UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

September 23, 2010

Vice President, Operations
Arkansas Nuclear One
Entergy Operations, Inc.
1448 S.R. 333
Russellville, AR 72802

SUBJECT: ARKANSAS NUCLEAR ONE, UNIT 2 – REQUEST FOR RELIEF ANO2-ISI-005, REQUEST TO EXTEND THE INSERVICE INSPECTION INTERVAL FOR THE VISUAL EXAMINATION OF ACCESSIBLE INTERIOR TO REACTOR VESSEL ATTACHMENT WELD (TAC NO. ME2566)

Dear Sir or Madam:

By letter dated November 4, 2009, Entergy Operations, Inc. (the licensee), submitted, pursuant to paragraph 50.55a(a)(3)(ii) of Title 10 of the *Code of Federal Regulations* (10 CFR), a request for relief for the Arkansas Nuclear One, Unit 2 (ANO-2), for visual examination of the accessible interior attachment welds within and beyond the beltline region and a visual examination of the accessible core support structure surfaces of the reactor pressure vessel once each 10-year inservice inspection (ISI) interval.

Specifically, the licensee requested permission to extend, from 10 to 20 years, the ISI interval that is required by Examination Categories B-N-2 and B-N-3 of Table IWB-2500-1 of Section XI of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), 2001 Edition, 2003 Addenda for the third 10-year ISI interval for ANO-2. This proposed alternative is applicable to the third 10-year ISI for the examination categories B-N-2 and B-N-3, Items B13.50, B13.60, and B13.70 visual examinations.

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed the licensee's submittal and determined that compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(ii), the NRC staff authorizes relief request ANO2-ISI-005, until the end of the third 10-year ISI interval for Examination Categories B-N-2 and B-N-3, Items B13.50, B13.60, and B13.70, at ANO-2, which are scheduled to be performed in 2018.

All other requirements of the ASME Code, Section XI for which relief was not specifically requested and approved in the subject request for relief remain applicable, including third-party review by the Authorized Nuclear Inservice Inspector.

The NRC staff's safety evaluation is enclosed. If you have any questions, please contact Kaly Kalyanam at (301) 415-1480 or via e-mail at kaly.kalyanam@nrc.gov.

Sincerely,

Michael T. Markley, Chief
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-368

Enclosure:
Safety Evaluation

cc w/encl: Distribution via ListServ

UNITED STATES
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELIEF REQUEST ANO2-ISI-005

REQUEST TO EXTEND B-N-2 AND B-N-3 COMPONENT EXAMINATIONS

ENTERGY OPERATIONS, INC.

ARKANSAS NUCLEAR ONE, UNIT 2

DOCKET NO. 50-382

1.0 INTRODUCTION

By letter dated November 4, 2009 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML093090314), Entergy Operations, Inc. (Entergy, the licensee), submitted a request to the U.S. Nuclear Regulatory Commission (NRC) for the approval for use of an alternative to the requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI, Paragraph IWB-2412, Inspection Program B. The proposed alternative was requested under Title 10 of the *Code of Federal Regulations* (10 CFR) paragraph 50.55a(a)(3)(ii).

The licensee requested approval for the use of alternative ANO2-ISI-005, to extend the inservice inspection (ISI) interval for visual examinations of the Category B-N-2 components (Interior Attachments Within Beltline Region and Interior Attachments Beyond Beltline Region) and B-N-3 components (Core Support Structure), so that the examinations will be performed at the same time as the examinations of the B-A and B-D components (which are scheduled to occur in 2018).

2.0 REGULATORY EVALUATION

In accordance with 10 CFR 50.55a(g)(4), the licensee is required to perform ISI of ASME Code Class 1, 2, and 3 components and system pressure tests during the first 10-year interval and subsequent 10-year intervals that comply with the requirements in the latest edition and addenda of Section XI of the ASME Code, incorporated by reference in 10 CFR 50.55a(b), subject to the limitations and modifications listed therein.

The ANO-2 Code of record for the inspection of ASME Code Class 1, 2, and 3 components is the 2001 Edition through 2003 Addenda of the ASME Code, Section XI. The regulations in 10 CFR 50.55a(a)(3) state, in part, that the Director of the Office of Nuclear Reactor Regulation may authorize an alternative to the requirements of 10 CFR 50.55a(g). For an alternative to be authorized, as per 10 CFR 50.55a(a)(3)(ii), the licensee must show that following the ASME

Enclosure

Code requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

2.1 Background

The visual inspection of Category B-N-2 and B-N-3 components to discover whether flaws have initiated, whether pre-existing flaws have extended, and whether pre-existing flaws may have been missed in prior examinations has always been done at the same time as the visual and ultrasonic ISI of Category B-A and B-D components. The licensee submitted a request (Request for Alternative ANO2-ISI-004) to extend the ISI of the Category B-A and B-D components from 10 to 20 years by separate letter dated October 29, 2009 (ADAMS Accession No. ML093030136). By letter dated September 21, 2010 (ADAMS Accession No. ML102450654), the NRC staff authorized Request for Alternative ANO2-ISI-004. The examinations of Category B-A and B-D components are required to be performed at regular intervals, as defined in Section XI of the ASME Code. Performing all of these inspections at the same time reduces the number of times that the unit's full core and internals must be moved to gain access for the examinations, in addition to significant savings in dose and outage duration.

3.0 TECHNICAL EVALUATION

3.1 Description of Proposed Alternatives

In ANO2-ISI-005, the licensee proposes the interval for Category B-N-2 and B-N-3 inspections be the same as that for Category B-A and B-D inspections.

3.2 Components for Which Relief is Requested

Examination Category	Item Number	Description
B-N-2	B13.50	Interior Attachments Within Beltline Region
B-N-2	B13.60	Interior Attachments Beyond Beltline Region
B-N-3	B13.70	Core Support Structure

3.3 Basis for Proposed Alternatives

The basis for the alternative is that performing the visual inspections of the B-N-2 and B-N-3 components on a different schedule than the Category B-A and B-D components would result in significant hardship without a compensating increase in safety. The licensee indicates that the Category B-N-2 and B-N-3 components have been inspected regularly in the past and no significant indications were noted. Likewise, a review of the same Category B-N-2 and B-N-3 inspections at other, similar nuclear power plants have been performed many times without finding a significant indication.

Furthermore, in its letter dated November 4, 2009, the licensee notes that:

> The reactor vessel would undergo, as a minimum, the Section XI Examination Category B-P pressure tests and visual examination conducted at the end of

each refueling before plant start-up, as well as leak tests with visual examinations that precede each start-up following maintenance or repair activities.

3.4 NRC Staff Evaluation

The NRC staff notes that the inspection of B-N-2 and B-N-3 components can only be done after the fuel and internals are removed from the reactor pressure vessel (RPV), and is usually only done at the same time as the ISI of Category B-A and B-D components. In addition, the licensee's request is consistent with the industry practice of performing the Category B-N-2 and B-N-3 on the same schedule for the ISI for Category B-A and B-D welds.

The licensee's request for alternative, ANO2-ISI-004, to perform the B-A and B-D welds on a 20-year interval instead of a Code-required 10-year interval (i.e., postpone it to until the end of the third interval for Categories B-A and B-D components at ANO-2 on March 25, 2020, with the ISI examinations scheduled to occur in 2018) was reviewed by the NRC staff and by letter dated September 21, 2010 (ADAMS Accession No. ML102450654), the staff authorized the request. The current relief request, ANO2-ISI-005, to extend the ISI interval that is required by Examination Categories B-N-2 and B-N-3, is consistent with the industry practice stated in the previous paragraph.

The radiation exposure to establish the conditions for and perform the ASME examination categories B-N-2 and B-N-3 examinations would essentially double if the subject examinations were performed in an outage different from the RPV shell, lower head, and nozzle weld examinations. Additionally, the NRC staff notes that an unnecessary risk is created by the removal of the core barrel to perform a visual examination without a compensating increase in quality or safety.

Finally, all of the previous inspections of Category B-N-2 and B-N-3 components at ANO-2 have not found any significant indications of cracking or any other problems. No evidence of service-induced degradation has been noted in the same inspections at other similar nuclear power plants. Additionally, the NRC staff notes that the change in interval for the inspections does not impact the defense-in-depth philosophy.

Based on the above, the NRC staff concludes that performing the examination of the RPV interior attachments and core support structure in an outage different from the RPV shell, head, and nozzle welds inspections would result in hardship or unusual difficulty without a compensating increase in quality or safety. Therefore, the proposed alternative is acceptable under the provisions of 10 CFR 50.55a(a)(3)(ii) until the end of the third interval, March 25, 2020.

4.0 CONCLUSION

The NRC staff has completed its review of the submittal for ANO2-ISI-005 regarding ANO-2. The staff concludes that performing the ISI of Category B-N-2 and B-N-3 components every 10 years as required by Section XI of the ASME Code would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. The staff concludes

that the Category B-N-2 and B-N-3 inspections may be performed as proposed and the alternative is authorized according to the provisions of 10 CFR 50.55a(a)(3)(ii) until the end of the third interval for Categories B-N-2 and B-N-3 components at ANO-2, which are scheduled to be performed in 2018.

All other requirements of the ASME Code, Section XI for which relief was not specifically requested and approved in the subject request for relief remain applicable, including third-party review by the Authorized Nuclear Inservice Inspector.

Principal Contributor: C. Fairbanks

Date: September 23, 2010

The NRC staff's safety evaluation is enclosed. If you have any questions, please contact Kaly Kalyanam at (301) 415-1480 or via e-mail at kaly.kalyanam@nrc.gov.

Sincerely,

/RA/

Michael T. Markley, Chief
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-368

Enclosure:
Safety Evaluation

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