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AUTH.NAME AUTHOR AFFILIATION
FITZPATRICK,E. Indiana Michigan Power Co. (formerly Indiana & Michigan Ele
RECIP.NAME RECIPIENT AFFILIATION
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SUBJECT: Provides alternatives to exam category C-H,items C7.30, C7.40,C7.70 & C7.80 on Class 2 components at containment penetrations.

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Indiana Michigan
Power Company
500 Circle Drive
Buchanan, MI 49107 1395

INDIANA MICHIGAN POWER

November 27, 1996

AEP:NRC:0969AZ

Docket No.: 50-315
50-316

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

Gentlemen:

Donald C. Cook Nuclear Plant Units 1 and 2
CODE ALTERNATIVE PROPOSAL ASME SECTION XI, 1989 EDITION
PARAGRAPH IWC-2500 EXAMINATION AND PRESSURE TEST REQUIREMENTS
AND AMENDMENTS TO AEP:NRC:0969AY

References:

1. Letter, William H. Bateman to Donald F. Schnell, "EVALUATION OF THE SECOND 10-YEAR INTERVAL INSPECTION PROGRAM PLAN REVISED REQUESTS FOR RELIEF NOS. ISI-07A AND ISI-09A - CALLAWAY PLANT, UNIT NO. 1 (TAC NO. M95408)," dated September 12, 1996.

The purpose of this letter is to provide alternatives to examination category C-H, items C7.30, C7.40, C7.70, and C7.80 on class 2 components at containment penetrations. This letter also responds to your staff's request for additional information concerning our letter AEP:NRC:0969AY. The additional information is indicated with margin bars.

Cook Nuclear Plant, in accordance with the requirements stated in 10 CFR 50.55a, has adopted the 1989 edition of the ASME Section XI code for the third 10-year interval for units 1 and 2. The additional ASME Section XI testing increases radiation exposure and extends outage time without providing a commensurate increase in the level of safety or quality. As an alternative to the requirements of the 1989 edition of the ASME Section XI Code, it is proposed to use code case N-522 for all piping and components that penetrate the containment structure but are outside the scope of ASME Section XI. Code case N-522 allows the use of 10 CFR 50, Appendix J leak rate testing of the containment vessel as an alternative to the code required method. Appendix J leak rate testing will be performed at a frequency consistent with option B of our Appendix J program commitments for both units 1 and 2. This alternative is proposed in accordance with 10 CFR 50.55a(a)(3) in attachment 1. Code relief has previously been granted to the Callaway Plant, unit 1 (reference 1).

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Attachment 2 of this letter amends the AEP:NRC:0969AY letter, dated October 25, 1996. ASME Section XI, 1989 edition, paragraph IWA-5250(a)(2) requires that if leakage occurs at a bolted connection, the bolting shall be removed, VT-3 visually examined for corrosion, and evaluated in accordance with IWA-3100. An alternative that provides an acceptable level of quality and safety is proposed in accordance with 10 CFR 50.55a(a)(3) in attachment 2. This code alternative has previously been granted to the Surry Plant.

Attachment 3 of this letter also amends the AEP:NRC:0969AY letter. ASME Section XI, 1989 edition with no addenda, paragraph IWA-5242(a)(2) in conjunction with code case N-498-1 requires that system pressure tests be conducted with the insulation removed on bolted connections for class 1, 2, and 3 borated systems. An alternative that provides an acceptable level of quality and safety is proposed in accordance with 10 CFR 50.55a(a)(3) in attachment 3.

NRC approval of these code alternatives is requested no later than January 31, 1997, to allow adequate outage planning time for units 1 and 2.

Sincerely,

A. Alan Blind Acz

E. E. Fitzpatrick
Vice President

jmb

Attachments

cc: A. A. Blind
A. B. Beach
MDEQ - DW & RPD
NRC Resident Inspector
J. R. Padgett

ATTACHMENT 1 TO AEP:NRC:0969AZ

BACKGROUND INFORMATION AND JUSTIFICATION

CODE RELIEF REQUEST TO USE CODE CASE N-522

AS AN ALTERNATIVE FOR PRESSURE TESTING

CLASS 2 COMPONENTS AT CONTAINMENT PENETRATIONS FOR

COOK NUCLEAR PLANT UNITS 1 and 2

THIRD 10-YEAR INTERVAL

I. System/Component for which relief is requested

Code relief is requested for unit 1 and unit 2, class 2 systems and components at containment penetrations.

II. Code Requirements

ASME Section XI, 1989 edition with no addenda, examination category C-H, items C7.30, C7.40, C7.70 and C7.80 in conjunction with ASME code case N-498-1 requires system pressure testing of class 2 components at containment penetrations.

III. Basis for code relief

The requirement to perform system pressure testing on class 2 containment penetrations that would otherwise be classified as non-code class piping or components is a duplication of Cook Nuclear Plant Appendix J leak rate testing. The additional ASME Section XI system pressure test increases radiation exposure and extends outage time without providing a compensating increase in the level of safety or quality.

Code relief has been granted to the Union Electric Company to use this code case as an alternative to ASME Section XI testing, for the Callaway Plant, unit 1 via NRC letter dated September 12, 1996 (TAC NO. (M95408).

IV. Alternative Method

As an alternative to the requirements of the 1989 edition of the ASME Section XI code, it is proposed to use code case N-522 for all piping and components that penetrate the containment structure. Code case N-522 allows the use of 10 CFR 50, Appendix J leak rate testing of the containment vessel and components as an alternative to the code required VT-2 method of testing of containment penetrations. Appendix J leak testing on containment penetrations will be performed at a frequency consistent with option B of our Appendix J program commitments. The containment purge, hydrogen sampling, radiation monitoring, and plant air systems are included in this relief request.

V. Justification for granting code relief

The requirements provided in IWC-2500-1, category C-H of the 1989 edition of ASME Section XI code are applicable to piping and valves that are normally considered outside the scope of ASME Section XI. At each containment penetration, piping and valves that are otherwise non-safety-related are upgraded to code class 2, primarily to support the primary reactor containment safety function. The reactor containment integrity, including all containment penetrations, is periodically verified by performing leakage tests in accordance with 10 CFR 50, Appendix J. Currently both Appendix J leak testing and the ASME Section XI system pressure tests are conducted on containment penetration piping and valves at considerable labor and personnel radiation exposures due to insulation removal and reinstallation, scaffolding erection and removal, and VT-2 examination activities. It is, therefore, proposed to

eliminate the costly, redundant Section XI, VT-2 testing of containment penetrations and use code case N-522 as an alternative that permits the use of leak rate tests on containment penetrations in accordance with Appendix J. Testing in accordance with the Appendix J, option B, Cook Nuclear Plant program will provide an acceptable level of safety and quality.

ATTACHMENT 2 TO AEP:NRC:0969AZ

AMENDMENT 1 TO AEP:NRC:0969AY

BACKGROUND INFORMATION AND JUSTIFICATION

CODE RELIEF REQUEST FOR THE VT-3 EXAMINATION OF BOLTS

ON MECHANICAL CONNECTIONS FOR

COOK NUCLEAR PLANT UNITS 1 and 2

THIRD 10-YEAR INTERVAL

I. System/Component for which relief is requested

Code relief is requested for all class 1, 2, and 3 bolted systems.

II. Code Requirements

ASME Section XI, 1989 edition with no addenda, paragraph IWA-5250(a)(2) requires that if leakage occurs at a bolted connection, the bolting shall be removed, VT-3 visually examined for corrosion, and evaluated in accordance with IWA-3100.

III. Basis for code relief

The implementation of 1989 edition code requirements for bolted connections requires all bolts be removed for a VT-3 inspection, if through an evaluation, leakage is suspected. The method stated in paragraph IWA-5250(a)(2) of the 1989 edition of the ASME Section XI code for the evaluation of bolted connections is not the most prudent method compared to the proposed alternative and may cause undue hardship, increase the danger to plant personnel and result in significant outage time loss without a commensurate increase in safety and quality.

Removal of any or all bolting in bolted connections where leakage has been observed, in some cases, is not the most prudent action to take since leakage is generally not caused by degraded bolting which is the intent of the ASME Section XI code.

Relief has been granted to Surry to use the alternative presented here.

IV. Alternative Method

As an alternative to the requirements of the 1989 edition of the ASME Section XI code, it is proposed that if leakage is suspected or discovered at a bolted connection by a VT-2 examination during a system pressure test, either the bolt closest to the source of leakage will be removed and a VT-3 examination will be conducted and evaluated in accordance with IWA-3100(a) or an engineering evaluation shall be conducted that will consider the following: location of leakage; history of leakage; bolting material; evidence of corrosion with the connection assembled; corrosiveness of internal fluid; available information for similar bolting materials in similar environments; and condition of other components in the vicinity that could also be degraded due to leakage.

When the evaluation of the above criteria concludes that the leaking condition has not degraded the bolt, no further action is necessary. If the evaluation concludes bolting is degraded or is non-conclusive in determining degradation of bolting, the bolt closest to the source shall be removed, VT-3 examined and evaluated in accordance with IWA-3100 (a). When the removed bolt shows evidence of rejectable degradation, all remaining bolting shall be removed and VT-3 examined and evaluated in accordance with IWA-3100 (a).

V. Justification for granting code relief

Removal of all bolting in a mechanical connection as stated in the 1989 edition of the ASME Section XI code will, in some cases, breech the system requiring unnecessary cool down of the plant and subjecting the system to contamination. This requirement unnecessarily increases time, radiation exposure, and system contamination without a commensurate increase in safety and quality. The proposed alternative is a viable method for assuring the integrity of bolted connections for Cook Nuclear Plant units 1 and 2 and the alternative provides an acceptable level of safety and quality.

ATTACHMENT 3 TO AEP:NRC:0969AZ

AMENDMENT 2 TO AEP:NRC:0969AY

BACKGROUND INFORMATION AND JUSTIFICATION

CODE RELIEF REQUEST FOR THE VT-2 EXAMINATION OF

BOLTED CONNECTIONS FOR CLASS 1, 2, AND 3 BORATED SYSTEMS FOR

COOK NUCLEAR PLANT UNITS 1 AND 2

THIRD 10-YEAR INTERVAL

I. **System/Component for which relief is requested**

Code relief is requested for all class 1, 2, and 3 systems, borated for the purpose of reactivity control.

II. **Code Requirements**

ASME Section XI, 1989 edition with no addenda, paragraph IWA-5242(a)(2) in conjunction with code case N-498-1 requires system pressure tests be conducted with the insulation removed on bolted connections for class 1, 2, and 3 systems, borated for the purpose of reactivity control. Table IWB-2500-1, category B-P, items B15.10 through B15.71 requires VT-2 inspection of all pressure retaining boundaries following each refueling outage for class 1 systems. Table IWC-2500-1, category C-H, items C7.10 through C7.80 requires VT-2 inspection at or near the end of each inspection period for class 2 systems. Table IWD-2500-1, categories D-A, D-B, and D-C, items D1.10, D1.20 and D1.30 requires VT-2 inspections at or near the end of each inspection period for class 3 systems.

III. **Basis for code relief**

The implementation of code requirements as written and interpreted in the 1989 edition of the ASME Section XI code for system pressure testing of class 1, 2, and 3 systems and components would be hazardous to Cook Nuclear Plant personnel. Surface temperatures of some components to be VT-2 inspected at operating temperatures and pressures would be in excess of safe contact temperatures. The removal and reinstallation of insulation and scaffolding for the purpose of performing a VT-2 inspection at operating conditions are not conducive with good ALARA practices.

This position is further supported by the following:

1 Code case N-533, issued by the ASME Section XI organization, which provides an acceptable alternative to the code method for class 1 systems.

2. Code relief to use the requirements specified in code case N-533 has been granted to the V.C. Summer and Surry Power plants.

IV. **Alternative Method**

As an alternative to the requirements of the 1989 edition of the ASME Section XI Code, it is proposed for class 1 systems that the insulation be removed on bolted connections for systems, borated for the purpose of reactivity control, VT-2 examined, and evaluated for evidence of leakage during refueling activities at conditions which may be less than system operating conditions. Additionally, a VT-2 inspection at system operating conditions after a four hour hold time will be performed with the insulation in place prior to returning the unit to service.

Similarly, for class 2 and 3 systems, borated for the purpose of reactivity control, with the insulation removed at conditions which may be less than system operating

conditions, a VT-2 examination and evaluation for evidence of leakage will be performed on bolted connections, followed by a VT-2 inspection after a four hour hold time with insulation in place at system operating conditions prior to returning the unit to service.

V. Justification for granting code relief

VT-2 inspection of bolted connections of borated systems at system operating pressures and temperatures would be inconsistent with the nuclear industry's ALARA goals. It is estimated a total of 6.7 additional man rem would result in implementing this requirement as written in the first refueling outage for unit 1. This additional exposure is attributed to the erection and disassembly of scaffolding, reinstallation of insulation, and the VT-2 inspection at system operating conditions.

Additionally, the potential danger to plant personnel who must perform the VT-2 inspection or support work on or around systems that operate in excess of 500° F is considered an unnecessary risk without a commensurate increase in the safety of the plant and equipment.

Borated system leakage will be manifested at atmospheric conditions in the form of boric acid residue. Prudent evaluation of boric acid residues at low energy conditions in the portion of the outage schedule where sufficient time is available for detecting and evaluating leakage and planning for repair, if necessary, is a more effective and conservative method of assuring the code intent of no leakage. The VT-2 inspection at system operating conditions with the insulation in place will most likely detect any leakage not present during the inspection with the insulation removed.

Based on the above, we believe the alternative proposed above is viable for assuring the safe operating condition of the plant and provides an acceptable level of quality and safety.