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PECO ENERGY

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10CFR50.73

May 19, 1994
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 reports the inadvertent automatic closure of several Primary Containment Isolation Valves, Engineered Safety Feature actuations, due to a loss of power to the isolation logic circuit. The fuse blew due to a random failure of a trip unit circuit card component.

Reference:	Docket No. 50-353
Report Number:	2-94-004
Revision Number:	00
Event Date:	April 22, 1994
Report Date:	May 19, 1994
Facility:	Limerick Generating Station P.O. Box 2300, Sanatoga, PA 19464-2300

This LER is being submitted pursuant to the requirements of 10CFR50.73(a)(2)(iv).

Very truly yours,

DBN:cah

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

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1 1

NRC Form 366
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/88

LICENSEE EVENT REPORT (LER)

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

TITLE (4) Inadvertent automatic closure of Primary Containment Isolation Valves, ESF Actuations, due to a failed trip unit card that caused the control circuit fuse to blow.

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 5 0 0 0
0 4	2 2	9 4	9 4	—	0 0 4	— 0 0	0 5	1 9	9 4		0 5 0 0 0

OPERATING MODE (9)	1
POWER LEVEL (10)	1 0 0

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

	20.402(b)		20.405(c)	X	50.73(a)(2)(iv)
	20.405(a)(1)(i)		50.36(c)(1)		50.73(a)(2)(v)
	20.405(a)(1)(ii)		50.36(c)(2)		50.73(a)(2)(vii)
	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)(x)

	73.71(b)
	73.71(c)
	OTHER (Specify in Abstract below and in Text, NRC Form 366A)

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
	AREA CODE
J. L. Kantner, Manager - Experience Assessment, LGS	6 1 0 — 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 NPRDS		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	
X	J M	R I B D	R 3 6 9	Y							

SUPPLEMENTAL REPORT EXPECTED (14)

		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
	YES (If yes, complete EXPECTED SUBMISSION DATE)	X NO			

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

On April 22, 1994, Main Control Room operators received annunciation of a Unit 2 half scram and a Division 1 Main Steam Isolation Valve half isolation signal. Additionally, three (3) Primary Containment Isolation Valves (PCIVs) inadvertently closed constituting an Engineered Safety Feature actuation. The three solenoid valve PCIVs are the sample valves for one of the Unit 2 Primary Containment hydrogen/oxygen analyzers. Personnel identified that a logic circuit fuse had blown resulting in the PCIV closures. Troubleshooting identified a bad trip unit circuit card in the logic circuitry associated with the fuse. The circuit card was replaced at 1721 hours, the isolation signal was reset, and the annunciators were cleared. The analyzer was then returned to normal operation. The redundant Primary Containment hydrogen/oxygen analyzer was unaffected by this event and all systems and components responded as designed following the failure of the trip unit circuit card. An electronic component failed on the trip unit circuit card causing a short circuit to ground resulting in the blown fuse. This failure has been evaluated to be a random failure with no pattern of recurrence.

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
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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 1 (Power Operation) operating at 100% power. There were no structures, systems, or components out of service that contributed to this event.

Description of the Event:

On April 22, 1994, at 0345 hours, Main Control Room operators received annunciation of a Unit 2 half scram and a Division 1 Main Steam Isolation Valve half isolation signal. Additionally, three (3) Primary Containment Isolation Valves (PCIV; EIIS:ISV) inadvertently closed constituting an Engineered Safety Feature (ESF) actuation. The three solenoid valve (SV; EIIS:ASV) PCIVs were SV-057-233, 283, and 291 which are the sample valves for one of the Unit 2 Primary Containment hydrogen/oxygen analyzers (i.e., 20S206; EIIS:IK). The analyzer automatically switched to the standby mode on the loss of sample flow due to the closure of the sample valves and no immediate operator actions were needed for this event.

At 0410 hours, Operations and Instrumentation and Controls (I&C) personnel identified that a logic circuit fuse (EIIS:FU) had blown. After the blown fuse was replaced, the new fuse immediately blew also. Troubleshooting by I&C personnel identified a bad trip unit circuit card in (EIIS:RIBD) the logic circuitry associated with the fuse. The circuit card was for trip unit Pressure Indicating Switch (PIS) PIS-42-2N650A and was replaced at 1721 hours, the isolation signal was reset, and the annunciators were cleared. The analyzer was then returned to normal operation.

A four (4) hour notification was made to the NRC at 0539 hours on April 22, 1994, in accordance with 10CFR50.72(b)(2)(ii) since this event involved an ESF actuation. This report is being submitted in accordance with the requirements of 10CFR50.73(a)(2)(iv).

Analysis of the Event

The actual and potential consequences of this event are minimal and there was no release of radioactive material to the environment. All systems and components responded as designed following the failure of the circuit card. The redundant Primary Containment hydrogen/oxygen analyzer was unaffected by this event.

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

Cause of the Event:

The cause of this event was equipment failure due to a malfunction of an electronic component on the trip unit circuit card. The failed component caused a short circuit to ground that resulted in the blown fuse. The loss of power to the logic circuitry caused the SV PCIVs to automatically close. This type of equipment failure has occurred infrequently in the past 10 years at Limerick Generating Station and is considered to be a random failure. A review of the Nuclear Plant Reliability Data System (NPRDS) supports this conclusion.

Corrective Actions:

Since this equipment malfunction is a random failure, no specific corrective actions are deemed necessary.

Previous Similar Occurrences:

The previous similar failures were random failures and no pattern of recurring events exists.