October 16, 2001

Mr. H. L. Sumner, Jr.
Vice President - Nuclear
Hatch Project
Southern Nuclear Operating
Company, Inc.
Post Office Box 1295
Birmingham, Alabama 35201-1205

SUBJECT: SAFETY EVALUATION OF RELIEF REQUEST RR-V-17 RELATED TO THE INSERVICE TESTING PROGRAM AT EDWIN I. HATCH NUCLEAR PLANT, UNITS 1 AND 2 (TAC NOS. MB2401 AND MB2402)

By letter dated July 11, 2001, you submitted relief request RR-V-17, which proposed an alternative to the inservice testing (IST) requirements of the ASME Code for the Operation and Maintenance of Nuclear Power Plants (ASME OM Code), 1990 Edition, paragraph ISTC 4.5.4(c). The alternative is proposed for use at the Edwin I. Hatch Nuclear Plant, Units 1 and 2, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.55a(a)(3)(i).

Your alternative proposed that the check valves identified in relief request RR-V-17 continue to be disassembled, inspected, and manually exercised in accordance with the guidance in NRC Generic Letter 89-04, Position 2, and the requirements of ASME OM Code, 1990 Edition, paragraph ISTC 4.5.4(c), except for the time of performance of the activity. The proposed alternative would permit the IST activity to be performed during normal plant operation or during refueling outages in lieu of the Code requirement that limits the IST activities to refueling outages. The alternative also proposed that the activities performed during normal plant operation be managed in accordance with the requirements of 10 CFR 50.65(a)(4).

We have completed our review of relief request RR-V-17 and our Safety Evaluation is enclosed. We have concluded that the alternative proposed for the valves identified in relief request RR-V-17, except for the High Pressure Coolant Injection (HPCI) valves E41- F045, is authorized for use at the Edwin I. Hatch Nuclear Plant, Units 1 and 2, pursuant to 10 CFR 50.55a(a)(3)(i) on the basis that it provides an acceptable level of quality and safety. The relief request is authorized for third 10-year Interval IST Program. The application of the alternative to HPCI system valves E41-F045 is denied because the basis for relief request RR-V-17 does not provide sufficient information for the staff to reach a safety or risk determination with regard

to the leak testing experience and leaktightness reliability of the associated isolation valves and the potential consequences of a loss of isolation capability during disassembly, inspection, and manual exercising of the valves.

Sincerely,

***/RA/***

Richard J. Laufer, Acting Chief, Section 1
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-321 and 50-366

Enclosure: As stated

cc w/encl: See next page

to the leak testing experience and leaktightness reliability of the associated isolation valves and the potential consequences of a loss of isolation capability during disassembly, inspection, and manual exercising of the valves.

Sincerely,

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Richard J. Laufer, Acting Chief, Section 1
Project Directorate II
Division of Licensing Project Management
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO THE INSERVICE TESTING PROGRAM

SOUTHERN NUCLEAR OPERATING COMPANY

EDWIN I. HATCH NUCLEAR PLANT, UNITS 1 AND 2

DOCKET NUMBERS 50-321 AND 50-366

## 1.0 INTRODUCTION

Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.55a requires that inservice testing (IST) of certain American Society of Mechanical Engineers (ASME) Code Class 1, 2, and 3 pumps and valves are performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code applicable Edition and Addenda, except where relief has been requested and granted or proposed alternatives have been authorized by the Commission pursuant to 10 CFR 50.55a(f)(6)(i), or (a)(3)(i), or (a)(3)(ii). In order to obtain authorization or relief, the licensee must demonstrate that (1) conformance is impractical for its facility; (2) the proposed alternative provides an acceptable level of quality and safety; or (3) compliance would result in a hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Pursuant to 10 CFR 50.55a, the Commission may grant relief from or authorize proposed alternatives to the ASME Code requirements upon making the necessary findings. The NRC staff's findings with respect to the licensee's request to implement an alternative to the requirements of the ASME Code for the Operation and Maintenance of Nuclear Power Plants (ASME OM Code),1990 Edition, paragraph ISTC 4.5.4(c) at the Edwin I. Hatch Nuclear Plant, Units 1 and 2, are contained in this Safety Evaluation.

By letter dated July 11, 2001, the Southern Nuclear Operating Company (SNC) requested NRC approval of relief request RR-V-17 to implement an alternative to the testing requirements of the ASME OM Code,1990 Edition, paragraph ISTC 4.5.4(c), at the Edwin I. Hatch Nuclear Plant, Units 1 and 2, pursuant to 10 CFR 50.55a(3)(i). The IST check valve program at the Edwin I. Hatch Nuclear Plant, Units 1 and 2, is required to meet the requirements of the 1990 Edition of the ASME OM Code. The licensee's proposed alternative is requested for use in its Third 10-Year Interval IST Program for the Hatch Nuclear Plant, Units 1 and 2.

## 2.0 LICENSEE'S RELIEF REQUEST

The licensee requests relief from the disassembly and examination IST program requirements of paragraph ISTC 4.5.4(c) of the ASME OM Code, 1990 Edition, for the Edwin I. Hatch Nuclear Plant check valves identified in relief request RR-V-17. The licensee proposes an alternative to the ASME OM Code, 1990 Edition, paragraph ISTC 4.5.4 (c), requirement that the IST program activities only be performed during refueling outages.

Enclosure

2.1 Licensee's Basis for Relief

The regulations in 10 CFR 50.65(a)(4) require licensees to assess and manage the increase in risk that may result from maintenance activities. SNC complies with the 10 CFR 50.65(a)(4) requirements at the Hatch Nuclear Plant by application of a safety-related procedure governing maintenance scheduling. This procedure dictates the requirements for risk evaluations as well as the necessary levels of action required for risk management in each case. The procedure also controls operation of the on-line risk monitor system, which is based on the Hatch Probabilistic Risk Assessment (PRA). In addition, this procedure provides for risk-assessing maintenance activities for components not directly in the Hatch Probabilistic Safety Assessment (PSA) model. With the use of risk evaluation for virtually all aspects of nuclear plant operation, SNC has initiated efforts to accomplish additional maintenance, surveillance, and testing activities during normal operation. Planned activities are evaluated utilizing risk insights to determine the impact on safe operation of the plant and the ability to maintain associated safety margins. Individual system components, a system train, or a complete system may be planned to be out of service to allow maintenance or other activities during normal operation.

All of the check valves listed in the relief request are located in systems that could be scheduled for maintenance during normal operation, thus allowing for their disassembly, examination, and full-stroke exercising. All activities are performed in accordance with plant procedures that meet 10 CFR 50.65(a)(4) requirements and provide detailed instructions for disassembly, inspection, exercising, and considerations for corrective actions, and potential regulatory-required scope expansion are factored into the planning process.

3.0 PROPOSED ALTERNATIVE

The licensee proposes as an alternative that the check valves identified in its relief request continue to be disassembled, inspected, and manually exercised in accordance with the guidance contained in NRC Generic Letter 89-04 (GL 89-04), Position 2, and the requirements of ASME OM Code, 1990 Edition, paragraph ISTC 4.5.4(c), except for the time of performance of the activity. The alternative proposed that the IST activities be performed during normal plant operation or during refueling outages, as appropriate, in lieu of the Code requirement that limits the IST activities to refueling outages. The alternative further proposes that the activities performed during normal plant operation be managed in accordance with the requirements of 10 CFR 50.65(a)(4).

4.0 EVALUATION

In relief request RR-V-17, SNC indicates that the Hatch Nuclear Plant IST check valve program valves, identified in the relief request, are committed to compliance with the ASME OM Code, 1990 Edition. SNC also indicates that all of the identified check valves follow the guidance provided in NRC GL 89-04, Position 2, with regard to sample disassembly and inspection of check valves, and the requirements of the ASME OM Code, 1990 Edition, paragraph ISTC 4.5.4(c). Paragraph ISTC 4.5.4(c) as well as GL 89-04, Position 2, limit the performance of check valve IST activities to refueling outages.

The attachment categorizes the identified valves with regard to their sampling groups, locations within systems, and functions performed at the Hatch Nuclear Plant, Units 1 and 2. All of the valves, except the four valves that control the Plant Service Water (PSW) flow to the Main Control Room air conditioning system equipment, are ASME Class 2 components. The four PSW check valves are ASME Class 3 components. The licensee's design criteria for the plant require component isolation from the reactor coolant system (RCS) pressure of all Class 2 and 3 valves covered in the relief request. Except for the E41-F045 valves (one in each unit) located in the High Pressure Coolant Injection (HPCI) system, all of the identified valves are relatively small-diameter valves, and mainly located in 2-inch diameter lines. The HPCI system E41-F045 valves are relatively large-diameter check valves located in the 16-inch diameter suppression pool to HPCI pump suction line. These valves open when the HPCI suction swaps from normal condensate storage tank supply to the suppression pool.

The regulations in 10 CFR 50.65(a)(4) require licensees to assess and manage the increase in risk that may result from maintenance activities, including surveillance, post-maintenance testing, and corrective and preventive maintenance. In RR-V-17, SNC indicates that the Hatch Nuclear Plant complies with 10 CFR 50.65(a)(4) requirements by application of a safety-related procedure governing maintenance scheduling.

SNC indicates that the Hatch safety-related procedure governing maintenance scheduling requires risk evaluations as well as the necessary levels of action required for risk management for each application. The procedure also controls operation of the on-line risk monitor system, which is based on the Hatch PRA. The procedure further provides for risk-assessing maintenance activities for components not directly in the Hatch PSA model.

SNC has initiated efforts to accomplish additional maintenance, surveillance, and testing activities during normal operation. SNC intends to optimize maintenance and IST activities by taking advantage of windows of opportunity, such as when one of the subject valve systems is isolated for maintenance during normal plant operation, to perform a required valve IST activity. Planned activities are evaluated utilizing risk insights to determine the impact on safety operation of the plant and the ability to maintain associated safety margins. Individual system components, a system train, or a complete system may be planned to be out of service to allow maintenance or other activities during normal operation.

All activities are performed in accordance with plant procedures that meet 10 CFR 50.65(a)(4) requirements and provide detailed instructions for disassembly, inspection, exercising, and considerations for corrective actions. The plant procedures, controls, and regulatory compliance used to prepare the associated system for maintenance or repair of one of the identified relief request valves during normal operation are the same procedures, controls, and regulatory compliance that would be used to prepare for IST disassembly and inspection activities of the valve.

The licensee indicates that all of the check valves listed in the relief request are located in systems that could be scheduled for maintenance during normal operation and would allow for check valve disassembly to be performed during normal power operation.

The staff finds that the HPCI system valves E41-F045 located in the 16-inch diameter torus suction lines to the HPCI pump would be isolated during the IST disassembly and inspection

activities by two valves located in the line on both sides of valves E41-F045, and that these isolation valves are not subject to periodic leakage testing.

In its review and evaluation of the SNC-requested relief and the proposed alternative, the staff's findings are based on its evaluation of the information provided and the following considerations: 1) all the valves are ASME Class 2 or 3, are relatively small except for valves E41-F045, and are provided with component isolation from the RCS; 2) all the valves are located in systems that could be isolated and scheduled for maintenance activities during normal power operation; 3) valves E41-F045 are located in the 16-inch diameter torus suction line to the HPCI pump and would be isolated by valves that could potentially have diminished reliability to maintain leaktightness because of lack of leaktightness testing requirements; 4) no information was provided on the leaktightness reliability of the valves, which will isolate valves E41-F045; 5) Hatch Nuclear Plant complies with 10 CFR 50.65(a)(4) requirements by application of safety-related procedures governing maintenance scheduling; 6) 10 CFR 50.65(a)(4) requires licensees to assess and manage the increase in risk that might result from maintenance activities including surveillance, post-maintenance testing, and corrective and preventive maintenance; 7) planned activities are evaluated utilizing risk insights to determine the impact on safety operation of the plant and the ability to maintain associated safety margins; 8) all activities are performed with plant procedures that provide detailed instructions for disassembly, inspection, exercising, and considerations for corrective actions; and 9) the plant procedures, controls, and regulatory compliance used to prepare the associated system for maintenance or repair of one of the subject valves during normal operation are the same procedures, controls, and regulatory compliance that would be used to prepare for IST of the valves.

Based on its evaluation of the proposed alternative and the above considerations, the staff finds that, except for the HPCI system valves E41-F045, the alternative proposed for the valves identified in relief request RR-V-17 provides an acceptable level of quality and safety, and is authorized for use at the Hatch Nuclear Plant, Units 1 and 2, pursuant to 10 CFR 50.55a(a)(3)(i).

The application of the alternative to valves E41-F045 at Hatch Nuclear Plant, Units 1 and 2, is denied because the licensee has not provided sufficient information in its relief request RR-V-17 for the staff to reach a safety or risk determination with regard to leakage testing and leaktight reliability of the associated isolation valves and the potential consequences of the loss of isolation capability during disassembly, inspection, and manual exercising of the HPCI system valves.

## 5.0 CONCLUSION

The NRC staff concludes that the alternative proposed in relief request RR-V-17, except for the HPCI system valves E41-F045, is authorized for use at Hatch Nuclear Plant, Unit 1 and 2, pursuant to 10 CFR 50.55a(a)(3)(i) on the basis that it provides an acceptable level of quality and safety. The relief request is authorized for third 10-year Interval IST Program. Any increase in risk that may result from IST activities performed during normal plant operation will be assessed and managed by the licensee in accordance with the requirements of 10 CFR 50.65(a)(4). The use of the alternative for the HPCI system check valves E41-F045 is denied because of the lack of information provided for the staff to reach a safety or risk

determination with regard to leakage testing experience and leaktightness reliability of the associated isolation valves and the potential consequences of a loss of isolation capability during disassembly, inspection, and manual exercising of the HPCI system valves.

Attachment: As stated

Principal Contributor: F. Grubelich

Date: October 16, 2001

RELIEF REQUEST RR-V-17 VALVES IDENTIFICATIONS, SAMPLING GROUPS, LOCATIONS AND FUNCTIONS

| Plant Unit 1 | | | Plant Unit 2 | |
|---|---|---|---|---|
| Valve Group | Valve Nos. | Valve Sizes | Valve Group | Valve Nos. |
| Residual Heat Removal System Class 2 Check Valves (RHR-E11) | | | | |
| 1E11-1 | 1E11-F046A/B/C/D | 3" | 2E11-1 | 2E11-F046A/B/C/D |
| 1E11-2 | 1E11-F125A/B | 2“ | 2E11-2 | 2E11-F123A/B |
| Jockey Pump System, Class 2, Check Valves (JP-E21) | | | | |
| 1E21-1 | 1E21-FO36A/B | 2" | 2E21-1 | 2E21-F036A/B |
| 1E21-2 | 1E21-FO39A/B | 2" | 2E21-2 | 2E21-F039A/B |
| High Pressure Coolant Injection System, Class 2, Check Valves (HPCI-E41) | | | | |
| 1E41-1 | 1E41-F022 | 2" | 2E41-1 | 2E41-F022 |
| 1E41-2 | 1E41-FO40 | 2" | 2E41-2 | 2E41-F040 |
| 1E41-3 | 1E41-FO45 | 16" | 2E41-3 | 2E41-F045 |
| 1E41-4 | 1E41-F046 | 4" | 2E41-4 | 2E41-F046 |
| 1E41-5 | 1E41-FO48 | 2" | 2E41-5 | 2E41-F048 |
| 1E41-6 | 1E41-F057 | 2" | 2E41-6 | 2E41-F057 |
| Reactor Core Isolation Cooling System. Class 2, Check Valves (RCIC-E51) | | | | |
| 1E51-1 | 1E51-F021 | 2" | 2E51-1 | 2E51-F021 |
| Plant Service Water System, Class 3, Check Valves (PSW-P41) | | | | |
| 1P41-5 | 1P41-F1074 | 4" | 2P41-3 | 2P41-F098 |
| | 1P41-F1075 | 4"-3" | 2P41-5 | 2P41-F105 |

Locations and Functions of Group Valves

| Valve Group | Valve Locations and Functions |
|---|---|
| 1E11-1<br>2E11-1 | Located in RHR pump minimum flow line. Minimum flow lines for two pumps in a train tie into common line that discharges to suppression pool. Each charge line contains Motor Operated Valve (MOV) normally open when RHR is in standby. Check valve opens on start of respective pump for pump minimum flow protection. Downstream MOV closes when RHR pump reaches set flow. |

Attachment

| | |
|---|---|
| 1E11-2<br>2E11-2 | Located in jockey pump keep-fill system. Valve provides boundary between safety-related and non-safety-related portion of the jockey pump system. The valve closes when the jockey pump cycles off, or is out of service, to prevent loss of inventory from the RHR piping system. |
| 1E21-1<br>2E21-2 | Located in Core Spray (CS) pump minimum flow lines. Minimum flow line for each pump discharges to the suppression pool. Each discharge line contains an upstream MOV normally open when CS is in standby. Check valve opens on start of respective pump for pump minimum flow protection. Downstream MOV closes when CS pump reaches set flow. |
| 1E21-2<br>2E21-3 | Located in jockey pump keep-fill system. Valve provides boundary between safety-related and non-safety-related portion of the jockey pump system. The valve closes when the jockey pump cycles off, or is out of service, to prevent loss of inventory from the CS piping system. |
| 1E41-1<br>1E41-1 | Located in the HPCI pump drain pot drain line to suppression pool. During HPCI operation, numerous sources of condensed steam flow to the turbine drain pot. This check valve allows the drain pot to drain to the suppression pool if the barometric condenser is non-operational. The check valve closure provides containment boundary between the suppression pool and the turbine drain pot. |
| 1E41-2<br>2E41-2 | Located in the HPCI pump drain pot drain line to suppression pool. This check valve allows the drain pot to drain to the suppression pool if the barometric condenser is non-operational. The check valve closure provides containment boundary between the suppression pool and the turbine drain pot. |
| 1E41-3<br>2E41-3 | Located in the suppression pool to HPCI pump suction line. The valve opens when HPCI suction swaps from normal condensate storage tank supply to the suppression pool. |
| 1E41-4<br>2E41-4 | Located in HPCI pump minimum flow line. The minimum flow line discharges to the suppression pool. The discharge line contains a downstream MOV that is normally closed when HPCI is in standby. The check valve and upstream MOV open on HPCI pump start for pump minimum flow protection. The upstream MOV closes when the HPCI pump reaches set flow. The check valve closure provides containment boundary between the suppression pool and HPCI system piping |
| 1E41-5<br>2E41-5 | Located in the HPCI lube oil cooler outlet line and opens to allow flow through the cooler during HPCI pump operation. The valve closes when HPCI is in standby to prevent draining the suction piping to the barometric condenser. |
| 1E41-6<br>2E41-6 | Located in the HPCI lube oil cooler outlet line and opens to allow flow through the cooler during HPCI pump operation. The valve closes when HPCI is in standby to prevent draining back flow into the cooler from the barometric condenser condensate pump discharge. |

| | |
|---|---|
| 1E51-1<br>2E51-1 | Located in RCIC pump minimum flow line. The minimum flow line discharges to the suppression pool. The discharge line contains a downstream MOV that is normally closed when RCIC is in standby. The check valve and an upstream MOV open on RCIC pump start for pump minimum flow protection. The upstream MOV closes when the RCIC pump reaches set flow. The check valve closure provides containment boundary between the suppression pool and RCIC system piping. |
| 1P41-5 | Located in the service water supply to the main control room air conditioning units (two trains). The valve is required to open to ensure adequate cooling water to the air conditioner units. Closure of the valve provides unit separation because coolers are provided with service water from each unit. |
| 2P41-3 | Located in the service water supply to one of the main control room air conditioning units. The valve is required to open to ensure adequate cooling water to the air conditioner unit. Closure of the valve provides unit separation because coolers are provided with service water from each nuclear unit. |
| 2P41-5 | Located in the service water supply to one of the main control room air conditioning units. The valve is required to open to ensure adequate cooling water to the air conditioner unit. Closure of the valve provides unit separation because coolers are provided with service water from each nuclear unit. |

cc:
Mr. Ernest L. Blake, Jr.
Shaw, Pittman, Potts
and Trowbridge
2300 N Street, NW.
Washington, DC 20037

Mr. D. M. Crowe
Manager, Licensing
Southern Nuclear Operating
Company, Inc.
P. O. Box 1295
Birmingham, Alabama 35201-1295

Resident Inspector
Plant Hatch
11030 Hatch Parkway N.
Baxley, Georgia 31531

Mr. Charles H. Badger
Office of Planning and Budget
Room 610
270 Washington Street, SW.
Atlanta, Georgia 30334

Harold Reheis, Director
Department of Natural Resources
205 Butler Street, SE., Suite 1252
Atlanta, Georgia 30334

Steven M. Jackson
Senior Engineer - Power Supply
Municipal Electric Authority
of Georgia
1470 Riveredge Parkway, NW
Atlanta, Georgia 30328-4684

Charles A. Patrizia, Esquire
Paul, Hastings, Janofsky & Walker
10th Floor
1299 Pennsylvania Avenue
Washington, DC 20004-9500

Chairman
Appling County Commissioners
County Courthouse
Baxley, Georgia 31513

Mr. J. D. Woodard
Executive Vice President
Southern Nuclear Operating
Company, Inc.
P. O. Box 1295
Birmingham, Alabama 35201-1295

Mr. P. W. Wells
General Manager, Edwin I. Hatch
Nuclear Plant
Southern Nuclear Operating
Company, Inc.
U.S. Highway 1 North
P. O. Box 2010
Baxley, Georgia 31515

Mr. L. M. Bergen
Resident Manager
Oglethorpe Power Corporation
Edwin I. Hatch Nuclear Plant
P. O. Box 2010
Baxley, Georgia 31515