Entergy

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

James Nadeau
Manager, Regulatory Assurance
Grand Gulf Nuclear Station
Tel. (601) 437-2103

GNRO-2017/00033

May 25, 2017

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

SUBJECT: Licensee Event Report (LER) 2017-003-00, Reactor Shutdown Because of Condensation System Inventory Depletion and a Manual Reactor Core Isolation Cooling (RCIC) Initiation Because of Feedwater System Shutdown

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

Dear Sir or Madam:

Attached is Licensee Event Report (LER) 2017-003-00, Reactor Shutdown Because of Condensation System Inventory Depletion and a Manual Reactor Core Isolation Cooling (RCIC) Initiation Because of Feedwater System Shutdown.

This letter contains no new Regulatory Commitments.

If you have any questions or require additional information, please contact James Nadeau at (601)-437-2103.

Sincerely,

JJN/dre

cc: (See Next Page)

cc: U.S. Nuclear Regulatory Commission
ATTN: Mr. Siva Lingam, NRR/DORL (w/2)
Mail Stop OWFN 8 B1
11555 Rockville Pike
Rockville, MD 20852-2738

U.S. Nuclear Regulatory Commission
ATTN: Mr. Kriss M. Kennedy (w/2)
Regional Administrator, Region IV
1600 East Lamar Boulevard
Arlington, TX 76011-4511

U.S. Nuclear Regulatory Commission
ATTN: Mr. Kriss M. Kennedy, NRR/DORL (w/2)
Regional Administrator, Region IV
1600 East Lamar Boulevard

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

Attachment to GNRO 2017/00033
Licensee Event Report (LER) 2017-003-00

NRC FORM 366 (11-2015) | U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

(See reverse for required number of digits/characters for each block)

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 10/31/2018

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/Privacy Section (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet 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.

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4. TITLE

Reactor Shutdown Because of Condensation System Inventory Depletion and a Manual Reactor Core Isolation Cooling (RCIC) Initiation Because of Feedwater System Shutdown

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	05000 N/A
04	04	2017	2017	- 005 -	00	05	25	2017	FACILITY NAME N/A	DOCKET NUMBER 05000 N/A

9. OPERATING MODE

1

10. POWER LEVEL

75%

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: *(Check all that apply)*

☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)
☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☒ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ OTHER
☐ 20.2203(a)(2)(vi)	☐ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMBER *(Include Area Code)*
James Nadeau / Manager, Regulatory Assurance	(601) 437-2103

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
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	DAY	YEAR
N/A	N/A	N/A

ABSTRACT *(Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)*

At 00:10 on April 4, 2017, the reactor was manually shutdown from approximately 75 percent core thermal power due condensate storage tank level lowering to 24 feet. All control rods fully inserted and all systems actuated and operated as designed. No safety relief valves actuated. Reactor level and pressure were controlled within normal bands.

Reactor core isolation cooling (RCIC) was manually initiated for level control. Decay heat was removed via steam discharge to the condenser, and to the suppression pool via RCIC. The electrical grid was stable and supplying plant loads.

The cause the condensate depletion was a condensate system leak. The cause of the RCIC initiation was the need to maintain reactor level control following shutdown of the feedwater system.

Corrective actions included repair of the condensate pipe. This licensee event report (LER) is being submitted pursuant to Title 10 Code of Federal Regulations for a manual actuation of the reactor protection system (RPS), and the manual initiation of RCIC.

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		YEAR	SEQUENTIAL NUMBER	REV. NO.
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NARRATIVE

A. PLANT OPERATING CONDITIONS BEFORE THE EVENT

Before the event, Grand Gulf Nuclear Station (GGNS) Unit 1 was in Mode 1 at approximately 75 percent (%) rated thermal power (RTP). All systems, structures and components that were necessary to mitigate, reduce the consequences of, or limit the safety implications of the event were available. No known inoperable systems, structures and components, other than the components involved in the likely cause, contributed to the event.

B. DESCRIPTION OF OCCURRENCE

On April 3, 2017 GGNS was in reactor MODE 1 at 100% power. The radwaste control room detected a rise in floor drain water collection and an accelerated decrease in condensate storage tank (CST) level. The radwaste control room informed the main control room, and determined that the floor drain collecting tank increase source was the turbine building west floor drain sump.

An investigation into the change in storage tank parameters was in progress, and the radwaste and main control rooms were attempting to maintain CST level. The CST level first reached 24 feet on day shift and rad waste was able to refill the CST to 27 feet using processed water and demineralized storage tank (DST) water.

At 23:15 on April 3, 2017, when the CST was again approaching 24 feet, no more processed or DST water was available so reactor power was lowered, achieving 70 million pounds mass per hour of steam flow (75 percent power) at 23:24 on April 3, 2017. After the power reduction the turbine building sump inflow increased. The control room secured a condensate pump and a condensate booster pump with no change to the sump inflow.

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NARRATIVE

The reactor mode switch was taken to SHUTDOWN at 00:10 on April 4, 2017 when the CST level reached 24 feet. The reactor shut down, with all control rods fully inserted and all systems operating as designed.

No safety relief valves actuated, and reactor level and pressure were maintained within normal bands. Level control was first maintained by the feedwater system, and then maintained by manual initiation of the reactor core isolation cooling (RCIC) system.

Decay heat removal was accomplished by passing steam to the condenser, and by passing steam through the RCIC turbine to the suppression pool.

C. REPORTABLE OCCURRENCE

This licensee event report (LER) is being submitted pursuant to Title 10 Code of Federal Regulations (10 CFR) 50.73(a)(2)(iv)(A) for a manual actuation of the reactor protection system (RPS) and the manual initiation of RCIC.

Telephonic notification was made via the U.S. Nuclear Regulatory Commission (NRC) Emergency Notification System 05:57 on June 25, 2017, pursuant to 10 CFR 50.72(b)(2)(iv)(A) and 10 CFR 50.72 (b)(2)(iv)(B).

The notification to the NRC was performed 1 hour and 47 minutes beyond the required 4 hour time required for NRC notification

D. CAUSE

- Cause of the reactor shutdown was a reactor mode switch to SHUTDOWN signal to RPS necessitated by a low level condition in the CST.

  The cause of the CST level loss was the use of condensate storage tank inventory to mitigate a leak from the condensate system (Cause B, System SD, Component OR, Manufacturer Bechtel).

- Cause of the initiation of RCIC was a manual initiation because of the need to maintain reactor water level control after the feedwater system had been shut down.

E. CORRECTIVE ACTIONS

Immediate:

- None

Completed Actions:

- Repair to the condensate system is complete, and the reactor is operating in Mode 1.

F. SAFETY ASSESSMENT

There were no actual nuclear safety consequences or radiological consequences during the event. All systems operated as designed and there was no release of radioactivity.

G. PREVIOUS SIMILAR EVENTS

Events Involving Manual Shutdown Actuation of RPS

- LER-2014-002-00 documents a manual reactor shutdown due an inability to determine main steam turbine first stage pressure. The failure was determined to be a pressure sensing line pipe separation due to vibration, with the cause being human error in the design of the pipe supporting structures.

  The event was similar because it was a manually initiated shutdown due to a failed non-safety system component.

  Otherwise, LER-2014-002-00 was different because the failure was due to inadequate design, while the event that is the likely cause of LER-2017-003-00 is due to inadequate maintenance practices.

  There are no common event sequences or lessons learned related to LER-2014-002-00 and the LER 2017-003-00 event.

Events Involving Manual Initiation of RCIC Following Manual Shutdown

- None