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10 CFR 50.73

GNRO-2021/00021

August 19, 2021

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

SUBJECT: Grand Gulf Nuclear Station, Unit 1 Revised Licensee Event Report 2020-004-01

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

Attached is revised Licensee Event Report 2020-004-01, Automatic Reactor Scram Due to Reactor Feed Pump Trip. This report is being submitted 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 (RPS).

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 blue ink, appearing to read "JAH".

Jeff A. Hardy  
JAH/fas

Attachments: Revised Licensee Event Report 2020-004-01

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**  
**Revised Licensee Event Report 2020-004-01**

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 Information Services 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: [ira\\_submission@omb.eop.gov](mailto:ira_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/>)

<b>1. Facility Name</b> Grand Gulf Nuclear Station, Unit 1	<b>2. Docket Number</b> 05000 416	<b>3. Page</b> 1 OF 3
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**4. Title**  
Automatic Reactor Scram Due To Reactor Feed Pump Trip

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
08	24	2020	2020	- 004 -	01	08	19	2021	N/A	05000 N/A
									Facility Name	Docket Number
									N/A	05000 N/A

<b>9. Operating Mode</b> 1	<b>10. Power Level</b> 14
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**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) (601) 437-2103
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**13. Complete One Line for each Component Failure Described in this Report**

Cause	System	Component	Manufacturer	Reportable To ICES	Cause	System	Component	Manufacturer	Reportable To ICES
X	SJ	V	ABB/Bailey	Y	N/A	N/A	N/A	N/A	N/A

<b>14. Supplemental Report Expected</b> <input type="checkbox"/> Yes (If yes, complete 15. Expected Submission Date) <input checked="" type="checkbox"/> No	<b>15. Expected Submission Date</b> Month: N/A, Day: N/A, Year: N/A
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Abstract (Limit to 1400 spaces, i.e., approximately 14 single-spaced typewritten lines)

At 2305 CT on August 24, 2020, while operating in MODE 1 at approximately 14 percent power, Grand Gulf Nuclear Station experienced an automatic Reactor scram after a trip of Reactor Feed Pump (RFP) B and subsequent lowering of reactor water level to 11.4 inches Narrow Range.

The root cause of the event was that the Reactor Feed Pump "B" Minimum Flow Valve positioner installed during Preventive Maintenance activities failed due to infant mortality within approximately 29 hours of service. This caused the minimum flow valve to close and tripped the pump on low suction flow.

Immediate action was replacement and satisfactory testing of the positioner for RFP B prior to unit restart. Additionally, the positioner for the RFP A Minimum Flow Valve was replaced as part of the initial extent of condition review. The corrective action for the root cause is to develop work instructions for those Air Operated Valves (AOV) using ABB/Bailey AV1 or AV2 series positioners to inspect the positioners prior to installation.

There were no consequences to the safety of the public, nuclear safety, industrial safety, or radiological safety. This report was made in accordance with 10 CFR 50.73(a)(2)(iv)(A), as any event or condition that results in 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/>)

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1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Grand Gulf Nuclear Station, Unit 1	05000-416	2020	- 004	- 01

**NARRATIVE**

**Plant Conditions:**

Grand Gulf Nuclear Station (GGNS) Unit 1 was operating at approximately 14 percent power in MODE 1 following forced outage FO-23-02. Reactor Feed Pump (RFP) B was in service through the startup level control valve with RFP A in standby. The main generator was offline at the time of the event. There were no structures, systems or components that were inoperable that contributed to this event.

**Event Description:**

At 2305 CT on August 24, 2020, while operating in MODE 1 at approximately 14 percent power, GGNS experienced an automatic Reactor scram after a trip of Reactor Feed [SJ] Pump B, reactor water level subsequently lowered to the scram setpoint of 11.4 inches Narrow Range.

Reactor feedwater was being supplied by the RFP B through the Startup Level Control Valve. The RFP A was in standby as only one feed pump was required to maintain sufficient inventory for this power level. At 2304, RFP B tripped due to a low suction flow condition. Operations personnel initiated immediate actions to place RFP A in service. However, before RFP A could be placed in service, an automatic reactor scram occurred on low water level.

Follow-up investigation revealed that the low feed pump suction flow condition occurred as a result of the RFP B minimum flow valve (1N21F503B) failing closed. During troubleshooting, an attempt was made to drive the valve locally, but the valve was unresponsive. The cover of the valve's positioner (1N21R085B) was removed, and it was discovered that the positioner's pilot valve was stuck. Technicians were able to exercise the pilot valve which allowed the positioner to control the valve. The positioner was subsequently replaced, and the failed positioner was sent to a vendor for failure analysis.

All control rods fully inserted and there were no complications. All systems responded as designed. Main Steam Isolation Valves were manually closed to control reactor cooldown rate. Reactor water level was being maintained with the condensate system.

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 54855.)

This report is made in accordance with 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 reactor feed pump 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. There were no actual nuclear safety consequences or radiological consequences during the event.

**Event Cause(s):**

The direct cause of the condition was that the pilot valve for the Reactor Feed Pump "B" Minimum Flow Valve's positioner stuck in a position that resulted in the minimum flow valve going closed. This directly resulted in the RFP low suction flow condition that tripped RFP B.



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CONTINUATION SHEET**

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Grand Gulf Nuclear Station, Unit 1	05000-416	YEAR	SEQUENTIAL NUMBER	REV NO.
		2020	- 004	- 01

The root cause of the event was that the Reactor Feed Pump "B" Minimum Flow Valve positioner installed during Preventive Maintenance activities failed due to infant mortality within approximately 29 hours of service. This caused the malfunctioning pilot valve condition, resulting in the minimum flow valve going closed and tripping RFP B on low suction flow. The condition was a latent issue (manufacturer defect) not identified by functional testing at the time the part was received.

**Corrective Actions:**

The failed positioner for the RFP "B" Minimum Flow Valve was replaced and tested satisfactorily prior to unit restart. Additionally, the positioner for the RFP "A" Minimum Flow Valve was also replaced as part of the initial extent of condition review. These actions were completed.

The corrective action to Preclude Repetition was to develop work instructions for those Air Operated Valves (AOV) using ABB/Bailey AV1 or AV2 series positioners to inspect the positioners prior to installation. This action has been completed.

**Previous Similar Events:**

None.