



Entergy Operations, Inc.  
P.O. Box 756  
Port Gibson, Mississippi 39150

**Jeffery A. Hardy**  
Manager Regulatory Assurance  
Grand Gulf Nuclear Station  
Tel: 802-380-5124

10 CFR 50.73

GNRO2024-00004

February 13, 2024

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

**SUBJECT:** Grand Gulf Nuclear Station, Unit 1 Licensee Event Report 2023-002-00,  
Reactor Scram due to Generator Stator Fault to Ground

Grand Gulf Nuclear Station, Unit 1  
Docket No. 50-416  
Renewed License No. NPF-29

Attached is Licensee Event Report (LER) 2023-002-00, Reactor Scram due to Generator Stator Fault to Ground. This report is being submitted in accordance with 10 CFR 50.73(a)(2)(iv)(A), any event or condition that resulted in manual or automatic actuation of any of the systems listed in paragraph (a)(2)(iv)(B).

This letter contains no new Regulatory Commitments. Should you have any questions concerning the content of this letter, please contact me at 802-380-5124.

Sincerely,

A handwritten signature in blue ink, appearing to read 'JAH', with a stylized flourish at the end.

JAH/saw

Attachments: Licensee Event Report 2023-002-00

GNRO2024-00004

Page 2 of 3

cc: NRC Senior Resident Inspector  
Grand Gulf Nuclear Station  
Port Gibson, MS 39150

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

**Attachment**  
**Licensee Event Report 2023-002-00**

(10-01-2023)



**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](mailto: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: [oir\\_submission@omb.eop.gov](mailto:oir_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 Grand Gulf Nuclear Station, Unit 1	<input checked="" type="checkbox"/> 050	2. Docket Number 416	3. Page 1 OF 2
	<input type="checkbox"/> 052		

4. Title  
Reactor Scram Due to Generator Stator Fault to Ground

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
12	16	2023	2023	002	00				N/A	<input type="checkbox"/> 050	N/A
									N/A	<input type="checkbox"/> 052	N/A

9. Operating Mode 1	10. Power Level 81
------------------------	-----------------------

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 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 Jeff Hardy	Phone Number (include area code) 802-380-5124
--------------------------------	--

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
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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
--	--	------------------------------	-------	-----	------

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

On December 16, 2023, Grand Gulf Nuclear Station was operating at 81 percent power following a planned sequence exchange and no critical work activities were in progress. At 0346, all three in service main generator protective relays measured an increase in voltage across the secondary of the neutral grounding transformer which resulted in a main generator lockout and subsequent main turbine trip and automatic reactor scram. The direct cause of the main generator lockout was a generator stator fault to ground. A root cause was not identified. Actions have been created to ensure the generator bushings are clean and the solenoid contactors are replaced.

All control rods fully inserted, there were no complications and all plant systems responded as designed. No radiological releases occurred due to this event. There were no consequences to the safety of the public, nuclear safety, industrial safety, or radiological safety. This report is made in accordance with 10 CFR 50.73(a)(2)(iv)(A), for any event or condition that resulted in manual or automatic actuation of the Reactor Protection System.



**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/>)

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](mailto: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: [oir\\_submission@omb.eop.gov](mailto:oir_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  Grand Gulf Nuclear Station, Unit 1	<input checked="" type="checkbox"/> 050	2. DOCKET NUMBER  416	3. LER NUMBER		
	<input type="checkbox"/> 052		YEAR 2023	SEQUENTIAL NUMBER 002	REV NO. 00

**NARRATIVE**

**PLANT CONDITIONS**

During the event, Grand Gulf Nuclear Station (GGNS) was in Mode 1, 81 percent power following a planned sequence exchange. There were no critical work activities in progress, and there were no inoperable safety-related systems at the time of the event.

**DESCRIPTION OF EVENTS**

On December 16, 2023, GGNS was operating at 81 percent power following a planned sequence exchange and no critical work activities were in progress. At 0346, all three in service main generator protective relays measured an increase in voltage across the secondary of the neutral grounding transformer. This voltage increased to approximately 30V (3240V primary) which was above the 59N (90 percent Stator Ground Fault) function trip setpoint of 8.566V (928.6V primary). All relays tripped after a built-in three second delay which initiated a main generator lockout and subsequent main turbine trip and reactor scram.

All control rods fully inserted, and all plant systems responded as designed. Reactor water level was maintained by main feedwater and condensate. Reactor pressure was maintained by the main turbine bypass valves. No radiological releases occurred.

**REPORTABILITY**

The automatic Reactor Protection System (RPS) actuation was initially reported to the NRC as a 4-hour report per 10 CFR 50.72(b)(2)(iv)(B) on December 16, 2023 (EN 56894). This report is made in accordance with 10 CFR 50.73(a)(2)(iv)(A) for any event or condition that resulted in manual or automatic actuation of any system listed in paragraph 10 CFR 50.73(a)(2)(iv)(B).

**CAUSE**

The Direct Cause of the RPS actuation was Generator Stator fault to ground resulting in a main generator lockout and reactor scram. A root cause was not identified.

**CORRECTIVE ACTIONS**

Immediately following the event, a turbine and generator cooldown was performed to allow testing of the generator stator windings, the isophase bus and the neutral grounding transformer. Additionally, all components associated with the main generator terminal voltages were tested for insulation resistance to ensure no ground is present. Corrective actions are being enacted to ensure that preventative maintenance is in place to clean the main generator bushings and replace the seal oil drain regulator tank solenoid contactors.

**SAFETY SIGNIFICANCE**

The reactor trip system responded as expected to the automatic trip signal. There was no failure of any function that would have prevented fulfillment of actions necessary to shutdown the reactor and maintain it in a safe shutdown condition, remove residual heat, control the release of radioactive material, or mitigate the consequences of an accident. All systems required to bring the plant to MODE 3 responded correctly. All safety related emergency core cooling systems were operable and available during the SCRAM. There was no loss of safety function for this event. There were no safety consequences impacting plant or public safety because of this event.

**PREVIOUSLY SIMILAR EVENTS**

LER 2020-003: On May 25,2020, at 0433, GGNS experienced an automatic reactor scram due to a main turbine trip.