

Exelon Generation Company, LLC  
LaSalle County Station  
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RA05-81

October 14, 2005

10 CFR 50.73

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

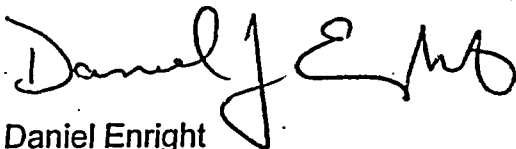
LaSalle County Station, Unit 1  
Facility Operating License No. NPF 11  
NRC Docket No. 50-373

Subject: Licensee Event Report

In accordance with 10 CFR 50.73 (a)(2)(i)(B) and (a)(2)(v)(D), Exelon Generation Company (EGC), LLC, is submitting Licensee Event Report Number 05-004-00, Docket No. 050-373.

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

Respectfully,



Daniel Enright  
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 collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to [infocollects@nrc.gov](mailto:infocollects@nrc.gov), and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an 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 1

2. DOCKET NUMBER  
050003733. PAGE  
1 of 4

4. TITLE Trip of the System Auxiliary Transformer (SAT) Feed Breaker to Bus 143 Due to Ground Fault in Potential Transformer

## 5. EVENT DATE

## 6. LER NUMBER

## 7. REPORT DATE

## 8. OTHER FACILITIES INVOLVED


MO DAY YEAR  
08 18 2005YEAR SEQUENTIAL  
NUMBER REV  
2005 - 004 - 00MO DAY YEAR  
10 14 2005FACILITY NAME DOCKET NUMBER  
DOCKET NUMBER9. 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 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 checked="" type="checkbox"/> 50.73(a)(2)(v)(D)	
<input type="checkbox"/> 20.2203(a)(2)(v)	<input checked="" type="checkbox"/> 50.73(a)(2)(i)(B)	<input 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

Rodger Smeets, System Engineering

TELEPHONE NUMBER (Include Area Code)

(815) 415-3865

## 13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU- FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU- FACTURER	REPORTABLE TO EPIX
X	EK	XPT	B093	Y					

## 14. SUPPLEMENTAL REPORT EXPECTED

15. EXPECTED  
SUBMISSION  
DATE

MONTH DAY YEAR

☐ YES  
(If yes, complete EXPECTED SUBMISSION DATE)☒ NO

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

On 08/18/05, the 1B diesel generator (DG) was being run in accordance with surveillance procedure LOS-DG-R1B, "1B Diesel Generator Twenty-Four Hour Run." During this test, the DG output breaker is closed onto Bus 143 and the DG is loaded in parallel with the grid. At approximately 1440 hours CDT, the SAT feed breaker (ACB 1432) to bus 143 tripped. The 1B DG continued to run and supply power to bus 143; however, the control room operators observed that the 1B DG cooling water pump was not running and promptly shutdown the 1B DG, leaving bus 143 de-energized. This resulted in bus 143 being de-energized, with no power available to the High Pressure Core Spray System.

The cause of the ACB 1432 trip was a phase-to-ground fault in the primary winding of potential transformer (PT) T1 in the 1B DG voltage regulator. The PT was replaced and the 1B DG was restored to operable status at 1410 hours on 8/22/05. Corrective actions include replacement of the Basler model PTs in the voltage regulator circuits of the remaining DGs, and evaluation of a modification to add a load limiting capability to the DG voltage regulators.

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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): 1                      Event Date: 08/18/05                      Event Time: 1440 CDT  
Reactor Mode(s): 1                      Power Level(s): 100  
Mode(s) Name: Run

## B. DESCRIPTION OF EVENT

On 08/18/05, the 1B diesel generator (DG) [EK] was being run in accordance with surveillance procedure LOS-DG-R1B, "1B Diesel Generator Twenty-Four Hour Run." During this test, the DG output breaker is closed onto 4160 VAC bus 143 and the DG is loaded in parallel with the grid. At approximately 1440 hours CDT, the SAT feed breaker (ACB 1432) to bus 143 tripped. The 1B DG continued to run and supply power to bus 143; however, the control room operators observed that the 1B DG cooling water pump was not running and promptly shutdown the 1B DG, leaving bus 143 de-energized.

Bus 143 is the Division 3 power supply to the High Pressure Core Spray (HP) [BG] system. With both the normal and alternate power supply unavailable, HP was declared inoperable. This condition was reportable in accordance with 10CFR50.72(b)(3)(v) as an event or condition that could have prevented the fulfillment of the safety function of structures or systems needed to mitigate the consequences of an accident. An 8-hour ENS notification (#41931) was made at 1804 hours.

The 1B DG and the HP system were restored to operable status at 1410 hours on 8/22/05.

## C. CAUSE OF EVENT

A root cause investigation was conducted which determined that the cause of the ACB 1432 trip was a phase-to-ground fault in the primary winding of potential transformer (PT) T1 in the 1B DG voltage regulator.

The ground fault caused fuse F30 on the H1 side of the primary winding of the PT to open. The T1 PT supplies a reference voltage to the input of the voltage regulator for the DG. When the bus voltage decreases, the reference voltage also decreases and the voltage regulator then increases the generator field current to return the bus voltage to the proper 4160 V level. When fuse F30 opened, the voltage regulator increased the generator field current to the output limit in an attempt to correct a perceived low voltage on bus 143.

With the generator still paralleled to the grid, the voltage could not be increased above 4160 volts. As a result, the VAR output from the generator increased from approximately 1.3 MVAR to approximately 7.8 MVAR. The increased VAR output caused DG loading to increase approximately 200% to approximately 940 amps. At this high current level, the DG overcurrent relay tripped approximately 40 seconds later, which was consistent with the time overcurrent trip setting on the overcurrent relay at 940 amps.

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The SAT feed breaker tripped due to the DG overcurrent trip condition. The 1B DG continued to run and supply bus 143 following the trip of the SAT feed breaker. But because the DG was no longer paralleled to the grid, the generator VARs decreased significantly while the generator output voltage increased to approximately 7000 volts. 480-volt bus 143-1 voltage increased to approximately 800 volts, which resulted in the trip of the 1B DG cooling water pump. The thermal overload for the pump motor tripped from high current due to over-excitation of the motor windings from the high bus voltage.

The following components also failed due to the high voltage on bus 143-1:

- Potential Transformer supplying relay and metering from Bus 143, including two 1 amp fuses
- 480V / 120V control power transformer for the 1B DG Lubricating Oil Circulating Pump
- K70 Agastat relay (120V) for the Oil Circulating Pump
- 480V / 120V control power transformer for the 1B DG Lubricating Oil Immersion Heater
- K71 Agastat relay (120V) for the Immersion Heater
- 480V / 120V control relay for Div. 3 125 VDC Battery Room Exhaust Fan 1VD06C (discovered after Bus 143 returned to service)
- F13 fuse (10 amp) supplying the 1E22-K600 Power Supply for HP system pressure and flow transmitters
- 1VD01YA/B hydro motor for 1B DG ventilation system

The actual cause for the phase-to-ground fault in the T1 PT could not be determined. The most probable cause for the shorted winding is a manufacturing defect. Some voiding in the rubberized insulating material surrounding the failed wire was discovered during the failure analysis, but no conclusive evidence was found to link this to the failure.

## D. SAFETY ANALYSIS

The safety significance of this event was minimal. Reactor Core Isolation Cooling (RCIC) [BN] and the Division 1 and 2 ECCS systems were fully operable during the event. A review of the probabilistic risk assessment (PRA) values determined that there was minimal impact on overall plant risk from the event.

This event is considered a safety system functional failure.

## E. CORRECTIVE ACTIONS

- The failed PT for the 1B DG voltage regulator was replaced (complete).
- The Division 3 buses were meggered acceptably prior to restoring power (complete).
- The 1B DG 24-hour surveillance run was performed satisfactory (complete).
- Basler PTs for the remaining DGs will be replaced (AT# 364534-15).
- A modification to add a load limiting capability to the DG voltage regulator to prevent a future bus overvoltage condition will be evaluated (AT# 364534-16).
- A comprehensive evaluation of the Division 3 bus components exposed to the overvoltage condition will be completed and formally documented. Actions will be initiated as appropriate. (AT# 364534-17).

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**F. PREVIOUS OCCURRENCES**

A search for potential transformer failures in DG voltage regulators was conducted and found no previous reportable occurrences at LaSalle.

**G. COMPONENT FAILURE DATA**

Basler 4200/240 V Potential Transformer, Model Number BE11173001