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An Exelon Company

10 CFR 50.73

October 19, 2005  
2130-05-20211

U. S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555 - 0001

Oyster Creek Generating Station  
Facility Operating License No. DPR-16  
NRC Docket No. 50-219

Subject: Licensee Event Report 2005-004-00, Actuation of an Emergency Diesel Generator due to Unexpected Breaker Opening

Enclosed is Licensee Event Report 2005-004, Revision 0. This event did not affect the health and safety of the public or plant personnel. This event included a safety system functional failure of the 4160 VAC electrical distribution system. Attachment 1 lists the regulatory commitments made in this LER submittal.

If any further information or assistance is needed, please contact William Stewart at 609-971-4775.

Sincerely,



C. N. Swenson  
Vice President, Oyster Creek Generating Station

CNS/WVS  
Attachment 1: Summary of Commitments  
Enclosure: NRC Form 366, LER 2005-004-00

cc: S. J. Collins, Administrator, USNRC Region I  
P. S. Tam, USNRC Senior Project Manager, Oyster Creek  
R. J. Summers, USNRC Senior Resident Inspector, Oyster Creek  
File No. 05049

IE22

## ATTACHMENT 1

### OCGS Licensee Event Report 2005-003-00

#### SUMMARY OF COMMITMENTS

The following table identifies commitments made in this document by Exelon Nuclear. (Any other actions discussed elsewhere in the submittal represent intended or planned actions by Exelon Nuclear. They are described to the NRC for the NRC's information and are not regulatory commitments.)

Commitment	Committed Date or "Outage"
Perform failure analysis of the failed light bulb from the D bus breaker closed indication.	December 30, 2005
Remove light bulb from the D bus and EDG 2 breakers closed indication and maintain removed until current limiting resistors are installed.	November 30, 2005
Develop and implement a modification to install current limiting resistors in the D bus and EDG 2 breakers closed indication circuit.	November 30, 2006

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, 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 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.

**LICENSEE EVENT REPORT (LER)**

(See reverse for required number of digits/characters for each block)

**1. FACILITY NAME**

Oyster Creek, Unit 1

**2. DOCKET NUMBER**

05000 219

**3. PAGE**

1 OF 4

**4. TITLE**

Actuation of an Emergency Diesel Generator due to Unexpected Breaker Opening

**5. EVENT DATE**

MONTH	DAY	YEAR
08	24	2005

**6. LER NUMBER**

YEAR	SEQUENTIAL NUMBER	REV NO
2005	004	00

**7. REPORT DATE**

MONTH	DAY	YEAR
10	19	2005

**8. OTHER FACILITIES INVOLVED**

FACILITY NAME	DOCKET NUMBER
	05000
FACILITY NAME	DOCKET NUMBER
	05000

**9. OPERATING MODE**

N

**11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)****10. POWER LEVEL**

100

☐ 20.2201(b)☐ 20.2201(d)☐ 20.2203(a)(1)☐ 20.2203(a)(2)(i)☐ 20.2203(a)(2)(ii)☐ 20.2203(a)(2)(iii)☐ 20.2203(a)(2)(iv)☐ 20.2203(a)(2)(v)☐ 20.2203(a)(2)(vi)☐ 20.2203(a)(3)(i)☐ 20.2203(a)(3)(ii)☐ 20.2203(a)(4)☐ 50.36(c)(1)(i)(A)☐ 50.36(c)(1)(ii)(A)☐ 50.36(c)(2)☐ 50.46(a)(3)(ii)☐ 50.73(a)(2)(i)(A)☐ 50.73(a)(2)(i)(B)☐ 50.73(a)(2)(i)(C)☐ 50.73(a)(2)(ii)(A)☐ 50.73(a)(2)(ii)(B)☐ 50.73(a)(2)(iii)☒ 50.73(a)(2)(iv)(A)☐ 50.73(a)(2)(v)(A)☐ 50.73(a)(2)(v)(B)☐ 50.73(a)(2)(v)(C)☐ 50.73(a)(2)(v)(D)☐ 50.73(a)(2)(vii)☐ 50.73(a)(2)(viii)(A)☐ 50.73(a)(2)(viii)(B)☐ 50.73(a)(2)(ix)(A)☐ 50.73(a)(2)(x)☐ 73.71(a)(4)☐ 73.71(a)(5)☐ OTHER☐ Specify in Abstract below or in NRC Form 366A**12. LICENSEE CONTACT FOR THIS LER****FACILITY NAME**

William Stewart, Regulatory Assurance

**TELEPHONE NUMBER (Include Area Code)**

(609) 971-4775

**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	EA	IL	G080	N					

**14. SUPPLEMENTAL REPORT EXPECTED**☐ YES (If yes, complete EXPECTED SUBMISSION DATE)☒ NO**15. EXPECTED SUBMISSION DATE**

MONTH	DAY	YEAR

**ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)**

The plant was operating normally at full power on 8/24/05. At 2337 hours, the D 4160 vac breaker opened and de-energized the D bus. Emergency Diesel Generator 2 (EDG) automatically started and re-powered the D bus. The Reactor Protection System processed a half scram, both Fire Diesels started, and Dilution pumps tripped. Other equipment was momentarily de-energized. A 7 day Limiting Condition for Operation (LCO) was entered and an 8hr Emergency Notification System call was made. The D breaker was replaced, a normal electric lineup was restored, EDG 2 was shut down, and the LCO was exited. A failed light bulb was found in the D breaker closed indicating circuit. It was also found that the current limiting resistor had been removed in that circuit. An extent of condition review determined that only one other breaker was similarly configured.

The apparent cause of the event was an internal short in an indicating light in the breaker closed indicating circuit. The breaker was eliminated as a possible cause of the trip after testing by the breaker manufacturer. Corrective Action is to remove indicating bulbs from the D bus and EDG 2 breaker closed indication circuits until current limiting resistors are installed.

**LICENSEE EVENT REPORT (LER)**

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Oyster Creek, Unit 1	05000219	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	2 OF 4
		2005	- 004	- 00	

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

**DESCRIPTION OF EVENT**

With the plant operating normally at full power on 8/24/05, the D 4160 vac breaker opened and de-energized the D bus at 2337 hours. A "No voltage" condition was sensed (less than 65% voltage for 3 seconds), with no apparent fault on the D bus. Emergency Diesel Generator 2 (EDG) automatically started and re-powered vital loads on the D bus after approximately 15 seconds. There were no indications of a lockout or ground fault indications on the D breaker. The D bus undervoltage relay targets were annunciated and no other targets were activated. The Reactor Protection System (RPS) processed a half scram from the loss of the ac power for Division 2 RPS MG set. Both Fire Diesels started as a result of the loss of power to the fire pond pump house. The RPS half scram was reset after transferring RPS Div 2 to the Alternate Feed Transformer. The Dilution pumps tripped on the loss of the fire system water.

In summary, the following equipment shut down when the D bus breaker opened:

- \* 1B1 480-volt bus
- \* 1 & 3 Dilution Pumps
- \* Phase Duct Cooling
- \* Hydrogen Injection
- \* Reactor Water Cleanup System
- \* RPS Division II
- \* Fire System Pond Pumps
- \* Nitrogen Compressors
- \* Reactor Building Ventilation
- \* Fuel Pool Cooling System
- \* Air Compressors 1-2 and 1-3

A 7 day Limiting Condition for Operation (LCO), was entered on 8/24/05 at 2337, due to the Bank 6 Startup Transformer not being able to supply the D bus although the startup transformer was energized and available. An Emergency Notification System call (8hr.) was made on 8/25/05 at 0223.

A controlled troubleshooting plan was developed and executed. No fault was found. The affected breaker was replaced and quarantined. After post-maintenance testing on the replaced breaker was completed, it was closed. After assuring stability of the electrical supply, EDG 2 was shut down. The LCO was exited on 8/25/2005 at 2050 after 21:12 hours.

Troubleshooting found a failed light bulb in the D bus breaker closed indicating circuit. It was also found that a current limiting resistor was not in the circuit. An extent of condition investigation identified no current limiting resistor in the EDG 2 breaker closed indicating circuit. All other 4160 vac breaker indicating circuits were found with current limiting resistors.

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

**ANALYSIS OF EVENT**

The actual and potential safety consequences of this event were minimal. Both Emergency Diesel Generators were and remained operable. Safety related equipment powered from other sources was unaffected. Safety related equipment powered from the D bus was re-powered when the bus was re-energized by the EDG and remained available and fully operable.

**CAUSE OF EVENT**

The apparent cause of the event was an internal short in an indicating light in the breaker closed indicating circuit. The breaker trip coil and closed indicating lights are in the same circuit. Normally a current limiting resistor and the resistance of the light bulb maintain the current below that which will actuate the trip coil. During troubleshooting, the indicating bulb was found to have failed and the current limiting resistor was found to have been inadvertently removed in 1986 by a modification to relocate control circuits. An internal short in the bulb coupled with the absence of a current limiting resistor caused the breaker trip coil to actuate.

The breaker was eliminated as a possible cause of the trip after testing by the breaker manufacturer found all measurements and checks to be within tolerance and no other identified problems.

**CORRECTIVE ACTIONS**

**Immediate:**

Developed and executed a controlled troubleshooting plan.  
Replaced the D 4160 vac breaker and returned D bus to its normal power supply lineup.  
Performed an extent of condition review.  
Removed light bulb from the D bus breaker closed indication.

**Long term:**

Perform failure analysis of the failed light bulb from the D bus breaker closed indication by 12/30/05.  
Remove light bulb from the EDG 2 breaker closed indication by 11/30/05 and maintain removed until current limiting resistors are installed.  
Develop and implement a modification to install current limiting resistors in the D bus and EDG 2 breakers closed indication circuit by 11/30/06.

**ADDITIONAL INFORMATION**

**A. Failed components:**

Indicating Bulb – GE 6S6, 6 watt, 155 volt

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

B. Previous Similar Events:

LER 96-009 – Actuation of Engineered Safety Feature caused by Loss of Power due to a Faulted Cable

LER 97-007 – Inadvertent Initiation of Diesel Generator 2 during Surveillance Testing due to Personnel Error (Voluntary)

LER 97-010 – Manual Reactor Scram, ESF Actuation, and Design Deficiencies after Main Generator Exciter PM

LER 00-003 – Manual Scram Following Multiple Recirc Pump Trips

C. Identification of components referred to in this Licensee Event Report:

Component	IEEE 803A Function	IEEE 805 System
Bulb	EIIS – IL	EIIS - EA
Breaker	EIIS – JX	EIIS – EA
Diesel Generator	EIIS – DG	EIIS - EK