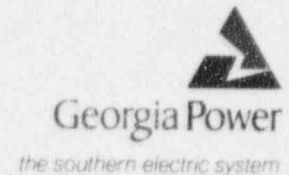


Georgia Power Company
40 Inverness Center Parkway
Post Office Box 1295
Birmingham, Alabama 35201
Telephone 205 877-7122

C. K. McCoy
Vice President, Nuclear
Vogtle Project



March 20, 1996

LCV-0773

4
Docket No. 50-425

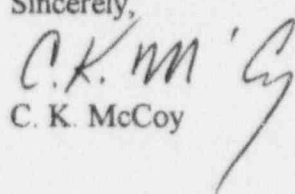
U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D. C. 20555

Ladies and Gentlemen:

VOGTLE ELECTRIC GENERATING PLANT
LICENSEE EVENT REPORT 1-96-01
PIPE FATIGUE LEADS TO NUCLEAR SERVICE COOLING
WATER SYSTEM INOPERABILITY

In accordance with the requirements of 10 CFR 50.73, Georgia Power Company (GPC) hereby submits the enclosed report associated with an event which occurred on February 20, 1996.

Sincerely,


C. K. McCoy

CKM/PAH

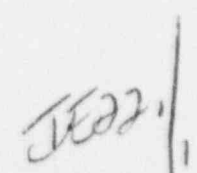
Enclosure: LER 1-96-01

cc: Georgia Power Company
Mr. J. B. Beasley, Jr.
Mr. M. Sheibani
NORMS

U. S. Nuclear Regulatory Commission
Mr. S. D. Ebner, Regional Administrator
Mr. L. L. Wheeler, Licensing Project Manager, NRR
Mr. C. R. Ogle, Senior Resident Inspector, Vogtle

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S PDR



LICENSEE EVENT REPORT (LER)

ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS MANDATORY INFORMATION COLLECTION REQUEST 50.0 HRS. REQUIRED LESSONS LEARNED ARE INCORPORATED INTO THE LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION AND RECORDS MANAGEMENT BRANCH (T-6 F33), 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)

Vogtle Electric Generating Plant - Unit 1

DOCKET NUMBER (2)

5 | 0 | 0 | 0 | 4 | 2 | 4 | 1 | OF | 4

PAGE (3)

TITLE (4)

PIPE FATIGUE LEADS TO NUCLEAR SERVICE COOLING WATER SYSTEM INOPERABILITY

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(S)	
0	2	0	9	6		0	3	2		0	5
2	0	9	6	0	0	0	3	2		0	5
										0	5
OPERATING MODE (9)			THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §. (Check one or more) (11)								
1			20.2201(b)			20.2203(a)(2)(v)			X 50.73(a)(2)(i)		
POWER LEVEL (10)			20.2203(a)(1)			20.2203(a)(3)(i)			50.73(a)(2)(ii)		
9 2			20.2203(a)(2)(i)			20.2203(a)(3)(ii)			50.73(a)(2)(iii)		
			20.2203(a)(2)(ii)			20.2203(c)(1)			50.73(a)(2)(iv)		
			20.2203(a)(2)(iii)			50.36(c)(1)			X 50.73(a)(2)(v)		
			20.2203(a)(2)(iv)			50.36(c)(2)			X 50.73(a)(2)(vi)		
									50.73(a)(2)(vii)		
									73.71		
									OTHER		
									Specify in Abstract below		
									or in NRC Form 366A		

LICENSEE CONTACT FOR THIS LER (12)

NAME

Mehdi Sheibani, Nuclear Safety and Compliance

TELEPHONE NUMBER (include area code)

AREA CODE

7 | 0 | 6 | 8 | 2 | 6 | - | 3 | 2 | 0 | 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
B	B S	P S P	K 0 5 5	N					

SUPPLEMENTAL REPORT EXPECTED (14)

YES (If yes, complete EXPECTED SUBMISSION DATE)

X NO

EXPECTED SUBMISSION DATE (15)

MONTH DAY YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-space typewritten lines) (16)

On February 17, 1996, the nuclear service cooling water (NSCW) pump 1 (Train A) discharge line was found to be cracked and leaking at the toe of the weld where the 4-inch bypass line weldolet joins the main 18-inch pump discharge line. On February 19, 1996, the other two NSCW pump discharge lines on Train A (3 and 5) were also found to have indications and/or cracks. On February 20, 1996, the three NSCW Train B pump discharge lines (2, 4 and 6) were found to have indications and/or cracks. By 2225 EST, on February 20, 1996, an engineering evaluation concluded that, due to the indications, pumps 1, 2, 5, and 6 may be unable to perform their intended safety function following a seismic event. Pump 1 in Train A had been returned to service earlier that day following weld repair and pump 3 had been subsequently removed from service. However, unit operation per Technical Specification (TS) 3.0.3 was initiated because the TS requires at least two pumps in one train of NSCW to remain operable. At 2242 EST, on February 20, 1996, pump 3, also in Train A, was returned to service following weld repair, and unit operation per TS 3.0.3 was ended.

The cause of this event was a design that allowed fatigue cracks to develop in the NSCW pump discharge piping. All of the indications/cracks in the pump discharge lines have been repaired. Additional design upgrades are being developed and will be implemented.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

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		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER		
Vogtle Electric Generating Plant - Unit 1	0 5 0 0 0 4 2 4	9 6	- 0 0 1	- 0 0	2	OF 4

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

A. REQUIREMENT FOR REPORT

This report is required per:

- 1) 10 CFR 50.73 (a)(2)(i), because the unit operated in a condition prohibited by the Technical Specifications (TS),
- 2) 10 CFR 50.73 (a)(2)(v), because a condition existed that alone could have prevented the fulfillment of the safety function of the nuclear service cooling water (NSCW) system, and
- 3) 10 CFR 50.73 (a)(2)(vii), because a single condition caused independent trains to become inoperable in the same system.

B. UNIT STATUS AT TIME OF EVENT

At the time of the discovery of this event on February 20, 1996, Unit 1 was operating in Mode 1 (power operation) at 92 percent of rated thermal power. Other than that described herein, there was no inoperable equipment that contributed to the occurrence of this event.

C. DESCRIPTION OF EVENT

On February 17, 1996, nuclear service cooling water (NSCW) system pump 1 (Train A) was out of service for maintenance. Following a pump start, an equipment operator noticed a leak coming from the toe of the weld where the 4-inch bypass line weldolet joins the main 18-inch pump discharge line. Around this weldolet, two indications were found, one with through wall leakage. The indications were 180 degrees apart, each approximately 4 to 6 inches long at the surface, and were oriented roughly parallel to the axis of the 18 inch pump discharge line. Following inspection by a metallurgist, who determined that the indications appeared to be fatigue induced, repairs were initiated.

On February 19, 1996, the same welds on the discharge lines of the other two pumps in NSCW Train A, the pump 3 and pump 5 discharge lines, were inspected with liquid penetrant and similar indications were found, but no leakage was observed. An engineering evaluation was initiated to support the interim operability determination that these pumps remained operable, even with indications.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1) Vogtle Electric Generating Plant - Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 4 2 4	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		9 6	- 0 0 1	- 0 0	3	OF	4

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

On February 20, 1996, at 1530 EST, liquid penetrant inspections were performed on the same discharge line welds on the NSCW Train B pumps 2, 4 and 6. Indications similar to those found on Train A were found at the toe of all three welds and water seepage was found on the pump 4 discharge line weld. These Train B indications were then included in the ongoing engineering evaluation.

Also, on February 20, 1996, at 1401 EST, pump 1 was returned to service, and repairs were initiated to the pump 3 discharge line weld. At 2225 EST, it was concluded that the engineering evaluation was unable to determine that pumps 1, 2, 5, and 6 could supply the flow required to perform their intended safety function following a seismic event. Unit operation per TS 3.0.3 was initiated because the TS requires at least two pumps in one train of NSCW to remain operable and, at that time, only pump 1 was considered operable. At 2242 EST, repairs were completed and pump 3 was returned to service and unit operation per TS 3.0.3 was ended. On February 21, 1996, at 0057 EST, the NRC Operations Center was notified because this condition could have resulted in a failure of both trains of NSCW in a postulated seismic event. Weld repairs were completed and all pumps were restored to operability by February 22, 1996, at 2310 EST.

D. CAUSE OF EVENT

The cause of this event was a piping design that allowed fatigue indications and/or cracks to be induced in the NSCW discharge piping. The primary cause is attributed to hydraulic transients in the bypass line, which serves as a pump miniflow line, and as a slow fill line to help minimize hydraulic transients when the pump discharge valve opens. The hydraulic transients in the bypass lines were causing movement of the lines. These hydraulically induced loads occur when an NSCW pump is started or stopped. Testing performed on February 27 and 28, 1996, indicates that the most severe movements of the bypass line occur when one pump is started while the other two are in service. This movement is primarily caused by flow from the starting pump impacting a closed check valve which must open against pressure from the operating pumps.

Modifications to reduce effects from hydraulic transients were previously made subsequent to the discovery of a pipe stress problem identified during Unit 1 start-up testing. The corresponding Unit 2 piping was modified and flow orifices were added to the Unit 1 piping in an effort to reduce pipe stress. Unit 2 piping welds have been inspected with no indications found. However, all six affected Unit 1 locations showed indications as previously described.

LICENSEE EVENT REPORT (LER)
TEXT CONTINUATION

FACILITY NAME (1) Vogtle Electric Generating Plant - Unit 1	DOCKET NUMBER (2) 0 5 0 0 0 4 2 4	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
		9 6	- 0 0 1	- 0 0	4	OF	4

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

E. ANALYSIS OF EVENT

NSCW is used to cool various safety-related components and represents the unit's ultimate heat sink. The indications that were found did not prevent the NSCW system from performing this function. Although one of the three locations on each train had through wall indications, the amount of leakage was insignificant and was quantified as "seeping." A review of the piping stresses at this location due to various loads and load combinations, i.e. weight, thermal, pressure, building differential settlement, seismic, hydraulic transients, etc. was performed. Testing determined that the most severe stresses were from the hydraulic transient loads resulting from starting a third pump while the other two pumps are in service. Although it is possible that a hydraulic transient could result in a complete severing of a 4-inch bypass pipe from one of the weld locations, the other two pumps of that train would most likely be unaffected, and the alternate train would also still be available. Based on these considerations, there was no adverse affect on plant safety or on the health and safety of the public as a result of this event.

F. CORRECTIVE ACTIONS

- 1) All of the discharge line weld indications and/or cracks have been repaired.
- 2) Design changes will be implemented by September 30, 1996 to replace the discharge spool pieces where the indications were located with thicker walled piping. Also, a hydraulic model will determine if additional piping supports are needed. An evaluation of the repaired piping was performed based on field testing data, actual geometry of the connection, and appropriate safety factors. The results of this evaluation demonstrated that the weld repair can withstand a significant number of severe hydraulic transients. The corrective action will be implemented before the number of fatigue cycles calculated in this evaluation are exceeded.

G. ADDITIONAL INFORMATION

- 1) Failed Components:
Pipe spool at weldolet, 18-inch, stainless steel, 6 each, ASME Section III, Class 3, manufactured by Pullman Power Products, a division of Kellogg/Wheelabrator-Fry.
- 2) Previous Similar Events:
None
- 3) Energy Industry Identification System Code:
Nuclear Service Cooling Water System - BS