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November 20, 1998
NG-98-1927

Mr. Samuel J. Collins, Director
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 NRC Request for Additional Information Related to the Generic Letter (GL) 96-05 Response for the Duane Arnold Energy Center

References: 1) Letter, R. Laufer (NRC) to L. Liu (IES), Request for Additional Information on Generic Letter 96-05, "Periodic Verification of Design-Basis Capability of Safety-Related Motor-Operated Valves," - Duane Arnold Energy Center (TAC No. M97044), dated September 23, 1998

2) Letter, J. Franz (IES) to W. Russell (NRC), "Generic Letter 89-10 Program Scope," dated March 18, 1996, NG-96-0522

3) Letter, G. Kelly (NRC) to L. Liu (IES), "Staff Evaluation of Removal of 17 Motor- Operated Valves from the Generic Letter 89-10 Program at Duane Arnold" (TAC No. M94130), dated June 25, 1996

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File: A-101b, A-107a

Dear Mr. Collins:

In Reference 1 above, the Staff requested additional information concerning our response to Generic Letter 96-05, "Periodic Verification of Design-Basis Capability of Safety-Related Motor-Operated Valves." The attachments to this letter provide our response to the Staff's request.

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As further discussed in Attachment 1 to this letter, the following commitments, as made in References 2 and 3 above, are being revised as follows:

COMMITMENT 1:

> *The torque switch settings for these valves will be maintained based upon their last diagnostic test. These torque switch settings include evaluations of degraded voltage conditions.*

The torque switch settings for the 17 valves in question will not be maintained based upon their last diagnostic test. These torque switch settings will not include evaluations of degraded voltage conditions. The torque switch settings for the 17 valves in question will be maintained as prescribed in section 3.1 of the Motor Operated Valve (MOV) Program Manual for non-safety related MOVs.

COMMITMENT 2:

> *All additional requirements for these MOVs will be as prescribed in section 3.1 of the MOV Program Manual. Subsection 5.0 of this section includes the methodology for determining the appropriate torque switch setting range for non-GL 89-10 MOVs. Factors considered include: Maximum Expected Differential Pressure, maximum line pressure, mean seat ring diameter, stem diameter, stem pitch, stem lead, valve factor, stem factor, etc..*

As stated above, these requirements still apply to the 17 MOVs in question.

COMMITMENT 3:

> *Industry operating experience and data feedback from the [Duane Arnold Energy Center] DAEC GL 89-10 program will be evaluated, on an ongoing basis, to determine if any adjustments to the control switches for these valves are required. However, since these valves are not in our Technical Specifications and are of low safety significance, adjustments to control switch settings will be made at the appropriate opportunity.*

Industry operating experience and data feedback from the DAEC GL 89-10 program will not be evaluated, on an ongoing basis, to determine if any adjustments to the control switches for the 17 valves in question are required.

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

Sincerely,

Kenneth E. Peveler,
Manager, Regulatory Performance

Attachment 1: Alliant Energy Corp./IES Utilities' Response to the NRC Request for Additional Information Related to the GL 96-05 Response for the Duane Arnold Energy Center

Attachment 2: Seventeen Valves Previously Removed from GL 89-10 Program Scope

cc: R. Murrell
J. Franz
D. Wilson
E. Protsch
R. Laufer (NRC-NRR)
J. Caldwell (Region III)
NRC Resident Office
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ALLIANT ENERGY CORP./IES UTILITIES' RESPONSE TO THE NRC REQUEST FOR ADDITIONAL INFORMATION RELATED TO THE GL 96-05 RESPONSE FOR THE DUANE ARNOLD ENERGY CENTER

NRC REQUEST 1:

In NRC Inspection Report No. 50-331/95011, the NRC staff closed its review of the motor-operated valve (MOV) program implemented at the Duane Arnold Energy Center in response to Generic Letter (GL) 89-10, "Safety-Related Motor-Operated Valve Testing and Surveillance." In the inspection report, the NRC staff noted certain aspects of the licensee's MOV program that would be addressed over the long term. For example, the NRC staff noted that (1) the licensee would be expected to review applicable information following completion of the NRC staff's evaluation of the Electric Power Research Institute (EPRI) MOV Performance Prediction Methodology [PPM] and to take appropriate action, as necessary; and (2) the licensee would need to supplement its test data regarding its assumptions for stem lubricant degradation and load sensitive behavior as part of its long-term MOV program. Since then, the NRC staff has completed its review of the EPRI MOV program as described in a safety evaluation (SE) dated March 15, 1996, and an SE supplement dated February 20, 1997. The licensee should describe the actions taken to address the specific long-term aspects of the MOV program at Duane Arnold that were noted in the NRC inspection report.

ALLIANT ENERGY CORP./IES UTILITIES RESPONSE:

The NRC Safety Evaluation documenting the review of the EPRI PPM was reviewed by Duane Arnold Energy Center's (DAEC's) engineering staff. This review concluded that all but two EPRI PPM valves were determined to be predictable using EPRI PPM. Specifically, MO-2700, "Reactor Water Clean Up Inboard Isolation Valve," and MO-2701, "Reactor Water Clean Up Outboard Isolation Valve," were determined to be unpredictable due to their application of stainless steel disc guides. During Refueling Outage 15, maintenance was performed to change the disc guides to stellite resulting in predictable EPRI PPM results.

Testing for load sensitive behavior is an on-going component of the MOV program. An evaluation for load sensitive behavior is included on each differential pressure test. DAEC has performed approximately 121 Differential Pressure tests on 32 MOVs. To date, there has been no evidence of load sensitive behavior.

Testing for stem lubrication degradation is performed whenever a periodic test is scheduled without an overhaul activity. DAEC has performed approximately 72 tests on 51 MOVs. To date, there has been no evidence of stem lubrication degradation.

NRC REQUEST 2:

In a letter dated June 25, 1996, to the licensee, the NRC staff provided its safety evaluation related to the licensee's removal of 17 MOVs from the GL 89-10 program at Duane Arnold. Those 17 MOVs have safety-related functions but are normally in their safety position. In the safety evaluation, the NRC staff concluded that the 17 MOVs are subject to the requirement that they be capable of returning to their safety position (if they are out of their safety position for surveillance or testing) or the provisions of the appropriate Technical Specifications for the systems (or trains) out of service must be followed. The NRC staff also noted that the licensee needed to address any applicable containment isolation or pipe break isolation requirements for these MOVs. In the safety evaluation, the NRC staff concluded that the commitments made by the licensee as discussed in NRC Inspection Report 95011 and subsequent licensee letters provided adequate confidence that the licensee had demonstrated and would maintain capability of the 17 MOVs to return to their safety position under accident conditions. The NRC staff noted that the licensee would be expected to take appropriate action according to its Technical Specifications if plant or industry information revealed that these MOVs were not capable of returning to their safety position. Finally, the NRC staff stated that the licensee would be expected to periodically evaluate the capability of these MOVs to return to their safety position as part of its long-term MOV program. In its letter dated March 17, 1997, in response to GL 96-05, the licensee reported that the periodic verification criteria for the 17 MOVs would be as follows: (1) torque switch settings shall be maintained not less than previously tested values, (2) industry operating experience and data feedback will be evaluated to determine if any adjustments to control switch settings are required, and (3) if torque switch setting adjustments are required, adjustments will be performed during the next appropriate scheduled maintenance activity, but periodic verification dynamic or static diagnostic testing will not be performed on these MOVs. Although the NRC staff recognizes the low risk significance of these MOVs, it is not apparent that the licensee's stated periodic verification criteria will provide confidence that these MOVs will be capable of returning to their safety position without (1) plans for performing required switch setting adjustments promptly, (2) any specified MOV operation under dynamic conditions, or (3) any future diagnostic testing. The licensee should describe the bases for its confidence that (1) these MOVs will continue to be capable of returning to their safety position, (2) any degradation in MOV performance will be identified prior to causing the MOVs to be incapable of returning to their safety position, and (3) any action necessary to ensure the MOV capability will be taken in a timely manner.

ALLIANT ENERGY CORP./IES UTILITIES RESPONSE:

On August 1, 1998, Alliant Energy Corp./IES Utilities implemented DAEC's conversion to the Improved Standard Technical Specifications (Amendment #223). As a result, DAEC's philosophy, based on previous licensing bases, of not entering Limiting Conditions for Operation during surveillance activities, was modified to require systems to be considered inoperable when the performance of a Surveillance Test Procedure (STP) results in a condition that would not allow the system to automatically respond to an initiation signal. As a result, the STPs for the Emergency Core Cooling Systems (ECCS), including those systems associated with the 17 valves in question, have been revised to state the following:

> *While Primary Containment Isolation System valves are out of their standby readiness position for stroke timing, they are considered inoperable and while ECCS valves are out of their standby readiness position for stroke timing, the ECCS system is considered inoperable.*

Therefore, based upon the fact that these valves are considered inoperable and the effect on their system is evaluated and the appropriate provisions of the Technical Specifications followed, these valves are no longer required to be in a special MOV program. The commitments made in our March 18, 1996 submittal, and discussed in the Staff's June 25, 1996 Safety Evaluation, are being revised appropriately.

NRC REQUEST 3:

The [Joint Owners Group] JOG program focuses on the potential age-related increase in the thrust or torque required to operate valves under their design-basis conditions. In the NRC safety evaluation dated October 30, 1997, on the JOG program, the NRC staff specified that licensees are responsible for addressing the thrust or torque delivered by the MOV motor actuator and its potential degradation. The licensee should describe the plan at Duane Arnold for ensuring adequate MOV motor actuator output capability, including consideration of recent guidance in Limitorque Technical Update 98-01 and its Supplement 1.

ALLIANT ENERGY CORP./IES UTILITIES RESPONSE:

The DAEC MOV program has an established preventive maintenance program that includes periodic lubrication and inspection, overhaul and diagnostic testing. These activities are performed both on-line and during refueling outages. All tasks are reviewed to evaluate for indication of degradation. If degradation is detected, corrective action will be taken. To date, degradation has not been detected in any MOV.

DAEC has reviewed and evaluated Limitorque Technical Update 98-01 and its Supplement 1. DAEC revised and implemented the degraded voltage thrust calculation methodology as specified in the Technical Update. The application of the resultant revised thrust calculation did not affect the operational capability of any MOV. The results of this review and recommended corrective action are documented on-site and available for future review.

SEVENTEEN VALVES PREVIOUSLY REMOVED FROM GL 89-10 PROGRAM SCOPE

VALVE ID	VALVE NAME
MO-1912	'B' RHR Shutdown Cooling Pump Suction Valve
MO-1920	'B' RHR Shutdown Cooling Pump Suction Valve
MO-2011	'A' RHR Shutdown Cooling Pump Suction Valve
MO-2016	'A' RHR Shutdown Cooling Pump Suction Valve
MO-1936	RHR Drain to Radwaste Valve
MO-1937	RHR Drain to Radwaste Valve
MO-1941	'A' RHR Heat Exchanger Outlet Valve
MO-2031	'B' RHR Heat Exchanger Outlet Valve
MO-2010	RHR Cross-tie Valve
MO-2311	HPCI Pump Discharge Valve
MO-2511	RCIC Pump Discharge Valve
MO-2316	HPCI/RCIC Test Return Redundant Shutoff Valve
MO-2515	RCIC Test Return Valve
MO-2112	'A' Core Spray Test Return Valve
MO-2132	'B' Core Spray Test Return Valve
MO-2115	'A' Core Spray Outboard Injection Valve
MO-2135	'B' Core Spray Outboard Injection Valve