

PHILADELPHIA ELECTRIC COMPANY

LIMERICK GENERATING STATION

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J. DOERING, JR.
PLANT MANAGER
LIMERICK GENERATING STATION

February 14, 1992
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

The LER reports automatic actuations of the Unit 2 Primary Containment and Reactor Vessel Isolation Control System, an Engineered Safety Feature due to an unexpected failure of a Geiger Mueller tube.

Reference:	Docket No. 50-353
Report Number:	2-92-002
Revision Number:	00
Event Date:	January 19, 1992
Report Date:	February 14, 1992
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)(iv).

Very truly yours,



DCS: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)										DOCKET NUMBER (2)										PAGE (3)																																
Limerick Generating Station, Unit 2										0 5 0 0 0 3 5 3										1 OF 0 3																																
TITLE (4) Refuel Floor isolation due to failed Geiger Mueller tube in radiation detector.																																																				
EVENT DATE (5)									LER NUMBER (6)									REPORT DATE (7)									OTHER FACILITIES INVOLVED (8)																									
MONTH			DAY			YEAR			YEAR			SEQUENTIAL NUMBER			SUBORDINATE NUMBER			MONTH			DAY			YEAR			FACILITY NAMES													DOCKET NUMBER (3)												
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LICENSEE CONTACT FOR THIS LER (12)																																																				
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G. J. Madsen, Regulatory Engineer, Limerick Generating Station															AREA CODE																																					
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ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-spaced typewritten lines) (16)

On January 19, 1992, a momentary spike occurred on the 'D' channel of the Unit 2 Refueling Floor Exhaust Duct Radiation Monitor. This momentary spike resulted in automatic actuations of the Primary Containment and the Reactor Vessel Isolation Control System (PCRVICS), an Engineered Safety Feature. The actuation closed isolation valves to one of the Unit 2 Primary Containment H2/O2 Combustible Gas Analyzers (CGA) and the 2B Containment Hydrogen Recombiner. The shift Instrumentation and Controls (I&C) technicians cleaned the connector on the detector cable. Following the connector cleaning, the radiation monitor was returned to service with no abnormal indications. The isolations were reset in accordance with plant procedures and the systems were restored expeditiously by operators, preventing any adverse impacts on plant systems. The systems responded as designed and the redundant CGA and 2A Containment Hydrogen Recombiner remained operable. The cause of this event was unexpected equipment failure. The 'D' channel Geiger-Mueller (GM) tube detector experienced a spike due to some form of degradation symptomatic of end of life of the GM tube. This is the first instance of this type of failure at Limerick. The radiation sensor/converter (which includes the GM tube) was replaced on January 31, 1992. Further evaluation of the failure history of GM tubes will be performed to determine whether there is an unusual failure rate of GM tubes at Limerick.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES 8/31/85

FACILITY NAME (1) Limerick Generating Station, Unit 2	DOCKET NUMBER (2) 0 5 0 6 0 3 5 3	LER NUMBER (5)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
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TEXT (if more space is required, use additional NRC Form 366A 3/17)

Unit Conditions Prior to the Event:

Unit 2 was in Operational Condition 1 (Power Operation) at 100% power level.

There were no systems or structures out of service which contributed to this event.

Description of the Event:

On January 19, 1992, at 1542 hours, a momentary spike occurred on the 'D' channel of the Unit 2 Refueling Floor Exhaust Duct Radiation Monitor (E11S:MON) (RE-026-2N011D). This momentary spike resulted in automatic actuations of the Primary Containment and the Reactor Vessel Isolation Control System (PCRVICES, E11S:JM), an Engineered Safety Feature (ESF), causing isolations of various Unit 2 Primary Containment Sampling and Recombiner Lines. Specifically, the "normally open" Unit 2 Primary Containment H2/O2 Combustible Gas Analyzer 20S205 (CGA, E11S:BB) sample line isolation solenoid valves HV-241, 242, 243, 244, 245, and 259, closed. This isolation caused CGA 20S205 which monitors the drywell atmosphere, to be inoperable. The "normally open" Steam Line drain block valve, HV-41-243, and the Recirculation Pump seal purge block valve, HV-46-228, closed and the "normally closed" Primary Containment purging nitrogen supply vent valve, HV-57-267, opened. The "normally closed" Containment Hydrogen Recombiner supply and return valves, HV-57-216, 263, 264, 269 and FV-C-57-D0-201 B, and the Primary Containment nitrogen purge make-up supply valve, HV-57-216, received a signal to close and remained closed. The shift Instrumentation and Controls (I&C) technicians cleaned the connector on the detector cable utilizing a Troubleshooting Control Form (TCF). Following the connector cleaning, the radiation monitor was returned to service and no abnormal indications were observed.

Operations personnel reset the isolations at 1838 hours following the completion of the I&C troubleshooting. I&C technicians continued their investigation through the performance of Surveillance Test (ST) procedure ST-2-026-625-2, "NSSSS - Refuel Floor Area Ventilation Exhaust Duct Radiation - High, Division II B, Channel D Functional Test." No abnormalities were identified.

A four hour notification was made to the NRC at 1840 hours on January 19, 1992, in accordance with the requirements of 10 CFR 50.72(b)(2)(ii), since this event resulted in automatic ESF actuations. This report is being submitted in accordance with the requirements of 10 CFR 50.73(a)(2)(iv).

Analysis of the Event:

All systems responded as designed during the isolation and there was no actual high radiation condition. There was no release of radioactive material to the environment as a result of this event. The isolations were reset in accordance with plant procedures and the systems were restored expeditiously by operators, preventing any adverse impacts on plant systems.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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TEXT (If more space is required, use additional NRC Form 365A 3/ (13))

Immediate and follow-up actions for this type of event are provided in procedure GP-8, "Primary and Secondary Containment Isolation Verification and Reset." Licensed MCR operators receive requalification training to review and practice responses to simulated plant transients of this type. This training reinforces immediate operator actions, minimizing the time that systems are isolated, and reducing the impact on the plant. Therefore, as a result of this adequate procedural guidance, training, and prompt operator actions, the consequences of this type of event are minimized.

The Refueling Floor Exhaust Duct Radiation Monitors are not required by Technical Specifications to be operable when the unit is in Operational Condition 1, because there are no core alterations, fuel movement or other activities which could result in a true high radiation condition. If a true high radiation condition had existed, the three other detector channels (A, B, and C) were available to complete isolation logic for Primary and Secondary Containments. Additionally, the redundant CGA 205206 and the 2A Containment Hydrogen Recombiner were unaffected during this event and remained operable.

Cause of the Event:

The cause of this event was unexpected equipment failure. The 'D' channel Geiger-Mueller (GM) tube detector experienced a spike due to some form of degradation of the GM tube. In most cases, the degradation of a GM tube occurs gradually, allowing time to identify the condition by erratic indication at the Main Control Room (MCR) recorder. Upon erratic indication, MCR operators notify I&C personnel to troubleshoot, repair, and/or replace the instrumentation including the sensor/converter. However, in this event, the detector momentarily spiked upscale and caused the isolations. This is the first instance of this type of failure at Limerick and the failure rate is considered to be acceptable. A search of the NFRDS database identified several similar failures that were attributed to end of life degradation of the GM tube. Therefore we conclude that this failure was symptomatic of end of life degradation.

Corrective Actions:

The radiation sensor/converter (which includes the GM tube) was replaced on January 31, 1992. Further evaluation of the failure history of GM tubes will be performed to determine whether there is an unusual failure rate of GM tubes at Limerick. Surveillance testing and monitoring of the radiation detectors with GM tubes are utilized to identify degradations of the instruments.

Previous Similar Occurrences:

None

Tracking Codes: B17 - Deficient Equipment