



November 18, 1999
NMP1L 1486

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

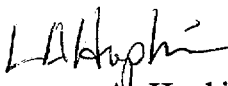
RE: Docket No. 50-220
LER 99-05, Supplement 1

Gentlemen:

In accordance with 10 CFR 50.73(a)(2)(iv), we are submitting LER 99-05, Supplement 1, "Reactor Trip During Plant Startup on Intermediate Range Monitor Spiking Caused by Electro-Magnetic Interference."

The purpose of this supplement is to inform you that Niagara Mohawk Power Corporation changed the completion date for a corrective action. The corrective action was to revise a calibration test procedure to cycle the intermediate range monitor range switches to clean the contacts by October 1, 1999. The procedure revision was completed on October 14, 1999.

Sincerely,


Lawrence A. Hopkins
Plant Manager - NMP1

LAH/CES/jb
Attachment

xc: Mr. H. J. Miller, NRC Regional Administrator
Mr. G. K. Hunegs, Senior Resident Inspector
Records Management

JE22

PO/ADOCK 0500 0220

LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE RECORDS AND REPORTS MANAGEMENT BRANCH (P-530), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503

FACILITY NAME (1) Nine Mile Point Unit 1	DOCKET NUMBER (2) 05000220	PAGE (3) 01 OF 04
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TITLE (4) **Reactor Trip During Plant Startup on Intermediate Range Monitor Spiking Caused by Electro-Magnetic Interference**

EVENT DATE (5)			LER NUMBER (6)				REPORT DATE(7)			OTHER FACILITIES INVOLVED (8)	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES	DOCKET NUMBER(S)	
08	01	99	99	005	01	11	18	99	N/A		
									N/A		

OPERATING MODE (9) **4** THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following)

POWER LEVEL (10) 0%	<input type="checkbox"/> 20.2201(b) <input type="checkbox"/> 20.2203(a)(1) <input type="checkbox"/> 20.2203(a)(2)(i) <input type="checkbox"/> 20.2203(a)(2)(ii) <input type="checkbox"/> 20.2203(a)(2)(iii) <input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 20.2203(a)(2)(v) <input type="checkbox"/> 20.2203(a)(3)(i) <input type="checkbox"/> 20.2203(a)(3)(ii) <input type="checkbox"/> 20.2203(a)(4) <input type="checkbox"/> 50.36(c)(1) <input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(i) <input type="checkbox"/> 50.73(a)(2)(ii) <input type="checkbox"/> 50.73(a)(2)(iii) <input checked="" type="checkbox"/> 50.73(a)(2)(iv) <input type="checkbox"/> 50.73(a)(2)(v) <input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> 50.73(a)(2)(viii) <input type="checkbox"/> 50.73(a)(2)(x) <input type="checkbox"/> 73.71 <input type="checkbox"/> OTHER <small>(Specify in Abstract below and in Text, NRC Form 366A)</small>
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LICENSEE CONTACT FOR THIS LER (12)

NAME Peter Mazzaferro - Manager Technical Support	TELEPHONE NUMBER (315) 349-1019
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COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
X	IG	JS	G080	Y					

SUPPLEMENTAL REPORT EXPECTED (14) <input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)	<input checked="" type="checkbox"/> NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
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ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single space typewritten lines) (16)

On August 1, 1999, at 2:20 p.m., Nine Mile Point Unit 1 automatically tripped during plant startup on invalid intermediate range monitor signals. Just prior to the trip, a normal reactor startup was in progress. When the reactor operator changed the Intermediate Range Monitor 11 range switch from range 2 to 3 as required, a reactor trip occurred. All systems responded as expected following the reactor trip.

The cause of the reactor trip was degraded contacts on the range switch. When the switch was moved, a relay in the downscale rod block circuitry chattered, which in turn, produced electro-magnetic interference. The electro-magnetic interference caused Intermediate Range Monitors 12, 15, and 16 to spike, which resulted in the reactor trip signal. A contributing cause is the sensitivity of the intermediate range monitor circuitry to electro-magnetic interference.

Corrective actions included: inspecting, cleaning, burnishing, and testing Intermediate Range Monitor 11 range switch, inspecting the remaining intermediate range monitor range switches, and installing circuitry to reduce the magnitude of the electro-magnetic interference from relays in all Intermediate Range Monitors downscale rod block circuitry. An action plan will be developed and implemented to further reduce the effect of electro-magnetic interference on the intermediate range monitor circuitry.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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FACILITY NAME (1) Nine Mile Point Unit 1	DOCKET NUMBER (2) 05000220	LER NUMBER (6)			PAGE (3) 02 OF 04
		YEAR 99	SEQUENTIAL NUMBER 05	REVISION NUMBER 01	

TEXT (If more space is required, use additional NRC Form 366A's) (17)

I. DESCRIPTION OF EVENT

On August 1, 1999, at 2:20 p.m., during plant startup, Nine Mile Point Unit 1 automatically tripped on an invalid intermediate range monitor signals. The conditions at the time of the trip were: reactor critical, with the coolant system at 0 psig and 178°F.

Approximately 5 minutes after achieving criticality, the reactor operator moved the Intermediate Range Monitor 11 range switch from range 2 to range 3 as part of a normal startup. At that time, Intermediate Range Monitors 12, 15, and 16 spiked high due to electro-magnetic interference causing a reactor trip. All systems responded as expected following the reactor trip.

During troubleshooting activities, maintenance and operation personnel recreated the electro-magnetic interference while the range switch was installed in the field and during bench testing. After cleaning and burnishing the contacts, maintenance personnel using the same switch movement verified elimination of the electro-magnetic interference.

II. CAUSE OF EVENT

The cause of the reactor trip was equipment degradation. The contacts on Intermediate Range Monitor 11 range switch were degraded from normal usage. (There are no vendor recommendations that would have indicated that contact cleaning was necessary.) The degraded contacts, when actuated, resulted in the downscale rod block relay chattering which introduced electro-magnetic interference in the intermediate range monitor circuitry. The electro-magnetic interference generated electrical noise that caused Intermediate Range Monitors 12, 15, and 16 to spike upscale.

During the investigation it was discovered that the internal switch assembly for Intermediate Range Monitor 11 range switch was original plant equipment. The same components for the remaining intermediate range monitor range switches were replaced in the mid-1980's. The condition of the contacts on the newer range switches was significantly better (visual and resistance checks) than on Intermediate Range Monitor 11.

A contributing cause to this event was the sensitivity of the intermediate range monitor circuitry to electro-magnetic interference. Throughout Nine Mile Point Unit 1's history, noise has been detected on the intermediate range monitors. Actions have been taken to suppress the source of noise and to "harden" the circuitry, but the complete elimination of noise has not been achieved to date.

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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
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Nine Mile Point Unit 1	05000220	99	05	01	03 OF 04

TEXT (If more space is required, use additional NRC Form 366A's) (17)

III. ANALYSIS OF EVENT

This event is considered reportable under 10 CFR 50.73(a)(2)(iv): "Any event or condition that resulted in a manual or automatic actuation of any engineered safety features (ESF), including the reactor protection system (RPS)..."

The intermediate range monitor's rod block and reactor trips functions are utilized for reactor protection during plant startup, shutdown, and low power operation. There was no actual high neutron flux. The reactor trip was in response to an invalid neutron flux signal spike. The plants systems including the intermediate range monitors (after the short electro-magnetic interference transients subsided) responded as expected. Therefore, the reactor trip did not have an adverse effect on the health and safety of the general public or plant personnel.

IV. CORRECTIVE ACTIONS

- Maintenance personnel inspected, cleaned, burnished, and tested Intermediate Range Monitor 11 range switch contacts.
- Maintenance personnel inspected cleaned, and tested the remaining intermediate range monitor range switches to preclude a similar event.
- Maintenance personnel installed resistance/capacitance networks across the relay coils of downscale rod block withdrawal functions associated with all Intermediate Range Monitors. This action minimizes the magnitude of electro-magnetic interference generated when these relays change state.
- Maintenance support personnel incorporated steps into the calibration test procedure to cycle the intermediate range monitor range switches to clean the contacts on October 14, 1999.
- An action plan will be developed and implemented to further reduce the sensitivity of the intermediate range monitor circuitry by the end of the next refueling outage.

V. ADDITIONAL INFORMATION

A. Failed components:

The intermediate Range Monitor 11 range switch failed on August 1, 1999, which was the initiator of the reactor trip.

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TEXT (If more space is required, use additional NRC Form 366A's) (17)

V. **ADDITIONAL INFORMATION** (Cont'd)

B. Previous similar events:

Licensee Event Reports 94-04, 93-06, 91-08, 91-03, 90-19, 87-25, 87-16, 86-21, and 84-05 report problems with intermediate range monitors spiking. Corrective actions for these licensee event reports consisted of detector, connector and cable upgrades and implementation of numerous design changes to reduce electro-magnetic interference and/or suppress their effects on the intermediate range monitor system. The cause of this event is different than the causes discussed in the licensee event reports; therefore, the past corrective actions would not have prevented this occurrence.

C. Identification of components referred to in this Licensee Event Report:

Components	IEEE 803A Function	IEEE 805 System ID
Intermediate Range Monitor	MON	IG
Relay	RLY	IG
Contacts	NA	IG
Switch	33	IG