Exelon Nuclear

10CFR50.73

March 13, 2009

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

Limerick Generating Station, Unit 1
Facility Operating License No. NPF-39
NRC Docket No. 50-352

Subject: LER 2009-001-00, Neutron Flux Accident Monitoring Instrumentation Inoperable

This Licensee Event Report (LER) addresses an event that resulted in a condition prohibited by Technical Specifications due to accident monitoring instruments that were inoperable for periods that exceeded the allowable outage times. The apparent cause of this event was a weakness in the Technical Specification Bases for accident monitoring instrumentation.

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

There are no commitments contained in this letter.

If you have any questions or require additional information, please do not hesitate to contact us.

Sincerely,

Original signed by

Christopher H. Mudrick
Vice President – Limerick Generating Station
Exelon Generation Company, LLC

cc: S. J. Collins, Administrator Region I, USNRC
E. M. DiPaolo, USNRC Senior Resident Inspector, LGS

NRC FORM 366 (9-2007) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB NO. 3150-0104 EXPIRES 08/31/2010

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Service Branch (T-5 F52), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects@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 an 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)

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4. TITLE: Neutron Flux Accident Monitoring Instrumentation Inoperable

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
										05000
01	16	2009	2009	- 001 -	00	03	13	2009	FACILITY NAME	DOCKET NUMBER
										05000

9. OPERATING MODE

1

10. POWER LEVEL

100

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: *(Check all that apply)*

- ☐ 20.2201(b)
- ☐ 20.2201(d)
- ☐ 20.2203(a)(1)
- ☐ 20.2203(a)(2)(i)
- ☐ 20.2203(a)(2)(ii)
- ☐ 20.2203(a)(2)(iii)
- ☐ 20.2203(a)(2)(iv)
- ☐ 20.2203(a)(2)(v)
- ☐ 20.2203(a)(2)(vi)
- ☐ 20.2203(a)(3)(i)
- ☐ 20.2203(a)(3)(ii)
- ☐ 20.2203(a)(4)
- ☐ 50.36(c)(1)(i)(A)
- ☐ 50.36(c)(1)(ii)(A)
- ☐ 50.36(c)(2)
- ☐ 50.46(a)(3)(ii)
- ☐ 50.73(a)(2)(i)(A)
- ☒ 50.73(a)(2)(i)(B)
- ☐ 50.73(a)(2)(i)(C)
- ☐ 50.73(a)(2)(ii)(A)
- ☐ 50.73(a)(2)(ii)(B)
- ☐ 50.73(a)(2)(iii)
- ☐ 50.73(a)(2)(iv)(A)
- ☐ 50.73(a)(2)(v)(A)
- ☐ 50.73(a)(2)(v)(B)
- ☐ 50.73(a)(2)(v)(C)
- ☐ 50.73(a)(2)(v)(D)
- ☐ 50.73(a)(2)(vii)
- ☐ 50.73(a)(2)(viii)(A)
- ☐ 50.73(a)(2)(viii)(B)
- ☐ 50.73(a)(2)(ix)(A)
- ☐ 50.73(a)(2)(x)
- ☐ 73.71(a)(4)
- ☐ 73.71(a)(5)
- ☐ OTHER

Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

NAME	TELEPHONE NUMBER *(Include Area Code)*
Robert E. Kreider, Manager – Regulatory Assurance	610-718-3400

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

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
B	IG	DET	G080	N					

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☒ NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

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

The required and minimum number of accident monitoring instrumentation channels for neutron flux were not maintained operable for periods that exceeded the Technical Specification 3.3.7.5 allowable outage times. The apparent cause of the event was that the Technical Specification and associated Bases do not clearly identify what instrumentation is required to satisfy the requirement for two operable neutron flux channels during operation in POWER OPERATION (OPCON 1) and STARTUP (OPCON 2) modes. Following this event the licensed operators were trained on this requirement. The Daily Surveillance Log/OPCON 1,2,3 was revised to verify that the required number of SRMs and IRMs remain operable in OPCON 1. The TS 3.3.7.5 Bases for accident monitoring instrumentation will be revised to clarify the site methods for meeting the accident monitoring instrumentation requirements. Licensed operator training will be revised to reinforce the requirements for maintaining the accident monitoring instrumentation channels operable.

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

Unit Conditions Prior to the Event

Unit 1 was in Operational Condition (OPCON) 1 (Power Operation) at approximately 100% power. There were no other structures, systems or components out of service that contributed to this event.

Description of the Event

On Friday, January 16, 2009, the system manager for the Nuclear Instrumentation system (EIIS:IG) identified that a potentially reportable condition existed for three periods when all four source range monitors (SRMs) were inoperable during OPCON 1 (POWER OPERATION). In addition, two periods were identified when three of four SRMs were inoperable during OPCON 1. This condition was identified during a review of the Operations' limiting conditions for operation (LCO) log following identification of surveillance tests that did not properly reference Technical Specification (TS) 3.3.7.5 Accident Monitoring Instrumentation when SRMs were removed from service for testing.

The periods when all four SRMs were inoperable were as follows: January 20, 2006 through February 20, 2006 (31 days), December 14, 2006 through December 18, 2006 (4 days), and February 20, 2007 through April 21, 2007 (60 days). The periods when three of four SRMs were inoperable were as follows: October 5, 2006 through December 14, 2006 (70 days), and December 18, 2006 through February 20, 2007 (64 days).

An investigation determined that the licensed operators were logging inoperable SRMs under TS 3.3.7.6 Source Range Monitors but were not consistently logging the inoperable SRMs under TS 3.3.7.5 Accident Monitoring Instrumentation.

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

TS 3.3.7.5 Accident Monitoring Instrumentation requires the instruments in Table 3.3.7.5-1 to be operable with operating condition applicability provided by the table. Item 13 on the table is neutron flux, which specifies that in OPCON 1 and OPCON 2 the "required number of channels" is two and the "minimum channels operable" is one. The TS action specifies that with one or more accident monitoring instrumentation channels inoperable, take the action required by the table. Action 80 provides the following direction:

ACTION 80

a. With the number of OPERABLE accident monitoring instrumentation channels less than the Required Number of Channels shown in Table 3.3.7.5-1, restore the inoperable channel(s) to OPERABLE status within 7 days or be in at least HOT SHUTDOWN within the next 12 hours.

b. With the number of OPERABLE accident monitoring instrumentation channels less than the Minimum Channels OPERABLE requirements of Table 3.3.7.5-1, restore the inoperable channel(s) to OPERABLE status within 48 hours or be in at least HOT SHUTDOWN within the next 12 hours.

The three periods when all four SRMs were inoperable each exceeded the 48-hour allowable outage time and the two periods when three of four SRMs were inoperable each exceeded the 7-day allowable outage time; therefore, this event resulted in a condition prohibited by Technical Specifications. This LER is being submitted pursuant to the requirements of 10CFR50.73(a)(2)(i)(B).

Analysis of the Event

There were no actual safety consequences associated with this event. The potential safety consequences of this event were minimal. At least two intermediate range monitors (IRMs) and at least two average power range monitors (APRMs) were operable during the affected periods and would have provided neutron flux monitoring capability for a portion of the required range of monitoring during an accident. In addition, the SRM channels that were inoperable for

preventive maintenance were often returned to available status prior to post maintenance testing completion.

TS 3.3.7.5 Accident Monitoring Instrumentation bases states the following:

> The OPERABILITY of the accident monitoring instrumentation ensures that sufficient information is available on selected plant parameters to monitor and assess important variables following an accident. This capability is consistent with the recommendations of Regulatory Guide 1.97, "Instrumentation for Light Water Cooled Nuclear Power Plants to Assess Plant Conditions During and Following an Accident," December 1975 and NUREG-0737, "Clarification of TMI Action Plan Requirements," November 1980.

Limerick UFSAR section 7.5.2.5.1.1.2.4.1 states that the specified range of monitoring for neutron flux is 10E-6 percent to 100 percent full power. To obtain this range of monitoring the four SRM channels, eight IRM channels and four APRM channels are combined to provide as many as four channels of wide-range neutron flux monitoring.

Cause of the Event

The apparent cause of the event was that TS and associated Bases do not clearly identify what instrumentation is required to satisfy the accident monitoring instrumentation requirement for two operable neutron flux channels in OPCON 1 and OPCON 2. A contributing cause was a weakness in the licensed operator knowledge regarding accident monitoring instrumentation requirements for two SRMs and two IRMs to remain operable in OPCON 1.

Corrective Action Completed

Following this event the licensed operators were trained on the accident monitoring instrumentation requirements for neutron flux monitoring, which requires maintaining two SRM channels operable in OPCON 1 and OPCON 2.

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CONTINUATION SHEET

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

The Daily Surveillance Log/OPCONs 1,2,3 (ST-6-107-590-1 and ST-6-107-590-2) were revised to include steps to verify no more than two SRMs and no more than six IRMs are inoperable in OPCON 1.

Corrective Actions Planned

The TS 3.3.7.5 Bases for accident monitoring instrumentation will be revised to clarify the site methods for meeting the accident monitoring instrumentation requirements.

Licensed operator training will be revised to reinforce the requirements for maintaining the accident monitoring instrumentation channels operable.

Previous Similar Occurrences

There were no previous similar events other than the events being reported in this LER during the last three years regarding inoperable accident monitoring instrumentation that resulted in a condition prohibited by Technical Specifications.

Component data:

Component data:

Component Description:	Source Range Monitors
System:	IG Incore/Excore Monitoring System
Component:	DET (Detector)
Component Number:	C51-1K600A
Manufacturer:	G080 General Electric Company
Model Number:	368X101BBG003