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 6

TITLE (4)

Reactor Scram and Containment Isolation

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

OPERATING MODE (9)	4	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
	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	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 3, 1986 with the reactor at 0% power and the mode switch in "SHUTDOWN", Nine Mile Point Unit 2 experienced a scram due to the loss of power to both Reactor Protection System (RPS) channels. The RPS power supplies were inadvertently cross connected, resulting in the loss of all RPS power. Coincident with this event was a containment isolation and a Standby Gas system automatic initiation.

No reactor transients were experienced during this event.

CORRECTIVE ACTIONS TAKEN:

1. A design change has been built into the main steam isolation valve (MSIV) logic circuits that will avoid cross connecting RPS channels A and B as described in this report.

2. A further investigation is being conducted on the loss of all annunciators.

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

EVENT:

On December 3, 1986 at 1509 with the reactor at 0% power and the mode switch in "SHUTDOWN", Nine Mile Point Unit 2 (NMP2) experienced a scram due to the loss of power to both Reactor Protection Systems (RPS) channels. (Loss of a RPS power supply causes that channel of RPS to initiate a half scram signal, while loss of both systems results in a full scram signal.) Loss of both reactor protection systems also resulted in (1) a containment isolation causing an automatic initiation of the "A" train of the Standby Gas system, and (2) loss of all RPS annunciation.

The process of recovering from this event resulted in another scram which is described in LER 86-14.

CAUSE:

(Refer to Figures 1 and 2)

The cause of this event can be traced to a circuit design allowing the RPS channels A and B being momentarily cross connected in the Main Steam Isolation Valve (MSIV) panel.

[Some background information: MSIV channel 1 (RPS A) outboard trip solenoid A (SVE A) is normally energized from uninterruptible power supply (UPS) 3A. Upon loss of normal power, solenoid A can be energized from MSIV channel 2 (RPS B). (The normal power supply for MSIV channel 2 is UPS 3B). This power scheme (which is similar for all MSIV trip solenoids) prevents an MSIV closure upon a single power supply failure].

During the preliminary testing program for MSIV logic, circuit checkouts were being properly performed per procedure EE.GENE006 following a modification to the MSIV logic circuits under Engineering & Design Coordination Report (E&DCR) M10032B. A jumper supplying a portion of the power to the MSIV logic circuits was removed (by a Stone and Webster electrician). The jumper removal simulated a loss of channel 1 power which caused several relays to de-energize. That relay de-energization caused associted contacts to change state which should have disconnected channel 1 power from SVE A. However, channel 2 power was connected before channel 1 power was disconnected. This paralleled the RPS A and B and the respective UPS 3A and 3B.

At the instant of connecting RPS A and B, the UPS 3A and 3B were out of phase. UPS 3B (RPS B power supply) tripped immediately. The electrical protection assemblies (EPA) breakers on the output of UPS 3A tripped open 3 seconds later. At this point all RPS power was lost.

The circuit checkout work provided temporary power to the CR-4 and CR-7 relays, while MSIV trip solenoid A was being energized from its normal power supply (UPS 3A). (Relays CR-4 and CR-7 swap power supplies to solenoid A upon loss of its normal power source. These relays actuate upon de-energization.) Removing the jumper supplying temporary power to relays CR-4 and CR-7 simulated a loss of power to solenoid A, when normal power to solenoid A was available. When the jumper was removed de-energizing CR-4 and CR-7, the 7-3 and 7-4 contacts closed while the 4-1 and 4-2 contacts apparently did not open in time. This allowed the cross connection of the MSIV channel 1 and MSIV channel 2 power supplies (UPS 3A and UPS 3B). Other cross connecting possibilities existed to cause the same event.

ANALYSIS:

With the reactor at 0% power and at ambient temperature and pressure, loss of both RPS uninterruptible power supplies (with a resultant containment isolation) did not create any reactor transients or adverse safety consequences.

This type of circuit modifications and testing would not be performed during power operations. However, if loss of both UPS were to occur at 100% power, the transient that would result would be similar to, and bounded by, the "closure of all MSIV's" event described in FSAR section 15.2.4.

Loss of annunciation delayed the determination by the Niagara Mohawk licensed operators of the event cause. However, the licensed operators are trained to respond to plant conditions without annunciators.

CORRECTIVE ACTIONS TAKEN:

1. A design change initiated by E&DCR #M10032C and incorporated in Modification #PN2Y86MX118 has been built into the MSIV circuits to ensure RPS channels A and B will not be cross connected as described in this report.

2. A further investigation is being conducted on the loss of all annunciators.

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ADDITIONAL INFORMATION:

No other NMP2 LER's cover events similar to that discussed in this report.

Identification of Components Referred to in this LER

Component	IEEE 803 EIIS Funct	IEEE 805 System ID
Power Supply, Uninterruptible	UJX	EE
Power Supply, Regulated	RJX	EC
Breaker	52	EE
Annunciator	ANN	IB
Inverter	INVT	EE
Transformer	XFMR	EE
Capacitor	CAP	EE
Fuse	FU	EE
Standby Gas System	N/A	WE
Reactor Protection System	N/A	JC
Logic Circuits	N/A	JC

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

FIGURE 1

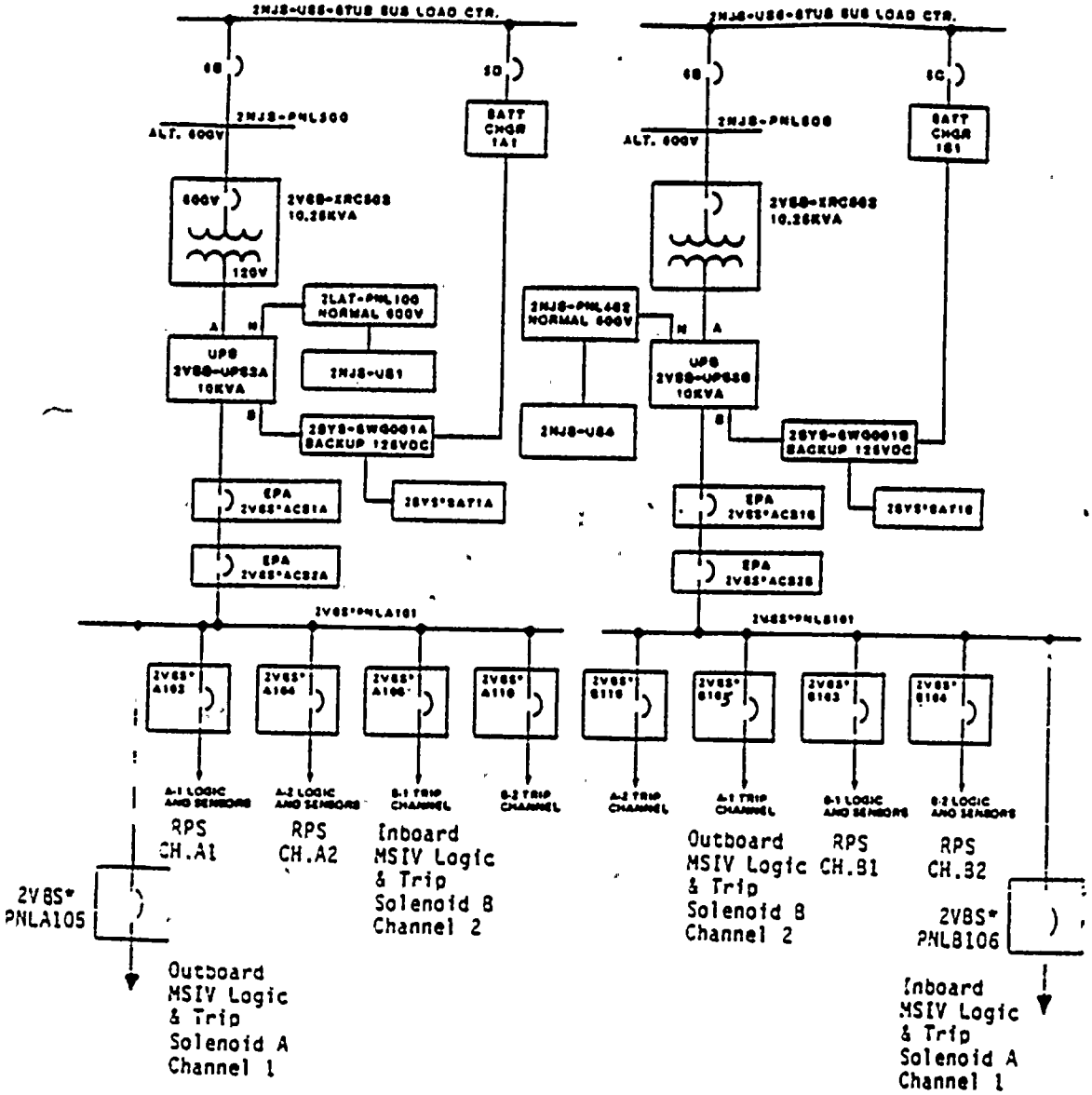

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FIGURE 2

MSIV TRANSFER CIRCUITRY