

PHILADELPHIA ELECTRIC COMPANY

LIMERICK GENERATING STATION

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SANATOGA, PA 19464-2300

(215) 327-1200 EXT. 2000

February 18, 1993

J. DOERING, JR.
PLANT MANAGER
LIMERICK GENERATING STATION

Docket No. 50-353
License No. NPF-85

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

SUBJECT: Licensee Event Report
Limerick Generating Station - Unit 2

This LER concerns the failure of loads to deenergize from a safeguard bus during performance of a loss of coolant accident/loss of offsite power surveillance test. The cause of these failures were wires that were not properly connected in circuit breakers making the associated Emergency Diesel Generator inoperable since January 19, 1993. Technical Specifications (TS) Section 3.8.1.1 was violated because the associated TS ACTION statements were not implemented within the required time period.

Reference:	Docket Nos. 50-353
Report Number:	2-93-002
Revision Number:	00
Event Date:	January 19, 1993
Discovery Date:	January 24, 1993
Report Date:	February 18, 1993
Facility:	Limerick Generating Station P.O. Box 2300, Sanatoga, PA 19464-2300

This LER is being submitted pursuant to the requirements of 10 CFR 50.73(a)(2)(i)(B) as required by TS Surveillance Requirements 4.8.1.1.3.

220098

Very truly yours,

J. A. Monty
for J. Doering

JLP:cah

cc: T. T. Martin, Administrator, Region I, USNRC
T. J. Kenny, USNRC Senior Resident Inspector, LGS

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LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)
Limerick Generating Station, Unit 2

DOCKET NUMBER (2)

01501003153101013

PAGE (3)

TITLE (4) Improperly Connected Wires in Circuit Breakers caused an Emergency Diesel Generator to be inoperable and a violation of Technical Specifications to occur.

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)
01	19	93	93	002	00	02	18	93		01501003153101013
OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5. (Check one or more of the following) (11)								
4										
POWER LEVEL (10)		20.402(b) 20.405(a) 50.72(a)(2)(iv) 72.71(b)								
01010		20.405(a)(1)(i) 50.56(a)(1) 50.72(a)(2)(v) 72.71(a)								
		20.405(a)(1)(ii) 50.28(a)(2) 50.72(a)(2)(vi) OTHER (Specify in Abstract below and in Test, NRC Form 754-1)								
		20.405(a)(1)(iii) X 50.72(a)(2)(iii) 50.72(a)(2)(vii)(A)								
		20.405(a)(1)(iv) 50.72(a)(2)(iv) 50.72(a)(2)(vii)(B)								
		20.405(a)(1)(v) 50.72(a)(2)(v) 50.72(a)(2)(viii)								

LICENSEE CONTACT FOR THIS LER (12)

NAME
G. J. Madron, Regulatory Engineer, Limerick Generating Station

TELEPHONE NUMBER

AREA CODE

215327-1200

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE) X NO

EXPECTED SUBMISSION DATE (15)

MONTH DAY YEAR

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

On January 24, 1993, the D24 Emergency Diesel Generator (EDG) failed to pass Surveillance Test (ST) procedure ST-1-092-114-2 because certain loads were not shunt tripped from the D24 safeguard bus when a simulated LOCA signal was initiated. During troubleshooting on January 25, 1993, a loose wire was discovered in circuit breaker D244-R-E-15 and a lifted wire was discovered in circuit breaker D244-D-G-28. The wires were restored to their normal position and a portion of procedure ST-1-092-114-2 was performed to verify appropriate loads were shunt tripped following a simulated LOCA signal. This event resulted in a condition prohibited by Technical Specifications (TS) Section 3.8.1.1 because the associated TS ACTION statements were not implemented within the required time period. Actual consequences of this event were minimal in that there was no event requiring the D24 EDG to perform its design function. The wire in the D244-R-E-15 circuit breaker is believed to have come loose at a plug connection during repairs made to enhance electrical separation between electrical divisions. The investigation into the cause of the lifted wire in circuit breaker D244-D-G-28 is continuing. A revision to the LER will be submitted if the investigation determines the cause and appropriate corrective action to prevent recurrence. Procedure S93.0.C will be revised to alert workers of the potential for wires becoming loose during removal and restoration of plug connections on circuit breakers similar to D244-R-E-15.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 2100-0104
EXPIRES 8/31/85

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (8)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Limerick Generating Station, Unit 2	0 5 0 0 0 3 5 2	9 3	— 0 0 2	— 0 0	0 2	OF	0 3

TEXT (If more space is required, use additional NRC Form 366A's) (17)

Unit Conditions Prior to the Event:

Unit 2 was in Operational Condition 4 (Cold Shutdown) at the time of discovery of this event on January 24, 1993.

Surveillance Test (ST) procedure ST-1-092-114-2, "D24 Diesel Generator 4KV SFGD Loss of Power LSF/SAA and Outage Testing," was being performed to verify deenergization of the D24 safeguard bus and load shedding during a simulated loss of offsite power and Loss of Coolant Accident (LOCA).

Description of the Event:

During performance of procedure ST-1-092-114-2 on January 24, 1993 at 1400 hours, shunt trip loads off of motor control centers D244-R-E and D244-D-G did not load shed when a simulated LOCA signal to the D24 safeguard bus was initiated. This resulted in the D24 Emergency Diesel Generator (EDG, E11S:EK) and loads off of the 4KV D24 safeguard bus being declared inoperable at 1400 hours. Troubleshooting was performed to determine the cause of the failures.

On January 25, 1993, a loose wire was discovered in circuit breaker D244-R-E-15 and a lifted wire was discovered in circuit breaker D244-D-G-28. This caused the following breakers and their loads to fail to shunt trip:

D244-R-E-02	125V Battery Charger
D244-R-E-04	2A Standby Liquid Control Tank Heating Element
D244-R-E-06	2C Fuel Pool Cooling Pump
D244-R-E-15	Control Rod Drive Repair Room Fan
D244-R-E-17	Welding Receptacle
D244-R-E-19	125V Battery Charger
D244-D-G-02	Welding Receptacle
D244-D-G-12	Bridge Crane
D244-D-G-28	D24 EDG Annunciator Auxiliary Relays

The wires were restored to their normal position and a portion of procedure ST-1-092-114-2 was performed to verify load shedding following a simulated LOCA signal. The D24 EDG was declared operable at 2200 hours.

Upon investigation it was determined that circuit breaker D244-R-E-15 had been installed with a loose wire since January 19, 1993. This event resulted in a condition prohibited by Technical Specifications (TS) Section 3.8.1.1, "A.C. Sources - Operating," because the associated TS ACTION statements were not implemented within the required time period. Therefore, this report is being submitted in accordance with the requirements of 10CFR50.73(a)(2)(i)(B).

Analysis of the Event:

The actual consequences of this event were minimal in that there was no event requiring the D24 EDG to perform its design function. There was no release of radioactive material to the environment as a result of this event. The D24 EDG

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104
EXPIRES 8/31/85

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Limerick Generating Station, Unit 2	0 6 0 0 0 3 5 2	9 3	— 0 0 2	— 0 0	0 1 3	OF	0 3

TEXT (If more space is required, use additional NRC Form 308A's) (17)

was inoperable for approximately 6 days as a result of this event. The three remaining Unit 2 EDGs were operable during the time the D24 EDG was inoperable.

Had an accident occurred in which the onsite Emergency AC Power system was called upon to perform its design function, coincident with a loss of offsite power, the D24 EDG would have been capable of performing its design function. The loads which should have shunt tripped but did not shed would not have overloaded the D24 EDG. The D24 EDG is the most lightly loaded EDG and would have supplied the loads which failed to shunt trip while maintaining a large margin of load capacity for supplying those systems needed to safely shutdown the plant.

However, if a fault in the non-safeguard loads supplied by the circuit breakers which failed to shunt trip occurred during a LOCA the motor control center circuit breakers for D244-R-E and D244-D-G would have isolated the fault. The loss of power to safeguard loads supplied by motor control centers D244-R-E and D244-D-G would not have seriously degraded safety because this situation is bounded by the loss of a safeguard bus. Sufficient safety systems would have been available to safely shutdown the plant.

Cause of the Event:

The cause for failing to implement TS ACTION statements within the required time period was that the D24 EDG was unknowingly inoperable due to faulty wiring in circuit breakers. An investigation into the cause of the faulty wiring in circuit breakers D244-R-E-15 and D244-D-G-28 was initiated. The wire in the D244-R-E-15 circuit breaker is believed to have come loose at the plug connection during repairs made to enhance electrical separation between electrical divisions. The D244-R-E-15 circuit breaker was installed on January 19, 1993, following completion of the repairs. The activity which lifted the wire in the D244-D-G-28 circuit breaker has not been identified after reviewing all historical maintenance, troubleshooting, and modification work activities since the last successful completion of this test. The investigation into the cause of the lifted wire on circuit breaker D244-D-G-28 is continuing. A revision to this LER will be submitted if the investigation determines the cause and appropriate corrective action to prevent recurrence.

Corrective Actions:

Procedure S93.0.C, "480 VAC Safeguard MCC Compartment Installation," will be revised to alert workers of the potential for wires becoming loose during removal and restoration of plug connections on circuit breakers similar to D244-R-E-15.

Previous Similar Occurrences:

There has been no previous occurrence of a failure to take the TS ACTION statements associated with TS Section 3.8.1.1. because of faulty wiring to load shedding breakers.