

Georgia Power Company  
333 Piedmont Avenue  
Atlanta, Georgia 30308  
Telephone 404 526-7020

Mailing Address:  
Post Office Box 4545  
Atlanta, Georgia 30302

J. T. Beckham, Jr.  
Vice President and General Manager  
Nuclear Generation



NED-84-074

March 30, 1984

U. S. Nuclear Regulatory Commission  
Office of Inspection and Enforcement  
Washington, D. C. 20555

REFERENCE:  
Wash.: RCD  
50-366  
Limatorque Motor Defect

ATTENTION: Richard C. DeYoung

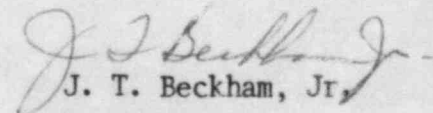
GENTLEMEN:

On June 2, 1983 and then again on August 3, 1983 Plant Hatch Unit 2 experienced a failure of a Limatorque Model SMB-4 motorized operator to close a safety-related valve. The second event was reported on September 1, 1983 by Licensee Event Report (LER) No. 50-366/1983-076; however, the earlier event was never reported to the NRC since the plant was in a Cold Shutdown Condition at the time and the affected valve was not required to be operable.

Georgia Power Company (GPC) has determined that the two failures were similar in origin and that both fall within the criteria for reportability under 10 CFR 21. Therefore, the details of the June 2, 1983 event are included in the enclosed Evaluation of a Substantial Safety Hazard, along with information relating this failure to the August 3, 1983 event and other information not included in the above referenced LER. In addition, GPC is reporting the details of both events to the vendor for these motors (Limatorque Corporation) so that appropriate action is taken to reduce the potential for future occurrences of this type.

This submittal concludes reporting by GPC for this event, barring any future occurrences of this type or discovery of any new information relating to this problem.

Sincerely yours,

  
J. T. Beckham, Jr.

CBS

Enclosure

xc: J. P. O'Reilly  
P. D. Rice  
H. C. Nix, Jr.

8404060286 840330  
PDR ADOCK 05000366  
S PDR

IE-22  
11

EVALUATION OF A SUBSTANTIAL SAFETY HAZARD  
LIMITORQUE MOTORIZED VALVE OPERATORS  
March 30, 1984

Initial Events and Reporting:

On June 2, 1983, with Plant Hatch Unit 2 in the Cold Shutdown Condition, the motorized operator on RHR inboard injection valve 2E11-F015B failed to function during a test. The valve was not required to be operable at that time, so NRC reporting was deemed unnecessary. On August 3, 1983, during an attempt to place Hatch-2 into the Shutdown Cooling Mode, the operator on valve 2E11-F015A failed to function. That event, which placed Hatch-2 in a seven day LCO per Technical Specification Section 6.9.1.9.b, was reported on September 1, 1983 by Licensee Event Report (LER) 50-366/1983-076.

Evaluation of Occurrences:

The cause of these two failures has been attributed by GPC to the backing out of the the locking nut on the worm gear shaft inside each motor operator. This allowed a critical worm gear to back out of its position in the bearing and bellville spring pack. Since the threads of the worm gear on each motor were free from the scarring which results from proper tightening of the locking nut set screw, GPC has concluded that this set screw, which secures the locking nut in position, was not tightened by the vendor for these operators before they were shipped to Plant Hatch.

The condition in each motorized operator following the slippage of the worm gear from its intended position prevented the internal torque sensing switch from stopping the motor after the valve had fully closed. This resulted in the trip of the valve motor circuit breaker (preventing motor burnup) and the resulting failure of each valve to respond to a subsequent open signal.

The failure of either of these valves to open due to this problem following a Design Basis Accident at Hatch-2 would prevent one complete loop of the Low Pressure Core Injection (LPCI) system, containing two of the four LPCI pumps, from injecting into the reactor vessel. Coupled with an assumed single failure of one of the two Core Spray system pumps, the plant would be left with insufficient low pressure ECCS to ensure the integrity of the fuel cladding during a design basis accident. Therefore, GPC concluded that these failures constituted a defect in a basic plant component necessary to assure the capability to shutdown the reactor and maintain it in a safe shutdown condition. This requires reporting to the NRC under 10 CFR 21.

Background Information:

The motorized operators in question were installed at Hatch-2 in early February 1983 as part of the GPC effort to meet the requirements of 10 CFR 50.49. After this installation, both of these devices were functionally checked per plant procedures and found to be working properly. A review initiated by GPC after these incidents indicated that these two motors were

the only Limitorque Model SMB-4 operators installed as part of the equipment qualification program upgrade. However, SMB-4 motors are installed on several other critical valves at Plant Hatch including the following:

E11-F015A&B	2E11-F048A&B
E11-F016A&B	2N21-F110
E11-F048A&B	2E41-F008
E41-F008	

Similar types of problems have previously been reported by I & E Information Notice 83-70 and I & E Circular 79-04 as well as a recent Institute of Nuclear Power Operations (INPO) significant event report which included details of causes and prevention for these types of events.

Corrective Actions and Preventive Measures:

Based on corrective measures recommended by Limitorque and also the above mentioned INPO report, GPC has performed modifications on the two failed valve motors to prevent future occurrences of this type of problem. In addition GPC will conduct an engineering review of Limitorque motors at Plant Hatch to determine if the recommended preventive maintenance is necessary for any of the SMB Model operators installed on any valves at Hatch, including those listed above. GPC will then make a determination on a valve-by-valve basis as to whether or not any modifications or repairs are necessary to prevent valve malfunction due to lock nut slippage. In the cases where a modification has been or is found to be necessary, the repair has been or will be the staking of the threads on the worm gear set screw as described in INPO Procedure No. PMP2-ZG-25, rev. 03.