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Docket No.: 50-364

NL-24-0123

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

Joseph M. Farley Nuclear Plant - Unit 2
Licensee Event Report 2024-002-00
Manual Reactor Trip due to Loss of Power to the 2A 125 Volt DC Distribution Panel

Ladies and Gentlemen:

In accordance with the requirements of 10 CFR 21.2(c) and 10 CFR 50.73(a)(2)(iv)(A), Southern Nuclear Company is submitting the enclosed Licensee Event Report for Unit 2.

This letter contains no NRC commitments. If you have any questions regarding this submittal, please contact Gene Surber, Licensing Manager, at (334) 661-2265.

Respectfully submitted,



Edwin Dean III

Vice President – Farley

ED/rgs/cbg

Enclosure: Unit 2 Licensee Event Report 2024-002-00

Cc: Regional Administrator, Region II
NRR Project Manager – Farley Nuclear Plant
Senior Resident Inspector – Farley Nuclear Plant
RTYPE: CFA04.054

**Joseph M. Farley Nuclear Plant - Unit 2
Licensee Event Report 2024-002-00
Manual Reactor Trip due to Loss of Power to the 2A 125 Volt DC Distribution Panel**

Enclosure

Unit 2 Licensee Event Report 2024-002-00



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 Infocollections@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: pira_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 Joseph M. Farley Nuclear Plant, Unit 2	<input checked="" type="checkbox"/> 050	2. Docket Number 364	3. Page 1 OF 3
	<input type="checkbox"/> 052		

4. Title
Manual Reactor Trip due to Loss of Power to the 2A 125 Volt DC Distribution Panel

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	<input type="checkbox"/> 050	Docket Number
02	16	2024	2024	002	00	04	15	2024	Facility Name	<input type="checkbox"/> 052	Docket Number

9. Operating Mode: 1 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 checked="" 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 Gene Surber, Farley Licensing Manager	Phone Number (Include area code) 3346612265
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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	EJ	BKR	S188	Y					

14. Supplemental Report Expected

<input checked="" 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 February 16, 2024, at 00:48 CDT while in Mode 1 and at 100% power, Farley Nuclear Plant (FNP) operators manually tripped Unit 2 following a loss of control of critical air-operated valves due to a partial loss of A-train DC power. LA08-2, the feeder breaker to the 2A 125VDC Distribution Panel, was found tripped open. This event resulted in a loss of letdown and the reactor makeup system. With volume control tank (VCT) makeup capability lost, operators made the decision to trip the reactor prior to charging pump suction rollover to the refueling water storage tank (RWST).

The cause of the breaker opening was due to a short between wires on the A phase current transformer (CT) / sensor wiring harness in breaker LA08-2 because of poor workmanship. Immediate corrective action included replacing breaker LA08-2 with a spare breaker to restore plant equipment to operation and stabilize the plant.

This event is reportable under 10 CFR 50.73(a)(2)(iv)(A) due to the automatic actuation of multiple systems listed in 10 CFR 50.73(a)(2)(iv)(B). FNP Unit 1 was not affected during this event.



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

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1. FACILITY NAME Joseph M. Farley Nuclear Plant, Unit 2	<input checked="" type="checkbox"/> 050	2. DOCKET NUMBER 364	3. LER NUMBER		
	<input type="checkbox"/> 052		YEAR 2024	SEQUENTIAL NUMBER 002	REV NO. 00

NARRATIVE

EVENT DESCRIPTION:

On February 16, 2024, at 00:48 CDT, with reactor power at 100% and in Mode 1, Farley Nuclear Plant (FNP) operators manually tripped Unit 2 following a partial loss of A-train 125V DC power which affected critical air-operated valves. Breaker LA08-2 [EIS: EJ/BKR] the supply breaker to the 2A 125VDC Distribution Panel, was found tripped open. Loss of power to the 2A 125VDC Distribution Panel resulted in a loss of letdown and the reactor makeup system. With the volume control tank (VCT) [EIS: CB / TK] makeup capability lost operators made the decision to trip the reactor prior to the charging pump suction rollover to the refueling water storage tank (RWST).

Operating events and actions occurred in the following timeline on February 16, 2024:

- 00:35 Multiple Main Control Room Alarms are received.
- 00:35 Breaker LA08-02 Tripped (Entry into TS 3.8.9)
- 00:35 Entry into Abnormal Operating Procedure for CVCS Malfunction
- 00:36 Entry into Abnormal Operating Procedure of Loss of Instrument Air
- 00:36 Letdown confirmed isolated and loss of makeup capability.
- 00:48 Operators Manually Trip Reactor based on VCT level.
- 01:42 Reactor Coolant Pump 2B secured due to low seal leak off.
- 01:45 Pressurizer (PZR) level rises to Technical Specification (TS) high value of 63.5%. (Entry into TS 3.4.9)
- 02:09 Instrument Air realigned to Containment.
- 03:08 Commenced Reactor Coolant System (RCS) Cooldown
- 04:20 Following troubleshooting and breaker replacement, closed Breaker LA08-02 and restored Letdown (Exit TS 3.8.9)
- 04:34 NRC notified per 10 CFR 50.72 (EN# 56971)
- 04:54 PZR level restored (Exit TS 3.4.9)

Following the reactor trip, main feedwater [EIS: JB] continued to be available. An actuation of the Auxiliary Feedwater System [EIS: BA] occurred following the manual reactor trip as designed due to low level in the steam generators [EIS: SB/SG].

BASIS FOR REPORTABILITY AND SAFETY ASSESSMENT:

The safety consequences of this event were low. Although the component failure had downstream interrelation system effects on letdown and makeup, the operating crew appropriately mitigated the transient with abnormal and emergency operating procedures. Additionally, all TS required actions were met and parameters restored well within required action times. The operating crew responded appropriately to the event. This event was within the analysis of the UFSAR Chapter 15. This event is reportable per 10 CFR 50.73(a)(2)(iv)(A) due to the automatic actuation of the Reactor Protection System [EIS: AA] and AFW system as listed in 10 CFR 50.73(a)(2)(iv)(B). FNP Unit 1 was not affected during this event.

CAUSE:

The 125 Volt DC AKW breaker was built by Siemens and equipped with SIGMATRIP DC Analog Trip Unit built by SURE-TRIP. Framatome was the vendor used to qualify the safety related breakers and trip units. The analysis determined that the vendor QA/QC program was not sufficient to identify poor practices when interfacing with third party products. It was determined that during installation of the SIGMATRIP DC Analog Trip Unit that the stranded wires that were terminated in the harness protruded in such a manner they were able to short to an adjacent wire in the harness. The short occurred in breaker LA08-2 (Serial Number R-300950258102B-001) on the A phase current transformer (CT)/sensor harness. For the SIGMATRIP DC Analog Trip Unit, Siemens and Framatome do not currently have a verification step/QA/QC check or any instruction for inspecting the wires connected in the wiring harnesses mounted to the CTs/sensors or the trip unit/logic box.



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NARRATIVE

CORRECTIVE ACTIONS:

The associated breaker was immediately replaced by a spare breaker during the event. A systematic plan has been developed to inspect all AKW Series breakers which are installed or will be installed in the plant. Additionally, site actions have been created to monitor the changes by SURE-TRIP, Siemens, and Framatome associated with wire stripping, installation, inspection, and QC/QA checks.

Additionally, Framatome has notified SNC by letter dated March 26, 2024 (LTR24010) that their evaluation has determined that this results in a Part 21 Deviation because the potential failure to inadvertently trip Siemens Low Voltage (LV) AKW circuit breakers is a departure from the technical requirements included in the Procurement Document.

Farley has begun a substantial safety hazard evaluation to determine if the deviation could constitute a defect in this application or if the deviation exists on other breakers delivered under affected Purchase Orders but notes that per 10 CFR 21.2(c) (and Information Notice 2011-19), evaluation and appropriate reporting under 10 CFR 50.73 (as completed herein) satisfies Farley's evaluation, notification, and reporting obligation to report defects under 10 CFR Part 21 for this particular application.

Basic Component: Siemens Low Voltage AKW Circuit Breaker

Serial Number: R-300950258102B-001

Supplying/Dedicating Entity: Framatome Inc.

PREVIOUS SIMILAR EVENTS:

No similar events or failure of AKW breakers were identified.