



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

Douglas Neve
Acting Manager,
Regulatory Assurance
Grand Gulf Nuclear Station
Tel. (601) 437-2103

GNRO-2017/00001

August 16, 2017

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

SUBJECT: Supplemental Licensee Event Report LER 2016-008-01, Entry into Mode of
Applicability with the Alternate Decay Heat Removal System Inoperable
Grand Gulf Nuclear Station, Unit 1
Docket No. 50-416
Renewed License No. NPF-29

Dear Sir or Madam:

Attached is Supplemental Licensee Event Report LER 2016-008-01, Entry into Mode of
Applicability with the Alternate Decay Heat Removal System Inoperable.

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

Sincerely,

A handwritten signature in black ink, appearing to read "D. Neve", written over a horizontal line.

Douglas Neve
Manager Regulatory Assurance
Grand Gulf Nuclear Station
DAN/ram

Attachment: Licensee Event Report (LER) 2016-008-01

cc: see next page

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

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

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



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/)

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.

1. FACILITY NAME Grand Gulf Nuclear Station, Unit 1	2. DOCKET NUMBER 05000 416	3. PAGE 1 OF 5
---	--------------------------------------	--------------------------

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
09	09	2016	2016	008-01		8	16	2017	N/A	05000 N/A
									N/A	05000 N/A

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

9. OPERATING MODE MODE 4	<input type="checkbox"/> 20.2201(b)	<input type="checkbox"/> 20.2203(a)(3)(i)	<input type="checkbox"/> 50.73(a)(2)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(viii)(A)
	<input type="checkbox"/> 20.2201(d)	<input type="checkbox"/> 20.2203(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(ii)(B)	<input type="checkbox"/> 50.73(a)(2)(viii)(B)
	<input type="checkbox"/> 20.2203(a)(1)	<input type="checkbox"/> 20.2203(a)(4)	<input type="checkbox"/> 50.73(a)(2)(iii)	<input type="checkbox"/> 50.73(a)(2)(ix)(A)
	<input type="checkbox"/> 20.2203(a)(2)(i)	<input type="checkbox"/> 50.36(c)(1)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(iv)(A)	<input type="checkbox"/> 50.73(a)(2)(x)
	<input type="checkbox"/> 20.2203(a)(2)(ii)	<input type="checkbox"/> 50.36(c)(1)(ii)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(A)	<input type="checkbox"/> 73.71(a)(4)
10. POWER LEVEL 0%	<input type="checkbox"/> 20.2203(a)(2)(iii)	<input type="checkbox"/> 50.36(c)(2)	<input type="checkbox"/> 50.73(a)(2)(v)(B)	<input type="checkbox"/> 73.71(a)(5)
	<input type="checkbox"/> 20.2203(a)(2)(iv)	<input type="checkbox"/> 50.46(a)(3)(ii)	<input type="checkbox"/> 50.73(a)(2)(v)(C)	<input type="checkbox"/> 73.77(a)(1)
	<input type="checkbox"/> 20.2203(a)(2)(v)	<input type="checkbox"/> 50.73(a)(2)(i)(A)	<input type="checkbox"/> 50.73(a)(2)(v)(D)	<input type="checkbox"/> 73.77(a)(2)(i)
	<input type="checkbox"/> 20.2203(a)(2)(vi)	<input checked="" type="checkbox"/> 50.73(a)(2)(i)(B)	<input type="checkbox"/> 50.73(a)(2)(vii)	<input type="checkbox"/> 73.77(a)(2)(ii)
		<input type="checkbox"/> 50.73(a)(2)(i)(C)	<input type="checkbox"/> OTHER	Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME Douglas Neve / Manager, Regulatory Assurance	TELEPHONE NUMBER (Include Area Code) (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
 YES (If yes, complete 15. EXPECTED SUBMISSION DATE) NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

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 the event is the Plant Service Water (PSW) supply isolation valves for the ADHR Heat Exchangers were not returned to the normal OPEN position after Heat Exchanger cleaning. The root causes were the inconsistent reinforcement of nuclear professional behaviors in the Operators and insufficient detail in operating procedures associated with the operation of the ADHR system. Corrective actions included the strengthening and reinforcement site of administrative controls to ensure personnel understood and adhered to the site's standards for nuclear professional behaviors for Operations personnel, and the revision of site operational procedures to include directions to verify PSW flowrate through the ADHR H/X when placing the system in STANDBY.



LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET

(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/>)

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.

1. FACILITY NAME	2. DOCKET	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV. NO.
Grand Gulf Nuclear Station, Unit 1	05000 416	2016 – 008 01		

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 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.



LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET

(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/>)

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.

1. FACILITY NAME	2. DOCKET	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV. NO.
Grand Gulf Nuclear Station, Unit 1	05000 416		2016 – 008 01	

NARRATIVE

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

This licensee event report is reportable in accordance with 10 CFR 50.73(a)(2)(i)(B), Operation or Condition Prohibited by Technical Specification.

CAUSE

Direct Cause:

The Direct Cause of the event is the Plant Service Water (PSW) supply isolation valves for the ADHR Heat Exchangers were not returned to the normal OPEN position after Heat Exchanger cleaning.

Root Cause(s):

The first Root Cause of the event is inconsistent reinforcement of nuclear professional behaviors in the Operators. Specifically, Operators were not consistently using applicable portions of the Plant operational guidance procedures.

The second Root Cause of the event is insufficient detail in operating procedures associated with the operation of the ADHR system. This insufficient detail in operating procedures introduced the error-likely situation related to status control of the system.

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.



LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET

(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/>)

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.

1. FACILITY NAME	2. DOCKET	3. LER NUMBER		
Grand Gulf Nuclear Station, Unit 1	05000 416	YEAR	SEQUENTIAL NUMBER	REV. NO.
		2016 – 008 01		

NARRATIVE

Entergy strengthened and reinforced site administrative controls to ensure personnel understood and adhered to the site standards for nuclear professional behaviors for Operations personnel.

These actions included, but were not limited to the establishment of:

- Standing orders for the manipulation of components and the subsequent movement of this order into the Operations Administrative procedures,
- Establishment and publication of departmental expectations,
- Placement of CAUTION or Component Control Tags for components left in a position not aligned with station operating instructions,
- Establishment of additional administrative procedural guidance to institutionalize Operator Fundamentals,
- Increased field observations by Shift Managers, Control Room Supervisors, and Field Support Supervisors,
- Periodic reviews of the field observations reports to identify issues at low levels,
- Identification and upgrade of departmental procedures to improve format, detail, accuracy,
- Implementation of the Operator High Intensity Oversight Plan.

Revision of site operational procedures to include directions to verify PSW flowrate through the ADHR H/X when placing the system in STANDBY and specific valve alignment for PSW verification.

SAFETY SIGNIFICANCE

The ADHR system was not available, as required in Mode 4, to provide decay heat removal in violation of Plant Technical Specification 3.4.10. Decay heat removal was maintained by the RHR system throughout the time period the ADHR system was not available. A probabilistic risk analysis was conducted by Entergy and it was concluded that there is no significant risk increase in core damage frequency. There were no other actual consequences to general safety of the public, nuclear safety, industrial safety and radiological safety for this event.



LICENSEE EVENT REPORT (LER)
CONTINUATION SHEET

(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/>)

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.

1. FACILITY NAME	2. DOCKET	3. LER NUMBER		
Grand Gulf Nuclear Station, Unit 1	05000 416	YEAR	SEQUENTIAL NUMBER	REV. NO.
		2016 – 008 01		

NARRATIVE

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.