

NRC Form 366  
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES 8/31/85

LICENSEE EVENT REPORT (LER)

Update

FACILITY NAME (1) Grand Gulf Nuclear Station - Unit 1						DOCKET NUMBER (2) 0 5 0 0 0 4 1 6				PAGE (3) 1 OF 013	
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TITLE (4)  
Forced Shutdown Due to RHR Pipe Support Deficiencies

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)		
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	MONTH	DAY	YEAR	FACILITY NAMES		DOCKET NUMBER(S)
05	02	84	84	024	02	10	17	84	NA		0 5 0 0 0
THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)											

OPERATING MODE (9) 2	20.402(b)	20.406(c)	50.73(a)(2)(iv)	73.71(b)
POWER LEVEL (10) 01014	20.406(a)(1)(i)	50.36(e)(1)	50.73(a)(2)(v)	73.71(c)
	20.406(a)(1)(ii)	50.36(e)(2)	50.73(a)(2)(vii)	OTHER (Specify in Abstract below and in Text, NRC Form 365A)
	20.406(a)(1)(iii)	X 50.73(a)(2)(i)	50.73(a)(2)(viii)(A)	
	20.406(a)(1)(iv)	50.73(a)(2)(ii)	50.73(a)(2)(viii)(B)	
	20.406(a)(1)(v)	50.73(a)(2)(iii)	50.73(a)(2)(ix)	

LICENSEE CONTACT FOR THIS LER (12)

NAME	TELEPHONE NUMBER
Ronald W. Byrd/Licensing Engineer	61011 41371-1211419

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

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPRDS										
X	B	O	P	S	F	T	1	6	0	B	B	O	S	P	T	B	1	3	0
X	B	O	P	S	F	T	1	6	0										

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE)  NO

EXPECTED SUBMISSION DATE (15)

MONTH	DAY	YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately fifteen single-space typewritten lines) (16)

A plant shutdown was completed on May 2, 1984, as required by the GGNS Technical Specifications, due to the inoperability of both independent Containment Spray loops of the Residual Heat Removal (RHR) System. The RHR B loop was declared inoperable on April 30, when two cracks were found in a 3 inch diameter branch pipe off the main RHR B loop header. On May 2, pipe support deficiencies resulted in both RHR loops being declared inoperable and the subsequent shutdown. The event was declared an Unusual Event at 1800 hours on May 2, and the Nuclear Regulatory Commission (NRC) was notified at 1822 hours.

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## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Grand Gulf Nuclear Station - Unit 1	0 5 0 0 0 4 1 6	8 4	- 0 2 4	- 0 2	0 2	OF	0 3

TEXT (if more space is required, use additional NRC Form 366A's) (17)

On May 2, 1984, at 2225 hours, the plant entered Hot Shutdown as required by action (b) of Technical Specification 3.6.3.2 due to the inoperability of both independent loops of the Containment Spray mode of the Residual Heat Removal System. The event was declared an Unusual Event at 1800 hours on May 2 and the Nuclear Regulatory Commission (NRC) was notified at 1822 hours. The sequence of events which lead to the shutdown are as follows:

On April 30, 1984, at 1645 hours, two cracks were found in a 3 inch diameter pipe which branches off the RHR B loop. This pipe allows the Reactor Core Isolation Cooling System (RCIC) to take suction from the RHR heat exchangers. The pipe has a primary pressure rating of 300 psi, is made of carbon steel and designed to meet ASME Boiler and Pressure Vessel Code Section III, Class 2. One crack was found at a 90 degree elbow just prior to valve F065. The other was in a weld-o-let fitting at the junction of the 3 inch branch line and the 18 inch diameter RHR loop B pipe. The distance between valve F065 and the branch connection is approximately 2.5 feet. As a result of the findings, Limiting Conditions for Operation (LCOs) were entered under Technical Specification 3.5.1, 3.6.3.2, and 3.6.3.3 after declaring LPCI "B", Containment Spray "B", and the Suppression Pool Cooling Mode of RHR B inoperable.

Subsequent special inspections were then conducted which revealed RHR system pipe support nonconformances at 1800 hours on May 2, 1984. One support base plate had loose nuts on the mounting bolts and two plates appeared to have been pulled away from the wall approximately 0.25 to 0.75 inches. The supports are located on the suction side of RHR pumps A and B. Since the structural integrity of the supports were in question, RHR loops A and B including Containment Spray, LPCI, Suppression Pool Cooling, and Shutdown Cooling modes were declared inoperable. Per action (b) of Technical Specification 3.6.3.2, the plant was placed in Hot Shutdown at 2225 hours on May 2 and in Cold Shutdown at 0745 hours on May 3. Reactor Recirculation pumps A and B were used as an alternate method of reactor coolant circulation. The Reactor Water Cleanup System and the Control Rod Drive System were also available for heat removal.

The damaged 3 inch pipe was removed and a temporary capped 6 inch weld-o-let connection was attached to the 18 inch pipe to restore the RHR B loop. Flow tests were performed on May 4 by throttling valve F003 which is at the heat exchangers outlet and immediately downstream of the cracked branch connection. Vibration measurements showed some excessive vibration when valve F003 was less than 15 percent open with valve F048 full closed. The surveillance procedure has been revised to prohibit operation in this condition.

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TEXT (If more space is required, use additional NRC Form 368A's) (17)

Valve F048, which is on the heat exchanger bypass line and connects just downstream of valve F003, is throttled in conjunction with valve F003 to obtain the proper cooldown rate in the shutdown cooling mode. Appropriate instructions will be revised to require either valve to be at least 15 percent open.

Two of the pipe supports were reworked, the other was redesigned to enhance its base plate mounting to correct the support deficiencies. Startup commenced at 1215 hours on May 6, 1984.

A metallurgical evaluation was performed on the failed elbow and the weld-o-let. The crack on the inner bend radius of the elbow is attributed to high cycle, low stress fatigue. No pre-existing flaws were found at the fracture initiation site. The crack initiation in the weld-o-let occurred at a pre-existing weld defect, a shrinkage crack at the toe of the weld. The crack propagated by high cycle fatigue circumferentially along the weld-o-let in the base metal of the 18 inch pipe.

The same pipe spool on Unit 1 RHR loop A was examined and found acceptable. Similar weld-o-lets on Unit 2 were inspected and no indication of weld shrinkage was identified. The condition is considered isolated rather than generic.



MISSISSIPPI POWER & LIGHT COMPANY

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P. O. BOX 1640, JACKSON, MISSISSIPPI 39205

October 17, 1984

NUCLEAR LICENSING & SAFETY DEPARTMENT

Document Control Desk  
U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

Gentlemen:

SUBJECT: Grand Gulf Nuclear Station  
Unit 1  
Docket No. 50-416  
License No. NPF-13  
File: 0260/L-835.0  
Force Shutdown Due to RHR Pipe  
Support Deficiencies  
LER 84-024-2  
AECM-84/0482

Attached is Licensee Event Report (LER) 84-024-2 which is a final report.

Yours truly,

L. F. Dale  
Director

EBS/SHH:rg  
Attachment

cc: Mr. J. B. Richard (w/a)  
Mr. R. B. McGehee (w/o)  
Mr. N. S. Reynolds (w/o)  
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