

**LICENSEE EVENT REPORT (LER)**

Estimated burden per response to comply with this mandatory information collection request: 50 hrs. Reported lessons learned are incorporated into the licensing process and fed back to industry. Forward comments regarding burden estimate to the Records Management Branch (T-6 F33), U. S. Nuclear Regulatory Commission, Washington, DC 20555-0001, and to the Paperwork Reduction Project (3150-0104), Office of Management and Budget, Washington, DC 20503. If 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.

FACILITY NAME (1): LaSalle County Station, Unit 1 DOCKET NUMBER (2) 05000373 PAGE (3) 1 of 4

TITLE (4) Average Power Range Monitors Inoperable During Refueling Due to Improper Isolation of Local Power Range Detectors

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
11	01	99	99	004	00	12	01	99	FACILITY NAME	DOCKET NUMBER

OPERATING MODE (9) 5 POWER LEVEL (10) 000 THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11)

<input type="checkbox"/>	20.2201(b)	<input type="checkbox"/>	20.2203(a)(2)(v)	<input checked="" type="checkbox"/>	50.73(a)(2)(i)	<input type="checkbox"/>	50.73(a)(2)(viii)
<input type="checkbox"/>	20.2203(a)(1)	<input type="checkbox"/>	20.2003(a)(3)(i)	<input type="checkbox"/>	50.73(a)(2)(ii)	<input type="checkbox"/>	50.73(a)(2)(x)
<input type="checkbox"/>	20.2203(a)(2)(i)	<input type="checkbox"/>	20.2003(a)(3)(ii)	<input type="checkbox"/>	50.73(a)(2)(iii)	<input type="checkbox"/>	73.71
<input type="checkbox"/>	20.2203(a)(2)(ii)	<input type="checkbox"/>	20.2003(a)(4)	<input type="checkbox"/>	50.73(a)(2)(iv)	<input type="checkbox"/>	OTHER
<input type="checkbox"/>	20.2203(a)(2)(iii)	<input type="checkbox"/>	50.36(e)(1)	<input type="checkbox"/>	50.73(a)(2)(v)	Specify n Abstract below or in NRC Form 366A	
<input type="checkbox"/>	20.2203(a)(2)(iv)	<input type="checkbox"/>	50.36(e)(2)	<input type="checkbox"/>	50.73(a)(2)(vii)		

**LICENSEE CONTACT FOR THIS LER (12)**

NAME: Charles Maney, Operations Staff TELEPHONE NUMBER (Include Area Code): (815) 357-6761 Extension 2929

**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)**

YES (If yes, complete EXPECTED SUBMISSION DATE) NO EXPECTED SUBMISSION DATE (15) MONTH 01 DAY 28 YEAR 2000

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

On November 1, 1999, at 2005 hours, during an operating experience review, it was determined that all of the Unit 1 Average Power Range Monitors (APRMs) were inoperable. Unit 1 was in Mode 5, Refueling, and per Technical Specification (TS) Section 3.3.1, "Reactor Protection System Instrumentation," the APRM Neutron Flux Setdown, set at 15 percent power, was required to be operable. In addition, TS Section 3.3.6, "Control Rod Block Instrumentation," requires the APRM Neutron Flux-High Rod Block Instrumentation to be operable.

During the removal of six Local Power Range Monitor (LPRM) strings, the operations staff did not place the LPRM mode selector switch to "Bypass." This resulted in the APRMs output being non-conservative. This condition was not immediately recognized and the actions required by TS were not performed leading to a condition prohibited by TS.

The significance of this event is minimal, since the Intermediate Range Monitor (IRM) system was operable and provided a High Neutron Flux trip set at a conservatively lower flux rate than provided by the APRM flux trip.

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

**PLANT AND SYSTEM IDENTIFICATION**

General Electric - Boiling Water Reactor, 3323 Megawatts Thermal Rated Core Power

Energy Industry Identification System (EIIS) codes are identified in the text as [XX].

**A. CONDITION PRIOR TO EVENT**

Unit(s): 1                                      Event Date: 11/01/99                      Event Time: 2005 Hours  
 Reactor Mode(s): 5                              Power Level(s): 000  
 Mode(s) Name: Refuel

**B. DESCRIPTION OF EVENT**

On November 1, 1999, at 2005 hours, during an operating experience review, it was determined that all of the Unit 1 Average Power Range Monitors (APRMs) [IG] were inoperable. The Unit was in a refueling outage, and six Local Power Range Monitor (LPRM) [IG] strings were being replaced. The six LPRM strings had been taken out of service on October 27, 1999, by removing the 100 VDC power supply fuses to the detectors; however, the associated LPRM mode selector switches had not been placed in the "Bypass" position.

In this configuration, with the fuses pulled and the LPRM mode selector switches in "Operate", the LPRM output signals would always be zero. However, the LPRM input counter would count the inoperable detectors, and the APRM averaging circuit would sum and average the inoperable along with the operable LPRMs. This would result in a power indication lower than actual. An Instrument Maintenance Department (IMD) Supervisor identified the condition, after reviewing a 1996 operating experience report in which another facility had failed to bypass the LPRMs. The IMD Supervisor alerted Operations shift personnel of the potential problem, and the switch positions were inspected and verified to be in the incorrect "Operate" position. The APRMs were declared inoperable at 2005 on November 1, 1999.

Technical Specification (TS) Section 3.3.1, "Reactor Protection System Instrumentation," requires the APRM Neutron Flux Setdown, set at 15 percent power, to be operable in Mode 5. In addition, TS Section 3.3.6, "Control Rod Block Instrumentation," requires the APRM Neutron Flux-High Rod Block Instrumentation to be operable. With the APRMs inoperable the appropriate actions of these TS are required to be entered.

TS Table 3.3.1-1 Action 3 requires that when less than the minimum two channels of the APRM Neutron Flux-High, Setdown trip are operable, core alterations are to be suspended, and all insertable control rods must be inserted within one hour. Because core alterations were in progress since October 28, 1999, while the APRM Neutron Flux-High, Setdown trip function was non-conservative, Technical Specification requirements were not met.

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Additionally, TS Table 3.3.6-1, "Control Rod Withdrawal Block Instrumentation" Function 2.d, "APRM Neutron Flux-High," Action 61, requires that with two or more less than the required minimum operable channels per trip function, at least one inoperable channel be placed in the trip position within one hour. This Technical Specification requirement was also not met. Since less than one hour elapsed from the time of discovery to the time APRM operability was restored, an inoperable channel was not placed in the trip position.

The condition was immediately corrected by adding the LPRM mode selector switches to the out-of-service, and placing them in the "Bypass" position. APRM channels A, B, C, and D were declared operable at 2100 on November 1, 1999. APRM Channels E and F were inoperable for unrelated reasons.

This event is reportable under 10 CFR 50.73(a)(2)(i) as a condition prohibited by Technical Specifications.

Late in the event investigation, it was noted that Rod Block Monitor Calibration procedures LIS-NR-105A/105B and LIS-NR-205A/205B and Functional Test procedure LIS-NR-305 and LIS-NR-405 require that LPRM inputs be disconnected from the APRM channels. These procedures do not require that the LPRM mode selector switches be placed in "Bypass", and therefore do not provide adequate assurance that Technical Specification requirements are being met. The scope of the root cause investigation has been expanded to include this condition, and past performances of these procedures are being reviewed to determine whether Technical Specification requirements were, in fact, met.

**C. CAUSE OF EVENT**

The root cause investigation of this event is still in progress. Apparent causes include a lack of knowledge of the operation and operability requirements of the APRMs and LPRMs, and inadequate procedural guidance.

An apparent contributing cause was a failure to identify operating experience information that could have prevented the event. This outage (L1R08) was the first in which the core was not fully offloaded during refueling. With the core offloaded, the above TS would not have applied. The preparations for L1R08 did not include a review of past operating experience information for events that had occurred during Mode 5 fuel shuffles.

**D. SAFETY ANALYSIS**

The significance of this event is minimal, since the Intermediate Range Monitor (IRM) [IG] system was operable and provided a High Neutron Flux trip set at a conservatively lower flux rate than provided by the APRM flux trip.

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**E. CORRECTIVE ACTIONS**

1. The condition was immediately corrected by adding the LPRM mode selector switches to the out-of-service, and placing them in the "Bypass" position (complete).
2. A supplement to this report will be submitted detailing the results of the root cause investigation. The supplement will address whether past performances of the Rod Block Monitor surveillance procedures resulted in actual non-compliance with Technical Specification requirements. The supplement will also include the results of an extent of condition review of procedures that could impact the operability of the APRMs (ATM# 18727-31).

**F. PREVIOUS OCCURRENCES**

LER 01-99-005 "Lifted Leads Result in Inoperable Average Power Range Monitor Thermal Power Upscale Trip"

Leads that defeated the output of one of the Reactor Recirculation flow converters to the Average Power Range Monitors (APRM) were lifted. This placed the facility in a condition where a single failure would have prevented the flow biased simulated thermal power upscale Reactor Protection System trip required by Technical Specification 3/4.3.1.

This event also indicated weaknesses in Operator knowledge of the APRMs and APRM operability. Corrective actions from this event were focused on Operator understanding of APRM operability with respect to the flow converters, and would not have prevented this event.

**G. COMPONENT FAILURE DATA**

Since no component failure occurred, this section is not applicable.