REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 8707200595 DOC. DATE: 87/07/13 NOTARIZED: NO DOCKET #
FACIL: 50-410 Nine Mile Point Nuclear Station, Unit 2, Niagara Moha 05000410
AUTH. NAME AUTHOR AFFILIATION
RANDALL, R. G. Niagara Mohawk Power Corp.
RECIP. NAME RECIPIENT AFFILIATION

SUBJECT: LER 87-033-00: on 870615, alternate rod insertion (ARI) initiation received leading to reactor protection sys (RPS) scram. Cause undetermined. ARI & RPS scrams reset & surveillance tests revised. W/870713 ltr.

DISTRIBUTION CODE: IE22D COPIES RECEIVED: LTR 1 ENCL 1 SIZE: 5
TITLE: 50.73 Licensee Event Report (LER), Incident Rpt, etc.

NOTES:

	RECIPIENT ID CODE/NAME	COPIES LTTR	COPIES ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR	COPIES ENCL
	PD1-1 LA	1	1	PD1-1 PD	1	1
	NEIGHBORS, D	1	1	MINER, S	1	1
INTERNAL:	ACRS MICHELSON	1	1	ACRS MOELLER	2	2
	AEOD/DOA	1	1	AEOD/DSP/ROAB	2	2
	AEOD/DSP/TPAB	1	1	DEDRO	1	1
	NRR/DEST/ADE	1	0	NRR/DEST/ADS	1	0
	NRR/DEST/CEB	1	1	NRR/DEST/ELB	1	1
	NRR/DEST/ICSB	1	1	NRR/DEST/MEB	1	1
	NRR/DEST/MTB	1	1	NRR/DEST/PSB	1	1
	NRR/DEST/RSB	1	1	NRR/DEST/SGB	1	1
	NRR/DLPQ/HFB	1	1	NRR/DLPQ/QAB	1	1
	NRR/DOEA/EAB	1	1	NRR/DREP/RAB	1	1
	NRR/DREP/RPB	2	2	NRR/PMAS/ILRB	1	1
	NRR/PMAS/PTSB	1	1	REG FILE 02	1	1
	RES DEPY GI	1	1	RES TELFORD, J	1	1
	RES/DE/EIB	1	1	RGN1 FILE 01	1	1
EXTERNAL:	EG&G GROH, M	5	5	H ST LOBBY WARD	1	1
	LPDR	1	1	NRC PDR	1	1
	NSIC HARRIS, J	1	1	NSIC MAYS, G	1	1

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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 4

TITLE (4)
Spurious Level 2 Signal During Surveillance Test Initiates ARI and Reactor Scram

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 6	1 5	8 7	8 7	0 3 3	0 0	0 7	1 3	8 7	N/A	0 5 0 0 0

OPERATING MODE (9): 2
POWER LEVEL (10): 0 0 2

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: *(Check one or more of the following)* (11)

[ ] 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	
	AREA CODE	
Robert G. Randall, Supervisor Technical Support	3 1 5	3 4 9 - 2 4 4 5

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

CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS

SUPPLEMENTAL REPORT EXPECTED (14)

[ ] YES *(If yes, complete EXPECTED SUBMISSION DATE)* [X] NO

EXPECTED SUBMISSION DATE (15): MONTH | DAY | YEAR

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

While in the startup mode on June 15, 1987 at 11:33:10, a Division II Alternate Rod Insertion (ARI) initiation was received during performance of a Redundant Reactivity Control System (RRCS) surveillance test. The Division II high reactor pressure channel B was tripped per the approved test, when a spurious low low water level signal was received on Channel A. The subsequent ARI initiation led to a Reactor Protection System (RPS) scram on Scram Discharge Volume (SDV) high level 41 seconds later, as expected. After extensive troubleshooting and testing of RRCS circuitry, the cause of the spurious low low level trip could not be determined.

Immediate corrective actions were to reset the ARI and RPS scrams, to establish reactor cooldown per the approved procedure and to begin troubleshooting activities. Further corrective actions are the revision of the RRCS surveillance tests to minimize spurious ARI initiations and the monitoring of various RRCS signals during performance of the next test to identify origin of spurious signals, if they recur.

IE22

NRC Form 366A
(9-83)

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/85

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Nine Mile Point Unit 2	0 5 0 0 0 4 1 0	8 7	— 0 3 3	— 0 0	0 2 OF 0 4

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

I. DESCRIPTION OF EVENT

While in the startup mode on June 15, 1987 at 11:33:10, the unit experienced a Division II Alternate Rod Insertion (ARI) initiation during performance of a Redundant Reactivity Control System (RRCS) surveillance test. Prior to the event, reactor power level was at approximately 2%, with reactor pressure at 909 psig and coolant temperature at 531°F. Approximately 41 seconds after the Division II ARI was received (11:33:51), a Reactor Protection System (RPS) reactor scram on Scram Discharge Volume (SDV) high level occurred. The RPS scram was an expected consequence of the ARI initiation. The four Division II ARI valves energized and opened upon receipt of an initiation signal to depressurize the scram valve pilot air header. Thus, control rods inserted. Consequently, the SDV began filling up and brought in the SDV high level trip.

Prior to and during the event, the RRCS high reactor pressure channel functional test was being performed. The NMPC Instrument and Controls (I&C) technicians had the Division II high reactor pressure Channel B in the tripped condition, while waiting for an RRCS reset permissive (approximately 12 minute time delay). Before the reset permissive timed out, a false Division II Channel A low low water level signal was received, as indicated by the illuminated status light on the RRCS Division II panel. A trip of Channels A and B completed the logic to initiate ARI and a RRCS 60HZ reactor recirculation pump trip (breakers 4A and 4B trip). Since the recirculation pumps had been operating in slow speed (15HZ) via the Low Frequency Motor Generators (LFMG), tripping of the 4A and B breakers did not trip the recirculation pumps.

The Channel A low low water level transmitter (B22-N402B) shares a variable leg with other instruments that initiate ECCS and primary containment isolation logic. This level instrument also shares a common reference leg with other instruments that initiate RPS, feedwater control and ECCS logic. No indication of a trip on these other instrument channels was observed. Reactor water level and pressure were normal throughout the event. In addition, no inoperable components or systems contributed to the event.

NMPC control room licensed operators were alerted to the ARI initiation, RRCS recirculation pump trip, and RPS scram by receipt of the associated control room panel annunciators and computer points. Immediate corrective actions were to reset the ARI and RPS scrams and to establish reactor cooldown in accordance with the scram recovery procedure by approximately 1141 hours. Subsequently, troubleshooting activities on RRCS circuitry were initiated to determine the cause of the spurious low low water level signal.

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

II. CAUSE OF EVENT

After extensive troubleshooting and testing of RRCS circuitry by NMPC personnel and General Electric design and power ascension engineers, the cause of the event could not be determined. Troubleshooting activities between 6/15/87 and 6/18/87 did not identify any equipment malfunctions that may have caused the event. The results of repeated testing demonstrated that the Division II RRCS operated as per design.

Static testing was performed on various input and output signals in an attempt to duplicate the event. The self-test feature test pulses were verified to be as per design. The self-test system is a feature which tests essential circuits within the RRCS cabinets. The test pulses momentarily (1 millisecond) apply test signals to each circuit card to determine if each circuit is functioning properly. In addition, a signal/noise test was performed on the low low water level Channel A Analog Trip Module (ATM). This test demonstrated that noise must be in excess of 20 milliseconds in order to seal-in a true trip condition. The 20 millisecond time delay is as per design and aids in preventing spurious trips due to random noise signals.

Further investigation indicates that the spurious low low water level signal was not caused by bumping the instrument or sensing lines or by a momentary power loss. This level transient could not be reproduced after repeated testing of the same channels.

III. ANALYSIS OF EVENT

The RRCS is designed in conjunction with other systems to mitigate the potential consequences of an Anticipated Transient Without Scram (ATWS) event. This safety-related system provides timely protective action inputs to other safety systems to protect the onset and consequences of conditions that threaten the integrity of the fuel barrier and the reactor coolant pressure boundary. Although the RRCS is a required plant modification per 10CFR50.62, the current risk from an ATWS event is acceptably small. Therefore, an inoperable RRCS system under any operational condition is not an adverse safety consequence, since this system will not mitigate the consequences of a design basis event. Likewise, an inadvertent ARI initiation is strictly an operational event and an unnecessary challenge to a safety system.

Normal scram systems, including the ARI, functioned as designed. Plant safety was not compromised.

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

IV. CORRECTIVE ACTIONS

Immediate corrective actions were to reset the ARI and RPS scram, to establish reactor cooldown in accordance with the scram recovery procedure, and to initiate troubleshooting activities on the RRCS circuitry.

Extensive troubleshooting and testing of RRCS circuitry has been completed and could not identify the cause for the spurious signal. Therefore, the following measures have been taken to minimize and/or diagnose any unforeseen recurrence of this event:

1. To minimize the possibility of an ARI initiation from a spurious signal or transient, the RRCS channel functional tests have been revised to require the ARI be reset after the 30 second timer times out.

2. Several signal inputs and outputs are being monitored by the GETARS computer continuously and during performance of the next required RRCS surveillance test so that, if a trip signal is received, the origin of the trip signal can be determined and the cause isolated.

V. ADDITIONAL INFORMATION

A. Identification of Components Referred to in this LER

Component	IEEE 803 EIIS Funct	IEEE 805 System ID
Redundant Reactivity Control System (RRCS)	N/A	N/A
Alternate Rod Insertion (ARI)	N/A	N/A
RRCS Recirculation Pump Trip (RPT)	N/A	N/A
Reactor Protection System (RPS)	N/A	JC
Scram Discharge Volume (SDV)	N/A	AA/JC
Emergency Core Cooling System (ECCS)	N/A	N/A
Low Frequency Motor Generator (LFMG)	MG	AD
Feedwater Control System (FWS)	N/A	JB
Instrument Channel	CHA	N/A
Level Transmitter	LT	N/A
General Electric Transient Analysis Recorder System (GETARS)	CPU	N/A

B. Previous Similar Events - None

C. Failed Components - None

NMP26420

NIAGARA MOHAWK POWER CORPORATION

NIAGARA MOHAWK

301 PLAINFIELD ROAD
SYRACUSE, NY 13212

THOMAS E. LEMPGES
VICE PRESIDENT—NUCLEAR GENERATION

July 13, 1987

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

RE: Docket No. 50-410
LER 87-33

Gentlemen:

In accordance with 10 CFR 50.73, we hereby submit the following Licensee Event Report:

LER 87-33 Is being submitted in accordance with 10 CFR 50.73 (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). However, actuation of an ESF, including the RPS, that resulted from and was part of the preplanned sequence during testing or reactor operation need not be reported."

A 10 CFR 50.72 (b) (2) (ii) report was made at 1226 hours on June 15, 1987.

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

Very truly yours,

Thomas E. Lempges

Thomas E. Lempges
Vice President
Nuclear Generation

TEL/PB/mjd

Attachments

cc: Regional Administrator, Region 1
Sr. Resident Inspector, W. A. Cook

IE22
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