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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
Technical Specification Change Request (TSCR-015) - Main Turbine Bypass Valve Surveillance Test Frequency Reduction

File: A-117

Dear Sir/Madam:

In accordance with the Code of Federal Regulations, Title 10, Sections 50.59 and 50.90, Alliant Energy - IES Utilities Inc. hereby requests revision to the Technical Specifications (TS) for the Duane Arnold Energy Center (DAEC).

Currently, DAEC TS Surveillance Requirement (SR) 3.7.7.1 requires that each of the Main Turbine Bypass Valves (BVs) be verified through one complete cycle of full travel every 31 days to demonstrate that the valves are mechanically OPERABLE. The current 31-day frequency is based on engineering judgment.

DAEC in-house operating experience has shown that these BVs have reliable equipment performance and consistently pass the surveillance test when cycled at the 31-day frequency. However, the 31-day frequency puts an unnecessary burden on DAEC plant personnel and creates the possibility for a plant transient/trip due to valve cycling. Reactor power must be decreased to less than 85% to allow BV testing.

This TS amendment request proposes to reduce the BV cycling frequency of SR 3.7.7.1 from 31 days to 92 days. This will make the test frequency for the BVs consistent with the testing frequency for the other Main Turbine Valves (e.g. Main Turbine Control, Stop, and Combined Intermediate Valves). The 92-day frequency is also consistent with the typical testing frequency for stroking safety-related valves under TS 5.5.6, In-Service Testing Program. Reducing the frequency of cycling the BVs will not impact the equipment performance but will reduce the burden on plant personnel, lower the frequency of possibility for a plant transient/trip due to valve cycling, and increase plant capacity factor.

A001

NRR-057

This application has been reviewed by the DAEC Operations Committee and the Safety Committee. A copy of this submittal, along with the evaluation of No Significant Hazards Consideration, is being forwarded to our appointed state official pursuant to 10 CFR Section 50.91. We request approval of this application no later than December 31, 2000 with a period of 30 days after the approval for implementation.

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

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

Alliant Energy - IES Utilities Inc.

By Gary D. Van Middlesworth for DLW
Dave Wilson
Vice President, Nuclear

State of Iowa
(County) of Linn

Signed and sworn to before me on this 8th day of June, 2000,
by Gary D. Van Middlesworth

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

NOTARIAL SEAL IOWA
NANCY S. FRANCK

9-28-01
Commission Expires

Attachments:
1) EVALUATION OF CHANGE PURSUANT TO 10 CFR SECTION 50.92
2) SAFETY ASSESSMENT
3) PROPOSED CHANGE TSCR-015 TO THE DUANE ARNOLD ENERGY CENTER TECHNICAL SPECIFICATIONS
4) ENVIRONMENTAL CONSIDERATION

cc: H. Tran (w/a)
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B. Mozafari (NRC-NRR) (w/a)
J. Dyer (Region III) (w/a)
D. McGhee (State of Iowa) (w/a)
NRC Resident Office (w/a)

EVALUATION OF CHANGE PURSUANT TO 10 CFR SECTION 50.92

Background:

The safety function of the Main Turbine Bypass System (MTBS) at the Duane Arnold Energy Center (DAEC) is to limit peak pressure in the Main Steam Lines and maintain reactor pressure within acceptable limits during transient events involving turbine-generator trips, which cause rapid pressurization, so that the Minimum Critical Power Ratio (MCPR) Safety Limit is not exceeded.

The DAEC Technical Specifications (TS) ensure OPERABILITY of the MTBS through Surveillance Requirements (SRs) 3.7.7.1, a simple valve stroke to demonstrate mechanical freedom of movement; SR 3.7.7.2, a check of the system response to an actuation signal; and SR 3.7.7.3, a check of the system's response time. Limiting Condition for Operation (LCO) 3.7.7 allows continued plant operation in case of an inoperable MTBS (either one or both Bypass Valves (BVs) inoperable) provided the more restrictive MCPR limit is applied. These SRs and LCOs are based on those in the NRC Standard TS (NUREG-1434, Revision 2).

DAEC in-house operating experience has shown that the BVs have reliable equipment performance in that they consistently pass the valve cycling test when cycled at the 31-day frequency. In addition, since July of 1999, we have, as specified in the requirements of LCO 3.7.7, applied a more restrictive MCPR limit to allow not verifying OPERABLE BVs. The BVs have since been cycled at a 92-day frequency. The results are satisfactorily and the failure rate is zero.

This proposed TS amendment will make the test frequency for the BVs consistent with the testing frequency for the other Main Turbine Valves (e.g. Main Turbine Control, Stop, and Combined Intermediate Valves). This is endorsed by our turbine manufacturer. The 92-day frequency is also consistent with the typical testing frequency for stroking safety-related valves under TS 5.5.6, In-Service Testing Program. Reducing the frequency of cycling the BVs will not impact the equipment performance but will reduce the unnecessary burden on plant personnel, lower the frequency of possibility for a plant transient/trip due to valve cycling, and increase plant capacity factor.

Alliant-IES Utilities Inc., Docket No. 50-331
Duane Arnold Energy Center, Linn County, Iowa
Date of Amendment Request: June 9, 2000

Description of Amendment Request:

This proposed TS amendment will allow a valve cycling frequency of 92 days for the BVs and will affect the SR in Section 3.7.7.1. The BASES of SR 3.7.7.1 will be revised

accordingly to match the new SR (e.g. replace "31 days" with "92 days" and replace "engineering judgement" with "operating experience").

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 current TS SR 3.7.7.1 requires that the BVs be cycled once every 31 days to demonstrate that the BVs are mechanically OPERABLE (free to move). DAEC in-house operating experience has shown that the BVs have reliable equipment performance in that they consistently pass the valve cycling test at both the 31-day and 92-day frequency. A test frequency of 92 days is sufficient to ensure the reliability of the BVs. The DAEC is analyzed for certain transient events with the assumption that the MTBS is out-of-service (e.g. turbine trips, generator load rejects, feedwater flow controller failure at maximum demand). Continued plant operation is allowed in cases of inoperable MTBS provided the more restrictive MCPR limit is applied (LCO 3.7.7). Margin to the MCPR Safety Limit is bounded by the analyzed failure of the MTBS. Should the BV fail a cycling test, the TS required actions would be taken accordingly. Therefore, this 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.

   There are no modifications made to the MTBS (including BVs) or system operations in this proposed TS amendment. The only change is the BV's cycling frequency from 31 days to 92 days. The proposed TS amendment does not alter the OPERABILITY requirements or performance characteristics of the MTBS. The reduced BV cycling frequency reduces the need for reactivity changes and pressure perturbations on the reactor. This 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 only change by this proposed TS amendment is the frequency of the BV's cycling test from 31 days to 92 days. The OPERABILITY requirement and functional characteristics of the MTBS remain unchanged. DAEC in-house operating experience has demonstrated that a 92-day test frequency provides reasonable assurance that the BVs remain OPERABLE. The BV's response times are used in determining the effect on the MCPR. The surveillance tests that ensure the MTBS meets the system's automatic actuation requirements (SR 3.7.7.2) and response time limits (SR 3.7.7.3) are not affected by this proposed TS amendment and will continue to be performed at the current TS frequency. Therefore, this 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.

Local Public Document Room Location: Cedar Rapids Public Library, 500 First Street SE, Cedar Rapids, Iowa 52401.

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

SAFETY ASSESSMENT

By letter dated June 9, 2000, Alliant Energy - IES Utilities Inc. submitted a request for revision of the Technical Specifications for the Duane Arnold Energy Center (DAEC). The proposed amendment changes the Surveillance Requirement (3.7.7.1) for cycling the Main Turbine Bypass Valves from a 31-day frequency to a 92-day frequency.

Background:

At the DAEC, the Main Turbine Bypass System (MTBS) is designed to control steam pressure when reactor steam generation exceeds turbine requirements during reactor startup, sudden load reduction and reactor cooldown by passing the excess steam flow to the condenser without going through the turbine. The bypass capacity of the MTBS is slightly less than 25% of the Nuclear Steam Supply System rated steam flow. Sudden load reductions within the capacity of the steam bypass can be accommodated without a reactor scram. The MTBS limits peak pressure in the Main Steam Lines and maintains reactor pressure within acceptable limits during certain transient events that cause rapid pressurization (e.g. feedwater controller failure at maximum demand, turbine trips, and generator load rejects), so that the Minimum Critical Power ratio (MCPR) Safety Limit is not exceeded.

The DAEC Technical Specifications (TS) ensure OPERABILITY of the MTBS through Surveillance Requirements (SRs) 3.7.7.1, a simple valve stroke to demonstrate mechanical freedom of movement; SR 3.7.7.2, a check of the system response to an actuation signal; and SR 3.7.7.3, a check of the system's response time. These SRs are based on those in the NRC Standard TS (NUREG-1434, Revision 2). Limiting Condition for Operation (LCO) 3.7.7, requires the MTBS to be OPERABLE whenever the reactor power is equal to or greater than 25% of rated to ensure the MCPR Safety Limit is not exceeded during transient events. LCO 3.7.7 allows continued plant operation in case of an inoperable MTBS (either one or both Bypass Valves (BVs) inoperable) provided the more restrictive MCPR limit is applied. The BV's response times are used in determining the effect on the MCPR calculated as a result of feedwater controller failure transient at maximum demand.

The DAEC is analyzed for certain transient events (e.g. turbine trips, generator load rejects, feedwater flow controller failure at maximum demand) with the assumption that the MTBS is out-of-service. Continued plant operation is allowed in case of inoperable MTBS provided the more restrictive MCPR limit is applied (LCO 3.7.7). Margin to the MCPR Safety Limit is bounded by the analyzed failure of the MTBS.

Other Main Turbine Valves (e.g. Main Turbine Control, Stop, and Combined Intermediate Valves) are tested on a quarterly basis (92 days), which is endorsed by our turbine manufacturer. The 92-day frequency is also consistent with standard stroke test

frequencies for safety-related valves that are governed by TS 5.5.6, In-Service Testing Program.

Basis for Change:

While the valve cycling test ensures the BVs are mechanically free to move, the 31-day testing frequency puts an unnecessary burden on the DAEC plant personnel. In order to perform the test, reactor power must be decreased to less than 85%. This reactivity manipulation and pressure change creates the possibility for a plant transient/trip due to valve cycling, and lowers plant capacity factor. DAEC in-house operating experience has shown that the BVs have reliable equipment performance in that they consistently pass the valve cycling test when cycled at the 31-day frequency.

In addition, since July of 1999, we have, as specified in the requirements of TS Section 3.7.7, applied a more restrictive MCPR limit to allow not verifying OPERABLE BVs. The BVs have since been cycled at a 92-day frequency. The results are satisfactory and the failure rate is zero. However, although this reduces the burden of testing, the DAEC is in the process of changing to 24-month operating cycles and higher power operation next cycle. Future core designs and operating strategies may not have enough extra margin to permit this option for the cycle. This TS amendment request, therefore, proposes to reduce the BV cycling frequency from 31 days to 92 days without the need to apply the more restrictive MCPR limit. Based on the DAEC in-house operating experience, a 92-day test frequency is sufficient to ensure the BV OPERABILITY. Should the BV fail a cycling test, the TS required actions would be taken accordingly.

Reducing the frequency of cycling the BVs will not impact the equipment performance, but will reduce the burden on plant personnel, lower the frequency of possibility for a plant transient/trip due to valve cycling, and increase plant capacity factor. This TS amendment, when implemented, will make the test frequency for the BVs consistent with the test frequency for the other Main Turbine Valves. In addition, the 92-day frequency is consistent with standard stroke test frequencies for safety-related valves that are governed by TS 5.5.6 for the In-Service Testing Program.

This proposed TS amendment does not change the OPERABILITY requirement and functional characteristics of the MTBS. This proposed TS amendment affects only the surveillance frequency requirement in SR 3.7.7.1, which is performed to demonstrate that the BVs are mechanically OPERABLE. As discussed above, DAEC in-house operating experience has demonstrated that a 92-day frequency provides reasonable assurance that the BVs will remain OPERABLE.

The surveillance tests that ensure the MTBS meets the system's automatic actuation requirements (SR 3.7.7.2) and response time limits (SR 3.7.7.3) are not affected by this proposed TS amendment and will continue to be performed at the current TS frequency

(once every 24 months). As discussed above, the BVs' response times are used in determining the effect on the MCPR.

Therefore, we have concluded that the proposed amendment to the DAEC Technical Specifications is acceptable.

PROPOSED CHANGE TSCR-015 TO THE DUANE ARNOLD ENERGY CENTER TECHNICAL SPECIFICATIONS

The holders of license DPR-49 for the Duane Arnold Energy Center (DAEC) propose to amend the Technical Specification Surveillance Requirement and BASES by deleting the referenced pages and replacing them with new pages. These changes to Surveillance Requirement (SR) 3.7.7.1 and its BASES reflect the proposed Technical Specifications (TS) amendment. The changes affect the SR and its BASES for the Main Turbine Bypass System.

SUMMARY OF CHANGES:

Page	Description of Change
3.7-17	Change the surveillance requirement frequency from "31 days" to "92 days".
B 3.7-35	Change "31 day" to "92 day", and "engineering judgement" to "operating experience".

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.7.1	Verify one complete cycle of each main turbine bypass valve.	~~31~~ 92 days
SR 3.7.7.2	Perform a system functional test.	24 months
SR 3.7.7.3	Verify the TURBINE BYPASS SYSTEM RESPONSE TIME is within limits.	24 months

BASES

ACTIONS (continued)

B.1

If the Main Turbine Bypass System cannot be restored to OPERABLE status and the MCPR limits for an inoperable Main Turbine Bypass System are not applied, THERMAL POWER must be reduced to < 25% RTP. As discussed in the Applicability section, operation at < 25% RTP results in sufficient margin to the required limits, and the Main Turbine Bypass System is not required to protect fuel integrity during the Feedwater Controller Failure Maximum Demand transient. The 4 hour Completion Time is reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.7.1

operating experience

Cycling each main turbine bypass valve through one complete cycle of full travel demonstrates that the valves are mechanically OPERABLE and will function when required. The ~~31~~ 92 day Frequency is based on ~~engineering judgment~~, is consistent with the procedural controls governing valve operation, and ensures correct valve positions. Operating experience has shown that these components usually pass the SR when performed at the ~~31~~ 92 day Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.

SR 3.7.7.2

The Main Turbine Bypass System is required to actuate automatically to perform its design function. This SR demonstrates that, with the required system initiation signals, the valves will actuate to their required position. The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant startup and because of the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown the 24 month Frequency, which is based on the refueling cycle, is acceptable from a reliability standpoint.

(continued)

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. Alliant Energy - IES Utilities Inc. 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 only change by this amendment is the Bypass Valve (BV)'s cycling frequency from once every 31 days to 92 days. The BVs have demonstrated reliable equipment performance; therefore, the ability of the BVs to open during a reactor pressurization event is not considered to be affected by this amendment.

3. There is no significant increase in individual or cumulative occupational radiation exposure. There are no modifications to the Main Turbine Bypass System. The only change is the BV's cycling frequency, which will not increase the dose rate.