

Exelon Generation Company, LLC  
LaSalle County Station  
2601 North 21<sup>st</sup> Road  
Marseilles, IL 61341-9757

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March 26, 2004

10 CFR 50.73

United States Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, D.C. 20555

LaSalle County Station, Unit 1  
Facility Operating License No. NPF-18  
NRC Docket No. 50-374

Subject: Licensee Event Report

In accordance with 10 CFR 50.73(a)(2)(iv)(A) and (a)(2)(vii), Exelon Generation Company, (EGC), LLC, is submitting Licensee Event Report Number 04-001-00, Docket No. 50-374.

Should you have any questions concerning this letter, please contact Mr. Glen Kaegi, Regulatory Assurance Manager, at (815) 415-2800.

Respectfully,



Susan Landahl  
Plant Manager  
LaSalle County Station

Attachment: Licensee Event Report

cc: Regional Administrator - NRC Region III  
NRC Senior Resident Inspector - LaSalle County Station

IE22

**LICENSEE EVENT REPORT (LER)**  
(See reverse for required number of  
digits/characters for each block)

Estimated burden per response to comply with this mandatory information collection request: 50 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records Management Branch (T-6 E6), U. S. Nuclear Regulatory Commission, Washington, DC 20555-0001, and by internet e.mail to [bjsl@nrc.gov](mailto:bjsl@nrc.gov), and to the Desk Officer, Office of Information and Regulatory Affairs, NOEB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. FACILITY NAME LaSalle County Station, Unit 2	2. DOCKET NUMBER 05000374	3. PAGE 1 of 4
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4. TITLE Reactor Protection Bus 'B' Trip and Inoperable Automatic Depressurization Valves Due to Equipment Failure

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
2	1	2004	2004	001	00	03	26	04	FACILITY NAME	DOCKET NUMBER

9. OPERATING MODE: 1  
10. POWER LEVEL: 100  
11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)

<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)
<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(x)
<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 73.71(a)(4)
<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(5)
<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> OTHER
<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	Specify in Abstract below or in NRC Form 366A
<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	
<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(B)	<input checked="" type="checkbox"/> 50.73(a)(2)(vii)	
<input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)	
<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)	

12. LICENSEE CONTACT FOR THIS LER

NAME Larry Bukantis, Equipment Specialist	TELEPHONE NUMBER (Include Area Code) 815-415-2576
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13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX
X	EF	EC	G080	Y	B	LE	RG	T020	N
X	EF	RLY	G080	Y					

14. SUPPLEMENTAL REPORT EXPECTED: YES (if yes, complete EXPECTED SUBMISSION DATE)  NO

15. EXPECTED SUBMISSION DATE: MONTH DAY YEAR

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

At 2334 hours on 2/1/04, the 2B Reactor Protection System (RPS) Motor-Generator (MG) Set output breaker (EPMA D) tripped, resulting in a loss of the 'B' RPS bus. The loss of the 'B' RPS bus resulted in a half-scrum and 'B' side Group 1 (except Main Steam Isolation Valves), 2, 3, 4, 5, 6, 7 and 10 containment isolations.

The Group 10 isolation isolated the Instrument Nitrogen (IN) compressor and caused the rupture disk to rupture. While the rupture disk was being replaced, nitrogen pressure to four Automatic Depressurization System (ADS) accumulators dropped below the Technical Specification required 150 psig, causing them to be declared inoperable.

The cause of the RPS MG Set output breaker trip was an erratic voltage regulator gain potentiometer. The cause of the inoperability of multiple ADS valves was that the pressure regulator for the backup compressed gas bottle system was unable to maintain the required 150 psig ADS accumulator supply header pressure under low load conditions.

Corrective actions included replacing the RPS MG set voltage regulator, replacing the IN rupture disk and returning the IN compressor to service. A long term corrective action for the IN pressure regulator will be evaluated.

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17. NARRATIVE (If more space is required, use additional copies of NRC Form 366A)

PLANT AND SYSTEM IDENTIFICATION

General Electric - Boiling Water Reactor, 3489 Megawatts Thermal Rated Core Power

A. CONDITION PRIOR TO EVENT

Unit(s): 2                                      Event Date: 2/1/04                                      Event Time: 2334  
 Reactor Mode(s): 1                                      Power Level(s): 100  
 Mode(s) Name: Run

B. DESCRIPTION OF EVENT

At 2334 hours on 2/1/04, the 2B Reactor Protection System (RPS) Motor-Generator (MG) [EF] Set output breaker (EPMA D) tripped, resulting in a loss of the 'B' RPS bus. The loss of the 'B' RPS bus resulted in a half-scrum and 'B' side Primary Containment Isolation System (PCIS) [JM] Group 1 (except Main Steam Isolation Valves), 2, 3, 4, 5, 6, 7 and 10 isolations. The Instrument Nitrogen (IN) [LE] and Reactor Water Clean Up (RT) [CE] systems were isolated when their containment isolation valves closed on Group 10 and Group 5 isolation signals.

The event required entry into multiple abnormal procedures, including LOA-RP-201, "Unit 2 Loss of Reactor Protection System Power," LOA-PC-201, "Primary/Secondary Containment Trouble," LOA-IN-201 "Loss of Drywell Pneumatic Air Supply," and LOA-RT-201 "Loss of Reactor Water Clean Up System." Operator response to this event was in accordance with expectations.

The RPS bus was reenergized using its alternate supply and the affected containment isolation valves were restored to their normal positions by 0045 on 2/2/04, with the exception of the IN system.

The Group 10 isolation isolated the IN compressor and caused the rupture disk in the IN compressor discharge line to rupture. When the IN compressor is unavailable, nitrogen pressure to the Automatic Depressurization System (ADS) [SB] accumulators is provided by a backup compressed gas bottle system. This system maintains the ADS accumulator supply header nitrogen pressure greater than or equal to 150 psig, as required by Technical Specification (TS) Surveillance Requirement (SR) 3.5.1.3.

Pressure slowly decreased in the accumulator supply header following the loss of the compressor while the rupture disk was being replaced. By 0920 on 2/2/04, accumulator nitrogen pressure had dropped below 150 psig on the 'C', 'R', 'U' and 'E' ADS valves. Due to the inoperability of two or more ADS valves, TS Required Action (RA) G.1 and G.2 had been entered at 0715 to place the plant in Mode 3 with in 12 hours and to reduce reactor steam dome pressure to less than or equal to 150 psig with 36 hours.

At 1000 on 2/2/04, the IN system was restarted following replacement of the rupture disk. At 1015, pressures in all four accumulators were verified to be greater than 150 psig, and the ADS valves were declared operable.

The loss of RPS bus 'B' is reportable under 10 CFR 50.72(b) (3) (iv) (A) and 50.73(a) (2) (iv) (A) as an event or condition that resulted in the manual or automatic actuation of any of the systems listed in 10 CFR 50.73(a) (2) (iv) (B), specifically, containment isolation valves in more than one system. An ENS call (EN 40495) was made at 0144 CST on 2/2/04.

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**17. NARRATIVE (If more space is required, use additional copies of NRC Form 366A)**

The inoperability of multiple ADS valves is reportable under 10 CFR 50.73(a)(2)(vii) as an event where a single cause or condition caused two or more trains to become inoperable in a single system designed to mitigate the consequences of an accident.

**C. CAUSE OF EVENT**

The cause of the 2B RPS MG set output breaker trip was determined to be an erratic output from the MG set voltage regulator gain potentiometer. The potentiometer is a wire-wound, open faced, carbon tipped adjustable resistor. The erratic output was due to oxidation, and was eliminated by cycling the potentiometer from its maximum to minimum setting several times to clear high resistance spots ("wiping").

A contributing problem was high resistance contacts on the 2K relay. The relay contacts are in series with the voltage regulator and the neutral bus, and carry the field current. On an overvoltage condition the 2K contacts open. Upon examination, it appeared that the silver plating on the contacts had been removed by past maintenance practices, resulting in inconsistent contact resistance and fluctuating voltage. The contacts appeared to have been filed rather than burnished.

The cause of the inoperability of multiple ADS valves was that regulator 2IN035 responds sluggishly under low demand conditions, such as are experienced following the loss of the IN compressor with no ADS valve position changes.

**D. SAFETY ANALYSIS**

The safety significance of this event was minimal. Upon the loss of the RPS bus, the supplied systems de-energized to their safe position. All systems powered by the 'B' RPS responded as designed following the loss of electrical power. Had a design basis event occurred, the reactor would have scrambled, and the systems affected by the loss of the RPS bus would have already been in the required configuration to mitigate the consequences of the accident.

The Emergency Core Cooling System (ECCS) safety analysis assumes one actuation of ADS valves to depressurize the reactor for operation of the low pressure ECCS systems. The 150 psig requirement is based on two cycles of the ADS valves. The lowest pressure observed on the four ADS accumulators during the event was approximately 149 psig. Engineering judgment is that at least one cycle was available, and that the safety function would have been met..

Another function of ADS is to remain open for long-term decay heat removal. Eighty-eight psid is required to hold the ADS valves open, and the design containment pressure is 45 psig; therefore, the minimum accumulator pressure required to keep the ADS valves open is 133 psig. Maintenance history of the pressure regulator shows that under low demand the regulator opens at 137.5 psig the first time, after which it controls acceptably at 150 psig.

**E. CORRECTIVE ACTIONS**

1. The voltage regulator and the 2K relay for the 2B RPS MG set were replaced (Complete).

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2. The potentiometers on the 1A, 1B, and 2A RPS MG set voltage regulators will be wiped, and the voltage regulators calibrated (AT#198850-24).
3. Procedure LES-RP-101 "Inspection of Reactor Protection Motor-Generator Sets" will be revised to wipe the voltage regulator potentiometers prior to performing the four year load test (AT#198850-25).
4. A Training Request will be issued to evaluate whether a knowledge deficiency exists in Maintenance regarding the difference between burnishing and filing relay contacts (AT# 198850-26).
5. Plant Engineering will evaluate upgrades to the IN pressure regulator to prevent future occurrences (AT# 198871-04).

F. PREVIOUS OCCURRENCES

LER 374/88-010                      Unit Shutdown Due to Automatic Depressurization System  
Nitrogen Backup Pressure Regulator Failure

This LER documented a previous occurrence of the IN regulator IN035 failing to maintain 150 psig in the ADS accumulator header. Corrective actions were to inspect the regulator and to replace the stem assembly. Additionally, a surveillance procedure was developed to cycle the regulator on a refuel basis. Until this event, there have been no reportable events of this nature in the past 16 years.

G. COMPONENT FAILURE DATA

General Electric, Voltage Regulator Circuit Board, Model# 3300A03B0061

General Electric CR120A Relay

Target Rock, Pressure Regulator, Model# 77U401