



ENTERGY

Entergy Operations, Inc.
P.O. Box 756
Port Gibson, MS 38150
Tel 601 437 2600

February 4, 1994

C. R. Hutchinson
Vice President
Operations
Grand Gulf Nuclear Station

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 Shutdown Cooling and ESF Actuation During Unit Outage Due to Operator Error
LER 93-011-01

GNRO-94/00019

Gentlemen:

Attached is Licensee Event Report (LER) 93-011-01 which is a final report.

Yours truly,

CRH/LFD/BAB
attachment

cc: Mr. R. H. Bernhard (w/a)
Mr. H. W. Keiser (w/a)
Mr. R. B. McGehee (w/a)
Mr. N. S. Reynolds (w/a)
Mr. H. L. Thomas (w/o)

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

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

9402170147 940204
PDR ADDCK 05000416
S PDR

NRC FORM 366 (5-92)		U.S. NUCLEAR REGULATORY COMMISSION				APPROVED BY OMB NO. 3150-0104 EXPIRES 5/31/95					
LICENSEE EVENT REPORT (LER)						ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST, 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503					
FACILITY NAME (1) Grand Gulf Nuclear Station						DOCKET NUMBER (2) 05000-416		PAGE (3) 01 of 04			
TITLE (4) Loss of Shutdown Cooling and ESF Actuation During Unit Outage Due to Operator Error											
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 NAME	DOCKET NUMBER	
10	07	93	93	011	01	02	04	94	N/A	05000	
									FACILITY NAME	DOCKET NUMBER	
									N/A	05000	
OPERATING MODE (9)		5		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR § (Check one or more (11))							
POWER LEVEL (10)		0		20.402(b)		20.405(c)		X		50.73(a)(2)(iv)	73.71(b)
				20.405(a)(1)(i)		50.36(c)(1)				50.73(a)(2)(v)	73.71(c)
				20.405(a)(1)(ii)		50.36(c)(2)		X		50.73(a)(2)(vii)	OTHER
				20.405(a)(1)(iii)		50.73(a)(2)(i)				50.73(a)(2)(viii)(A)	(Specify in abstract below and in text, NRC Form 366A)
				20.405(a)(1)(iv)		50.73(a)(2)(ii)				50.73(a)(2)(viii)(B)	
				20.405(a)(1)(v)		50.73(a)(2)(iii)				50.73(a)(2)(x)	
LICENSEE CONTACT FOR THIS LER (12)											
NAME Bruce A. Burke / Licensing Engineer						TELEPHONE NUMBER (Include Area Code) 601-437-6333					
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	
SUPPLEMENTAL REPORT EXPECTED (14)						EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR	
YES (If yes, complete EXPECTED SUBMISSION DATE)		X		NO							
ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)											
<p>Automatic closure of Grand Gulf Nuclear Station's (GGNS) residual heat removal (RHR) system containment isolation valve 1E12F009 occurred while RHR B was operating in shutdown cooling mode. This automatic closure resulted in RHR B pump tripping. 1E12F009 is the inboard isolation valve on the common suction line for RHR A and RHR B. Additional ESF systems actuated as a result of this event. The closure signal was generated when station operators manually opened the feeder breaker to the alternate power supply for Class 1E distribution panel 1Y85.</p> <p>Immediate corrective actions included briefing Operations personnel on the event. Issuance of a standing order to require that an information tag be placed on the inverter barrel switch and the alternate source feeder breaker when the inverter is switched to its alternate power supply. Signs were also placed on the alternate power source supply breakers. These signs give appropriate details for inverter verification which would be required prior to the opening of the breakers.</p> <p>A similar ESF actuation and loss of shutdown cooling event occurred at GGNS just three days prior to this event, but was caused by a faulty battery charger. LER 90-023, LER 90-022, LER 89-004, LER 87-021, and LER 87-020 discussed details of previous loss of shutdown cooling events at GGNS. A similar ESF actuation due to loss of power to the bus as a result of a failed inverter was discussed in LER 85-038.</p> <p>Safety related equipment operated as designed. Safety and health of the general public were not compromised by this event.</p>											

NRC FORM 366A (5-92)	U.S. NUCLEAR REGULATORY COMMISSION	APPROVED BY OMB NO. 3150-0104 EXPIRES 5/31/95		
LICENSEE EVENT REPORT (LER) TEXT CONTINUATION		ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503		
		FACILITY NAME (1) Grand Gulf Nuclear Station	DOCKET NUMBER (2) 05000-416	LER NUMBER (6) 93-011-01

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

A. REPORTABLE OCCURRENCE

Automatic closure of 1E12F009 occurred on October 7, 1993 while the Division II residual heat removal (RHR B) system [BO] was operating in shutdown cooling mode. This isolation resulted in loss of shutdown cooling. 1E12F009 is the inboard containment isolation valve on the common suction line for RHR A and RHR B. RHR A was inoperable prior to this event. The standby gas treatment system (SGTS) [BH] and control room standby fresh air [VI] automatically initiated. Divisional primary containment and secondary containment isolation valves [NH] also closed automatically. In addition, the reactor protection system (RPS) [JC] generated a half scram signal. This event is reportable per 10 CFR 50.73(a)(2)(iv) and 10 CFR 50.73(a)(2)(vii)(B).

B. INITIAL CONDITIONS

The plant was in Operational Condition 5 at zero percent power when shutdown cooling operation was lost. Reactor water was approximately 84 degrees F with the reactor vessel depressurized. Fuel assemblies were approximately 21 feet below water level. Division I Class 1E distribution panels 1Y89 and 1Y85 were powered by their alternate power supply via breakers 52-156121 for 1Y87-1 and 52-156122 for 1Y96-1, respectively. These distribution panels supply power to engineered safety feature (ESF) components.

C. DESCRIPTION OF OCCURRENCE

On October 7, 1993 at 1513, station operators were reconfiguring equipment in order to permit calibration of meters for alternate source transformers 1Y87-1 and 1Y96-1. Feeder breaker 52-156122 was manually opened as the operators were tagging out the alternate power supply to Class 1E distribution panel 1Y85. However, power to this distribution panel was being supplied by its alternate power source (1Y96-1) as a result of a failed Class 1E battery charger on October 4, 1993 (see LER 93-010).

Actuation of ESF systems occurred when feeder breaker 52-156122 was opened. Distribution panel 1Y85 supplies power to Division I ESF loads including RPS, the neutron monitoring system [JD], and control logic [JM] for the primary containment and secondary containment isolation system. The standby gas treatment system (SGTS) [BH] and control room standby fresh air system [VI] initiated automatically. Automatic closure of 1E12F009 also occurred. 1E12F009 is the containment inboard isolation valve on the common suction line for RHR A and RHR B pumps. Closure of this valve subsequently tripped RHR B which was in the shutdown cooling mode of operation. This isolation resulted in declaring RHR B inoperable. Operation of shutdown cooling was restored in fifteen (15) minutes. Reactor water temperature increased approximately three (3) degrees F.

NRC FORM 366A (5-92)	U.S. NUCLEAR REGULATORY COMMISSION	APPROVED BY OMB NO. 3150-0104 EXPIRES 5/31/95		
LICENSEE EVENT REPORT (LER) TEXT CONTINUATION		ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST 500 HRS FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503		
		FACILITY NAME (1) Grand Gulf Nuclear Station	DOCKET NUMBER (2) 05000-416	LER NUMBER (6) 93-011-01

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

D. APPARENT CAUSE(S)

The instructions for each clearance tag for both feeder breakers required that operators verify that the respective distribution panel was powered by its normal power source (i.e., inverter) prior to opening the alternate power source feeder breaker. The operator that opened breaker 52-156122 relied on the inverter's panel switch (i.e., barrel switch) position to perform this verification. The barrel switch does not change position when an automatic transfer to the alternate power source occurs. Panel lights above the barrel switch indicate operating details, including the power source supplying the load. In addition, manual realignment is required to restore the distribution panel to the normal power source after an automatic transfer rather than the device automatically reverting back to the normal power source when it becomes available.

The clearance instructions did not specify details of how to perform the verifications. The operating characteristics of this equipment should have triggered additional details and remarks to be incorporated into the clearance instructions. Indication lights on each panel should have been relied on to determine whether power is supplied by the normal source or alternate source.

A subsequent investigation revealed that the cause of the incident was due to inadequate work practices. Self-checking was not adequately applied while verifying the inverter status prior to implementing the clearance. Specifically, operators performing the task did not consider all available information and indications while verifying the power source of the inverter.

E. CORRECTIVE ACTION(S)

Immediate corrective actions included briefing Operations personnel on the event. A standing order was issued to require that an information tag be placed on the barrel switch and alternate source feeder breaker when the panel is switched to its alternate power supply. In addition, labels were placed on the alternate power supply breaker. These signs state which panel indication lights are to be relied upon to determine the power source to the distribution panel prior to opening the supply breaker.

F. SAFETY ASSESSMENT

The consequences of this event were minimal. Shutdown cooling operation was lost for approximately fifteen (15) minutes. The alternate decay heat removal system was available for removal of decay heat as required by GGNS technical specifications.

NRC FORM 366A (5-92)	U.S. NUCLEAR REGULATORY COMMISSION	APPROVED BY OMB NO. 3150-0104 EXPIRES 5/31/95		
LICENSEE EVENT REPORT (LER) TEXT CONTINUATION		ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS INFORMATION COLLECTION REQUEST: 50.0 HRS. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (MNBB 7714), U.S. NUCLEAR REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO THE PAPERWORK REDUCTION PROJECT (3150-0104), OFFICE OF MANAGEMENT AND BUDGET, WASHINGTON, DC 20503.		
		FACILITY NAME (1) Grand Gulf Nuclear Station	DOCKET NUMBER (2) 05000-416	LER NUMBER (6) 93-011-00
TEXT (If more space is required, use additional copies of NRC Form 366A) (17)				
<p>Temperature of reactor coolant increased from 84 degrees F to 87 degrees F. Other ESF systems including SGTS, RPS, and control room standby fresh air responded as designed. Systems were restored to operation or their standby (i.e., ready-for-service) condition.</p>				
<p>A similar ESF actuation and loss of shutdown cooling event occurred just three days prior to this event. As a result of this previous event, the alternate power supplies were left supplying power to the distribution panels 1Y85 and 1Y89. The first event caused the automatic shift to the alternate power supplies. Other loss of shutdown cooling events have occurred previously at GGNS due to causes unrelated to this event. LER 90-023, LER 90-022, LER 89-004, LER 87-021, and LER 87-020 discussed details of those events. A similar ESF actuation due to loss of power to the bus as a result of a failed inverter was discussed in LER 85-038. Safety and health of the general public were not compromised by this event.</p>				
<p>G. ADDITIONAL INFORMATION</p>				
<p>Energy Industry Identification System (EIIIS) codes are identified in the text within brackets [].</p>				