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

SUBJECT: LER 91-009-00:on 910503,ESF actuation & secondary containment isolation occurred,causing reactor bldg recirculation unit cooler to start.Caused by spurious high radiation signal.Work request initiated.W/910603 ltr.

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	NRR/DST/SRXB 8E	1	1	REG FILE 02	1	1
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EXTERNAL:	EG&G BRYCE,J.H	3	3	L ST LOBBY WARD	1	1
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NIAGARA MOHAWK

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Joseph F. Firlit
Vice President
Nuclear Generation

NMP80513

June 3, 1991

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

RE: Docket No. 50-410
LER 91-09

Gentlemen:

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

LER 91-09 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 10CFR50.72 (b)(2)(ii) report was made at 1017 hours on May 3, 1991.

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/RM/lmc
ATTACHMENT

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

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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 0	1 OF 0 5

TITLE (4)
Engineered Safety Feature Actuation due to a Spurious High Radiation Level Signal

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
0 5	0 3	9 1	9 1	— 0 0 9	— 0 0	0 6	0 3	9 1	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)	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
John T. Conway, Manager Technical Support NMP2	AREA CODE 3 1 5 — 3 4 9 - 2 6 9 8

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	I L	S O L	K 0 2 0								

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
X YES (If yes, complete EXPECTED SUBMISSION DATE)	NO		0 8	0 1	9 1

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

On May 3, 1991, at 0831 hours, Nine Mile Point Unit 2 experienced an actuation of an Engineered Safety Feature (ESF). Specifically, the Secondary Containment (Reactor Building) isolated and the Reactor Building Emergency Recirculation Unit Cooler and Standby Gas Treatment System (GTS) started automatically. The ESF actuation was initiated by a high radiation level signal in the Reactor Building Ventilation System (HVR). At the time of the event, the reactor mode switch was in the "RUN" position (Mode 1) with the reactor operating at 100% rated thermal power.

The root cause of the event is still under investigation.

The Control Room operators implemented the Emergency Operating Procedure (EOP) for Secondary Containment control until Reactor Building radiation was verified at normal operating levels and the cause for the ESF actuation was determined to be a spurious high radiation level trip. Other corrective actions included returning the HVR system to a normal line up after welding was complete, replacing a failed component in the radiation monitoring cabinet, and as an interim measure, issuing guidance to welders to ensure their welding cables are not in contact with any instrumentation cables.

I. DESCRIPTION OF EVENT

On May 3, 1991, at 0831 hours, Nine Mile Point Unit 2 experienced an actuation of an Engineered Safety Feature (ESF). Specifically, the Secondary Containment (Reactor Building) isolated and the Reactor Building Emergency Recirculation Unit Cooler and Standby Gas Treatment System (GTS) started automatically. The ESF actuation was initiated by a high radiation level signal in the Reactor Building Ventilation System (HVR). At the time of the event, the reactor mode switch was in the "RUN" position (Mode 1) with the reactor operating at 100% rated thermal power.

The high radiation level trip signal was generated by the Division II "above refuel floor" radiation monitor which responded as though a high radiation level condition existed. The circuitry functioned per its design initiating a Secondary Containment isolation, and automatic starts of the Division II Emergency Recirculation Unit Cooler (2HVR*UC413B) and Division I and II trains of GTS.

Immediately, the Control Room operators implemented the Emergency Operating Procedure (EOP) for Secondary Containment Control (N2-EOP-Secondary Containment Control), verified the Secondary Containment did isolate, verified the automatic start of the Emergency Recirculation Unit Cooler and Division I and II trains of GTS, and noted the indication for process radiation monitor 2HVR*CAB14B to be above the alarm setpoint (indicated level 1.46 E-2 micro ci/cc; alarm level 1.00 E-4 micro ci/cc).

At 0833 hours, the Control Room operators noted the indication for other radiation monitors in the Reactor Building were normal including 2HVR*CAB14A which indicated 3.60 E-7 micro ci/cc. A radiation survey of the Reactor Building was commenced and at 0844 hours, radiation levels were verified normal allowing the operators to exit the EOP for Secondary Containment Control.

An investigation into the cause of the spurious actuation revealed Direct Current (DC) Shielded Metal Arc Welding was in progress four feet above the radiation monitoring microprocessor 2HVR*RUW14B. Several attempts to duplicate the initial radiation trip signal were unsuccessful, but it was determined from Digital Radiation Monitoring System (DRMS) memory and discussions with the welder that electrical noise was being detected by the radiation monitoring microprocessor during the same time frame as welding was in progress.

I. DESCRIPTION OF EVENT (cont.)

During the investigation into the spurious trip, it was noted that a low flow alarm existed for the process radiation monitor 2HVR*CAB14B. Investigation of the alarm found a blown fuse in the junction box supplying power to the motor operated flow control valve for sample flow to the process radiation monitor. It was determined that the already shut valve received a false shut signal which caused an overload of the valve operating motor and the blown fuse.

The fuse was replaced and welding was completed by 1600 hours on the same day and a functional test (N2-RSP-RMS-M108) of the process radiation monitor was commenced. During this test, a failed check source positioning solenoid was discovered, and the functional test of the process radiation monitor was aborted. The source check positioning solenoid was replaced, and the functional test of the process radiation monitor was then completed satisfactorily.

On May 4, 1991, at 2112 hours, the Control Room operators returned the GTS system and Emergency Recirculation Unit Coolers to standby and restored the Reactor Building Ventilation System to its normal line up per operating procedure N2-OP-52 "Reactor Building Ventilation System".

II. CAUSE OF EVENT

The immediate cause of the event was a Division II "above refuel floor" high radiation level signal. The root cause evaluation for this event is continuing per Nuclear Division Procedure NDP-16.01, "Root Cause Evaluations."

The root cause of this event is unknown at this time. When established, the root cause will be reported in a supplement to this Licensee Event Report.

III. ANALYSIS OF EVENT

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

Secondary Containment isolation, Reactor Building Emergency Recirculation Unit Cooler automatic start, and GTS automatic starts are conservative actions having no adverse

III. ANALYSIS OF EVENT (cont.)

safety consequences, for the general public or the plant, at any reactor power level. The event in no way adversely affected any other safety system nor the operators ability to achieve safe reactor plant conditions.

The duration of the event was 1 day, 12 hours, 41 minutes.

IV. CORRECTIVE ACTIONS

The immediate corrective actions were to determine the validity and cause of the high radiation level trip signal.

Follow-up corrective actions for this event included:

1. Radiation monitor 2SWP*CAB14B was declared inoperable, GTS and the Reactor Building Emergency Recirculation Unit Coolers remained in operation, and the DRMS computer was monitored for the duration of welding operations.

2. A blown fuse for the process radiation monitor flow control valve was replaced.

3. A Work Request (WR #154660) was initiated and the failed check source positioning solenoid was replaced.

4. A functional check of the process radiation monitor (2HVR*CAB14B) was performed.

5. The current welding instructions provide specific guidance and Engineering evaluation for high frequency AC TIG welding to ensure instrumentation is not impacted. No such controls exist for DC welding. Therefore, until the root cause is determined, a memo has been written to the Maintenance Managers from Nine Mile Point Units 1 and 2 emphasizing caution when performing any welding near instrumentation. This memo directs that welding cables are routed away from instrumentation cables.

V. ADDITIONAL INFORMATION

A. Failed component identification:

Component description	-	check source positioning solenoid
Mark number	-	CS01
Manufacturer	-	Kaman Instrumentation Corp.
Part Number	-	823779-026A
Symbol Number	-	9311296
Niagara Mohawk Drawing	-	1.73L-801-055
Niagara Mohawk Spec	-	P281F

B. Previous similar events:

There have been several previous Reactor Building isolations with emergency ventilation starts caused by spurious high radiation level signals. Because the root cause varies between events and the root cause of this event is unknown, an accurate comparison can not be made. Previous similar events will therefore be listed and compared when the root cause has been determined.

V. ADDITIONAL INFORMATION

C. Identification of components referred to in this LER:

COMPONENT	IEEE 803 EIIS FUNCTION	IEEE 805 SYSTEM ID
Secondary Containment (Reactor Building)	N/A	NG
Reactor Building Unit Coolers	CLR	VA
Standby Gas Treatment System	N/A	BH
Reactor Building Ventilation System	N/A	VA
Above Refuel Floor Process Radiation Monitor and Microprocessor	MON	IL
Digital Radiation Monitoring System	MON	IL
Flow Control Valve	FCV	IL
Check Source Positioning Solenoid	SOL	IL