



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

**Robert Franssen**  
Site Vice President  
Grand Gulf Nuclear Station  
Tel: 601-437-7500

10 CFR 50.73

GNRO-2021/00009

April 1, 2021

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

SUBJECT: Grand Gulf Nuclear Station, Unit 1 Licensee Event Report 2020-006-01,  
Grand Gulf Nuclear Station, Unit 1  
Docket No. 50-416  
Renewed License No. NPF-29

Attached is Licensee Event Report 2020-006-01, Primary Water Tank Low Level Causing Turbine Trip and Subsequent Reactor SCRAM. This report is being submitted in accordance with 10 CFR 50.73(a)(2)(iv)(B), for any event or condition that resulted in manual or automatic actuation of the Reactor Protection System.

This letter contains no new Regulatory Commitments. Should you have any questions concerning the content of this letter, please contact Jeff Hardy, Regulatory Assurance Manager at 269-764-2011.

Sincerely,

A handwritten signature in black ink that reads "Robert Franssen".

Robert Franssen  
RF/fas

Attachments: Licensee Event Report 2020-006-01

GNRO-2021/00009

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 2020-006-01**

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 e-mail to [Infocollections.Resource@nrc.gov](mailto:Infocollections.Resource@nrc.gov), and the OMB reviewer at: OMB Office of Information and Regulatory Affairs, (3150-0104), Attn: Desk ail: [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.



**LICENSEE EVENT REPORT (LER)**

(See Page 3 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 Grand Gulf Nuclear Station, Unit 1	2. Docket Number 05000416	3. Page 1 OF 3
--	------------------------------	-------------------

4. Title  
Primary Water Tank Low Level Causing Turbine Trip and Subsequent Reactor SCRAM

5. Event Date			6. LER Number			7. Report Date			8. Other Facilities Involved	
Month	Day	Year	Year	Sequential Number	Rev No.	Month	Day	Year	Facility Name	Docket Number
12	11	2020	2020	- 006 -	01	4	1	2021	N/A	05000 N/A
									Facility Name	Docket Number
									N/A	05000 N/A

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"/> 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"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<b>10 CFR Part 73</b>
<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.69(g)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(4)
<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> 73.71(a)(5)
<input type="checkbox"/> 20.2203(a)(2)(i)	<b>10 CFR Part 21</b>	<input type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	<input type="checkbox"/> 73.77(a)(1)(i)
<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 21.2(c)	<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> 73.77(a)(2)(i)
<input type="checkbox"/> 20.2203(a)(2)(iii)	<b>10 CFR Part 50</b>	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)	<input type="checkbox"/> 73.77(a)(2)(ii)
<input type="checkbox"/> 20.2203(a)(2)(iv)	<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"/> 20.2203(a)(2)(v)	<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"/> Other (Specify here, in abstract, or NRC 366A)				

**12. Licensee Contact for this LER**

Licensee Contact Jeff Hardy, Manager Regulatory Assurance	Telephone Number (Include Area Code) (269)-764-2011
--	--

**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**

Yes (If yes, complete 15. Expected Submission Date)  No

**15. Expected Submission Date**

Month N/A	Day N/A	Year N/A
--------------	------------	-------------

Abstract (Limit to 1560 spaces, i.e., approximately 15 single-spaced typewritten lines)

On December 11, 2020, at 1204 CT, while operating in MODE 1 at 100 percent power, Grand Gulf Nuclear Station experienced an Automatic Reactor SCRAM after a main turbine and generator trip. All Control Rods fully inserted and there were no complications associated with the SCRAM. All systems responded as designed and the plant was stabilized in MODE 3.

The direct cause of the generator and turbine trip was while adding makeup water to the primary water system, the Operator misdiagnosed the response of the Leakage Water Return Valve and closed the valve manually. This led to a trip of the main turbine when primary water system tank level lowered to the trip setpoint of 78 percent. Primary water is non-radioactive, ultra-purified water circulated to and from the generator to cool the generator stator, bushings and rotor.

Corrective actions included revising the primary water system operating procedure with specific instructions for local manual standpipe level control.

There were no consequences to the general safety of the public, nuclear safety, industrial safety or radiological safety. No radiological releases occurred due to 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/>)

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 e-mail 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; e-mail: [oira\\_submission@omb.eop.gov](mailto: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.

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
Grand Gulf Nuclear Station, Unit 1	05000-416	YEAR	SEQUENTIAL NUMBER	REV NO.
		2020	- 006	- 01

**NARRATIVE**

**Plant Conditions:**

Grand Gulf Nuclear Station (GGNS) Unit 1 was operating at 100 percent power in MODE 1. There were no Structures, Systems, or Components that were inoperable that contributed to this event.

**Event Description:**

On December 11, 2020 at 1204 CT, while operating in MODE 1 at 100 percent power, GGNS received a signal for low primary water tank level resulting in an automatic generator and turbine [TA] trip and subsequent automatic reactor SCRAM.

Primary water is non-radioactive ultra-purified water circulated to and from the generator to cool the generator stator, bushings and rotor.

All Control Rods fully inserted and there were no complications associated with the SCRAM. All system responded as designed and the plant was stabilized in MODE 3. No radiological releases occurred due to this event.

This event was reported under 10 CFR 50.72(b)(2)(iv)(B), as any event or condition that results in actuation of the Reactor Protection System when the reactor is critical. (EN 55030)

This report is made pursuant to 10 CFR 50.73(a)(2)(iv)(A), any event or condition that resulted in manual or automatic actuation of the Reactor Protection System.

**Safety Assessment:**

The reactor SCRAM due to the turbine trip did not result in actual consequences to safety of the general public, nuclear safety, industrial safety or radiological safety. The safety significance of this event is determined to be low.

**Event Cause(s):**

The direct cause of the generator and turbine trip was while adding makeup water to the primary water system, the Turbine Building Operator, misdiagnosed the response of the Leakage Water Return Valve, and closed the valve manually. An aspect of the logic control system of the Leakage Water Return Valve resulted in the valve partially reopening and failing "as is." This condition resulted in the control system failing to control the process variable, resulting in the trip of the Main Turbine on low primary water tank level.

The root cause of the event was the Turbine Control System Project Leaders established a design for the Leakage Water Return Valve control logic which was not fully understood. This ultimately reducing the operational margin and causing a plant trip.

**Corrective Actions:**

Following the turbine trip, GGNS remained in hot shutdown from December 11, 2020 until December 13, 2020. Corrective actions were made to issue a Standing Order detailing oversight for plant manipulations and issue a revision to the Primary Water system operating instruction with specific instructions for local manual standpipe level control.



**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 e-mail 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; e-mail: [oira\\_submission@omb.eop.gov](mailto: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.

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
Grand Gulf Nuclear Station, Unit 1	05000-416	YEAR	SEQUENTIAL NUMBER	REV NO.
		2020	- 006	- 01

To preclude repetition, Entergy's procedure EN-HU-104, Technical Task Risk and Rigor, was revised to require creation of a detailed table listing generation risk parameters (setpoints, settings, dimensions) being revised for engineering changes with high generation risk. This table is to list the old parameter, new, and basis for acceptability. This table would then be presented for mitigating actions such as Independent Third-Party Review, and challenge board. This action has been completed.

**Previous Similar Events:**  
None.