



Constellation.

10 CFR 50.73

NMP2L2867
January 30, 2024

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

Nine Mile Point Nuclear Station, Unit 2
Renewed Facility Operating License No. NPF-69
Docket No. 50-410

Subject: Supplement to NMP2 Licensee Event Report 2023-001, Automatic Reactor
Scram on Low Level Due to Partial Loss of Feedwater

In accordance with the reporting requirements contained in 10 CFR 50.73(a)(2)(iv)(A), please
find enclosed Supplement to NMP2 Licensee Event Report (LER) 2023-001, Automatic Reactor
Scram on Low Level Due to Partial Loss of Feedwater.

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,

01/26/24

Carl Crawford
Plant Manager, Nine Mile Point Nuclear Station

CC/MLR

Enclosure: Supplement to NMP2 Licensee Event Report 2023-001, Automatic Reactor
Scram on Low Level Due to Partial Loss of Feedwater

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

1E22
NRR

Enclosure

Supplement to NMP2 Licensee Event Report 2023-001,
Automatic Reactor Scram on Low Level Due to Partial Loss of Feedwater
Nine Mile Point Nuclear Station, Unit 2

Renewed Facility Operating License No. NPF-69



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 FOIA, Library, and Information Collections Branch (T-6 A10M), U. S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by email to Infocollcts.Resource@nrc.gov, and the OMB reviewer at: OMB Office of Information and Regulatory Affairs, (3150-0104), Attn: Desk Officer for the Nuclear Regulatory Commission, 725 17th Street NW, Washington, DC 20503, email: ora_submission@omb.eop.gov. The NRC may not conduct or sponsor, and a person is not required to respond to, a collection of information unless the document requesting or requiring the collection displays a currently valid OMB control number.

1. Facility Name Nine Mile Point Unit 2	<input checked="" type="checkbox"/> 050 <input type="checkbox"/> 052	2. Docket Number 410	3. Page 1 OF 4
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4. Title
 Supplement to LER 2023-001-00, Automatic Reactor Scram on Low Level Due to Partial Loss of Feedwater

5. Event Date			6. LER Number			7. Report Date			8. Other Facilities Involved	
Month	Day	Year	Year	Sequential Number	Revision No.	Month	Day	Year	Facility Name	Docket Number
09	02	2023	2023	001	01	01	30	2024	Facility Name	<input type="checkbox"/> 050
									Facility Name	<input type="checkbox"/> 052

9. Operating Mode Mode 1, Power Operation **10. Power Level** 100%

11. This Report is Submitted Pursuant to the Requirements of 10 CFR §: (Check all that apply)

<input type="checkbox"/> 10 CFR Part 20	<input type="checkbox"/> 20.2203(a)(2)(vi)	<input type="checkbox"/> 10 CFR Part 50	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)	<input type="checkbox"/> 73.1200(a)
<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)	<input type="checkbox"/> 73.1200(b)
<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)	<input type="checkbox"/> 73.1200(c)
<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.36(c)(2)	<input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)	<input type="checkbox"/> 73.1200(d)
<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 10 CFR Part 21	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 10 CFR Part 73	<input type="checkbox"/> 73.1200(e)
<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 21.2(c)	<input type="checkbox"/> 50.69(g)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.77(a)(1)	<input type="checkbox"/> 73.1200(f)
<input type="checkbox"/> 20.2203(a)(2)(iii)		<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> 73.77(a)(2)(i)	<input type="checkbox"/> 73.1200(g)
<input type="checkbox"/> 20.2203(a)(2)(iv)		<input type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	<input type="checkbox"/> 73.77(a)(2)(ii)	<input type="checkbox"/> 73.1200(h)
<input type="checkbox"/> 20.2203(a)(2)(v)		<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)		

OTHER (Specify here, in abstract, or NRC 366A).

12. Licensee Contact for this LER

Licensee Contact Brandon Shultz, Site Regulatory Assurance Manager	Phone Number (Include area code) (315) 349-7012
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13. Complete One Line for each Component Failure Described in this Report

Cause	System	Component	Manufacturer	Reportable to IRIS	Cause	System	Component	Manufacturer	Reportable to IRIS
B	SJ	LCV	CCI	Y					

14. Supplemental Report Expected <input type="checkbox"/> No <input type="checkbox"/> Yes (If yes, complete 15. Expected Submission Date)	15. Expected Submission Date Month: Day: Year:
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16. Abstract (Limit to 1326 spaces, i.e., approximately 13 single-spaced typewritten lines)

On 9/2/2023 at 0632 EDT, with Nine Mile Point Nuclear Station operating at 100% power, a Feedwater transient occurred resulting in a Reactor Protection System (RPS) Automatic Reactor Scram on Low Level (Level 3, 159.3"). Following the scram, reactor water level dropped below Level 2 (108.8") resulting in a Group 2 Recirc Sample System Isolation, Group 3 Traversing Incore Probe (TIP) Isolation Valve Isolation, Group 6 and 7 Reactor Water Cleanup Isolation, and Group 9 Containment Purge Isolations.

All control rods inserted as expected. High Pressure Core Spray and Reactor Core Isolation Cooling (RCIC) initiated and injected as expected. Emergency Core Cooling Systems (ECCS) and RCIC were secured and normal reactor pressure and level control was established for hot shutdown.

This event is reportable in accordance with 10 CFR 50.73(a)(2)(iv)(A).



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

(See NUREG-1022, R.3 for instruction and guidance for completing this form
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1. FACILITY NAME Nine Mile Point Unit 2	<input checked="" type="checkbox"/> 050	2. DOCKET NUMBER 410	3. LER NUMBER		
	<input type="checkbox"/> 052		YEAR	SEQUENTIAL NUMBER	REV NO.
			2023	- 001	- 01

NARRATIVE

THE ENERGY INDUSTRY IDENTIFICATION SYSTEM (EIS) COMPONENT FUNCTION IDENTIFIED AND SYSTEM NAME OF EACH COMPONENT OR SYSTEM REFERRED TO IN THIS LER ARE ENCLOSED WITHIN [BRACKETS]

I. DESCRIPTION OF EVENT

A. PRE-EVENT PLANT CONDITIONS:

Prior to the event, NMP2 was in Mode 1 (Power Operation) at 100% power.

B. EVENT:

On 9/2/2023 at 0632 EDT, with Nine Mile Point Nuclear Station operating at 100% power, a Feedwater [SJ] transient occurred resulting in an RPS Automatic Reactor Scram on Low Level (Level 3, 159.3"). Following the Scram, reactor water level dropped below Low Low Level (Level 2, 108.8") resulting in a Group 2 Recirc Sample System Isolation [AD], Group 3 TIP Isolation Valve Isolation, Group 6 and 7 Reactor Water Cleanup Isolation [CE], and Group 9 Containment Purge Isolations [BB].

All control rods inserted as expected. High Pressure Core Spray [BG] and Reactor Core Isolation Cooling [BN] initiated and injected as expected. ECCS Systems and RCIC were secured and normal reactor pressure and level control was established for hot shutdown.

This event is reportable in accordance with 10 CFR 50.73(a)(2)(iv)(A).

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

None.

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

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

September 2, 2023:

0632 – A sudden reduction in Feedwater flow causes level lowering to Low Level (Level 3, 159"), resulting in an RPS Automatic Reactor Scram.

0632 – Shortly following the scram, Low Low Level (Level 2, 108.8") is reached, resulting in Group 2, 3, 6, 7, 8, and 9 isolations. Recirculating Pumps trip, and High Pressure Core Spray (HPCS) and Reactor Core Isolation Cooling (RCIC) automatically initiate.



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			2023	- 001	- 01

NARRATIVE

E. METHOD OF DISCOVERY:

This event was self-revealed when RPS Automatic Scram signal was received on Low Level (Level 3, 159").

F. SAFETY SYSTEM RESPONSES:

All safety systems responded per design.

II. CAUSE OF THE EVENT

The direct cause of the Feedwater transient was due to stem-plug separation of the 2FWS*LV10B, Level Control Valve Feedwater Flow B, which resulted loss of flow from the 'B' Feedwater line. The B Feedwater Level Control Valve was disassembled for inspection to determine if stem-to-plug separation was the cause of the instantaneous loss of Feedwater flow. It was observed that the plug was no longer connected to the stem, with the last three threads on the stem having been visibly damaged. Discovery also noted the tab lock washer was not bent up on the stem collar and the anti-rotation pin was absent from the tab washer. The investigation confirmed the tab lock washer bend was not performed at the vendor facility prior to installation. PowerLabs failure analysis concluded the anti-rotation pin was correctly installed on the tab lock washer. The bulk of the stem threads were intact, suggesting the plug had unthreaded from the stem. Remnants of the Teflon balance seal assembly were located on the top surface of the plug.

III. ANALYSIS OF THE EVENT

The scram did not have any impact to the health or safety of the public. All safety systems responded per design.

Failure analysis of the stem and plug did not identify any adverse conditions from manufacturing that would have caused this issue. The observation of the locking tab not being bent up to the flat of the stem is not causal because the tack welds between the stem and lock washer were intact. The failure analysis confirmed the anti-rotation pin was originally installed. This is based on analysis of the pin weld and corresponding wear marks on the inner diameter of the plug where the pin is contained. In this case, it appears fatigue propagation was associated with low cycle and high relative loading which is caused from hydraulic instabilities within the valve due to balance seal failure. Severe degradation of the Teflon balance seal allowed high-pressure fluid to travel past the seal and across the stem-to-plug connection interface, resulting in the pin shearing from the tab lock washer. The anti-rotation pin is not designed to protrude up through the lock washer, therefore there is risk of inadequate engagement between the pin and tab lock washer that could weaken the structural integrity of the design. This would provide minimal engagement between the pin and tab lock washer increasing susceptibility to mechanical failure. In addition, the tack weld associated with the tab lock washer pin hole was further investigated under the scanning electron microscope. Examination of the fracture surface revealed a dimple structure indicative of an overload condition. In addition, beach marks were identified which are indicative of a progressive failure mechanism, like fatigue. The root cause of 2FWS-LV10B stem to disk separation event is attributed to marginal design of the stem and plug connection provided by the vendor.



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	<input type="checkbox"/> 052		YEAR 2023	SEQUENTIAL NUMBER - 001	REV NO. - 01

NARRATIVE

IV. CORRECTIVE ACTIONS

A. ACTION TAKEN TO RETURN AFFECTED SYSTEMS TO PRE-EVENT NORMAL STATUS:

The station completed repairs to the 2FWS*LV10B, Level Control Valve Feedwater Flow B. Additionally, a Lost Parts Evaluation was completed for the identified foreign material in the FW system.

B. ACTION TAKEN OR PLANNED TO PREVENT OCCURRENCE:

An engineering change (ECP-23-000326) was developed in the interim to add welds between the tab lock washer and plug to provide added protection for a future stem/plug separation. The station plans to install a revised (integral/single piece) valve anti-rotation design which eliminates the potential for stem-to-plug separation.

V. ADDITIONAL INFORMATION

A. FAILED COMPONENTS:

2FWS*LV10B, Level Control Valve Feedwater Flow B.

B. PREVIOUS LERs on SIMILAR EVENTS:

None