

December 30, 1988

Docket Nos.: 50-321
50-366

Mr. W. G. Hairston, III
Senior Vice President -
Nuclear Operations
Georgia Power Company
P. O. Box 1295
Birmingham, Alabama 35201

Dear Mr. Hairston:

SUBJECT: ISSUANCE OF AMENDMENT NO. 159 TO FACILITY OPERATING LICENSE DPR-57
AND AMENDMENT NO. 97 TO FACILITY OPERATING LICENSE NPF-5 -
EDWIN I. HATCH NUCLEAR PLANT, UNITS 1 AND 2 (TACS 60980/60981)

The Commission has issued the enclosed Amendment No. 159 to Facility Operating License DPR-57 and Amendment No. 97 to Facility Operating License NPF-5 for the Edwin I. Hatch Nuclear Plant, Units 1 and 2. The amendments are being issued in response to your application dated February 28, 1986, as supplemented September 25 and December 23, 1986, and December 15, 1988.

The amendments extend the expiration dates of the licenses from September 30, 2009, to August 6, 2014, for Unit 1 and from December 27, 2012, to June 13, 2018, for Unit 2.

A copy of our Safety Evaluation is also enclosed. Notice of Issuance will be included in the Commission's Bi-Weekly Federal Register Notice.

Sincerely,

/s/

Lawrence P. Crocker, Project Manager
Project Directorate II-3
Division of Reactor Projects-I/II
Office of Nuclear Reactor Regulation

Enclosures:

1. Amendment No. 159 to DPR-57
2. Amendment No. 97 to NPF-5
3. Safety Evaluation

cc w/ enclosures:
See next page

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for DMatthews
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DATED December 30, 1988

AMENDMENT NO. 159 TO FACILITY OPERATING LICENSE DPR-57, EDWIN I. HATCH, UNIT 1
AMENDMENT NO. 97 TO FACILITY OPERATING LICENSE NPF-5, EDWIN I. HATCH, UNIT 2

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Mr. W. G. Hairston, III
Georgia Power Company

Edwin I. Hatch Nuclear Plant,
Units Nos. 1 and 2

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

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 FACILITY OPERATING LICENSE

Amendment No. 159
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) Facility Operating License No. DPR-57 filed by Georgia Power Company, acting for itself, Oglethorpe Power Corporation, Municipal Electric Authority of Georgia, and City of Dalton, Georgia, (the licensee) dated February 28, 1986, as supplemented September 25 and December 23, 1986, and December 15, 1988, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations 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.

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2. Accordingly, Facility Operating License No. DPR-57 is hereby amended to read as follows:

A. Change paragraph 2.D. to read as follows:

This license is effective as of the date of issuance and shall expire at midnight, August 6, 2014.

3. This license amendment is effective as of its date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Lawrence P. Crocker for

David B. Matthews, Director
Project Directorate II-3
Division of Reactor Projects-I/II
Office of Nuclear Reactor Regulation

Date of Issuance: December 30, 1988

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[Signature]



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

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 FACILITY OPERATING LICENSE

Amendment No. 97
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) Facility Operating License No. NPF-5 filed by Georgia Power Company, acting for itself, Oglethorpe Power Corporation, Municipal Electric Authority of Georgia, and City of Dalton, Georgia, (the licensee) dated February 28, 1986, as supplemented September 25 and December 23, 1986, and December 15, 1988, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations 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, Facility Operating License No. NPF-5 is hereby amended to read as follows:

A. Change paragraph 2.G. to read as follows:

This license is effective as of the date of issuance and shall expire at midnight, June 13, 2018.

3. This license amendment is effective as of its date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Lawrence P. Crocker for

David B. Matthews, Director
Project Directorate II-3
Division of Reactor Projects-I/II
Office of Nuclear Reactor Regulation

Date of Issuance: December 30, 1988

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENT NOS. 159 AND 97 TO
FACILITY OPERATING LICENSES DPR-57 AND NPF-5

GEORGIA POWER COMPANY
OGLETHORPE POWER CORPORATION
MUNICIPAL ELECTRIC AUTHORITY OF GEORGIA
CITY OF DALTON, GEORGIA

EDWIN I. HATCH NUCLEAR PLANT, UNITS 1 AND 2

DOCKET NOS. 50-321 AND 50-366

1.0 INTRODUCTION

By letter dated February 28, 1986, as supplemented by letters dated September 25, 1986, December 23, 1986, and December 15, 1988, Georgia Power Company (the licensee) requested amendments to Facility Operating Licenses DPR-57 and NPF-5 for the Edwin I. Hatch Nuclear Plant, Units 1 and 2. The proposed amendments would extend the expiration dates of these licenses from September 30, 2009 to August 6, 2014 for Unit 1, and from December 27, 2012 to June 13, 2018 for Unit 2. Because the September 25, 1986, December 23, 1986, and December 15, 1988, submittals clarified certain aspects of the original request, the substance of the changes noticed in the Federal Register and the proposed no significant hazards determination were not affected.

2.0 DISCUSSION

Title 10 CFR 50.51 specifies that each license will be issued for a fixed period of time not to exceed 40 years from the date of issuance. The currently licensed terms for Hatch Units 1 and 2 are 40 years commencing with the issuance of the construction permits, which were issued on September 30, 1969 (Unit 1) and December 27, 1972 (Unit 2). Accounting for the time that was required for construction, these represent effective operating license terms of about 35 years for Unit 1 and about 34 1/2 years for Unit 2. Consistent with Section 50.51 of the Commission's regulations, the licensee, by the February 28, 1986 application, seeks extensions of the operating license terms for Hatch Units 1 and 2 so that the fixed period of the licenses would be from the dates of issuance of the operating licenses.

3.0 EVALUATION

The NRC staff has evaluated the safety issues associated with issuance of the proposed license amendments which would allow approximately five additional

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years of operation for Unit 1 and approximately five and one-half additional years of operation for Unit 2. The issues addressed consist of additional radiation exposure to the licensee's operating staff, impacts on the off-site population, and the general aging of plant structures and equipment. The impact of additional radiation exposure to the facility operating staff and the impact on the general population in the vicinity of the Hatch nuclear plant are addressed in the NRC staff's Environmental Assessment dated

3.1 Mechanical Equipment

The components of the reactor coolant pressure boundary of Hatch Units 1 and 2 were designed, built and tested to the appropriate ASME Boiler and Pressure Vessel Codes, Regulatory standards, and supplemental criteria in compliance with the requirements of 10 CFR Part 50, Section 50.55a, "Codes and Standards." The initial inservice inspection program was described in the FSAR and Technical Specifications and complied with the requirements of Section 50.55a(g). The program was revised and updated effective January 1, 1984, including the portion on testing of pumps and valves to the standard of Section XI of the ASME Boiler and Pressure Vessel Code, 1980 Edition, including Winter 1980 Addendum. The program was implemented for an 80-month period, near the end of which the plan is to update the program to meet a later edition of Section XI.

Inspections conducted at several boiling water reactors (BWRs) indicated intergranular stress corrosion cracking (IGSCC) in large-diameter stainless steel pipe. The NRC staff considered this a generic problem and as a result, the Commission issued Generic Letter 84-11 requiring a reinspection program at all BWRs, involving welds in stainless steel pipes greater than 4 inches in diameter, in systems that are part of or connected to the reactor coolant pressure boundary, out to the second isolation valve. If IGSCC was discovered, repair, analysis and additional surveillance were required to ensure the continued integrity of the affected pipe.

During the 1984 refueling outage for Hatch Unit 2, the licensee replaced type 304 stainless steel recirculation system piping, the stainless steel portion of the residual heat removal system piping, and the reactor water cleanup system piping out to the containment outboard isolation valve with Type 316 Nuclear Grade (NG) material. The replacement piping, components, and supports were analyzed, constructed and tested in compliance with appropriate subsections of Sections III and XI of the ASME Boiler and Pressure Vessel Code, 1980 Edition, including Winter 1982 Addenda. For Hatch Unit 1, the licensee has not replaced the austenitic stainless steel piping, but has addressed the IGSCC concern by utilizing a combination of Induction Heating Stress Improvement and weld overlays.

Generic Letter 88-01, issued on January 25, 1988, superseded Generic Letter 84-11, and included a copy of NUREG-0313, Revision 2, "Technical Report on Material Selection and Processing Guidelines for BWR Coolant Pressure Boundary Piping." NUREG-0313, Rev. 2, describes methods acceptable to the staff to

control the susceptibility of BWR ASME Boiler and Pressure Vessel Code Class 1, 2, and 3 pressure boundary piping and safe ends to intergranular stress corrosion cracking. The revision describes the technical bases for the staff's positions on the following items: materials of construction; processes to minimize or control IGSCC; water chemistry; reinforcement by weld overlay; replacement of piping; stress improvements; clamping devices; crack characterization and repair criteria; inspection methods, schedules, and personnel; and limits on number of cracked weldments in piping. For piping that does not conform to the staff positions, varying degrees of inservice inspection are required to ensure structural integrity of the pressure boundary piping system, pursuant to paragraph 50.55a(g)(6)(ii) of 10 CFR Part 50.

By letter dated June 30, 1988, Georgia Power Company responded to Generic Letter 88-01, describing the licensee's plans and program for implementation of the NRC staff's positions specified in the generic letter. The licensee response still is under review. However, the staff will ensure that the licensee's program acceptably meets the staff requirements.

We conclude from our evaluation that compliance with the codes, standards, and regulatory requirements to which the mechanical equipment for Hatch Units 1 and 2 was originally analyzed, constructed, tested and inspected, including the inservice inspection programs in compliance with Section XI of the ASME Boiler and Pressure Vessel Code and the other augmented inspections of austenitic stainless steel piping, provide adequate assurance that the structural integrity of components important to safety will be maintained during the additional periods authorized by these amendments. Any significant degradation by an active mechanism would be discovered and the mechanical equipment or component restored to an acceptable condition. Therefore, the age of the mechanical equipment or component should not be a consideration in the extension of the operating licenses for Hatch Units 1 and 2.

3.2 Structures

The concrete and steel Category I structures for Hatch Units 1 and 2 were designed and constructed in accordance with the Commission's General Design Criteria, Appendix A, 10 CFR Part 50, as amended July 7, 1971. The design bases, fabrication, construction, and quality assurance criteria for the plant were reviewed by the NRC staff. The staff evaluations are presented in the Safety Evaluation Reports (SERs) for the Hatch Units: "Safety Evaluation of the Edwin I. Hatch Nuclear Plant Unit 1," dated May 11, 1973, and "Safety Evaluation Report Related to Operation of Edwin I. Hatch Nuclear Plant, Unit No. 2," NUREG-0411, dated June 1978. Industrial experience with concrete and steel structures confirms that a service life in excess of forty years may be anticipated.

The major codes and specifications used in the design and construction of the Category I concrete and steel structures were American Concrete Institute (ACI) 318-63/71, "Building Code Requirements for Reinforced Concrete" and the American Institute of Steel Construction (AISC) Specification, "Specification for the Design, Fabrication, and Erection of Structural Steel for Building."

Support structures were constructed to the requirements of Subsection NF, Section III of the ASME Boiler and Pressure Vessel Code. Sections 3.8 of the staff's SERs state that the concrete and steel structures were designed and analyzed to resist various combinations of dead and live loads, including pressure, jet, seismic and accident induced loads, during their anticipated service lifetimes.

The use of the indicated codes, standards, and specifications in the design, analyses, and construction; Appendix B of 10 CFR Part 50 for quality assurance; and the identified testing and inservice surveillance requirements; provide reasonable assurance that the concrete and steel structures would withstand continued service for an extended period of six years without impairment of structural integrity.

3.3 Reactor Vessels

The Final Safety Analysis Reports (FSARs) state that the reactor vessels for Hatch Units 1 and 2 were designed and fabricated for a service life of forty years at 80% plant capacity (32 effective full-power years). The vessels were designed, fabricated and inspected in accordance with the requirements of Section III of the ASME Boiler and Pressure Code edition, addenda, and Code Cases applicable at the time of purchase. Operating limitations on temperature and pressure were established using Appendix G of Section III of the ASME Boiler and Pressure Vessel Code and Appendix G of 10 CFR Part 50. The inservice inspection program is periodically upgraded to comply with the recommendations of Section 50.55a(g), 10 CFR Part 50, that incorporates Section XI of the ASME Boiler and Pressure Vessel Code.

The integrity and performance capability of the ferritic materials in the reactor vessels for Hatch Units 1 and 2 is assured because the fracture toughness is monitored with a surveillance program in conformance, to the extent practical, with the recommendations of Appendix H, 10 CFR Part 50, "Reactor Vessel Materials Surveillance Program Requirements," and ASTM E185, "Standard Practice for Conducting Surveillance Tests for Light-Water Cooled Nuclear Power Reactor Vessels." The ferritic materials must meet the fracture toughness properties of Section III of the ASME Boiler and Pressure Vessel Code and Appendix G, 10 CFR Part 50, "Fracture Toughness Properties."

The first surveillance capsule was removed from Hatch Unit 1 after Fuel Cycle 10. Although a surveillance capsule has not been removed from Hatch Unit 2, the licensee stated that the results from the Hatch Unit 1 analyses are expected to be bounding for Hatch Unit 2. The analysis of Hatch Unit 1 surveillance capsule is reported in NEDC-30997, "Edwin I Hatch Nuclear Power Plant, Unit 1, Reactor Pressure Vessel Surveillance Material Testing and Fracture Toughness Analysis."

The Hatch Unit 1 surveillance analysis projected the 32 EFPY adjusted reference temperature of the limiting beltline material to be 184°F and an estimated upper shelf energy of 66 ft-lbs. Paragraph IV B of Appendix G, 10 CFR Part 50, sets limits on the end-of-life predicted fracture toughness

properties at 200°F for the adjusted reference temperature and 50 ft-lbs on the upper shelf energy. The projected fracture toughness properties for the Hatch Unit 1 reactor vessel are within the limits set by Appendix G.

We conclude that there are no special considerations to indicate reactor vessel degradation for Hatch Units 1 and 2 due to the proposed operating lifetime extensions. The structural integrity of the reactor vessels is assured because they were originally designed for 32 EFPY usage (40 years at 80% plant capacity); they are monitored, inspected, and tested to detect degradation processes at an early stage of development; and they are operated with procedures to assure that design conditions are not exceeded.

3.4 Summary of Findings

The NRC staff concluded in the Environmental Assessment that the annual radiological effects during the additional years of operation that would be authorized by the proposed license amendments are not more than were previously estimated in the Final Environmental Statements, and are acceptable.

The staff concludes from its considerations of the design, operation, testing and monitoring of the mechanical equipment, structures, and the reactor vessels that an extension of the operating licenses for Hatch Units 1 and 2 to a 40-year service life is consistent with the FSARs, SERs, and submittals made by the licensee, and that there is reasonable assurance that the units will be able to continue to operate safely for the additional periods authorized by these amendments. The plants are operated in compliance with the Commission's regulations, and issues associated with plant degradation have been adequately addressed.

In summary, we find that extension of the operating licenses for Hatch Units 1 and 2 to allow 40-year service lives is consistent with the Final Environmental Statements and Safety Evaluation Reports for the Hatch units and that the Commission's previous findings are not changed.

4.0 ENVIRONMENTAL CONSIDERATION

A Notice of Issuance of Environmental Assessment and Finding of No Significant Impact relating to the proposed extension of the Facility Operating License termination dates for Hatch Units 1 and 2 was published in the Federal Register on December 30, 1988 (53 FR 53085).

5.0 CONCLUSION

The Commission made a proposed determination that the amendments involve no significant hazards consideration which was published in the Federal Register on April 23, 1986 (51 FR 15397), and consulted with the state of Georgia. No public comments were received, and the state of Georgia did not have any comments.

We have 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, and (2) such activities will be conducted in compliance with the Commission's regulations, and 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 Contributor: Lawrence P. Crocker, PDII-3/DRP-I/II

Dated: December 30, 1988