Exelon Nuclear
Limerick Generating Station
P.O. Box 2300
Sanatoga, PA 19464

www.exeloncorp.com

Exelon Nuclear

FOL

November 2, 2001

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Subject: FOL Maximum Power Level Violation

Limerick Generating Station, Units 1 and 2
Facility Operating License Nos. NPF-39 and NPF-85
NRC Docket No. 50-352 and 50-353

This written followup report addresses a violation of the maximum power level specified in the Facility Operating License (FOL) section 2.C for Limerick Units 1 and 2. This violation is due to the use of a non-conservative value for the moisture carryover fraction in the steam flow from the reactor vessel when calculating core thermal power. The maximum power level limit of 3458 megawatts thermal was exceeded by approximately 3 megawatts thermal.

Report Number:	None
Revision:	00
Event Date:	October 3, 2001
Discovered Date:	October 3, 2001
Report Date:	November 2, 2001
Facility:	Limerick Generating Station P.O. Box 2300, Sanatoga, PA 19464-2300

This written followup report is submitted pursuant to the requirements of the Facility Operating License section 2.F for Unit 1 and section 2.E for Unit 2.

Very truly yours,

William Levis
Vice President

cc: H. J. Miller, Administrator Region I, USNRC
A. L. Burritt, USNRC Senior Resident Inspector, LGS

IE22

2/6/02
DCD

NRC FORM 366 (1-2001)

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104 EXPIRES 6-30-2001

Estimated burden per response to comply with this mandatory information collection request: 50 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records Management Branch (T-6 E6), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to bjs1@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202 (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

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, Unit 1	05000 352	1 OF 3

TITLE (4)

Maximum Power Level Violation Due To Non-Conservative RPV Steam Moisture Carryover Assumption

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)	
MO	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO	MO	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
									Limerick Unit 2	05000 353
10	3	2001		00		11	2	2001	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 all that apply) (11)

	20.2201(b)		20.2203(a)(3)(ii)		50.73(a)(2)(ii)(B)		50.73(a)(2)(ix)(A)
	20.2201(d)		20.2203(a)(4)		50.73(a)(2)(iii)		50.73(a)(2)(x)
	20.2203(a)(1)		50.36(c)(1)(i)(A)		50.73(a)(2)(iv)(A)		73.71(a)(4)
	20.2203(a)(2)(i)		50.36(c)(1)(ii)(A)		50.73(a)(2)(v)(A)		73.71(a)(5)
	20.2203(a)(2)(ii)		50.36(c)(2)		50.73(a)(2)(v)(B)	x	OTHER Specify in Abstract below or in NRC Form 366A
	20.2203(a)(2)(iii)		50.46(a)(3)(ii)		50.73(a)(2)(v)(C)		
	20.2203(a)(2)(iv)		50.73(a)(2)(i)(A)		50.73(a)(2)(v)(D)		
	20.2203(a)(2)(v)		50.73(a)(2)(i)(B)		50.73(a)(2)(vii)		
	20.2203(a)(2)(vi)		50.73(a)(2)(i)(C)		50.73(a)(2)(viii)(A)		
	20.2203(a)(3)(i)		50.73(a)(2)(ii)(A)		50.73(a)(2)(viii)(B)		

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER (Include Area Code)
Marino C. Kaminski, Manager – Experience Assessment	(610) 718-3400

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

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX

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

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

On October 3, 2001 General Electric (GE) notified Exelon Corporation that it would be issuing a Service Information Letter (SIL) regarding the use of a non-conservative value for moisture carryover fraction in the thermal power calculation programs used at BWR/4 through BWR/6 plants. The 0.1 percent value used in the core thermal power calculation for reactor steam dryer moisture carryover may be non-conservative. The smaller value of moisture carryover fraction resulted in a non-conservative determination of core thermal power by approximately 0.08 percent of rated thermal power. The moisture carryover constant in the process computer has been changed to 0.0 percent. This written followup report is being submitted pursuant to the requirements of the FOL condition 2.F for Unit 1 and 2.E for Unit 2.

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Limerick Generating Station, Unit 1	05000352	--	--	00	2 OF 3

NARRATIVE *(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. There were no structures, systems or components out of service that contributed to this event.

Description of the Event

On August 7, 2001, Susquehanna Station conducted a review of carryover measurements for the reactor steam dryer that indicated the measured value was less than the constant value used in the heat balance calculations. This issue was reported during a BWROG Potential Issues Resolution Team (PIRT) conference call conducted on August 9, 2001. General Electric (GE) committed to examine industry data and determine the extent of the condition. On September 26, 2001, GE issued a white paper that summarized their findings. The summary stated that for BWR/4 through BWR/6 plants, actual moisture carryover could be less than the 0.1 percent value typically used in the heat balance calculations.

On October 3, 2001, GE notified Exelon Corporation that it would be issuing a Service Information Letter (SIL) regarding the use of non-conservative constant values in the thermal power calculation programs used at BWR/4 through BWR/6 plants. The actual reactor steam dryer moisture carryover constant may be smaller than the constant value used in the heat balance calculation program. The SIL will recommend that plants without actual measured carryover test data use a value of zero for moisture carryover in the heat balance calculation.

The process computer heat balance moisture carryover constant used at Limerick has been 0.1 percent since initial operation. Limerick has revised the constant in the Unit 1 and Unit 2 process computer heat balance programs to reflect a value for moisture carryover of 0.0 percent.

This event involved a violation of the maximum power level of 3458 megawatts thermal specified in the FOL condition 2.C.

An ENS notification was completed on October 4, 2001, at 14:23 hours, for Unit 2 per the FOL condition 2.E. Further review of the Unit 1 test data determined that uncertainties in this data could have caused a similar condition on Unit 1. An ENS notification was completed on October 5, 2001, at 17:10 hours, for Unit 1 per the FOL condition 2.F.

This written followup report is being submitted pursuant to the requirements of the FOL condition 2.F for Unit 1 and 2.E for Unit 2.

FACILITY NAME (1)	DOCKET (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Limerick Generating Station, Unit 1	05000352	--	--	00	3 OF 3

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

Analysis of the Event

There were no actual safety consequences associated with this event. The potential safety consequences of this event were minimal. The licensed maximum thermal power was exceeded by approximately 0.08 percent (approximately 3 megawatts thermal). The licensing basis safety analyses account for 2 percent uncertainty in the core thermal power determination. This provides for adequate margin to account for the small potential error in the heat balance calculation.

This issue is not risk significant since no change in calculated core damage frequency occurred as a result of this event.

Cause of the Event

This event was caused by an incorrect assumption by GE during initial plant design regarding the efficiency of the reactor steam dryer. The design value of 0.1 percent moisture carryover was conservative with regard to erosion of the main steam lines but was non-conservative when used in the heat balance calculation of actual core thermal power.

Corrective Action Completed

The reactor heat balance process computer program constant for steam dryer moisture carryover has been reset to a value that assumes 0.0 percent moisture carryover.