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Georgia Power
The southern electric system

February 13, 1992

ELV-03433
001159

Docket No. 50-425

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

Gentlemen:

VOGTLE ELECTRIC GENERATING PLANT
LICENSEE EVENT REPORT
REACTOR COOLANT PUMP (RCP)
THERMAL BARRIER ISOLATION VALVES DECLARED
INOPERABLE DUE TO TORQUE SWITCH SETTINGS

In accordance with 10 CFR 50.73, Georgia Power Company (GPC) hereby submits the enclosed revised report related to an event which was originally discovered on December 11, 1991. On January 17, 1992, additional information was discovered which necessitates this revised report.

Sincerely,

C.K.M.'s
C. K. McCoy

CKM/NJS/gmb

Enclosure: LER 50-425/1991-012, Revision 1

xc: Georgia Power Company
Mr. W. B. Shipman
Mr. M. Sheibani
NORMS

U. S. Nuclear Regulatory Commission
Mr. S. D. Ebnetter, Regional Administrator
Mr. D. S. Hood, Licensing Project Manager, NRR
Mr. B. R. Bonser, Senior Resident Inspector, Vogtle

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TITLE (4)
RCP THERMAL BARRIER ISOLATION VALVES DECLARED INOPERABLE DUE TO TORQUE SWITCH SETTINGS

EVENT DATE (5)			LER NUMBER (6)			REPORT DATE (7)			OTHER FACILITIES INVOLVED (8)		
MONTH	DAY	YEAR	YEAR	SEQ NUM	REV	MONTH	DAY	YEAR	FACILITY NAMES		DOCKET NUMBER(S)
12	11	91	91	012	01	02	13	92	VEGP - UNIT 1		05000424
											05000

OPERATING MODE (9) 1

POWER LEVEL 100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR (11)

20.402(b)	20.405(c)	50.73(a)(2)(iv)	73.71(b)
20.405(a)(1)(i)	50.36(c)(1)	X 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)
20.405(a)(1)(iii)	X 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)(ix)	

LICENSEE CONTACT FOR THIS LER (12)

NAME MEHDI SHEIBANI, NUCLEAR SAFETY AND COMPLIANCE	TELEPHONE NUMBER AREA CODE 404 826-3209
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COMPLETE ONE LINE FOR EACH FAILURE DESCRIBED IN THIS REPORT (13)

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORT TO NPRDS	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORT TO NPRDS
B	CC	ISV	A391	Y					

SUPPLEMENTAL REPORT EXPECTED (14)

YES (if yes, complete EXPECTED SUBMISSION DATE) NO

EXPECTED SUBMISSION DATE (15)

MONTH	DAY	YEAR

ABSTRACT (16)

On 12-11-91, during a review of minimum required thrust values against field measured thrust values for safety-related motor-operated valves, offsite engineering personnel determined that the as-left torque switch settings for valves 2HV-19051, 2HV-19053, 2HV-19055, and 2HV-19057 were inadequate to ensure the design function of these valves. These valves are designed to provide a redundant isolation function to valve 2HV-2041 for isolating a postulated reactor coolant pump thermal barrier tube rupture. The site was notified and Technical Specification (TS) action requirements pertaining to the operability of the thermal barrier isolation function were entered while corrective actions were taken. This included increasing the torque switch settings for 2HV-19051, 2HV-19053, and 2HV-19055 and installing a jumper to temporarily bypass the close torque switch for 2HV-19057. On 1-17-92, the as-left torque switch settings for valves 2HV-2041 and 1HV-2041 were also determined to be inadequate. Due to this discovery, the NRC was notified pursuant to 10 CFR 50.72(b)(2)(iii), and the TS action requirements were again entered while action was taken to increase the torque switch settings for 2HV-2041 and 1HV-2041.

The event was caused by inadequate original vendor specified information. Originally, the valve vendor (Anchor/Darling Valve Company) supplied recommended torque switch settings but did not supply minimum thrust requirements. Therefore, while the close torque switches were set at nominal specified values and valve diagnostic testing was performed for the Unit 2 valves during Unit 2 preoperational testing, the discovery that the specified torque switch settings were inadequate did not occur until the present review of field data. Followup corrective actions will be completed during the next refueling outages.

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A. REQUIREMENT FOR REPORT

This report is required per 10 CFR 50.73(a)(2)(i) since the Unit 1 and Unit 2 reactor coolant pump (RCP) thermal barrier isolation functions were discovered to be inoperable, per Technical Specification (TS) 3.7.12 requirements, in excess of the 7-day limiting condition for operation.

This report is also required per 10 CFR 50.73(a)(2)(v) since for Unit 2 this represented a condition that alone could have prevented the fulfillment of the safety function of the Unit 2 RCP thermal barrier isolation valves.

B. UNIT STATUS AT TIME OF EVENT

At the time of discovery for valves 2HV-19051, 2HV-19053, 2HV-19055, and 2HV-19057, Unit 2 was in Mode 1 (Power Operation) at 100 percent of rated thermal power. At the time of discovery for valves 1HV-2041 and 2HV-2041, both Unit 1 and Unit 2 were in Mode 1 at 100 percent of rated thermal power. Other than that described herein, there was no inoperable equipment which contributed to the occurrence of this event.

C. DESCRIPTION OF EVENT

On 12-11-91, Southern Company Services (SCS) Vogtle Project Engineering personnel identified a problem involving Unit 2 motor-operated valves (MOVs) 2HV-19051, 2HV-19053, 2HV-19055, and 2HV-19057. These valves are designated as RCP thermal barrier isolation valves and provide a redundant isolation function to valve 2HV-2041 to prevent a spill of the reactor coolant from a postulated breached RCP thermal barrier should a break occur in the nonsafety-related auxiliary component cooling water piping downstream of valve 2HV-2041. Due to a concern regarding the accuracy of motor-operated valve analysis and testing system (MOVATS) diagnostic test equipment which had been used at VEGP to set up many safety-related MOVs, a comparison of current required minimum thrust values against as-left torque switch settings and field measured thrust values had been initiated. The as-left values were determined at the site from a review of MOVATS test data sheets.

The comparison was completed for Unit 1 valves 1HV-19051, 1HV-19053, 1HV-19055, and 1HV-19057 on 10-1-91. The field data supplied for these valves indicated that the as-left close torque switch settings were either 1.25 or 1.5, which had resulted in MOVATS measured thrust values of 5275 lb, 6614 lb, 6551 lb, and 6673 lb, respectively. Since a minimum closing thrust requirement of 4867 lb had been established for these valves, the as-left torque switch settings were determined to be acceptable; although, a slight adjustment to the close torque switch setting for 1HV-19051 was made to account for the MOVATS inaccuracy concern.

No comparison was performed for Unit 1 valve 1HV-2041 since no MOVATS test data was available for that valve.

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On 12-11-91, the comparison was completed for the corresponding Unit 2 valves. Based on the field data supplied, the as-left close torque switch setting for 2HV-2041 was 2.75, which had resulted in a MOVATS measured thrust value of 11,900 lb. Since a minimum closing thrust requirement of 6950 lb had been established for this valve, the as-left close torque switch setting for 2HV-2041 was determined to be acceptable. However, for valves 2HV-19051, 2HV-19053, 2HV-19055, and 2HV-19057, the review of field data determined that the as-left close torque switch settings and the resulting thrust values for these valves were not acceptable. The field data indicated that the close torque switch for each of these valves was set at a nominal value of 1.0, which had resulted in MOVATS measured thrust values of 3260 lb, 3230 lb, 3460 lb, and 1760 lb, respectively. Since these values were below the minimum required thrust of 4867 lb, the site was notified of this discovery, and on 12-11-91 at 1846 EST, the action requirements of TS 3.7.12 were entered for Unit 2 (viz., restore the RCP thermal barrier isolation function to operable status within 7 days or be in at least Hot Standby within the next 6 hours and in Cold Shutdown within the following 30 hours).

On 12-13-91, corrective action was taken to remove the torque switch limiter plates from valves 2HV-19051, 2HV-19053, and 2HV-19055 and to increase the torque switch settings to 2.25. For valve 2HV-19057, a temporary modification was implemented to install a jumper to bypass the close torque switch. Bypassing the close torque switch for valve 2HV-19057 was considered necessary since the review of MOVATS data indicated the existence of a possible problem in the torque controlling components of the valve operator. The valves were declared operable and the action requirements of TS 3.7.12 were exited at 1520 EST on 12-13-91.

Subsequently, site personnel recognized that the field data which had been provided to SCS engineering for valve 2HV-2041 were not the actual as-left data. While completing a design basis review as a part of the implementation of Generic Letter 89-10, "Safety-Related Motor-Operated Valve Testing and Surveillance," SCS engineering personnel questioned the validity of the as-left thrust value which had been provided by the site for 2HV-2041. This prompted site personnel to review the maintenance history for this valve which revealed that, following the MOVATS test conducted at a close torque switch setting of 2.75, the close torque switch for 2HV-2041 had been reset to 1.0 per the direction of the work order. The setting of 1.0 had resulted in a MOVATS measured thrust value of 2740 lb. The apparent cause for the torque switch readjustment for 2HV-2041 being overlooked during the previous determination of as-left values was that the review had not included a review of maintenance work orders. A verification of all of the previously provided as-left values was then performed and several other discrepancies were identified; however, the only discrepancy which could significantly impact the reviews performed was the discrepancy in the as-left values for 2HV-2041.

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On 1-17-92, SCS engineering determined that the actual as-left values for 2HV-2041 were inadequate to ensure the closure of this common return header isolation valve for a postulated RCP thermal barrier tube rupture. While no MOVATS test data was available for 1HV-2041, a discussion with site personnel determined that this valve was set at the same torque switch setting as 2HV-2041 and was, therefore, equally suspect of being incapable of performing its design function. The site was notified, and the action requirements of TS 3.7.12 were entered for both Unit 1 and Unit 2. Due to the previous discovery of unacceptable torque switch settings for the redundant Unit 2 valves, an Event Notification pursuant to 10CFR50.72(b)(2)(iii) was made at 2225 EST on 1-17-92. Corrective actions were taken to increase the close torque switch settings for 1HV-2041 and 2HV-2041 from 1.0 to 2.25, and the action requirements of TS 3.7.12 were exited for both Units on 1-18-92.

D. CAUSE OF EVENT

The root cause of the event was inadequate original vendor specified information.

Valves 1/2HV-19051, 1/2HV-19053, 1/2HV-19055, and 1/2HV-19057 are 2 1/2-in. Anchor/Darling gate valves equipped with Limitorque SMB-00-10 operators. Valves 1/2HV-2041 are 3-in. Anchor/Darling gate valves equipped with Limitorque SMB-00-15 operators. The recommended torque switch settings originally provided by the vendor for the individual RCP thermal barrier isolation valves included a nominal close torque switch setting of 1.0 and a maximum close torque switch setting of 1.5. The original recommended torque switch settings provided for the common return header isolation valves included a nominal close torque switch setting of 1.125 and a maximum close torque switch setting of 2.75. Although the valve vendor supplied recommended torque switch settings, the vendor did not originally supply Georgia Power Company with the minimum thrust requirements for these valves. Also, the valves were not in the scope of valves covered by NRC Bulletin 85-03. Therefore, while the close torque switches for the noted valves were set at the nominal specified values and the resulting thrust values for the Unit 2 valves were measured by MOVATS diagnostic testing performed during Unit 2 preoperational testing in 1988, the unacceptability of the as-left values went unrecognized at that time. The thrust values obtained by the MOVATS testing of the Unit 2 valves were considered to be baseline data only, and after some troubleshooting of 2HV-19057, no operability issue appeared to exist following that testing.

Subsequently, due to the scheduling of MOVATS diagnostic testing of the Unit 1 individual RCP thermal barrier isolation valves, the site requested SCS Vogtle Project Engineering personnel to provide a minimum closing thrust value which could be used for comparison purposes for that testing. Based on discussions with the valve vendor, the minimum closing thrust requirement of 4867 lb was established and was provided to the site in 1990. The previously noted acceptable thrust values were obtained in that testing; however, in retrospect, it is noted that the close torque switches for the

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Unit 1 valves were set at either 1.25 or 1.5. Apparently, due to the success of the Unit 1 testing, the need to perform a review of as-left close torque switch settings and field measured thrust values for the Unit 2 valves was not recognized until the concern regarding the accuracy of the MOVATS diagnostic test equipment was identified.

E. ANALYSIS OF EVENT

For Unit 1, the review of field data for valves 1HV-19051, 1HV-19053, 1HV-19055, and 1HV-19057 determined that the as-left torque switch settings and resulting thrust values for those valves were acceptable. Therefore, in spite of the eventual determination that the as-left values for 1HV-2041 were unacceptable, the Unit 1 RCP thermal barrier isolation function could have been fulfilled by the individual RCP thermal barrier isolation valves.

For Unit 2, the as-left close torque switch settings and the resulting thrust values for both the individual RCP thermal barrier isolation valves and the common return header isolation valve were eventually determined to have been inadequate, prior to the completion of the corrective action taken on 12-13-91. Therefore, prior to 12-13-91, both the individual RCP thermal barrier isolation valve and the common return header valve may have failed to close following a postulated RCP thermal barrier tube rupture. An evaluation was performed to determine what possible consequences may have resulted from a combined failure of these valves to close. Based on conservative estimates of leakage flowrates and times for operator action, it was determined that offsite doses for such a scenario could have exceeded the current Vogtle bounding analysis for a loss of coolant accident (LOCA) outside of the containment. However, the resulting doses would still have been well within the 10 CFR Part 100 offsite dose limits. Also, it is noted that no actual breach of a RCP thermal barrier has ever occurred at VEGP. Based on these considerations, the inadequate torque switch settings did not result in an adverse effect on plant safety nor on the health and safety of the public.

F. CORRECTIVE ACTIONS

1. The torque switch limiter plates for valves 2HV-19051, 2HV-19053, and 2HV-19055 were removed and the close torque switch settings were increased from 1.0 to 2.25. Removal of the limiter plates was required since the plates limited the torque switch setting to a maximum of 1.5. The setting of 2.25 was determined to be conservative in that it would provide sufficient margin to ensure the valve operators developed the minimum required thrust but would still provide for protection of the motor operator and valve.

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2. A temporary modification for valve 2HV-19057 has been implemented to install a jumper to bypass the close torque switch. Bypassing the torque switch will allow the motor operator to develop its maximum torque, which will ensure closure of the valve regardless of any possible problem which might exist in the torque controlling components of the valve operator. Since the purpose of the close torque switch is to stop the motor after the motor has produced torque sufficient to ensure the valve disc is properly seated but before the motor can overheat or cause damage to the operator or valve, it is possible that this modification could result in an inability to reopen the valve if the valve is closed or closes for any reason. However, there is no safety-related requirement for the valve to be able to open. During the next Unit 2 refueling outage, troubleshooting and, if necessary, repair, will be completed for 2HV-19057 to delete the need for the temporary jumper.

3. The close torque switch settings for valves 1HV-2041 and 2HV-2041 were conservatively increased from 1.0 to 2.25.

4. MOVATS diagnostic testing will be performed for valves 2HV-19051, 2HV-19053, 2HV-19055, 2HV-19057, and 2HV-2041 during the next Unit 2 refueling outage which is currently scheduled to begin 3-13-92. Based on the results of that testing, a torque switch setting less than 2.25 may be found acceptable. Torque switch limiter plates will be reinstalled as appropriate.

5. MOVATS diagnostic testing for valve 1HV-2041 will be performed during the next Unit 1 refueling outage which is currently scheduled to begin 3-5-93.

G. ADDITIONAL INFORMATION

1. Failed Components Identification
 - Valve 2HV-19057
 - 2 1/2-in. Anchor/Darling Gate Valve, Model No. E9001-38
 - Equipped With Limitorque SMB-00-10 Operator

2. Previous Similar Events
 - None.

3. Energy Industry Identification System Codes
 - Closed/Component Cooling Water - CC
 - Reactor Coolant System (PWR) - AB