

PHILADELPHIA ELECTRIC COMPANY

LIMERICK GENERATING STATION
P. O. BOX A
SANATOGA, PENNSYLVANIA 19464

(215) 327-1200 EXT. 2000

M. J. MCCORMICK, JR., P.E.
PLANT MANAGER
LIMERICK GENERATING STATION

October 16, 1990
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 an inadvertent automatic actuation of the Primary Containment and Reactor Vessel Isolation Control System, an Engineered Safety Feature (ESF), that resulted in the closure of the High Pressure Coolant Injection (HPCI) system steam line outboard isolation valve. This ESF actuation resulted from a personnel error due to the failure to recognize the need to reset an isolation signal prior to energizing the HPCI system steam line outboard isolation valve motor operator.

| | |
|------------------|---------------------------------------------------------------|
| Reference: | Docket No. 50-353 |
| Report Number: | 2-90-017 |
| Revision Number: | 00 |
| Event Date: | September 16, 1990 |
| Report Date: | October 16, 1990 |
| Facility: | Limerick Generating Station P.O. Box A, Sanatoga, PA 19464 |

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

Very truly yours,

WGS:cah

cc: T. T. Martin, Administrator, Region I, USNRC
T. J. Kenny, USNRC Senior Resident Inspector, LGS

000085
9010290454 901016
PDR ADOCK 05000353
S PNU

IE22
11

LICENSEE EVENT REPORT (LER)

| | | |
|--------------------------------------------------|----------------------------------------|--------------------|
| FACILITY NAME (1) Limerick Generating Station | DOCKET NUMBER (2) 0 5 0 0 0 3 5 3 1 | PAGE (3) OF 0 4 |
|--------------------------------------------------|----------------------------------------|--------------------|

TITLE (4) This LER reports an inadvertent actuation of the Primary Containment and Reactor Vessel Isolation Control System an ESF due to personnel error.

| 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 9 | 1 6 | 9 0 | 9 0 | 0 1 7 | 0 0 | 1 0 | 1 6 | 9 0 | | | 0 5 0 0 0 |
| | | | | | | | | | | | 0 5 0 0 0 |

| | | | | | | | | | | |
|-------------------------------------------|---------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-----------------------------------------------------|--------------------------------------------------------------|--|--|--|--|--|--|
| OPERATING MODE (9) 1 | THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 50. (Check one or more of the following) (11) | | | | | | | | | |
| POWER LEVEL (10) 1 0 0 | <input type="checkbox"/> 20.402(b) | <input type="checkbox"/> 20.406(e) | <input checked="" type="checkbox"/> 60.73(a)(2)(iv) | <input type="checkbox"/> 73.71(b) | | | | | | |
| | <input type="checkbox"/> 20.406(a)(1)(i) | <input type="checkbox"/> 60.38(e)(1) | <input type="checkbox"/> 60.73(a)(2)(v) | <input type="checkbox"/> 73.71(e) | | | | | | |
| | <input type="checkbox"/> 20.406(a)(1)(ii) | <input type="checkbox"/> 60.38(e)(2) | <input type="checkbox"/> 60.73(a)(2)(vi) | OTHER (Specify in Abstract below and in Text, NRC Form 366A) | | | | | | |
| | <input type="checkbox"/> 20.406(a)(1)(iii) | <input type="checkbox"/> 60.73(a)(2)(i) | <input type="checkbox"/> 60.73(a)(2)(vii) | | | | | | | |
| | <input type="checkbox"/> 20.406(a)(1)(iv) | <input type="checkbox"/> 60.73(a)(2)(ii) | <input type="checkbox"/> 60.73(a)(2)(viii)(A) | | | | | | | |
| <input type="checkbox"/> 20.406(a)(1)(v) | <input type="checkbox"/> 60.73(a)(2)(iii) | <input type="checkbox"/> 60.73(a)(2)(viii)(B) | | | | | | | | |
| <input type="checkbox"/> 20.406(a)(1)(vi) | <input type="checkbox"/> 60.73(a)(2)(iv) | <input type="checkbox"/> 60.73(a)(2)(ix) | | | | | | | | |

| | | | |
|------------------------------------------------------------------------|--|------------------|-----------------------|
| LICENSEE CONTACT FOR THIS LER (12) | | TELEPHONE NUMBER | |
| NAME G. J. Madsen, Regulatory Engineer, Limerick Generating Station | | AREA CODE | 2 1 5 3 2 7 - 1 2 0 0 |

| COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13) | | | | | | | | | | | |
|----------------------------------------------------------------------------|--------|-----------|--------------|---------------------|-------|--------|-----------|--------------|---------------------|--|--|
| CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NFRDS | CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NFRDS | | |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

| | | | | | | |
|--------------------------------------------------------------------------|----------------------------------------|--|-------------------------------|-------|-----|------|
| SUPPLEMENTAL REPORT EXPECTED (14) | | | EXPECTED SUBMISSION DATE (15) | MONTH | DAY | YEAR |
| <input type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE) | <input checked="" type="checkbox"/> NO | | | | | |

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

On September 16, 1990, an inadvertent automatic actuation of the Primary Containment and Reactor Vessel Isolation Control System (PCRIVICS), an Engineered Safety Feature (ESF), occurred. This ESF actuation resulted in the closure of the Unit 2 High Pressure Coolant Injection (HPCI) system steam supply line outboard primary containment isolation valve, HV-055-2F003 due to re-energizing the motor operator for this valve prior to resetting the isolation logic from the Main Control Room (MCR). The cause of this event was the failure of the Unit 2 Reactor Operator (RO) to be aware of system conditions prior to resetting the PCRIVICS isolation logic. An additional causal factor is inadequate communication between the Unit 2 RO and the MCR shift supervisor. Both of these operators were counseled. There were no adverse consequences and no release of radioactive material as a result of this event. In the event of an accident requiring the use of the HPCI system during the time period that it was isolated, operators could have unisolated HV-055-2F003 and then manually initiated the HPCI system. In addition, the Automatic Depressurization System, the low pressure Emergency Core Cooling Systems, and the Reactor Core Isolation Cooling System were operable to respond to an accident condition in the event that the HPCI system could not have been manually initiated. This event will be discussed in the Licensed Operator Requalification LOR Training program.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

| | | | | | | |
|------------------------------------------------------|------------------------------------------------------|----------------|------------------------------------|------------------------------|----------|----------|
| FACILITY NAME (1) Limerick Generating Station | DOCKET NUMBER (2) 0 5 0 0 0 3 5 3 | LER NUMBER (6) | | | PAGE (3) | |
| | | YEAR 9 0 | SEQUENTIAL NUMBER — 0 1 7 | REVISION NUMBER — 0 0 | 0 2 | OF 0 4 |

TEXT (If more space is required, use additional NRC Form 306A's (1/77))

Unit Conditions Prior to the Event:

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

Prior to the event, the Unit 2 High Pressure Coolant Injection (HPCI, EIIS:BJ) system outboard primary containment steam supply line isolation valve (EIIS:ISV), HV-055-2F003, was de-energized in the open position. The redundant isolation valve remained operable in the open position. This condition enabled Instrumentation and Control (I&C) technicians to perform troubleshooting of the differential pressure instrumentation that provides indication of high steam flow in the HPCI steam supply line. There were no other structures, systems or components out of service which contributed to this event.

Description of the Event:

On September 16, 1990, at 1820 hours, an inadvertent automatic actuation of the Primary Containment and Reactor Vessel Isolation Control System (PCRIVICS, EIIS:JM), an Engineered Safety Feature (ESF), occurred. This ESF actuation resulted in the closure of the Unit 2 HPCI system steam supply line outboard primary containment isolation valve, HV-055-2F003, due to re-energizing the motor operator for this valve prior to resetting the PCRIVICS isolation logic from the Main Control Room (MCR).

The Differential Pressure Indicating Switch (PDIS-055-2N657B) (EIIS:PDIS) had been indicating low differential pressure and was satisfactorily tested by utility employed I&C technicians on day shift on September 16, 1990. However, the PDIS indication remained low and the technicians suspected that the associated Differential Pressure Transmitter (PDT-055-2N057B) (EIIS:PT) was out-of-calibration or the instrument sensing lines had developed a buildup of trapped air. The PDT and PDIS monitor the differential pressure (DP) in the steam supply line to the HPCI turbine, upstream of the HV-055-2F003 valve. The logic associated with these instruments provides a PCRIVICS isolation signal that will close HV-055-2F003 in the event of a high steam flow or an instrument line break. At 1712 hours on September 16, 1990, operations personnel de-energized HV-055-2F003 in the open position to support I&C technicians in the performance of a calibration check of the PDT and PDIS. This arrangement would allow the HPCI system to still function in the event of an accident. The I&C technicians successfully completed the calibration check and informed the MCR shift supervisor, a senior licensed operator, that the instrument sensing lines had been flushed to eliminate any trapped air that may have existed. The MCR shift supervisor then informed the Unit 2 Reactor Operator (RO), a licensed operator, that the troubleshooting performed by the I&C technicians was complete and the PCRIVICS isolation logic could be reset and valve HV-055-2F003 could then be re-energized. The Unit 2 RO had a non-licensed Assistant Plant Operator (APO) restore the power to the motor operator for HV-055-2F003, at 1820 hours, prior to resetting the PCRIVICS isolation logic. This allowed an existing PCRIVICS isolation signal, that had been generated due to the functional testing performed on the PDT and PDIS, to cause the automatic closure of HV-055-2F003. The Unit 2 RO was immediately notified of this ESF actuation by a MCR

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

| | | | | | | |
|---------------------------------------------|--------------------------------------------------------|-------------------|--------------------------------------|-------------------------------------|----------|--|
| NAME (1) Limerick Generating Station | DOCKET NUMBER (2) 0 5 0 0 0 3 5 3 | LER NUMBER (6) | | | PAGE (3) | |
| | | YEAR 9 0 | SEQUENT NUMB - 0 1 7 | REVISION NUMBER - 0 0 | | |
| 0 3 OF 0 4 | | | | | | |

TEXT (If more space is required, use additional NRC Form 365A's)

annunciator alarm. The RO acknowledged the alarm, verified that a valid isolation signal was not present, reset the PCRVICES isolation logic, and reopened valve HV-055-2F003 at 1821 hours on September 16, 1990.

A four (4) hour notification was made to the NRC at 2024 hours on September 16, 1990, in accordance with 10CFR50.72(b)(2)(ii), because the event resulted in the inadvertent automatic actuation of the PCRVICES, an ESF. Accordingly, this report is being submitted in accordance with the requirements of 10CFR50.73(a)(2)(iv).

Analysis of the Event:

There were no adverse consequences and no release of radioactive material as a result of this event. The PCRVICES and HV-055-2F003 functioned as designed and the valve closed when the motor operator was re-energized with an isolation signal present. The HPCI system was out of service for one (1) minute as a result of this event.

In the event of an accident requiring the use of the HPCI system during the time period that it was isolated, operators could have immediately reset the PCRVICES isolation logic and reopened HV-055-2F003 from the MCR, and then manually initiated the HPCI system. In addition, the Automatic Depressurization system, the low pressure Emergency Core Cooling Systems, and the Reactor Core Isolation Cooling system were operable to respond to an accident condition in the event that the HPCI system could not have been manually initiated. In addition, 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 training, and prompt operator actions, the event duration was limited to one minute and no adverse plant conditions developed during this event.

Cause of the Event:

The cause of this event is an isolated occurrence of personnel error in that the Unit 2 RO failed to recognize the need to reset the PCRVICES isolation logic and clear the isolation signal prior to energizing HV-055-2F003. As a result, the Unit 2 RO instructed the APO to re-energize the valve motor operator while the PCRVICES isolation signal was still present, causing an automatic actuation of the PCRVICES and closure of HV-055-2F003.

An additional casual factor identified was inadequate communication between the Unit 2 RO and MCR shift supervisor. This communication error occurred in that the Unit 2 RO did not "Repeat Back" the MCR shift supervisor's directive as required by the Operations Manual Chapter 6.2, "Operations Verbal Communications Standards," which is included in the Licensed Operator Requalification (LOR) training program. The MCR shift supervisor also failed to require the Unit 2

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

| | | | | | | |
|------------------------------------------------------|----------------------------------------------|----------------|-------------------|-----------------|----------|-----|
| FACILITY NAME (1) Limerick Generating Station | DOCKET NUMBER (2) 0 5 0 0 0 3 5 3 9 0 | LER NUMBER (5) | | | PAGE (3) | |
| | | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | | |
| | | — 0 1 7 | — 0 0 | 0 4 | OF | 0 4 |

TEXT (If more space is required, use additional NRC Form 206A's) (17)

RO, as stipulated in the Operations Manual, Chapter 6.2, to use the "Repeat Back" method of communication.

Corrective Actions:

On September 16, 1990, the Unit 2 RO was counseled on the need to be aware of system conditions prior to restoring power to a motor operated valve. In addition, the MCR shift supervisor and Unit 2 RO were both counseled on the importance of using the "Repeat Back" method of communication. Additionally, the past performance records for both the Unit 2 RO and MCR shift supervisor were reviewed and the results indicate that no personnel errors concerning inadequate communication had been previously noted for either operator. LOR Training will be provided by January 1, 1991, to emphasize the need for operators to be aware of system conditions at all times and to illustrate the need to adhere to high standards of communication as stipulated in the Operations Manual Chapter 6.2.

In addition, operators are individually evaluated on a six week frequency, while in LOR simulator training, to improve and enforce the need to "Repeat Back" communications to ensure the understanding of task expectations. This communication evaluation criteria of LOR simulator training was previously incorporated into the program and is currently ongoing. Finally, control room crew team training is scheduled to begin on October 22, 1990. This Training is designed to help each crew member understand the personalities of the other members of the team which will serve to enhance teamwork and communications.

Previous Similar Occurrences:

LERs 1-84-014, 1-86-002, 1-86-053, 1-87-059, and 1-87-062 all reported an automatic actuation of an ESF as a result of the primary cause being an operations personnel error. However, the operator involved has not made this type of personnel error prior to this event, therefore, previous corrective actions would not have prevented this event.

LERs 1-84-031, 1-85-003, 1-85-051 and 1-89-18 all reported an automatic actuation of an ESF as a result of the primary cause being a communication deficiency involving operations personnel. We recognize the need to strengthen the area of communications and have implemented the above corrective measures in addition to the enhancements already made in ongoing training, the Operations Manual Chapter 6.2, and evaluations of individuals based upon their communication skills.

Tracking Codes: All-Failure to properly assess consequences of actions
A7-Failure to properly communicate