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DUKE POWER

June 9, 1995

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555

Subject: McGuire Nuclear Station, Units 1 and 2
Docket Nos. 50-369 and 50-370
NRC Inspection Report No. 50-369, 370/95-06
Violation 50-369, 370/95-06-01 and 50-369, 370/95-06-02
Reply to a Notice of Violation

Gentlemen:

Enclosed is a response to a Notice of Violation dated May 10, 1995 concerning Generic Letter 89-10 analysis and calculation errors and errors in entries of test data. Should there be any questions concerning this response, contact Randy Cross at (704) 875-4179.

Very Truly Yours,


T. C. McMeekin

Attachment

xc: (w/attachment)

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U. S. Nuclear Regulatory Commission
June 9, 1995

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**McGuire Nuclear Station
Reply to a Notice of Violation**

Violation 50-369, 370/95-06-01

10 CFR 50 Appendix B, Criterion III, design control, requires design control measures which assure that regulatory requirements and design bases are properly translated into drawings, specifications, instructions, and procedures.

Contrary to the above, on March 29, 1995, the licensee's design control measures did not assure proper translation of design basis information into sizings and settings for motor operated valves. The following examples indicate where calculations for setting and sizing valves were incorrectly performed:

1. The current (Revision 3) engineering thrust calculations for Auxiliary Feedwater valves 1CA0054 and 2CA0050 failed to use the correct actuator output for the effects of high ambient temperature, resulting in inaccurate assessments of valve capability.
2. Engineering personnel did not note that the peak thrust measured during the static tests of Auxiliary Feedwater valves 1CA0038 and 1CA0161 fell outside the calibration range of the measurement sensor. This resulted in inaccurate assessments of valve capability.
3. The thrust calculation for PORV Block Valve 1NC0030 was incorrect due to a sign error. The error resulted in a non-conservative determination of valve capability.

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

Reply to Violation 50-369, 370/95-06-01

1. Reason for the violation:

The reason for the violation is Inappropriate Action. Lack of attention to detail in performing the calculations and inadequate independent reviews resulted in the calculations for the setting and sizing of these valves to be performed with these errors undetected. None of the errors required any changes to the set-up of the valves in the field.

2. Corrective steps that have been taken and the results achieved:

- a) The thrust calculations for 1CA0050 and 2CA0054 were corrected, the VOTES traces re-marked and a VOTES summary report re-issued. While correcting the thrust calculations, it was determined that the VOTES dP Analysis Assessment spreadsheet was using values from the VOTES differential pressure tests that were overly conservative. The dP Analysis Assessment spreadsheet was revised to incorporate the new information. These actions confirmed that the valve field set-ups are acceptable. These corrective actions were completed by April 26, 1995.

A review performed for all other thrust calculations identified the following additional valves as having thrust calculation errors: 2CA0050, 1CA0054, 1,2 CA 38 and 66. These valves were reviewed and it was determined the valve field set-ups are acceptable. These thrust calculations will be corrected to use the high temperature stall torque value. Any additional calculation changes required as a result of the calculation corrections will also be addressed. All

calculations will be corrected by July 19, 1995.

- b) The structural limitations for 1CA0038 were immediately reviewed and it was determined that the new larger thrust was acceptable. Other occurrences of overthrusting were reviewed and it was determined that an overthrust evaluation for 1CA0161 did not include the error associated with extrapolating the calibration range. The new larger thrust for 1CA0161 was reviewed and determined to be acceptable. In addition, 1CA0054 and 2CA0050 were reviewed for exclusion of extrapolation errors during VOTES testing. Each MOV's load increased as a result of adding extrapolation errors but quantified loads were within current structural guidelines endorsed by the actuator manufacturer. These corrective actions were completed on April 2, 1995.
- c) The thrust calculation for 1NC0033 (identified as 1NC0030 in the Notice of Violation) was corrected. A review was performed of all Generic Letter 89-10 gate valve electric motor operator (EMO) sizing calculations in which valve set-up data sheets had been provided to plant personnel for VOTES testing where this error had occurred. The following additional valves were determined to be affected: 2NC0033, 1,2 NC31, 35; 1,2 CF 151, 153, 155, 157; 2NV 94 and 95. The calculations were corrected and the resulting larger EPRI valve factor was reviewed against the original valve factor used in the EMO sizing calculation. In all cases, the original valve factor used was more conservative than the corrected EPRI valve factor and thus there is no change necessary to any of the field set-up data sheets. These corrective actions were completed on March 29, 1995.
- d) MOV calculations will be revised to incorporate overthrust evaluations for 1CA0161, 1CA0038, 1CA0054, 2CA0050. This corrective action will be completed by July 19, 1995.
- e) As a result of identifying these examples of calculation errors, a complete review will be conducted of the Generic Letter 89-10 valve validation calculations to ensure all validation calculations are checked with increased attention to detail. This corrective action will be completed by September 30, 1995.

No similar events have occurred since implementation of these corrective actions.

3. Corrective steps that will be taken to avoid further violations:

- a) A review of the independent verification process for the EMO sizing calculations, VOTES test analysis summary report and the MPM test analysis report was performed. This review determined that the number of reviews this data receives during testing, analysis and final calculation verification is adequate and that the reviews are performed by a Valve Engineer qualified in VOTES test analysis.
- b) On May 24, 1995, Engineering management discussed the three examples cited in the violation with all Engineering personnel producing and checking validation calculations for Generic Letter 89-10 work at McGuire and counseled them on the importance of increased attention to detail when producing or checking these calculations.

4. Date when full compliance will be achieved:

McGuire Nuclear Station is now in full compliance with Technical Specifications. All corrective actions will be completed by September 30, 1995.

Violation 50-369, 370/95-06-02

10 CFR 50 Appendix B, Criterion XI, test control, requires appropriate procedural controls on testing used to demonstrate the capabilities of safety-related components.

Contrary to the above, on March 29, 1995, the licensee's test procedural controls were inadequate, as follows:

1. The documented testing of Nuclear Service Water valve 2RN0137 indicated that the technicians failed to apply a necessary 5 ft-lb correction to the measured torque values. This correction was applicable to the test stand being used.
2. In the static test documentation for Auxiliary Feedwater valve 2CA0050 the target thrust values that were copied into Page 1 of Enclosure 11.4, "MOV Test Data Sheet," (procedure IP/O/A/3066/02H, "Testing MOVs Using VOTES") did not agree with the limits contained in the thrust set-up sheet. This sheet was used to adjust the valve thrust requirements for diagnostic equipment uncertainties.

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

Reply to Violation 50-369, 370/95-06-02

1. Reason for the violation:

For example 1, the manufacturer of the new torque test bench used at McGuire did not account for a 5ft-lb lost load that is required to start the test bench in motion. McGuire Engineering personnel questioned the omission by the manufacturer and decided not to apply the 5 ft-lbs to the measured torque valve for 2RN0137 until verification with the manufacturer. This was considered a conservation decision since taking credit for the additional 5 ft-lbs would have provided additional margin in the expected torque outputs. Example 1 is not considered to be an example of inadequate test procedure controls.

For example 2, the reason for the violation is an inadequate VOTES test procedure IP/O/A/3066/02H. This procedure did not require VOTES technicians to verify that structural thrust limits experienced during thrust testing are not exceeded. In addition, the procedure requires documentation of the structural limit for the valve and actuator when the Engineering field data sheet provides the lesser of the two as the structural limit.

2. Corrective steps that have been taken and the results achieved:

- a) The 5 ft-lb correction was applied to the measured torque value for 2RN0137. This corrective action was completed on March 31, 1995.
- b) The butterfly MPM analysis will be reviewed to ensure that the 5 ft-lb load was included in the final determinations. This corrective action will be completed by June 29, 1995.

No similar events have occurred since implementation of these corrective actions.

3. Corrective steps that will be taken to avoid further violations:

- a) VOTES testing procedure IP/O/A/3066/02H was revised to instruct the VOTES technician to record the structural limit as documented on the Engineering supplied field set-up sheet and verify that the maximum thrust recorded during VOTES testing does not exceed the structural limit of the component. These corrective actions were completed on May 3, 1995.
- b) The changes included in IP/O/A/3066/02H will be reviewed with the Motor Operated Valve execution crews by June 27, 1995.

4. Date when full compliance will be achieved:

McGuire Nuclear Station is now in full compliance with Technical Specifications. All corrective actions will be completed by June 29, 1995.