

May 22, 1995

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

SUBJECT: ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT
IMPACT FOR AN EXEMPTION FROM 10 CFR 50.60, "ACCEPTANCE CRITERIA
FOR FRACTURE PREVENTION MEASURES FOR LIGHT-WATER NUCLEAR POWER
REACTORS FOR NORMAL OPERATION" - VOGTLE ELECTRIC GENERATING PLANT,
UNITS 1 AND 2 (TAC NOS. M90966 AND M90967)

Dear Mr. McCoy:

Enclosed is the Environmental Assessment and Finding of No Significant Impact related to your application for an exemption dated October 3, 1994, as supplemented by letter dated March 1, 1995. The proposed exemption would permit the use of the American Society of Mechanical Engineers Code Case N-514, "Low Temperature Overpressure Protection," as an acceptable alternative to certain requirements of Appendices G and H to 10 CFR 50.60, "Acceptance Criteria for Fracture Prevention Measures for Light-Water Nuclear Power Reactors for Normal Operation," for determining the acceptable low temperature overpressure protection setpoints for the Vogtle Electric Generating Plant (VEGP), Units 1 and 2.

This assessment is being forwarded to the Office of the Federal Register for publication.

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

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PDR ADOCK 05000424
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Docket Nos. 50-424
and 50-425

Enclosure:
Environmental Assessment

cc w/enclosure:
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DATE	5/18/95		5/18/95	1/195	5/19/95	5/22/95



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

May 22, 1995

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Vice President - Nuclear
Vogtle Project
Georgia Power Company
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This assessment is being forwarded to the Office of the Federal Register for publication.

Sincerely,

A handwritten signature in cursive script, reading "Louis L. Wheeler", is written over the typed name.

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

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Environmental Assessment

cc w/enclosure:
See next page

Mr. C. K. McCoy
Georgia Power Company

Vogtle Electric Generating Plant

cc:

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UNITED STATES NUCLEAR REGULATORY COMMISSION
GEORGIA POWER COMPANY, ET AL
DOCKET NOS. 50-424 AND 50-425
VOGTLE ELECTRIC GENERATING PLANT, UNITS 1 AND 2
ENVIRONMENTAL ASSESSMENT AND FINDING OF
NO SIGNIFICANT IMPACT

The U. S. Nuclear Regulatory Commission (the Commission) is considering issuance of an exemption from certain requirements of its regulations to Facility Operating License Nos. NPF-68 and NPF-84, issued to Georgia Power Company, et al. (the licensee) for operation of the Vogtle Electric Generating Plant (Vogtle), Units 1 and 2, located at the licensee's site in Burke County, Georgia.

ENVIRONMENTAL ASSESSMENT

Identification of Proposed Action:

The proposed action would grant an exemption from certain requirements of 10 CFR 50.60, "Acceptance Criteria for Fracture Prevention Measures for Light-Water Nuclear Power Reactors for Normal Operation," to allow application of an alternate methodology to determine the low temperature overpressure protection (LTOP) setpoint for Vogtle. The proposed alternate methodology is consistent with guidelines developed by the American Society of Mechanical Engineers (ASME) Working Group on Operating Plant Criteria (WGOPC) to define pressure limits during LTOP events that avoid certain unnecessary operational restrictions, provide adequate margins against failure of the reactor pressure vessel, and reduce the potential for unnecessary activation of pressure-relieving devices used for LTOP. These guidelines have been incorporated into Code Case N-514, "Low Temperature Overpressure Protection," that has been

approved by the ASME Code Committee. The content of this Code case has been incorporated into Appendix G of Section XI of the ASME Code and published in the 1993 Addenda to Section XI. The NRC staff is revising 10 CFR 50.55a that will endorse the 1993 Addenda and Appendix G of Section XI into the regulations.

The philosophy used to develop Code Case N-514 guidelines is to ensure that the LTOP limits are still below the pressure/temperature (P/T) limits for normal operation, but allow the pressure that may occur with activation of pressure-relieving devices to exceed the P/T limits, provided acceptable margins are maintained during these events. This philosophy protects the pressure vessel from LTOP events, and still maintains the Technical Specification P/T limits applicable for normal heatup and cooldown in accordance with Appendix G to 10 CFR Part 50 and Sections III and XI of the ASME Code.

The proposed action is in accordance with the licensee's application for an exemption to 10 CFR 50.60 dated October 3, 1994, as supplemented by letter dated March 1, 1995.

The Need for the Proposed Action:

Section 50.60 states that all light-water nuclear power reactors must meet the fracture toughness and material surveillance program requirements for the reactor coolant pressure boundary as set forth in Appendices G and H to 10 CFR Part 50. Appendix G to 10 CFR Part 50 defines P/T limits during any condition of normal operation, including anticipated operational occurrences and system hydrostatic tests, to which the pressure boundary may be subjected over its service lifetime. Section 50.60(b) specifies that alternatives to the described requirements in Appendices G and H to 10 CFR Part 50 may be used when an exemption is granted by the Commission under 10 CFR 50.12.

To prevent transients that would produce pressure excursions exceeding the Appendix G P/T limits while the reactor is operating at low temperatures, the licensee installed an LTOP system. The LTOP system includes pressure relieving devices in the form of Power-Operated Relief Valves (PORVs) that are set at a pressure low enough that if a transient occurred while the coolant temperature is below the LTOP enabling temperature, they would prevent the pressure in the reactor vessel from exceeding the Appendix G P/T limits. To prevent these PORVs from lifting as a result of normal operating pressure surges (e.g., reactor coolant pump starting, and shifting operating charging pumps) with the reactor coolant system in a water solid condition, the operating pressure must be maintained below the PORV setpoint.

In addition, in order to prevent cavitation of a reactor coolant pump, the operator must maintain a differential pressure across the reactor coolant pump seals. Therefore, the licensee must operate the plant in a pressure window that is defined as the difference between the minimum required pressure to start a reactor coolant pump and the operating margin to prevent lifting of the PORVs due to normal operating pressure surges. The licensee's proposed LTOP analysis includes changes to account for the non-conservatism identified in Westinghouse Nuclear Safety Advisory Letter 93005A and Information Notice 93-58. The new analysis accounts for the static head due to elevation differences and the dynamic head effect of four reactor coolant pumps (RCP) operation. By including these factors and using the Appendix G safety margins, the licensee determined that the operating margin to the PORV setpoint would be depleted at approximately 120°F for Unit 1 and 145°F for Unit 2. Therefore, operating with these limits could result in the lifting of the PORVs and cavitation of the RCPs during normal operation.

The licensee proposed that in determining the PORV setpoint for LTOP events for Vogtle Units 1 and 2, the allowable pressure be determined using the safety margins developed in an alternate methodology, in lieu of the safety margins required by Appendix G to 10 CFR Part 50. Designated Code Case N-514, the proposed alternate methodology is consistent with guidelines developed by the American Society of Mechanical Engineers (ASME) Working Group on Operating Plant Criteria to define pressure limits during LTOP events that avoid certain unnecessary operational restrictions, provide adequate margins against failure of the reactor pressure vessel, and reduce the potential for unnecessary activation of pressure-relieving devices used for LTOP. Code Case N-514, "Low Temperature Overpressure Protection," has been approved by the ASME Code Committee. The content of this Code case has been incorporated into Appendix G of Section XI of the ASME Code and published in the 1993 Addenda to Section XI. The NRC staff is revising 10 CFR 50.55a, which will endorse the 1993 Addenda and Appendix G of Section XI into the regulations.

An exemption from 10 CFR 50.60 is required to use the alternate methodology for calculating the maximum allowable pressure for the LTOP setpoint. By letter dated October 3, 1994, as supplemented by letter dated March 1, 1995, the licensee requested an exemption from 10 CFR 50.60 for this purpose.

In addition to requesting the exemption from 10 CFR 50.60, the licensee proposed an amendment to the Technical Specifications revising the LTOP analysis. The new analysis removes the non-conservatism as described previously. The amendment will be evaluated separate from this exemption request.

Environmental Impacts of the Proposed Action:

Appendix G of the ASME Code requires that the P/T limits be calculated:

(a) using a safety factor of 2 on the principal membrane (pressure) stresses, (b) assuming a flaw at the surface with a depth of one-quarter (1/4) of the vessel wall thickness and a length of six (6) times its depth, and (c) using a conservative fracture toughness curve that is based on the lower bound of static, dynamic, and crack arrest fracture toughness tests on material similar to the McGuire reactor vessel material.

In determining the PORV setpoint for LTOP events, the licensee proposed to use safety margins based on an alternate methodology consistent with the proposed ASME Code Case N-514 guidelines. The ASME Code Case N-514 allows determination of the setpoint for LTOP events such that the maximum pressure in the vessel would not exceed 110% of the P/T limits of the existing ASME Appendix G requirements. This results in a safety factor of 1.8 on the principal membrane stresses. All other factors, including assumed flaw size and fracture toughness, remain the same. Although this methodology would reduce the safety factor on the principal membrane stresses, use of the proposed criteria will provide adequate margins of safety to the reactor vessel during LTOP transients and will satisfy the underlying purpose of 10 CFR 50.60 for fracture toughness requirements.

The change will not increase the probability or consequences of accidents, no changes are being made in the types of any effluents that may be released offsite, and there is no significant increase in the allowable individual or cumulative occupational radiation exposure. Accordingly, the Commission concludes that there are no significant radiological environmental impacts associated with the proposed action.

With regard to potential non-radiological impacts, the proposed change involves use of more realistic safety margins for determining the PORV setpoint during LTOP events. It does not affect non-radiological plant effluents and has no other environmental impact. Therefore, the Commission concludes that there are no significant non-radiological environmental impacts associated with the proposed exemption.

Alternative to the Proposed Action:

Since the Commission has concluded there is no measurable environmental impact associated with the proposed action, any alternatives with equal or greater environmental impact need not be evaluated. As an alternative to the proposed action, the staff considered denial of the proposed action. Denial of the application would result in no change in current environmental impacts. The environmental impacts of the proposed action and the alternative action are similar.

Alternative Use of Resources:

This action did not involve the use of any resources not previously considered in the Final Environmental Statement related to operation of the Vogtle Electric Generating Plant.

Agencies and Persons Consulted:

In accordance with its stated policy, on May 23, 1995, the staff consulted with the Georgia State official, Mr. James L. Setser of the Georgia Department of Natural Resources, regarding the environmental impact of the proposed action. The state official had no comments.

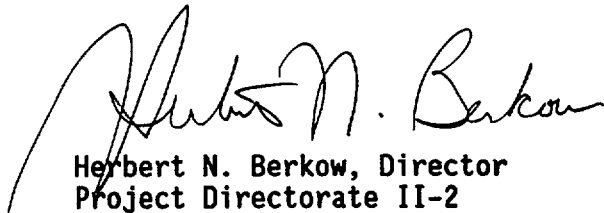
FINDING OF NO SIGNIFICANT IMPACT:

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

For further details with respect to this action, see the licensee's letter dated October 3, 1994, as supplemented by letter dated March 1, 1995, which are available for public inspection at the Commission's Public Document Room, 2120 L Street, NW., Washington, DC and at the local public document room located at the Burke County Library, 412 Fourth Street, Waynesboro, Georgia 30830.

Dated at Rockville, Maryland, this 22nd day of May 1995.

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in black ink, appearing to read "Herbert N. Berkow". The signature is fluid and cursive, with a large initial "H" and "B".

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