January 20, 2006

Mr. H. L. Sumner, Jr.
Vice President - Nuclear
Hatch Project
Southern Nuclear Operating
Company, Inc.
P.O. Box 1295
Birmingham, AL 35201-1295

SUBJECT: EDWIN I. HATCH NUCLEAR PLANT, UNIT NOS. 1 AND 2, ISSUANCE OF AMENDMENTS RE: APPENDIX J LEAKAGE RATE TEST FOR CONTAINMENT PURGE VALVES (TAC NOS. MC4227 & MC4228)

Dear Mr. Sumner:

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 248 to Renewed Facility Operating License DPR-57 and Amendment No. 192 to Renewed Facility Operating License NPF-5 for the Edwin I. Hatch Nuclear Plant, Units 1 and 2. The amendments consist of changes to the Technical Specifications in response to your application dated August 23, 2004, as supplemented by letter dated May 20, 2005.

The amendments revise the Surveillance Requirements for certain containment purge valves. The amendments replace requirements for valve seat replacement every 24 months with a requirement to perform an Appendix J leakage rate test of the valves at a frequency of at least once every 30 months.

A copy of the related Safety Evaluation is also enclosed. A Notice of Issuance will be included in the Commission's biweekly *Federal Register* notice.

Sincerely,

/RA/

Christopher Gratton, Sr. Project Manager
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-321 and 50-366

Enclosures:
1. Amendment No. 248 to DPR-57
2. Amendment No. 192 to NPF-5
3. Safety Evaluation

cc w/encls: See next page

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NRR-058

OFFICE	NRR/LPL2-1/PM	NRR/LPL2-1/LA	NRR/ITSB	OGC	NRR/LPL2-1/BC
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DATE	1/19/06	1/19/06	1/18/06	01/05/06	1/20/06

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SOUTHERN NUCLEAR OPERATING COMPANY, INC.

GEORGIA POWER COMPANY

OGLETHORPE POWER CORPORATION

MUNICIPAL ELECTRIC AUTHORITY OF GEORGIA

CITY OF DALTON, GEORGIA

DOCKET NO. 50-321

EDWIN I. HATCH NUCLEAR PLANT, UNIT NO. 1

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 248
Renewed License No. DPR-57

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment to the Edwin I. Hatch Nuclear Plant, Unit 1 (the facility) Renewed Facility Operating License No. DPR-57 filed by Southern Nuclear Operating Company, Inc. (the licensee), acting for itself, Georgia Power Company, Oglethorpe Power Corporation, Municipal Electric Authority of Georgia, and City of Dalton, Georgia (the owners), dated August 23, 2004, as supplemented by letter dated May 20, 2005, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations as set forth in 10 CFR Chapter I; The supplemental information provided clarity only.

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (I) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations set forth in 10 CFR Chapter I;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is hereby amended by page changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Renewed Facility Operating License No. DPR-57 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 248, are hereby incorporated in the license. Southern Nuclear shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance and shall be implemented within 60 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Evangelos C. Marinos, Chief
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Technical Specification
Changes

Date of Issuance: January 20, 2006

ATTACHMENT TO LICENSE AMENDMENT NO. 248

RENEWED FACILITY OPERATING LICENSE NO. DPR-57

DOCKET NO. 50-321

Replace the following pages of the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove	Insert
3.6-12	3.6-12
B 3.6-26	B 3.6-26

SOUTHERN NUCLEAR OPERATING COMPANY, INC.

GEORGIA POWER COMPANY

OGLETHORPE POWER CORPORATION

MUNICIPAL ELECTRIC AUTHORITY OF GEORGIA

CITY OF DALTON, GEORGIA

DOCKET NO. 50-366

EDWIN I. HATCH NUCLEAR PLANT, UNIT NO. 2

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 192
Renewed License No. NPF-5

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment to the Edwin I. Hatch Nuclear Plant, Unit 2 (the facility) Renewed Facility Operating License No. NPF-5 filed by Southern Nuclear Operating Company, Inc. (the licensee), acting for itself, Georgia Power Company, Oglethorpe Power Corporation, Municipal Electric Authority of Georgia, and City of Dalton, Georgia (the owners), dated August 23, 2004, as supplemented by letter dated May 20, 2005, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations as set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (I) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations set forth in 10 CFR Chapter I;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is hereby amended by page changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Renewed Facility Operating License No. NPF-5 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A and the Environmental Protection Plan contained in Appendix B, as revised through Amendment No. 192 are hereby incorporated in the license. Southern Nuclear shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance and shall be implemented within 60 days of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Evangelos C. Marinos, Chief
Plant Licensing Branch II-1
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Technical Specification
Changes

Date of Issuance: January 20, 2006

ATTACHMENT TO LICENSE AMENDMENT NO. 192

RENEWED FACILITY OPERATING LICENSE NO. NPF-5

DOCKET NO. 50-366

Replace the following pages of the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove	Insert
3.6-12	3.6-12
B 3.6-26	B 3.6-26

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO

AMENDMENT NO. 248 TO RENEWED FACILITY OPERATING LICENSE DPR-57

AND AMENDMENT NO. 192 TO RENEWED FACILITY OPERATING LICENSE NPF-5

SOUTHERN NUCLEAR OPERATING COMPANY, INC.

EDWIN I. HATCH NUCLEAR PLANT, UNIT NOS. 1 AND 2

DOCKET NOS. 50-321 AND 50-366

1.0 INTRODUCTION

By letter dated August 23, 2004, as supplemented May 20, 2005, Southern Nuclear Operating Company, Inc. (Southern Nuclear, the licensee), proposed license amendments to change the Technical Specifications (TSs) for the Edwin I. Hatch Nuclear Plant, Unit Nos. 1 and 2. The proposed changes would replace requirements for valve seat replacement every 24 months with a requirement to perform an Appendix J leakage rate test of the valves at a frequency of at least once every 30 months. The supplemental letter dated May 20, 2005, provided clarifying information that did not change the scope of the August 23, 2004, application nor the initial proposed no significant hazards consideration determination.

2.0 REGULATORY EVALUATION

The Nuclear Regulatory Commission (NRC) finds that Southern Nuclear, the licensee, in its August 23, 2004, submittal, identified the applicable regulatory requirements. The regulatory requirements and guidance which the NRC staff considered in its review of the application are as follows:

1. Title 10 of the *Code of Federal Regulations* (10 CFR) establishes the fundamental regulatory requirements with respect to fluid systems at nuclear power plants. Specifically, Appendix J to Part 50, "Primary Reactor Containment Leakage Testing For Water-Cooled Power Reactors," provides the containment leakage test requirements to assure that (a) leakage through the primary reactor containment and systems and components penetrating primary containment shall not exceed allowable leakage rate values as specified in the TSs or associated bases, and (b) periodic surveillance of reactor containment penetrations and isolation valves is performed so that the proper maintenance and repairs are made during the service life of the containment, and systems and components penetrating primary containment.

2. Section 50.36, “Technical specifications,” provides the regulatory requirements for the content required in a licensee’s TSs. Section 50.36 states, in part, that the TSs will

include SRs to assure that the quality of systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation (LCO) will be met.

3. Regulatory Guide (RG) 1.163, “Performance-Based Containment Leak Test Program,” provides methods, procedures, and analyses that are acceptable to the NRC for containment leakage rate testing.

3.0 TECHNICAL EVALUATION

At the time that Hatch 1 and 2 received their operating licenses, 10 CFR, Part 50, Appendix J, "Primary Reactor Containment Leakage Testing For Water-Cooled Power Reactors," required containment isolation valves, including containment purge and vent valves, to be subjected to local leakage rate tests at every refueling outage, but not to exceed 2-year intervals. Compliance with Appendix J provides assurance that the leakage rate of the containment, including those systems and components which penetrate the containment, does not exceed the allowable leakage rate specified in the TSs and bases. The allowable leakage rate is determined so that the leakage rate assumed in the safety analyses is not exceeded.

However, in the 1970s, the NRC staff had determined that containment purge and vent valves were, as a class, a special problem in terms of leakage rate. Experience had shown that containment purge and vent valves with resilient seals were more susceptible than other containment isolation valves to degradation caused by environmental factors (such as temperature extremes, and changes in humidity and barometric pressure) and mechanical factors (such as wear and tear, and hardening of resilient seals due to aging and exposure to radiation). This degradation not only could cause high and rapidly increasing leakage rates, but the radiological consequences of such leaks were more significant than for other valves because of the large diameter of the containment purge and vent valves and the direct connection that they provide between the containment atmosphere and the outside environment.

As part of the resolution of Generic Issue B-20 (also known as Multi-Plant Action MPA-B020), “Containment Leakage Due to Seal Deterioration,” the NRC staff decided to increase the frequency of local leakage rate testing of containment purge and vent valves, beyond the frequency required by Appendix J (additional background may be found in [Office of Inspection and Enforcement] IE Circular 77-11, "Leakage of Containment Isolation Valves with Resilient Seals," issued September 6, 1977). This would limit the time during which the valves might be inoperable due to excessive leakage, and make it more likely that a licensee would catch and correct advancing degradation before it became extreme. Although there was some variation, a typical testing arrangement was to have “passive” valves (those not opened during plant operation) tested every 6 months, and “active” valves (those opened during plant operation) tested every 3 months.

Note that the NRC did not implement the increased testing frequencies through regulations, but rather through plant TSs. Although Appendix J does not contain any special requirements for containment purge and vent valves, and the 3- and 6-month tests are not entirely the same as Appendix J tests, the same tests are usually used to fulfill Appendix J requirements when they come due.

At Hatch, rather than increase the testing frequency, the TSs were amended to require valve seat replacement every 24 months. This frequent seat replacement was supposed to keep the seals from degrading significantly.

In 1995, the NRC revised Appendix J to add a new, performance-based option for testing, called Option B. The NRC also published RG 1.163, "Performance-Based Containment Leak Test Program," dated September 1995, which was developed as a method acceptable to the NRC staff for implementing Option B. This RG states that the Nuclear Energy Institute (NEI) guidance document, NEI 94-01, Rev. 0, "Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J," dated July 26, 1995, provides methods acceptable to the NRC staff for complying with Option B, with four exceptions which are described therein. Virtually all of the plants that have adopted Option B have adopted TSs which require compliance with the provisions of RG 1.163.

RG 1.163 allows an extension in the Type A (integrated leakage rate) test interval to 10 years based upon two consecutive successful tests. Type B tests (local leakage rate tests of containment penetrations such as electrical penetrations) may be extended up to a maximum interval of 10 years based upon completion of two consecutive successful tests. Type C tests (local leakage rate tests of containment isolation valves) may have intervals extended to 5 years based on two consecutive successful tests. However, despite the fact that most other containment isolation valves may have test intervals of up to 5 years, RG 1.163 does not allow the containment purge and vent valves to go onto an extended interval; they must remain on the nominal 30-month interval. This is in consideration of their past poor operating experience and the safety significance of their large diameter and direct connection between the containment atmosphere and the outside environment. Also, although RG 1.163 indicates a 30-month interval, this still does not directly affect the more frequent (3- and 6-month) tests contained in plant TSs, which, as before, go beyond the requirements of Appendix J.

Subsequent to the problems observed in the 1970s, the industry has made considerable strides in correcting the deficiencies of containment purge and vent valves with resilient seals. Improved seal materials, quality control, and modifications of equipment and environmental conditions have largely corrected valve deficiencies in many plants. Several plants have requested, and the NRC staff has granted, TS changes to eliminate the more-frequent testing requirements, allowing testing at what is essentially a refueling outage interval. The NRC staff has granted these reliefs on the basis of good valve performance demonstrated by plant-specific historical leakage rate testing results. Each plant must show that their containment purge and vent valves have had consistently good performance and are thus unlikely to experience significant degradation between tests when the test interval is lengthened.

The licensee has provided data relating the Boiling-Water Reactor Owners Group (BWROG) operating experience for containment isolation butterfly values with resilient seats. The data showed the history at seven different plants. A total of 2,457 local leak rate tests (LLRTs) were performed. The data identified a failure rate of 4.4E-2/test, or, of the 2,457 LLRTs, there were 107 failures. Of the total failures, only 28 were related to seats. The other failures were not attributable to any specific conditions or known causes; therefore, only 1.1E-2 or 27/2457 failures were known to involve the seat.

The data for Hatch identifies a failure rate of 17% or 68/385 failures. There were 23 seat-related failures of the total 68 failures. Hatch attributes these failures to the frequent replacement of the valve seats at 18 to 48 month intervals. The routine seat replacement is much shorter for Hatch than for other plants. The average plant seat replacement interval is 72 to 120 months. NUREG-1493, "Performance-Based Containment Leak-Test Program," dated September 1995, evaluated the impact of changing the frequency of Appendix J tests on overall reactor risk. The report concluded that the frequency of Type C Tests could be reduced without significant impact on reactor accident risk. The BWROG experience supports that the data indicates that maintenance activities actually increase the likelihood of LLRT failures. According to NUREG-1493, test data shows that many component failures occur soon after a previous maintenance event. The data suggests that the component failure rate decreases versus the time since the last maintenance. Therefore, the increased maintenance or the shorter replacement intervals have contributed to the increased as-found LLRT failure rates at Hatch.

Hatch has changed the valve seat design of the containment isolation butterfly valves. The original seat ring was manufactured with a glued joint from ethylene-propylene terpolymer (EPT) material. The seat material was changed from EPT to ethylene propylene diene monomer (EPDM) and with a continuous seat ring. The expected life span of this application is 60 years. These changes should bring the failure rate more in line with the BWROG average.

Considering NUREG-1493 test data and the change in the design of the seat material by Hatch, the NRC staff finds it acceptable to replace requirements for valve seat replacement every 24 months with a requirement to perform an Appendix J leakage rate test of the valves at a frequency of at least once every 30 months.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Georgia State official was notified of the proposed issuance of the amendments. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendments change surveillance requirements. The NRC staff has determined that the amendments involve no significant increase in the amounts and no significant change in the types of any effluents that may be released offsite and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding (70 FR 405). Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

6.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by

operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributors: K. Cotton
J. Pulsipher

Date: January 20, 2006

Edwin I. Hatch Nuclear Plant, Units 1 & 2

cc:

Laurence Bergen
Oglethorpe Power Corporation
2100 E. Exchange Place
P.O. Box 1349
Tucker, GA 30085-1349

Mr. R.D. Baker
Manager - Licensing
Southern Nuclear Operating Company, Inc.
P.O. Box 1295
Birmingham, AL 35201-1295

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

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

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

Mr. Reece McAlister
Executive Secretary
Georgia Public Service Commission
244 Washington St., SW
Atlanta, GA 30334

Arthur H. Domby, Esq.
Troutman Sanders
Nations Bank Plaza
600 Peachtree St, NE, Suite 5200
Atlanta, GA 30308-2216

Chairman
Appling County Commissioners
County Courthouse
Baxley, GA 31513

Mr. Jeffrey T. Gasser
Executive Vice President
Southern Nuclear Operating Company, Inc.
P.O. Box 1295
Birmingham, AL 35201-1295

Mr. G. R. Frederick, General Manager
Edwin I. Hatch Nuclear Plant
Southern Nuclear Operating Company, Inc.
U.S. Highway 1 North
P.O. Box 2010
Baxley, GA 31515

Mr. K. Rosanski
Resident Manager
Oglethorpe Power Corporation
Edwin I. Hatch Nuclear Plant
P.O. Box 2010
Baxley, GA 31515