P.O. Box 63
Lycoming, New York 13093

Constellation Energy Group

Nine Mile Point
Nuclear Station

November 3, 2003
NMP2L 2105

United States Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

Subject: Nine Mile Point Unit 2
Docket No. 50-410
Facility Operating License No. NPF-69

Licensee Event Report 03-003, "Oscillation Power Range Monitor Inoperable Due to Non-Conservative Settings For Adjustable Parameters"

Gentlemen:

In accordance with 10 CFR 50.73(a)(2)(i)(B), 10 CFR 50.73(a)(2)(v)(A) and 10 CFR 50.73(a)(2)(vii)(A) we are submitting Licensee Event Report (LER) 03-003, "Oscillation Power Range Monitor Inoperable Due to Non-Conservative Settings For Adjustable Parameters."

Very truly yours,

LA Hopkins

Lawrence A. Hopkins
Plant General Manager

LAH/TFS/bjh
Attachment

cc: Mr. H. J. Miller, NRC Regional Administrator, Region I
Mr. G. K. Hunegs, NRC Senior Resident Inspector

IE22

NRC FORM 366 U.S. NUCLEAR REGULATORY COMMISSION
(1-2001)

APPROVED BY OMB NO. 3150-0104 EXPIRES 7-31-2004

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)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Nine Mile Point, Unit 2	05000410	1 OF 4

TITLE (4)

Oscillation Power Range Monitor Inoperable Due to Non-Conservative Settings For Adjustable Parameters

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
										05000
10	02	2003	2003	- 003 -	00	11	03	2003	FACILITY NAME	DOCKET NUMBER 05000

OPERATING MODE (9)	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply) (11)							
1	20.2201(b)		20.2203(a)(3)(ii)		50.73(a)(2)(ii)(B)		50.73(a)(2)(ix)(A)	
POWER LEVEL (10)	20.2201(d)		20.2203(a)(4)		50.73(a)(2)(iii)		50.73(a)(2)(x)	
100	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)	X	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)		OTHER	
	20.2203(a)(2)(iii)		50.46(a)(3)(ii)		50.73(a)(2)(v)(C)		Specify in Abstract below or in	
	20.2203(a)(2)(iv)		50.73(a)(2)(i)(A)		50.73(a)(2)(v)(D)		NRC Form 366A	
	20.2203(a)(2)(v)	X	50.73(a)(2)(i)(B)	X	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)
Miguel A. Armenta, Supervisor Fuels	315-349-7340

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
X	YES (If yes, complete EXPECTED SUBMISSION DATE).	NO		12	05	03

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

On October 2, 2003, Nine Mile Point Unit 2 (NMP2) was operating at approximately 100% power when Part 21 information was received from General Electric (GE) informing Nine Mile Point Nuclear Station, LLC (NMPNS) that the Oscillation Power Range Monitor (OPRM) may not prevent exceeding the Safety Limit Minimum Critical Power Ratio (SLMCPR) for all anticipated instability events. The OPRM was declared inoperable and the action statement of Technical Specification 3.3.1.1, "Reactor Protection System Instrumentation," was entered. As required by the action statement, alternate methods to detect and suppress thermal-hydraulic instabilities were implemented, which allows continued operation for 120 days with the OPRM inoperable.

A preliminary GE evaluation has determined the cause to be a failure to recognize the conditioning filter functionality, resulting in the use of a conditioning filter and associated settings that were not appropriate for the expected OPRM signal characteristics. This also resulted in testing specifications that were not appropriate to ensure correct system performance. Proposed corrective actions involve changing the setpoints for the Conditioning Filter Cutoff Frequency and the Period Tolerance to appropriate values. NMPNS will conduct a review of the GE evaluation prior to accepting the cause and proposed corrective actions.

This event is reportable in accordance with 10 CFR 50.73(a)(2)(i)(B), 10 CFR 50.73(a)(2)(v)(A) and 10 CFR 50.73(a)(2)(vii)(A) in that the non-conservatism could result in OPRM setpoints that may not provide Minimum Critical Power Ration (MCPR) Safety Limit protection for all anticipated thermal hydraulic instability events.

LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET (2) NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Nine Mile Point, Unit 2	05000410	2003	-- 003	-- 00	2 OF 4

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

I. Description of Event

On October 2, 2003, Nine Mile Point Unit 2 (NMP2) was operating at approximately 100% power when Part 21 information was received from General Electric (GE) informing Nine Mile Point Nuclear Station, LLC (NMPNS) that the Oscillation Power Range Monitor (OPRM) may not prevent exceeding the Safety Limit Minimum Critical Power Ratio (SLMCPR) for all anticipated instability events. As a result, the OPRM was declared inoperable and the action statement of Technical Specification 3.3.1.1, "Reactor Protection System Instrumentation," was entered. As required by the action statement, alternate methods to detect and suppress thermal-hydraulic instabilities were implemented, which allows continued operation for 120 days with the OPRM inoperable.

The OPRM consists of four channels each containing 30 cells. Each cell monitors the number of reactor power oscillations and the amplitude of the oscillations. A reactor trip is generated when the number of oscillations, the conformation count (CC), and the normalized oscillation amplitude both exceed their respective setpoints in at least one cell in two or more channels simultaneously. According to the licensing basis, the oscillation is expected to reach the CC setpoint prior to the amplitude set point.

On July 24, 2003, with the OPRM armed, NMP2 experienced a slow growing core wide instability event that resulted in an OPRM trip of the reactor. The event is described in Licensee Event Report (LER) 03-002. In the NMP2 event, the OPRM detected the instability and initiated a reactor scram that provided SLMCPR protection. However, post-event analyses by GE concluded that the OPRM did not perform as expected, in that more cells exceeded their amplitude setpoint prior to exceeding their CC setpoint. This was attributed to a large number of unexpected CC resets that occurred throughout the event. The analyses by GE concluded that the adjustable period confirmation variables, as set at NMP2 and approved by GE, did not adequately filter out high frequency noise creating a signal that caused the frequent CC resets.

Based on analysis of the NMP2 event, GE could not confirm that the OPRM, with the current settings, would prevent exceeding the SLMCPR for all anticipated instability events.

II. Cause of Event

A preliminary GE evaluation concluded that the apparent cause was a failure to recognize the conditioning filter functionality, resulting in the use of a conditioning filter and associated settings that were not appropriate for the expected OPRM signal characteristics. This also resulted in testing specifications that were not appropriate to ensure correct system performance. Testing/tuning against unstable plant data did not include specific acceptance criteria for the required trip signal timing. As a result, the permissible values of the detection algorithm adjustable parameters included setting values that may not be appropriate when applied to the OPRM system raw input signal for the purpose of generating timely trip signal.

NMPNS will conduct a review of the GE evaluation prior to accepting the cause and proposed corrective actions. A supplement will be provided containing the results of the review and identifying corrective actions.

FACILITY NAME (1)	DOCKET (2) NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Nine Mile Point, Unit 2	05000410	2003	-- 003 --	00	3 OF 4

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

III. Analysis of Event

The OPRM at NMP2 had non-conservative settings for the adjustable period confirmation variables (50 msec for the period tolerance and 3.0 Hz for the cutoff frequency). GE could not confirm that the OPRM, with the current settings, would prevent exceeding the SLMCPR for all anticipated instability events. Because of the non-conservatism, all OPRM channels were declared inoperable. This condition is reportable in accordance with 10 CFR 50.73(a)(2)(v)(A), "Any event or condition that could have prevented the fulfillment of the safety function of structures or systems that are needed to: (A) Shut down the reactor and maintain it in a safe shutdown condition," and 10 CFR 50.73(a)(2)(vii)(A), "Any event where a single cause or condition caused at least one independent train or channel to become inoperable in multiple systems or two independent trains or channels to become inoperable in a single system designed to: (A) Shut down the reactor and maintain it in a safe shutdown condition." The OPRM would have been inoperable since activation of the trip function in April 2000. This would exceed the action statement requirement of Technical Specification 3.3.1.1, Reactor Protection System (RPS) Instrumentation, which is reportable in accordance with 10 CFR 50.73(a)(2)(i)(B), "Any operation or condition which was prohibited by the plant's Technical Specifications."

The following were considered when assessing the significance of this event:

- The SLMCPR is set such that 99.9 percent of the fuel rods are expected to avoid boiling transition if the limit is not violated. The critical power at which boiling transition is calculated to occur has been adopted as a fuel design criterion. However, fuel damage does not necessarily occur if a fuel rod actually experiences boiling transition. The MCPR Safety Limit is a conservative limit for this application because the fuel and clad response to these oscillations are relatively mild. If boiling transition was to actually occur, the cyclic nature of the event provides for clad rewet every two seconds resulting in a nearly negligible cladding temperature transient.
- Although the OPRM may not meet the licensing criteria for SLMCPR protection, the system would still provide a measure of automatic protection.
- There were no adverse consequences. The OPRM provided SLMCPR protection for the July 24, 2003 event at NMP2. MCPR was estimated to be substantially greater than the 1.06 Safety Limit.
- A qualitative risk analysis of the inoperable OPRM concluded that an inoperable OPRM has negligible impact on risk.

Based on the above, the non-conservative OPRM settings did not pose a threat to the health and safety of plant personnel or the public.

IV. Corrective Actions

After completing a review of the GE evaluation, NMPNS will provide corrective actions in a supplement.

- The OPRM was declared inoperable and the Technical Specification required alternate method to detect and suppress thermal-hydraulic instability oscillations was activated. The OPRM remains armed.
- After completing a review of the GE evaluation, NMPNS will provide additional corrective actions in a supplement.

FACILITY NAME (1)	DOCKET (2) NUMBER (2)	LER NUMBER (6)			PAGE (3)
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Nine Mile Point, Unit 2	05000410	2003	-- 003 --	00	4 OF 4

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

V. Additional Information

1. Failed Components: None

2. Previous similar events: Will be provided upon completion of review of GE evaluation.

3. Identification of components referred to in this Licensee Event Report:

Components	IEEE 805 System ID	IEEE 803A Function
Oscillation Power Range Monitors	IG	N/A
Reactor Protection System	JC	N/A