

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

ACCESSION NBR: 8707220247      DOC. DATE: 87/07/14      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.  
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 RECIP. NAME      RECIPIENT AFFILIATION

SUBJECT: LER 87-034-00: on 870617, both reactor recirculation pumps tripped due to troubleshooting activities. Caused by rapid powering up & down of redundant reactivity control sys power supplies & failed card. Card replaced. W/870714 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 ENCL	RECIPIENT ID CODE/NAME	COPIES LTTR 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/NAS	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
	<u>REG FILE</u> 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



LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) <b>Nine Mile Point Unit 2</b>	DOCKET NUMBER (2) <b>0 5 0 0 0 4 1 0 1</b>	PAGE (3) <b>1 OF 4</b>
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TITLE (4)  
**Reactor Recirculation Pump Trip Due To Troubleshooting On RRCS Circuitry**

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)
06	17	87	87	034	00	07	14	87	N/A		0 5 0 0 0
									N/A		0 5 0 0 0

OPERATING MODE (9) <b>4</b>	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)										
POWER LEVEL (10) <b>0, 0, 0</b>	20.402(b)			20.406(c)			50.73(a)(2)(iv)			73.71(b)	
	20.406(a)(1)(i)			50.36(c)(1)			50.73(a)(2)(v)			73.71(c)	
	20.406(a)(1)(ii)			50.36(c)(2)			50.73(a)(2)(vi)			<input checked="" type="checkbox"/> OTHER (Specify in Abstract below and in Text, NRC Form 368A)	
	20.406(a)(1)(iii)			50.73(a)(2)(i)			50.73(a)(2)(vii)(A)				
	20.406(a)(1)(iv)			50.73(a)(2)(ii)			50.73(a)(2)(vii)(B)				
	20.406(a)(1)(v)			50.73(a)(2)(iii)			50.73(a)(2)(ix)				
<b>Voluntary</b>											

LICENSEE CONTACT FOR THIS LER (12)										
NAME <b>Robert G. Randall, Supervisor Technical Support</b>							TELEPHONE NUMBER			
							AREA CODE			
							<b>3115</b>	<b>31491-121415</b>		

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)											
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPD'S		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPD'S	
X		01B1	G1 Q 810	N							

SUPPLEMENTAL REPORT EXPECTED (14)				EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR
<input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)				<input checked="" type="checkbox"/> NO				

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

While in cold shutdown on June 17, 1987, both reactor recirculation pumps tripped due to troubleshooting activities on Redundant Reactivity Control System (RRCS) circuitry. The unit had been shutdown since June 15, 1987 when an Alternate Rod Insertion (ARI) and reactor scram were received during performance of an RRCS surveillance test. The causes of the event were the rapid powering up and down of RRCS power supplies during troubleshooting and a failed High Power Output Isolator (HPOI) card. This event is reported voluntarily as an automatic actuation of a safety system not required for safe shutdown.

Immediate corrective actions were to restart the recirculation pumps in slow speed and to restore reactor water level to normal within one hour. The failed HPOI card was replaced, post-maintenance tests performed, and the RRCS was returned to service on July 1, 1987.

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		8 7	- 0 3 4	- 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 cold shutdown on June 17, 1987, both running reactor recirculation pumps tripped due to troubleshooting activities on Redundant Reactivity Control System (RRCS) circuitry. The unit had been shutdown since June 15, 1987 when an Alternate Rod Insertion (ARI) initiation was received during performance of an RRCS surveillance test. The ARI event is described in LER 87-33. Both recirculation pumps were operating in slow speed (15HZ) prior to the event. At 1846 hours breaker CB2B spuriously tripped, tripping the B recirculation pump. Reactor water level rapidly increased five to six inches, which was sufficient to bring in the reactor water level high/low alarms. Similarly, at 1855 hours breakers CB 1A, 1B and 2A tripped simultaneously, tripping the A recirculation pump. Level sharply increased nine to ten inches. Upon investigating the cause for the two sharp level increases, Niagara Mohawk licensed control room operators noticed that both recirculation pumps had tripped. There are no alarms available to alert the operators of recirculation pumps tripping off from slow speed. Only two computer alarms were received that indicated recirculation loop flow was interrupted.

Prior to and during the event, Niagara Mohawk Instrument and Controls (I&C) personnel and General Electric engineers were troubleshooting RRCS circuitry to determine the cause for the event on June 15, 1987. No alarms were observed on the RRCS panels they were working on. Therefore, the cause of the event was not immediately apparent, although troubleshooting of RRCS circuitry appeared to be the most probable cause.

Immediate corrective actions were to restart the recirculation pumps in slow speed and to restore reactor water level to normal via the Reactor Water Cleanup System (WCS) at approximately 1945 hours.

II. CAUSE OF EVENT

The root causes of the event are the rapid powering up and down of RRCS power supplies during testing and a High Power Output Isolator (HPOI) failure.

General Electric (GE) engineers and I&C personnel were testing RRCS circuits to determine the cause for the ARI event. Troubleshooting activities included testing the RRCS Self-Test System (STS) circuits, which were initially suspected as the cause for the ARI event. Upon further investigation of the recirculation pump trips, GE engineers determined that the rapid powering up and down was the most probable cause for the simultaneous trip of the three breakers. This rapid powering up and down caused various circuits to de-energize and re-energize at different rates. This condition could generate a trip signal to energize the high power isolators and trip the breakers. No trip signals sealed in at the local RRCS panels. Therefore, it was further determined that the trip did not occur at the Analog Trip Module (ATM), but at the high power isolators of the RRCS Low Frequency Motor Generator (LFMG) trip circuit.



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		8   7	-   0   3   4	-   0   0	0   3	OF	0   4

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

The first breaker trip (CB2B) occurred during testing with Division 1 Channel A in the tripped condition. Rapid powering up and down had not been occurring for several minutes prior or during this breaker trip. The cause for this breaker trip was not readily understood. With RRCS still inoperable on June 27, 1987, CB2B tripped again during performance of an RRCS surveillance test to restore the system back to service. Subsequent troubleshooting on June 30, 1987 identified a failed HPOI card in the Division I Channel B CB2B trip logic circuit. Troubleshooting demonstrated that the STS test pulses (1 millisecond) were locking in a trip on the defective HPOI. When a trip was inserted in Channel A and with a defective HPOI in Channel B, the test pulses would trip the breaker. No other channels exhibited failures. Therefore, this was considered a random failure.

### III. ANALYSIS OF EVENT

The RRCS and the RRCS Recirculation Pump Trip (RPT) feature are not Engineered Safety Features as described in the FSAR. The automatic actuation of these safety systems, which are not required for safe shutdown, is reported voluntarily. See Item 11 on Page 1.

The RRCS RPT feature prevents reactor vessel overpressurization and possible short-term fuel damage for the most limiting postulated Anticipated Transient Without Scram (ATWS) event. The purpose of the RPT is to reduce core flow and create core voids to decrease power generation, thus limiting any power excursion.

An inadvertent RPT during any operational condition is not an adverse safety consequence. It is, however, an unnecessary challenge to a safety system. Normal RPS scram systems were fully operable during the period that RRCS was out of service for testing purposes from June 15, 1987 to June 30, 1987. During the event the unit was in cold shutdown, and RPT was not required to be operable per plant Technical Specifications.

### IV. CORRECTIVE ACTIONS

Immediate corrective actions were to restart the recirculation pumps in slow speed and to restore reactor water level to normal via the WCS system.

The failed HPOI card was replaced, and post-maintenance tests on RRCS were satisfactory. Therefore, the RRCS was returned to service on July 1, 1987.

The momentary switching off and on of RRCS power supplies was a one-time-only test and will not be repeated.





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

V. ADDITIONAL INFORMATION

A. Identification of Components Referred to in this LER

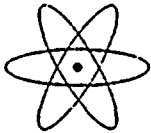
Component	IEEE 803 EIIIS Funct	IEEE 805 System ID
Redundant Reactivity Control System (RRCS)	N/A	N/A
RRCS Recirculation Pump Trip (RPT)	N/A	N/A
Reactor Recirculation Pumps (RCS)	P	AD
Low Frequency Motor Generator (LFMG)	MG	AD
Reactor Water Cleanup System (WCS)	N/A	CE
High Power Output Isolator (HPOI)	OB	N/A
Trip Channel	CHA	N/A
Analog Trip Module (ATM)	IMOD	N/A
Circuit Breaker (CB)	52	

B. Previous Similar Events - None

C. Failed Components

High Power Output Isolator ID No. C-A26-A02, part No. 219B5370PCP001,  
Manufactured by General Electric Co.





NIAGARA MOHAWK POWER CORPORATION

NIAGARA  MOHAWK

301 PLAINFIELD ROAD  
SYRACUSE, NY 13212

THOMAS E. LEMPGES  
VICE PRESIDENT—NUCLEAR GENERATION

July 14, 1987

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

RE: Docket No. 50-410  
LER 87-34

Gentlemen:

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

LER 87-34

A telephone notification was made at 2137 hours on June 17, 1987.

This report was completed in the format designated in NUREG-1022, Supplement  
No. 2, dated September 1985.

Very truly yours,

Thomas E. Lempges  
Vice President  
Nuclear Generation

TEL/PB/mjd

Attachments

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

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