

## PHILADELPHIA ELECTRIC COMPANY

LIMERICK GENERATING STATION

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J. DOERING, JR.  
PLANT MANAGER  
LIMERICK GENERATING STATION

May 21, 1993  
Docket Nos. 50-352  
50-353  
License Nos. NPF-39  
NPF-85

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

SUBJECT: Licensee Event Report  
Limerick Generating Station - Units 1 and 2

This LER reports operation in a condition prohibited by Technical Specifications (TS) in that the D.C. electrical power sources were inoperable due to missed TS Surveillance Requirements, and the associated TS ACTIONS were not taken within the required time. The cause of this event was personnel error resulting in a procedural deficiency.

Reference: Docket Nos. 50-352  
50-353  
Report Number: 1-93-005  
Revision Number: 00  
Event Date: June 6, 1989  
Discovery Date: April 23, 1993  
Report Date: May 21, 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).

Very truly yours,



DCS:cah

cc: T. T. Martin, Administrator, Region I, USNRC  
N. S. Perry, USNRC Senior Resident Inspector, LGS

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## LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Limerick Generating Station, Unit 1 DOCKET NUMBER (2) 0 5 0 0 0 3 5 2 1 OF 0 4 PAGE (3)

TITLE (4) Missed Technical Specifications Surveillance Requirement due to Personnel Error during Procedure Revision.

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	4	2	3	9	3	9	3	0	0	5	Limerick, Unit 2	0 5 0 0 0 3 5 3
0	4	2	3	9	3	9	3	0	0	5		0 5 0 0 0 3 5 3

OPERATING MODE (8)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)									
1		20.402(b)		20.405(c)		X	50.73(a)(2)(ix)		73.71(b)		
		20.405(a)(1)(i)		50.36(e)(1)			50.73(a)(2)(iv)		73.71(a)		
POWER LEVEL (10)	11010	20.405(a)(1)(ii)		50.36(e)(2)			50.73(a)(2)(vii)		OTHER (Specify in Abstract below and in Text, NRC Form 366A)		
		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)(ix)				

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
AREA CODE	
Jim L. Kantner, Regulatory Engineer, Limerick Generating Station	2 1 5 3 2 7 - 1 2 0 0

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)	NO	EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
	X				

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

On April 23, 1993, at 1200 hours, we determined that a Technical Specifications (TS) Surveillance Requirement (SR) had not been satisfied for TS Section 3.8.2.1, "D.C. Sources-Operating," and the associated TS ACTION were not taken in the specified time period. It was determined that Surveillance Test (ST) procedures for Units 1 and 2 had been revised to remove the requirement that battery cell-to-cell and terminal connections be verified tight (by checking the torque values against the vendor required values); the ST procedures then only required a visual inspection and resistance test. Upon discovery of the condition on April 23, 1993, at 1200 hours, the plant entered TS Section 3.0.3 and TS SR 4.0.3. All 2400 affected battery cell-to-cell and terminal connections were verified as found to be tight within the 24 hour extended surveillance period allowed by TS SR 4.0.3, thereby precluding a plant shutdown. The actual and potential consequences of this event were minimal. Upon inspection, all 2400 affected battery cell-to-cell and terminal connections were sufficiently tight to ensure operability of the D.C. Sources. Additionally, visual inspections as well as resistance checks performed during the previously performed ST procedures did not indicate any abnormal conditions. The cause of this event was personnel error in that the requirement to verify tightness of connections was removed from the affected ST procedures. The affected ST procedures will be revised prior to their next performance to include proper direction for verification of tightness for cell-to-cell and terminal connections.

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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Limerick Generating Station, Unit 1	0 5 0 0 0 3 5 2	9 3	— 0 0 5	— 0 0	0 2	OF	0 4

TEXT (If more space is required, use additional NRC Form 368A's) (17)

Unit Conditions Prior to the Event:

Units 1 and 2 were both in Operational Condition 1 (Power Operation) at 100% power at the time of discovery of this condition. There were no systems, structures, or components out of service which contributed to this event.

Description of the Event:

On April 23, 1993, at 1200 hours, during semi-annual reviews of Surveillance Test (ST) procedures, station personnel determined that a Technical Specifications (TS) Surveillance Requirement (SR) for Limerick Generating Station (LGS) Units 1 and 2 had not been satisfied for TS Section 3.8.2.1, "D.C. Sources-Operating," and the associated TS ACTION had not been taken in the specified time period. LGS TS SR 4.8.2.1.C.2, requires 18-month periodic verification that "...cell-to-cell and terminal connections are clean, tight, free of corrosion and coated with anticorrosion material," as part of verification that the D.C. electrical power sources (i.e., the batteries) are OPERABLE. The associated TS ACTION requires restoration of any inoperable division battery to OPERABLE status within 8 hours or be in at least HOT SHUTDOWN within the next 12 hours and in COLD SHUTDOWN within the following 24 hours.

Units 1 and 2 Surveillance Test (ST) procedures ST-2-095-951-1 thru ST-2-095-956-1, and ST-2-095-951-2 thru ST-2-095-955-2 are performed to verify operability of four divisions of safeguard power supply batteries for each unit. These procedures were revised in 1988 to remove the requirement that the battery cell-to-cell and terminal connections be verified tight. Performance of these revised ST procedures did not fully meet the TS SR and the batteries should have been declared inoperable and the TS ACTIONS implemented when the revised ST procedures were performed. This condition has existed since June 6, 1989 on Unit 1 and October 4, 1989 on Unit 2.

Upon discovery of the condition on April 23, 1993, at 1200 hours the plant entered TS Section 3.0.3, and TS SR 4.0.3. All 2400 affected battery cell-to-cell and terminal connections were verified tight within the 24 hour extended surveillance period allowed by TS SR 4.0.3 thereby precluding a plant shutdown. Between June 6, 1989 for Unit 1 and October 4, 1989 for Unit 2, and April 24, 1993 for both Units, the TS ACTIONS for the missed SR were not satisfied within the time specified by TS. Therefore, this incident resulted in operation in a condition prohibited by TS. This report is being submitted in accordance with 10CFR50.73(a)(2)(i)(B).

Analysis of the Event:

The actual and potential consequences of this event were minimal and there was no release of radioactive material to the environment as a result of this event. Upon inspection, all 2400 affected battery cell-to-cell and terminal connections were sufficiently tight such that the batteries would have performed their

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

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TEXT (If more space is required, use additional NRC Form 368A (a) (17))

design function. Had any connections been loose, it is extremely likely that the affect on operability of the division would have been detected through either observation or resistance readings taken as part of the ST procedures.

Additionally, visual inspections performed during the previously performed ST procedures did not indicate any abnormal conditions (i.e., no loose bolts, nuts, or missing pieces). The ST procedures did verify that the resistance readings between cells were consistently less than the TS SR maximum value. The data also showed that nearly all of the terminal resistance readings were also below the administrative limit (preventative maintenance work was then done if resistance readings were over the administrative limit). This long term data indicates that the terminal connections remained tight, therefore, a build up of corrosion was not likely to occur. All of the terminals were previously torqued to the manufacturer's recommended value during original installation and are torqued after any cell replacement in accordance with approved corrective and preventative maintenance procedures. There have been no recorded high resistance readings that would imply loose connections. If resistance readings are high, the existing ST procedures require a torque check of the connections. There have been no temperature variations or high vibrations in the battery rooms that could cause the terminals to loosen. Therefore, we have concluded that the batteries were capable of performing their design function throughout the period of the missed TS SRs.

Cause of the Event:

The cause of this event was personnel error in that the requirement to physically check connections to verify tightness was removed from the affected ST procedures in conflict with TS SR 4.8.2.1.C.2. This TS SR is based on the recommendations provided in Regulatory Guide (RG) 1.129-1978, "Maintenance, Testing and Replacement of Large Lead Storage Batteries for Nuclear Power Plants," which endorses IEEE Standard 450-1975, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Large Lead Storage Batteries for Generating Stations and Substations." The ST procedure revisions were made in response to a concern regarding the potential for damage of battery posts as a result of repetitive torquing of the connections. This requirement was removed based on the judgement that an acceptable cell-to-cell connection resistance value in conjunction with an acceptable visual examination (both required by the ST procedure) would effectively verify connection tightness as required by TS SR 4.8.2.1.C.2. IEEE Standard 450-1975 requires the battery cell-to-cell and terminal connections be verified tight. During the review process associated with the deletion of the tightness verification by torque measurement, the IEEE Standard 450-1975 was not considered. LGS Updated Final Safety Analysis Report (UFSAR) Section 8.3.2.1.1.6 specifies that we conform to RG 1.129-1978 and IEEE Standard 450-1975 with respect to battery maintenance and certain testing, which includes tightness of connections.

Contributing to this error was the fact that the TS SR requires several specific activities in one single requirement (i.e.,... clean, tight, free of corrosion

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Limerick Generating Station, Unit 1	0   5   0   0   0   3   5   2	9   3	—   0   0   5	—   0   0	0   4	OF	0   4

TEXT (If more space is required, use additional NRC Form 365A's) (17)

and coated with an anticorrosion material). As a result, the deletion of one of the activities was not recognized by the mechanism in place at LGS which is designed to relate each TS SR to a specific ST procedure.

Corrective Actions:

The affected ST procedures will be revised prior to their next performance scheduled during upcoming refueling outages for both Units, to include proper direction for verification of tightness for cell-to-cell and terminal connections. Since the time of this event (1989) an upgraded training process for 10CFR50.59 reviews has been implemented, which further clarifies the appropriate review mechanics for procedure revision and plant modifications. A review of all TS SRs which require more than one specific activity in a single requirement will be completed to assure that all TS SRs are addressed appropriately in ST procedures.

Previous Similar Occurrences:

LGS Unit 1 LER 1-91-007 reported a failure to satisfy TS SRs as a result of personnel error deleting the SR from ST procedures. This event also occurred prior to the upgraded training for 10CFR50.59 reviews, therefore, corrective actions for that event would not have prevented this event.