



# PECO NUCLEAR

A Unit of PECO Energy

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10CFR50.73

May 23, 1996

Docket No. 50-352  
License No. NPF-39

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

SUBJECT: Licensee Event Report  
Limerick Generating Station - Unit 1

This LER reports operation prohibited by the Technical Specifications (TS) in that two (2) Remote Shutdown Panel control circuits were inoperable for longer than the TS action time limits. The circuits were inoperable due to dusty switch contacts that caused high circuit impedance values.

Reference:	Docket No. 50-352
Report Number:	1-96-010
Revision Number:	00
Event Date:	April 23, 1996
Report Date:	May 23, 1996
Facility:	Limerick Generating Station P.O. Box 2300, Saratoga, PA 19464-2300

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

Very truly yours,

DBN:cah

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

9606030056 960523  
PDR ADOCK 05000352  
S PDR

JK271

## 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  
(MNB 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 1

DOCKET NUMBER (2)

05000 352

PAGE (3)

1 OF 4

TITLE (4) Two Remote Shutdown Panel Control Circuits Inoperable for Longer than the Tech.  
Spec. Actions Time Limit Due to Dusty Contacts.

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
04	23	96	96	-- 010 --	00	05	23	96	FACILITY NAME	DOCKET NUMBER
										05000
										05000
OPERATING MODE (9)		1	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)							
POWER LEVEL (10)		100	20.402(b)		20.405(c)		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)		X 50.73(a)(2)(i)		50.73(a)(2)(viii)(A)		(Specify in Abstract below and in Text.	
			20.405(a)(1)(iv)		50.73(a)(2)(ii)		50.73(a)(2)(viii)(B)		NRC Form 366A)	
			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 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
	X				

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

On 4/23/96 and 4/24/96, unacceptably high 'as-left' Remote Shutdown Panel (RSP) circuit impedance measurements were discovered in two Unit 1 RSP Surveillance Test (ST) procedures that had been performed on 1/21/96, and 2/1/96. Each test had been signed off as being satisfactorily completed and the circuit contacts had not been adequately cleaned to reduce the circuit impedance. The circuits involved control switches for the 1A Safety Relief Valve (SRV) and an Emergency Service Water (ESW) system valve. With high circuit impedances, proper operation of the associated equipment from the RSP can not be assured and the controls are inoperable. The action of Technical Specification (TS) Section 3.3.7.4 had not been performed resulting in operation prohibited by TS. The actual consequences of the event are minimal since operation from the RSP was not required while the circuits had high impedances. The primary cause of not restoring the RSP controls to an operable status is inadequate procedures. The RSP ST procedure steps and the acceptance criteria section do not contain clear and quantitative acceptance criteria for impedance measurements. The Units 1 and 2 RSP ST procedures will be revised to include clear acceptance criteria, the Units 1 and 2 RSPs will be cleaned. This event will be included in continuing training.

LICENSEE EVENT REPORT (LER)  
TEXT CONTINUATION

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)		DOCKET NUMBER (2)		LER NUMBER (6)		PAGE (3)
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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 1 (Power Operation) when this event was discovered. Between January and April 1996, Unit 1 completed a refueling outage, a short maintenance outage, and operated at various power levels.

Description of the Event

On April 10, 1996, during performance of a Surveillance Test (ST) procedure, high circuit impedance readings were measured on four (4) circuits on the Unit 1 Remote Shutdown Panel (RSP, EIIS:PL). The circuits involved four (4) Residual Heat Removal (RHR, EIIS:BO) system valve control switches and the circuit impedances ranged from 18 ohms to 136 ohms. The associated RSP controls were declared inoperable and the Action of Technical Specification (TS) Section 3.3.7.4 was initiated. This TS Section states that with an inoperable RSP control, restore the control to an operable status within seven (7) days or be in hot shutdown within the next twelve (12) hours.

An Engineering evaluation performed on April 11, 1996, concluded that maximum allowable RSP circuit impedances were 25 ohms for AC circuits and 20 ohms for DC circuits. With higher circuit impedances, proper operation of the associated equipment from the RSP can not be assured. The switches were cleaned and retested satisfactorily on April 11, 1996, within the time limits of the TS action.

During an investigation into the cause of the high contact impedance, it was discovered that other high impedance readings were previously measured during performance of other RSP ST procedures. On April 23, and April 24, 1996, unacceptably high 'as-left' RSP circuit impedance measurements were discovered in two (2) Unit 1 RSP ST procedures that had been performed on January 21, 1996, and February 1, 1996. Each test had been signed off as being satisfactorily completed and the circuit contacts had not been adequately cleaned to reduce the circuit impedance. The circuits involved control switches for the 1A Safety Relief Valve (SRV, EIIS:RV) and an Emergency Service Water (ESW, EIIS:BI) system valve, HV-11-011A. The circuit impedances were 46 and 93 ohms respectively. The action of TS Section 3.3.7.4 had not been performed resulting in operation prohibited by TS. Therefore this report is being submitted in accordance with 10CFR50.73(a)(2)(i)(B).



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

By April 24, 1996 both the SRV and ESW control circuits were cleaned and retested satisfactorily within the time limits of the TS action.

The follow-up investigation verified that all other Unit 1 and Unit 2 RSP control circuits had acceptable 'as-left' impedance measurements since 1990. On April 25, 1996, a further engineering evaluation concluded that AC circuit impedance values could be 29 ohms over the clean circuit impedance and that DC circuits impedance values could be 25 ohms over the clean circuit impedance.

Analysis of the Event

The actual consequences of the event are minimal since operation from the RSP was not required while the circuits had high impedances. The potential consequences are minimal and are discussed below.

When the RSP transfer switch for the 1A SRV is placed to the emergency position, indication and control for this valve is transferred to the RSP. With the exception of high circuit impedance, all other 1A SRV testing was completed satisfactorily. When operating per Special Event (SE) procedure SE-1, Remote Shutdown, reactor pressure control is accomplished by cycling up to three (3) SRVs as required to maintain 990 to 1096 psig. Only three (3) of the fourteen (14) SRVs per unit have controls at the RSP (i.e., A,C,N). The automatic pressure protection function of the 1A SRV was unaffected and could have responded to a true over-pressure condition lift setpoint (1190 psig). If the operator attempted to operate 1A SRV and it did not open, the other two SRVs were operable. If another SRV was required, procedure SE-6, Alternate Remote Shutdown, would have been entered due to an inoperable RSP control. Procedure SE-6 directs the operator to control pressure from a panel in the Auxiliary Equipment Room using the Automatic Depressurization System (ADS, EIIS:) SRVs (i.e., S,H,M,E,K).

When the RSP transfer switch for the ESW system valve is placed in the emergency position, indication and control for this valve is transferred to the RSP. This valve is normally open and is open during the performance of procedure SE-1. This valve does not automatically reposition when the transfer switch is placed in the emergency position. The high impedance is in the closing circuit for this valve. The valve could be manually closed locally if the valve could not be closed from the RSP.

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

Due to current flow through the circuits contacts, the circuit impedance would most likely decrease as the dust is burned off. As a result, the circuit control function would probably be restored.

Cause of the Event

The primary cause of not restoring the RSP controls to an operable status within the TS Action time limits is inadequate procedures. The RSP ST procedure steps and the acceptance criteria section do not contain clear and quantitative acceptance criteria for impedance measurements. Therefore, when the ST procedures were performed and reviewed, the high impedance measurements were not recognized to be a concern and corrective actions were not initiated.

The high impedance was caused by dust on switch contacts within the RSP. The housekeeping of the Unit 1 RSP included using compressed air to blow dust off the contacts but did not include removal of the dust from the panel. Additionally, certain contacts collect dust due to their orientation and other contacts are not thoroughly cleaned using the compressed air due to location within the RSP.

Corrective Actions

The Unit 1 and Unit 2 RSP ST procedures will be revised by July 31, 1996, to include clear and quantitative acceptance criteria. A review of other ST procedures that require impedance reading is being performed to ensure that appropriate acceptance criteria exist.

The Unit 1 and Unit 2 RSPs will be cleaned by July 31, 1996.

This event will be included in the continuing training program for those individuals responsible for performing and evaluating the RSP and other ST procedures. This is intended to alert these individuals of the need to recognize unclear acceptance criteria when performing, reviewing or writing ST procedures.

Previous Similar Occurrences

None