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January 11, 2024

Docket No.: 50-364

NL-24-0001

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

Joseph M. Farley Nuclear Plant - Unit 2
Licensee Event Report 2024-001-00
Manual Reactor Trip due to Rising Steam Generator Levels

Ladies and Gentlemen:

In accordance with the requirements of 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 2024-001-00

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 2024-001-00
Manual Reactor Trip due to Rising Steam Generator Levels**

Enclosure

Unit 2 Licensee Event Report 2024-001-00



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 Infocollects.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: omb_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 <input type="checkbox"/> 052	2. Docket Number 364	3. Page 1 OF 3
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4. Title
Manual Reactor Trip due to Rising Steam Generator Levels

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
11	14	2023	2024	001	00	01	11	2024	Facility Name	<input type="checkbox"/> 050
									Facility Name	<input type="checkbox"/> 052

9. Operating Mode 1	10. Power Level 010
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11. This Report is Submitted Pursuant to the Requirements of 10 CFR §: (Check all that apply)

10 CFR Part 20	<input type="checkbox"/> 20.2203(a)(2)(vi)	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)	10 CFR Part 21	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	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 Gene Surber, Farley Licensina 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	JB	FCO	E232	Y					

14. Supplemental Report Expected

<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes (If yes, complete 15. Expected Submission Date)
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15. Expected Submission Date

Month	Day	Year

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

On November 14, 2023, Farley Nuclear Plant (FNP) Unit 2 was performing an initial reactor startup following Refueling Outage 29 (2R29). With reactor power at approximately 10%, steam generator (SG) levels began to rise while in automatic control. Operators took manual control of the main feedwater regulating and main feedwater regulating bypass valves but were unable to control the rise in SG levels. At 1041 CST the operators initiated a manual reactor trip prior to reaching high SG level setpoint. All equipment responded as expected. NRC was notified in accordance with 10 CFR 50.72(b)(2)(iv)(B) due to reactor scram and 10 CFR 50.72(b)(3)(iv)(A) for a specified system actuation via ENS 56852.

The cause of the event was determined to be Ovation steam and feedwater flow signal errors resulting in the automatic feedwater controls transferring to 'high power mode' at a lower reactor power level than designed (10% versus 20%). This resulted in rising SG Levels and led the operators to manually trip the reactor. Following correction of Ovation signal errors post trip, operators were able to complete the reactor startup and reached full power on November 19, 2023.



**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 001	REV NO. 00

NARRATIVE

INITIAL PLANT CONDITIONS:

On November 14, 2023, while in Mode 1 and 10% reactor power, Farley Nuclear Plant (FNP) Unit 2 was returning to power following Refueling Outage 29 (2R29). During 2R29, the feedwater control system [EEIS:JB] was upgraded. The newly upgraded system is a digital-based Emerson Ovation System. This system operates in two modes: low-power and high-power. The transition between the two modes is automatic and based on the measured loop feedwater flow exceeding a predefined threshold. Both control modes operate the main feed regulating valves (MFRVs) and the MFRV bypass valves [EEIS: SJ-FCV], as appropriate. No systems, structures, or components (SSCs) were inoperable that contributed to the event.

EVENT DESCRIPTION:

At 1041 CST on November 14, 2023, FNP Unit 2 reactor was manually tripped due to rising Steam Generator (SG) [EEIS: SB / SG] water levels. Prior to the reactor trip, control room personnel had raised power from approximately 3% to 7% power and had entered Mode 1. Operators stabilized power at 7% to troubleshoot an issue related to the newly-installed modification. Operators had established a control limit of 20% power while troubleshooting continued and began a power ascension to 12%. Although SG level control was initially stable in automatic, operators observed that SG levels began to rapidly rise at 10% reactor power.

As SG levels increased, operators took manual control of the MFRVs and MFRV bypass valves to stabilize levels. However, during the transient the SG levels rose above a predetermined manual reactor trip criteria based on SG level. Operators tripped the reactor prior to reaching any automatic reactor trip setpoint. At the current power level and Reactor Coolant System temperature an automatic feedwater isolation occurred per design. During restoration after the trip, the operators restored feedwater capability by manually initiating Auxiliary Feedwater (AFW).

BASIS FOR REPORTABILITY AND SAFETY ASSESSMENT:

There were no safety consequences as result of this event. 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 (RPS) 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 cause of the event was determined to be the Ovation steam and feedwater flow signal errors resulted in automatic feedwater controls to transfer to 'high power mode' at low reactor power. This resulted in SG levels rising forcing the operators to initiate a manual reactor trip.

It was determined that during the design change, process errors were introduced which were not identified during testing. Steam flow and feed flow inputs to the Ovation system were higher than actual control board indications. The Ovation system performs an automatic swap to high-power control at 20% feedwater flow. With the higher Ovation feedwater flow signals, the swap to high-power flow control occurred at approximately 10% reactor power. It was identified that there was a flow correction duplication in Ovation. This flow correction was already present in the Control System. A contributor to this event was inadequate communication surrounding the signal errors between plant departments and the Outage Control Center due to the lack of adequate team structure.



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NARRATIVE

CORRECTIVE ACTIONS:

- Corrected U2 inaccurate Ovation signals which resulted in the early transfer to Feed Regulating Valve operation.
- Develop a Modification Acceptance Test procedure for Ovation project to ensure field devices are checked through Ovation engineering values and/or logic.
- Conduct teaching and learning sessions with Engineering, Operations, Maintenance, and Site Projects first line leaders and above related to risk management and communications.

PREVIOUS SIMILAR EVENTS:

- None