

PHILADELPHIA ELECTRIC COMPANY

LIMERICK GENERATING STATION

P. O. BOX A

SANATOGA, PENNSYLVANIA 19464

(215) 327-1200 EXT. 2000

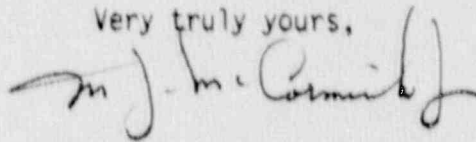
November 21, 1990
Docket No. 50-353
License No. NPF-85M. J. MCCORMICK, JR., P.E.
PLANT MANAGER
LIMERICK GENERATING STATIONU.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555SUBJECT: Licensee Event Report
Limerick Generating Station - Unit 2

This LER reports a failure to meet Technical Specifications (TS) Section 3.7.6.4, "Halon Systems," since the Halon System had been inoperable and the Action required by TS was not taken in the appropriate time period. This resulted in a condition prohibited by TS.

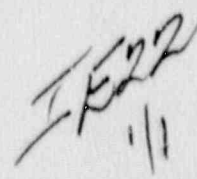
Reference:	Docket No. 50-353
Report Number:	2-90-016
Revision Number:	01
Event Date:	August 11, 1990
Discovery Date:	August 13, 1990
Reportability Date:	September 10, 1990
Report Date:	November 21, 1990
Facility:	Limerick Generating Station P.O. Box A, Sanatoga, PA 19464

This revised LER is being submitted to provide additional information regarding the cause and corrective actions. Changes to this revised LER are indicated by revision bar markers in the right hand margin. The original LER was submitted pursuant to the requirements of 10 CFR 50.73 (a)(2)(i)(B).

Very truly yours,



WGS:rgs

cc: T. T. Martin, Administrator, Region I, USNRC
T. J. Kenny, USNRC Senior Resident Inspector, LGS9011300226 901121
PDR ADOCK 05000353
S FDC

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Limerick Generating Station										DOCKET NUMBER (2) 0 5 0 0 0 3 5 3										PAGE (3) 1 OF 0 5				
TITLE (4) Failure to meet Technical Specification 3.7.6.4 since the Halon system had been inoperable and the TS Action was not taken in the appropriate time period.																								
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	8	1	1	9	0	9	0	0	1	6	0	1	1	1	2	1	9	0	0 5 0 0 0					
OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 5. (Check one or more of the following) (11)																						
1		20.402(b)				20.405(c)				50.73(a)(2)(iv)				73.71(b)										
POWER LEVEL (10)		20.406(a)(1)(i)				50.36(a)(1)				50.73(a)(2)(v)				73.71(c)										
1		20.406(a)(1)(ii)				50.36(a)(2)				50.73(a)(2)(vi)				OTHER (Specify in Abstract below and in Text, NRC Form 366A)										
		20.406(a)(1)(iii)				X 50.73(a)(2)(ii)				50.73(a)(2)(vii)(A)														
		20.406(a)(1)(iv)				50.73(a)(2)(iii)				50.73(a)(2)(viii)(B)														
		20.406(a)(1)(v)				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 0 0														
COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)																								
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC														
SUPPLEMENTAL REPORT EXPECTED (14)										EXPECTED SUBMISSION DATE (15)														
YES (If yes, complete EXPECTED SUBMISSION DATE)										X NO														

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

On July 5, 1990, Unit 2 Surveillance Test (ST) Procedure ST-7-022-353-2, "Halon System Inventory," was performed for the Auxiliary Equipment Room (AER) Halon Fire Suppression System. This ST identified one weight deficient bottle in the Halon System Main Bank. The Main Bank was declared inoperable and the "Main/Reserve" switch (HS-22-283A) was placed in the "Reserve" position switching the Halon System to its redundant Reserve Bank. The deficient bottle was removed on July 24, 1990 to be refilled and HS-22-283A was still in the "as left" position of "Reserve." However, on August 13, 1990, while preparing to replace the refilled Main Bank bottle, station personnel discovered that HS-22-283A was in the "Main" position. HS-22-283A was immediately put in the "Reserve" position by the Fire Protection system engineer and Halon system operability was restored. There were no adverse consequences in that no fires occurred in the Unit 2 AER during this time period. Further investigation into this event identified the cause to be: 1) a lack of adequate job planning and coordination and 2) use of a tagging system that has been determined to be inadequate for this halon system application. Corrective actions include a revision to STs that will initiate a blocking mechanism to provide administrative control of Halon bottles and the development of a halon system Maintenance Request Form history file that will be referenced and duplicated to ensure adequate job planning.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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 3 9 0	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		— 0 1 6	— 0 1	0 2	OF	0 5	

TEXT (If more space is required, use additional NRC Form 305A's) (17)

Unit Conditions Prior to the Event:

Unit 2 Operating Condition was 1 (Power Operation) at 100% Power Level.

Description of the Event:

On July 5, 1990, Unit 2 Surveillance Test (ST) Procedure ST-7-022-353-2, "Halon System Inventory," was performed for the Auxiliary Equipment Room (AER) subfloor and panel Halon Fire Suppression system. The Fire Protection system engineer identified at the completion of this test that one bottle in the Unit 2 Halon System Main Bank (i.e. consisting of 7 bottles) was low on weight and pressure. The Halon System Main Bank was then declared inoperable and the "Main/Reserve" Switch (HS-22-283A) was placed in the "Reserve" position switching the Halon System to its redundant Reserve Bank and ensuring system operability. Additionally, an Equipment Status Control Tag was placed on HS-22-283A by the Fire Protection system engineer as directed by operations personnel to indicate that the system was in an off-normal system alignment. These actions were to ensure that Technical Specifications (TS) Section 3.7.6.4, "Halon Systems," was satisfied by maintaining an operable Halon system with 95% of full charge weight and 90% of full charge pressure. The deficient bottle was removed on July 24, 1990 to be refilled and HS-22-283A was in the "Reserve" position which aligned the redundant Halon system Reserve Bank to automatically initiate in the event of a fire in the Unit 2 AER.

However, on August 13, 1990 at 1450 hours, while preparing to perform procedure ST-7-022-353-2 to replace the refilled Halon bottle in the Main Bank, HS-22-283A was discovered by the Fire Protection system engineer to be in the "Main" position with the Equipment Status Control Tag missing and only six Halon bottles in the Main Bank. The Fire Protection system engineer recognized this condition as inappropriate and immediately notified shift supervision. Operations personnel then returned HS-22-283A to the "Reserve" position at 1500 hours returning the Halon system to an operable condition. The procedure ST-7-022-353-2 was then completed by reinstalling the refilled Halon bottle in the Main Bank and returning the Halon system "Main/Reserve" Switch, HS-22-283A, into the "Main" position. This returned the Main Bank to an operable condition with the Reserve Bank in standby. Both Main and Reserve Halon Banks had a full Halon charge.

On August 13, 1990, an investigation was then initiated to investigate the cause and the actual date/time when HS-22-283A was changed to the "Main" position. The specific period of time in question was between the removal of the deficient Main Bank Halon bottle on July 24, 1990 until the discovery that HS-22-283A was mispositioned with the Equipment Status Control Tag missing on August 13, 1990.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104

EXPIRES 8/31/86

FACILITY NAME (1) Limerick Generating Station	DOCKET NUMBER (2) 0 5 0 0 0 3 5 3 9 0	LER NUMBER (6)			PAGE (3)		
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TEXT (If more space is required, use additional NRC Form 365A's) (17)

The investigation revealed that the switch was repositioned on August 11, 1990 as the result of operations personnel performing procedure ST-6-022-453-0, "Halon System Lineup Verification." The operators who performed this ST observed that all of the seven Halon bottles were in place. Based on the satisfactory completion of ST-6-022-453-0, shift supervision determined that HS-22-283A could be placed in the "Main" position. The Equipment Status Control Tag was then removed and HS-22-283A was placed in the "Main" position by operations personnel on August 11, 1990. However, between August 11, 1990 and August 13, 1990 we suspect that maintenance personnel may have again removed the Main Bank Halon bottle to have it weighed. Therefore, for this time period, with HS-22-283A in the Main position and one Halon bottle removed, the AER Halon system for Unit 2 should have been considered inoperable.

As a result of the Halon system being degraded, the performance of ST-7-022-353-2, on July 5, 1990, was evaluated to determine what percentage of Halon weight existed in the Main Bank of the Unit 2 Halon system with one bottle missing (i.e. six bottles in place) which would be used to conclude whether the Main Bank was operable or not. In conjunction with this evaluation, the load cell and digital display used to weigh the Halon system bottles during the performance of ST-7-022-353-2 were sent to the Philadelphia Electric Company Testing and Labs facility to verify instrument calibration. The evaluation of ST-7-022-353-2 was completed on September 10, 1990 and determined that the weight of the Halon Main Bank with six bottles in place was at 94.48% of full charged weight. Also, Testing and Labs confirmed that the load cell and digital display were properly calibrated. Therefore, with HS-22-283A in the "Main" position and less than 95% of full charged weight, due to the Main Halon bottle being removed to be weighed, the Unit 2 Halon system was inoperable for some time between August 11 and 13, 1990. During this time period the TS Action 3.7.6.4, "with one or more of the required Halon Systems inoperable, within one hour establish a continuous fire watch with backup fire suppression equipment for those areas in which redundant systems or components could be damaged; for other areas, establish an hourly firewatch patrol," was not taken in the specified time period. This resulted in a condition prohibited by TS and this report is being submitted in accordance with 10CFR50.73(a)(2)(i)(B).

Analysis of the Event:

There were no adverse consequences and no radioactive material was released to the environment as a result of this event. During the time the Unit 2 Halon system was aligned to the Main Bank containing six fully charged bottles, no fires occurred in the Unit 2 AER requiring the use of the Halon fire suppression system.

In the event of a fire in the AER, with HS-22-283A in the Main position and the Main Bank missing one Halon bottle, the Main Bank would have automatically initiated and suppressed the fire. There was sufficient Halon in the six Halon bottles in the Main Bank to meet the design levels of fire suppression in the Unit 2 AER panels and subfloor. Main Control Room annunciation of a fire in the

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMR NO. 3153-0104

EXPIRES 8/31/85

FACILITY NAME (1) Limerick Generating Station	DOCKET NUMBER (2) 0 5 0 0 0 3 5 3 9 0 — 0 1 6 — 0 1 0 4 CF 0 5	LER NUMBER (6)			PAGE (3)
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TEXT: (If more space is required, use additional NRC Form 360-A's (17))

AER would have occurred and alerted operators of a fire in the Unit 2 AER. The fire brigade would then respond as directed by Special Event (SE) Procedure SE-8, "Fire," and implement procedure F-A-542, "Auxiliary Equipment Room 542 Elevation 289' Fire Area 25." This procedure instructs the fire brigade to verify automatic initiation of the Halon system and then manually initiate the redundant Halon system bank if needed.

Cause of the Event:

The root cause of this event is unknown due to the inability to identify the specific maintenance personnel who may have been involved in moving the Halon bottle. However, causal factors for this event are: 1) the use of an Equipment Status Control Tag that has since been determined to be inadequate in controlling the position of HS-22-283A due to not specifically identifying the need to complete ST-7-022-353-2 prior to placing HS-22-283A in the main position and 2) the lack of job planning and coordination for the Halon bottle during the time that the Halon bottle was received onsite from the vendor after refilling to the time the bottle was finally reinstalled.

The investigation into the cause of this event revealed that the Halon bottle, removed on July 24, 1990 and shipped offsite to the vendor for refilling, was received back on site on August 9, 1990. On August 11, 1990, Operators performed ST-6-022-453-2 and verified that all fourteen Halon bottles were in place (i.e., all seven bottles were in the Main Bank and all seven bottles were in the Reserve Bank) prior to removing the Equipment Status Control Tag from HS-22-283A. This tagging mechanism was inadequate for this application in that it indicated the halon bottle was removed, but did not provide any indication of outstanding work or testing requirements pending completion prior to returning the Main Bank to service. As a result of the information placed on the Equipment Status Control Tag (i.e., halon bottle removed), operations personnel then reverified that all fourteen Unit 2 halon bottles were in place prior to placing HS-22-283A in the "Main" position. The operators who performed the ST were certain that all fourteen Unit 2 Halon bottles were in place on August 11, 1990. This is further supported by the operators performing a second verification by physically walking out to the Unit 2 Halon bottles and rechecking as a result of questioning by shift supervision.

We suspect that the Unit 2 Halon bottle was reinstalled by maintenance person on August 10 or August 11, 1990 as directed by the associated Maintenance Request Form (MRF). This MRF was inadequate in that it indicated that the H bottle needed to be removed, refilled and then installed but did not specify that the bottle must be weighed prior to installation. Therefore, we conclude that the installation was completed without weighing the bottle between August 11, 1990 and August 13, 1990, and maintenance personnel again removed the Main Bank bottle to have it weighed after either recognizing on their own or being notified by the Fire Protection system engineer that the bottle needed to be weighed prior to installation.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO. 3150-0104
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FACILITY NAME (1) Limerick Generating Station	DOCKET NUMBER (2) 0 5 0 0 0 3 5 3 9 0	LER NUMBER (6)			PAGE (3)		
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TEXT (If more space is required, use additional NRC Form 366A's) (17)

In conclusion, as a result of inadequate jrb planning and work coordination, the halon bottle was installed prior to involving the Fire Protection system engineer who would have ensured the Halon bottle was weighed. Additionally, the tagging mechanism used was inadequate in that it did not identify to operations personnel the necessary actions to perform and groups to contact prior to returning the Halon System Main Bank back to service.

Corrective Actions:

ST-7-022-353-1 and ST-7-022-353-2 performed by the Fire Protection group were revised on November 19, 1990 to require the initiation of a supervisory block that controls equipment and will provide administrative controls for halon bottles determined to be deficient and requiring removal from the associated Halon system rack. These procedures will specifically require the deficient halon bottle(s) to be weighed prior to changing position of HS-22-283A and placing a Halon Bank back in service. Additionally, this supervisory block will provide adequate information such as associated MRF numbers and testing requirements enabling operations personnel to be fully aware of halon system conditions. This supervisory block will ensure that proper STs are performed to demonstrate operability to meet TS Section 3.7.6.4 prior to placing a Halon System Bank back in service.

Additionally, maintenance personnel responsible for the planning section of all MRFs have been provided with instructions located in the MRF history files that will be referenced by maintenance planners and written on MRFs for future Halon bottle work. These instructions will ensure that any MRF associated with the removal and installation of Halon bottles will inform maintenance personnel of the need to have the Halon bottle weighed by involving the protection personnel prior to installation of the bottle.

Previous Similar Occurrences:

None

Tracking Codes:

(A) Personnel Error