



Commonwealth Edison
LaSalle County Nuclear Station
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Marseilles, Illinois 61341
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February 14, 1994

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

Licensee Event Report #94-001-00, Docket #050-373 is being submitted to your office in accordance with 10CFR50.73(a)(2)(iv).

D. J. Ray
Station Manager
LaSalle County Station

DJR/JH/mkl

Enclosure

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

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PDR ADDCK 05000373
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JEZ

LICENSEE EVENT REPORT (LER)

Form Rev 3.0

Facility Name (1) LaSalle County Station Unit 1 Docket Number (2) 0 5 0 0 0 3 7 3 Page (3) 1 of 0 3

Title (4) 1B Reactor Protection System (RPS) Motor Generator (MG) Set Underfrequency Trip

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	1	1	7	9	4	9	4	---	0	0	1	---	0	0	0	2	1	4	9	4	LaSalle 2	0	5	0	0	0	3	7	4

OPERATING MODE (9) 1

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

POWER LEVEL (10) 0 9 1	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)
	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: Jim Hausser, System Engineer ext. 2245

TELEPHONE NUMBER: 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	MANUFAC-TURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFAC-TURER	REPORTABLE TO NPRDS
X	E	F	B 1	A 6 0 9	N				
X	E	F	E C 8 D	G 0 8 2	Y				

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 January 17, 1994, at 1413 hours, a half scram and several isolations or half isolations occurred. At the time, both Reactor Protection System (RPS) Buses were powered from their respective Motor-Generator (MG) Sets. The half scram was caused by a trip of motor-generator set output breaker on the 1B RPS MG set. The trip was caused by the failure of an underfrequency relay located inside the MG Set Cabinet. After the 1B RPS Bus was placed on its alternate supply, the half scram was successfully reset and all systems which isolated were placed back in service. The cause was the upward drift of the under-frequency relay setpoint. This relay was replaced. A circuit card failure of the EPM breaker was also found during subsequent testing and repaired. An adverse trend evaluation was initiated to review long term testing and preventive maintenance of RPS buses.

This event is being reported in accordance with the requirements of 10CFR50.73(a)(2)(iv) due to an automatic actuation of an engineered safety feature (ESF).

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								Year	/// /// ///	Sequential Number	/// /// ///	Revision Number										
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TEXT																						

PLANT AND SYSTEM IDENTIFICATION

General Electric - Boiling Water Reactor

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

A. CONDITION PRIOR TO EVENT

Unit(s): 1,2 Event Date: 1-17-94 Event Time: 1413 Hours

Reactor Mode(s): 1, 2 Modes(s) Name: Run, Startup Power Level(s): 95%, 1%

B. DESCRIPTION OF EVENT

On January 17, 1994, at 1413 hours with Unit 1 in Operational Condition 1 (run) at at 95% power and Unit 2 in Operational Condition 2 (Startup) at 1% power, the '1B' Reactor Protection System (RPS, RP) [EF] 120 VAC Bus deenergized due to a trip of the output breaker for the 1B RPS Motor-Generator (MG) Set. Loss of power to this bus initiates a half-scrum and closure of the Primary Containment Inboard and Outboard Isolation Valves (PC)[NH] for groups 1, 2, 3, 4, 5, 6, 7, and 10, except for Main Steam Isolation Valves (MSIV's), Primary Containment Chill Water (PCCW, VP)[KM] Isolation Valves and Reactor Building Closed Cooling Water (RBCCW, WR)[CC] Isolation Valves. The group 4 isolation also affects Unit 2 by isolation of the common secondary containments. The 'B' RPS bus was transferred to its alternate feed and the half-scrum was reset. LaSalle Operating Abnormal Procedures LOA-RP-01, "LOSS OF REACTOR PROTECTION SYSTEM POWER", and LOA-PC-02, "ISOLATION RECOVERY", were entered and the affected systems were returned to normal.

The MG set tripped due to a failed underfrequency relay internal to the MG set. The relay operated correctly but the set point had drifted higher than the 54 hertz setpoint. The underfrequency relay was replaced per work request L26810. Both Electric Power Monitor (EPM) Assemblies tripped open as expected with the loss of the MG set. As a precautionary measure, LaSalle Electrical Surveillance LES-GM-300, "Unit 1 RPS Electric Power Monitoring (EPM) Calibration by O.A.D." was performed on January 18, 1994, to determine if the EPMs were functioning properly. This surveillance indicated a failure in the logic card for EPM 1C71-S0038. Each of the RPS EPMs has a logic card that provides overvoltage (OV), undervoltage (UV), and underfrequency (UF) trip signals. Work Request L26809 was initiated to replace the faulty card. The new card was successfully tested on January 18, 1994.

This event is being reported in accordance with the requirements of 10CFR50.73(a)(2)(iv) due to an automatic actuation of an engineered safety feature (ESF).

C. APPARENT CAUSE OF EVENT

The initiating cause of this event was the loss of the 'B' RPS bus due to the failure of the underfrequency relay located inside the MG set. The failure of the relay caused the MG set Output Breaker to trip open resulting in the loss of power to the RPS bus. The failure mode of the relay was a drift up in the setpoint. The relay is factory set to actuate at 54 hertz. The installed relay was found to actuate at 58 hertz. The relays inside the MG set are not currently on a surveillance schedule. The EPMs are the only RPS bus protective devices that are currently tested on a regular basis. Testing of the MG set after the trip showed that with a load applied to the MG set output the frequency did not drop to 58 Hertz while the underfrequency relay was found after the trip to be set at 58 hertz, its operation is suspect and likely drifted to the actual operating output of the MG set at the time of the trip. Other components were tested satisfactorily.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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		Year	///	Sequential Number	///	Revision Number				
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TEXT Energy Industry Identification System (EIIIS) codes are identified in the text as [XX]

D. SAFETY ANALYSIS OF EVENT

All protective systems functioned as designed during this event, and all Engineered Safety Function (ESF) actuations occurred. The Reactor Protection System has a failsafe design. On loss of power, all protective devices actuate. The tripping of the MG set had no impact on the design requirements of the reactor protection system. EMP 1C71-S003D, which is in series with 1C71-S003B, was found to be operating properly. Had the "B" EPM breaker failed to trip, the "D" EPM would have provided UV, OV, and UF protection for the RPS bus.

E. CORRECTIVE ACTIONS

Immediate corrective actions were taken to recover from this event. The '1B' RPS bus was successfully energized from the alternate supply allowing the half scram and all affected systems to be placed back in service.

The following corrective actions have been or will be taken:

1. The logic card for EPM 1C71-S003B was replaced and successfully tested per work request L26809.
2. After being replaced the failed relay was bench tested/monitored. It was verified to drift. It was further decided there would be no value added by performing a root cause to identify the specific failed component.
3. The replaced relay was successfully tested per work request L26810.
4. LaSalle Special Test LST-93-140 "RPS MG Set Load Test" was performed to determine proper operation of the Motor-Generator (MG) set and to verify the MG set frequency remained above 58 hertz under load.
5. The MG set relays will be added to the testing schedule. Action Item Record (AIR) 373-180-94-0010501 will track the implementation of the testing.
6. Adverse trend evaluation was initiated (373-230-05400169PIF) to address recurring problems with RPS MG sets and EPMs.

F. PREVIOUS EVENTS

<u>DVR Number</u>	<u>Title</u>
1-2-88-046	Reactor Protection System Electrical Protection Assembly Trip Failure Due To Failed Logic Card
1-1-89-084	Failure of Electric Assembly Due To Logic Card Drift

<u>LER Number</u>	<u>Title</u>
373/93-018-00	Unit 1 A RPS Power Lost Due To A Failed Logic Card

G. COMPONENT FAILURE DATA

Manufacturer	Nomenclature	Model Number	MFG Part Number
ASCO	Under-Freq. Relay	214A87	214A87

EVENT SUMMARY AND CAUSE CODES

DVR Number

- | | | |
|-------------------------------------------|----------------------------------------------------|-------------------------------------------------|
| <input type="checkbox"/> Lost generation | <input type="checkbox"/> Reactor trip | <input type="checkbox"/> NRC violation, level__ |
| <input type="checkbox"/> Cost > \$25,000 | <input checked="" type="checkbox"/> ESF actuation | <input type="checkbox"/> GSEP event, class---- |
| <input type="checkbox"/> Hazard or Spill | <input checked="" type="checkbox"/> NRC reportable | <input type="checkbox"/> Tech Spec LCO |
| <input type="checkbox"/> Personnel injury | <input checked="" type="checkbox"/> LER | <input type="checkbox"/> Potential or future lo |
| <input type="checkbox"/> Component type | <input type="checkbox"/> PSE | <input type="checkbox"/> SALP functional area_ |
| | <input type="checkbox"/> Failure mode | |

	Component type	Failure mode	Department
X	CE	EL2	IM
X			
X			

	Licensed? L or blank	Level	Department	Type	Detail code
A					
A					
A					

	Type	Detail Code	Department
B			
B			
B			

	Type	Detail code
C		

	Type of deficiency	Detail code	Procedure type
D			
D			
D			

	Type	Detail code	Department
E			
E			
E			