

NRC Form 308  
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES 8/31/85

## LICENSEE EVENT REPORT (LER)

FACILITY NAME (1) Grand Gulf Nuclear Station - Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 4 1 6	PAGE (3) 1 OF 0 2
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TITLE (4)

ESF Actuations While Placing Battery Charger on Equalize

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)
0 1	0 3	8 4	8 4	0 0 1	0 0 0 2	0 2	8 4		NA		0 5 0 0 0

OPERATING MODE (9)		THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)									
POWER LEVEL (10) 0 0 1 0		20.402(b)		20.406(e)	<input checked="" type="checkbox"/>	50.73(a)(2)(iv)		73.71(b)			
		20.406(a)(1)(i)		50.36(e)(1)		50.73(a)(2)(v)		73.71(e)			
		20.406(a)(1)(ii)		50.36(e)(2)		50.73(a)(2)(vii)		OTHER (Specify in Abstract below and in Text, NRC Form 366A)			
		20.406(a)(1)(iii)		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)		TELEPHONE NUMBER	
NAME Ronald Byrd/Licensing Engineer		AREA CODE 6 0 1 1	NUMBER 4 3 7 - 2 1 4 9

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
YES (If yes, complete EXPECTED SUBMISSION DATE:)	<input checked="" type="checkbox"/> NO				

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

On January 3, 1984, while in Cold Shutdown at 0920 hours and while placing a Division 2 battery charger on equalize, the Division 2 power supply tripped on high voltage resulting in the following automatic actions: initiation of Control Room Fresh Air Unit B, SGTs B, Drywell Purge Compressor B, SSW B, Division 2 hydrogen analyzers, Low Pressure Coolant Injection B and C, and isolation of Shutdown Cooling, RWCU, the Auxiliary Building and Containment Building. The Division 2 Diesel Generator was out of service at the time. The LPCI injection raised the water level to greater than 400 inches. While troubleshooting the problem on January 6, 1984, CRFAU B actuated when the chlorine detector was deenergized from a repeat of the trip. Other systems had been removed from service for the test.

The equalizing potentiometer on the battery charger was set higher than its normal equalizing voltage of 140 Vdc. The inverter tripped at 147 Vdc. The charger then tripped at 152 Vdc allowing the inverter to reset and initiate the ECCS actuation.

The procedure was revised to instruct the technicians to adjust the charger output to 140+/-1 Vdc when placing the chargers on equalize. A design change will lower the charger high voltage trip to 145 Vdc, allowing the charger to trip prior to the inverter trip.

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PDR ADOCK 05000416  
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NRC Form 366A  
(9-83)

U.S. NUCLEAR REGULATORY COMMISSION

## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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EXPIRES 8/31/85

FACILITY NAME (1)	DOCKET NUMBER (2)	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
Grand Gulf Nuclear Station - Unit 1	0 5 0 0 0 4 1 6 8 4	—	0	1	—	0	0
						0	2 OF 0 2

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

On January 3, 1984, while in Cold Shutdown at 0920 hours and while placing a Division 2 battery charger on equalize, the Division 2 power supply tripped on high voltage resulting in the following automatic actions: initiation of Control Room Fresh Air Unit B, SGTs B, Drywell Purge Compressor B, SSW B, Division 2 hydrogen analyzers, Low Pressure Coolant Injection B and C, and isolation of Shutdown Cooling, RWCU, the Auxiliary Building and Containment Building. The Division 2 Diesel Generator was out of service at the time. The LPCI injection raised the water level to greater than 400 inches. While troubleshooting the problem on January 6, 1984, CRFAU B actuated when the chlorine detector was deenergized from a repeat of the trip. Other systems had been removed from service for the test.

The equalizing potentiometer on the battery charger was set higher than its normal equalizing voltage of 140 Vdc. The inverter tripped at 147 Vdc. The charger then tripped at 152 Vdc allowing the inverter to reset and initiate the ECCS actuation.

The procedure was revised to instruct the technicians to adjust the charger output to 140+/-1 Vdc when placing the chargers on equalize. A design change will lower the charger high voltage trip to 145 Vdc, allowing the charger to trip prior to the inverter trip.

The following additional information describes characteristics of the plant design which although not the root cause of the event contributed to the ECCS injection:

Rosemount Transmitter/Trip units are used in several General Electric supplied systems including the ECCS. On a low level in the reactor vessel, the current in the loop connecting the transmitter and the trip unit is below the specified setpoint. Consequently, the trip unit energizes the trip output load relay to initiate the ECCS.

On a loss of the 125 Vdc divisional power or 24 Vdc power to the trip unit, the loop current is zero and there is also no available power to energize the load relay. However, as soon as power is restored to the trip unit, power will be available to (and does) energize the load relay until the loop current re-establishes itself at a level above the trip setpoint. Even though the loop current restoration time is in the milliseconds range it is long enough for the trip to generate a trip output and to seal in the auto start logic of the ECCS. This situation caused the ECCS injection.

GGNS and General Electric are currently pursuing a design enhancement which will re-establish loop current prior to energization of the load relays to prevent inadvertent ECCS actuations following a loss of power to the trip unit.



# MISSISSIPPI POWER & LIGHT COMPANY

*Helping Build Mississippi*

P. O. BOX 1640 JACKSON, MISSISSIPPI 39205

February 2, 1984

NUCLEAR PRODUCTION 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  
ESF Actuations While Placing  
Battery Charger on Equalize  
LER 84-001-0  
AECM-84/0059

Attached is Licensee Event Report (LER) 84-001-0 which is a final report.

Yours truly,

L. F. Dale  
Manager of Nuclear Services

EBS/SHH:sad  
Attachment

cc: Mr. J. B. Richard (w/a)  
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