

## PHILADELPHIA ELECTRIC COMPANY

LIMERICK GENERATING STATION

P. O. BOX A

SANATOGA, PENNSYLVANIA 19464

(215) 327-1200 EXT. 2000

J. DOERING, JR.  
PLANT MANAGER  
LIMERICK GENERATING STATION

June 6, 1991

Docket Nos. 50-352

50-353

License Nos. NPF-39

NPF-85

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

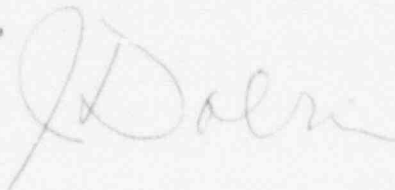
SUBJECT: Licensee Event Report  
Limerick Generating Station - Units 1 and 2

This LER reports an event where both trains of the Standby Gas Treatment System were inoperable and in a condition that alone could have prevented the fulfillment of its safety function. The cause of this event was due to cognitive personnel error, less than adequate communication, and a failure to comply with a procedure.

Reference: Docket Nos. 50-352  
50-353  
Report Number: 1-91-013  
Revision Number: 00  
Event Date: May 8, 1991  
Report Date: June 6, 1991  
Facility: Limerick Generating Station  
P.O. Box A, Sanatoga, PA 19464

This LER is being submitted pursuant to the requirements of 10 CFR 50.73(a)(2)(v)(C).

Very truly yours,



WGS: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 3										PAGE (3) 1 OF 0 5																											
TITLE (4) Both trains of the Standby Gas Treatment System were inoperable as a result of cognitive personnel error.																																															
EVENT DATE (5) 0 5 0 8 9 1 9 1									LER NUMBER (6) 0 1 3 0 0 0 6 0 6 9 1									REPORT DATE (7) 0 5 0 8 9 1 9 1									OTHER FACILITIES INVOLVED (8) Unit 2																				
OPERATING MODE (9) 1									THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more of the following) (11) 20.402(a) 20.405(a)(1)(i) 20.405(a)(1)(ii) 20.405(a)(1)(iii) 20.405(a)(1)(iv) 20.405(a)(1)(v)									FACILITY NAMES Unit 2									DOCKET NUMBER(S) 0 5 0 0 0 3 5 3																				
POWER LEVEL (10) 1 0 0									20.405(a)(2)(i) 20.405(a)(2)(ii) 20.405(a)(2)(iii) 20.405(a)(2)(iv) 20.405(a)(2)(v)									50.36(a)(1) 50.36(a)(2) 50.73(a)(2)(i) 50.73(a)(2)(ii) 50.73(a)(2)(iii)									50.73(a)(2)(iv) 50.73(a)(2)(v) 50.73(a)(2)(vi) 50.73(a)(2)(vii) 50.73(a)(2)(viii) 50.73(a)(2)(ix)									73.71(a) 73.71(c) OTHER (Specify in Abstract below and in Text, NRC Form 386A)											
LICENSEE CONTACT FOR THIS LER (12) G. J. Madsen, Regulatory Engineer, Limerick Generating Station																																															
NAME															TELEPHONE NUMBER 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 NRCDS																																															
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)

On May 8, 1991, during the performance of Surveillance Test (ST) Procedure ST-6-076-250-1, "SGTS and RERS Flow Test," the 'A' trains of the Standby Gas Treatment System (SGTS) and Reactor Enclosure Recirculation System inadvertently shutdown and the manual Unit 1 Reactor Enclosure (RE) Secondary Containment isolation signal, which was present for the test, cleared. Licensed Main Control Room (MCR) personnel manually initiated the redundant Unit 1 'B' RE Secondary Containment isolation signal in an attempt to start the 'B' train of the SGTS. However, the 'B' train of SGTS did not initiate. With both the 'A' and 'B' trains of SGTS inoperable, Technical Specifications (TS) Action 3.0.3 was entered. An operator found Slide Gate Damper SGD-076-206-1 in the closed position which had been closed during application of a blocking permit. The closed SGD-076-206-1 which caused the Unit 1 RE Secondary Containment isolation signal to be bypassed was then opened. Both trains of the SGTS were declared operable and TS Action 3.0.3 was exited. The actual consequences of the event were minimal, however, SGTS could not have controlled the release of radioactive material in the event of an accident. The cause of this event is cognitive personnel error, less than adequate communication, and a failure to comply with a procedure. Corrective actions include a review of open blocking permits, counseling of operations personnel, tagging of devices, development of a case study for training use, and a review of existing guidance.

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

FACILITY NAME (1)  Limerick Generating Station	DOCKET NUMBER (2)  0 5 0 0 0 3 5 2 9 1	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
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TEXT (If more space is required, use additional NRC Form 365A's) (1)

Unit Conditions Prior to the Event:

Unit 1 Operational Condition was 1 (Power Operation) at 100% Power Level.

Unit 2 Operational Condition was 5 (Refueling) at 0% Power Level.

The Unit 1 Reactor Enclosure (RE) Heating Ventilation and Air Conditioning (HVAC) system was secured and isolated. The 'A' train of the Standby Gas Treatment System (SGTS, EIIS:BH), a common system, and the Unit 1 Reactor Enclosure Recirculation System (RERS) were in service to support the performance of Surveillance Test (ST) Procedure ST-6-076-250-1, "SGTS and RERS Flow Test," with a manual isolation signal of the Unit 1 RE Secondary Containment initiated in accordance with the ST. Unit 2 RE Secondary Containment Integrity was not established nor required to be operable for Unit 2 plant conditions.

Application of blocking permit 1-076-1016 was in progress to prepare for maintenance work on the Unit 1 Drywell Purge Exhaust Slide Gate Damper (SGD, EIIS:DMP) SGD-076-205-1. There were no other structures, systems, or components out of service which contributed to this event.

Description of the Event:

On May 8, 1991, at 1635 hours, during the performance of procedure ST-6-076-250-1, the 'A' trains of the SGTS and RERS inadvertently shutdown and the manual Unit 1 RE Secondary Containment isolation signal, which was present for the test, cleared. At 1645 hours, Licensed Main Control Room (MCR) operations personnel manually initiated the redundant Unit 1 'B' RE Secondary Containment isolation signal in an attempt to start the 'B' train of the SGTS. However, the 'B' train of SGTS did not initiate. With both the 'A' and 'B' trains of SGTS inoperable and no applicable Limiting Condition for Operation Action Statement specified in Technical Specifications (TS) Section 3.6.5.3, "SGTS," MCR operations personnel entered TS Action 3.0.3 requiring actions to be taken to commence shutdown of Unit 1 within one hour. At 1650 hours, MCR operations personnel then placed the Unit 1 RE HVAC system in service to re-establish TS required Unit 1 RE Secondary Containment differential pressure.

MCR operations personnel reviewed the Alarm Response Card (ARC) procedure for, "A/B Reac Enclosure Refuel Floor Isolation System Armed Bypassed," which was annunciated. MCR personnel determined that a possible cause of the SGTS inoperability could be SGD-076-206-1 being in the closed position. An Operations Supervisor immediately went to check the position of the SGD while other plant operators checked the remaining possible annunciator causes listed in the ARC procedure. At 1710 hours, the Operations Supervisor found SGD-076-206-1 in the closed position with a blocking tag hung associated with blocking permit 1-076-1016. With SGD-076-206-1 closed, the Unit 1 RE Secondary Containment was isolated from the SGTS causing all Unit 1 RE isolation signals and associated SGTS start signals to be bypassed as designed. The Operations Supervisor notified the MCR of this condition and, at 1713 hours, permit 1-076-1016 was authorized for restoration. The Operations Supervisor then opened SGD-076-206-1. Both the 'A' and 'B' trains of the SGTS were then declared operable.

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-010-

EXPIRES: 8/31/85

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

and TS Action 3.0.3 was exited. Unit 1 was in TS Action 3.0.3 for less than one hour. Therefore, Unit 1 reactor power was not reduced.

A four hour notification to the NRC was made on May 8, 1991, at 1817 hours, in accordance with the requirements of 10 CFR 50.72(b)(2)(iii)(C), since this event resulted in a condition that alone could have prevented the fulfillment of a safety function. This event could have prevented the SGTS and Unit 1 RE Secondary Containment from performing their design functions to control the release of radioactive material and mitigate the consequences of an accident. This report is being submitted in accordance with the requirements of 10 CFR 50.73(a)(2)(v)(C).

Analysis of the Event:

The actual consequences of the event were minimal in that no radioactive release occurred.

In the event that an accident involving the release of radioactive material had occurred during the 38 minutes that SGD-076-206-1 was closed, SGTS would not have performed its safety function to control the release of radioactive material. This could have resulted in an untreated gaseous radioactive release to the environment.

However, in response to this type of accident, the operators would have initiated Transient Response Implementation Plan (TRIP) Procedure T-103, "Secondary Containment Control," and Procedure T-104, "Radioactivity Release Control," which provides direction for mitigating the release of radioactivity. Licensed operators receive requalification training to review and practice responses to simulated plant transients of this type. The procedures, training, and operator actions would have mitigated the consequences of this type of accident.

Cause of the Event:

The primary cause of this event is cognitive personnel error in that a licensed Shift Supervisor performing the functions of the Permit Supervisor, failed to 1) communicate with the MCR Shift Supervisor to discuss plant conditions prior to directing the application of the blocking permit and 2) adequately assess plant conditions prior to directing the application of a blocking permit. Additionally, this event was the result of a failure to comply with an administrative procedure in that the non-licensed Auxiliary Plant Operator (APO) given the task of applying the blocking permit performed locked valve manipulations (i.e., closing the SGD) without first obtaining MCR shift supervision permission.

On May 8, 1991, the Permit Supervisor reviewed local permit 1-076-1016 and then signed and authorized the permit for application without 1) communicating with the MCR Shift Supervisor and 2) adequately considering plant conditions in accordance with the guidance provided in Administrative Procedure A-41,



## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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"Procedure for Control of Plant Equipment." The APO who was then given the task of applying the block by the Permit Supervisor failed to obtain shift supervision permission prior to manipulating locked devices as identified on the blocking permit, including SGD-076-206-1. This action was not in accordance with Administrative Procedure A-8, "Procedure for Control of Locked Valves and Devices," which requires an individual to obtain authorization from shift supervision to make an entry into the locked valve log prior to any locked device manipulation.

The closure of SGD-076-206-1 actuated the associated limit switch and resulted in the bypass of the Unit 1 RE Secondary Containment isolation signal which had been manually initiated by licensed MCR personnel to start the 'A' train of the SGTS and the RERS for scheduled surveillance testing. This bypassing of the Unit 1 RE Secondary Containment isolation signal then resulted in the shutdown of the SGTS and RERS and prevented the completion of any start signal to start both the 'A' and 'B' trains of the SGTS and RERS.

The APO completed the blocking application and proceeded to the MCR to make the required entries into the locked valve log. The APO asked the Unit 2 Outage Shift Supervisor to approve and sign his entries into the locked valve log. The Unit 2 Outage Shift Supervisor and MCR Shift Supervisor had determined that the application of blocking permit 1-076-1016 was the cause of the 'A' and 'B' SGTS inoperability and instructed the APO to restore the remainder of the blocking permit to original plant conditions.

Corrective Actions:

- 1) A complete review of all open blocking permits and permits awaiting application for the operating Unit 1 and common equipment was performed to ensure TS compliance and plant reliability.
- 2) The Permit Supervisor was counseled and coached on the responsibilities of this position and the importance of understanding the impact on plant operation when removing equipment from service.
- 3) The APO was counseled on procedure compliance and the requirements of the locked valve program.
- 4) A directive was issued to all shift operations personnel detailing the reasons for the SGTS blocking error. This directive re-emphasized management's expectations of operations personnel involved with the permits and blocking system and locked valve program.
- 5) All Unit 1, common, and Unit 2 RE Secondary Containment SGDs were tagged to identify them as devices important to Secondary Containment Integrity. These tags direct personnel to contact MCR personnel prior to manipulation of a SGD to ensure shift supervision permission has been obtained.

## 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	DOCKET NUMBER (2)  0 5 0 0 0 3 5 2 9 1	LER NUMBER (6)			PAGE (3)		
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TEXT (If more space is required, use additional NRC Form 366A's) (17)

- 6) A case study (e.g., a training video of event) will be developed and utilized to train licensed operators on the lessons learned from this event. The case study is expected to be complete by August, 1991.
- 7) Existing guidance for the removal of equipment from service will be reviewed. Any improvements identified will be incorporated into the new Clearance and Tagging program which is expected to be in place by the fourth quarter of 1991.

Previous Similar Occurrences:

There are no other LERs which have been submitted resulting from personnel error that caused redundant equipment to become inoperable. LERs 1-87-059, 1-89-018, 2-90-006, and 2-91-005 were associated with blocking permits but did not result from plant conditions not being adequately considered prior to authorization for application. Therefore, the corrective actions associated with these LERs would not have prevented the occurrence of this event.

Tracking Codes: A1 - Failure to follow administrative procedures  
A7 - Failure to properly communicate  
A11 - Failure to properly assess consequences of actions