Robert W. Boyce
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PECO NUCLEAR
A Unit of PECO Energy

PECO Energy Company
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10CFR 50.73

June 24, 1996
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 a partial Group VIC Primary Containment and Reactor Vessel Isolation Control System actuation, an Engineered Safety Feature, resulting from a failure of the 'B' Reactor Enclosure Exhaust Radiation Monitor caused by a burnt relay circuit board. A failure analysis was unable to conclude the exact cause of the burnt relay circuit board.

Reference:	Docket No. 50-353
Report Number:	2-96-005
Revision Number:	00
Event Date:	May 27, 1996
Report Date:	June 24, 1996
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,

DMS:cah

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

IE22

NRC FORM 366 (5-92) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104
EXPIRES 5/31/95

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.

LICENSEE EVENT REPORT (LER)

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

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Limerick Generating Station, Unit 2	05000 353	1 OF 4

TITLE (4) PCRVICS Actuation Resulting from a Failure of a Reactor Enclosure Exhaust Radiation Monitor Caused by a Burnt Relay Circuit Board.

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 NAME	DOCKET NUMBER
										05000
05	27	96	96	-- 005 --	0	06	24	96	FACILITY NAME	DOCKET NUMBER 05000

OPERATING MODE (9)	1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)					
		20.402(b)	20.405(c)	X	50.73(a)(2)(iv)		73.71(b)
POWER LEVEL (10)	100	20.405(a)(1)(i)	50.36(c)(1)		50.73(a)(2)(v)		73.71(c)
		20.405(a)(1)(ii)	50.36(c)(2)		50.73(a)(2)(vii)		OTHER
		20.405(a)(1)(iii)	50.73(a)(2)(i)		50.73(a)(2)(viii)(A)		(Specify in Abstract below and in Text, NRC Form 366A)
		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)		

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
J. L. Kantner - Manager, Experience Assessment, LGS	(610) 718-3400

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
BV	026	IBISSW	GE	YES						

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 15 single-spaced typewritten lines) (16)

On 05/27/96, a partial Group VIC [Primary Containment (PC) Sampling/Recombiner] Primary Containment and Reactor Vessel Isolation Control System (PCRVICS) actuation, an Engineered Safety Feature, occurred. As a result, the PC Drywell and Suppression Pool Hydrogen/Oxygen Combustible Gas Analyzers (CGA) for monitoring the Drywell and Suppression Pool atmospheres were partially isolated; however, both CGAs remained operable. Also, the PC Radiation Leak Detector was isolated and unable to monitor; however, Chemistry grab samples during the period indicated no abnormal radiation levels. Troubleshooting revealed that the PCRVICS actuation signal was caused by the failure of the 'B' Reactor Enclosure Exhaust Radiation Monitor (RM), RISH-026-2K609B. On 5/31/96, repairs to the RM were completed, the RM tested satisfactorily, and the PCRVICS isolations were reset. The actual consequences of this event were minimal. Troubleshooting of the RM identified burnt circuit board traces on the relay board. The burnt circuit board traces are associated with relay K-2, which initiates the PCRVICS actuation when deenergized. A failure analysis was completed and the exact cause of the burnt circuit board traces could not be determined. A review is being performed to determine if any further corrective actions are required.

Unit Conditions Prior to the Event:

Unit 2 was in Operational Condition 1 (Power Operation) operating at 100% power level. There were no structures, systems, or components out of service which contributed to this event.

Description of the Event:

On May 27, 1996, at 1031 hours, a partial Group VIC (Primary Containment Sampling/Recombiner) Primary Containment and Reactor Vessel Isolation Control System (PCRVICS) actuation (EIIS:JM), an Engineered Safety Feature (ESF), occurred. The following "normally open" PCRVICS valves automatically closed as a result of the actuation:

- The Primary Containment (PC) Drywell and Suppression Pool Hydrogen/Oxygen (H2/O2) Combustible Gas Analyzers (CGA) (EIIS:BB) Sample Line Isolation Valves: SV-57-232, 234, 250, and 281. Isolation of these valves did not affect the operability of the CGAs since sufficient sample valves remained open to monitor the Drywell and Suppression Pool atmospheres.

- The PC Drywell Radiation Leak Detector, RISH-026-2K600, Sample Line Isolation Valves: SV-026-290B and 290D. This caused the PC Radiation Leak Detector to be isolated and unable to monitor the Drywell and Suppression Pool atmospheres.

Troubleshooting revealed that the PCRVICS actuation signal was caused by the failure of the 'B' Reactor Enclosure Exhaust Radiation Monitor, RISH-026-2K609B. The radiation monitor, and the PC Radiation Leak Detector were declared inoperable and their appropriate Technical Specifications (TS) Actions were taken. The affected PCRVICS isolation valves remained in the closed position in accordance with TS until repairs to the radiation monitor could be completed. Chemistry personnel commenced obtaining 24 hour grab samples per TS for the inoperable PC Radiation Leak Detector. On May 31, 1996, repairs to RISH-026-2K609B were completed and the unit was subsequently satisfactorily tested. By 1253 hours on May 31, 1996, the affected Group VIC PCRVICS isolations were reset in accordance with General Plant (GP) Procedure, GP-8, "Primary and Secondary Containment Isolation Verification and Reset."

A four hour notification was made to the NRC at 1426 hours on May 27, 1996, in accordance with the requirements of 10CFR50.72(b)(2)(ii) since this event resulted in the automatic actuation of an ESF. Accordingly, this report is being submitted in accordance with the requirements of 10CFR50.73(a)(2)(iv).

Analysis of the Event:

The actual consequences of this event were minimal. There was no release of radioactive material to the environment as a result of this event. The partial Group VIC PCRVICS actuations initiated as designed. Following completion of repairs to radiation monitor, RISH-026-2K609B, Operations personnel reset the affected Group VIC PCRVICS isolations without incident. Had Operations personnel not been able to reset the isolation signal, manual restoration of the isolation valves could have been completed in accordance with Transient Response Implementation Plan (TRIP) procedure T-102, "Primary Containment Control," which directs, when required, the actions to bypass the isolation signal and reopen the isolation valves.

As a result of the partial Group VIC PCRVICS actuations, the PC H2/O2 CGAs for monitoring the Drywell and Suppression Pool atmospheres were partially isolated; however, both CGAs remained operable. No abnormal H2/O2 concentrations were identified during this event. Also, the PC Radiation Leak Detector was isolated and unable to monitor; however, Chemistry grab samples during the period in question indicated no abnormal radiation levels.

Cause of the Event:

The partial Group VIC PCRVICS isolations were initiated from a failure of the 'B' Reactor Enclosure Exhaust Radiation Monitor, RISH-026-2K609B. Further troubleshooting of the RISH unit (GE part No. 129B2802G091) identified burnt circuit board traces on the relay board (GE part no. 174B9274PCPI, rev.0). The burnt circuit board trace is associated with the relay K-2 contacts, which initiate the PCRVICS actuation when deenergized. A failure analysis was performed by an offsite corporate testing facility. The root cause of the circuit board failure could not be determined. The results of the failure analysis are as follows:

1. All relay parameters tested were identified to be normal. The relays were opened for inspection and no signs of overheating, arcing or cracking were observed.

2. The following potential causes of the circuit board failure were identified:

   a. A defective or undersized foil trace,
   b. An overcurrent or short circuit external to the board which caused the foil trace to burn open, or
   c. The presence of foreign conductive material, such as a strand of wire, was lodged between the relay socket and the board.

Corrective Actions:

1. On May 31, 1996, repairs to RISH-026-2K609B were completed, and the radiation monitor was satisfactorily tested and returned to operation.

2. A review is being performed, based on the results of the failure analysis, to determine if any further actions need to be implemented (e.g., increased preventative maintenance testing of the circuit board or radiation monitor). This review is expected to be completed by July 17, 1996.

Previous Similar Occurrences:

None