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 AUTH. NAME: MCCARTHY, D.C. AUTHOR AFFILIATION: Carolina Power & Light Co.
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SUBJECT: Provides 30 day rept for plant Unit 2 re estimated effect of changes or errors in ECCS evaluation models or application of models per 10CFR50.46.

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MAY 20 1993

SERIAL: NLS-93-132
10 CFR 50.46

United States Nuclear Regulatory Commission
ATTENTION: Document Control Desk
Washington, DC 20555

H. B. ROBINSON STEAM ELECTRIC PLANT, UNIT NO. 2
DOCKET NO. 50-261/LICENSE NO. DPR-23

THIRTY-DAY REPORT PURSUANT TO 10 CFR 50.46 - LARGE BREAK LOCA

Gentlemen:

The purpose of this letter is to provide a 30-day report pursuant to 10 CFR 50.46(a)(3)(ii) for the H. B. Robinson Steam Electric Plant, Unit No. 2 (HBR2) regarding the estimated effect of changes or errors in Emergency Core Cooling System (ECCS) evaluation models or in the application of the models. The fuel vendor, Siemens Power Corporation (SPC), has recently discovered two errors in the postulated large break Loss of Coolant Accident (LOCA) evaluation previously submitted to the NRC on April 3, 1992. The errors result in a significant change in the analysis; however, these errors do not result in a substantial safety concern.

The two specific errors were input errors in the previously submitted large break LOCA analysis. The specific errors were the use of an incorrect value for the pellet densification in the fuel heat transfer software code (RODEX2) and the use of too large a time step in the peak cladding temperature (PCT) software code (TOODEE2). The pellet densification affects the gap size and thus affects the stored energy. The greater the densification, the larger the gap and the higher the stored energy at the initiation of the event. For the HBR2 analysis, a specific maximum densification value was input as a bounding value instead of using the default calculation. The value used was appropriate for the 94 percent Theoretical Density (TD) pellet, but not for the 95 percent TD pellet. Thus a very small densification was calculated by the heat transfer code (RODEX2), resulting in an underprediction of the stored energy. The output from the heat transfer program (RODEX2) is used in calculating the PCT.

The PCT program (TOODEE2) input error was the use of too large a time step to allow satisfactory convergence of the PCT calculation. Because the rate of temperature increase for the HBR2 analysis was relatively rapid, the exothermic metal water reaction was not coupled closely enough with the large time step. Therefore, the PCT at the end of each time step was slightly underpredicted.

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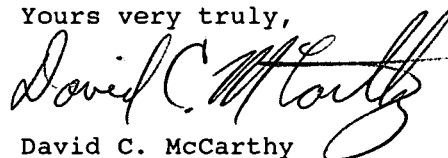
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The HBR2 small break LOCA analysis does not contain the heat transfer software input error, and the rate of temperature increase in the small break LOCA is slow enough that there was convergence in the PCT program calculation.

Correction of the two large break LOCA analysis input errors results in a significant (i.e., greater than 50°F) increase in the calculated PCT. However, the large break LOCA analysis that contained the errors was based on a very conservative core power distribution characterized by $F_Q = 2.50$ and $F_{\Delta H} = 1.75$. SPC has reevaluated the impact of the errors at core power distribution limits that more closely bound plant operation (i.e., $F_Q = 2.40$ and $F_{\Delta H} = 1.70$). The resulting PCT is 2134°F vs. the previously calculated PCT of 2146°F. In summary, there was sufficient conservatism in the core power peaking portion of the input data of the previous calculation to accommodate correction of the errors. The 10 CFR 50.46 LOCA requirements are satisfied at the maximum limits allowed for the plant, and CP&L concludes that the errors do not result in a substantial safety concern.

Questions regarding this matter may be referred to Mr. R. W. Prunty at (919) 546-7318.

Yours very truly,



David C. McCarthy
Manager

Nuclear Licensing Section

RES/jbw

cc: Mr. S. D. Ebnetter
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