

October 3, 1991

Docket Nos. 50-424
and 50-425

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

Dear Mr. Hairston:

SUBJECT: EXEMPTION FROM 10 CFR PART 50.46, 10 CFR 50.44, 10 CFR 51.52,
AND APPENDIX K TO 10 CFR 50 FOR USE OF ZIRLOTM CLADDING -
VOGTLE ELECTRIC GENERATING PLANT, UNITS 1 AND 2 (TAC NOS. 73574
AND 73575)

The enclosed exemption relates to your request dated June 3, 1991, to allow
use of up to two Westinghouse VANTAGE-5 fuel assemblies, each containing no
more than twelve (12) fuel rods clad with ZIRLOTM, beginning with Vogtle
Unit 1 Cycle 4 and Vogtle Unit 2 Cycle 3. As a result of the NRC review of
your request, we found it necessary to issue an exemption to four of the
Commission's regulations: 10 CFR 50.44, 10 CFR 50.46, 10 CFR 51.52 and
Appendix K to 10 CFR 50.

A copy of the Exemption has been forwarded to the Office of the Federal
Register for publication.

Sincerely,

ORIGINAL SIGNED BY:

Darl S. Hood, Project Manager
Project Directorate II-3
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

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Enclosure:
As stated

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UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555

October 3, 1991

Docket Nos. 50-424
and 50-425

Mr. W. G. Hairston, III
Senior Vice President -
Nuclear Operations
Georgia Power Company
P. O. Box 1295
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A copy of the Exemption has been forwarded to the Office of the Federal Register for publication.

Sincerely,

A handwritten signature in dark ink, reading "Darl S. Hood", is written over a horizontal line.

Darl S. Hood, Project Manager
Project Directorate II-3
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Enclosure:
As stated

cc w/enclosure:
See next page

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

Vogtle Electric Generating Plant

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of	}	
GEORGIA POWER COMPANY, et al.	}	Docket Nos. 50-424
(Vogtle Electric Generating	}	and 50-425
Plant, Units 1 and 2)	}	

EXEMPTION

I

Georgia Power Company, et al. (the licensee), is the holder of Facility Operating License Nos. NPF-68 and NPF-81 which authorize operation of the Vogtle Electric Generating Plant, Units 1 and 2. The license provides, among other things, that the licensee is subject to all rules, regulations, and orders of the Commission now or hereafter in effect.

The facilities consist of two pressurized water reactors at the licensee's site located in Burke County, Georgia.

II

By letter dated June 3, 1991, the licensee requested changes to Vogtle Units 1 and 2 Technical Specifications (TSs) to allow use of two fuel assemblies, each containing up to twelve (12) fuel rods clad with ZIRLOTM instead of Zircaloy. Currently, the TSs recognize only the use of Zircaloy clad fuel. Similarly, four of the Commission's regulations include specific references to light water reactors fueled by uranium oxide pellets enclosed in Zircaloy tubes. The four regulations are 10 CFR 50.46, 10 CFR 50 Appendix K, 10 CFR 50.44, and 10 CFR 51.52 which provide requirements for emergency core cooling system (ECCS) performance, ECCS evaluation models, standards for combustible gas control system, and environmental effects of transportation of fuel and waste. The

chemical composition of Zircaloy cladding is somewhat different from the chemical composition of ZIRLOTM. The ZIRLOTM contains slight reductions in the amounts of tin, iron, chromium, and zirconium, and the addition of a nominal 1% niobium to improve its waterside corrosion and hydrating properties. Therefore, exemptions to the subject regulations are required to allow the use of ZIRLOTM cladding.

III

Pursuant to 10 CFR 50.12, the Commission may, upon application by any interested person or upon its own initiative, grant exemptions from the requirements of 10 CFR Part 50 when (1) the exemptions are authorized by law, will not present an undue risk to public health or safety, and are consistent with the common defense and security; and (2) when special circumstances are present. According to 10 CFR 50.12(a)(2)(ii), special circumstances are present when "Application of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule...."

The underlying purpose of 10 CFR 50.46 and 10 CFR 50 Appendix K is to establish requirements for design calculations of ECCS. The licensee, as part of its proposal for TS changes to allow use of ZIRLOTM, has addressed ECCS performance for Vogtle Units 1 and 2. The licensee's analyses demonstrate adequate ECCS performance with the two fuel assemblies clad with ZIRLOTM in the reactor core. Thus, the licensee achieved the underlying purpose of 10 CFR 50.46 and 10 CFR 50 Appendix K.

The purpose of 10 CFR 50.44 is to ensure that a means is provided for the control of hydrogen gas that may be generated following a postulated loss-of-coolant accident (LOCA). The licensee has previously addressed hydrogen generation following a LOCA. The licensee's proposed use of ZIRLOTM cladding has no significant effect on the previous assessment of hydrogen gas production. Thus, the licensee has achieved the underlying purpose of 10 CFR 50.44.

The underlying purpose of 10 CFR 51.52 is to ensure adequate consideration of environmental effects of transportation of fuel and waste. Specifically, 10 CFR 51.52 requires a licensee's Environmental Report to include a statement of compliance to indicate, among other things, that the fuel pellets are encapsulated in Zircaloy rods. Alternatively, detailed analysis of the environmental effects of the transportation of the fuel to and from the site must be provided in accordance with 10 CFR 51.52(b). Since the chemical composition of the ZIRLOTM cladding is not significantly different from Zircaloy, the environmental effects of transporting ZIRLOTM will not be significantly different from the environmental effects of transporting Zircaloy. Thus, a detailed analysis, in accordance with 10 CFR 51.52(b), is not necessary for ZIRLOTM to achieve the underlying purpose of 10 CFR 51.52.

The fuel assemblies with some fuel rods clad with ZIRLOTM meet the same design bases as the existing fuel with all Zircaloy cladding. No safety limits have been changed or setpoints altered as a result of the use of these altered fuel assemblies. The ZIRLOTM claddings have been tested for corrosion resistance, tensile and burst strength, and creep characteristics. The results indicate that this cladding is safe for reactor service.

IV

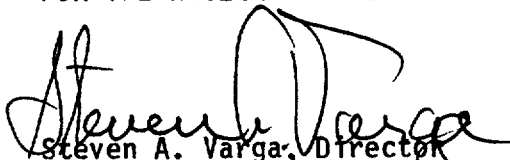
For the foregoing reasons, the NRC staff has concluded that the use of the two fuel assemblies, each containing up to 12 fuel rods clad with ZIRLOTM, will not present an undue risk to public health and safety if used in the Vogtle Units 1 and 2 reactors. Such use is consistent with the common defense and security. The NRC staff has determined that there are special circumstances present as specified in 10 CFR 50.12(a)(2) such that application of 10 CFR 50.46, Appendix K to 10 CFR 50, 10 CFR 50.44, and 10 CFR 51.52 is not necessary in order to achieve the underlying purpose of these regulations.

Accordingly, the Commission has determined that pursuant to 10 CFR 50.12(a), an exemption is authorized by law, will not endanger life or property or common defense and security, and is, otherwise, in the public interest. Therefore, the Commission hereby grants Georgia Power Company exemption from the requirements of 10 CFR 50.46, Appendix K to 10 CFR 50, 10 CFR 50.44, and 10 CFR 51.52 in that explicit consideration of the ZIRLOTM cladding for the two fuel assemblies is not required in order to be in compliance with these regulations. This exemption applies only for two fuel assemblies, each consisting of no more than twelve (12) fuel rods clad with ZIRLOTM.

Pursuant to 10 CFR 51.32, the Commission has determined that the granting of this exemption will not result in any significant adverse environmental impact (56 FR 49801).

This exemption is effective upon issuance.

FOR THE NUCLEAR REGULATORY COMMISSION



Steven A. Varga, Director
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Dated at Rockville, Maryland,
this 3rd day of October 1991

IV

For the foregoing reasons, the NRC staff has concluded that the use of the two fuel assemblies, each containing up to 12 fuel rods clad with ZIRLOTM, will not present an undue risk to public health and safety if used in the Vogtle Units 1 and 2 reactors. Such use is consistent with the common defense and security. The NRC staff has determined that there are special circumstances present as specified in 10 CFR 50.12(a)(2) such that application of 10 CFR 50.46, Appendix K to 10 CFR 50, 10 CFR 50.44, and 10 CFR 51.52 is not necessary in order to achieve the underlying purpose of these regulations.

Accordingly, the Commission has determined that pursuant to 10 CFR 50.12(a), an exemption is authorized by law, will not endanger life or property or common defense and security, and is, otherwise, in the public interest. Therefore, the Commission hereby grants Georgia Power Company exemption from the requirements of 10 CFR 50.46, Appendix K to 10 CFR 50, 10 CFR 50.44, and 10 CFR 51.52 in that explicit consideration of the ZIRLOTM cladding for the two fuel assemblies is not required in order to be in compliance with these regulations. This exemption applies only for two fuel assemblies, each consisting of no more than twelve (12) fuel rods clad with ZIRLOTM.

Pursuant to 10 CFR 51.32, the Commission has determined that the granting of this exemption will not result in any significant adverse environmental impact (56 FR 49801).

This exemption is effective upon issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

ORIGINAL SIGNED BY:

Steven A. Varga, Director
Division of Reactor Projects - I/II
Office of Nuclear Reactor Regulation

Dated at Rockville, Maryland,
this day of October 1991

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LBerry
10/12/91

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LRaghavan:cw
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