UNITED STATES NUCLEAR REGULATORY COMMISSION

GEORGIA POWER COMPANY, ET AL.

VOGTLE ELECTRIC GENERATING PLANT, UNITS 1 AND 2

DOCKET NOS. 50-424 AND 50-425

ENVIRONMENTAL ASSESSMENT AND FINDING NO SIGNIFICANT IMPACT

The U. S. Nuclear Regulatory Commission (NRC) is considering issuance of an exemption from the provisions of 10 CFR 50.46, Appendix K to 10 CFR 50, 10 CFR 50.44, and 10 CFR 51.52 to Georgia Power Company, et al. (the licensee or GPC), for Vogtle Electric Generating Plant (Vogtle), Units 1 and 2, located in Burke County, Georgia.

ENVIRONMENTAL ASSESSMENT

Identification of Proposed Action: By letter dated June 3, 1991, the licensee requested amendments to Vogtle Units 1 and 2 Technical Specifications (TSs) to allow use of two fuel assemblies, each containing up to 12 fuel rods clad with ZIRLO™ instead of Zircaloy. The chemical composition of ZIRLO™ cladding is somewhat different from the composition of Zircaloy. Based on tests in foreign reactors, fuel rods clad with ZIRLO™ exhibit improved corrosion and hydriding properties. The proposed action would allow the licensee to use ZIRLO™ cladding in addition to Zircaloy to determine the behavior of ZIRLO™ cladding in the Vogtle core.

The Need for Proposed Action: Exemptions to 10 CFR 50.46, Appendix K to 10 CFR 50, 10 CFR 50.44, and 10 CFR 51.52 are needed because these regulations include specific references to fuel pellets enclosed in Zircaloy tubes. Zircaloy is a zirconium based alloy and is currently in use as cladding for fuel pellets.

The licensee plans to use some ZIRLO™ cladding which is similar to Zircaloy except for slight reductions in the content of tin, iron, chromium, and zirconium, and the addition of a nominal one percent niobium to improve corrosion resistance. Since the regulations 10 CFR 50.46, 10 CFR 50 Appendix K, 10 CFR 50.44, and 10 CFR 51.52 include specific references to fuel pellets enclosed in Zircaloy tubes, exemptions to the subject regulations are required to allow use of ZIRLO™ cladding. The NRC staff has reviewed the chemical compositions of ZIRLO™ and Zircaloy claddings and found no significant difference between them. Therefore, a special circumstance exists in which application of the subject regulations is not necessary to achieve their underlying purposes and thus, an exemption is authorized by 10 CFR 50.12.

The underlying purpose of 10 CFR 50.46 and Appendix K to 10 CFR 50 is to establish requirements for design calculations of emergency core cooling systems. The licensee, as part of its proposal for TS changes to allow use of two fuel assemblies with ZIRLO™ cladding, addressed ECCS performance. The NRC staff, based on its review, has concluded that the licensee's evaluation of two fuel assemblies with ZIRLO™ cladding meets 10 CFR 50.46 and Appendix K to 10 CFR 50 requirements for ECCS performance.

The purpose of 10 CFR 50.44 is to ensure that a means is provided to control 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 ZIRLO™ cladding has no significant effect on the previous assessment of hydrogen gas production.

10 CFR 51.52 addresses environmental effects of transportation of fuel and waste. Specifically, 10 CFR 51.52(a) requires a statement of compliance in a licensee's environmental report 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 ZIRLO™ cladding is not significantly different from Zircaloy, a detailed analysis is not necessary.

nmental Impact of the Proposed Action: The proposed exemption involves features located entirely within the restricted area as defined in 10 CFR Part 20. It does not affect the potential for radiological accidents and does not involve a significant increase in the amounts, or change in the types of any effluent that may be released offsite. There is no significant increase in individual or cumulative occupational exposure. The ZIRLO™ clad fuel assemblies meet the same design bases as the existing fuel with Zircaloy cladding. No safety limits have been changed or setpoints altered as a result of the use of these new fuel assemblies. The Final Safety Analysis Report (FSAR) analyses are bounding for the ZIRLO™ clad fuel assemblies as well as for the remainder of the core. The fuel system design with the ZIRLO™ cladding has been previously reviewed by the Commission's staff and found to perform satisfactorily under conditions representative of a reactor environment. Even in the unlikely case of gross fuel failure, the number of rods involved (a maximum of 24 rods will use the ZIRLO™ cladding) is less than 0.05 % of the core and therefore, does not represent a prohibitively large inventory of radioactive material which could be released into the reactor coolant. Thus, the fuel failure would have an insignificant environmental impact and is bounded by previous assessments. The small number of fuel rods involved in conjunction with the chemical similarity of the ZIRLO™ cladding to Zircaloy cladding ensures that hydrogen production would not be significantly different from previous assessments. As a result,

the proposed exemption does not affect the consequences of radiological accidents. Consequently, the Commission concludes that there are no significant radiological impacts associated with the proposed exemption.

With regard to potential nonradiological impacts, the proposed exemption does not affect nonradiological effluent and has no other environmental impact. Therefore, the Commission concludes that there are no significant nonradiological impacts associated with the proposed exemption.

With regard to the potential environmental impacts associated with the transportation of the ZIRLO™ clad fuel assemblies, there is no impact on previous assessments determined in accordance with 10 CFR 51.52.

Alternative to the Proposed Action: Because the Commission's staff has concluded that there is no significant environmental impact associated with the proposed exemption, any alternative to this exemption will have either no significantly different environmental impact or greater environmental impact. The principal alternative would be to deny the requested use of ZIRLO™ cladding. This would not reduce environmental impacts as a result of plant operations.

Alternative Use of Resources: This action does not involve the use of resources not previously considered in connection with the "Applicants Environmental Report, Operating License Stage of Vogtle Electric Generating Plant, Units 1 and 2."

Agencies and Persons Consulted: The Commission's staff did not consult other agencies or persons.

FINDING OF NO SIGNIFICANT IMPACT

The Commission has determined not to prepare an environmental impact statement for the proposed exemption. Based upon the above environmental assessment, we conclude that the proposed action will not have a significant effect on the quality of the human environment.

For further details with respect to this action, see the application for amendments dated June 3, 1991, which is available for public inspection at the Commission's Public Document Room, 1717 H Street, NW., Washington, DC and at the Burke County Public Library, 412 Fourth Street, Waynesboro, Georgia 30830.

Dated at Rockville, Maryland, this 25th day of September 1991.

FOR THE NUCLEAR REGULATORY COMMISSION

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