Exelon Generation.
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Route 9 South
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RA-14-012 10 CFR 50.73

February 6, 2014

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

Oyster Creek Nuclear Generating Station
Renewed Facility Operating License No. DPR-16
NRC Docket No. 50-219

Subject: Licensee Event Report (LER) 2013-001-00, Automatic Reactor SCRAM due to an Invalid Intermediate Range Monitor (IRM) SCRAM Signal, Revision 1

Enclosed is LER 2013-001-01, Automatic Reactor SCRAM due to an Invalid Intermediate Range Monitor (IRM) SCRAM Signal, Revision 1. The LER was revised to add supplemental information as required by Revision 0. This event did not affect the health and safety of the public or plant personnel. This event did not result in a safety system functional failure. There are no regulatory commitments made in this LER submittal.

Should you have any questions concerning this letter, please contact Mike McKenna, Regulatory Assurance Manager, at (609) 971-4389.

Respectfully,

Russell R. Peak
Plant Manager
Oyster Creek Nuclear Generating Station

Enclosure: NRC Form 366, LER 2013-001-01

cc: Administrator, NRC Region 1
NRC Senior Resident Inspector - Oyster Creek Nuclear Generating Station
NRC Project Manager - Oyster Creek Nuclear Generating Station

IE22
NRR

NRC FORM 366 (10-2010) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 10/31/2013

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 FOIA/Privacy Section (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects.resource@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)

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
Oyster Creek, Unit 1	05000219	1 OF 3

4. TITLE

Automatic Reactor SCRAM due to an Invalid Intermediate Range Monitor (IRM) SCRAM Signal

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
									N/A	N/A
10	03	2013	2013	- 001 -	01	2	6	2014	FACILITY NAME: N/A	DOCKET NUMBER: N/A

9. OPERATING MODE

N

10. POWER LEVEL

0

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

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

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMBER *(Include Area Code)*
Michael McKenna, Regulatory Assurance Manager	(609) 971-4389

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
X	IG	RI	G080	Y	N/A	N/A	N/A	N/A	N/A

14. SUPPLEMENTAL REPORT EXPECTED

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

15. EXPECTED SUBMISSION DATE	MONTH	DAY	YEAR
	N/A	N/A	N/A

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

On 10/3/13 at 0643 EDT, during reactor startup, with the reactor critical and power in the intermediate range, an automatic reactor scram occurred due to an invalid (noise) intermediate range monitor (IRM) scram signal processed on both RPS trip systems. The SCRAM was caused by both Reactor Protection Systems (RPS) channels receiving simultaneous IRM Hi-Hi signals on IRM channels 12, 13, 14, 17, and 18.

Testing conducted by Analysis and Measurement Services (AMS) identified low shield to ground insulation resistances on multiple channels of the IRM system. This condition allowed significant noise coupling to occur which resulted in the erratic behavior of the IRM channels that led to the full reactor SCRAM. The noise which was received by the IRM channels has been determined to be caused by a shorted SRM 22 detector. The short circuit provided a path to ground for the high voltage potential used to bias the SRM detector.

The root cause of the SCRAM was the susceptibility of the Intermediate Range Monitor (IRM) channels to electrical noise due to low shield to ground insulation resistance. Contributing to this event was an internal fault of Source Range Monitor (SRM) detector 22 which caused a significant amount of noise to propagate onto the IRM channels resulting in spiking. SRM-22 was replaced during a subsequent maintenance outage on November 20, 2013.

There were no safety consequences as a result of this event. All control rods fully inserted and plant response was as expected. This event is being reported pursuant to: 10CFR50.73(a)(2)(iv)(A) due to an automatic actuation of the Reactor Protection System (RPS).

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
		YEAR	SEQUENTIAL NUMBER	REV NO.	
Oyster Creek, Unit 1	05000219	2013	- 001	- 01	2 OF 3

NARRATIVE

Plant Conditions Prior To Event

Event Date: October 3, 2013
Unit 1 Mode: Startup

Event Time: 0643 EDT
Power Level: 0%

Description of Event

An automatic reactor SCRAM occurred on October 3, 2013 at 0643 EDT during the plant startup from 1M30. The SCRAM was caused by both Reactor Protection Systems (RPS) channels receiving simultaneous IRM Hi-Hi signals on IRM channels 12, 13, 14, 17, and 18. The IRMs all became erratic at the same time, cycling between Hi-Hi and downscale. Source Range Monitors (SRMs) 23 and 24 also became erratic at this time. These erratic output signals occurred coincidentally with Source Range Monitor (SRM) 22 withdrawal to maintain counts in their acceptable range.

Testing conducted by Analysis and Measurement Services (AMS) identified low shield to ground insulation resistances on multiple channels of the IRM system. This condition allowed significant noise coupling to occur which resulted in the erratic behavior of the IRM channels that led to the full reactor SCRAM. The noise which was received by the IRM channels has been determined to be caused by a shorted SRM 22 detector. The short circuit provided a path to ground for the high voltage potential used to bias the SRM detector.

Analysis of Event

A full SCRAM was received due to actuation of RPS sub-channel relays 1K1, 1K2, and 2K2. It was determined from PPC trend data that IRMs 12-14, 17, and 18 caused the SCRAM. At the time of the event, IRMs 11 and 16 were bypassed. Further troubleshooting identified that the SCRAM occurred while withdrawing SRM detectors out of the core. It was identified that SRM 22 motion caused spiking of all IRM channels.

There were no safety consequences as a result of this event. All control rods fully inserted and plant response was as expected. This event is being reported pursuant to: 10CFR50.73(a)(2)(iv)(A) due to an automatic actuation of the Reactor Protection System (RPS).

Cause of Event

Troubleshooting has identified the motion of SRM-22, in and out of the core, as the source of noise causing spiking on the IRMs. When the high voltage to the SRM-22 detector was disconnected, there was no IRM spiking when the SRM detector was moved.

The root cause of the SCRAM was the susceptibility of the Intermediate Range Monitor (IRM) channels to electrical noise due to low shield to ground insulation resistance. Contributing to this event is an internal fault of Source Range Monitor (SRM) detector 22 which caused a significant amount of noise to propagate onto the IRM channels resulting in spiking.

Corrective Actions

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
		YEAR	SEQUENTIAL NUMBER	REV NO.	
Oyster Creek, Unit 1	05000219	2013	- 001 -	01	3 OF 3

NARRATIVE

SRM-22 high voltage cable was disconnected per the simple troubleshooting process. When the high voltage to the SRM-22 detector was disconnected, there was no IRM spiking when the SRM detector was moved. SRM-22 was not initially repaired, but electrically isolated. SRM-22(General Electric Part number 112C3144G037) was subsequently replaced during a Maintenance outage on November 20, 2013.

Actions were created to troubleshoot and repair low insulation resistances on IRM channels and implement a mitigation strategy to address EMI issues with the Nuclear Instrumentation System.

Previous Occurrences

There have been no similar Licensee Event Reports associated with this component failure submitted at OCNGS in the last two years.

Component Data

Components	IEEE 805 System ID	IEEE 803A Function
Neutron Monitors	IG	RI