



10 CFR 50.73

NMP1L3400
May 11, 2021

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

Nine Mile Point Nuclear Station, Unit 1
Renewed Facility Operating License No. DPR-63
Docket No. 50-220

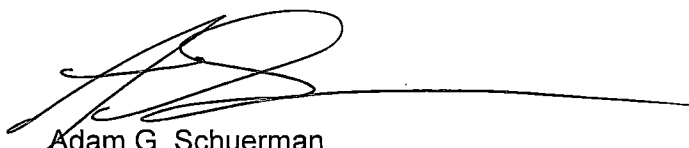
Subject: NMP1 Licensee Event Report 2021-001, *Average Power Range Monitors
Declared Inoperable Due to Trip of Reactor Recirculation Pump 13*

In accordance with the reporting requirements contained in 10 CFR 50.73(a)(2)(v)(A), please find enclosed NMP1 Licensee Event Report (LER) 2021-001, *Average Power Range Monitors Declared Inoperable Due to Trip of Reactor Recirculation Pump 13*

There are no regulatory commitments contained in this letter.

Should you have any questions regarding the information in this submittal, please contact Brandon Shultz, Site Regulatory Assurance Manager, at (315) 349-7012.

Respectfully,



Adam G. Schuerman
Plant Manager, Nine Mile Point Nuclear Station
Exelon Generation Company, LLC

AGS/DW

Enclosure: NMP1 Licensee Event Report 2021-001, *Average Power Range Monitors
Declared Inoperable Due to Trip of Reactor Recirculation Pump 13*

cc: NRC Regional Administrator, Region I
NRC Resident Inspector
NRC Project Manager

TE22
NRR

May 11, 2021
NMP1 LER 2021-001
Page 2

bcc: P. M. Orphanos
A.G. Schuerman
C. D. Giambrone
B. K. Shultz
D.J. Wolniak
S. Brannan Cole
D. T. Gudger
D. P. Ferraro
M. J. Cazzolli

COMMITMENTS IDENTIFIED IN THIS CORRESPONDENCE	
•	None

Enclosure

NMP1 Licensee Event 2019-004
*Average Power Range Monitors Declared Inoperable
Due to Trip of Reactor Recirculation Pump 13*
Nine Mile Point Nuclear Station, Unit 1

Renewed Facility Operating License No. DPR-63

**LICENSEE EVENT REPORT (LER)**

(See Page 2 for required number of digits/characters for each block)

(See NUREG-1022, R.3 for instruction and guidance for completing this form
<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/>)

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 Information Services Branch (T-2 F43), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by 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.

1. FACILITY NAME

Nine Mile Point Unit 1

2. DOCKET NUMBER

05000220

3. PAGE

1 OF 5

4. TITLE

Average Power Range Monitors Declared Inoperable Due to Trip of Reactor Recirculation Pump 13

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		
03	12	2021	2021	- 001	- 00	05	11	2021	N/A	N/A		
9. OPERATING MODE			11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)									
N			<input type="checkbox"/> 20.2201(b)			<input type="checkbox"/> 20.2203(a)(3)(i)			<input type="checkbox"/> 50.73(a)(2)(ii)(A)		<input type="checkbox"/> 50.73(a)(2)(viii)(A)	
			<input type="checkbox"/> 20.2201(d)			<input type="checkbox"/> 20.2203(a)(3)(ii)			<input type="checkbox"/> 50.73(a)(2)(ii)(B)		<input type="checkbox"/> 50.73(a)(2)(viii)(B)	
			<input type="checkbox"/> 20.2203(a)(1)			<input type="checkbox"/> 20.2203(a)(4)			<input type="checkbox"/> 50.73(a)(2)(iii)		<input type="checkbox"/> 50.73(a)(2)(ix)(A)	
			<input type="checkbox"/> 20.2203(a)(2)(i)			<input type="checkbox"/> 50.36(c)(1)(i)(A)			<input type="checkbox"/> 50.73(a)(2)(iv)(A)		<input type="checkbox"/> 50.73(a)(2)(x)	
10. POWER LEVEL 98			<input type="checkbox"/> 20.2203(a)(2)(ii)			<input type="checkbox"/> 50.36(c)(1)(ii)(A)			<input checked="" type="checkbox"/> 50.73(a)(2)(v)(A)		<input type="checkbox"/> 73.71(a)(4)	
			<input type="checkbox"/> 20.2203(a)(2)(iii)			<input type="checkbox"/> 50.36(c)(2)			<input type="checkbox"/> 50.73(a)(2)(v)(B)		<input type="checkbox"/> 73.71(a)(5)	
			<input type="checkbox"/> 20.2203(a)(2)(iv)			<input type="checkbox"/> 50.46(a)(3)(ii)			<input type="checkbox"/> 50.73(a)(2)(v)(C)		<input type="checkbox"/> 73.77(a)(1)	
			<input type="checkbox"/> 20.2203(a)(2)(v)			<input type="checkbox"/> 50.73(a)(2)(i)(A)			<input type="checkbox"/> 50.73(a)(2)(v)(D)		<input type="checkbox"/> 73.77(a)(2)(i)	
			<input type="checkbox"/> 20.2203(a)(2)(vi)			<input type="checkbox"/> 50.73(a)(2)(i)(B)			<input type="checkbox"/> 50.73(a)(2)(vii)		<input type="checkbox"/> 73.77(a)(2)(ii)	
			<input type="checkbox"/> 50.73(a)(2)(i)(C)			<input type="checkbox"/> OTHER		Specify in Abstract below or in NRC Form 366A				

12. LICENSEE CONTACT FOR THIS LER

LICENSEE CONTACT

Brandon Shultz, Site Regulatory Assurance Manager

TELEPHONE NUMBER (Include Area Code)

(315) 349-7012

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	AD	EC	GE	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

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

At 98% power on March 12, 2021 at approximately 21:02, Reactor Recirculation Pump #13 (RRP 13) tripped while lowering pump flow in preparation to secure it for planned maintenance. Following the RRP trip, the Average Power Range Monitors (APRMs) flow bias trips were inoperable due to reverse flow through the RRP. The APRMs were restored to operable on March 12, 2021 at 2110 when the RRP 13 discharge blocking valve was closed by operations, eliminating the reverse flow condition through the pump. This event is reportable under 10 CFR 50.72(b)(3)(v)(A) and 10 CFR 50.73(a)(2)(v)(A) as 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.

The cause of the RRP 13 trip is generator field overcurrent due to a degraded voltage adjust potentiometer. Corrective actions included replacing the voltage adjust potentiometer. The event described in this LER is documented in the plant's corrective action program.

**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

(See NUREG-1022, R.3 for instruction and guidance for completing this form
<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/>)

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 Information Services Branch (T-2 F43), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by 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.

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Nine Mile Point Unit 1	05000220	2021	- 001	- 00

NARRATIVE**I. DESCRIPTION OF EVENT****A. PRE-EVENT PLANT CONDITIONS:**

Prior to the event, Nine Mile Point Unit 1 (NMP1) was in the power operating condition at 98% reactor power. All five Reactor Recirculation Pumps (RRP) were in operation.

B. EVENT:

On March 12, 2021, at approximately 21:02, NMP1 experienced a trip of RRP 13 at 98% power. At Nine Mile Point Unit 1, due to the five RRP pump design, a trip of an RRP at power will result in reverse flow through the tripped pump. This reverse flow condition results in an unconservative total flow input to the APRM logic resulting in the APRM flow biased trip set point being higher than the allowable Technical Specification value. As a result, Operations declared the APRMs inoperable.

At 21:10, Operations closed the RRP 13 discharge valve in accordance with special operation procedure N1-SOP-1.3 terminating the reverse flow condition. The APRMs were declared operable and Technical Specification 3.6.2a and g were exited.

Nine Mile Point Unit 2 (NMP2) was unaffected by the RRP trip at NMP1.

Operations performed the ENS notification (#55137) required by 10 CFR 50.72(b)(3)(v)(A) and 10 CFR 50.73(a)(2)(v)(A) as 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.

This event has been entered into the plant's corrective action program as issue report IR 4408605.

C. INOPERABLE STRUCTURES, COMPONENTS, OR SYSTEMS THAT CONTRIBUTED TO THE EVENT:

No other systems, structures, or components contributed to this event.

D. DATES AND APPROXIMATE TIMES OF MAJOR OCCURRENCES AND OPERATOR ACTIONS:

The dates, times, and major occurrences and operator actions for this event are as follows.

March 12, 2021

**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

(See NUREG-1022, R.3 for instruction and guidance for completing this form
<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/>)

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 Information Services Branch (T-2 F43), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOF-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.

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Nine Mile Point Unit 1	05000220	2021	- 001	- 00

NARRATIVE

20:04 - Commenced N1-OP-43B Normal Power Operations Section 2.0 for the purpose of removing RRP 13 from Service.

21:02 - RRP 13 trip

21:02 - APRMs declared inoperable and Technical Specification 3.6.2a and g are entered for the scram and rod block function.

21:03 - N1-SOP-1.3, "Recirc Pump Trip at Power" is entered

21:10 - RRP 13 discharge valve is closed per N1-SOP-1.3, APRMs declared operable and Technical Specifications 3.6.2a and 3.6.2g are exited.

E. METHOD OF DISCOVERY:

This event was discovered by Reactor Operators when the control room alarm was received for "React Recirc M-G Set 13".

F. SAFETY SYSTEM RESPONSES:

No operational conditions requiring the response of safety systems occurred as a result of this condition.

II. CAUSE OF EVENT:

The cause of the RRP 13 trip is generator field overcurrent due to a degraded voltage adjust potentiometer. The potentiometer P1 was tested with a digital multimeter and the reading was found erratic versus smooth. There was also mechanical resistance noted when manipulated.

III. ANALYSIS OF THE EVENT:

This event is reportable under 10 CFR 50.72(b)(3)(v)(A) and 10 CFR 50.73(a)(2)(v)(A) as 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.

There were no actual nuclear safety consequences associated with the event. Although the flow-biased portion of the high neutron flux trips was not conservative, the trip function remained available. A portion of the flow-biased trip function curve is clamped at a maximum value of 122% of rated thermal power. This portion of the setpoint curve was not impacted by the non-conservative flow signal and remained available to provide the scram trip function as designed.

An assessment of the potential impact on the safety limit minimum critical power ratio (SLMCPR) was performed. This assessment included a review of thermal hydraulic stability and transients. NMP1 is analyzed for thermal-hydraulic instability using the Boiling Water Reactor Owners' Group Option II. The Option II analysis is performed to demonstrate the

**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

(See NUREG-1022, R.3 for instruction and guidance for completing this form
<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/>)

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 Information Services Branch (T-2 F43), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by 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.

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Nine Mile Point Unit 1	05000220	2021	- 001	- 00

NARRATIVE

SLMCPR protection for postulated instability events by the APRM flow-biased flux scram setpoints. Should oscillations occur, they will be automatically detected and suppressed by the flow biased APRM neutron flux scram. This analysis credits the flow-biased flux scram. As such, when APRMs are declared inoperable, operators are required to use procedures in conjunction with the Exclusion and Restricted regions on the power to flow map, to protect the SLMCPR. At 98% reactor power during the APRM inoperable scenario, instability is not a concern barring additional reactor recirculation flow reduction and entrance into the Restricted Region.

For transient review, the Recirculation Pump Trip and Stall Malfunctions are inherent power decay situations in which the core thermal transients remain within permissible limits. Transient results from tripping various combinations of recirculation pumps do not result in a scram or trip. With respect to cycle specific transient analyses performed for Anticipated Operational Occurrences (AOOs), these events terminate on a direct scram (Turbine Stop Valve Closure, Generator Load Reject, MSIV closure) and are therefore, unaffected by APRM reading. As such, if one of these events were to occur after a RRP trip and before the APRMs could be declared operable again, the SLMCPR would still be protected.

The direct cause of the APRMs being declared inoperable was the trip associated with the RRP 13. Operators were able to stabilize plant conditions quickly by properly executing the respective operating procedures and remaining in compliance with TS requirements.

It is concluded that the safety significance of this event is low, and the event did not pose a threat to the health and safety of the public or plant personnel.

This event could affect the NRC Regulatory Oversight Process Indicator for safety system functional failures. Presently an engineering analysis is being performed to verify the safety function of protecting SLMCPR was maintained.

IV. CORRECTIVE ACTIONS:**A. ACTION TAKEN TO RETURN AFFECTED SYSTEMS TO PRE-EVENT NORMAL STATUS:**

Replacement of the voltage adjust potentiometer was completed. The RRP 13 was placed back into service.

B. ACTION TAKEN OR PLANNED TO PREVENT RECURRENCE:

The four remaining RRP's were inspected with no degradation noted on the voltage adjust potentiometers.

**LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET**

(See NUREG-1022, R.3 for instruction and guidance for completing this form
<http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/>)

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 Information Services Branch (T-2 F43), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by 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.

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Nine Mile Point Unit 1	05000220	2021	- 001	- 00

NARRATIVE**V. ADDITIONAL INFORMATION:****A. FAILED COMPONENTS:**

The voltage adjust potentiometer was determined to be degraded.

B. PREVIOUS LERs ON SIMILAR EVENTS:

LER 2019-004 reported the trip of RRP 11 due to a degraded tachometer generator.

C. THE ENERGY INDUSTRY IDENTIFICATION SYSTEM (EIIIS) COMPONENT FUNCTION IDENTIFIER AND SYSTEM NAME OF EACH COMPONENT OR SYSTEM REFERRED TO IN THIS LER:**COMPONENT****IEEE 803
FUNCTION
IDENTIFIER****IEEE 805
SYSTEM
IDENTIFICATION**

Average Power Range Monitor (APRM)
Reactor Recirculation Pumps

JIC
P

JC
AD