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FACIL:50-410 Nine Mile Point Nuclear Station, Unit 2, Niagara Moha 05000410
AUTH.NAME AUTHOR AFFILIATION
LAGOE,L. Niagara Mohawk Power Corp.
FIRLIT,J.F. Niagara Mohawk Power Corp.
RECIP.NAME RECIPIENT AFFILIATION

SUBJECT: LER 90-016-00:on 901202,ESF actuation,automatic initiation of HPCS sys logic & automatic start of Div III standy EDG. Cuased by spurious reactor vessel level instrument signal & personnel error.Operations verified proper operation of DG.

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TITLE: 50.73/50.9 Licensee Event Report (LER), Incident Rpt, etc.

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NMP73986

January 2, 1991

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

RE: Docket No. 50-410
LER 90-16

Gentlemen:

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

LER 90-16 Is being submitted in accordance with 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 telephone notification was made on December 2, 1990, at 0210 hours per 10CFR50.72 part (b)(2)(ii).

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

Very truly yours,

Joseph F. Firlit
Vice President - Nuclear Generation

JFF/AC/lmc

ATTACHMENT

xc: Thomas T. Martin, Regional Administrator Region I
William A. Cook, Sr. Resident Inspector

Cert No P73405066

IE22
1/1

NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Nine Mile Point Unit 2	0 5 0 0 0 4 1 1 0	1 OF 0 6

TITLE (4) Engineered Safety Feature Actuation - High Pressure Core Spray and Division III Standby Emergency Diesel Generator Initiation Due to Personnel Error

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)
									N/A	0 5 0 0 0
1 2	0 2	9 0	9 0	0 1 6	0 0	0 1	0 2	9 1	N/A	0 5 0 0 0

OPERATING MODE (9)	5	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)			
POWER LEVEL (10)	0 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)	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
L. Lagoe, Superintendent Maintenance NMP2	AREA CODE 3 1 5 3 4 9 - 2 4 9 7

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	

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)

On December 2, 1990, at 0122 hours, with the reactor at 0 percent power, all rods inserted, and the mode switch in the "REFUEL" position, Nine Mile Point Unit 2 (NMP2) experienced an actuation of an Engineered Safety Feature (ESF). The event consisted of an automatic initiation of the High Pressure Core Spray (HPCS) System logic (HPCS did not inject since the pump was removed from service due to outage work) and automatic start of the Division III Standby Emergency Diesel Generator.

The immediate cause of the event was a spurious Reactor Vessel Level Instrument signal. The root cause was determined to be personnel error due to poor work practices.

Immediate operator actions were to verify plant status and identify the cause of the ESF initiation. Operations verified that the Diesel Generator was operating properly, and returned it to standby.

Additional corrective actions included: Holding an Accountability Meeting with the personnel involved with this event; providing additional training for Planning Department personnel; and issuing a Lessons Learned Transmittal for this event.

I. DESCRIPTION OF EVENT

On December 2, 1990, at 0122 hours, with the reactor at 0 percent power, all rods inserted, and the mode switch in the "REFUEL" position, Nine Mile Point Unit 2 (NMP2) experienced an actuation of an Engineered Safety Feature (ESF). The event consisted of an automatic initiation of the High Pressure Core Spray (HPCS) System logic (HPCS did not inject since the pump was removed from service due to outage work) and automatic start of the Division III Standby Emergency Diesel Generator.

On December 1, 1990, at 1850 hours, Instrument and Control (I&C) technicians began work on replacing the instrument sensing line isolation valve for Reactor Vessel Pressure Transmitter 2ISC*PT108 (note attached diagram) per Work Request (WR) #180770. Work was started with the instrument rack isolation valve and the drain isolation valve marked-up (closed and open respectively). The transmitter isolation valve was replaced using Maintenance Instruction Procedure S-MI-5.3-001 Attachment A, "Use of Procedures". The markup on the rack drain valve and isolation valve was then cleared (valves closed and opened respectively) causing air to be trapped in the instrument tubing between pressure transmitters 2ISC*PT108 and 2ISC*PT109.

On December 2, 1990, at approximately 0100 hours, the I&C technicians proceeded to:

1. Bleed air from the instrument tubing associated with pressure transmitter 2ISC*PT108 (note attached drawing) by cracking the test isolation valve and opening the transmitter vent valve.

2. Bleed air from the instrument tubing associated with pressure transmitter 2ISC*PT109 by cracking the test isolation valve and opening the transmitter vent valve.

3. Bleed air from the reference leg by cracking the drain isolation valve.

At approximately 0122 hours, an ESF actuation occurred. The actuation was the result of a pressure surge on the reference leg of 2ISC*PT108. Pressure transmitter 2ISC*PT108 shares common reference leg tubing with two Reactor Vessel Water Level Transmitters, 2ISC*LT10A and 2ISC*LT10C. While venting to the drain, a pressure surge on the common reference leg induced a spurious low-low reactor water level (108.8") signal to be generated by the level transmitters. The transmitters' outputs satisfied the logic for the Engineered Safety Feature actuation -

I. DESCRIPTION OF EVENT (cont.)

HPCS initiation and Division III Standby Emergency Diesel Generator autostart. Immediate operator action was to verify plant status and identify the cause of the ESF initiation. The Division III Diesel Generator was verified to be operating properly, and returned to standby. The High Pressure Core Spray System did not inject, as the pump was in pull-to-lock for outage work. Operations reset the HPCS initiation signal and shut HPCS injection valve, 2CSH*MOV107.

II. CAUSE OF EVENT

A root cause for this event has been performed per Nuclear Division Procedure NDP-16.01, "Root Cause Evaluation" and the Root Cause Evaluation Workbook. The immediate cause of the event was a spurious signal initiated by a pressure surge on the reference leg of reactor vessel level transmitters 2ISC*LT10A and 2ISC*LT10C.

The root cause for this event was determined to be personnel error due to poor work practices. While preparing the work package associated with the replacement of the instrument isolation valve, the planner failed to consider that restoring the pressure transmitter to service could have an affect on the Reactor Vessel Water Level Instrumentation. Had he done so, the planner would have evaluated the work to be "Level 1" work which would have required a specific maintenance procedure to be written. The procedure would have then received a technical and safety review, and would have included the requirement to backfill the pressure transmitter prior to valving it into service.

A contributing factor to this event was that the Chief I&C Technician, while reviewing the work package, should have recognized the package's inadequacy and pursued correcting it prior to performing the work.

III. ANALYSIS OF EVENT

This event is reportable in accordance with 10CFR50.73, part (a)(2)(iv), "Any event or condition that results in manual or automatic actuation of any Engineered Safety Feature (ESF)".

III. ANALYSIS OF EVENT (cont.)

An ESF actuation (HPCS initiation and standby Emergency Diesel start) is a conservative action and poses no adverse safety consequences. All systems functioned properly. Division III Diesel Generator automatically started and HPCS injection valve opened (HPCS did not inject since the pump was inoperable due to outage work). Additionally, the event did not in any way effect the operation of other safety systems; and, at no time was there any threat to the health and safety of plant personnel or the general public.

All related systems performed their designed function. The duration of the event, from the ESF Logic initiation to HPCS reset and the return of the Division III Diesel to Standby, was twenty three minutes.

IV. CORRECTIVE ACTION

Immediate corrective action was to verify plant status as normal and identify the cause of the ESF initiation. Operations verified that the diesel generator was operating properly, shut it down, and returned it to standby.

Additional corrective actions included:

1) Conducting an Accountability Meeting with the personnel involved to review the circumstances of the ESF actuation.

2) Instructing the Planning Department on the correct use of Maintenance Instruction Procedure S-MI-5.3-001, "Use of Procedures". Specifically, the purpose of this guidance was to reinforce the importance of considering the full scope of the job when developing a work package.

3) Developing a Lessons Learned Transmittal to inform the Planning, Operations, and I&C Departments of the circumstances surrounding this event and the corrective actions taken to prevent recurrence.

V. ADDITIONAL INFORMATION

A. Failed components: None.

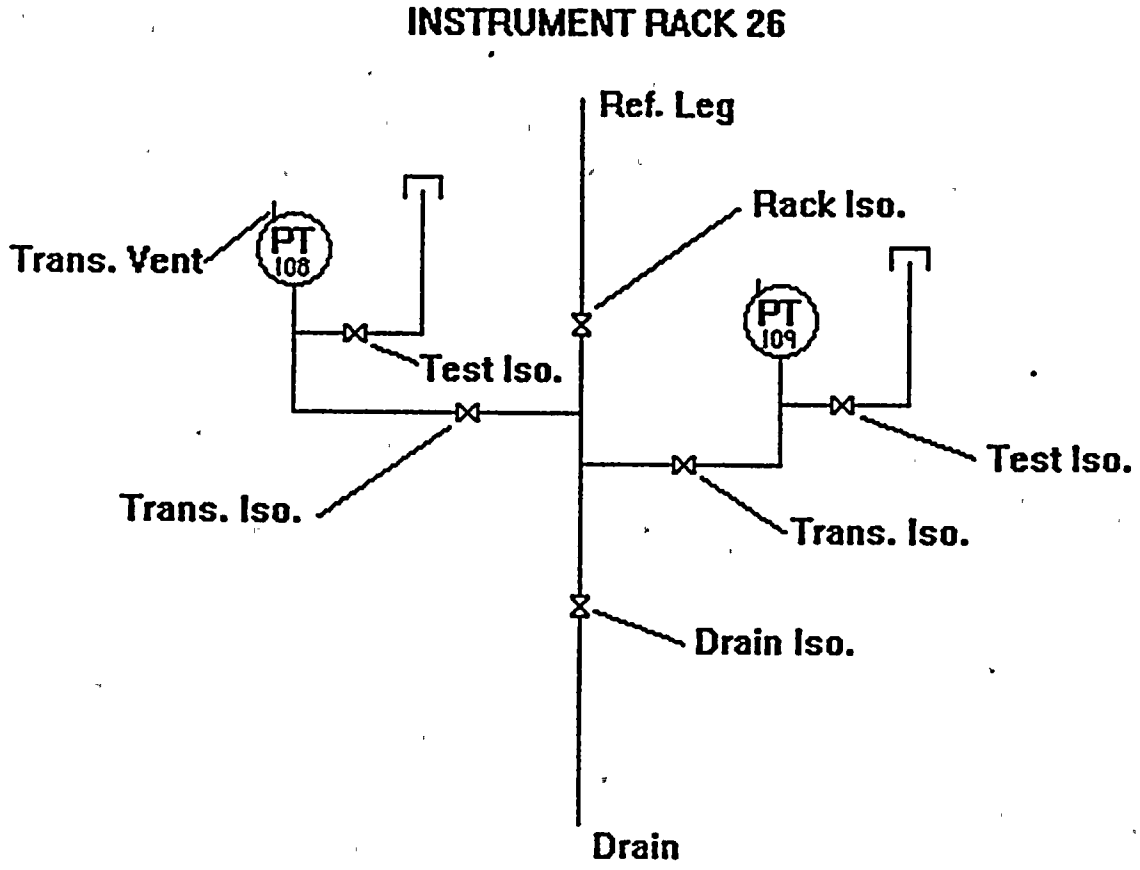
B. There have been several previous events involving spurious instrument signals caused by hydraulic pressure surges within instrument lines:

- For LERs 90-02 and 87-33, the hydraulic surge causes were indeterminate.
- LERs 90-04, 89-06, 88-66, 87-77, 87-20, and 87-10 were a result of instrumentation valve manipulation.
- LERs 87-11 and 86-21 were the result of bumping the flex hose sections of the instrument lines.
- LER 88-07 was a result of an I&C Technician backfilling a common sensing line to remove entrapped air.

Collectively, the corrective actions taken as a result of these LERs should have prevented this event. Both the I&C Planner and the I&C Chief Technician should have been sensitized to the susceptibility of the instrument system to pressure surges during instrument valve manipulation.

C. Identification of components referred to in this LER:

COMPONENT	IEEE 803 EIIS FUNCTION	IEEE 805 SYSTEM ID
Pressure Transmitter	PT	JB
High Pressure Core Spray (HPCS)	N/A	BG
Emergency Diesel Generator	N/A	EC
Rack Isolation Valve	ISV	JB
Drain Isolation Valve	DRN	JB
Level Transmitter	LT	JB
Injection Valve	INV	BG


INSTRUMENT RACK 26
Ref. Leg
Rack Iso.
Trans. Vent
PT 108
Test Iso.
PT 109
Test Iso.
Trans. Iso.
Trans. Iso.
Drain Iso.
Drain