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

Gentlemen:

In accordance with the provisions of Perry Nuclear Power Plant Technical Specifications Section 3.3.3.1, the enclosed Special Report is being submitted to notify the NRC of an inoperable channel of Post Accident Monitoring instrumentation. The instrumentation has been repaired and is now operable. However, the instrumentation was inoperable for approximately one day greater than the out-of-service time allowed by Technical Specifications, hence the enclosed 14 day Special Report.

If you have questions or require additional information, please contact Mr. James D. Kloosterman, Manager-Regulatory Affairs, at (216) 280-5833.

Very truly yours,

Enclosure: Special Report - Inoperable Post Accident Monitoring Instrumentation

cc: NRC Region III Administrator
NRC Resident Inspector
NRC Project Manager

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# SPECIAL REPORT

## INOPERABLE POST ACCIDENT MONITORING INSTRUMENTATION

One channel of the Primary Containment/Drywell Area Gross Gamma Radiation monitors was inoperable for approximately one day greater than the out-of-service time allowed by Technical Specifications. The instrumentation has been repaired and is now operable. Based on discussions with the vendor, coupled with troubleshooting activities, the apparent cause was considered to be a capacitive coupling in the mineral-insulated cable which masks the picoamp signal from the ion chamber at low level signals.

The primary purpose of the Post Accident Monitoring instrumentation is to display plant variables required to be monitored by the control room operators during accident scenarios. The Primary Containment/Drywell Area Gross Gamma Radiation monitors, which comprise a portion of the Post Accident Radiation Monitoring system (i.e., system 1D19) instruments, are provided to monitor for potential significant radiation releases, and to aid in the assessment of any such releases for determining site emergency action levels.

Coincident with the implementation of improved Technical Specifications (TS) on July 14, 1996, there were fewer Primary Containment/Drywell Area Gross Gamma Radiation channels operable than the "Required Channels" depicted in Table 3.3.3.1-1, "Post Accident Monitoring Instrumentation." In accordance with TS 3.3.3.1 Action B.1, if the required channel is not restored within 30 days, a Special Report is required to be submitted detailing root cause determination of the inoperable channel and proposed restorative actions. Direction contained in the Bases, indicate the Special Report shall be submitted within 14 days of entering Condition B.

Primary Containment/Drywell Area Gross Gamma Radiation monitor channel restoration was not completed until August 14, 1996, approximately one day later than the out-of-service time allowed by TS. Accordingly, this Special Report is being submitted to comply with TS Action B.1. Radiation monitoring of the containment atmosphere was adequately maintained during this time via the Atmosphere Radiation and Area Radiation monitors.

PNPP has two multi-channel Area Radiation monitors manufactured by Kamen Instrumentation Corporation, each consisting of one high range containment detector (1D19-N200A or 1D19-N200B) and one high range drywell detector (1D19-N100A or 1D19-N100B). Channel inoperability was identified by two separate and distinct indications on the associated recorder (1D19-R100) for the Division 1 Area monitor (1D19-K100). The first indication was observed on Division 1 Drywell Channel 1, (1D19-N100A) which was noted to have increased oscillating readings which were not reflected on the Division 2 Drywell Channel 1 monitor (1D19-K200). The indication

appeared to be electrical noise and troubleshooting commenced with attempting to isolate a potential shield break at the electrical connections. The associated connectors external to containment were disassembled, cleaned, and reassembled. Observed noise was reduced and consistent with the opposite channel (1D19-N100B).

The second indication was the upscale reading on the associated recorder (1D19-R100) for Containment Channel 2 (1D19-N200A) for the Division 1 Containment Area monitor, (1D19-K100). The associated channel in the Division 2 monitor (1D19-N200B) did not reflect a similar increase nor did area surveys confirm the indicated change. Troubleshooting focused on the electrical connectors to determine if a false signal was being imposed on the detector signal. Disassembly and cleaning of the containment connections prior to the mineral-insulated cable junction appeared to have corrected the problem on August 8, 1996; however, following a source check of the containment detector (1D19-N200A), the indication returned on August 9, 1996. Based on discussions with the vendor, coupled with the response to the connector cleaning with subsequent detector source check, the apparent cause was considered to be a capacitive coupling in the mineral-insulated cable which masks the picoamp signal from the ion chamber at low level signals. The charge, caused by capacitive coupling, requires a period of time for the signal to increase above the default value unless externally acted upon (e.g., a source check of the detector).

After disassembly and cleaning of the connectors internal to containment prior to the mineral-insulated cable junction, the indications for the 1D19-N200A detector stabilized at the default value. The monitor was returned to operable status on August 14, 1996.