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Exelon Nuclear

10CFR50.73

November 27, 2000
Docket No. 50-352, 50-353
License No. NPF-39, NPF-89

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

SUBJECT: Licensee Event Report
Limerick Generating Station (LGS) - Unit 1 and Unit 2

This LER reports two conditions identified by a Safety System Functional Inspection (SSFI) for the High Pressure Coolant Injection (HPCI) System. Both conditions involved inadequate procedures. One condition was discovery of a Unit 1 safeguard battery with electrolyte level at or below the Technical Specification (TS) minimum. The second condition resulted in several HPCI system surveillance tests (Unit 1 & Unit 2) being conducted at a pump discharge pressure that was less than TS minimum. Each instance resulted in a condition prohibited by the plant's Technical Specifications.

Reference:	Docket No. 50-352, 50-353
Report Number:	1-00-004
Revision Number:	00
Event Date:	October 18, 2000(battery level)/May 9, 1999(HPCI flow-Unit 1)/ June 7, 1999(HPCI flow-Unit 2)
Discovery Date:	October 24, 2000(battery level)/October 30, 2000(HPCI flow)
Report Date:	November 27, 2000
Facility:	Limerick Generating Station P.O. Box 2300, Sanatoga, PA. 19464-2300

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

Very truly yours,

Robert C. Braun, Plant Manager, LGS
cc: H. J. Miller, Administrator Region I, USNRC
A. L. Burritt, USNRC Senior Resident Inspector, LGS

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NRC FORM 366 U.S. NUCLEAR REGULATORY COMMISSION
(6-1998)

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Limerick Generating Station, Units 1 and 2	05000352/05000353	1 OF 4

TITLE (4)
Deficient surveillance tests identified by internal SSFI on High Pressure Coolant Injection (HPCI) System

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
										05000
10	18	2000	2000	-- 004 --	00	11	27	2000	FACILITY NAME	DOCKET NUMBER
										05000

OPERATING MODE (9)	1
POWER LEVEL (10)	100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)

	20.2201(b)		20.2203(a)(2)(v)	x 50.73(a)(2)(i)	50.73(a)(2)(viii)
	20.2203(a)(1)		20.2203(a)(3)(i)	50.73(a)(2)(ii)	50.73(a)(2)(x)
	20.2203(a)(2)(i)		20.2203(a)(3)(ii)	50.73(a)(2)(iii)	73.71
	20.2203(a)(2)(ii)		20.2203(a)(4)	50.73(a)(2)(iv)	OTHER
	20.2203(a)(2)(iii)		50.36(c)(1)	50.73(a)(2)(v)	Specify in Abstract below or in NRC Form 366A
	20.2203(a)(2)(iv)		50.36(c)(2)	50.73(a)(2)(vii)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
K. W. Gallogly, Manager - Experience Assessment	(610) 718-3400

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX		CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
☐ YES (If yes, complete EXPECTED SUBMISSION DATE).	☒ NO				

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

On October 11, 2000, an internal Safety System Functional Inspection (SSFI) for the High Pressure Coolant Injection (HPCI) System identified two conditions that resulted in conditions prohibited by Technical Specifications (TS). On October 24, 2000, six cells in the Unit 1 Division III safeguard 125 VDC battery were measured to be at or below the electrolyte level minimum indication mark. Surveillance test deficiencies allowed acceptance of battery electrolyte level at a value that was less than the TS minimum. The battery electrolyte level was restored to normal and test procedures have been revised. Also, as part of the SSFI, it was identified that HPCI full flow surveillance test (ST) procedures did not specify the proper pump discharge pressure required by TS. Several tests had been performed at a pump discharge pressure that did not satisfy TS testing requirements. The most recent HPCI STs have been performed at a pump discharge pressure that satisfied TS requirements. HPCI ST procedures have been revised.

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Limerick Generating Station Units 1 and 2	05000 -352/-353	2000	-- 004 --	00	4

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

Unit Conditions Prior to the Event

Unit 1 and Unit 2 were in Operational Condition (OPCON) 1 (Power Operation) at 100% power level prior to the discovery of these conditions. There were no structures, systems, or components out of service that contributed to this event.

Description of the Event

Condition 1:
On October 11, 2000 a Safety System Functional Inspection (SSFI) identified what appeared (visually) to be relatively low electrolyte levels on several cells of the Unit 1 Division III safeguard battery (EIIS:EJ) (EIIS:BTRY). The 7-day action stipulated by Note 1 in TS table 4.8.2.1-1 to restore level was not recognized until October 24, 2000. Once identified, surveillance test procedure, ST-6-095-913-1 "Division III 125 VDC Safeguard Battery Quarterly Inspection" was conducted, and six cells (of 60 total) were measured to have electrolyte levels less than or equal to the TS minimum. The six cells in question were verified to be either just at or slightly below (i.e. by 1/16 inch) the minimum indication mark. The cells were promptly filled with water, and TS compliance was achieved on October 25, 2000. All six cells were also verified at that time to have normal values of specific gravity, temperature and voltage.

An investigation determined that battery surveillance test and routine inspection procedures cited acceptable levels for battery electrolyte that were less restrictive than limits set by TS. The TS limits for electrolyte are "greater than the minimum level mark, and less than or equal to ¼ inch above the maximum level indication mark". TS allowable values are "Above top of plates, and not overflowing". Tests and procedures used by the operators to check cell levels contained incorrect, non-conservative criteria that, contrary to TS, directed operators to accept electrolyte levels on the minimum indication mark as satisfactory.

Condition 2:
On October 11, 2000, the SSFI identified that the HPCI (EIIS:BJ) Pump, Valve and Flow ST procedure did not specify the proper TS required pump (EIIS:P) discharge pressure. TS 4.5.1.b.3 requires that the pump develop 5600 gpm against a test line pressure of 1040 psig plus head and line losses. Head and line losses were calculated to be 120 psig. Therefore, the pump discharge pressure must be equal to or greater than 1160 psig. Unit 1 and Unit 2 HPCI systems were verified to be operable based on the results of the most recent ST data. Reactor Core Isolation Cooling (RCIC) system STs were also verified to provide adequate testing per TS requirements.

On October 30, 2000, an investigation determined that, between December 31, 1998 and present, there were three occasions where HPCI had not been tested properly at a pressure that exceeded 1160 psig. Unit 1 HPCI was tested to 1045 psig on April 25, 1999. Unit 2 HPCI was tested to 1155 psig on September 23, 1999 and 1085 psig on May 24, 1999.

The events described above resulted in operation of Unit 1 and 2 in conditions prohibited by the plant Technical Specifications. This report is being submitted in accordance with the requirements of 10CFR50.73 (a)(2)(i)(B).

Analysis of the Event

There were no actual safety consequences associated with either condition. The potential safety consequences were minimal.

For condition 1, the capacity of the battery was unaffected because electrolyte level was maintained above the top of the plates. Only one of the four Unit 1 safeguard divisions was impacted, and only 6 cells (of 60 total) within that division were affected. Therefore, the battery was capable of performing its safety function, with no effect upon battery cell capacity or performance.

For condition 2, Unit 1 and Unit 2 HPCI were subsequently surveilled, found to be fully functional, and verified to retain design basis pumping capacity. Therefore, the HPCI systems were always capable of performing their safety function.

Cause of the Event

Both of these conditions were caused by inadequate procedures.

Condition 1:
The primary cause of the low electrolyte level in the Unit 1 Division III battery was inadequate surveillance procedures. The Technical Specification low level limit was never accurately translated into the procedures in question and, as a result, electrolyte levels found to be on the minimum indication mark were incorrectly considered to be acceptable. The procedures were also ambiguous in that they only required the recording of levels below the minimum indication mark. Finally, guidance for water addition was insufficient.

Condition 2:
The HPCI STs specified a pump discharge pressure at design rated flow that was incorrectly calculated based on reactor pressure. This allowed the test to be conducted at a pump discharge pressure that was less than the pressure required to ensure system operability per TS requirements.

Completed Corrective Actions

Condition 1:
The quarterly and weekly safeguard battery STs have been revised to provide clear and consistent direction to verify that battery electrolyte level is above the minimum indication mark.

Condition 2:
HPCI STs have been revised to require a pump discharge pressure of at least 1160 psig while maintaining system flow of at least 5600 gpm.

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

Planned Corrective Actions

Conditions 1 and 2:
A targeted review of Operation's surveillance tests (ST-6's) which contain specific limits is being performed. This review will be complete by December 15, 2000.

Battery procedures will be revised to provide direction regarding the threshold for water addition. This action will be complete by January 31, 2001.

Operator training on the revised procedures will be completed by March 31, 2001.

Previous Similar Occurrences
None

Failed Component Data:
None