

March 29, 1999

Mr. W. R. McCollum, Jr.  
Vice President, Oconee Site  
Duke Energy Corporation  
P. O. Box 1439  
Seneca, SC 29679

SUBJECT: EXEMPTION FROM THE REQUIREMENTS OF 10 CFR PART 50,  
SECTION 50.60 AND APPENDIX G - OCONEE NUCLEAR STATION,  
UNITS 1, 2, AND 3 (TAC NOS. MA3829, MA3830, AND MA3831)

Dear Mr. McCollum:

The Commission has issued the enclosed exemption from certain requirements of Title 10 of the Code of Federal Regulations, Part 50, Section 50.60 and Appendix G. This exemption is related to your application dated October 15, 1998, as supplemented December 17, 1998, and January 11 and 21, 1999, and allows you to apply the methodology of the American Society of Mechanical Engineers Code Case N-514 as the basis for establishing the setpoints of the low temperature overpressure protection systems at Oconee Nuclear Station, Units 1, 2, and 3.

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

Sincerely,  
ORIGINAL SIGNED BY:  
David E. LaBarge, Senior Project Manager  
Project Directorate II-2  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Docket Nos. 50-269, 50-270, and 50-287

Enclosure: Exemption

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UNITED STATES  
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

March 29, 1999

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Vice President, Oconee Site  
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Sincerely,

A handwritten signature in black ink, appearing to read "D. E. LaBarge".

David E. LaBarge, Senior Project Manager  
Project Directorate II-2  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Docket Nos. 50-269, 50-270, and 50-287

Enclosure: Exemption

cc w/encl: See next page

Oconee Nuclear Station

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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

In the Matter of )  
DUKE ENERGY CORPORATION ) Docket Nos. 50-269, 50-270, and 50-287  
(Oconee Nuclear Station, Units 1, 2, and 3) )

EXEMPTION

I.

The Duke Energy Corporation (Duke/the licensee) is the holder of Facility Operating License Nos. DPR-38, DPR-47, and DPR-55, that authorize operation of the Oconee Nuclear Station, Units 1, 2, and 3 (Oconee), respectively. The licenses provide, among other things, that the facilities are subject to all rules, regulations, and orders of the U.S. Nuclear Regulatory Commission (the Commission) now or hereafter in effect.

The facilities consist of pressurized water reactors located on Duke's Oconee site in Seneca, Oconee County, South Carolina.

II.

Title 10 of the Code of Federal Regulations (10 CFR) Part 50, Appendix G requires that pressure-temperature (P-T) limits be established for reactor pressure vessels (RPVs) during normal operating and hydrostatic or leak rate testing conditions. Specifically, 10 CFR Part 50, Appendix G states that "[t]he appropriate requirements on...the pressure-temperature limits and minimum permissible temperature must be met for all conditions." Pressurized water reactor

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licensees have installed cold overpressure mitigation systems/low temperature overpressure protection (LTOP) systems in order to protect the reactor coolant pressure boundaries (RCPBs) from being operated outside of the boundaries established by the P-T limit curves and to provide pressure relief of the RCPBs during low temperature overpressurization events. The licensee is required by the Oconee Units 1, 2, and 3 Technical Specifications (TSs) to update and submit the changes to its LTOP setpoints whenever the licensee is requesting approval for amendments to the P-T limit curves in the Oconee Units 1, 2, and 3 TSs.

In the submittal of October 15, 1998, the licensee requested that the staff exempt Oconee Units 1, 2, and 3 from the application of specific requirements of 10 CFR Part 50, Section 50.60 and Appendix G. Specifically, the licensee proposed to use the American Society of Mechanical Engineers (ASME) Code Case N-514 to permit setting the pressure setpoint of the facility's LTOP such that the P-T limits required by 10 CFR Part 50, Appendix G could be exceeded by 10 percent during a low temperature overpressure transient.

The licensee noted that the underlying purpose of the subject regulations is to establish limits to protect the RPVs from brittle failure during low temperature operation and the LTOP provides a physical means of protecting these limits.

The Reactor Coolant System P-T operating window at low temperatures is defined by the LTOP setpoint. Implementation of an LTOP setpoint without the additional margin of 10 percent allowed by the ASME Code Case N-514 would restrict the P-T operating window and would potentially result in undesired actuation of the LTOP system. This constitutes an unnecessary burden that can be alleviated by the application of the Code Case and reduce the potential for an undesired lift of the LTOP valve.

The licensee stated that establishing the LTOP pressure setpoints in accordance with the provisions in Code Case N-514 would provide an acceptable level of safety against overpressurization events of the Oconee RPVs. The licensee stated that establishing the LTOP

setpoints in accordance with N-514 provisions such that the vessel pressure would not exceed 110 percent of the P-T limit allowables would still provide an acceptable level of safety and mitigate the potential for an inadvertent actuation of the LTOP. The Code Case dictates that when the LTOP system is enabled, the peak pressure resulting from an LTOP design-basis transient will not exceed 110 percent of the pressure limits established by the P-T limit curves for the plant, as required by 10 CFR Part 50, Appendix G, and by Appendix G to the Code. The Code Case also requires that the LTOP system be enabled at a temperature of 200 °F or at a temperature value equivalent to the sum of the limiting adjusted reference temperature (ART) + 50 °F, whichever is greater. The staff has previously found for several other nuclear power plants that Code Case N-514 provides an "acceptable level of safety" based on the amount of conservatism that has been explicitly incorporated into the methodologies for generating P-T limit curves, as prescribed in 10 CFR Part 50, Appendix G; Appendix G to the Code; and RG 1.99, Revision 2. The conservatism includes: (1) a safety factor of 2 on the pressure stresses; (2) a margin factor applied to the calculation of ART values in accordance with the methodology of RG 1.99, Revision 2; (3) an assumed flaw of one-fourth of the vessel section thickness from the inside wetted surface in the vessel beltline region with a 6:1 aspect ratio; and (4) a limiting material toughness based on dynamic crack arrest data. The staff has reviewed the proposed application of this Code Case to Oconee Units 1, 2, and 3, and found it to be acceptable.

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. As stated in 10 CFR 50.12(a)(2)(ii), special circumstances exist when application of the regulation would not serve or is not necessary to achieve the underlying purpose of the rule. The staff has determined that an exemption would be required to approve the use of Code Case N-514. The staff has further determined that special circumstances are present, in that application of the regulation under these circumstances is not necessary to achieve the underlying purpose of the rule and use of Code Case N-514 would meet the underlying intent of the regulation. Based upon a consideration of the conservatism that is explicitly incorporated into the methodologies of 10 CFR Part 50, Appendix G; Appendix G of the Code; and RG 1.99, Revision 2, the staff concluded that permitting the LTOP setpoints to be established at the level specified in the Code Case (e.g., less than or equal to 110 percent of the limit defined by the P-T limit curves) would provide an adequate margin of safety against brittle failure of the RPVs. This is also consistent with the determination that the staff has reached for other licensees under similar conditions based on the same considerations. Therefore, the staff concludes that requesting the exemption under the special circumstances of 10 CFR 50.12(a)(2)(ii) is appropriate and that the methodology of Code Case N-514 may be used to establish the LTOP setpoints for the Oconee Units 1, 2, and 3 reactor coolant system.

#### IV.

Accordingly, the Commission has determined that, pursuant to 10 CFR 50.12(a), the 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 Duke an exemption from the requested specific requirements of 10 CFR Part 50, Section 50.60 and Appendix G, for Oconee Nuclear Station, Units 1, 2, and 3.

Pursuant to 10 CFR 51.32, the Commission has determined that the granting of this exemption will not result in any significant effect on the quality of the human environment (64 FR 14950, dated March 29, 1999).

This exemption is effective upon issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

ORIGINAL SIGNED BY:

Samuel J. Collins, Director  
Office of Nuclear Reactor Regulation

Dated at Rockville, Maryland, this 29th day of March 1999.

\* See previous concurrence

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OFFICE	AD-NRR	D-NRR
NAME	BSheron	SCollins
DATE	3/26/99	3/29/99

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Pursuant to 10 CFR 51.32, the Commission has determined that the granting of this exemption will not result in any significant effect on the quality of the human environment (64 FR 14950, dated March 29, 1999).

This exemption is effective upon issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

  
Samuel J. Collins, Director  
Office of Nuclear Reactor Regulation

Dated at Rockville, Maryland, this 29th day of March 1999.