

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Limerick Generating Station Unit 1 DOCKET NUMBER (2) 0 5 0 0 0 3 5 2 PAGE (3) 1 OF 0 6

TITLE (4) Inadvertent Start of an Emergency Diesel Generator During the Installation of Test Equipment Due to a Procedural Deficiency

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 6	0 9	8 8	8 8	0 2 2	0 0	0 7	1 1	8 8			0 5 0 0 0
											0 5 0 0 0

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11)

OPERATING MODE (9) <u>1</u>	20.402(b)	20.406(c)	<input checked="" type="checkbox"/>	80.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10) <u>0 1 8 1 5</u>	20.406(a)(1)(i)	80.36(c)(1)	<input type="checkbox"/>	80.73(a)(2)(v)	73.71(c)
	20.406(a)(1)(ii)	80.36(c)(2)	<input type="checkbox"/>	80.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 365A)
	20.406(a)(1)(iii)	80.73(a)(2)(i)	<input type="checkbox"/>	80.73(a)(2)(viii)(A)	
	20.406(a)(1)(iv)	80.73(a)(2)(ii)	<input type="checkbox"/>	80.73(a)(2)(viii)(B)	
	20.406(a)(1)(v)	80.73(a)(2)(iii)	<input type="checkbox"/>	80.73(a)(2)(ix)	

LICENSEE CONTACT FOR THIS LER (12)

NAME Charles A. Mengers, Senior Engineer, Licensing Section TELEPHONE NUMBER 2 1 5 8 4 1 - 5 1 8 4

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPROS

SUPPLEMENTAL REPORT EXPECTED (14) YES (If yes, complete EXPECTED SUBMISSION DATE) NO

EXPECTED SUBMISSION DATE (15) MONTH DAY YEAR

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

Abstract:

An inadvertent start of the D-13 Emergency Diesel Generator, an Engineered Safety Feature, occurred during the preparation for a special test. The cause of this event was a procedural deficiency in Special Procedure SP-ST-012, "D13 Diesel Generator Slow Start Testing" that called for connecting electrical test equipment to a contact with the circuit energized. In accordance with the procedure, a terminal block screw was being loosened in preparation for connecting test equipment. Loosening of the terminal screw caused voltages to realign through the circuit. When the negative leg was restored, the voltage drop created caused a voltage spike which caused two relays to energize and seal in. The D13 Diesel Generator started as designed when its test-start logic was energized, however, a third relay failed during the test making it impossible to load the diesel. The Diesel Generator was tripped and declared inoperable. It was declared operable June 10, 1988 at 08:40 hours after the failed relay was replaced. The Diesel Generator was inoperable for approximately 23 hours. Three diesel generators remained available during the event. This is adequate to satisfy minimum load demand under loss of offsite power conditions. The Special Procedure was revised to require de-energizing the test circuit. The event was discussed with the special test procedure writers.

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PDR ADOCK 05000352
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TEXT (If more space is required, use additional NRC Form 366A's) (17)

Unit Conditions Prior to the Event:

Operating Mode - 1 (Power Operation)

Reactor Power - 85%

Description of the Event:

On June 9, 1988 at 1145 hours an inadvertent start of the D-13 Emergency Diesel Generator occurred during the installation of electrical test equipment to DC circuits for a special test. The cause of this event was a procedural deficiency that inadvertently allowed a start signal to be generated.

During the performance of Special Procedure SP-ST-012, "D13 Diesel Generator Slow Start Testing", a PECO technician was preparing to connect test equipment in accordance with the procedure. After the terminal block screw was loosened, the D13 diesel generator started.

During the loosening of the screw on terminal B31-06, the negative leg was lost momentarily, and positive leg voltages were realigned through the circuit. When the negative leg was restored, a voltage drop was developed across the TSR (test start relay) and TSRX (test start auxiliary relay) relays (see Attachment 1). This potential caused both a voltage spike and the relays to energize. The TSRX relay has a seal-in contact that kept the start circuit energized. The D13 Diesel Generator started as designed when its test-start logic was energized. The Diesel Generator was tripped by placing it in "pull-to-lock" and was declared inoperable.

During the performance of the special test procedure, the TR relay failed. The normal backup to the TR relay - the coolant pressure switch (CPS) - had been disabled as part of the test. During the inadvertent start, the failure of the TR relay coincident with the disabled CPS made it impossible to load the diesel because this configuration caused the HSR (high speed relay) and LSR (low speed relay) relays not to function as designed. (See Attachment 2).

The TR relay was replaced, and the Diesel Generator was declared operable June 10, 1988 at 0840 hours, after a successful test run. The Diesel Generator was inoperable for approximately 23 hours.

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

Consequences of the Event:

The consequences of the event were the unnecessary start and inoperability of the D13 Diesel Generator for approximately 23 hours.

In the event of a loss of offsite power, three other Diesel Generators would have been available. As the FSAR states: "the operation of 3 out of 4 channels of the standby power system (diesels) is adequate to satisfy minimum Class 1E load demand caused by a LOCA or loss of offsite power sources." Therefore, the consequences of this event were minimal.

Cause of the Event:

The cause of this event was a deficiency in Special Procedure SP-ST-012, "D13 Diesel Generator Slow Start Testing". The procedure instructed the technician to loosen a terminal screw in order to connect electrical test equipment to contact B31-06 with the circuit energized. Disturbance of the connection caused the energization of the test-start relays and resulted in the D13 diesel start.

Corrective Actions:

Immediately following the start of the D13 diesel generator, it was placed in a tripped condition and declared inoperable. Further investigation revealed the failed TR relay; which was replaced.

Actions Taken to Prevent Recurrence:

Special Procedure SP-ST-012, "D13 Diesel Generator Slow Start Testing" was revised to include instructions to render the diesel inoperable during testing and remove control fuses to de-energize the test circuit prior to connecting test equipment. The test was then successfully run. There are no other slow start procedures for the other diesels.

The event was discussed in detail with the engineers who are responsible for writing special procedures. Supervisory

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

personnel emphasized that when writing special test procedures that require connecting test equipment to energized circuits, a thorough review of test points must be made, so as to preclude the occurrence of a similar event.

EIIS Codes:

- EK - Emergency Onsite Power Supply
- RLY - Relay
- FU - Fuse
- DG - Diesel Generator

Previous Similar Occurrences:

None

Tracking Codes: D2 - Inadequate Procedure did not cover situation

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)

DOCKET NUMBER (2)

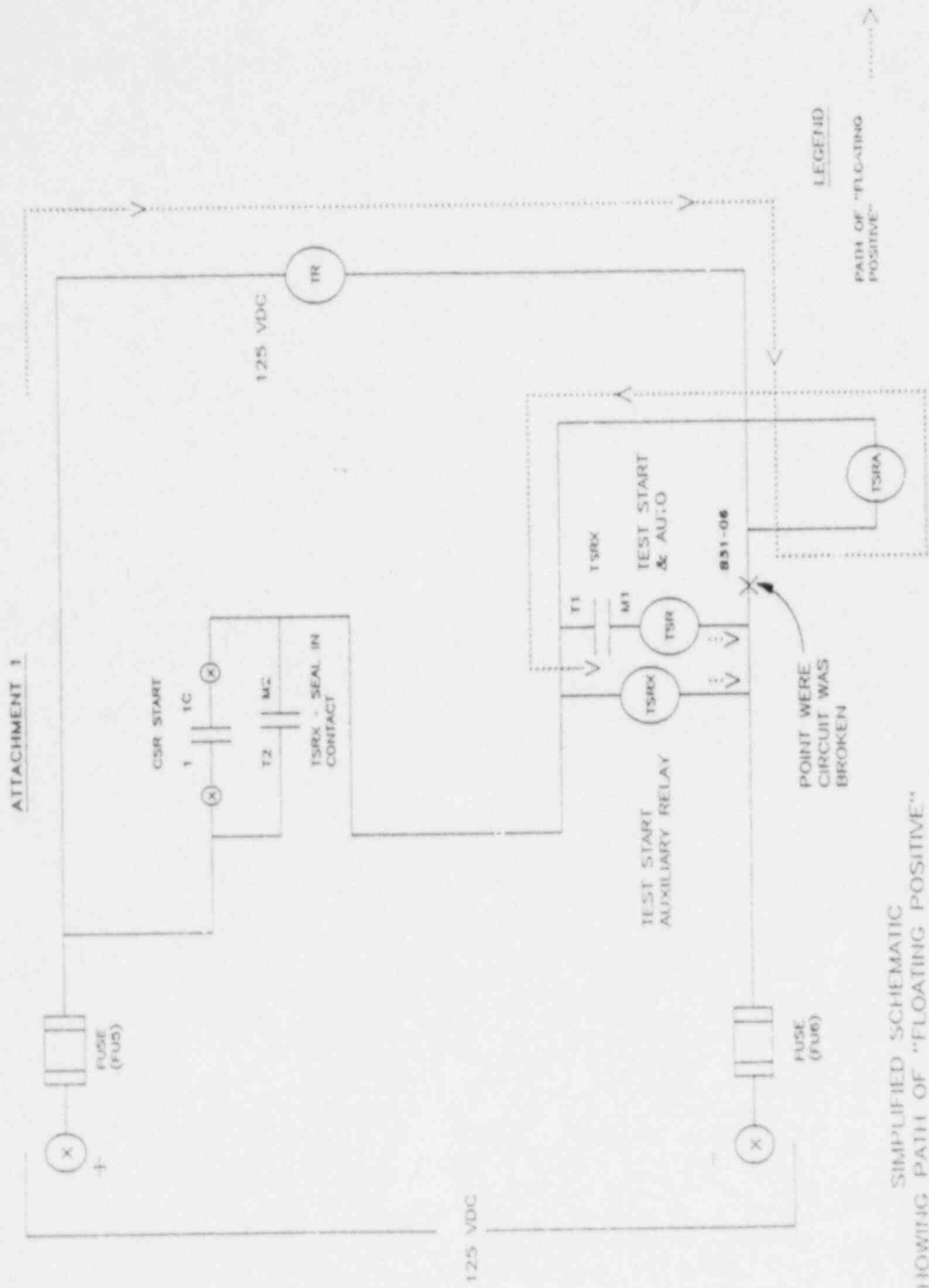
LER NUMBER (6)

PAGE (3)

Limerick Generating Station Unit 1

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TEXT (if more space is required, use additional NRC Form 364A (1-77))



ATTACHMENT 1

LEGEND
PATH OF "FLOATING POSITIVE"

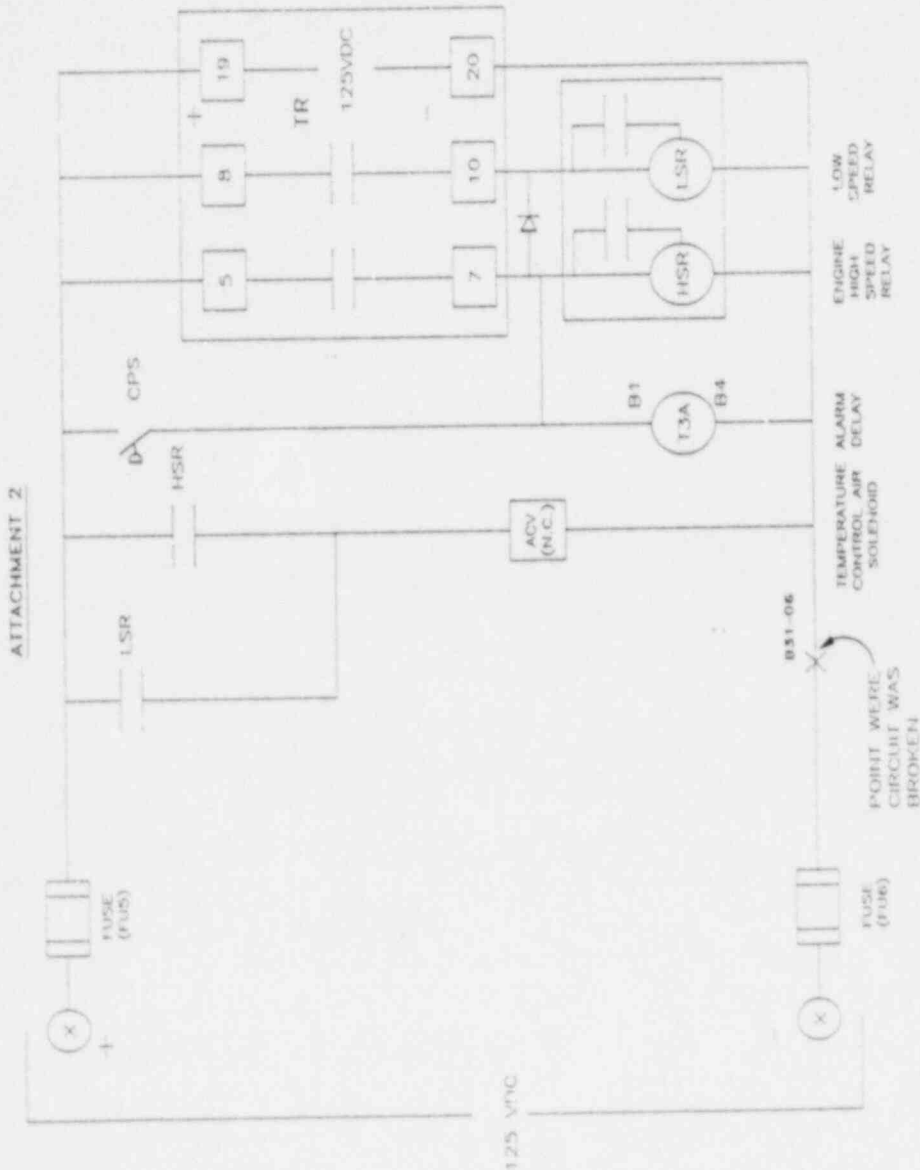
POINT WHERE CIRCUIT WAS BROKEN

SIMPLIFIED SCHEMATIC
SHOWING PATH OF "FLOATING POSITIVE"
FOR LER 88-022

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		88	022	00	06	OF	06

TEXT (if more space is required, use additional NRC Form 364A) (17)



SIMPLIFIED SCHEMATIC
SHOWING FAILED IR RELAY
FOR LER 88-022

PHILADELPHIA ELECTRIC COMPANY

1301 MARKET STREET

P.O. BOX 8699

PHILADELPHIA, PA 19101

(215) 841-5020

July 11, 1988

E. P. FOGARTY
MANAGER
NUCLEAR SUPPORT DIVISION

Docket No. 50-352

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

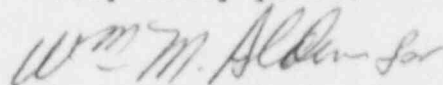
SUBJECT: Licensee Event Report
Limerick Generating Station - Unit 1

This LER reports an inadvertent start of an Emergency Diesel Generator (an Engineered Safety Feature) during the installation of test equipment due to a procedural deficiency.

Reference: Docket No. 50-352
Report Number: 88-022
Revision Number: 00
Event Date: June 9, 1988
Report Date: July 11, 1988
Facility: Limerick Generating Station
P.O. Box A, Sanatoga, PA 19464

This LER is being submitted pursuant to the requirements of 10 CFR 50.73(a)(2)(iv).

Very truly yours,



E. P. Fogarty
Manager
Nuclear Support Division

cc: W. T. Russell, Administrator, Region I, USNRC
T. J. Kenny, USNRC Senior Resident Inspector
INPO Records Center

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