

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) Grand Gulf Nuclear Station - Unit 1										DOCKET NUMBER (2) 0 5 0 0 0 4 1 6 1				PAGE (3) 1 OF 0 3									
TITLE (4) Turbine Trip and Scram on Loss of Condenser Vacuum																							
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	1	0	8	5	8	5	0	0	0	7	0	0	0	3	1	2	8	5	0 5 0 0 0 0			
OPERATING MODE (9) 1			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more of the following) (11)																				
POWER LEVEL (10) 0 4 1 9			20.402(b)			20.406(c)			<input checked="" type="checkbox"/> 50.73(a)(2)(iv)			73.71(b)											
			20.406(a)(1)(i)			50.38(c)(1)			50.73(a)(2)(v)			73.71(c)											
			20.407(a)(1)(ii)			50.38(c)(2)			50.73(a)(2)(vi)			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)																							
NAME Angela H. Horton/Licensing Engineer										TELEPHONE NUMBER 6 0 1 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 NPD	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO NPD														
X	JM	ISO L A 4 1 9 9		Y																			
SUPPLEMENTAL REPORT EXPECTED (14)										EXPECTED SUBMISSION DATE (15)		MONTH	DAY	YEAR									
<input type="checkbox"/> 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)

While Steam Jet Air Ejectors (SJAЕ) were being transferred from the "B" train to the "A" train, condenser vacuum decreased to the turbine trip setpoint, tripping the turbine and causing a reactor scram. Subsequent to the scram, while shutting Main Steam Isolation Valves (MSIVs) to limit the cooldown rate, three of the MSIVs failed to close normally.

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## LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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FACILITY NAME (1)  Grand Gulf Nuclear Station -Unit 1	DOCKET NUMBER (2)  0   5   0   0   0   4   1   6	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		8   5	—   0   0   7	—   0   0	0   2	OF	0   3

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

Description of Reportable Occurrences

On February 10, 1985 at 0650 the operators were in the process of swapping the Steam Jet Air Ejectors (SJAEs) when the Reactor scrammed due to a turbine trip on loss of condenser vacuum.

Initial Conditions

The plant was operating at approximately 49% reactor power. The "B" SJAЕ was not able to maintain condenser vacuum. The breaker for suction valve F003B on the "B" train was tagged open for maintenance work.

Status of Redundant or Backup Systems

Not applicable.

Nature of Occurrence

SJAЕ "A" was being placed in service due to apparent intercondenser fouling of SJAЕ "B". However, with the "A" train supply valve, F505A, fully open, the steam supply pressure to the SJAЕ "A" was only about 60 psig. In order to increase the steam supply pressure, the "B" SJAЕ supply valve, F505B, was throttled closed. The steam supply pressure increased to 115 psig. At this time, the operators noticed that condenser vacuum was decreasing. The F003A valve, which needed to be open to increase the vacuum, was found to have dual indication. The valve was given an open signal both locally and remotely, however, the valve did not respond. An operator was sent to open the "A" train suction valve while another was sent to clear the tag and close the SJAЕ "B" suction valve F003B. During this time condenser vacuum decreased to the turbine trip setpoint and a turbine trip occurred followed by a reactor scram.

At approximately 0804 the MSIVs were slow closed to limit the cooldown rate. Upon taking the associated handswitches to close following the slow closure of the MSIVs, B21-F028A, B21-F028C, and B21-F022D re-opened. Several attempts were made to close the valves before they were successfully closed.

Immediate Corrective Actions Taken

The applicable Off-Normal-Event Procedures were carried out and the scram was reset. MSIVs F028A, F028C, and F022D were declared inoperable.

Apparent Cause

The F003A valve would not respond because it had tripped on thermal overload (possibly due to valve cycling). If this had not occurred the turbine may not have tripped on low vacuum. It appears that the thermal overload trip was caused by excessive automatic cycling of the valve on low steam flow due to undersized piping to the SJAEs.

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Grand Gulf Nuclear Station - Unit 1	0   5   0   0   0   4   1   6	8   5	—	0   0   7	—	0   0	0   3 OF 0   3

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

Apparent Cause (continued)

The failure of the MSIVs to stay closed after being shut with the test circuit and their inability to be closed normally indicated a failure of the dual solenoid valve to transfer when de-energized. The vendor (ASCO) and General Electric are conducting an investigative program to determine root cause. The plant replaced all eight solenoid valves.

Supplemental Corrective Action

A design change is being implemented to increase the size of the SJAE steam supply piping and complete other SJAE enhancements. The B intercondenser was cleaned.

An NRC approved compensatory action schedule for exercising the MSIVs was implemented prior to startup. The MSIV solenoids were replaced. Other necessary corrective actions will be completed after the cause is determined.

Safety Assessment

There are no safety consequences associated with the loss of vacuum, resultant turbine trip and reactor scram. The MSIVs were not required to provide a safety function at the time of failure and the affected Main Steam Lines were isolated by redundant valves. They were being closed to control reactor cooldown rate. If the failures are found to be caused by a generic problem, a supplement to this report will be issued.



# MISSISSIPPI POWER & LIGHT COMPANY

*Helping Build Mississippi*

P. O. BOX 1640, JACKSON, MISSISSIPPI 39215-1640

March 12, 1985

NUCLEAR LICENSING & SAFETY DEPARTMENT

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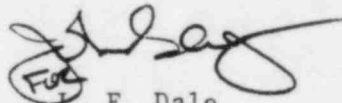
Washington, D. C. 20555

Gentlemen:

SUBJECT: Grand Gulf Nuclear Station  
Unit 1  
Docket No. 50-416  
License No. NPF-29  
File: 0260/L-835.0  
Turbine Trip and Scram on  
Loss of Condenser Vacuum  
LER 85-007-0  
AECM-85/0080

Attached is Licensee Event Report (LER) 85-007-0 which is a final report.

Yours truly,

  
L. F. Dale  
Director

EBS/SHH:vog

Attachment

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

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11