Constellation

10 CFR 50.73

LG-24-066

June 10, 2024

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

Limerick Generating Station, Unit 1
Renewed Facility Operating License No. NPF-39
NRC Docket No. 50-352

Subject: LER 2024-002-00 Invalid Actuation Due to a Trip of 1B Reactor Protection System Circuit Breaker

In accordance with the requirements of 10 CFR 50.73(a)(2)(iv)(A), Limerick Generating Station hereby submits the enclosed Licensee Event Report.

There are no commitments contained in this letter.

If you have any questions, please contact Jordan Rajan at (610) 718-3400.

Respectfully,

Michael F. Gillin
Vice President – Limerick Generating Station
Constellation Energy Generation, LLC

cc: Administrator Region I, USNRC
USNRC Senior Resident Inspector, Limerick Generating Station

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

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

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/)

1. Facility Name		2. Docket Number	3. Page
Limerick Generating Station Unit 1	■ 050 ☐ 052	352	1 OF 3

4. Title

Invalid Actuation Due to a Trip of 1B Reactor Protection System Circuit Breaker

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
04	11	2024	2024	- 002 -	00	06	10	2024	Facility Name	☐ 052	Docket Number

9. Operating Mode	10. Power Level
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)
Jordan Rajan	610-718-3400

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	JC	52	W121	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)

On April 11, 2024, Limerick Generating Station (LGS) Unit 1 was in Operational Condition (OPCON) 5, refueling, performing a surveillance test on the 1B Reactor Protection System (RPS) Power Monitoring System. Following the completion of the testing, when returning the system to the normal plant alignment, an invalid isolation occurred due to a trip of the 1B-Y160 RPS panel.

Troubleshooting on circuit breaker 52-DY24801 found the circuit breaker contacts were not closed even though the handle was in the closed position. The circuit breaker was replaced. This resulted in containment isolation signals that actuated containment isolation valves in more than one system; therefore, the loss of the RPS bus 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 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.
Limerick Generation Station Unit 1	■ 050 ☐ 052	352	2024	- 002	- 00

NARRATIVE

Initial Plant Condition

Prior to the event, Unit 1 was in Operational Condition (OPCON) 5 (Refueling) with reactor coolant temperature 99 degrees Fahrenheit with a time to boil of 12 hours.

Event Description

On April 11, 2024, a surveillance test was being performed to test the 1B Reactor Protection System (RPS) [EIIS System JC] Power Monitoring System by simulating undervoltage, overvoltage, and underfrequency signals for the 1B RPS series circuit breakers. During the testing, power is maintained to the 1B RPS system through a maintenance bypass circuit which is parallel to the series breakers.

On April 11, 2024, at 13:48 EST the station experienced a loss of the RPS panel 1B-Y160 which resulted in a 1B RPS half scram signal and isolation of the following systems: Drywell Chilled Water (DWCW) [EIIS System KM], Reactor Enclosure Chilled Water (RECW) [EIIS System KM], Reactor Water Cleanup (RWCU) [EIIS System CE], Primary Containment Instrument Gas (PCIG) [EIIS System LD, and Primary Containment Leak Detector System [EIIS System IJ]. Shutdown Cooling [EIIS System BO] received an isolation signal but did not isolate because the Shutdown Cooling isolation instruments were bypassed in accordance with station procedures. The B train of Standby Gas Treatment System (SGTS) [EIIS System BH] started and was isolated due to drawing the fuel floor to a high negative pressure. The A train of SGTS was started and operated as designed. The cause of the B train of SGTS drawing a high negative pressure was the panel 1B-Y160 supplies power to the refuel floor slide gate damper position. Without this position indication the B train of SGTS will draw excessively from the fuel floor. The plant responded as expected to the loss of the 1B RPS Panel 1B-Y160.

The investigation identified that one of the series circuit breakers, 52-DY24801, appeared to be closed but troubleshooting determined the circuit breaker was open. Additional troubleshooting was performed which cycled the breaker several times to ensure the expected continuity was achieved. The station was able to re-energize the 1B RPS power panel to restore normal ventilation. On April 13, 2024, circuit breaker 52-DY24801 was replaced.

Analysis of the Event

The loss of the RPS bus and associated actuations is considered invalid because it was not the result of a valid signal and not an intentional manual action. The loss of the RPS Panel 1B-Y160 was a result of opening the maintenance bypass switch with one of the series breakers open (52-DY24801). This resulted in containment isolation signals that actuated containment isolation valves in more than one system. Therefore, the loss of the RPS bus is reportable in accordance with 10 CFR 50.73(a)(2)(iv)(A).

Safety Consequences

The system response did not result in a safety system functional failure (SSFF) as defined in accordance with NEI 99-02, "Regulatory Assessment Performance Indicator Guideline." The RPS logic safety function was satisfied by its actuation and responded as expected to the loss of the 1B RPS Panel 1B-Y160.

LICENSEE EVENT REPORT (LER) CONTINUATION SHEET

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NARRATIVE

Cause of the Event

The circuit breaker contacts did not close even though the handle indicated the circuit breaker was in the closed position. Failure analysis on circuit breaker 52-DY24801 identified a mechanical problem with the circuit breaker closing handle. The handle failed to reposition to the tripped position during testing of the circuit breaker. Failure of the circuit breaker to close could not be reproduced in the post-event testing.

Corrective Actions Completed

Circuit breaker 52-DY24801 was replaced.

Corrective Actions Planned

Evaluate options to determine if the series circuit breakers are closed prior to opening the maintenance switch during testing.

Previous Similar Occurrences

There have been no previous similar occurrences for an actuation due to a circuit breaker that appeared to be closed, but was open, within the past five years.

Component Data

System: JC (Plant Protection System)
Component: 52 (Circuit Breaker, AC)
Manufacturer: W121 (Westinghouse)