

IES
INDUSTRIES INC.

February 11, 1994
NG-94-0336

Dr. Thomas E. Murley, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Station P1-137
Washington, D.C. 20555

Subject: Duane Arnold Energy Center
Docket No: 50-331
Op. License No: DPR-49
Reply to Notice of Violation Transmitted with
Inspection Report 93019
File: A-102

Dear Dr. Murley:

This letter and its attachment are provided in response to the recent inspection of the Duane Arnold Energy Center's (DAEC's) Generic Letter (GL) 89-10 Motor-Operated Valve Program.

The Attachment responds to the items identified in the Notice of Violation.

This letter contains the following new commitment:

Complete re-evaluation of VOTES data on all Generic Letter 89-10 valves tested prior to Refueling Outage 12 by April 1, 1994, using our revised engineering acceptance criteria.

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If you have any questions regarding this matter, please feel free to contact my office.

Sincerely,



John F. Franz
Vice President, Nuclear

Attachment: Reply To A Notice Of Violation Transmitted with
Inspection Report 93019

JFF/RJM:so

cc: R. Murrell
L. Liu
L. Root
R. Pulsifer (NRC-NRR)
J. Martin (Region III)
NRC Resident Office
DCRC

IES UTILITIES INC.
REPLY TO A NOTICE OF VIOLATION
TRANSMITTED WITH INSPECTION REPORT 93019

VIOLATION 1a

1. 10 CFR 50, Appendix B, Criterion XI requires, in part, that "a test program shall be established to assure that all testing required to demonstrate that structures, systems, and components will perform satisfactorily in service is identified and performed in accordance with written test procedures which incorporate the requirements and acceptance limits contained in applicable design documents," and that "test results shall be documented and evaluated to assure that test requirements have been satisfied."
 - a. Contrary to the above, on September 16, 1993, the licensee performed static testing of the high pressure coolant injection outboard isolation valve, MO-2239, using procedure VALVOP-L993-001, that did not incorporate all appropriate acceptance limits to ensure MOV torque switch settings were correct and that the MOV could perform its design basis function. Specifically, no acceptance limits were established to control the maximum motor current input. (50-331/93019-01a(DRS))

This is a Severity Level IV violation (Supplement 1).

RESPONSE TO VIOLATION 1a

1. Reason For The Violation.

On September 2, 1993, Static Valve Operation Test and Evaluation System (VOTES) testing for MO-2239 was performed to satisfy Generic Letter (GL) 89-10. MO-2239 produced a thrust which was acceptable but close to the calculated minimum required thrust. Upon evaluation of the test data, the torque switch trip setpoint was raised higher in the allowable thrust range. The valve was declared operable on September 18, 1993.

On October 5, 1993, during reactor startup testing after the refueling outage, Surveillance Test Procedure (STP) 45D001-CY, "HPCI System Cycle Operability Test," was performed prior to exceeding 150 psig reactor pressure. During performance of the STP, the motor operator supply circuit breaker for MO-2239 tripped when the valve was shut. As a result, the HPCI system was declared inoperable and the appropriate notifications were made. Troubleshooting determined that the operator's torque switch was not opening prior to the motor operator supply circuit breaker tripping. Based on our conclusion that the

breaker trip setting was exceeded due to a failure of the torque switch, the torque switch was replaced and post-maintenance testing was completed on MO-2239. VOTES data obtained after torque switch replacement indicated that the valve was closing with more thrust than that obtained with the old torque switch and was below locked rotor current. Based on this information, the valve was declared operable.

On October 7, 1993, MO-2239 received an isolation signal due to low reactor pressure as anticipated during a planned plant evolution. Again, the torque switch for MO-2239 failed to open prior to the supply circuit breaker tripping.

After a comprehensive review of the test data, it was determined that the supply current for MO-2239 was too close to locked rotor current at the torque switch trip setpoint. The review revealed that a diagnostic software default value was used during initial valve testing on September 2, instead of an appropriate equipment-specific value. As a result, the torque switch adjustment performed on September 16, 1993 used incorrect current data as its basis which caused the motor to draw locked rotor current prior to developing sufficient torque to trip the closed torque switch. Our review also determined that the design specification for maximum degraded voltage current was not reviewed and compared to the actual current being observed during valve testing.

2. Corrective Steps That Have Been Taken And The Results Achieved

On October 7, 1993, MO-2239, and thus the HPCI System, were declared inoperable. The reactor startup was halted and all withdrawn control rods were reinserted. Notifications were made and a root cause review was initiated. The torque switch setting was reduced to provide adequate margin between torque switch trip and motor capability. Diagnostic data confirmed that the motor operator was operating within the design thrust and current requirements.

Previously, the weak link calculations specified the maximum thrust for which a particular valve/operator combination was to be setup. Because torque limitations of the motor under normal and degraded conditions may be more limiting than the weak link analysis, acceptance limits have been established to control the maximum motor current input. Additionally, the VOTES test procedure now provides for a redundant external electrical current measurement to verify the VOTES data.

An evaluation of the VOTES data for all Generic Letter 89-10 valves tested from Refueling Outage 12 to present was completed and the appropriate actions have been taken. This

re-evaluation was performed using our recently revised engineering acceptance criteria.

Additional training emphasizing this event was provided to VOTES technicians.

Additionally, the maintenance directive for planning of Limatorque motor operator VOTES testing (MD-035) has been revised to include a requirement that the engineering evaluation of VOTES data is completed prior to returning a valve to operable status.

3. Corrective Actions That Will Be Taken To Avoid Further Violations.

A Re-evaluation of VOTES data on all Generic Letter 89-10 valves tested prior to Refueling Outage 12 will be completed by April 1, 1994, using our revised engineering acceptance criteria.

4. Date When Full Compliance Will Be Achieved.

Full compliance was achieved on November 22, 1993, when maintenance procedure VALVOP-L993-001 was revised to include acceptance limits for maximum motor current input.

VIOLATION 1b

1. 10 CFR 50, Appendix B, Criterion XI requires, in part, that "a test program shall be established to assure that all testing required to demonstrate that structures, systems, and components will perform satisfactorily in service is identified and performed in accordance with written test procedures which incorporate the requirements and acceptance limits contained in applicable design documents," and that "test results shall be documented and evaluated to assure that test requirements have been satisfied."

b. Contrary to the above, residual heat removal drain to waste surge tank inboard isolation valve, MO-1937, was returned to service following dynamic diagnostic testing before performing calculations to evaluate and document that acceptance criteria in SpTP-187 had been met. (50-331/93019-01b(DRS))

This is a Severity Level IV violation (Supplement 1).

RESPONSE TO VIOLATION 1b

1. Reason For The Violation

Special Test Procedure (SpTP)-167, Dynamic VOTES test for MO-1937 (Residual Heat Removal System Drain to Radwaste), section 9, "Extrapolation of Dynamic Test Data and Acceptance Criteria for MO-1937", contains the acceptance criteria for the dynamic test. Administrative procedure 1406.1, "Procedure Use and Adherence", requires that this section be completed prior to declaring the valve operable. However, MO-1937 was declared operable and returned to service without section 9 being completed. Additionally, we have determined that there was not a mechanism in place to provide for a prompt review and verification of the test data which could have identified this discrepancy.

2. Corrective Steps That Have Been Taken And The Results Achieved.

On December 3, 1993, a Quality Deficiency Report (QDR) was written to document the deficiency. Also on December 3, 1993, the extrapolation of SpTP-187 test data per section 9 was completed and verified by engineering and determined to be satisfactory for operability. All other dynamic tests performed to date were also reviewed to ensure that all steps of the SpTPs were satisfactorily completed.

Maintenance procedure VALVOP-L993-001, which controls the VOTES testing for all MOVs, was revised on November 1, 1993, to require verification sign-offs for critical steps.

Additionally, the maintenance directive for planning of Limitorque motor operator VOTES testing (MD-035) has been revised to include a requirement that the engineering evaluation of VOTES data is completed prior to returning a valve to operable status.

3. Corrective Actions That Will Be Taken To Avoid Further Violations.

As stated above, all actions to avoid further violations have been completed.

4. Date When Full Compliance Will Be Achieved.

Full compliance was achieved on December 3, 1993, when section 9 of SpTP-187 was completed and verified.

VIOLATION 2

10 CFR 50, Appendix B, Criterion XVI, requires, in part, "measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected."

Contrary to the above, as of December 6, 1993, corrective action was not taken following the completion of engineering evaluations conducted September 1993, and December 3, 1993, which concluded that the residual heat removal shutdown cooling outboard suction isolation valve, MO-1909, was in a potentially nonconforming condition. Specifically, the evaluations indicated that the valve may not be able to operate under design basis conditions.
(50-331/93019-05(DRS))

This is a Severity Level IV violation (Supplement 1).

RESPONSE TO VIOLATION 2

1. Reason For The Violation.

MO-1909, RHR Shutdown Cooling Isolation Valve, was declared operable on September 10, 1993, following static VOTES testing. At the time, MOV operability was based on having passed its "in-field" acceptance criteria. The more detailed engineering evaluation of MOV test results was not required to be completed prior to declaring the valve operable. On November 10, 1993, a meeting was held with DAEC MOV Program personnel and NRC Region III personnel on the DAEC MOV Program and MOV test acceptance criteria. Based on issues identified at that meeting, the MOV engineering acceptance criteria was revised to better account for rate of loading.

A Re-evaluation of Refueling Outage 12 MOV test results against the revised engineering acceptance criteria determined that MO-1909 did not meet the revised acceptance criteria. Because the valve met the "in-field" acceptance criteria applicable at the time of testing the significance of this was not fully recognized and appropriate corrective action was not promptly pursued.

2. Corrective Steps That Have Been Taken and Results Achieved.

On December 3, 1993, a QDR was generated and, in accordance with Generic Letter 91-18, an immediate operability determination was performed. Also, on December 7, 1993, a more detailed evaluation of MO-1909 test results subsequently determined that MO-1909 was operable.

A Re-evaluation of all VOTES tests performed from the beginning of Refueling Outage 12 to present was completed and appropriate actions taken. This Re-evaluation was performed using the revised engineering acceptance criteria.

Additionally, the maintenance directive for planning of Limitorque motor operator VOTES testing (MD-035) has been revised to include a requirement that the engineering evaluation of VOTES data is completed prior to returning a valve to operable status.

3. Corrective Actions That Will Be Taken To Avoid Further Violations.

A Re-evaluation of VOTES data on all Generic Letter 89-10 valves tested prior to Refueling Outage 12 will be completed by April 1, 1994, using our recently revised engineering acceptance criteria.

4. Date When Full Compliance Will Be Achieved.

Full compliance was achieved on December 8, 1993, when MO-1909 was re-evaluated and determined to be operable.