

August 19, 1996

Mr. C. K. McCoy  
Vice President - Nuclear  
Vogtle Project  
Georgia Power Company  
P. O. Box 1295  
Birmingham, AL 35201

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Docket File  
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SUBJECT: ISSUANCE OF AMENDMENTS - VOGTLE ELECTRIC GENERATING PLANT,  
UNITS 1 AND 2 (TAC NOS. M95782 AND M95783)

Dear Mr. McCoy:

The Nuclear Regulatory Commission has issued the enclosed Amendment No. 94 to Facility Operating License NPF-68 and Amendment No. 72 to Facility Operating License NPF-81 for the Vogtle Electric Generating Plant, Units 1 and 2. The amendments consist of changes to the Technical Specifications (TS) in response to your application dated June 17, 1996.

The amendments revise TS 5.3.1, Fuel Assemblies, to remove the restriction on the number of fuel rods clad with ZIRLO™ that can be loaded into the core.

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,  
Original signed by:

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

Docket Nos. 50-424 and 50-425

Enclosures:

1. Amendment No. 94 to NPF-68
2. Amendment No. 72 to NPF-81
3. Safety Evaluation

cc w/encl: See next page

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UNITED STATES  
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

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cc w/encl: See next page

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Vogtle Electric Generating Plant

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

GEORGIA POWER COMPANY  
OGLETHORPE POWER CORPORATION  
MUNICIPAL ELECTRIC AUTHORITY OF GEORGIA  
CITY OF DALTON, GEORGIA  
VOGTLE ELECTRIC GENERATING PLANT, UNIT 1  
AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 94  
License No. NPF-68

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment to the Vogtle Electric Generating Plant, Unit 1 (the facility) Facility Operating License No. NPF-68 filed by the Georgia Power Company, acting for itself, Oglethorpe Power Corporation, Municipal Electric Authority of Georgia, and City of Dalton, Georgia (the licensees), dated June 17, 1996, 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.

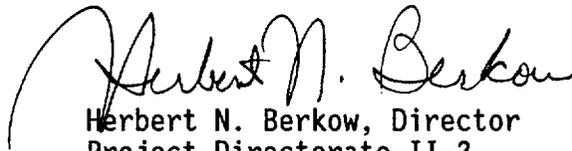
2. Accordingly, the license is hereby amended by page changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-68 is hereby amended to read as follows:

Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 94 , and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated into this license. GPC 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 30 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Herbert N. Berkow, Director  
Project Directorate II-2  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Attachment:  
Technical Specification  
Changes

Date of Issuance: August 19, 1996



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

GEORGIA POWER COMPANY  
OGLETHORPE POWER CORPORATION  
MUNICIPAL ELECTRIC AUTHORITY OF GEORGIA  
CITY OF DALTON, GEORGIA  
VOGTLE ELECTRIC GENERATING PLANT, UNIT 2  
AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 72  
License No. NPF-81

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment to the Vogtle Electric Generating Plant, Unit 2 (the facility) Facility Operating License No. NPF-81 filed by the Georgia Power Company, acting for itself, Oglethorpe Power Corporation, Municipal Electric Authority of Georgia, and City of Dalton, Georgia (the licensees), dated June 17, 1996, 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.

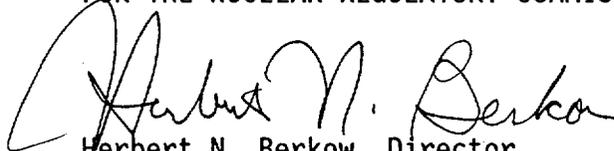
2. Accordingly, the license is hereby amended by page changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-81 is hereby amended to read as follows:

Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 72, and the Environmental Protection Plan contained in Appendix B, both of which are attached hereto, are hereby incorporated into this license. GPC 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 30 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Herbert N. Berkow, Director  
Project Directorate II-2  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Attachment:  
Technical Specification  
Changes

Date of Issuance: August 19, 1996

ATTACHMENT TO LICENSE AMENDMENT NO. 94

FACILITY OPERATING LICENSE NO. NPF-68

DOCKET NO. 50-424

AND

TO LICENSE AMENDMENT NO. 72

FACILITY OPERATING LICENSE NO. NPF-81

DOCKET NO. 50-425

Replace the following page of the Appendix "A" Technical Specifications with the enclosed page. The revised page is identified by Amendment number and contains vertical lines indicating the area of change.

Remove Page

5-4

Insert Page

5-4

## DESIGN FEATURES

### 5.3 REACTOR CORE

#### FUEL ASSEMBLIES

5.3.1 The core shall contain 193 fuel assemblies with each fuel assembly containing 264 fuel rods clad with Zircaloy-4 or ZIRLO™. Each fuel rod shall have a nominal active fuel length of 144 inches. The initial core loading shall have a maximum enrichment not to exceed 3.2 weight percent U-235. Reload fuel shall be similar in physical design to the initial core loading and shall have a maximum enrichment not to exceed 4.55 weight percent U-235. Limited substitutions of zirconium alloy or stainless steel filler rods for fuel rods, in accordance with NRC-approved applications of fuel rod configurations, may be used. Fuel assemblies shall be limited to those fuel designs that have been analyzed with applicable NRC staff-approved codes and methods, and shown by tests or analyses to comply with all fuel safety design bases. A limited number of lead test assemblies that have not completed representative testing may be placed in non-limiting core regions.

#### CONTROL ROD ASSEMBLIES

5.3.2 The core shall contain 53 full-length control rod assemblies. The control rod assemblies shall contain a nominal 142 inches of absorber material. The nominal absorber composition shall be 95.5% natural hafnium and 4.5% natural zirconium and/or 80% silver, 15% indium, and 5% cadmium. All control rods shall be clad with stainless steel.

### 5.4 REACTOR COOLANT SYSTEM

#### DESIGN PRESSURE AND TEMPERATURE

5.4.1 The Reactor Coolant System is designed and shall be maintained:

- a. In accordance with the Code requirements specified in Section 5.2 of the FSAR, with allowance for normal degradation pursuant to the applicable Surveillance Requirements,
- b. For a pressure of 2485 psig, and
- c. For a temperature of 650°F, except for the pressurizer which is 680°F.

#### VOLUME

5.4.2 The total water and steam volume of the Reactor Coolant System is 12,240 ± 100 cubic feet at a nominal  $T_{avg}$  of 588.5°F.

### 5.5 METEOROLOGICAL TOWER LOCATION

5.5.1 The meteorological tower shall be located as shown on Figure 5.1-1 and 5.1-2.



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 94 TO FACILITY OPERATING LICENSE NPF-68  
AND AMENDMENT NO. 72 TO FACILITY OPERATING LICENSE NPF-81  
GEORGIA POWER COMPANY, ET AL.  
VOGTLE ELECTRIC GENERATING PLANT, UNITS 1 AND 2  
DOCKET NOS. 50-424 AND 50-425

1.0 INTRODUCTION

By letter dated June 17, 1996, Georgia Power Company, et al. (GPC or the licensee) proposed license amendments to change the Technical Specifications (TS) for Vogtle Electric Generating Plant (VEGP), Units 1 and 2. The proposed changes would revise TS 5.3.1 to remove the restriction on the number of fuel rods clad with ZIRLO™. Prior to this change, the TS specified that fuel rods would be clad with Zircaloy-4, except for a limited number of rods that could be clad with ZIRLO™.

2.0 EVALUATION

ZIRLO™ is a new cladding and thimble tube alloy. It is similar to Zircaloy-4, and was developed to enhance corrosion resistance. ZIRLO™ is a modification of Zircaloy-4 that includes reductions in the tin and iron content, elimination of the chromium content, and the addition of one percent niobium. The Westinghouse ZIRLO™ fuel is described in WCAP-12610, "VANTAGE+ Fuel Assembly Reference Core Report." The VANTAGE+ fuel assembly design was developed from the VANTAGE 5 fuel assembly design, which is currently in use at VEGP.

In addition to the use of ZIRLO™ in the VANTAGE+ fuel design, dimensional modifications to the fuel assembly skeleton are introduced for extended burnup applications. The VANTAGE+ reconstitutible top nozzle (RTN) has an option for a slight height reduction and a compensating recess in the adapter plate to accommodate the rod cluster control rod assembly hub in the fully inserted position for extended burnup applications. The VANTAGE+ RTN is otherwise identical to the VANTAGE 5 design except for modifications necessary to accommodate extended burnup operations. These modifications consist of the use of ZIRLO™ guide thimbles and small skeletal dimension alterations to provide additional fuel assembly and rod growth space for extended burnup levels.

Since the VANTAGE+ fuel assembly is intended to replace either the Westinghouse Standard, Optimized, or VANTAGE 5 fuel designs, the VANTAGE+ assembly design envelope is equivalent to those of previous Westinghouse fuel assemblies. Also, the VANTAGE+ fuel assembly is designed to be mechanically

and hydraulically compatible with the previous Westinghouse fuel designs in full or transitional cores. The same functional requirements and design criteria established for the Westinghouse VANTAGE 5 fuel assembly remain valid for the VANTAGE+ fuel assembly.

The NRC staff approved the ZIRLO™ fuel design discussed in WCAP-12610 in a safety evaluation dated July 1, 1991. The NRC staff also approved loss-of-coolant accident (LOCA) methodologies in a safety evaluation dated October 9, 1991, for Appendix F, "LOCA NOTRUMP Evaluation Model: ZIRLO Modifications," and Appendix G, "LOCA Plant Specific Accident Evaluation," of WCAP-12610. Westinghouse performed the LOCA analyses assuming a total peaking factor of 2.45 at 102 percent of a core power of 2775 MWt. An appropriate set of input conditions and a worst case break (a double-ended cold leg guillotine break with a discharge coefficient of 0.4) were used. Using the Westinghouse approved evaluation model, with modifications to account for the ZIRLO™ material properties, the calculated peak cladding temperature was 2083.5°F, the calculated maximum local metal-water reaction was 7.2 percent, and the calculated total core-wide metal-water reaction was less than 0.3 percent. These values are below the allowable limits specified in 10 CFR 50.46(b) of 2200°F, 17 percent, and 1 percent, respectively. The analyses also indicated that the temperature transient would be terminated while the core geometry was still amenable to cooling in accordance with 10 CFR 50.46(b)(4). Individual plant-approved emergency core cooling systems assure long-term cooling capability to satisfy 10 CFR 50.46(b)(5).

NUREG-1431, "Standard Technical Specifications for Westinghouse Plants," specifically includes ZIRLO™ as an acceptable cladding material.

Based on the above, the staff finds the proposed changes to the VEGP TS to remove the current restriction on the use of ZIRLO™ clad fuel rods acceptable.

### 3.0 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.

### 4.0 ENVIRONMENTAL CONSIDERATION

The amendments change requirements with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. 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 (61 FR 37299 dated July 17, 1996). 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.

5.0 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 Contributor: L. Wheeler

Date: August 19, 1996