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FACIL:50-410 Nine Mile Point Nuclear Station, Unit 2, Niagara Moha 05000410
AUTH.NAME AUTHOR AFFILIATION
KINSLEY,J. Niagara Mohawk Power Corp.
MCCORMICK,M.J. Niagara Mohawk Power Corp.
RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 92-024-00:on 921204,experienced actuation of ESF, resulting in plant being in condition prohibited by TS. Caused by failed panalarm temp switch.Control room operators entered & faulty temp switch replaced.W/921230 ltr.

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NIAGARA MOHAWK

NINE MILE POINT—UNIT 2/P.O. BOX 63, LYCOMING, NY 13093

Martin J. McCormick Jr. PE
Plant Manager-Unit 2
Nuclear Generation

December 30, 1992
NMP88317

United States Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

RE: Docket No. 50-410
LER 92-24

Gentlemen:

In accordance with 10CFR50.73, we hereby submit the following Licensee Event Report:

LER 92-24 Is being submitted in accordance with the following: 1) 10CFR50.73 (a)(2)(i)(B), "any operation or condition prohibited by the plant's Technical Specification"; and 2) 10CFR50.73 (a)(2)(iv), "any event or condition that resulted in manual or automatic actuation of any Engineered Safety Feature (ESF), including the Reactor Protection System (RPS)."

A 10CFR50.72 (b)(2)(ii) report was made at 1019 hours on December 4, 1992.

This report was completed in the format designated in NUREG-1022, Supplement 2, dated September 1985.

Very truly yours,

Martin J. McCormick Jr.
Plant Manager - NMP2

NSC/RLM/lmc
Attachment

pc: Mr. Thomas T. Martin, Regional Administrator Region I
Mr. Wayne L. Schmidt, Senior Resident Inspector

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Control No 9212290550
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NRC FORM 366 (6-89) | U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

APPROVED OMB NO. 3150-0104
EXPIRES: 4/30/92

ESTIMATED BURDEN PER RESPONSE TO COMPLY WTH 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)	DOCKET NUMBER (2)	PAGE (3)
Nine Mile Point Unit 2	0 5 0 0 0 4 1 0	1 OF 0 5

TITLE (4): Technical Specification Violation and Engineered Safety Feature Actuation due to a Reactor Core Isolation Cooling System Isolation Caused by a Failed Temperature Switch

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)
1 2	0 4	9 2	9 2	0 2 4	0 0	1 2	3 0	9 2	N/A	0 5 0 0 0
									N/A	0 5 0 0 0

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)					
POWER LEVEL (10)	1 0 0	20.402(b)	20.405(c)	X	50.73(a)(2)(iv)		73.71(b)
		20.405(a)(1)(i)	50.36(c)(1)		50.73(a)(2)(v)		73.71(c)
		20.405(a)(1)(ii)	50.36(c)(2)		50.73(a)(2)(vii)		OTHER (Specify in Abstract below and in Text, NRC Form 366A)
		20.405(a)(1)(iii)	X 50.73(a)(2)(i)		50.73(a)(2)(viii)(A)		
		20.405(a)(1)(iv)	50.73(a)(2)(ii)		50.73(a)(2)(viii)(B)		
		20.405(a)(1)(v)	50.73(a)(2)(iii)		50.73(a)(2)(x)		

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
James Kinsley, General Supervisor Instrument & Control NMP2	AREA CODE 3 1 5 — 3 1 4 9 1 - 1 7 5 1 0 1 2

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS
X	J M	T I S	R 2 8 1 1	Y					

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO				

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

At 0749 hours on December 4, 1992, Nine Mile Point Unit 2 (NMP2) experienced actuation of an Engineered Safety Feature (ESF), which also resulted in the plant being in a condition prohibited by Technical Specifications. Specifically, the Reactor Core Isolation Cooling system (ICS) isolated and the Residual Heat Removal system received an isolation signal (A Group 5 and Group 10 Primary Containment Isolation) on a false Reactor Building General Area high temperature trip signal. At the time of the ESF actuation, the High Pressure Core Spray (CSH) pump was out of service for scheduled maintenance. With both the ICS and the CSH inoperable, the plant was not in compliance with Technical Specifications. At the time of the event, the reactor mode switch was in the "RUN" position (Operational Condition 1) with the plant operating at 100 percent rated thermal power.

The cause for the isolation signal was a failed Panalarm (Riley) temperature switch.

The immediate corrective actions include entry into the Emergency Operating Procedures, returning the CSH pump to standby, verifying normal plant conditions, and investigating the cause for the temperature alarm. Additional corrective actions included: 1) replacing the faulty temperature switch; 2) returning ICS to standby; and 3) identifying the cause for the failure.

I. DESCRIPTION OF EVENT

At 0749 hours on December 4, 1992, Nine Mile Point Unit 2 (NMP2) experienced actuation of an Engineered Safety Feature (ESF), which also resulted in the plant being in a condition prohibited by Technical Specifications. Specifically, Control Room annunciator 601157, "Reactor Building General Area High" alarmed, the Reactor Core Isolation Cooling System (ICS) inboard steam supply isolation valves (2ICS*MOV128 and 2ICS*MOV170) isolated, and Residual Heat Removal System (RHS) shutdown cooling isolation valves (2RHS*MOV112, 2RHS*MOV67B, and 2RHS*MOV40B) received an isolation signal (these valves are shut at power) on a false Reactor Building General Area high temperature signal. At the time of the event, the reactor mode switch was in the "RUN" position (Operational Condition 1) with the plant operating at 100 percent rated thermal power.

At 0724 hours, preparations were made to perform scheduled maintenance on level switch 2CSH*LS143 in the High Pressure Core Spray System (CSH). Part of the preparation required placing the CSH pump switch in pull-to-lock position to prevent the pump from inadvertently starting. Technical Specification (TS) 3.5.1 ACTION statement (c.) in part requires ICS be OPERABLE if CSH is inoperable while the plant is in Operational Condition 1.

At 0749 hours, Panalarm (Riley) temperature switch 2RHS*TS82B (Reactor Building 240 foot elevation general area) failed to the tripped condition, causing Control Room annunciator 601157 to alarm along with the Group 5 and 10 isolation signals to ICS and the shutdown cooling mode of RHS. The Control Room operators immediately realized that the isolation resulted in both ICS and CSH being inoperable, which violates TS ACTION statement 3.5.1.c. The operators entered TS ACTION statement 3.0.3, which requires a shutdown be commenced within one hour.

Since no work had commenced on the CSH scheduled maintenance, the operators returned the CSH pump to standby and declared CSH operable at 0750 hours. This brought the plant immediately back into compliance with the TS ACTION statement 3.7.4, which requires CSH be OPERABLE if ICS is inoperable. TS ACTION statement 3.0.3 was exited.

Because of the High General Area temperature alarm, the Emergency Operating Procedure for Secondary Containment Control, N2-EOP-SCT was entered. Plant operators were dispatched to check the ICS pump room, ICS pipe chase, and adjacent areas of the Reactor Building for signs of a possible steam leak. No steam leakage or other abnormalities were found. Also, Instrument & Control technicians were notified of the temperature alarm and by 0849 hours they had determined that Panalarm (Riley) temperature switch 2RHS*TS82B had failed. The Emergency Operating Procedures were exited by 0910 hours.

The defective temperature switch was replaced and the new switch was successfully tested. At 1215 hours the same day, the ICS isolation valves were opened and the ICS was returned to standby and declared operable.

II. CAUSE OF EVENT

A root cause evaluation has been performed per NIP-ECA-02, "Root Cause Evaluations." The immediate cause of the Group 5 and 10 isolations was a high general area temperature signal generated by a failed temperature switch. The failed temperature switch was analyzed by Instrument & Control technicians who determined the trip relay coil had failed open, allowing the contacts to open, initiating the trip signal.

Analysis of previous events has revealed that NMP2, as well as the Nuclear Industry, has experienced many difficulties with Panalarm (Riley) temperature switches.

III. ANALYSIS OF EVENT

This event is reportable in accordance with the following: 1) 10 CFR 50.73 (a)(2)(iv), "any event or condition that resulted in manual or automatic actuation of an Engineered Safety Feature (ESF), including the Reactor Protection System (RPS)"; and 2) 10 CFR 50.73 (a)(2)(i)(B), "any operation or condition prohibited by the plant's Technical Specifications." The Group 5 and 10 isolations were ESFs and the isolation and inoperability of ICS while CSH was inoperable did not meet TS ACTION statements 3.5.1 or 3.7.4.

The ICS is a system designed to assure that sufficient reactor water inventory is maintained in the reactor vessel to ensure adequate core cooling when the reactor is in a hot shutdown condition, isolated from the main condenser, and the Feedwater System is not in operation. Both the ICS and the CSH supply high pressure water to the reactor vessel during transients or accidents. With both of these systems inoperable, adequate core cooling is still possible by the low pressure Emergency Core Cooling System (ECCS) injection sources after reactor vessel depressurization using the Automatic Depressurization System (ADS).

The isolation of the ICS and shutdown cooling mode of RHS was a conservative action designed to automatically prevent significant release of radioactive materials from the Primary Containment should a line break occur in either of these lines. The inoperability of both the CSH and the ICS at the same time did not remove core cooling capability of the ECCS following a Loss of Coolant Accident (LOCA) because the ADS and low pressure injection sources were still operable. The time period during which both systems were inoperable was of short (approximately one minute) duration.

For the reasons stated above, the event posed no adverse safety consequences to the general public or plant personnel. Also, the event did not affect the operators ability to maintain safe reactor plant conditions. The challenge to plant protective systems caused by the failure of Panalarm (Riley) temperature switches is undesirable. Niagara Mohawk is aggressively pursuing replacement of the Panalarm (Riley) switches (reference this LER Section V.B.).

The duration of the ESF event was 3 hours and 36 minutes. The duration of the Technical Specification violation was approximately 1 minute.

IV. CORRECTIVE ACTIONS

Immediately following the high temperature alarm, the Control Room operators entered Emergency Operating Procedure N2-EOP-SCT, "Secondary Containment Control," because of the potential for a steam leak in the area of the high temperature alarm. They also immediately returned CSH to OPERABLE status and exited TS ACTION statement 3.0.3. Plant operators were dispatched to verify normal conditions existed in areas monitored by the alarming temperature switch and Instrument & Control personnel were called to investigate the cause for the high temperature alarm.

Additional corrective actions:

1. The faulty Panalarm (Riley) temperature switch was replaced with an identical component, post-maintenance testing was completed, and temperature switch 2RHS*TS82B was declared operable.

2. The faulty Panalarm temperature switch was bench tested and the trip relay coil was found to have failed open.

3. A Plant Modification, PN2Y90MX021, "Replacement of Riley Temperature Switches," is presently scheduled to be completed during the next refueling outage. This modification is intended to replace all Main Steam System Panalarm (Riley) switches with an S. Levy (manufacturer) model temperature monitor. If the application/performance of this model switch proves successful, Engineering will evaluate replacing all remaining Panalarm (Riley) temperature switches with the S. Levy model.

V. ADDITIONAL INFORMATION

A. Failed component identification:

Component description	-	temperature switch
Mark number	-	2RHS*TS82B
Manufacturer	-	Riley Co.
Part number	-	164C5687P020
Model number	-	86-PTEF-E
Symbol number	-	E31-N639B
Vendor drawing	-	807E154TY
Niagara Mohawk spec	-	P800A

B. Previous similar events:

NMP2 has experienced several previous ICS isolations associated with false high temperature signals. LER 87-17 Supplement 1 describes an ICS isolation when a

V. ADDITIONAL INFORMATION (cont.)

temperature switch was bumped, LER 91-10 describes an ICS isolation from a suspected spurious trip of another temperature switch, and LER 92-21 describes an ICS isolation due to failed termination leads. These events caused isolations, but were not complete failures of the switch. LER 92-01 describes failure of a similar Panalarm (Riley) temperature switch that caused isolation of ICS and the Reactor Water Cleanup System (WCS). A corrective action from LER 92-01 is a Plant Modification PN2Y90MX021, "Replacement of Riley Temperature Switches." This modification has been approved for implementation and was to replace the Panalarm (Riley) switches with S. Levy Temperature Monitors. Completion was scheduled for the second refuel outage, however, due to operational problems with the new S. Levy Temperature Monitors after they were installed, this modification was postponed until the third refuel outage. All Main Steam Panalarm (Riley) Temperature Switches will be replaced initially and depending upon the results of the initial replacement, substitution of the remaining Panalarm (Riley) switches with the S. Levy Monitors will be evaluated.

C. Identification of components referred to in this LER:

COMPONENT	IEEE 803A EIIS	IEEE 805 SYSTEM ID
Reactor Core Isolation Cooling System	N/A	BN
Residual Heat Removal System	N/A	BO
High Pressure Core Spray System	N/A	BG
Primary Containment and Reactor Vessel Isolation Control System	N/A	JM
Feedwater System	N/A	SJ
Automatic Depressurization System	N/A	JC
Reactor Water Cleanup System	N/A	CE
Temperature Switch	TIS	JM
Pump	P	BG
Isolation Valves	ISV	BO, BN
Level Switch	LIS	BG
Condenser	COND	SG