



April 13, 1993

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ULNRC-2790

Gentlemen:

DOCKET NUMBER 50-483

CALLAWAY PLANT

CHANGE TO MODERATOR TEMPERATURE COEFFICIENT BASES

- References: 1. ULNRC-2528 dated December 6, 1991,  
Temporary Waiver of Compliance from  
Technical Specification 3.1.1.3  
Moderator Temperature Coefficient
2. ULNRC-2532 dated December 12, 1991,  
Revisions to Cycle 5 COLR EOL and 300  
ppm Surveillance MTC Limits

Union Electric Company herewith transmits changes to the Bases for Callaway Technical Specification 3/4.1.1.3, Moderator Temperature Coefficient. The references cited above provide discussions related to this issue as it affected operations during Cycle 5.

The purpose of the attached changes is to revise the manner in which the accident analysis Moderator Density Coefficient (MDC) is converted into the End of Cycle Life (EOL) Moderator Temperature Coefficient (MTC) Limiting Condition for Operation (hereafter EOL MTC LCO) and, subsequently, into a 300 ppm surveillance limit. The accident analysis MDC is based on EOL, hot full power, 0 ppm boron conditions with all control and shutdown banks fully inserted (ARI). The accident analysis MDC, corresponding to the most negative MTC, is used to calculate its corresponding analytical MTC limit based on the rate of change of moderator density with temperature at rated thermal power conditions. This analytical MTC limit for an ARI condition is then modified to reflect an all rods out (ARO) condition in order to arrive at a Technical Specification limit that can be directly compared against measured values. This EOL MTC LCO, listed in the Core Operating Limits Report (COLR), considers the difference in MTC associated with an ARI core condition vs. an ARO core condition. This MTC difference is much greater than that between a core

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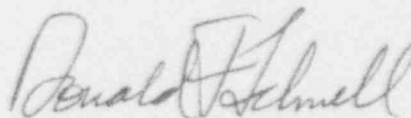
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condition of rods inserted to their insertion limits and all rods withdrawn. In other words, the current Bases approach results in an unduly restrictive, more positive (less negative) EOL MTC LCO since it does not account for the Technical Specification rod insertion limits. The new approach considers each plant parameter that can affect MTC (i.e. soluble boron concentration, moderator temperature and pressure, rod insertion, axial power shape, and xenon concentration) separately and assesses the sensitivity of changes in that parameter, within its applicable Technical Specification limits, on EOL MTC. The sum of these impact assessments is then used to establish the difference between the analytical MTC limit and the EOL MTC LCO. After adding a further allowance to this EOL MTC LCO to account for less burnup and higher soluble boron concentration, a 300 ppm equilibrium boron concentration surveillance limit is determined and also specified in the COLR. No changes to the Technical Specifications themselves are involved since the LCO and 300 ppm surveillance limits are specified in the COLR. A future COLR revision will document the changes to these values.

If you have any questions on the attached changes, please contact us.

Very truly yours,



Donald F. Schnell

GGY/dls

Attachments

STATE OF MISSOURI     )  
                              )     S S  
CITY OF ST. LOUIS     )

Donald F. Schnell, of lawful age, being first duly sworn upon oath says that he is Senior Vice President-Nuclear and an officer of Union Electric Company; that he has read the foregoing document and knows the content thereof; that he has executed the same for and on behalf of said company with full power and authority to do so; and that the facts therein stated are true and correct to the best of his knowledge, information and belief.

By Donald F. Schnell  
Donald F. Schnell  
Senior Vice President  
Nuclear

SUBSCRIBED and sworn to before me this 13th day  
of April, 1993.

Barbara J. Pfaff  
BARBARA J. PFAFF  
NOTARY PUBLIC, STATE OF MISSOURI  
MY COMMISSION EXPIRES APRIL 22, 1993  
ST. LOUIS COUNTY

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