Clinton Power Station
8401 Power Road
Clinton, IL 61727

U- 604885
June 23, 2026

10 CFR 50.73

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

Clinton Power Station, Unit 1
Renewed Facility Operating License No. NPF-62
NRC Docket No. 50-461

Subject: Licensee Event Report 2025-001-01

Enclosed is Licensee Event Report (LER) 2025-001-01: MSIV B21-F022D Limit Switch Failed Testing. This report is being submitted in accordance with the requirements of 10 CFR 50.73.

There are no regulatory commitments contained in this report.

Should you have any questions concerning this report, please contact Mr. Derek Hillinger, Regulatory Assurance Manager, at (217) 937-2800.

Respectfully,

Frank Payne
Site Vice President
Clinton Power Station

Attachment: Licensee Event Report 2025-001-01

cc:

Regional Administrator - Region III
NRC Senior Resident Inspector - Clinton Power Station
Office of Nuclear Facility Safety - Illinois Emergency Management Agency

NRC FORM 366 (04-02-2024) U.S. NUCLEAR REGULATORY COMMISSION

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/)

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 04/30/2027

1. Facility Name		2. Docket Number	3. Page
Clinton Power Station	☒ 050 ☐ 052	00461	1 OF 3

4. Title
MSIV B21-F022D Limit Switch Failed Testing

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	☐ 050	Docket Number
9	13	2025	2025	- 001 -	01	06	23	2026	Facility Name	☐ 052	Docket Number

9. Operating Mode	10. Power Level
Mode 5	0%

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

10 CFR Part 20	☐ 20.2203(a)(2)(vi)	**10 CFR Part 50**	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)	☐ 73.1200(a)
☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)	☐ 73.1200(b)
☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)	☐ 73.1200(c)
☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)	☐ 73.1200(d)
☐ 20.2203(a)(2)(i)	**10 CFR Part 21**	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(A)	**10 CFR Part 73**	☐ 73.1200(e)
☐ 20.2203(a)(2)(ii)	☐ 21.2(c)	☐ 50.69(g)	☐ 50.73(a)(2)(v)(B)	☐ 73.77(a)(1)	☐ 73.1200(f)
☐ 20.2203(a)(2)(iii)		☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ 73.77(a)(2)(i)	☐ 73.1200(g)
☐ 20.2203(a)(2)(iv)		☒ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(v)(D)	☐ 73.77(a)(2)(ii)	☐ 73.1200(h)
☐ 20.2203(a)(2)(v)		☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)		

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

12. Licensee Contact for this LER

Licensee Contact	Phone Number (Include area code)
Derek Hillinger, Regulatory Assurance Manager	(217) 937-2800

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	SB	ZS	N007	Yes						

14. Supplemental Report Expected		15. Expected Submission Date	Month	Day	Year
☒ No	☐ Yes (If yes, complete 15. Expected Submission Date)				

16. Abstract (Limit to 1326 spaces, i.e., approximately 13 single-spaced typewritten lines)

During performance of "RPS Main Steamline Isolation B21-F022D Channel Calibration", Main Steam Line 'D' Inboard Isolation Valve 1B21-F022D failed to generate a Reactor Protection System (RPS) trip when it was closed, indicating that its Full Open Limit Switch (LS) failed. This was a failure of Surveillance Requirement (SR) 3.3.1.1.13, "Perform CHANNEL CALIBRATION" for Technical Specification (TS) 3.3.1.1 RPS Instrumentation, function 6 (MSIV-Closure). This TS function was not required in the current Mode of Operation when it was discovered, but it was a Condition Prohibited by Technical Specifications.

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/)

1. FACILITY NAME		2. DOCKET NUMBER	3. LER NUMBER		
			YEAR	SEQUENTIAL NUMBER	REV NO.
Clinton Power Station	■ 050 ☐ 052	00461	2025	- 001	- 00

NARRATIVE

CONDITION PRIOR TO THE EVENT

Unit: 1 Event Date: September 13, 2025 Event Time: 03:30 CST
Mode: 5 Mode Name: Refueling Reactor Power: 0

EVENT DESCRIPTION

On March 10, 2024, during performance of Main Steam Line Isolation Valve (MSIV) Channel Functional testing (SR 3.3.1.1.9) for TS Table 3.3.1.1-1 function 6 MSIV-Closure, the Main Steam Line 'D' Inboard Isolation Valve 1B21-F022D Limit Switch #5 (LS-5), the Division 4 channel, failed to issue a trip signal to the Reactor Protection System (RPS).

On March 30, 2024, a temporary configuration change was implemented to connect Limit Switch #3 (LS-3), a spare limit switch installed on the 1B21-F022D MSIV, into the Division 4 RPS logic in lieu of the normally connected LS-5. After connecting LS-3 into the Division 4 RPS logic, post maintenance testing including performance of a channel functional test was conducted to restore the 1B21-F022D MSIV-Closure TS function to an operable status.

On February 13, 2025, the NRC Comprehensive Engineering Team Inspection team challenged that post maintenance testing methodology chosen by the station for declaring 1B21-F022D MSIV-Closure TS function operable credit for performance of a channel calibration relied on historical data and engineering changes with unquantified uncertainties instead of the prescribed physical calibration procedure. They raised concerns that this approach may not fully satisfy the technical specification requirements for performance of a channel calibration after modifying the reactor protection system input. As a result, this issue was placed in the Clinton Corrective Action Program (CAP).

As part of the shift review and operability determination process, the Shift Manager invoked SR 3.0.3 for this condition. SR 3.0.3 allowed for continued operability based on a risk evaluation and management plan and the reasonable expectation that the channel calibration surveillance will be met when performed at the first reasonable opportunity. The next reasonable opportunity was determined to be during the fall 2025 Refueling Outage (C1R22) prior to removal of temporary configuration change and repair/replacement of 1B21-F022D LS-5.

On September 13, 2025, when performing Main Steam line Isolation Valve B21-F022D Channel Calibration (SR 3.3.1.1.13), 1B21-F022D LS-3 failed to change state. No as-found measurement of the setpoint was obtained. It is concluded that the as-found calibration failed, resulting in failure to meet SR 3.3.1.13. Per guidance of NUREG-1022, the switch must be considered inoperable longer than allowed by LCO 3.3.1.1 Condition G and is reportable in accordance with 10 CFR 50.73(a)(2)(i)(B).

CAUSE OF THE EVENT

Additional failure analysis found that both limit switches, LS-3 and LS-5, had significant mechanical wear. The actuation levers and rollers were heavily degraded, with LS-3's roller worn enough that it could not spin properly and LS-5's roller worn completely down to the bushing. Both switches also contained dried, degraded grease, which caused fretting on the cam shaft and made the internal mechanisms sluggish. In LS-5, this damage increased rotational torque well above specification, preventing the switch from returning to neutral on its own, while LS-3 returned more slowly than designed.

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NARRATIVE

SAFETY CONSEQUENCES

There were no safety consequences as a result of this event. The failure of LS-3 to actuate only affected the 1B21-F022D MSIV-Closure TS function. MSIV closure signals are initiated from position switches located on each of the eight MSIVs. Each MSIV has one position switch. The logic for the Main Steam Isolation Valve–Closure Function is arranged such that either the inboard or outboard valve on two or more of the Main Steam Lines (MSLs) must close in order for a scram to occur. During the time that 1B21-F022D MSIV-Closure TS function was inoperable, all seven other position switches were operable and would have fulfilled the specified safety function of ensuring a scram occurs prior in anticipation of the complete loss of the normal heat sink and subsequent over-pressurization transient.

CORRECTIVE ACTIONS

The temporary configuration change was removed, normal plant configuration restored with LS-5 providing the 1B21-F022D MSIV-Closure TS function, and Main Steam line Isolation Valve B21-F022D Channel Calibration procedure (SR 3.3.1.1.13) performed on the as-left configuration.

PREVIOUS OCCURENCES

A review of Licensee Event Reports for the past five years identified no previous similar occurrences at Clinton Power Station.