



PECO ENERGY

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10CFR 50.73

January 30, 1995
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 actuations of the Unit 1 and Unit 2 Primary Containment and Reactor Vessel Isolation Control Systems (PCRVICS), Engineered Safety Features (ESF), and other ESFs, as a result of an end of life failure of a PCRVICS fuse coincident with the performance of a surveillance test procedure.

Reference:	Docket Nos. 50-352 50-353
Report Number:	2-95-001
Revision Number:	00
Event Date:	January 2, 1995
Report Date:	January 30, 1995
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

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LICENSEE EVENT REPORT (LER)

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

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.

FACILITY NAME (1) Limerick Generating Station, Unit 2 DOCKET NUMBER (2) 05000 353 PAGE (3) 1 OF 5

TITLE (4) Actuations of the Unit 1 and Unit 2 PCRVICS (i.e., ESF), and other ESFs, as a result of an end of life fuse failure coincident with the performance of an ST procedure

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
01	02	95	95	-- 001 --	00	01	30	95	LGS, Unit 1	05000 352
									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)							
POWER LEVEL (10)	63%	20.402(b)		20.405(c)	X	50.73(a)(2)(iv)		73.71(b)	
		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 J. L. Kantner, Manager - Experience Assessment, LGS TELEPHONE NUMBER (Include Area Code) (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

SUPPLEMENTAL REPORT EXPECTED (14)

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

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On 01/02/95, during performance of a surveillance test (ST) procedure, an Instrumentation and Controls technician switched a radiation monitor to 'operate' which coincidentally caused fuse B21-F101A to blow. This loss of power caused by the blown fuse resulted in automatic actuations of the Unit 1 and Unit 2 Primary Containment and Reactor Vessel Isolation Control Systems (PCRVICS), Engineered Safety Features (ESF), and other ESFs. The fuse was replaced and all isolations were reset within 44 minutes. The actual consequences of this event were minimal. All affected systems responded as designed and there was no release of radioactive material to the environment as a result of this event. The cause of the isolations was concluded to be an end of life fuse failure coincident with the performance of an ST procedure. The PCRVICS circuitry was inspected and the ST procedure was performed again without incident. No additional causes other than random equipment failure were identified, and therefore, no additional actions are planned.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)
Limerick Generating Station, Unit 2	05000 353	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	02 OF 05
		95	-- 001 --	00	

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

Unit Conditions Prior to the Event:

Unit 1 was in Operational Condition (OPCON) 1 (Power Operation) at 63% power level. Ascension to 100% power level was being performed at the time of this event. The 'A' train of the Standby Gas Treatment System (SGTS) was in service to inert the Unit 1 drywell with nitrogen. A current limiter was installed on the 'A' SGTS flow dampers to control nitrogen flow into the Unit 1 drywell. The normal Unit 1 Reactor Enclosure ventilation system was in service prior to and during this event.

Unit 2 was in OPCON 1 at 62% power level in end-of-cycle coastdown. There were no Unit 2 structures, systems, or components out of service that contributed to this event.

Description of the Event:

On January 2, 1995, Instrumentation and Controls (I&C) technicians were performing Unit 2 Surveillance Test (ST) procedure ST-2-026-618-2, "NSSSS - Reactor Enclosure Ventilation Exhaust Duct Radiation - High; Division IA, Channel A Functional Test." At 1833 hours, during performance of this ST procedure, an I&C technician switched the radiation monitor (i.e., RISH-026-2K609A) to 'operate' which coincidentally resulted in a blown fuse (EIIS:FU), B21-F101A, in the Auxiliary Equipment Room (AER) panel 10C622, "Inboard Valve Relays NSSSS Div 1."

The loss of power caused by the blown fuse resulted in automatic actuations of the Unit 2 Primary Containment and Reactor Vessel Isolation Control System (PCRVICS) (EIIS:JM), an Engineered Safety Feature (ESF), closing the outboard primary containment isolation valves in the following systems;

- Primary Containment Instrument Gas (PCIG) Process Lines (EIIS:LK), and
- Primary Containment Nitrogen Inerting Block Valves.

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

The outboard isolation valves in the following Unit 2 PCRVICS subsystems received a signal to close, however, no valve movement occurred since the associated valves were already closed due to plant conditions prior to the event;

- Primary Containment Purge Supply and Exhaust, and
- Primary Containment Exhaust to Reactor Enclosure Equipment Compartment Exhaust (REECE).

Additionally, the following Unit 2 ESF actuations occurred;

- Reactor Enclosure Ventilation (EIIS:VA) System isolated,
- 'A' train of the Reactor Enclosure Recirculation System (RERS) (EIIS:VA) initiated, and
- 'A' train of the SGTS (EIIS:BH) received an initiation signal, and reconfigured to drawdown the Unit 2 Reactor Enclosure. As a result of the flow limiter installed on the 'A' SGTS, the system was unable to drawdown and maintain the Unit 2 Reactor Enclosure Secondary Containment at the required differential pressure of negative 0.25 inches of water gauge during the time period of this event. However, the requirements of Technical Specifications (TS) Section 3.6.5.1.1 were not violated.

Finally, as a result of the loss of power, the following Unit 1 PCRVICS systems and subsystems received a signal to isolate;

- Primary Containment Nitrogen Inerting Block Valves, and
- Primary Containment Purge Supply and Exhaust Valves.

Isolation of these valves resulted in the termination of the activities being performed to inert the Unit 1 drywell. This delay did not violate the requirements of TS Section 3.6.6.3.

At 1833 hours on January 2, 1995, licensed Main Control Room (MCR) operators observed annunciator indication in the MCR for isolations of the above listed PCRVICS valves. Additionally, the I&C technicians immediately stopped performance of the ST procedure upon receipt of the unexpected annunciation.

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MCR operators restored the PCIG system using PCRVICS isolation bypass switches in accordance with General Plant (GP) procedure GP-8, "Primary and Secondary Containment Isolation Verification and Reset," and the blown fuse was then replaced. MCR operators then reset and restored the remaining isolations by 1917 hours on January 2, 1995, using Procedure GP-8. All PCRVICS isolations previously mentioned above were reset, and normal system operations were restored within 44 minutes.

A four (4) hour notification was made to the NRC on January 2, 1995, at 2117 hours in accordance with the requirements of 10CFR 50.72(b)(2)(ii), since this event resulted in automatic actuations of ESFs. Accordingly, this report is being submitted in accordance with the requirements of 10CFR50.73(a)(2)(iv).

Analysis of the Event:

The consequences of this event were minimal. There was no release of radioactive material to the environment as a result of this event. The Unit 1 and Unit 2 PCRVICS isolation valves and system actuations functioned as designed under the loss of the system control logic power condition created by the blown power supply fuse. The Unit 1 and Unit 2 isolations were bypassed or reset. The affected systems were restored to their pre-transient conditions by operators in accordance with plant procedures within 44 minutes, thereby preventing any adverse impact on plant systems.

Immediate and follow-up actions to this type of event (i.e., loss of logic power) are provided in procedure GP-8. Licensed operators receive requalification training to review and perform operator responses to transients of this type. This training provides practice on immediate operator actions and minimizes the length of time certain systems are isolated reducing the adverse impact on the plant. Therefore, as a result of adequate procedural guidance, training, and prompt operator actions, the event duration was limited and no adverse plant conditions developed.

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Additionally, if the fault introduced during the performance of the ST procedure had resulted in this logic system being inoperable, the redundant PCRVICES isolation logic channel would have been available to isolate the PCRVICES system if required. The redundant trains of RERS and SGTS were unaffected by this event, and were available had an actual event requiring their operation occurred.

Cause of the Event:

The cause of the isolations was the blowing of the PCRVICES fuse (i.e., B21-F101A), manufactured by Bussmann (Model No. Min5). The root cause of the event was concluded to be an end of life PCRVICES fuse failure coincident with the performance of the ST procedure.

Corrective Actions:

1. On January 25, 1995, an inspection of the PCRVICES circuitry and RISH-026-2K609A was performed to look for a possible short which would draw excessive current through fuse B21-F101A. No additional causes other than random equipment failure of the fuse were identified.
2. On January 25, 1995, procedure ST-2-026-618-2 was performed again, and was completed satisfactorily.
3. Other plant activities ongoing at the time of the isolations were investigated to determine whether the blown fuse could have been caused by those activities; however, no cause could be identified.

Based on the above results and findings, we conclude that this event was caused by a random equipment failure, and therefore, no further corrective actions are planned.

Previous Similar Occurrences:

Limerick Generating Station LER 1-89-059 reported the failure of the same fuse B21-F101A due to personnel error resulting from improper use of test equipment. The corrective actions from this previous event would not have prevented this event from occurring.