

LICENSEE EVENT REPORT (LER)

Facility Name (1) LaSalle County Station Unit 1	Docket Number (2) 0 5 0 0 0 3 7 3	Page (3) 1 of 0 5
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Title (4) Trip of "A" Reactor Protection System Due to Improper Installation of "A" Average Power Range Monitor Relay

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)
0 4	2 2	8 8	8 8	0 0 4	0 0	0 5	2 0	8 8	LaSalle Unit 2	0 5 0 0 0 3 7 4

OPERATING MODE (9) 5	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10CFR (Check one or more of the following) (11)																				
POWER LEVEL (10) 0 0 0	<input type="checkbox"/> 20.402(b)	<input type="checkbox"/> 20.405(a)(1)(i)	<input type="checkbox"/> 20.405(a)(1)(ii)	<input type="checkbox"/> 20.405(a)(1)(iii)	<input type="checkbox"/> 20.405(a)(1)(iv)	<input type="checkbox"/> 20.405(a)(1)(v)	<input checked="" type="checkbox"/> 20.405(c)	<input type="checkbox"/> 50.36(c)(1)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(i)	<input type="checkbox"/> 50.73(a)(2)(ii)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)	<input type="checkbox"/> 50.73(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)	<input type="checkbox"/> 50.73(a)(2)(x)	<input type="checkbox"/> 73.71(b)	<input type="checkbox"/> 73.71(c)	<input type="checkbox"/> Other (Specify in Abstract below and in Text)

LICENSEE CONTACT FOR THIS LER (12)		TELEPHONE NUMBER	
Name Roger F. Smeets, Technical Staff Engineer, extension 701	AREA CODE 8 1 5	3 5 7 - 6 7 6 1	

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
A	E	F		N					

SUPPLEMENTAL REPORT EXPECTED (14)

Expected Submission Date (15)

Yes (If yes, complete EXPECTED SUBMISSION DATE) NO

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

On April 22, 1988 at 1319 hours, with Unit 1 defueled and Unit 2 in Operational Condition 1 (Run) at 96% power, during the performance of Work Request L79559 by the Instrument Maintenance (IM) Department, Reactor Protection System (RPS) Bus "A" tripped. In accordance with the Work Request, the technician was replacing relay 1C51B-K1 in Average Power Range Monitor (APRM) "A" panel 1H13-P608, when a small spark occurred near the relay socket. With the trip of RPS Bus "A" on Unit 1, a number of automatic actions occurred as a result of the subsequent Group II through VII isolations and half scram.

Immediate investigation revealed that the 1C71-S003A & C Power Monitoring Assemblies (PMA's), the 175 amp "A" RPS Generator Output Breaker were tripped, and a 6 amp fuse (1C71-F12A) was blown, all of which feed the APRM circuitry. The initiation of the event was determined to be a short to ground which occurred when the replacement 1C51B-K1 relay was mispositioned while being inserted into the relay socket by the IM technician.

The safety consequences of the event were minimal since Unit 1 was Defueled. All isolations and actuations (half scram on Unit 1 SBTG initiation) occurred as designed.

The 1C51B-K1 relay which was being installed in the APRM circuitry when the "A" RPS bus tripped was bench tested by the IM Department and found to be undamaged. A new relay was also tested and verified to be normal prior to installing in the 1H13-P608 APRM panel. A functional test and calibration of APRM Channel "A" was performed to assure that no other components were affected by the ground fault. In addition, the LaSalle Operational Analysis Department performed a calibration check of the 1C71-S003A and C PMA's and verified both relays were within their required trip setpoint ranges. Finally, LaSalle Station Instrument and Electrical Maintenance personnel have been trained on the event to prevent recurrence.

This event is reportable to the requirements of 10CFR50.73(a)(2)(iv) due to the actuation of an Engineered Safety Feature System.

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)						Page (3)		
		Year	Sequential Number	Revision Number						
LaSalle County Station Unit 1	0 5 0 0 0 3 7 3	8 8	- 0 0 4	-	0 0	0 2	OF	0 5		

TEXT Energy Industry Identification System (EIIS) codes are identified in the text as [xx]

PLANT AND SYSTEM IDENTIFICATION

General Electric - Boiling Water Reactor

Energy Industry Identification System (EIIS) codes are identified in the text as [XX].

A. CONDITION PRIOR TO EVENT

Unit(s): 1/2 Event Date: 4/22/88 Event Time: 1319 Hours
 Reactor Mode(s): Defueled/1 Mode(s) Name: Defueled/Run Power Level(s): 0%/96%

B. DESCRIPTION OF EVENT

On April 22, 1988 at 1319 hours with Unit 1 defueled and Unit 2 in Operational Condition 1 (Run) at 96% power, during the performance of Work Request L79559 by the Instrument Maintenance Department, Reactor Protection System Bus "A" (RPS Bus "A") [EF] tripped. In accordance with the Work Request, the Technician was replacing relay 1C51B-K1 in Average Power Range Monitor "A" (APRM "A") [IG] panel 1H13-P608 when a small spark occurred near the relay socket. The relay was immediately removed from the area by the technician and no further attempt was made to reinstall it at that time.

With the trip of RPS Bus "A" on Unit 1, the following automatic actions occurred as a result of the subsequent Group II through VII isolations and half scrams.

- The Division 1 Secondary Containment Isolation Dampers associated with the Unit 1 Reactor Building Ventilation System (VR) [VA] closed.
- The Division 1 Secondary Containment Isolation Dampers associated with the Unit 2 Reactor Building Ventilation System closed.
- The Unit 1 and Unit 2 Reactor Building Supply and Exhaust Fan tripped as a result of the isolations.
- The Unit 1 and Unit 2 Standby Gas Treatment Systems (SBGT, VG) [BH] automatically started.
- The Unit 1 Reactor Water Cleanup System (RT) [CE] isolated.

Other affected systems were previously isolated due to other work in progress prior to the event. The Operating Department immediately inserted jumpers in the Unit 2 Primary Containment Isolation (PCIS) [JM] Logic associated with the Main Steam (MS) [SB] Line High Differential Temperature and High Ambient Temperature Isolations, in accordance with LOA-VR-01, Recovery from a Group 4 Isolation or Serious Trip of Reactor Building Ventilation." The RPS "A" Motor Generator (MG) Set was recovered at 1325 hours. (Alternate feed was already in use for RPS "B" MG Set.) The Unit 2 Division 1 Reactor Building Isolation Dampers were opened and the Unit 2 Reactor Building Supply and Exhaust Fans were restarted. Both Standby Gas Treatment Systems were returned to normal by 1328 hours. At 1350 hours, the jumpers which were inserted in the Unit 2 Primary Containment Isolation logic were removed. The Unit 1 Reactor Water Cleanup System was returned to its normal configuration at 1417 hours.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)						Page (3)		
		Year	Sequential Number	Sequential Number	Sequential Number	Revision Number	Revision Number			
LaSalle County Station Unit 1	0 5 0 0 0 3 7 3	8 8	-	0 0 4	-	0 0	0 3	OF	0 5	

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B. DESCRIPTION OF EVENT (Continued)

The output of the RPS "A" MG Set is arranged as follows. (See Figure 1.) Immediately downstream of the generator is a 175 amp Generator Output Breaker followed by two 175 amp (1C71-S003A and 1C71-S003C) Power Monitoring Assemblies (PMA). The PMA's are in series with two 100 amp breakers (CB-2A and CB-1A). Breaker CB-1A then feeds RPS Trip Channels A1 and A2. Immediate investigation revealed that both PMA's, the 175 amp Generator Output Breaker were tripped, and a 6 amp fuse (1C71-F12A) was blown, all which feed the APRM circuitry. The CB-1A and CB-2A 100 amp breakers were in their normal position.

All plant systems operated as required during the event. A review of other work in progress prior to the event indicated that no other jobs contributed to this event. The event was determined to be reportable in accordance with 10CFR50.73(a)(2)(iv) due to the actuation of an Engineered Safety Feature System.

C. APPARENT CAUSE OF EVENT

The initiation of the event was determined to be a short to ground which occurred when the replacement 1C51B-K1 relay was inserted into the relay socket by the IM technician. Following close inspection of the relay prongs and relay socket, slight pits were discovered on both parts which probably resulted from electrical arcing during the relay installation. Based on the alignment of the pits, the spark resulted from the mispositioning of the replacement relay into the relay socket. The mispositioned relay prongs appear to have provided a current path from the 120 VAC RPS "A" Bus through a normally closed contact in the relay to ground.

Initially, after the incident the trip of the two PMA's and the size and type for the 1C71-F12A 6 amp fuse were reviewed. Subsequent review of these items has verified that the tripped Economy EON type 6 amp fuse (1C71-F12A), which was discovered immediately following the event, is a proper replacement for a Bussman NON type 6 amp fuse. In addition, because the fault was equivalent to a direct short to ground, the PMA's were seeing low voltage for a fraction of a second which would cause an instantaneous trip to occur due to an undervoltage condition. Following the trip of the PMA's, the RPS "A" MG Set was no longer electrically loaded and the 175 amp generator breaker tripped on undervoltage as expected.

The direct cause of the event was the improper installation of the 1C51B-K1 relay at the 1H13-P608 panel by the Instrument Maintenance Department Technician. Subsequent inspection of the 1H13-P608 panel indicated that the physical accessibility of the 1C51B-K1 relay was limited. Visibility of the relay is difficult and the installation physically awkward due to other equipment in the panel. These factors contributed to the mispositioning of the relay during replacement.

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LaSalle County Station Unit 1	0 5 0 0 0 3 7 3	8 8	-	0 0 4	-	0 0	0 4	OF	0 5	

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D. SAFETY ANALYSIS OF EVENT

The safety consequences of the event were minimal since Unit 1 was defueled. All isolations and actuations (half scram on Unit 1, secondary containment isolation and SBTG initiation) occurred as expected for this event. The isolation of the Unit 2 Reactor Building Ventilation System and Unit 2 SBTG System initiation did not adversely affect the operation of Unit 2. Both systems were returned to normal within ten minutes of the event. If Unit 1 had been operating at the time of the event, similar actions would have occurred as a result of the "A" RPS trip. Isolations of Groups II through VII for an operating unit would cause more operational problems. However, it is unlikely that the consequences would have been different based on the prompt response by Operating personnel during this event.

E. CORRECTIVE ACTIONS

The immediate actions of the Operating Department were to restore the "A" RPS MG Set to operable status and to provide recovery from the plant actuations and isolations which occurred during the event. An investigation was immediately performed to determine the actual cause of the event. The 1C51B-K1 relay, which was being installed in the APRM circuitry when the "A" RPS Bus tripped, was bench tested by the Instrument Maintenance Department and found to be undamaged. A new relay was also tested and verified to be normal prior to installing in the 1H13-P608 APRM panel. The APRM circuit cards related to this event were tested and a shorted transistor found during the check was replaced. A functional test and calibration of APRM Channel "A" was performed to assure that no other components were affected by the ground fault. The Technical Staff Department conferred with a General Electric Company representative to verify that the event occurred as expected and with a Sargent and Lundy representative to verify the proper (1C71-F12A) 6 amp fuse type. In addition, the LaSalle Operational Analysis Department performed a calibration check of the 1C71-S003A and 1C71-S003C PMA's and verified both relays were within their required trip setpoint ranges. Finally, LaSalle Station Instrument and Electrical Maintenance personnel have been trained on the event to prevent recurrence. In the future, when equipment accessibility is abnormally difficult, workers will be instructed to obtain additional instructions from their foremen to assure similar type events do not occur. Action Item Record #373-200-88-03001 will track completion of this corrective action.

F. PREVIOUS EVENTS

LER Number	Title
1-1-87-084	Loss of 1B Reactor Protection System Motor Generator Due to Relay Failures
1-2-84-211	Loss of "A" RPS Bus

G. COMPONENT FAILURE DATA

No component failure contributed to this event.



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LaSalle County Nuclear Station
Rural Route #1, Box 220
Marseilles, Illinois 61341
Telephone 815/357-6761

May 20, 1988

U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

Dear Sir:

Licensee Event Report #88-004-00, Docket #050-373 is being
submitted to your office in accordance with
50.73(a)(2)(iv).

WRs
for G. J. Diederich
Station Manager
LaSalle County Station

GJD/RFS/kg

Enclosure

xc: Nuclear Licensing Administrator
NRC Resident Inspector
NRC Region III Administrator
INPO - Records Center

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11