



# Entergy Operations

Entergy Operations, Inc.

P.O. Box 756

Port Gibson, MS 39150

Tel: 601-437-2800

April 23, 1993

U.S. Nuclear Regulatory Commission  
Mail Station P1-137  
Washington, D.C. 20555

Attention: Document Control Desk

SUBJECT: Grand Gulf Nuclear Station  
Unit 1  
Docket No. 50-416  
License No. NPF-29  
Loss of Single Train Safety System Function  
LER 93-003-00

GNRO-93/00051

Gentlemen:

Attached is Licensee Event Report (LER) 93-003-00 which is a final report. A supplemental report will be submitted following completion of the investigation.

Yours truly,

CRH/BAB/cg  
attachment

cc: Mr. D. C. Hintz (w/a)  
Mr. J. L. Mathis (w/a)  
Mr. R. B. McGehee (w/a)  
Mr. N. S. Reynolds (w/a)  
Mr. H. L. Thomas (w/o)

Mr. Stewart D. Ebner (w/a)  
Regional Administrator  
U.S. Nuclear Regulatory Commission  
Region II  
101 Marietta St., N.W., Suite 2900  
Atlanta, Georgia 30323

Mr. P. W. O'Connor, Project Manager (w/a)  
Office of Nuclear Reactor Regulation  
U.S. Nuclear Regulatory Commission  
Mail Stop 13H3  
Washington, D.C. 20555

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NRC Form 366  
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES 8/31/88

## LICENSEE EVENT REPORT (LER)

FACILITY NAME (1)	DOCKET NUMBER (2)	PAGE (3)
Grand Gulf Nuclear Station	050004116	1 OF 03

TITLE (4)
Loss of Single Train Safety System Function

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)	
03	24	93	93	003	00	04	23	93		050000	
										050000	

OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR 8. (Check one or more of the following) (11)									
POWER LEVEL (10)	1	20.402(a)	20.405(c)	80.73(a)(2)(iv)	73.71(b)						
		20.405(a)(1)(i)	80.36(c)(1)	X 80.73(a)(2)(v)	73.71(c)						
		20.405(a)(1)(ii)	80.36(c)(2)	80.73(a)(2)(vi)	OTHER (Specify in Abstract below and in Text, NRC Form 366A)						
		20.405(a)(1)(iii)	80.73(a)(2)(i)	80.73(a)(2)(vii)(A)							
		20.405(a)(1)(iv)	80.73(a)(2)(ii)	80.73(a)(2)(vii)(B)							
	20.405(a)(1)(v)	80.73(a)(2)(iii)	80.73(a)(2)(viii)								
	20.405(a)(1)(vi)	80.73(a)(2)(iv)	80.73(a)(2)(ix)								

LICENSEE CONTACT FOR THIS LER (12)		TELEPHONE NUMBER	
NAME	AREA CODE		
Bruce A. Burke / Licensing Engineer	601	4137-16313	

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)											
CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NRC		

SUPPLEMENTAL REPORT EXPECTED (14)		EXPECTED SUBMISSION DATE (15)	MONTH	DAY	YEAR
<input checked="" type="checkbox"/> YES (If yes, complete EXPECTED SUBMISSION DATE)	<input type="checkbox"/> NO		08	13	93

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

Grand Gulf Nuclear Station (GCNS) Division III standby service water (SSW C) system pump motor failed on March 24, 1993. The failure occurred approximately five and one-half hours into the weekly eight hour recirculation run. SSW C provides cooling water for the high pressure core spray (HPCS) pump room coolers and Division III standby diesel generator.

Investigation into the exact cause of the failure is continuing. It is suspected that a phase-to-phase or phase-to-ground short occurred in the motor. The motor had an estimated total run time of twenty-five hundred hours. The failed motor has been sent to a vendor for failure analysis and refurbishment.

All safety related equipment operated as designed. Safety and health of the general public were not compromised by this event.

NRC Form 306A  
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

APPROVED OMB NO 3150-0104  
EXPIRES: 8/31/88

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
Grand Gulf Nuclear Station	0 5 0 0 0 4 1 6	9 3	— 0 1 3	— 0 0	0 2	OF 0 3

TEXT (If more space is required, use additional NRC Form 306A's) (17)

## A. REPORTABLE OCCURRENCE

Grand Gulf Nuclear Station (GGNS) Division III standby service water (SSW C) system [BI] pump motor failed on March 24, 1993. SSW C provides cooling water for the high pressure core spray (HPCS) system [BG] pump room coolers and Division III standby diesel generator cooling system [LB]. This event is reportable per 10 CFR 50.73(a)(2)(v)(A) and 50.73(a)(2)(vii)(A).

## B. INITIAL CONDITIONS

The plant was in Operational Condition 1 at approximately 100 percent power with reactor water at approximately 530 degrees F and 1027 psig. The weekly SSW C recirculation run was in progress for approximately five and one-half hours when the failure occurred.

## C. DESCRIPTION OF OCCURRENCE

While performing the weekly recirculation run of SSW C on March 24, 1993, the SSW C pump tripped at 0512 hours due to a pump motor failure. The weekly recirculation run is for corrosion protection and microbiological protection of the open recirculating system SSW C loop; chemical additions are made as part of the recirculation run. This motor failure resulted in declaring SSW C and HPCS inoperable.

## D. APPARENT CAUSES

The 100 horsepower, 1,800 rpm three phase motor smelled of burned wiring/insulation upon failure. The motor and pump rotated freely following failure, thereby eliminating a failed pump or motor bearing as causing the motor failure. It is suspected that an electrical short occurred in the motor, either phase-to-phase or phase-to-ground. Investigation into the exact cause of the failure is continuing.

Periodic vibration monitoring ensured that the pump-to-motor coupling was aligned. A vibration test had been performed satisfactorily one week prior to the motor failure.

The existing operating instruction procedure for this pump limits starts to two successive starts from ambient temperature or one start from operating temperature. Subsequent starts may be made after thirty minutes of operation or sixty minutes of being idle. These controls comply with vendor recommendations.

The motor had been in service since commercial operation of GGNS. The weekly eight hour recirculation run was commenced in mid-1990. The motor had an estimated total run time of approximately twenty-five hundred hours.

## E. CORRECTIVE ACTION

Immediate corrective actions included performing the action statement specified in GGNS Technical Specifications 3.5.1, 3.7.1.2, and 3.8.1.1. The SSW C pump motor was replaced with a spare unit and retested satisfactorily. Operability of SSW C and HPCS was restored at 2245 hours on March 24, 1993.

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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

The failed motor has been sent to a vendor for failure analysis and refurbishment. A supplemental report will be submitted to discuss results of the investigation.

## F. SAFETY ASSESSMENT

SSW water carries heat to the SSW cooling towers, the ultimate heat sink system [BS] at GGNS for removal of decay heat generated by the reactor core. Divisions I and II SSW provide cooling water for a variety of auxiliary systems, three common major loads being the respective train of residual heat removal (RHR) system [BO], standby diesel generator cooling system [LB], and fuel pool cooling system [DA]. Division III SSW is for HPCS support systems (i.e., Division III standby diesel generator cooling system and the HPCS pump room coolers). Divisions I and III share the same cooling tower, but each division has its own pump.

HPCS is a single train system without any recognized redundancy. However, HPCS is backed up by multiple trains of low pressure emergency core cooling systems and the automatic depressurization system. Additionally, high pressure makeup was available from the reactor core isolation cooling (RCIC) system [BN]. The out-of-service time was maintained within the limits of GGNS technical specifications, thereby minimizing any safety significance of this event.

Safety and health of the general public were not compromised by this event.

## G. ADDITIONAL INFORMATION

Energy Industry Identification System (EIIS) codes are identified in the text within brackets [ ].