NRC Form 366 (9-83)

U.S. NUCLEAR REGULATORY COMMISSION
APPROVED OMB NO. 3150-0104
EXPIRES: 8/31/85

LICENSEE EVENT REPORT (LER)

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

TITLE (4)
Inadvertent ESF Actuation While Shutdown

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 2	2 3	8 5	8 5	—	0 1 0	—	0 2	1 1	2 9	8 5	NA	0 5 0 0 0
												0 5 0 0 0

OPERATING MODE (9)	4	THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)							
POWER LEVEL (10)	0 0 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)		50.73(a)(2)(vii)		OTHER (Specify in Abstract below and in Text, NRC Form 366A)
			20.405(a)(1)(iii)		50.73(a)(2)(i)		50.73(a)(2)(viii)(A)		
			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	TELEPHONE NUMBER
Ronald Byrd/Licensing Engineer	AREA CODE 6 0 1 3 1 7 1 - 1 2 1 1 4 1 9

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 fifteen single-space typewritten lines) (16)

While placing a second Division 2 battery charger on equalize, the Division 2 inverter tripped on high voltage causing a loss of power to several reactor vessel level instruments. When the inverter automatically reset, a Division 2 ESF initiation occurred.

A relay powered from the inverter reenergized before level instruments, which failed low on the loss of power, could recover. The relay initiated ESF systems on a reactor low water level signal. Procedures have been revised to require only one charger to be placed in service when equalizing. A design change which installs time delay devices in the logic circuitry to allow instrument loop current restoration prior to the trip relay actuation will be implemented during an available maintenance outage.

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* U.S.GPO:1984-0-454-481/18750

NRC Form 366A (9-83)

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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Grand Gulf Nuclear Station - Unit 1	0 5 0 0 0 4 1 6	8 5	— 0 1 0	— 0 2	0 2 OF 0 3

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

Description of Reportable Occurrence

At 0918 on February 23, 1985, while placing the Division 2 battery chargers on an equalize charge, the Division 2 inverter tripped on high voltage causing a loss of power to several reactor vessel level instruments. When the inverter automatically reset and restored power, various Division 2 ESF systems actuated.

Initial Conditions

The plant was in Cold Shutdown.

Status of Redundant or Backup Systems

Not applicable

Nature of Occurrence

The Division 2 battery chargers were being placed on equalize to charge the battery banks in preparation for a battery discharge test. The chargers are adjusted by turning a potentiometer until a voltage of approximately 140 VDC is observed. One charger had been set at 140 VDC. While adjusting the second charger, the inverter tripped on a high voltage of 147 VDC, causing a loss of power to Division 2 reactor level instruments The instruments fail low on a loss of power indicating a reactor low water evel signal.

After the inverter tripped, technicians returned the equalizing voltage back to the normal float voltage of 132 VDC. The inverter automatically reset and restored power. A relay powered from the inverter energized before the level instrumentation could recover causing ESF systems to initiate on an erroneous reactor low water level signal.

The ESF initiations included the isolation of the Control Room Fresh Air Unit, the start of the 'B' Standby Gas Treatment System, an injection by Low Pressure Coolant Injection (LPCI) subsystems 'B' and 'C', the start of the Standby Service Water System, and a Division 2 isolation. The Division 2 Diesel Generator was out of service at the time.

Immediate Corrective Action

The LPCI injection was terminated in approximately 1 minute. The plant was returned to normal conditions within 30 minutes.

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

Apparent Cause

The procedure required the chargers' potentiometers to be turned completely down to minimum voltage prior to placing the chargers on equalize and allows for both chargers to be placed in service together. The first charger was placed on equalize and its output adjusted to 140 VDC in accordance with the procedure. In adjusting the second charger, a voltage increase greater than anticipated occurred which tripped the inverter.

The ECCS initiation is caused by the trip unit sensing a low current from the transmitter as the loop current is being reestablished. Initially the loop current from the transmitter to the trip unit is below the trip setpoint, but enough power is available for the trip unit to energize the trip logic relays to seal-in a trip signal.

Supplemental Corrective Action

A similar event was reported in LER 84-001. At that time, a design change request was initiated to lower the charger high voltage trip to 145 VDC, allowing the charger to trip prior to the inverter, thus preventing the loss of power. This alternative was determined not feasible and was not implemented.

A design change is being pursued to prevent inadvertent ESF initiations following the loss of power to the instruments. A time delay device installed between the trip unit and the logic relays will allow the loop current to reestablish itself at a level above the low current actuation setpoint before the trip unit energizes the relays. This design change will be implemented during an available maintenance outage.

Procedures have been revised to require only one charger to be used when equalizing to minimize the probability of recurrence. The problem has not recurred since the revised battery charging procedures have been implemented.

Safety Assessment

There were no safety consequences as a result of the event. The advertent LPCI injection raised the vessel level from 83 inches to approximately 120 inches.

MISSISSIPPI POWER & LIGHT COMPANY
Helping Build Mississippi
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November 29, 1985

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-29
File: 0260/L-835.0
Inadvertent ESF Actuation
While Shutdown
LER 85-010-02
AECM-85/0375

Attached is Licensee Event Report (LER) 85-010-02 which is a final report.

Yours truly,

L. F. Dale
Director

JRM/EBS/SHH:bms
Attachment

cc: Mr. O. D. Kingsley, Jr. (w/a)
Mr. T. H. Cloninger (w/a)
Mr. R. B. McGehee (w/a)
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