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-2016/00055

October 27, 2016

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

SUBJECT: Licensee Event Report LER 2016-008-00, Entry into Mode of Applicability with the Alternate Decay Heat Removal System Inoperable
Grand Gulf Nuclear Station, Unit 1
Docket No. 50-416
License No. NPF-29

Dear Sir or Madam:

Attached is Licensee Event Report LER 2016-008-00, Entry into Mode of Applicability with the Alternate Decay Heat Removal System Inoperable. This report is being 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 James Nadeau at 601-437-2103.

Sincerely,

JJN/ram

Attachment: Licensee Event Report (LER) 2016-008-00

cc: see next page

NRC FORM 366 (06-2016) U.S. NUCLEAR REGULATORY COMMISSION

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

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 3

4. TITLE

Entry into Mode of Applicability with the Alternate Decay Heat Removal System Inoperable

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
09	09	2016	2016	008	00	10	27	2016	FACILITY NAME N/A	DOCKET NUMBER 05000N/A

9. OPERATING MODE	11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: *(Check all that apply)*			
MODE 4	☐ 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)
0%	☐ 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)(i)
	☐ 20.2203(a)(2)(vi)	☒ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(vii)	☐ 73.77(a)(2)(ii)
		☐ 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)*
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
X	N/A	N/A	N/A	Y	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		03	03	2017

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

Entergy manually shutdown the Grand Gulf Nuclear Station (GGNS) reactor on September 8, 2016, at approximately 1104 hours, to replace Residual Heat Removal (RHR) Pump 'A' after it failed its technical specification surveillance. The reactor entered MODE 4, Cold Shutdown, at approximately 0509 hours on September 9, 2016. Residual Heat Removal Train 'B' was placed in shutdown cooling mode (SDC) to maintain Reactor coolant temperature 110 degrees Fahrenheit (F) to 120 F on September 9, 2016 at 0332. At the time of entry into MODE 4, and throughout the time period the 'A' RHR pump was inoperable, the Alternate Decay Heat Removal (ADHR) System was not available because the ADHR heat exchangers tube-side cooling water system had been clearance-tagged CLOSED to support cleaning of the heat exchanger tubes since August 10, 2016. This condition was not identified until September 23, 2016, after the 'A' RHR train was returned to OPERABLE status. The direct cause of this event appears to be the lack of adequate information validation and verification by station personnel. Entergy personnel verified both RHR trains were operable and available on September 23, 2016, when the ADHR Heat Exchangers were identified as clearance-tagged CLOSED. The cause of the event remains under investigation and this licensee event report will be supplemented upon completion of the causal evaluation.

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Grand Gulf Nuclear Station Unit 1	05000-416	2016	- 008	- 00

NARRATIVE

PLANT CONDITIONS PRIOR TO THE EVENT
MODE 4
'A' RHR Pump inoperable
'B' RHR Pump in service providing shutdown cooling
Alternate Decay Heat Removal System inoperable

DESCRIPTION
Entergy manually shutdown the Grand Gulf Nuclear Station (GGNS) reactor on September 8, 2016, at approximately 1104 hours, to replace Residual Heat Removal (RHR) [BO] Pump 'A' after it failed its technical specification surveillance. The reactor entered MODE 4, Cold Shutdown, at approximately 0509 hours on September 9, 2016. Residual Heat Removal Train 'B' was placed in shutdown cooling mode (SDC) to maintain Reactor coolant temperature 110 degrees Fahrenheit (F) to 120 F. At approximately 1742 hours on September 9, 2016, The Alternate Decay Heat Removal (ADHR) [BO] System was placed into standby.

Grand Gulf Nuclear Station Technical Specification (TS) 3.4.10, Residual heat Removal (RHR) Shutdown Cooling System – Cold Shutdown, requires two trains of RHR to be OPERABLE. Condition A, One or two RHR shutdown cooling subsystems inoperable requires the verification of an alternate method of decay heat removal is available for each inoperable RHR shutdown cooling subsystem. This action is required to be completed within 1 hour and once per 24 hours thereafter during the mode of applicability.

At the time of entry into MODE 4, and throughout the time period the 'A' RHR pump was inoperable, the ADHR System was not available because the ADHR heat exchangers tube-side cooling water system had been clearance-tagged closed to support cleaning of the heat exchanger tubes since August 10, 2016. This condition was not identified until September 23, 2016, after the 'A' RHR train was returned to OPERABLE status.

Alternate Decay Heat Removal Background Information:
The ADHR System provides an alternate method of reactor decay heat removal during cold shutdown and refueling conditions. It is designed for use during MODEs 4 and 5 to provide decay heat removal when maintenance is being performed on RHR shutdown cooling loops or associated support systems. An alternative method of decay heat removal must be demonstrated for each required RHR SDC loop that is inoperable. The cause of the event is under investigation and this licensee event report will be supplemented upon completion of the causal evaluation. The direct cause of this event appears to be the lack

The ADHR System is an auxiliary cooling loop included as part of the RHR System with separate pumps, heat exchangers, and controls. The ADHR System is completely isolated mechanically and electrically from connected plant systems during MODEs 1, 2, and 3. The functional design basis for the ADHR System is to maintain Reactor coolant temperatures below TS limits during cold shutdown and refueling operations, accomplishing this task by operating in either a Reactor to Reactor cooling mode or Spent Fuel Pool to Reactor cooling mode.

The ADHR pumps and heat exchangers are located in RHR 'C' Pump Room. Cooling water for the ADHR heat exchangers is supplied by the Plant Service Water (PSW) System.

Two identical ADHR pumps provide the needed head to pump water at a maximum combined flow of 3600 gpm when operated in parallel.

Two ADHR heat exchangers, also located in the RHR "C" Pump Room are operated in a parallel arrangement to provide the required decay heat removal. Each heat exchanger is a horizontally mounted, 50% capacity, two-pass, U-tube type heat exchanger with a single-pass shell. Plant Service Water passes through the tubes, while the water being cooled passes through the shell.

Plant Service Water provides the cooling source to the ADHR System heat exchangers and the ADHR System Air Conditioning Unit. A loss of PSW would prevent the ADHR System from performing its intended function.

REPORTABILITY

CAUSE

The cause of the event is under investigation and this licensee event report (LER) will be supplemented upon completion of the causal evaluation. The direct cause of this event appears to be the lack of adequate information validation and verification by station personnel.

CORRECTIVE ACTIONS

Entergy personnel verified both RHR trains were operable and available on September 23, 2016, when the ADHR Heat Exchangers were identified as clearance-tagged CLOSED.

Entergy established a causal evaluation to determine the cause and to establish corrective actions as appropriate. This LER will be supplemented upon completion of this causal evaluation.

SAFETY SIGNIFICANCE

There were no actual nuclear safety consequences or radiological consequences during the event. The 'B' RHR train remained OPERABLE and in service, maintaining shutdown cooling throughout the duration of the event.

PREVIOUS SIMILAR EVENTS

LER 2013-004-00, Operation Prohibited By Technical Specifications Due To Inadvertent Bypass of Reactor Steam Dome High Pressure Interlock For Residual Heat Removal System Isolation
LER 2013-005-00, Reactor Pressure Vessel Steam Pressure Less Than 0 PSIG During Six Plant Startups Resulting In A Technical Specification 3.4.11 RCS Pressure And Temperature (PFF) Limits Violation
LER 2013-005-01, Reactor Pressure Vessel Steam Pressure Less Than 0 PSIG During Six Plant Startups Resulting In A Technical Specification 3.4.11 RCS Pressure And Temperature (PFF) Limits Violation
LER 2015-003-00, Technical Specification Surveillance On Primary Containment Isolation Valves

Entergy has reviewed the above identified licensee event reports and has concluded that the causes and corrective actions associated with these licensee event reports could not have prevented the occurrence of the event documented in this licensee event report.