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VICE PRESIDENT - NUCLEAR

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

Perry Nuclear Power Plant  
Docket No. 50-440  
Inoperable Loose-Part Detection  
System Instrumentation - Special Report

Gentlemen:

Attached is a Special Report concerning inoperable Loose-Part Detection System Instrumentation. This report satisfies the conditions of Perry Technical Specifications 3.3.7.8 and 6.9.2.

If you have any questions, please feel free to call.

Sincerely,

Michael D. Lyster

MDL:NJL:njc

Attachment

cc: NRC Project Manager  
NRC Resident Office  
NRC Region III

Operating Companies  
Cleveland Electric Illuminating  
Toledo Edison

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**SPECIAL REPORT - INOPERABLE LOOSE PARTS  
DETECTION SYSTEM INSTRUMENTATION**

On January 15, 1991 channel 8 of the Vibration and Loose Parts Monitoring (V&LPM) System experienced spurious alarms that could not be reset. Channel 8 was declared inoperable and the Unit entered Technical Specification action statement 3.3.7.8, requiring submittal of a special report to the Commission within the next 10 days after one or more V&LPM channels have been inoperable for more than 30 days. The 30 day time limit to restore channel 8 to an operable status was exceeded on February 14, 1991. All aspects of the Technical Specification action statement were met.

This system is designed to continuously monitor the Nuclear Boiler for any indication of loose parts in the Nuclear Boiler System. Ten individual channels monitor the reactor vessel components with sensors physically mounted near natural collection areas. Each channel consists of a detector (accelerometer), preamplifier, and signal processing electronics which input to a tape recorder, audible speaker, a dB meter, control room annunciator, a spectrum analyzer, an x-y plotter, a loose part locator, and a printer. The channel 8 detector is mounted on a pipe riser in the "B" reactor recirculation loop.

The System Engineer evaluated the condition and has determined the alarm threshold required adjustment. The alarms were not attributed to a suspected loose part. Troubleshooting was performed on the accessible equipment with no equipment problems identified. In addition, equipment problems in other portions of the system are not suspected as the cause of the alarms. Apparently, normal process noise was causing the alarm to actuate. The alarm threshold for channel 8 is believed to have been left at too sensitive a setting during the recent refueling outage. It was felt that design changes implemented during the refuel outage would be sufficient to resolve concerns with this channel, therefore the alarm threshold was left at its previous setting.

The alarm threshold for channel 8 was raised to a value comparable with channel 7 (corresponding sensor location located at the "A" reactor recirculation loop). No further alarms have occurred since the new alarm setpoint was implemented. The new setpoint can not be verified operable since access to the Drywell is not available during power operations. Drywell access is needed so that impact tests at the sensor location can be performed. Impact tests are performed as part of the channel calibration surveillance to recalibrate the channel. Until the impact tests are completed satisfactorily, the channel is considered inoperable.

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This channel has previously been reported inoperable due to equipment problems associated with cables located in the Drywell. At the recent refueling outage, Drywell cables leading to the preamplifiers were replaced. The current channel characteristics do not resemble previously observed anomalies and the current inoperability is apparently not related to the previous equipment concerns. Verification of the proper adjustment of the alarm threshold during the next calibration should resolve the current concerns.

Although channel 8 has been declared inoperable, it has not been disconnected since the alarm setpoint has been adjusted and the spurious alarms were eliminated. The channel will be observed on an "information only" basis. It is beneficial to trend the data from this channel instead of disconnecting it. The data obtained should aid in recognizing similar problems should they occur with other channels in the future.

With channel 8 inoperable, the V&LPM system still meets the intent of Regulatory Guide 1.133 by maintaining more than two sensors located at each natural collection region (reactor vessel upper and lower plenums). The provisions of Technical Specification 3.3.7.8 will continue to be met. The channel will be completely recalibrated and returned to service following the next outage of opportunity.

Additionally, a design change is scheduled for implementation during the third refueling outage (March, 1992). Significant upgrades to the V&LPM system will be installed at that time. New filter cards to be installed under that design change should improve system performance regarding spurious alarms due to process noise.