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DAEC Plant Support Center
Operated by Nuclear Management Company, LLC

June 7, 2001
NG-01-0754

Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Station 0-P1-17
Washington, DC 20555-0001

Subject: Duane Arnold Energy Center
Docket No: 50-331
Op. License No: DPR-49
10 CFR 50.46 Special Report of Errors in Peak Cladding Temperature for the DAEC

References:
1. NG-00-1342, "10 CFR 50.46 Annual Report of Changes in Peak Cladding Temperature for the DAEC," dated August 15, 2000.
2. NG-00-1900, "Technical Specification Change Request (TSCR-042): 'Extended Power Uprate'," dated November 16, 2000.

File: A-105, A-225, J-60a

Dear Sir(s):

In accordance with 10 CFR 50.46(a)(3)(ii), Nuclear Management Company, LLC (NMC) hereby reports a significant change in the calculated peak cladding temperature (PCT) for the Duane Arnold Energy Center (DAEC).

Subsequent to our last annual report (Reference 1), we were notified by the General Electric Company (GE) of two related errors in our Design Basis Accident Loss-of-Coolant Accident (DBA-LOCA) analysis. The first error involves a miscalculation in the computer code which caused the condensation effect in the vessel lower plenum region to be overestimated. The correction of this error results in an increase of 45 °F in the previously reported Licensing Basis PCT (LBPCT) for the DAEC. This error is applicable to all fuel types currently in use at the DAEC. The second error causes a premature termination of the condensation effects due to Emergency Core Cooling System (ECCS) injection subcooling. The correction of this error results in an increase of 10 °F in the calculated LBPCT. Again, all fuel types currently in use at the DAEC are affected.

Notwithstanding any prior LBPCT errors, the new errors, in and of themselves, result in a cumulative PCT change of greater than the 50 °F reporting threshold under §50.46 (a)(3)(i). Although this is defined as a "significant change" under §50.46, the actual impact on safety is not significant. The DAEC has substantial margin, over 500 °F, to the 2200 °F PCT limit of §50.46 (b)(1), based upon the current licensing basis analysis, adjusted for all reported errors. In addition, the impact of these errors on the Upper Bound PCT (UBPCT) does not result in exceeding the 1600 °F limit imposed by the Staff's Safety Evaluation Report on the GE LOCA methodology.

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Independent of the above, a re-analysis of the DBA-LOCA has been performed for the GE10 and GE12 fuel designs as part of our Power Uprate application (Reference 2). This re-analysis corrected all the previously-identified errors affecting those fuel designs. However, the above-identified errors were discovered subsequent to the Power Uprate calculations. Therefore, all currently-used fuel designs at the DAEC, both the GE10 and GE12 previously utilized, as well as the recently-added GE14, will have PCT errors that result in a cumulative change of greater than the 50 °F reporting threshold, even after the approval of the Power Uprate LOCA analysis. However, adding these new errors to the Reference 2 results does not cause either the LBPCT or UBPCT to exceed their respective limit, again with substantial margin. Therefore, a specific re-analysis to correct these new errors is not required at this time.

Should you have any questions regarding this matter, please contact this office.

Sincerely,

Kenneth S. Putnam
Manager, Nuclear Licensing

cc: T. Browning
G. Van Middlesworth
J. Dyer (Region III)
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NRC Resident Office – DAEC
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