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AUTH.NAME AUTHOR AFFILIATION
FITZPATRICK,E. Indiana Michigan Power Co. (formerly Indiana & Michigan Ele
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SUBJECT: Forwards response to NRC 950405 ltr re violations noted in insp repts 50-315/95-05 & 50-315/95-05 on 950131-0320. Corrective actions:provided field personnel w/instructions prior to installation.

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Indiana Michigan
Power Company
P.O. Box 16631
Columbus, OH 43216

INDIANA MICHIGAN POWER

May 5, 1995

AEP:NRC:1224
10 CFR 2.201

Docket Nos.: 50-315
50-316

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

Gentlemen:

Donald C. Cook Nuclear Plant Units 1 and 2
NRC INSPECTION REPORTS NO. 50-315/95005 (DRP)
AND 50-316/95005 (DRP)
REPLY TO NOTICE OF VIOLATION (CALCULATIONS TO
SUPPORT VALVE LEAK SEALING)

This letter is in response to a letter from W. L. Axelson dated April 5, 1995, which forwarded a Notice of Violation associated with calculations to support valve leak sealant injection. Our reply to the Notice of Violation is contained in the attachment to this letter.

Sincerely,

E. E. Fitzpatrick
Vice President

SWORN TO AND SUBSCRIBED BEFORE ME

THIS 5th DAY OF May 1995

Notary Public

My Commission Expires: 6-28-95

eh

Attachment

JE01

cc: A. A. Blind
G. Charnoff
J. B. Martin
NFEM Section Chief
NRC Resident Inspector - Bridgman
J. R. Padgett
W. T. Russell - NRC NRR

ATTACHMENT TO AEP:NRC:1224

REPLY TO NOTICE OF VIOLATION: NRC
INSPECTION REPORT NOS. 50-315/95005 (DRP) AND
50-316/95005 (DRP)

NRC Violation

"As a result of the inspection conducted from January 31 through March 20, 1995, a violation of NRC requirements was identified. In accordance with the 'General Statement of Policy and Procedure for NRC Enforcement Actions,' 10 CFR Part 2, Appendix C (1994), the violation is listed below:

Technical Specification 6.8, Procedure and Program, states in part that written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Appendix 'A' of Regulatory Guide 1.33, Rev. 2, February 1978.

Regulatory Guide 1.33, Quality Assurance Program Requirements (Operations), Appendix A, states that safety-related maintenance activities should be covered by written procedures.

Procedure No. 12MHP5021.001.051, Rev. 6, Control of Temporary On-Line Leak Sealing, Attachment 4, requires the leak sealing package received from the vendor to be reviewed by AEP Nuclear Design Group. This includes verifying that contractor documents and calculations are adequate and correct for the proposed leak repair.

Contrary to the above:

a. calculations and work procedures documented in Furmanite Procedure No. N-95036, Revision 2, dated February 22, 1995:

(1) did not specify that a minimum effective thread length of 0.41 inches had to be attained for the installation of the 3/8-inch shutoff adapters, as required for auxiliary connections by the original design code for the valve, American National Standard ANSI B16.34.

(2) did not consider design basis loading due to seismic or actuator thrust, and utilized 1/8-inch diameter holes, instead of the actual 3/8-inch diameter holes when calculating the resulting valve body longitudinal stress.

b. calculations documented in Furmanite Procedure No. N-95105, Revision 2, dated February 28, 1995:

failed to consider the load induced in the six flange bolts due to the moment caused by the calculated thrust force.

The above examples are considered a Severity Level IV violation (Supplement 1). (50-315/95005-04; 50-316/95005-04 (DRP))"

Response to NRC Violation

Admission or Denial of the Alleged Violation

Indiana Michigan Power admits to the violation as cited in the NRC Notice of Violation.

The three parts to the violation (a.1, a.2, and b) are responded to separately below.

Item a.1

1. Background and Reason for Part a.1 of the Violation

The reason for the violation was lack of specific instruction in Furmanite's procedure. Although the effective thread length requirement was not specified in the Furmanite procedure, the information was available prior to installation to ensure compliance with the minimum thread length (0.41 inches) required by ANSI B16.34. The technician who performed the work was provided with these instructions verbally. The technician confirmed that the adequate thread length engagement was achieved.

2. Corrective Actions Taken and Results Achieved

As stated above, although the specific instructions were not provided in Furmanite's procedure, the instructions were provided to field personnel prior to installation.

3. Corrective Actions Taken to Avoid Further Violations

By letter dated April 28, 1995, Furmanite issued internal guidance to its personnel (and also included this guidance in their procedure) regarding adherence to applicable ANSI B16.34 requirements for auxiliary connections.

4. Date When Full Compliance will be Achieved

Full compliance was achieved on May 1, 1995, when the appropriate documentation was added to the work package.

Item a.2

1. Background and Reason for Part a.2 of the Violation

The reason for the violation was our failure to document our engineering judgement in this area while verifying the Furmanite calculations.

Valve 1-MCM-221 is a safety-related seismic Class I motor operated valve. The valve manufacturer supplied the valve to nuclear grade requirements which included design of the valve to design loadings such as pressure, thermal, seismic and thrust loads.

The leak-sealant injection process required four 1/8-inch diameter holes to be drilled into the valve body. The hole size at each location is 3/8-inch diameter up to a depth of 0.41-inch to meet ANSI B16.34 requirements, and 1/8-inch diameter for the remaining depth of 0.47-inch.

Furmanite's calculation of stresses in the valve body was based on a 1/8-inch through hole instead of the actual profile of the hole as described above. The results were accepted and approved by the verifier based on previous experience and judgement that a minor variation in cross-sectional area would not result in a significant change in the calculated stress values.

The stresses were recalculated using the actual cross-sectional area (94.4% of the original metal area) at the drilled location. The reduction in stress-bearing area resulted in an insignificant increase in the longitudinal stress. The section modulus of the valve body at the drilled location was reduced by 6.1%, which will result in an insignificant increase in seismic or other stresses. Additionally, we performed a verification check for area replacement for the 3/8-inch hole as required by the ANSI B 31.1 Code and determined that there was no overlap of the reinforcement zones.

As stated above, the valve manufacturer supplied the valve to nuclear grade requirements which included design of the valve to system design condition loads such as pressure, thermal, seismic and thrust loads. The design loadings have not changed for the valve. The impact on its qualification is the reduction in area of cross-section and section modulus due to the holes drilled for the installation of the shutoff adapters. These reductions were (and are) judged to be insignificant and, as such, no additional evaluations were done using the reduced area for the design condition loads.

2. Corrective Actions Taken and Results Achieved

The Furmanite stress calculations for the longitudinal pressure stress have been revised to accurately reflect the installed geometry (3/8-inch hole) of the injection port in the valve body. The resulting change in the longitudinal pressure stress was insignificant and confirmed the engineering judgements that were made.

The basis for our engineering judgement on the impact of seismic and thrust loads was added to the calculation package.

3. Corrective Actions Taken to Avoid Further Violations

Guideline EG-NECP-005, "Guidelines for Checking Leak-Sealing Calculations," will be modified by June 30, 1995, to provide guidance on documentation required regarding the use of engineering judgement in checking Furmanite leak-sealing calculations when detailed calculations are considered not to be warranted. By July 15, 1995, training on the guideline and its use will be held with appropriate personnel.

4. Date When Full Compliance will be Achieved

Full compliance was achieved on April 24, 1995, when the engineering judgement for not specifically including the impact of seismic and thrust loads was added to the calculation package.

Item b

1. Background and Reason for Part b of the Violation

The reason for the violation was lack of adequate guidance for reviewing the Furmanite calculations. We agree with the finding that our review failed to consider the load induced in the six flange bolts due to the moment caused by the calculated thrust force.

Valve 2-NRV-163, on which the leak-sealing process was implemented, is a safety-related seismic Class I component. To seal the leakage, the valve body was not modified, but an external enclosure (sealant retainer) was attached to the valve body. The leak sealing compound was injected into this enclosure to stop the leakage through the gasket at the body to bonnet joint. This sealant retainer is not part of the pressure boundary of the valve and does not have a safety function. The bolts in question are associated with the sealant retainer, not the valve.

2. Corrective Actions Taken and Results Achieved

Calculations were performed to determine the load induced in the flange bolts due to the moment caused by the calculated thrust force. The increased loads on the bolts and the structural integrity of the sealant retainer are acceptable for the following reasons.

(1) The maximum bolt stress (at the top bolts) is well below the yield (approximately 73% of the yield stress at design temperature).

(2) The calculated stresses in the sealant retainer and bolts are based on a conservative pressure load of 2485 psi (design pressure). The actual pressure inside the retainer is likely to be below the operating pressure (2235 psi) as a significant number of vents are used during the leak sealing process to minimize the pressure build-up.

(3) The installation of the sealant retainer is a repair not governed by the ASME code.

Based on the above, it was concluded that, although the recalculated stress values in the flange bolts are

higher than those calculated earlier, the maximum stress is still below the yield stress. Therefore, the structural integrity of the sealant retainer is maintained and the piping system will perform its intended design function.

3. Corrective Actions Taken to Avoid Further Violations

Our guideline EG-NECP-005, "Guidelines for Checking Leak-Sealing Calculations," was issued on April 3, 1995. The document provides an illustration for evaluating thrust loads and their effect on sealant retainer flange bolts.

4. Date When Full Compliance will be Achieved

Full compliance was achieved on March 22, 1995, when the evaluations of the thrust load on the bolts was completed.