

June 4, 2001

Mr. Gary Van Middlesworth
Site General Manager
Duane Arnold Energy Center
Nuclear Management Company, LLC
3277 DAEC Road
Palo, IA 52324-9785

SUBJECT: DUANE ARNOLD ENERGY CENTER - REQUEST FOR ADDITIONAL
INFORMATION ON THE PROPOSED EXTENDED POWER UPRATE PROGRAM
(TAC NO. MB0543)

Dear Mr. Van Middlesworth:

The Nuclear Regulatory Commission (NRC) staff has reviewed your application dated November 16, 2000, for a license amendment in support of the proposed extended power uprate program at the Duane Arnold Energy Center (DAEC). As part of the review of the power uprate for DAEC, during the week of March 26, 2001, four members of the NRC staff visited the General Electric (GE) Facility, Global Nuclear Fuel at Wilmington, North Carolina, to audit material pertinent to your power uprate for DAEC. Material reviewed included the database used for the development of the GEXL14 correlation for the GE14 fuel, analyses of the anticipated transient without scram event, and loss-of-coolant accident analyses. The audit identified several open issues that resulted in the request for additional information (RAI) in the enclosure.

Your timely response to the enclosed RAI will assist us in meeting your schedule as discussed with Mr. Kenneth Putnam of your organization. If you have any questions regarding this issue, please contact me at 301-415-2020.

Sincerely,

/RA/

Brenda L. Mozafari, Project Manager, Section 1
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-331

Enclosure: As stated

cc w/encl: See next page

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Duane Arnold Energy Center

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REQUEST FOR ADDITIONAL INFORMATION
REGARDING THE PROPOSED EXTENDED POWER UPRATE
FOR THE DUANE ARNOLD ENERGY CENTER

During the week of March 26, 2001, four members of the Nuclear Regulatory Commission (NRC) staff visited the General Electric (GE) Facility, Global Nuclear Fuel, at Wilmington, North Carolina, to audit material pertinent to the proposed power uprate for the Duane Arnold Energy Center (DAEC). Material reviewed included the database used to develop GEXL14 Correlation for the GE14 fuel, analyses of the anticipated transient without scram event, and loss-of-coolant accident (LOCA) related analyses. The audit identified several open issues which are listed below in the form of a request for additional information.

- 1) The COBRAG computer code is the critical power ratio (CPR) methodology used to predict critical power behavior throughout the core. The NRC staff has not reviewed this code. The licensee for DAEC has indicated that COBRAG uses first principle models to predict boiling transition and the details of the flow field. Justify the adequacy of the COBRAG code in predicting, from "first principles," boiling transition phenomena in the upper portion of GE12 and GE14 fuels.
- 2) Describe the testing of the new GE14 fuel that was conducted to test the respective CPR correlations. Identify any additional data, available or planned, to substantiate and validate the correlations. Provide upskew or downskew data that has been collected to validate the GEXL10 or the GEXL14 correlations for use at DAEC.
- 3) In 1992, following an NRC Team Audit of GE11 fuel design compliance with Amendment No. 22 of NEDE-20411-PA, GE was encouraged to develop a procedure for implementing Amendment No. 22 criteria for new correlation development as defined in GESTARII. This procedure is documented in TDP-0117, Rev. 2, page 8. Explain how the procedure was applied in the development of the GEXL14 correlation for use at DAEC, especially with regard to items 3 and 4, given the apparent absence of raw data for upskew and downskew power profiles. Provide technical justification if the criteria of the Amendment No. 22 process criteria were not met.
- 4) The LOCA analysis of off-rated conditions (specifically, single-loop operation) assumes that the statistical adders developed for the SAFER code at rated conditions will apply. Justify the use of these adders for the single-loop operation at DAEC.

ENCLOSURE