Entergy

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

Tom Coutu
Director, Regulatory and
Performance Improvement
Grand Gulf Nuclear Station
Tel. (601) 437-7511

GNRO-2014/00008

February 5, 2014

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

SUBJECT: Reactor Pressure Vessel steam pressure less than 0 psig during six plant startups resulting in a violation of Technical Specification 3.4.11, RCS Pressure and Temperature (P/T) Limits.
Grand Gulf Nuclear Station, Unit 1
Docket No. 50-416
License No. NPF-29

Dear Sir or Madam:

Attached is Licensee Event Report (LER) 2013-005-00 which is a final report. This report is submitted in accordance with Title 10 *Code of Federal Regulations* 50.73(a)(2)(i)(B).

This letter contains no new commitments. If you have any questions or require additional information, please contact Mr. Jeffery Seiter at 601-437-2344.

Sincerely,

TC/ras

Attachment: Licensee Event Report (LER) 2013-005-00

CC: (See next page)

cc: with Attachment

U.S. Nuclear Regulatory Commission
ATTN: Mr. Steven Reynolds
Acting Regional Administrator, Region IV
1600 East Lamar Boulevard
Arlington, TX 76011-4511

U.S. Nuclear Regulatory Commission
ATTN: Mr. A. Wang, NRR/DORL
Mail Stop OWFN/8 G14
11555 Rockville Pike
Rockville, MD 20852-2378

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

Attachment to

GNRO-2014/00008

Licensee Event Report (LER) 2013-005-00

NRC FORM 366 (01-2014) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 01/31/2017

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 and Information Collections Branch (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.

LICENSEE EVENT REPORT (LER)

(See Page 2 for required number of digits/characters for each block)

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4. TITLE

Reactor Pressure Vessel steam pressure less than 0 psig during six plant startups resulting in a violation of Technical Specification 3.4.11, RCS Pressure and Temperature (P/T) Limits.

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
12	12	2013	2013	- 005	- 00	02	05	2014	FACILITY NAME N/A	DOCKET NUMBER 05000 N/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)(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)
10. POWER LEVEL	☐ 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)
100	☐ 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)*
Grand Gulf Nuclear Station	Jeffery A Seiter / Acting Manager, Regulatory Assurance	(601) 437-2344

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
D	N/A	N/A	N/A	N/A	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		N/	N/	N/A

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

On December 12, 2013, with the plant operating in Mode 1 at 100 percent thermal power, Grand Gulf Nuclear Station (GGNS) discovered that during six past startups, the Reactor Pressure Vessel (RPV) steam pressure was below zero (0) pounds per square inch gage (psig) with the Main Steam Isolation Valves (MSIVs) open and the Mechanical Vacuum Pumps (MVPs) running without entering LCO 3.4.11 RCS Pressure and Temperature (P/T) Limits. From 12/12/10 through12/12/2013 there were six occurrences of reactor pressure < 0 psig. The Reactor Pressure/Temperature curves in the GGNS Pressure and Temperature Limit Report (PTLR) have a minimum pressure value of 0 psig referenced on the curve. The lowest pressure noted in the six occurrences was approximately -9.9 psig on December 13, 2012. All systems performed per design during the reactor startups with RPV pressure below 0 psig during the past 3 years. The cause of not entering LCO 3.4.11 was the condition was procedurally allowed and aligned with Operations training. There were no adverse effects on the health or safety of the public as a result of these events.

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NARRATIVE

A. REPORTABLE OCCURRENCE

This Licensee Event Report (LER) is being submitted pursuant to Title 10 Code of Federal Regulations (10 CFR) 50.73(a)(2)(i)(B) for an operation or condition which was prohibited by Technical Specifications by not entering Limiting Condition of Operation (LCO) 3.4.11, RCS Pressure and Temperature (P/T) Limits during six Reactor startups with Reactor Pressure Vessel (EIIS:RPV) steam pressure below zero (0) pounds per square inch gage (psig).

B. INITIAL CONDITIONS

At the time of discovery of the issue, the reactor was in operational mode one with reactor power at 100 percent. There were no additional inoperable structures, systems, or components at the time of discovery that contributed to this event. This event is considered a discovery of an existing but previously unrecognized condition.

C. DESCRIPTION OF OCCURRENCE

On December 12, 2013, Grand Gulf Nuclear Station discovered a previously unrecognized failure to enter LCO 3.4.11 when Reactor Pressure Vessel (RPV) pressure dropped below zero psig during six reactor startups. The plant was operating in Mode 1 at 100 percent thermal power during discovery. All systems performed per design.

D. APPARENT CAUSE

The cause of the failure to enter the LCO was the condition was procedurally allowed and aligned with training Operations personnel had received. Therefore, RPV being below 0 psig was not recognized to be a condition that required entry into the LCO. Integrated Operating Instruction (IOI) 03-1-01-1 was revised in 1994 to allow startup with a vacuum in the reactor vessel because opening Main Steam Isolation Valves (MSIVs) with pressure in the reactor vessel can cause a rapid drop in level. The current IOI 03-1-01-1 contains a note as follows: "IF vacuum is NOT desired on Reactor Vessel, THEN INBOARD MSIVs AND drain Valves, 1B21-F016 AND 1B21-F019, May be left closed."

E. CORRECTIVE ACTIONS

Corrective Action issued to revise the GGNS Pressure and Temperature Limit Report (PTLR) to address having vacuum in the reactor vessel (below 0 on PTLR curve). Interim corrective action issued to ensure negative pressure is not applied to reactor pressure vessel until PTLR is revised. Corrective Action has also been issued to revise Operator Training.

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NARRATIVE

F. SAFETY ASSESSMENT

The six events posed no threat to public health and safety as the RPV performed as designed. All safety systems performed as designed.

The six events did not challenge any design or safety limit. Nuclear safety was not significantly compromised because the negative (vacuum) internal pressures identified do not cause any concerns with applicable material stresses or analysis for the GGNS RPV. GGNS remained being operated in an analyzed condition and within established margins in regards to brittle fracture of the RPV ferritic materials. There are no known or understood safety significance issues created by allowing the RPV to have a relatively small vacuum of approximately -9.9 to -6 psig during startup with the RPV metal temperatures being at approximately 160 Fahrenheit (°F) to 170°F. There is reasonable assurance that operating below 0 psig on the pressure/temperature (P/T) curves is acceptable. The PTLR is set for the limiting components which are nozzle welds for the RPV inlet. These locations get compressive and tensile stresses during startup and shutdown, but the vacuum in the steam region had an immeasurable effect on these limiting locations. The locations were still under pressure from the static fluid head (just less pressure due to being at vacuum). Therefore, margin remained.

During the six events, no Technical Specification defined Safety Limits were challenged. Radiological Safety was not affected since there was no radiological release to the public during the events.

There was no impact to the safety of the public, industrial safety or radiological safety as a result of these events.

G. ADDITIONAL INFORMATION

There have been no indications of RPV brittle fracture in the past 3 years due to the cause documented in this LER. There have been no identified failures to enter an LCO due to inadequate procedure or training in the past 3 years.