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ACCESSION NBR:9408250019 DOC.DATE: 94/08/17 NOTARIZED: NO DOCKET #
 FACIL:50-410 Nine Mile Point Nuclear Station, Unit 2, Niagara Moha 05000410

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SUBJECT: Special rept: on 940731, main stack of gaseous effluent monitoring sys declared inoperable. Caused by random mode failure of SCR in ac to ac power conditioner. Tapaz ac power conditioner was repaired, tested & reinstalled.

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August 17, 1994
NMP2L 1487

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

RE: Nine Mile Point Unit 2
Docket No. 50-410
NPF-69

Subject: Special Report

Dear Sir:

In accordance with Nine Mile Point Unit 2 (NMP2) Technical Specification (TS) Table 3.3.7.10-1, "Radioactive Gaseous Effluent Monitoring Instrumentation", ACTION 139b, Niagara Mohawk Power Corporation is submitting this Special Report concerning the inoperability of the Main Stack Gaseous Effluent Monitoring System (GEMS).

EVENT DESCRIPTION

On July 31, 1994 at 0800 hours with the reactor mode switch in the "RUN" position (operational condition 1), and the plant operating at approximately 100 percent power, the Main Stack GEMS noble gas station, including flow monitoring instrumentation, was declared inoperable due to an interruption in the AC power source. Immediately upon loss of the AC power source, alarms were received in the control room indicating loss of power as well as loss of communication with the Allen Bradley programmable controller. Investigation at the GEMS station identified low battery alarms on the uninterruptable power supply (2VBB-UPS1H) and the UPS cycling between the normal and bypass (maintenance) power source. Each of the components in alarm, Stack GEMS (2RMS-CAB170) and the uninterruptable power supply (2VBB-UPS1H), were declared inoperable and compensatory actions were implemented as required by TS 3.3.7.10.

Troubleshooting of the Main Stack GEMS was completed under work order #94-3375-00. Testing of the GEMS components indicated that a triode semiconductor device (SCR) in the Topaz AC to AC power conditioner had shorted between cathode and gate resulting in a degraded voltage output to the GEMS multi-channel analyzer (MCA) and Allen Bradley programmable controller. The SCR was replaced as well as a pair of resistors which failed as a result of the SCR short. The failure of the SCR resulted in cyclic power transients which resulted in repeated transfer of the AC power source, 2VBB-UPS1H, from normal to bypass (maintenance).

Troubleshooting of the uninterruptable power supply (2VBB-UPS1H) was completed under work order #94-3376-00. Testing of the UPS system indicated no major problems; there were minor adjustments made as well as the replacement of a electrical contactor which failed as a result of the cyclic disturbances caused by the failure of the Topaz AC power conditioner.

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On Wednesday, August 3, 1994 at 0800 hours, the Stack GEMS had been inoperable for 72 hours necessitating the submittal of this Special Report in accordance with NMP2 TS Table 3.3.7.10-1 ACTION 139b.

The Main Stack GEMS, including the uninterruptable power supply, was returned to operable status following post maintenance testing on Thursday, August 4, 1994 at 1530 hours.

CAUSE OF EVENT

Since there were no pre-failure conditions to challenge the system or the Topaz power conditioner, such as lighting, high temperature, or electrical disturbances, the initiating cause of this event is considered a random-mode failure of the SCR in the Topaz AC to AC power conditioner. This failure resulted in several other conditions including degradation of the UPS, loss of the spectral data from the MCA, and loss of the program contained in the Allen Bradley Programmable Controller. With the loss of the programmable controller, all functions of the GEMS are inoperable with the exception of gross count rate from the detector and alarm circuitry.

CORRECTIVE ACTIONS

1. The Topaz AC power conditioner was repaired, tested, and reinstalled.
2. Minor adjustments were made to the uninterruptable power supply, including replacement of an electrical contactor.
3. Programs were reloaded into the Allen Bradley programmable controller and the GEMS multi-channel analyzer.
4. Post Maintenance testing was completed on the UPS per work order #94-3376-00 and confirmed proper operation of that device.
5. Post Maintenance testing of the GEMS was completed per work order #94-3375-00 and confirmed proper operation of the system.

Very truly yours,

Kim A. Dahlberg
Kim A. Dahlberg
Plant Manager - Unit 2

KAD/AFZ/ksj

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