Entergy

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

Eric A. Larson
Site Vice President
Grand Gulf Nuclear Station
Tel. (601) 437-7500

10CFR50.73

GNRO-2019/00008

February 8, 2019

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

SUBJECT: Licensee Event Report 2018-010-00, Reactor Manual Scram due to Main Turbine Bypass Valve Drifting Open
Grand Gulf Nuclear Station, Unit 1
Docket No. 50-416
License No. NPF-29

Dear Sir or Madam:

Attached is Licensee Event Report 2018-010-00, Reactor Manual Scram due to Main Turbine Bypass Valve Drifting Open. This report is being submitted in accordance with 10CFR50.73(a)(2)(iv)(A) for any event or condition that resulted in a manual or automatic actuation of systems listed in 10CFR50.73(a)(2)(iv)(B).

This letter contains no new commitments. If you have any questions or require additional information, please contact Douglas Neve at 601-437-2103.

Sincerely,

E. A. L.

Eric A. Larson

EAL/jep

Attachment: Licensee Event Report 2018-010-00

cc: see next page

cc: NRC Region IV - Regional Administrator
NRC Senior Resident Inspector, Grand Gulf Nuclear Station
NRR Project Manager

GNRO-2019/00008

Attachment

Licensee Event Report 2018-010-00

NRC FORM 366 (04-2018)

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 03/31/2020

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-2 F43), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

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
Grand Gulf Nuclear Station, Unit 1	05000416	1 OF 4

4. Title

Reactor Manual Scram due to Main Turbine Bypass Valve Drifting Open

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
									N/A	05000N/A
12	12	2018	2018	- 010	- 00	02	08	2019	Facility Name	Docket Number
									N/A	05000N/A

9. Operating Mode	11. This Report is Submitted Pursuant to the Requirements of 10 CFR §: *(Check all that apply)*			
1	☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
	☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
	☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
	☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☒ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
10. Power Level	☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
100%	☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
	☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(C)	☐ 73.77(a)(1)
	☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(D)	☐ 73.77(a)(2)(ii)
	☐ 20.2203(a)(2)(vi)	☐ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(vii)	☐ 73.77(a)(2)(iii)
		☐ 50.73(a)(2)(i)(C)	☐ Other (Specify in Abstract below or in NRC Form 366A	

12. Licensee Contact for this LER

Licensee Contact	Telephone Number (Include Area Code)
Douglas Neve/Manager, Regulatory Assurance	(601) 437-2103

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	N37	33	Collins	Yes	N/A	N/A	N/A	N/A	N/A

14. Supplemental Report Expected	15. Expected Submission Date	Month	Day	Year
☒ Yes (If yes, complete 15. Expected Submission Date) ☐ No		07	01	2019

Abstract (Limit to 1400 spaces, i.e., approximately 14 single-spaced typewritten lines)

At approximately 1351 hours on Wednesday, December 12, 2018, while operating in MODE 1 at approximately 100 percent power, the Grand Gulf Nuclear Station was manually shutdown in response to Main Steam Bypass and Control Valve "A" drifting open. The Main Steam Line Isolation Valves were manually closed as a mitigating action to control reactor pressure vessel rate of depressurization and cooldown. During the scram recovery, the Reactor Core Isolation Cooling (RCIC) System injection was delayed. During preparation to initiate High Pressure Core Spray (HPCS) System the operator noted that RCIC had started to inject but due to the water level and the rate of change the operator started HPCS. HPCS was secured once water level was trending higher. RCIC was utilized for reactor water level control until RCIC was placed in standby at 1645 hours.

There were no consequences to the general safety of the public, nuclear safety, industrial safety and radiological safety for this event.

This report is made pursuant to 10CFR50.73(a)(2)(iv)(A) for any event or condition that resulted in manual or automatic actuation of systems as listed in 10CFR50.73(a)(2)(iv)(B), specifically the Reactor Protection System, HPCS, and RCIC systems were actuated.

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Grand Gulf Nuclear Station, Unit 1	05000-416	2018	- 010	- 00

NARRATIVE

A. PLANT CONDITIONS PRIOR TO THE EVENT

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

B. DESCRIPTION

At appoximately 1200 hours CDT on Wednesday, December 12, 2018 while operating in MODE 1 at appoximately 100 percent power the GGNS Main Steam Bypass Stop and Control Valve 'A' [JI] began drifting open. The valve began to modulate between 0 -10% open over the course of 90 minutes. After 90 minutes, the valve began to open at an increased rate, reaching approximately 50% open. The reactor was manually scrammed at 1351 hours. The Main Steam Line Isolation Valves [SB] were manually closed as a mitigating action to control reactor pressure vessel rate of depressurization and cooldown. Reactor pressure was controlled through the use of the Safety/Relief Valves [SB] and ultimately the Reactor Core Isolation Cooling (RCIC) System [BN].

During the scram recovery, at 1358 hours the operator proceeded into the steps for a controlled start of RCIC. The expected RCIC injection response was delayed due to discharge pressure indication and governor valve light indications were not as expected. Therefore, the operator prepared to initiate the High Pressure Core Spray (HPCS) System [BG] based on current reactor water level and its trend.

During preparation to initiate HPCS, the operator noted that RCIC had started to inject but reactor level was in the low end of the desired control band at -24.8" Wide Range (WR) with a downward trend and current RCIC injection was not arresting the decreasing trend in a timely manner. After evaluating the reactor water level and rate of change, the operator completed manually starting HPCS injection at 1408 hours. At 1409 hours, the HPCS injection was secured with reactor water level at 7.4" WR and trending higher and RCIC still injecting. RCIC and Safety/Relief Valves were utilized for reactor water level control until RCIC was placed in standby at 1645 hours.

C. REPORTABILITY

This event was reported under 10CFR50.72(b)(2)(iv)(A) and 10CFR50.72(b)(2)(iv)(B) for any event that results in the Emergency Core Cooling System discharge to the Reactor Coolant System, actuation of the Reactor Protection System while the reactor is critical, and under 10CFR50.72(b)(3)(iv)(A) for any specified system actuation (HPCS and RCIC) in Emergency Notification System (ENS) Notification 53788.

This report is made pursuant to 10CFR50.73(a)(2)(iv)(A) for any event or condition that resulted in manual or automatic actuation of systems as listed in 10CFR50.73(a)(2)(iv)(B), specifically the reactor protection system, HPCS, and RCIC systems were actuated.

D. CAUSE

The reactor was manually shutdown by Operators in response to the Main Steam Bypass Stop and Control Valve "A" drifting open.

The direct cause of the event was a failed Linear Variable Differential Transformer (LVDT) in the actuator for the Main Steam Bypass Stop and Control Valve 'A' that directy resulted in the inability of the valve primary controller to properly position the valve. Failure of the LVDT resulted in a constant error signal being present at the controller, which allowed the valve to integrate open over time.

The cause evaluation is in progress. A supplemental LER will be submitted if the results of the cause evaluation or corrective actions warrant.

E. CORRECTIVE ACTIONS

The following corrective actions are completed.

Completed:

- The Linear Variable Differential Transformer on the Main Steam Bypass Stop and Control Valve 'A' was replaced, retested the valve control, and returned valve to service.
- Operating instruction (ONEP-05-1-02-V-1) was updated with guidance to manually swap bypass control valve control to the auxiliary controller which will drive the valve to its proper position should a similar issue occur and the automatic transfer to the auxiliary controller not occur.

The mitigating actions listed above have been completed and further corrective actions may be generated as part of the on-going causal evaluation.

F. SAFETY SIGNIFICANCE

The manual Reactor SCRAM and manual closure of the MSIVs did not result in actual consequences to safety of the general public, nuclear safety, industrial safety or radiological safety.

If manual operation of the Safety/Relief Valves (SRVs) was not performed following this event, the potential consequence to safety of the general public, nuclear safety, industrial safety and radiological safety would have been mitigated by automatic operation of the SRVs to control Reactor pressure.

Based on the above, the safety significance of this event is determined to be low. The response to the manual scram was performed in accordance with plant procedures. Plant parameters (reactor level, pressure) were maintained within procedure and safety limits. There were no actual nuclear safety consequences or radiological consequences during the event.

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Grand Gulf Nuclear Station, Unit 1	05000-416	2018	- 010	- 00

G. PREVIOUSLY SIMILAR EVENTS

Entergy conducted a three-year review of the relevant licensee event reports and determined that there were no similar events.