

October 9, 1998

FOR: The Commissioners

FROM: L. Joseph Callan /s/  
Executive Director for Operations

SUBJECT: PROPOSED REVISION OF APPENDIX K TO TITLE 10 PART 50 OF THE CODE OF FEDERAL REGULATIONS (10 CFR PART 50)

## PURPOSE:

To inform the Commission of the staff's plans regarding a proposed relaxation of Appendix K, "ECCS Evaluation Models," to 10 CFR Part 50, to facilitate small, but cost-beneficial power uprates.

## BACKGROUND:

Appendix K was written to define conservative analysis assumptions for emergency core cooling system (ECCS) performance analyses during design-basis loss-of-coolant accidents (LOCAs). Large margins for important safety parameters (e.g., fuel cladding oxidation) were provided by conservatively selecting the ECCS performance criteria as well as conservatively establishing ECCS calculational requirements. One conservative requirement is to assume in the calculation that the reactor is operating at 102-percent power. The opening sentence of Appendix K to 10 CFR Part 50 establishes the requirement to conduct ECCS analyses at a specified power level: "it shall be assumed that the reactor has been operating continuously at a power level at least 1.02 times the licensed power level (to allow for such uncertainties as instrumentation error)."

## DISCUSSION:

Several licensees have recently informed the staff of their plans for using improved flow measurement technology in their plants. Licensees also plan to request credit for these improvements in power uprate license submittals. One such system is described in the Caldon, Inc., Topical Report No. ER-80P, "Improving Thermal Power Accuracy and Plant Safety While Increasing Operating Power Level Using the LEFM System." The topical report has been submitted to the NRC for review by Texas Utilities Electric Company (TUE), in support of their requested exemption to Appendix K. The licensee proposes that use of the Caldon LEFM flow instrument results in a power measurement uncertainty of approximately 1 percent or less. By being allowed to take credit for this flow measurement uncertainty, the resultant power measurement uncertainty is commensurately reduced. Allowing credit for this lower uncertainty through an exemption to the 102 percent power uncertainty requirement of 10 CFR 50 Appendix K will allow the plant to increase power by approximately 1 percent without revising ECCS analyses. The Caldon topical report includes risk and reliability information to help form the basis for its argument that plant safety is not adversely affected by increasing licensed reactor power while relying on current safety analyses. In its evaluation of the exemption request and the anticipated power uprate amendment request for Comanche Peak, the staff expects to use Regulatory Guide 1.174, "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Current Licensing Basis," and Standard Review Plan Chapter 19. TUE intends to submit the power uprate amendment request in December 1998.

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On July 14, 1998, the staff met with representatives of TUE to discuss licensing submittals for a proposed power uprate license amendment. Also present at the meeting were representatives of Caldon and six other licensees (Arizona Public Service, Commonwealth Edison, Florida Power & Light, Niagara Mohawk, Northern States Power, and Tennessee Valley Authority). Based upon the attendance at this meeting, the staff believes that there is a high likelihood of additional exemption requests being submitted if the TUE exemption request and power uprate are approved. If the staff concludes that the Caldon topical report is acceptable, the staff believes that a rulemaking should be instituted to change Appendix K in order to avoid the need to issue repetitive exemptions. Such rulemaking would be pursued independent of the current staff effort to evaluate options for making Part 50 more risk-informed, because of the cost-beneficial nature of such a change to Appendix K, and because initial evaluations suggest a low risk significance to the change.

The Office of the General Counsel has no legal objections to this paper.

## SCHEDULING:

The Appendix K exemption request review for Comanche Peak is underway and should be complete by the end of calendar year 1998. As information from that review becomes available, the staff will prepare a rulemaking plan and seek Commission approval to begin rulemaking activities. The staff expects to submit the rulemaking plan in December 1998.

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