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Serial: RNP-RA/01-0094

MAY 2 1 2001

United States Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-261/LICENSE NO. DPR-23

POST ACCIDENT MONITORING (PAM) INSTRUMENTATION REPORT

Ladies and Gentlemen:

This letter transmits a Post Accident Monitoring (PAM) Instrumentation Report for the H. B. Robinson Steam Electric Plant (HBRSEP), Unit No. 2. The report, submitted in accordance with Technical Specifications (TS) Section 5.6.6, "Post Accident Monitoring (PAM) Instrumentation Report," is attached.

If you have any questions concerning this matter, please contact Mr. H. K. Chernoff.

Sincerely,

Timothy P. Cleary
Plant General Manager

ALG/alg

Attachment

c: Mr. L. A. Reyes, USNRC, Region II
Mr. R. Subbaratnam, NRC, NRR
NRC Resident Inspector, HBRSEP

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H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2

POST ACCIDENT MONITORING (PAM) REPORT

Technical Specifications (TSs) Limiting Condition for Operation (LCO) 3.3.3, "Post Accident Monitoring (PAM) Instrumentation," Conditions F and H require a report to be submitted to the NRC in accordance with Technical Specifications Section 5.6.6, "Post Accident Monitoring (PAM) Instrumentation Report," if the Required Action and Completion Time of LCO 3.3.3, Condition D are not met. During Refueling Outage (RO) 20, it was identified that the Pressurizer Power Operated Relief Valve (PORV) position indication was potentially inoperable for an extended but indeterminate period beyond the 7 day Completion Time of LCO 3.3.3, Required Action D.1. The PORV position indication was restored to OPERABLE status prior to MODE 3 operation following the refueling outage. Therefore the TS Section 5.6.6 requirements for a preplanned alternate method of monitoring, and for the plans and schedule for restoring the instrumentation channels of the Function to OPERABLE status, have been satisfied. The following paragraphs discuss the cause of the inoperability and additional corrective actions taken.

Background

During an outage related inspection of the pressurizer mirror insulation, gaps were identified in the pressurizer insulation, which led to an inspection of cables in the vicinity of the insulation gaps. Discoloration and heat damage were found on the flexible conduit associated with the Pressurizer PORV PCV-456 limit switches, in an area located over a gap in the pressurizer insulation. The conduit has a metal jacket that is covered with a polymer coating. A thermography image taken during the inspection indicated temperatures approximately 400-450°F in the gap. The valve was successfully cycled, which demonstrated that the valve was capable of being manually opened or closed, and that the associated motor operators, solenoids, limit switches, and cables were functional. Inspection of the cable after removal found apparent damage on the outer jacket and on the insulation of the individual conductors in the cable.

The damaged cable was removed and subsequently tested to determine the degree of cable and conductor insulation degradation. The test results were inconclusive regarding the ability of the damaged cables in the conduit to withstand Regulatory Guide (RG) 1.97[1] requirements for the duration of an accident. However, the test results indicated that the cable would have functioned at least through the initial phases of an accident, when it is most likely that position indication for the PORV is needed to diagnose a potentially stuck open PORV.

PCV-456 is a pressurizer PORV, which during normal operation opens at 2335 psig to limit pressure excursion and challenges to the pressurizer safety valves. When the plant is in

[1] Regulatory Guide 1.97, "Instrumentation for Light-Water-Cooled Nuclear Power Plants to Assess Plant and Environs Conditions During and Following an Accident," Revision 3.

MODE 4, or in MODE 5 with the RCS not vented, the PORV will operate to provide Low Temperature Overpressure Protection (LTOPP) to the RCS. The position indication function of the valve, from fully closed to fully open, is provided by two stem mounted limit switches that are seismically qualified and powered from an emergency power source. The affected cable provides indication from the open and closed limit switches associated with the valve position. The PORV position indication function is a RG 1.97, Type D, Category 2 variable. The function is Type D because the variable provides information to indicate the operation of a system important to safety. The function is Category 2 because the PORV indication function is not a key variable, which is consistent with the RG 1.97 category designation. The purpose of the PORV position indication function is to provide a positive indication of the position of these valves to aid the operator in diagnosing a failure of the PORV to close.

Cause of Inoperability

The cable damage was caused by heat from the pressurizer coming from a gap in the mirror insulation installed on the pressurizer. The cause for the gap in the insulation was a failure to ensure that gaps in the insulation material were identified and closed during previous maintenance and inspection activities in the pressurizer cubicle.

The original design requirement for RCS insulation was to maintain the surface temperature of the insulation envelope to approximately 150°F. Gaps of significance in the pressurizer's insulation may cause the design temperature envelope requirements of exposed electrical components near the insulation gaps to be exceeded.

Corrective Actions Taken

The damaged cable, and other cables in the area associated with PORV solenoids, limit switches, and connector cables were replaced. The insulation was repaired and gaps were covered with additional insulation. In addition, thermography was performed to confirm the effectiveness of the thermal insulation corrective actions.

Plant procedures will be revised by August 1, 2001, to require inspection of insulation on, and immediately below, the pressurizer head to ensure that no gaps, tears, or other visible signs of degradation exist.

A routine maintenance activity will be added to perform thermography to the extent practical of the pressurizer at an appropriate temperature during outages to inspect insulation performance.