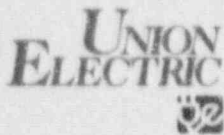


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August 22, 1997

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
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Washington, D. C. 20555-0001

ULNRC-03638

Gentlemen:

CALLAWAY PLANT
DOCKET NUMBER 50-483
EXEMPTION TO 10CFR50.60,
"Acceptance Criteria for Fracture Prevention for
Lightwater Nuclear Power Reactors for Normal Operation"

Union Electric Company herewith transmits a request for exemption to 10CFR50.60 "Acceptance Criteria for Fracture Prevention for Lightwater Nuclear Power Reactors for Normal Operation". We request this exemption in order to apply the guidance in American Society of Mechanical Engineers Code Case N-514, "Low Temperature Overpressure Protection", in lieu of those specified by 10CFR50, Appendix G.

This exemption supports an amendment to the Callaway Technical Specifications (to be submitted prior to October 1, 1997) which will revise the heatup, cooldown, and Cold Overpressure Mitigating System curves. As such, review and approval of this exemption is requested by March 1, 1998 so that it can be incorporated consistent with the amendment and prior to Refuel 9. If you have any questions concerning this request, please contact us.

Very truly yours,

A handwritten signature in cursive script that reads "Alan C. Passwater".

Alan C. Passwater
Manager-Licensing and Fuels

070097

Attachment: Exemption Request



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P PDR

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10CFR50.60 Exemption Request

Union Electric requests exemption from the requirements of 10CFR50.60 in accordance with the guidance specified in 10CFR50.12(a)(2). This exemption would permit using the safety margins recommended in American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code Case N-514, "Low Temperature Overpressure Protection", in lieu of the safety margins required by 10CFR50, Appendix G.

To prevent transients that would result in pressure increases greater than 10CFR50, Appendix G pressure/temperature (P/T) limits while at low temperatures, Union Electric has a Cold Overpressure Mitigation System (COMS). The pressure actuation setpoint has been established such that if a transient occurred, the COMS would prevent the pressure in the reactor vessel from exceeding the P/T limits of 10CFR50, Appendix G. The pressure actuation setpoint must also be high enough to prevent the inadvertent actuation of the COMS as a result of normal operating pressure surges. Application of the various instrument and calculation uncertainties has resulted in a COMS actuation setpoint that established an operating window that is too narrow to permit reasonable system makeup and pressure control.

To allow for an increased operating band to permit system makeup and pressure control, Union Electric requests use of ASME Code Case N-514, which designates the allowable pressure as 110% of that specified by 10CFR50, Appendix G. ASME Code Case N-514 is consistent with guidelines developed by the ASME Working Group on Operating Plant Criteria to define pressure limits during low temperature overpressure protection (LTOP) events. The defined pressure limits avoid certain unnecessary operational restrictions, provide adequate margins against failure of the reactor pressure vessel, and reduce the potential for unnecessary actuation of pressure-relieving devices used for LTOP. 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 and has been incorporated into the latest draft of Regulatory Guide 1.147 (Draft DG 1050, dated May 1997).

Pursuant to 10CFR50.12, 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 10CFR50.12(a)(2)(ii), special circumstances are present whenever application of the regulation

in question is not necessary to achieve the underlying purpose of the rule.

It is our position that per 10CFR50.12(a)(2)(ii), special circumstances are present such that "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 10CFR50, Appendix G is to establish fracture toughness requirements for ferritic materials of pressure-retaining components of the reactor coolant pressure boundary to provide adequate margins of safety during any condition of normal operation.

Appendix G of ASME Section XI requires that the P/T limits be established (a) using a safety factor of two (2) on the principle membrane (pressure) stresses; (b) assuming a flaw at the surface with a depth of one-quarter (1/4) of the vessel wall thickness and the length of six (6) times its depth; and (c) using a conservative fracture toughness curve that is based on the lower band of static, dynamic, and crack arrest fracture toughness tests on material similar to the Callaway reactor vessel material.

In determining the setpoint for LTOP events, we propose to use safety margins based on an alternate methodology consistent with the 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 Code Appendix G. This results in a safety factor of 1.8 on the principle 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 stress, the proposed criteria will provide adequate margins of safety on the reactor vessel during LTOP transients, and thus will satisfy the underlying purpose of 10CFR50.60 for fracture toughness requirements. Further, by relieving the operational restrictions, the potential for undesirable COMS actuation would be reduced, thereby improving plant safety.