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Murray R. Edelman

SR. VICE PRESIDENT
NUCLEAR

September 18, 1987
PY-CEI/NRR-0721 L

Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, D. C. 20555

Perry Nuclear Power Plant
Docket No. 50-440
Inoperable Accident Monitoring
Instrumentation -
Special Report - NP-38-02

Dear Sir:

Attached is a Special Report concerning inoperable Accident Monitoring Instrumentation on the D19 area radiation monitors. This report satisfies the conditions of Perry Technical Specifications 3.3.7.5 and 6.9.2.

Please feel free to contact me should you have any further questions.

Very truly yours,

Murray R. Edelman
Senior Vice President
Nuclear Group

MRE:cab

Attachment

cc: T. Colburn
K. Connaughton
USNRC Region III
Director, Office of Resource Management

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SPECIAL REPORT - INOPERABLE ACCIDENT
MONITORING INSTRUMENTATION
NP-38-02

On September 1, 1987, the Primary Containment/Drywell Area Gross Gamma Radiation Monitors (D19) had less than the Minimum Required Channels required by Perry Technical Specifications 4.3.7.5 - 1.11 when the second of the two Drywell radiation monitors failed. The seventy-two (72) hour time limit to restore the channels was exceeded on September 4, 1987. Prior to this time, one of the two Containment and the first Drywell radiation monitors were already inoperable due to instrument failures. Actions required to restore the channels to operable are continuing. All aspects of the Technical Specification Action 81 statement were met.

This instrumentation is designed to monitor high levels of gamma radiation in Containment and Drywell during a Loss of Coolant Accident (LOCA) and provide information which can be used for detection of potential significant releases, long term post accident surveillance, and Emergency Plan implementation. Each channel consists of a Kaman Instrumentation ion chamber detector, signal and high voltage instrument cables, a microcomputer and control room indication unit.

The equipment failures appear to be due to degraded insulation resistance of the field cable system. Each cable system utilizes Kaman Instrumentation Mineral-Insulated (MI) cable from the detector (mounted in the Containment or Drywell) to the Containment penetration, and soft triax cable from the Containment penetration to the Control Complex building. Cable insulation resistance and voltage withstand testing have both indicated a degradation in cable integrity. Very high insulation resistance is required in these applications since the current output from the field mounted detector is on the order of 10 picoamps during normal operation.

The cause of the cable degradation is indeterminate. These cables have a history of problems; the MI cables are fragile and sensitive to excess humidity. Several cables were replaced or reworked during initial startup testing. Discussion with other utilities with this system and other similar systems indicates this is an industry concern.

Efforts to restore the three channels to operable status are on-going; priority is being given to the Drywell monitors in order to restore the Minimum Required Channels. Work is restrained due to the sensitivity of the work, parts availability and because of inaccessibility to the Drywell. All possible work which can be performed outside the Drywell is continuing. If rework is necessary inside the Drywell, this will be dependent upon Drywell accessibility during outage conditions.

Currently, rework is being performed to restore the cables to the original design, however, due to the system's poor performance, Engineering is evaluating modifications to enhance the cable system or a system retrofit to use an alternate detector/cable system. In the interim, the preplanned alternate method of monitoring this parameter, Technical Specification Action 81, is being implemented. This utilizes the normal range Atmosphere Radiation Monitors (D17) and the Area Radiation Monitors (D21) to assess normal plant conditions and the Post Accident Sampling System (P87) Containment and Drywell Atmosphere grab samples in the event of an accident.