

PHILADELPHIA ELECTRIC COMPANY

LIMERICK GENERATING STATION
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 PLANT MANAGER
 LIMERICK GENERATING STATION

July 10, 1992

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

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

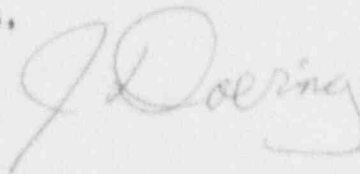
SUBJECT: Licensee Event Report
Limerick Generating Station - Unit 1

This LER reports a condition prohibited by Technical Specifications (TS) in that channel 'B' of the Unit 1 Main Steam Line Radiation Monitoring System was inoperable and the Actions required by TS were not taken in the appropriate time period. This condition was due to inadequate physical electrical separation between cables due to an original installation error.

Reference:	Docket No. 50-352
Report Number:	1-92-011
Revision Number:	00
Discovery Date:	June 5, 1992
Reportability Date:	June 16, 1992
Report Date:	July 10, 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)(i)(B).

Very truly yours,



JLP: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) **Limerick Generating Station, Unit 1** DOCKET NUMBER (2) **0 5 0 0 0 3 5 2** PAGE (3) **1 OF 0 4**

TITLE (4) **Inoperability of channel 'B' of the Main Steam Line Radiation Monitoring System as a result of inadequate electrical separation.**

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 6	0 5	9 2	9 2	0 1 1	0	0 0	0 7	1 0	9 2		0 5 0 0 0
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OPERATING MODES (9) **4** THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 50. (Check one or more of the following) (11)

POWER LEVEL (10) 0 0 0	20.402(a)	20.406(a)	50.73(a)(2)(i)(A)	73.71(b)
	20.405(a)(1)(i)(I)	50.38(a)(1)	50.73(a)(2)(i)(A)	73.71(c)
	20.405(a)(1)(i)(II)	50.38(a)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract or/and in Text, NRC Form 366A)
	20.406(a)(1)(i)(I)	<input checked="" type="checkbox"/> 50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
	20.406(a)(1)(i)(II)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	
	20.406(a)(1)(i)(III)	50.73(a)(2)(iii)	50.73(a)(2)(ix)	

LICENSEE CONTACT FOR THIS LER (12)

NAME **G. J. Madsen, Regulatory Engineer, Limerick Generating Station** TELEPHONE NUMBER **2 1 5 3 2 7 1 - 1 2 1 0 0**

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRPDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRPDS

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE) NO

EXPECTED SUBMISSION DATE (15)

MONTH	DAY	YEAR

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

Abstract:

On June 5, 1992, Limerick Generating Station (LGS) personnel discovered a potential physical electrical separation deficiency in Unit 1 panel 10C790. Coaxial Reactor Protection System (RPS) cable was found bundled at the back of panel 10C790 with fiberglass sleeving missing on approximately 12 inches of the cable. The sleeving was installed on all visible portions of this cable, but was discovered to be missing by Nuclear Quality Assurance Technical Monitoring (NQATM) personnel during a detailed inspection of panel 10C790. Panel 10C790 was inspected as one of the modified panels during the fourth refueling outage of Unit 1. Modification 6133-1 affected panel 10C790 but did not involve the coaxial RPS cable. The appropriate wiring was subsequently sleeved to comply with separation requirements. This condition has existed since October 26, 1984, the date of issuance of the Unit 1 Low Power Operating License. This condition resulted from a failure by construction personnel to properly install the wiring during original construction of LGS Unit 1. The consequences of this event were minimal in that no electrical fault condition actually occurred and that the failure of channel 'B' does not prevent the MSL-RMS from functioning as designed. NQATM will continue their program of inspecting all modified panels during the associated unit's refueling outage and 5 per cent of all other panels on a quarterly basis.

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		YEAR 9 2	SEQUENTIAL NUMBER — 0 1 1	REVISION NUMBER — 0 0	OF		

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

Unit Conditions Prior to the Event:

Unit 1 Operational Condition was 4 (Cold Shutdown) at a Power Level of 0%.

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

Description of the Event:

On June 5, 1992, during physical electrical separation panel inspections on Limerick Generating Station (LGS) Unit 1, a potential physical electrical separation deficiency between Engineered Safeguard System (ESS, EIIS:JE) wires and coaxial Reactor Protection System (RPS, EIIS:JC) cable 1XIRO50B was discovered. The deficiency was located in Unit 1 panel (EIIS:PL) 10C790. This deficiency was documented on an administratively controlled Equipment Trouble Tag (ETT) which in turn generated a Work Order to implement corrective actions.

LGS Updated Final Safety Analysis Report (UFSAR), Chapter 8, "Electric Power," Section 8.1.6.1.14, states that LGS conforms with the guidance of Regulatory Guide 1.75, Revision 2, 1978, "Physical Independence of Electric Systems," and also states that except for specific cases delineated in UFSAR Section 8.1.6.1.14, a minimum of 6 inches spatial separation is maintained between ESS wiring and RPS wiring unless barriers are installed. The basis for this position is to prevent damage from the propagation of a fault condition between a ESS circuit and an RPS circuit during accident conditions.

Coaxial RPS cable 1XIRO50B was found bundled at the back of panel 10C790 with fiberglass sleeving missing on approximately 12 inches of the cable. The sleeving was installed on all visible portions of this cable, but was discovered to be partially missing by Nuclear Quality Assurance Technical Monitoring (NQATM) personnel during a detailed inspection of panel 10C790. During this inspection the NQATM personnel physically traced the routing of coaxial RPS cable 1XIRO50B by hand and discovered the sleeving missing where the cable could not be visually observed. NQATM performs inspection of all modified panels during the associated unit's refueling outage and 5 per cent of all other panels on a quarterly basis. Panel 10C790 was inspected as one of the modified panels during the fourth refueling outage of Unit 1. Modification 6133-1 affected panel 10C790 but did not involve coaxial RPS cable 1XIRO50B.

An analysis of the wiring configuration in panel 10C790 determined that a fault condition in coaxial RPS cable 1XIRO50B would not propagate to the ESS wire. Conversely, a fault condition in the ESS wire could potentially propagate to coaxial RPS cable 1XIRO50B. Coaxial RPS cable 1XIRO50B is associated with channel 'B' of the Main Steam Line Radiation Monitoring System (MSL-RMS, EIIS:IL). Channel 'B' of MSL-RMS is common to the RPS and isolation actuation instrumentation. On June 5, 1992, LGS personnel determined that channel 'B' of the MSL-RMS was inoperable because of deficiencies in the physical separation of wiring in Unit 1 panel 10C790. On June 16, 1992, an evaluation was completed

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TEXT (if more space is required, use additional NRC Form 388A's (117))

that determined this condition has existed since October 26, 1984, the date of issuance of the Unit 1 Low Power Operating License; therefore, the 'B' channel of MSL-RMS should have been considered inoperable since October 26, 1984. The ACTIONS required by Technical Specifications (TS) Section 3.3.1 and 3.3.2 were not taken within the specified time period constituting a condition prohibited by TS. This report is being submitted in accordance with the requirements of 10CFR50.73(a)(2)(i)(B).

Analysis of the Event:

The actual consequences of this condition were minimal in that no electrical fault condition occurred that could have resulted in cable degradation and subsequent interaction. Additionally, the cables used at LGS meet the flame test acceptance criteria of the IEEE-383-1974 Standard; therefore, ignition of cables resulting in electrical interaction or fault propagation is extremely unlikely.

If an actual electrical fault condition had occurred in panel 10C790, the fault condition could have potentially affected the ability of the RPS to automatically actuate and the main steam line isolation valves to automatically close on high radiation. The output trip signals of the four MSL-RMS channels are combined in one-out-of-two-twice logic. Only one channel in each trip system must signal high radiation to initiate scram and main steam line isolation. Thus, the failure of channel 'B' does not prevent the MSL-RMS from functioning as designed. Additionally, Main Control Room (MCR) licensed operators would have been able to manually actuate the RPS and manually isolate the main steam lines from the MCR in accordance with emergency operating procedures. Therefore, the potential consequences were minimal.

Cause of the Event:

The cause of this event was an original installation error during the initial construction of Unit 1 in that construction personnel failed to properly install the cabling and the NQA personnel failed to identify this physical separation deficiency.

During Unit 1 construction, panel 10C790 did receive an integrated final physical separation inspection. The installation specification E-1412, which provided instruction to construction personnel on the implementation of physical separation in accordance with the commitments in the UFSAR, was adequate. However, the construction personnel involved did not properly install this cabling. Subsequently, the NQA inspector failed to identify these deficiencies during the integrated final physical separation inspection of this panel.

Corrective Actions:

A work order was initiated on June 5, 1992, to provide adequate cable separation in panel 10C790. The appropriate wiring was subsequently sleeved on June 29,

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TEXT (if more space is required, use additional NRC Form 306A's) (17)

1992 to comply with separation requirements. Inspection of Unit 1 electrical panels and any necessary changes to the wiring were completed during the Unit 1 third refuel outage as reported in LER 1-90-024 and LER 1-90-035. The inspection of panel 10C790 during the Unit 1 third refuel outage on December 1, 1990, identified damage sleeving on an ESS cable and an RPS cable. The sleeving was replaced on December 3, 1990. The missing sleeving reported in this LER was not identified at that time because of the physical location of this deficiency and because all visible portions of the cables had proper sleeving. Since no other cable separation deficiencies have been found subsequent to the Unit 1 third refuel outage, we have concluded that increased panel inspection is not needed at this time. NQATM will continue their program of inspecting all modified panels during the associated unit's refueling outage and 5 per cent of all other panels on a quarterly basis.

Previous Similar Occurrences:

LERs 1-88-037, 1-88-042, 1-89-008, 1-89-009, 1-89-022, 1-89-025, 1-90-024 and 1-90-035 reported conditions involving physical separation deficiencies which resulted in a system becoming inoperable. These corrective actions could not have prevented this condition of missing sleeving because this deficiency existed since original construction of Unit 1.

Tracking Codes: B9 - Construction/Installation Error