

August 15, 2001
NG-01-0927

Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
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Subject: Duane Arnold Energy Center
Docket No: 50-331
Op. License No: DPR-49
Technical Specification Change Request (TSCR-041): Automatic
Depressurization System Timer Calibration Frequency Change
File: A-117

In accordance with the Code of Federal Regulations, Title 10, Sections 50.59 and 50.90, Nuclear Management Company, LLC (NMC) hereby requests revision to the Technical Specifications for the Duane Arnold Energy Center (DAEC).

The proposed amendment extends the channel calibration surveillance frequency for the Automatic Depressurization System (ADS) timers from 18 months to 24 months. This channel calibration surveillance will continue to be performed in the same manner as it has been in that no modifications to test methodologies or station equipment have been included in this request.

This request is made to facilitate a change to the DAEC operating cycle from 18 months to 24 months. This request has been prepared following the guidance in Generic Letter 91-04, "Changes in Technical Specification Surveillance Intervals to Accommodate a 24-Month Fuel Cycle," and is similar to other surveillance interval changes made during DAEC's conversion to Improved Technical Specifications via Amendment 223.

This application has been reviewed by the DAEC Operations Committee and the Safety Committee. A copy of this submittal, along with the 10 CFR 50.92 evaluation of "No Significant Hazards Consideration," is being forwarded to our appointed state official pursuant to 10 CFR Section 50.91.

NMC requests approval of this application no later than August 31, 2002.

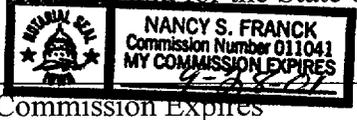
This letter is true and accurate to the best of my knowledge and belief.

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 15th day of August, 2001,
by Gary Van Middlesworth.

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

Commission Expires

- Attachments: 1) Evaluation of Change Pursuant to 10 CFR Section 50.92
2) Proposed Change TSCR-041 to the Duane Arnold Energy Center Technical Specifications
3) Safety Assessment
4) Environmental Consideration

cc: C. Rushworth
R. Anderson (NMC) (w/o)
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EVALUATION OF CHANGE PURSUANT TO 10 CFR SECTION 50.92Background:

The Duane Arnold Energy Center (DAEC) Technical Specification (TS) Surveillance Requirements (SRs) currently specify that the Automatic Depressurization System (ADS) timer CHANNEL CALIBRATION surveillance (SR 3.3.5.1.7 in conjunction with Table 3.3.5.1-1, functions 4.b. and 5.b.) be performed at a frequency of 18 months. The frequency of performing the ADS timer CHANNEL CALIBRATION surveillance is being extended to 24 months to facilitate a change to the DAEC operating cycle from 18 months to 24 months.

Nuclear Management Company, LLC, Docket No. 50-331

Duane Arnold Energy Center, Linn County, Iowa

Date of Amendment Request: August 15, 2001

Description of Amendment Request:

The SR 3.3.5.1.7 (18 month CHANNEL CALIBRATION) surveillance requirement listed in Table 3.3.5.1-1, functions 4.b. and 5.b. (ADS Timer), is changed to SR 3.3.5.1.8 (24 month CHANNEL CALIBRATION).

Basis for proposed No Significant Hazards Consideration:

The Commission has provided standards (10 CFR Section 50.92(c)) for determining whether a significant hazards consideration exists. A proposed amendment to an operating license for a facility involves no significant hazards consideration if operation of the facility in accordance with the proposed amendment would not (1) involve a significant increase in the probability or consequences of an accident previously evaluated; (2) create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) involve a significant reduction in a margin of safety.

After reviewing this proposed amendment, we have concluded:

1. The proposed amendment will not involve a significant increase in the probability or consequences of an accident previously evaluated.

The proposed amendment extends the CHANNEL CALIBRATION surveillance frequency for the ADS timers from 18 months to 24 months to facilitate a change in the DAEC operating cycle from 18 months to 24 months. The proposed change does not physically impact the plant nor does it impact any design or functional requirements of the ADS. That is, the proposed change does not degrade the performance or increase the challenges of any safety systems assumed to function in the accident analysis. The proposed change alters the frequency but not the Surveillance Requirement itself nor the way in which the surveillance is performed. The proposed change does not affect the availability of equipment or systems

required to mitigate the consequences of an accident because of the availability of redundant systems or equipment and because other tests performed more frequently will identify potential equipment problems. Furthermore, an evaluation of surveillance test results shows that the probability of exceeding the TS Allowable Value (AV) with the extended surveillance frequency is small and remains well within the setpoint methodology guideline. Therefore, the proposed amendment will not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. The proposed amendment will not create the possibility of a new or different kind of accident from any accident previously evaluated.

The proposed amendment extends the CHANNEL CALIBRATION surveillance frequency for the ADS timers from 18 months to 24 months to facilitate a change in the DAEC operating cycle from 18 months to 24 months. The proposed change does not introduce any failure mechanisms of a different type than those previously evaluated since there are no physical changes being made to the facility. In addition, only the frequency will change; the Surveillance Requirement itself and the way the surveillance is performed will remain unchanged. Furthermore, a review of the maintenance history of these timers indicated no evidence of any failures that would invalidate the above conclusions. Therefore, the proposed amendment will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. The proposed amendment will not involve a significant reduction in a margin of safety.

The proposed amendment extends the CHANNEL CALIBRATION surveillance frequency for the ADS timers from 18 months to 24 months to facilitate a change in the DAEC operating cycle from 18 months to 24 months. Although the proposed change will result in an increase in the interval between surveillance tests, the impact on system availability is considered small based on other more frequent testing, the availability of redundant systems or equipment, and the fact that there is no evidence of any existing equipment failures that would impact the availability of the ADS. Furthermore, an evaluation of surveillance test results shows that the probability of exceeding the TS AV with the extended surveillance frequency is small and remains well within the setpoint methodology guideline. Therefore, the proposed amendment will not involve a significant reduction in a margin of safety.

Based upon the above, we have determined that the proposed amendment will not involve a significant hazards consideration.

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Attorney for Licensee: Al Gutterman; Morgan, Lewis & Bockius, 1800 M Street NW, Washington, D.C. 20036-5869

PROPOSED CHANGE TSCR-041 TO THE DUANE ARNOLD ENERGY CENTER
TECHNICAL SPECIFICATIONS

The holders of license DPR-49 for the Duane Arnold Energy Center propose to amend the Technical Specifications by deleting the referenced pages and replacing them with the enclosed new pages. Following this page are the marked-up pages for this change.

SUMMARY OF CHANGES:

<u>Page</u>	<u>Description of Changes</u>
3.3-44	The SR 3.3.5.1.7 surveillance requirement listed for function 4.b. is changed to SR 3.3.5.1.8.
3.3-45	The SR 3.3.5.1.7 surveillance requirement listed for function 5.b. is changed to SR 3.3.5.1.8.

Table 3.3.5.1-1 (page 4 of 5)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
3. HPCI System (continued)					
e. Suppression Pool Water Level - High	1, 2(c), 3(c)	2	D	SR 3.3.5.1.3 SR 3.3.5.1.8 SR 3.3.5.1.9	≤ 5.9 inches
f. High Pressure Coolant Injection Pump Discharge Flow - Low (Bypass)	1, 2(c), 3(c)	1	E	SR 3.3.5.1.3 SR 3.3.5.1.8 SR 3.3.5.1.9	≥ 264.2 gpm and ≤ 2025.1 gpm
4. Automatic Depressurization System (ADS) Trip Logic A					
a. Reactor Vessel Water Level - Low Low Low	1, 2(d), 3(d)	2	G	SR 3.3.5.1.1 SR 3.3.5.1.3 SR 3.3.5.1.8 SR 3.3.5.1.9	≥ 38.3 inches
b. Automatic Depressurization System Timer	1, 2(d), 3(d)	1	H	SR 3.3.5.1.3 SR 3.3.5.1.8 SR 3.3.5.1.9	≤ 125 seconds
c. Reactor Vessel Water Level - Low (Confirmatory)	1, 2(d), 3(d)	1	G	SR 3.3.5.1.1 SR 3.3.5.1.3 SR 3.3.5.1.8 SR 3.3.5.1.9	≥ 166.1 inches
d. Core Spray Pump Discharge Pressure - High	1, 2(d), 3(d)	2	H	SR 3.3.5.1.3 SR 3.3.5.1.8 SR 3.3.5.1.9	≥ 114.2 psig and ≤ 177.0 psig
e. Low Pressure Coolant Injection Pump Discharge Pressure - High	1, 2(d), 3(d)	4	H	SR 3.3.5.1.3 SR 3.3.5.1.8 SR 3.3.5.1.9	≥ 103.8 psig and ≤ 147.0 psig

(continued)

- (c) With reactor steam dome pressure > 150 psig.
- (d) With reactor steam dome pressure > 100 psig.

Table 3.3.5.1-1 (page 5 of 5)
Emergency Core Cooling System Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS PER FUNCTION	CONDITIONS REFERENCED FROM REQUIRED ACTION A.1	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
5. ADS Trip Logic B					
a. Reactor Vessel Water Level - Low Low Low	2(d) ¹ , 3(d)	2	G	SR 3.3.5.1.1 SR 3.3.5.1.3 SR 3.3.5.1.8 SR 3.3.5.1.9	≥ 38.3 inches
b. Automatic Depressurization System Timer	2(d) ¹ , 3(d)	1	H	SR 3.3.5.1.3 SR 3.3.5.1.8 SR 3.3.5.1.9	≤ 125 seconds
c. Reactor Vessel Water Level - Low (Confirmatory)	2(d) ¹ , 3(d)	1	G	SR 3.3.5.1.1 SR 3.3.5.1.3 SR 3.3.5.1.8 SR 3.3.5.1.9	≥ 166.1 inches
d. Core Spray Pump Discharge Pressure - High	2(d) ¹ , 3(d)	2	H	SR 3.3.5.1.3 SR 3.3.5.1.8 SR 3.3.5.1.9	≥ 114.2 psig and ≤ 177.0 psig
e. Low Pressure Coolant Injection Pump Discharge Pressure - High	1, 2(d), 3(d)	4	H	SR 3.3.5.1.3 SR 3.3.5.1.8 SR 3.3.5.1.9	≥ 103.8 psig and ≤ 147.0 psig

(d) With reactor steam dome pressure > 100 psig.

SAFETY ASSESSMENT

Background:

By letter dated August 15, 2001, Nuclear Management Company, LLC (NMC) submitted a request for revision of the Technical Specifications (TS) for the Duane Arnold Energy Center (DAEC). The proposed amendment extends the CHANNEL CALIBRATION surveillance frequency for the Automatic Depressurization System (ADS) timers. As described in the Updated Final Safety Analysis Report (UFSAR), Section 7.3.1.1.2.2, "ADS Instrumentation and Control," the 120-second (nominal) delay time setting of the self-indicating timers in the logic is chosen to be long enough so that the High Pressure Coolant Injection (HPCI) system has time to start, yet not so long that the Core Spray system and Low Pressure Coolant Injection (LPCI) are unable to adequately cool the fuel if the HPCI system fails to start.

The DAEC TS Surveillance Requirements (SRs) currently specify that the ADS timer CHANNEL CALIBRATION surveillance (SR 3.3.5.1.7 in conjunction with Table 3.3.5.1-1, functions 4.b. and 5.b.) be performed at a frequency of 18 months. The frequency of performing the ADS timer CHANNEL CALIBRATION surveillance is being extended to 24 months to facilitate a change to the DAEC operating cycle from 18 months to 24 months.

This change is preferred over the option of performing the surveillance on-line with the risk of an error causing an ADS initiation or the option of shutting the plant down solely to perform the surveillance. With a 24 month specified frequency, the maximum frequency accounting for the allowable "grace period" specified in SR 3.0.2 is 30 months.

Basis for Change:

This CHANNEL CALIBRATION surveillance will continue to be performed in the same manner as it has been in that no modifications to test methodologies are involved. The ADS equipment will not be affected except that the frequency of calibrating the timers will be extended to accommodate a 24 month operating cycle.

The CHANNEL CALIBRATION surveillance is performed to ensure that at a previously evaluated setpoint, actuation takes place to provide the required safety function. By extending the calibration frequency from 18 months to 24 months the time interval between calibrations will be increased. However, as currently required by DAEC TS, a CHANNEL FUNCTIONAL TEST is performed during the operating cycle more frequently than the CHANNEL CALIBRATION surveillance. The purpose of the CHANNEL FUNCTIONAL TEST is to detect failures of the instrumentation channels. Gross instrumentation failures are detected by alarms or by comparison with redundant and independent indications. Instrumentation purchased for these functions are highly reliable and meet the design criteria of safety related equipment. The instrumentation is designed with redundant and independent channels which provide means to verify proper instrumentation performance during operation and adequate redundancy to ensure a

high confidence of system performance even with the failure of a single component.

NRC Generic Letter 91-04, "Changes in Technical Specification Surveillance Intervals to Accommodate a 24-Month Fuel Cycle," describes NRC requirements for preparing such license amendment requests. The Generic Letter indicates that the NRC staff has generically reviewed the extension of surveillance intervals from 18 to 24 months and found that the effect on safety is small because safety systems use redundant electrical and mechanical components and because licensees perform other surveillances during plant operation that confirm that these systems and components can perform their safety functions. The Generic Letter also states that licensees should evaluate the effect on safety of an increase in 18 month surveillances to accommodate a 24 month fuel cycle. This evaluation should support a conclusion that the effect on safety is small.

An evaluation for extending the ADS timer calibration frequency to 24 months has been performed in accordance with Generic Letter 91-04, specifically Enclosure 2, "Guidance for Addressing the Effect of Increased Surveillance Intervals on Instrument Drift and Safety Analysis Assumptions." The evaluation concluded that the surveillance frequency can be extended to 24 months (30 months including the SR 3.0.2 "grace period") without any adverse effects on plant safety. The increase in probability of exceeding the TS Allowable Value (AV) is small and the probability itself remains well within the setpoint methodology guideline. The methodology used was in accordance with "General Electric Instrument Setpoint Methodology," NEDC-31336P-A, accepted by NRC Safety Evaluation Report dated November 6, 1995. The ADS timer settings were provided to NRC in NG-97-1010, dated June 10, 1997 as part of the conversion to Improved Technical Specifications (ITS) via Amendment 223. DAEC surveillance procedures properly implement the assumptions and conclusions of this evaluation. Therefore, NMC has concluded that the proposed revision to the DAEC Technical Specifications is acceptable.

The seven issues stipulated in Enclosure 2 of Generic Letter 91-04, followed by the DAEC's response to each, are provided below.

1. Confirm that instrument drift as determined by as-found and as-left calibration data from surveillance and maintenance records has not, except on rare occasions, exceeded acceptable limits for a calibration interval.

Calibration data in the DAEC Instrument Trending Program (ITP) for the ADS timers (KS4400A/B) has been reviewed. Data in the ITP was taken from the appropriate Surveillance Test Procedures (STP) or maintenance procedure. For these timers the data was taken from an STP using calibrated measuring and test equipment (M&TE). This data includes the as-found and as-left data for the last eight calibrations for each timer. Review of this data shows that the as-found setpoint has not exceeded the Technical Specifications Allowable Value (AV) of 125 seconds during the last eight calibrations for each timer. The

highest as-found setpoint for KS4400A was 121.4 sec. and 120.5 sec. for KS4400B. In no case did the timers require recalibration due to being outside the as-left tolerance.

A review of the maintenance history for these timers shows one instance where corrective action was required to replace a failed relay. This failure was discovered during a quarterly functional check of the ADS system.

2. Confirm that the values of drift for each instrument type (make, model, and range) and application have been determined with a high probability and a high degree of confidence. Provide a summary of the methodology and assumptions used to determine the rate of instrument drift with time based upon historical plant calibration data.

The methodology to establish drift values was determined from the historical calibration data as discussed in Item 1 above. The drift was determined by finding the standard deviation of the observed-in-service-difference (OISD) for a particular surveillance interval. The OISD was calculated by subtracting the as-left value from a previous calibration from the as-found value of the next calibration. For this evaluation the standard deviation of the OISD was considered the drift value for the calibration interval of the data analyzed. This was conservative because the OISD includes instrument accuracy and calibration accuracy as well as drift. The calibration interval for the ADS timers was changed from 12 to 18 months in 1995. Analysis of the data at both intervals shows no corresponding increase in the OISD standard deviation due to the increase in calibration interval. The ADS timers are Eagle Signal Division model HP52S283A107 with a 0 to 150 second range.

3. Confirm that the magnitude of instrument drift has been determined with a high probability and a high degree of confidence for a bounding calibration interval of 30 months for each instrument type (make, model number, and range) and application that performs a safety function. Provide a list of the channels by TS section that identifies these instrument applications.

GE setpoint methodology, which was approved by the NRC, was used to determine the drift value for a 30-month calibration interval. Based on the GE setpoint methodology, the known drift for a given calibration interval can be adjusted to a longer interval by multiplying the known drift by the square root of the proposed interval divided by the known interval. From the data analysis performed the standard deviation for a 12-month interval was greater than that for 18 months. Therefore, for additional conservatism the standard deviation for the 12-month OISD will be used to project the 30-month drift value. This method resulted in a projected drift for 30 months of 2.4 seconds. With a nominal trip setpoint of 120 seconds, and an AV of 125 seconds, the probability of finding the setpoint (within the AV) with a 30-month calibration interval was 98.2%. The surveillance requirement for these timers was SR 3.3.5.1.7. The AV was found in Technical Specification Table 3.3.5.1-1, items 4b and 5b.

4. Confirm that a comparison of the projected instrument drift errors has been made with the values of drift used in the setpoint analysis. If this results in revised setpoints to accommodate larger drift errors, provide proposed TS changes to update trip setpoints. If the drift errors result in a revised safety analysis to support existing setpoints, provide a summary of the updated analysis conclusions to confirm that safety limits and safety analysis assumptions are not exceeded.

No setpoint calculation was performed for the ADS delay timers. An evaluation of the ADS timer settings documented that the precision of the timer settings was not critical to plant safety. This conclusion was based on information in NEDO-10139, Emergency Operating Procedures direction to reset the ADS timers early in an event, and margin to peak cladding temperature shown in the DAEC LOCA analysis. Therefore, no safety analysis was required and no comparison was performed.

5. Confirm that the projected instrument errors caused by drift are acceptable for control of plant parameters to effect a safe shutdown with the associated instrumentation.

The projected drift for the ADS timers will not exceed the Technical Specification Allowable Value with high probability. The precision of the ADS timer setpoint was not critical to plant safety.

6. Confirm that all conditions and assumptions of the setpoint and safety analyses have been checked and are appropriately reflected in the acceptance criteria of plant surveillance procedures for channel checks, channel functional tests, and channel calibrations.

As stated in Item 4, there was no setpoint calculation for the ADS timers. Review of STP 3.3.5.1-16, which calibrates the ADS timers, shows that it was consistent with the DAEC Technical Specifications. The results of calibration interval extension will not require changes to the AV or calibration data in these documents.

7. Provide a summary description of the program for monitoring and assessing the effects of increased calibration surveillance intervals on instrument drift and its effect on safety.

STP 3.3.5.1-16 will monitor the ADS timers for instrument drift through surveillance calibrations. The ITP uses input from the STPs to track performance of selected plant instrumentation. The ADS timers are included in the scope of the ITP. DAEC has two primary programs to assess instrument performance - the ITP and the Action Request (AR) programs. The AR program is used to document and resolve the instruments out of tolerance conditions. These two programs will ensure that any negative trend, in the ADS timer performance, will be identified, documented, and appropriate actions taken.

ENVIRONMENTAL CONSIDERATION

10 CFR Section 51.22(c)(9) identifies certain licensing and regulatory actions which are eligible for categorical exclusion from the requirement to perform an environmental assessment. A proposed amendment to an operating license for a facility requires no environmental assessment if operation of the facility in accordance with the proposed amendment would not: (1) involve a significant hazards consideration; (2) result in a significant change in the types or significant increase in the amounts of any effluents that may be released offsite; and (3) result in a significant increase in individual or cumulative occupational radiation exposure. Nuclear Management Company (NMC) has reviewed this request and determined that the proposed amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR Section 51.22(c)(9). Pursuant to 10 CFR Section 51.22(b), no environmental impact statement or environmental assessment needs to be prepared in connection with the issuance of the amendment. The basis for this determination follows:

Basis

The change meets the eligibility criteria for categorical exclusion set forth in 10 CFR Section 51.22(c)(9) for the following reasons:

1. As demonstrated in Attachment 1 to this letter, the proposed amendment does not involve a significant hazards consideration.
2. There is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite. The operation of the plant is not being changed by this extension of the Automatic Depressurization System (ADS) timer CHANNEL CALIBRATION frequency. This CHANNEL CALIBRATION surveillance will continue to be performed in the same manner as it has been in that no modifications to test methodologies are involved. The ADS equipment will not be affected except that the frequency of calibrating the timers will be extended to accommodate a 24 month operating cycle.
3. There is no significant increase in individual or cumulative occupational radiation exposure. The activities of plant personnel are not being changed by this extension of the Automatic Depressurization System (ADS) timer CHANNEL CALIBRATION frequency. This CHANNEL CALIBRATION surveillance will continue to be performed in the same manner as it has been in that no modifications to test methodologies are involved. The ADS equipment will not be affected except that the frequency of calibrating the timers will be extended to accommodate a 24 month operating cycle.