Mr. D. N. Morey
Vice President - Farley Project
Southern Nuclear Operating Company
Post Office Box 1295
Birmingham, Alabama 35201-1295

July 1, 1996

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION - GENERIC LETTER 95-07, "PRESSURE LOCKING AND THERMAL BINDING OF SAFETY-RELATED POWER-OPERATED GATE VALVES," JOSEPH M. FARLEY NUCLEAR PLANT, UNITS 1 AND 2 (TAC NOS. M93461 AND M93462)

Dear Mr Morey:

On August 17, 1995, the NRC issued Generic Letter (GL) 95-07, "Pressure Locking and Thermal Binding of Safety-Related Power-Operated Gate Valves," to request that licensees take actions to ensure that safety-related power-operated gate valves that are susceptible to pressure locking or thermal binding are capable of performing their safety functions. The NRC staff is reviewing and evaluating your February 12, 1996, response to GL 95-07. Additional information, as discussed in the enclosure, is requested in order for the staff to complete its review. We request that you provide responses to Items 1, 3, 4, and 7 of the enclosure within 30 days from the date of this letter and the remainder of the items of the enclosure within 60 days. If you have any questions regarding this request or the response time please contact me.

The information requested by this letter is within the scope of the overall burden estimated in Generic Letter 95-07, "Pressure Locking and Thermal Binding of Safety-Related Power-Operated Gate Valves," which was a maximum of 75 person-hours per licensee response. This request is covered by Office of Management and Budget Clearance Number 3150-0011, which expires July 31, 1997.

Sincerely,

Original signed by:

Byron L. Siegel, Senior Project Manager
Project Directorate II-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket Nos. 50-348 and 50-364

Enclosure: Request for Additional Information

cc w/encl: See next page

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

July 1, 1996

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Project Directorate II-2
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Docket Nos. 50-348 and 50-364

Enclosure: Request for Additional Information

cc w/encl: See next page

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REQUEST FOR ADDITIONAL INFORMATION

JOSEPH M. FARLEY NUCLEAR PLANT, UNITS 1 AND 2, RESPONSE TO

GENERIC LETTER 95-07, "PRESSURE LOCKING AND THERMAL BINDING OF SAFETY-RELATED

POWER-OPERATED GATE VALVES"

1. Regarding valve 2-MOV8811A, train A RHR Pump Suction from Containment Sump, the licensee's submittal states that there is a 2-foot leg of fluid in the vertical pipe leaving the sump to this valve, and that following an accident, the maximum containment sump fluid temperature is 300 degrees F. In addition, the licensee's submittal states that temperatures of the fluid at this valve will remain steady during the injection phase due to the insulating qualities of the upstream and downstream fluid. Reliance on water-filled piping to preclude thermally-induced pressure locking of this valve is uncertain. Please address the staff concern that significant heat transfer can occur from the high temperature fluid in the containment sump during a design basis event, which could cause pressure in the valve bonnet to be higher than the 50 psig assumed in the thrust requirement calculation.

   In addition, please provide the following information:

   a. The heat transfer calculations performed involving the 2-foot leg of fluid for staff review.

   b. If available, please provide the differential pressure test data to support the use of a 0.5 friction coefficient for these valves. If not, provide detailed information supporting the use of the 0.5 friction coefficient. It should be noted that the NRC staff considers the general reference to the EPRI MOV Performance Prediction Program to be an insufficient answer.

   c. The actuator capability calculation for this valve for our review and justification for any deviations from the Limitorque guidelines.

2. Please address the staff concern that valves 1(2)-MOV8889, RHR to Hot Leg, may become pressurized during plant operation and experience pressure locking during a design basis event.

3. Your submittal in response to the Generic Letter discussed the results of thrust requirement and actuator capability calculations for valves 1(2)-MOV8884, Charging Pump to RCS Hot Leg Isolation, and valves 1(2)-MOV8885, Charging Pump to RCS Cold Leg Isolation. Please provide these thrust requirement and actuator capability calculations for our review.

4. Regarding valves 1(2)-MOV8801A/B, BIT Outlet Isolation, your submittal stated that, based on a review of SCS calculation (SM-95-981-001, Rev. 0), the maximum expected pressure that may be trapped in the bonnet is 2,581 psig with zero upstream and downstream pressures. You also

provided a representative thrust requirement calculation for valve 1-MOV-8801B, which appears to include an upstream pressure of 2632 psig. Please address this apparent discrepancy in pressure.

If available, please provide the differential pressure test data to support the use of a 0.5 friction coefficient for these valves. If not, please provide detailed information supporting the use of the 0.5 friction coefficient.

Also, please provide your actuator capability calculations for these valves.

5. Regarding valves 1(2)-MOV8803A/B, BIT Inlet Isolation, your submittal includes a representative thrust requirement calculation for valve 2-MOV8803B. Please discuss why 2641 psig is assumed for the upstream pressure.

   Are there differential pressure test data to support the use of a 0.5 friction coefficient for these valves? If so, please provide this information for our review. If not, please provide detailed information supporting the use of the 0.5 friction coefficient.

   Also, please provide your actuator capability calculations for these valves.

6. If available, please provide differential pressure test data for valves 1(2)-MOV8886, Charging Pump RCS Cold Leg Isolation, to support the use of a 0.5 friction coefficient for these valves. If not, please provide detailed information supporting the use of the 0.5 friction coefficient. In addition, provide the actuator capability calculations for these valves.

7. Valves 1(2)-MOV8000A/B, Pressurizer PORV Block Valves, if closed to isolate a leaking PORV, may be potentially susceptible to depressurization induced pressure locking during a steam generator tube rupture event. In addition, these valves, if closed to isolate a leaking PORV, may be potentially susceptible to thermal binding if required to open for low temperature overpressure protection. Please address these two issues.

8. In Attachment 1 to GL 95-07, the NRC staff requested that licensees include consideration of the potential for gate valves to undergo pressure locking or thermal binding during surveillance testing. During workshops on GL 95-07 in each Region, the NRC staff stated that, if closing a safety-related power-operated gate valve for test or surveillance defeats the capability of the safety system or train, the licensee should perform one of the following within the scope of GL 95-07:

a. Verify that the valve is not susceptible to pressure locking or thermal binding while closed,

b. Follow plant technical specifications for the train/system while the valve is closed,

c. Demonstrate that the actuator has sufficient capacity to overcome these phenomena, or

d. Make appropriate hardware and/or procedural modifications to prevent pressure locking and thermal binding.

The staff stated that normally open, safety-related power-operated gate valves which are closed for test or surveillance but must return to the open position should be evaluated within the scope of GL 95-07. Please discuss if valves which meet this criterion were included in your review, and how potential pressure locking or thermal binding concerns were addressed.

9. Through review of operational experience feedback, the staff is aware of instances where licensees have completed design or procedural modifications to preclude pressure locking or thermal binding which may have had an adverse impact on plant safety due to incomplete or incorrect evaluation of the potential effects of these modifications. Please describe evaluations and training for plant personnel that have been conducted for each design or procedural modification completed to address potential pressure locking or thermal binding concerns.