

May 22, 2001  
NG-01-0700

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  
Response to Request for Additional Information (RAI) to Technical  
Specification Change Request (TSCR-042) – Extended Power Uprate  
(TAC # MB0543)

References: 1. NG-00-1900, "Technical Specification Change Request (TSCR-042):  
'Extended Power Uprate'," dated November 16, 2000.  
2. NG-01-0637, "Response to Request for Additional Information (RAI)  
to Technical Specification Change Request TSCR-042 – Extended  
Power Uprate. (TAC # MB0543)," May 10, 2001.

File: A-117, SPF-189

Dear Sir(s):

On May 11, 2001, a conference call was held with the NRC Staff to review a draft Request For Additional Information (RAI) on the Reference 1 amendment request. The proposed RAI had been provided to us electronically on May 10, 2001. As a result of this conference call, three questions were withdrawn from the electronic version of the draft RAI, as the requested information had been previously provided to the Staff in Reference 2 or the original submittal. The Attachment to this letter contains the remaining RAI and our Response.

No new commitments are being made in this letter.

Please contact this office should you require additional information regarding this matter.

A 001

This letter is true and accurate to the best of my knowledge and belief.

NUCLEAR MANAGEMENT COMPANY, LLC

By *Gary Van Middlesworth*  
Gary Van Middlesworth  
DAEC Site Vice-President

State of Iowa  
(County) of Linn

Signed and sworn to before me on this 22nd day of May, 2001,

by Gary Vanmiddlesworth.

*Nancy S. Franck*  
Notary Public in and for the State of Iowa



9-28-01  
Commission Expires

Attachment: DAEC Response to NRC Probabilistic Safety Assessment Branch  
Request for Additional Information Regarding Proposed Amendment for  
Power Uprate

cc: T. Browning  
R. Anderson (NMC)  
B. Mozafari (NRC-NRR)  
J. Dyer (Region III)  
D. McGhee (State of Iowa)  
NRC Resident Office  
Docu

DAEC Responses to  
NRC Probabilistic Safety Assessment Branch  
Request for Additional Information Regarding  
Proposed Amendment for Power Uprate

NRC Question: "How was the impact on shutdown risk assessed?"

DAEC Response:

While a Probabilistic Risk Assessment (PRA) model tailored to evaluating shutdown risk, specifically Core Damage Frequency (CDF), has not been developed for the DAEC, simplified risk evaluation tools are utilized. DAEC utilizes a defense-in-depth approach to managing risk during plant shutdowns, which is based on the guidelines provided in NUMARC 91-06. This process specifically monitors Decay Heat Removal (DHR) Capability, [Vessel] Inventory Control, Electrical Power Availability, Reactivity Control and Containment Control. These controls are implemented through plant procedures (e.g., Outage Management Guidelines (OMGs), Integrated Plant Operating Instruction (IPOI) #8 – Outage and Refueling Operations, and Abnormal Operating Procedure (AOP) # 149 – Loss of Decay Heat Removal).

The effect of the Power Uprate will be to increase the amount of decay heat following shutdown, which has the greatest impact on DHR capability. To determine DHR capability, first, a "Time to Boil" is calculated assuming all DHR is lost, at least once per shift; next, a DAEC-specific decay heat curve is used to determine decay heat load, which is then compared to the heat removal capacity of the available systems. This evaluation is used to determine whether these systems can be removed from service for maintenance or testing. The incremental decay heat due to the Power Uprate will just extend the time that the existing DHR systems will need to remain in service during plant shutdown (Ref. PUSAR Section 3.9.1) and remain available right after shutdown.

In addition to the above process used to manage risk during shutdown periods, DAEC has extensive Technical Specification (TS) requirements that reinforce the above shutdown risk management concepts (e.g., Shutdown Cooling (TS 3.9.7/3.9.8), Shutdown Margin (TS 3.1.1), Control Rod Removal (TS 3.10.5/3.10.6), Secondary Containment during Operations with the Potential to Drain the Reactor Vessel (OPDRVs) (TS 3.6.4.1), ECCS- Shutdown (TS 3.5.2), AC and DC Sources – Shutdown (TS 3.8.2/3.8.5) and Distribution, (TS 3.8.8)).

Based upon the above, Power Uprate will have little or no effect on the process controls for shutdown risk management and a negligible effect on the overall ability of DAEC to adequately manage shutdown risk.