

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, as Caril-

TC/ras

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

CC: (See next page)

GNRO-2014/00008 Page 2 of 2

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 U.S. NUCLEAR REGULATORY COMMISSION					APPROVED BY OMB: NO. 3150-0104 EXPIRES: 01/31/2017												
(01-2014) LICENSEE EVENT REPORT (LER) (See Page 2 for required number of digits/characters for each block)							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.										
1. FACI		ME						2. DOC	<b>:K</b>	ET NUMBER		3. P	PAGE				
Grand Gulf Nuclear Station, Unit 1							05000 416 1 OF 3										
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. R	EPORT	T DATE 8. OTHER				ACILITIES INVOLVED					
MONTH	DAY	YEAR	YEAR SEC		REV	MONTH	DAY	YEAR							OCKET		
12	12	2013	2013 -	005 -	NO. 00	02	05	2014	-	N/A Facility name N/A				05	000 DOCKET	N/A NUMBER	
9. OP	ERATIN	G MODE	11. THIS	REPORTIS	SUBN	I IITTED P	URSUAN	I IT TO TH	IE	REQUIREMEN	TS OF 10 (	CFR §	: (Check	all th	at ap	ply)	
			20.2201	b)		203(a)(3	)(i)		50.73(a)		50.73(a)(2)(vii)						
1			 20.2201(d)			20.2203(a)(3)				50.73(a)(2)(ii)(A)			50.73(a)(2)(viii)(A)				
		20.2203(a)(1)			20.2203(a)(4)							50.73(a)(2)(viii)(B)					
			20.2203(a)(2)(i)			50.36(c)(1)(i)							50.73(a)(2)(ix)(A)			A)	
10. POV	VER LE	VEL	20.2203(a)(2)(ii)			50.36(c)(1)(ii)							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)					
	100		20.2203(a)(2)(v)			50.73(a)(2)(i)(											
			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 N Grand G	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 COMPONE							NT FAILU	JR		IN THIS R	EPOF	रा					
CAUS	SE .	SYSTEM	COMPONENT	MANU FACTUR	- ER	TO EPIX	-E	CAUSE		SYSTEM	COMPON	PONENT MANU- FACTURER		R	REP(	DRTABLE DEPIX	
D		N/A	N/A	N/A		N/A		N/A		N/A	N/A	A N/A			N/A		
14. SUPPLEMENTAL REPORT EXPECTED					24	15. EXPECTED					MONTH	DA	Y	YEAR			
YES (If yes, complete 15. EXPECTED SUBMISSION DATE) 📝 NO							SUE	MISSION DATE		N/	N	/	N/A				
ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)																	
On disc incl with occ Rep was pres and	Decem covered n gage ( hout en urrence port (PT approx ssure be aligned	ber 12, 20 that durin (psig) with tering LCC es of reacto (LR) have kimately -9 elow 0 psig d with Ope	13, with the p g six past star the Main Ste D 3.4.11 RCS or pressure < 0 a minimum p 9.9 psig on De g during the p erations trainin	ant operat tups, the R am Isolatic Pressure a psig. The ressure val cember 13 ast 3 years. ag. There	ing in eactor on Val- nd Ter e React ue of ( , 2012 . The were n	Mode 1 Pressur- ves (MS nperatur tor Press ) psig re . All sys cause of to advers	at 100 p e Vessel IVs) ope e (P/T) ure/Ten ferenced stems pe not ente se effect	bercent the (RPV) en and the Limits. hperature of on the erformed ering LC s on the	he stone Fi cu d p CO he	ermal power, C eam pressure v Mechanical V rom 12/12/10 curves in the C urve. The lowe per design duri 0 3.4.11 was th ealth or safety	Grand Gul was below acuum Pu through12 GGNS Pre est pressu ing the rea e condition of the pul	f Nuc v zerc umps 2/12/2 ssure re no actor on wa blic a	clear Stati o (0) pour s (MVPs) 2013 ther e and Ten ted in the startups v as procedu as a result	ion (C nds po runn e wer pera six c with l urally of th	GGN er sq ing re six ture occur RPV / allc ese c	S) uare Limit rences wed events.	

U.S. NUCLEAR REGULA (01-2014) LICENSEE EVENT RE CONTINUATION	APPROVED BY OMB: NO. 3150-0104 EXPIRES: 01/31/201 <sup>1</sup> 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 no required to respond to, the information collection.							
1. FACILITY NAME	2. DOCKET	6. LER NUMBER		3. PAGE				
Grand Gulf Nuclear Station, Unit 1	05000 416 -	YEAR SEQUENTIAL REV NUMBER NO.	-	05	2			
		2013 _ 005 _ 00	2	OF	5			
Reactor Pressure Vessel (EIIS:RPV) steam pres B. INITIAL CONDITIONS At the time of discovery of the issue, the react were no additional inoperable structures, syst event. This event is considered a discovery of	or was in operatio tems, or componer an existing but pr	pounds per square inch gage (p nal mode one with reactor power ts at the time of discovery that co eviously unrecognized condition.	sig). at 100 ontribu	percen uted to t	t. There his			
C. DESCRIPTION OF OCCURRENCE	5 1							
On December 12, 2013, Grand Gulf Nuclear St when Reactor Pressure Vessel (RPV) pressure operating in Mode 1 at 100 percent thermal p	ation discovered a dropped below zer ower during discov	previously unrecognized failure o psig during six reactor startups ery. All systems performed per o	to ente 5. The j design.	er LCO 3 plant wa	.4.11 as			
D. APPARENT CAUSE								
The cause of the failure to enter the LCO was t Operations personnel had received. Therefor required entry into the LCO. Integrated Opera	he condition was p e, RPV being below iting Instruction (10	rocedurally allowed and aligned 0 psig was not recognized to be 01) 03-1-01-1 was revised in 1994	with t a cond to allo	raining lition th w startu	at ıp with			

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.

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."

NRC FORM 366A (01-2014)	LICENSEE EVENT REPORT (LER) U.S. NUCLEAR REGULATORY COMMISSION CONTINUATION SHEET										
1. FACILITY NAME	2. DOCKET	(	6. LER NUMBER	3. PAGE							
Grand Gulf Nuclear Station, Unit 1	05000 416	YEAR	SEQUENTIAL NUMBER	REV NO.	3	OF	3				
	03000 410	2013	. 005 _	00	5	UF	2				

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.