Southern Nuclear

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September 6, 2023

ND-23-0696

10 CFR 50.73(a)(2)(iv)(A)

Docket No.: 52-025

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

Southern Nuclear Operating Company
Vogtle Electric Generating Plant (VEGP) – Unit 3
Licensee Event Report 2023-005-00
Automatic Reactor Protection System Actuation During Startup Testing Due to Inadequate Turbine Trip Logic

Ladies and Gentlemen:

In accordance with the requirements of 10 CFR 50.73(a)(2)(iv)(A), Southern Nuclear Operating Company is submitting the enclosed Licensee Event Report for VEGP Unit 3.

This letter contains no regulatory commitments. If you have questions regarding the enclosed information, please contact Will Garrett at (706) 848-7154.

Respectfully submitted,

Patrick A. Martino
Site Vice President, Unit 3

PAM/NBC/sfr

Enclosure: Unit 3 Licensee Event Report 2023-005-00

cc:
Regional Administrator, Region II
VPO Project Manager
Senior Resident Inspector – Vogtle 3 & 4

Vogtle Electric Generating Plant - Unit 3

Licensee Event Report 2023-005-00 - Automatic Reactor Protection System Actuation During Startup Testing Due to Inadequate Turbine Trip Logic

Enclosure

Unit 3 Licensee Event Report 2023-005-00

(This enclosure consists of 3 pages, including this cover page)

NRC FORM 366 (03-14-2023) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 08/31/2023

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: oira_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.

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
Vogtle Electric Generating Plant, Unit 3	☐ 050 ☒ 052	00025	1 OF 2

4. Title

Automatic Reactor Protection System Actuation During Startup Testing Due to Inadequate Turbine Trip Logic

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
07	09	2023	2023	- 005 -	00	09	06	2023	Facility Name	☐ 052	Docket Number

9. Operating Mode	10. Power Level
1	045

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)
Will Garrett, VEGP 3&4 Licensing Manager	7068487154

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

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 July 9, 2023, at 1328 EDT with Vogtle Electric Generating Plant (VEGP) Unit 3 in Mode 1 at 45 percent power, the Reactor Protection System (RPS) automatically actuated during the 100 percent load rejection startup test activities. The operators responded timely by ensuring plant stability, with decay heat removal accomplished by steam generator power operated relief valves. The cause of the event was a turbine trip due to an erroneous high-level indication in a Moisture Separator Reheater (MSR) resulting from the steam pressure change that occurred following the planned load rejection. The corrective action for this event modified logic to prevent a turbine trip during the anticipated steam pressure change following a load rejection event, by accounting for erroneous high-2 MSR level indications during this condition. This event is reportable under 10 CFR 50.73(a)(2)(iv)(A) as an automatic actuation of the RPS. VEGP Units 1, 2, and 4 were unaffected by this event.

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/)

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 08/31/2023

1. FACILITY NAME		2. DOCKET NUMBER	3. LER NUMBER		
			YEAR	SEQUENTIAL NUMBER	REV NO.
Vogtle Electric Generating Plant, Unit 3	☐ 050 ■ 052	00025	2023	- 005	- 00

NARRATIVE

EVENT DESCRIPTION

On July 9, 2023, at 1328 EDT with Vogtle Electric Generating Plant (VEGP) Unit 3 in Mode 1 at 45 percent power, the Reactor Protection System (RPS) [EIIS: JC] automatically actuated during the 100 percent load rejection test activities. The initiating event was a main turbine [EIIS: TA / TRB] trip due to a high-level indication in Moisture Separator Reheater (MSR) B [EIIS: SB / MSR]. During the performance of the 100 percent load rejection startup test, the turbine was in a Power/Load Unbalance condition. In this condition and as designed, the intercept valves (IVs) [EIIS: TA / V] initially fully closed to prevent turbine overspeed. The IVs cycled open and closed, by design, to control turbine speed based on lowering demand and to allow recovery from the load rejection by blowing down the reheated steam. As the IVs cycled, the pressure in the MSR shell decreased. Moisture removed from the high-pressure turbine exhaust via the MSR accumulated in the MSR Shell Drain Tank [EIIS: SN / TK] and prevented the MSR Shell Drain Tank pressure from correlating with pressure changes in the MSR shell. The differential pressure transmitters [EIIS: SB / PDT] that provide the MSR level indication responded to these pressure changes, resulting in an erroneous level indication that ultimately exceeded the high-2 setpoint, which led to the turbine trip. The turbine trip deenergized the Unit Auxiliary Transformers (UATs) [EIIS: EA / XFMR] which were powering the reactor coolant pumps [EIIS: AB / P], resulting in the reactor trip on low coolant flow. There were no structures, systems, or components that were inoperable at the beginning of the event that contributed to the event. This event is reportable under 10 CFR 50.73(a)(2)(iv)(A) as a condition that resulted in automatic actuation of the RPS.

EVENT ANALYSIS

The cause of this event was an inadequate turbine trip logic. The MSR pressure change conditions that occurred following the 100 percent load rejection test activities adversely impacted the differential pressure level instrument reading. The turbine trip logic did not account for these pressure change conditions. The turbine trip logic was modified to account for erroneous high MSR level indications while in the load rejection condition.

SAFETY ASSESSMENT

There were no safety consequences due to this event because the automatic actuation function of the RPS maintained the plant in a safe condition. The operators responded timely by ensuring plant stability and decay heat was removed by steam generator power operated relief valves [EIIS: SB / PCV]. All safety systems functioned as expected as a result of the event. VEGP Units 1, 2, and 4 were unaffected by this event.

CORRECTIVE ACTION

The turbine trip logic was modified by a software design change to account for erroneous high-2 MSR level indications during load rejection conditions.

PREVIOUS SIMILAR EVENTS

None