



July 25, 2001
NG-01-0893

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)

Reference: 1. NG-00-1900, “Technical Specification Change Request (TSCR-042):
‘Extended Power Uprate’,” dated November 16, 2000.

File: A-117, SPF-189

Dear Sir(s):

On July 11, July 12, and July 16, 2001, conference calls were held with various members of the NRC Staff regarding the referenced amendment request to increase the authorized license power level of the Duane Arnold Energy Center. In order to complete their review, the Staff requested additional information regarding our submittal. The Staff’s preliminary questions had been provided to us electronically for the purposes of discussion. As a result of these calls, some of these questions have been clarified based upon our discussions. For expediency, we have combined these Requests for Additional Information (RAIs) into a single response letter. The Attachment to this letter contains the requested information.

No new commitments are being made in this letter.

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

A001

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 24th day of July, 2001,

by Gary Van Middlesworth.

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



Commission Expires

Attachment: DAEC Responses to NRC Plant Systems Branch Requests for Additional Information Regarding Proposed Amendment for Power Uprate

cc: T. Browning
R. Anderson (NMC) (w/o Attachment)
B. Mozafari (NRC-NRR)
J. Dyer (Region III)
D. McGhee (State of Iowa)
NRC Resident Office
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DAEC Responses to NRC
Plant Systems Branch Requests for Additional Information
Regarding Proposed Amendment for Power Uprate

- 1) In GE's evaluation in Section 4.7 - Post-LOCA Combustible Gas Control regarding hydrogen and oxygen monitoring, it is indicated to be not available to accurately monitor during the first 22 hours after the LOCA due to high temperature limitations. What about the requirements of NUREG-0737, Item II.B.3(2)(a) to include continuous hydrogen monitoring which is needed to support a plant's emergency plan?"

DAEC Response:

NUREG-0737, Item II.B.3(2)(a) deals with the Post-Accident Sampling System (PASS), which is not impacted by this issue. We recognize that this condition is a deviation from our previous commitments to both NUREG-0737, Item II.F.1(6) and Regulatory Guide (RG) 1.97. Thus, we were very detailed in our discussion in the submittal and attempted to provide the Staff with the information necessary to process this change in the DAEC licensing basis. However, we did not specifically identify this as a formal deviation from commitment in our application.

Again, this is not an issue of availability, but of required accuracy. During this initial 22 hour period, the accuracy of these monitors will not conform to the NUREG-0737 requirement, but the monitors will be available. Of significant note is that the stated temperature effect causes the monitors to read in the conservative direction, i.e., higher than actual hydrogen and oxygen concentration. Thus, to preclude precipitous action to actuate the Containment Atmosphere Dilution (CAD) system prematurely, we administratively have chosen to not take direct actions based solely on these hydrogen and oxygen monitor readings until their accuracy can be assured. While the monitors will not be used to obtain an absolute reading during this initial accident period, they will provide valuable trending information if hydrogen and/or oxygen concentration changes are occurring inside the containment. The design basis accident analysis, per Safety Guide 7, indicates that a combustible gas mixture will not be generated for approximately 2.3 days into the accident, i.e., well after the containment temperatures have returned to below the 200°F level to regain the required accuracy for these monitors (Ref. PUSAR Section 4.7).

In addition, the Boiling Water Reactor Owners' Group (BWROG) has recently submitted a licensing topical report¹ that supports our assessment that hydrogen and oxygen monitoring is not required for several days into the accident, i.e., well beyond the 22 hours. While we did not prepare our submittal based upon this BWROG topical, nor are we requesting to apply it here, it does provide insights that are germane to this issue.

Consequently, we do not believe that during this initial 22 hour period, that this potential inaccuracy in these monitors will hinder our ability to effectively execute our Emergency Plan.

¹ James M. Kinney (BWROG) to USNRC, "BWR Owners' Group Licensing Topical Report NEDO-33003 "Regulatory Relaxation for the H2/O2 Monitors and Combustible Gas Control System' Dated July 2001," BWROG-01036, June 22, 2001.

The Emergency Response Facilities have sufficient information available, using the Severe Accident Management Guidelines (SAM-Gs), to diagnose whether a flammable mixture is developing inside the containment to recommend that the Control Room take appropriate actions to protect the containment.

- 2) In GE's evaluation in Section 6.6 – Power-Dependent Heating Ventilation and Air Conditioning, please clarify that the values presented for normal containment temperatures are based upon plant-specific calculations.

DAEC Response:

Yes, the numerical values listed in the PUSAR (NEDC-32980P) Section 6.6 for increases in normal containment temperature were derived from plant-specific calculations. These calculations are available for review in General Electric's design record files.

- 3) In GE evaluation Section 4.1.5, it is indicated that one of the design inputs for the hardened wetwell vent was the ability to exhaust energy equivalent to 1%. Based on the as-built design, the hardened wetwell vent will exhaust approximately 0.91% RTP at 1912 MWt (EPU). Please indicate how long the venting capability will be available during severe accident conditions beyond the onset of a station blackout. If it is less than 24 hours, indicate why it is acceptable.

DAEC Response:

In conversations with the Staff, we clarified that the Station Blackout (SBO) event scenario does not utilize the hardened wetwell vent system. The cross-reference in Section 4.1.5 to the SBO analysis was only to indicate it as the input data source for the primary containment pressure for a loss of decay heat event, the design basis for the hardened wetwell vent system. Coincidentally, the point in time when the decay heat production rate decrease to within the capacity of the hardened wetwell vent is at approximately 4 hours, the end of the SBO coping period. Thus, the SBO containment evaluation was a convenient data input source to the hardened wetwell vent evaluation. As shown in Section 4.1.5, the hardened wetwell vent system is capable of preventing containment overpressure at the EPU conditions.

In addition, because the physical size of the hardened wetwell vent system is fixed, its new design basis is now 0.91% RTP, a slight reduction from the original basis of 1% RTP.