August 6, 2007

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

SUBJECT: ARKANSAS NUCLEAR ONE, UNIT 1 - REQUEST TO EXTEND THE THIRD 10-YEAR INSERVICE INSPECTION INTERVAL (TAC NO. MD4698)

Dear Mr. Forbes:

By letter dated March 8, 2007, Entergy Operations, Inc. (Entergy), requested relief from certain American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, examination requirements pertaining to the Arkansas Nuclear One, Unit 1 (ANO-1), third 10-year inservice inspection (ISI) interval. Specifically, Entergy has requested to extend its third 10-year ISI interval by approximately 6 months beyond the 1-year extension allowed by ASME Code, Section XI, IWA-2430(d).

Based on the information submitted by the licensee, the Nuclear Regulatory Commission (NRC) has reviewed the subject request and concludes that the proposed alternative provides an acceptable level of quality and safety. Therefore, the NRC staff authorizes the proposed alternative in accordance with 10 CFR 50.55a(a)(3)(i) and extends the third 10-year ISI interval at ANO-1 to the end of its 21st refueling outage (1R21). This completes the NRC staff's review under TAC No. MD4698.

The NRC staff's safety evaluation is enclosed.

Sincerely,

/RA by Mohan Thadani for/

Thomas G. Hiltz, Chief
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No.: 50-313

Enclosure: Staff Evaluation

cc w/encl: See next page

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

REQUEST TO EXTEND THIRD 10-YEAR INSERVICE INSPECTION INTERVAL

ENTERGY OPERATIONS, INC.

ARKANSAS NUCLEAR ONE UNITS 1 AND 2

DOCKET NUMBERS 50-313 AND 50-368

1.0 INTRODUCTION

By letter dated March 8, 2007 (Agencywide Documents Access and Management System Accession No. ML070740527), Entergy Operations, Inc. (the licensee), submitted request for alternative ANO1-ISI-008 for Arkansas Nuclear One, Unit 1 (ANO-1). The licensee requested approval to extend its third 10-year inservice inspection (ISI) interval by approximately 6 months beyond the 1-year extension allowed by American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code), Section XI. The licensee requested to extend their third 10-year ISI interval to include its 21st refueling outage (1RF21), currently scheduled for the fall 2008.

2.0 REGULATORY EVALUATION

ISI of ASME Code Class 1, 2, and 3 components shall be performed in accordance with the requirements of Section XI of the ASME Code and applicable edition and addenda as required by paragraph 50.55a(g) of Title 10 of the *Code of Federal Regulations* (10 CFR), except where specific written relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i). Paragraph 50.55a(a)(3) of 10 CFR states in part that alternatives to the requirements of paragraph (g) may be used, when authorized by the Nuclear Regulatory Commission (NRC), if the licensee demonstrates that: (i) the proposed alternatives would provide an acceptable level of quality and safety, or (ii) compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2, 3 components (including supports) shall meet the requirements, except the design and access provisions and the pre-service examination requirements, set forth in the ASME Code, Section XI, “Rules for Inservice Inspection (ISI) of Nuclear Power Plant Components,” to the extent practical within the limitations of design, geometry, and materials of construction of the components. The regulations require that inservice examination of components and system pressure tests conducted during the first 10-year interval and subsequent intervals 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) 12 months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein. The Code of record for the third 10-year ISI interval for ANO-1 is the 1992 Edition of the ASME Code, Section XI, with portions of the 1993 Addenda applicable to pressure testing. The components (including supports) may meet the

requirements set forth in subsequent editions and addenda of the ASME Code incorporated by reference in 10 CFR 50.55a(b) subject to the limitations and modifications listed therein and subject to Commission approval.

Currently, ANO-1 is in the third period of its third 10-year ISI interval. The licensee stated that it plans to submit to the NRC staff a request for alternative to implement a risk-informed/ safety-based ISI (RIS_B) program. The licensee plans to implement the RIS_B ISI program during 1RF21 which is currently scheduled for the fall 2008. To accomplish this, the licensee requires approval of the current (third) 10-year ISI interval extension, which extends the third 10-year ISI interval to the end of 1RF21.

3.0 TECHNICAL EVALUATION

3.1 Component for Which Relief Is Requested

3.1.1 ASME Code, Section XI, Components Affected (As Submitted)

Components/Numbers:	Piping Welds
Code Class:	2
Examination Category:	C-F-1 and C-F-2
Item Numbers:	All
Description:	Piping Welds
Unit/Inspection Interval Applicability:	Arkansas Nuclear One, Unit 1 (ANO-1)/Third (3rd) 10-year interval

3.2 ASME Code Requirements from Which Relief Is Requested

ASME Code, Section XI, 1992 Edition, with parts of the 1993 Addenda applicable to pressure testing.

ASME Section XI, Table IWB-2412-1, defines an inservice inspection (ISI) interval to be 10 years in duration. Subsection IWB-2412(b) allows extending the interval for 1 year to coincide with a plant outage.

3.3 PROPOSED ALTERNATIVE

Pursuant to 10 CFR 50.55a(a)(3)(i), relief is requested to extend the third interval to include an additional outage (approximately 6 months beyond the code allowed 1-year extension) for items in examination categories C-F-1, and C-F-2.

3.4 LICENSEE BASIS FOR ALTERNATIVE (As Stated by the Licensee)

NRC Information Notice (IN) 98-44, Ten-Year Inservice Inspection Program Update for Licensees that Intend to Implement RI-ISI of Piping (Reference 2 [of the March 8, 2007 licensee submittal]), states that the probabilistic risk assessment technology in NRC regulatory activities should be increased to the extent supported by state-of-the-art methods and data and in a manner that complements the NRC's deterministic approach. Basically, this information combined with risk assessment techniques and associated data provides for developing an effective approach to the ISI program. This approach provides an acceptable level of quality and safety, as required by 10 CFR 50.55a(a)(3)(i). IN 98-44 also states that the NRC staff will consider authorizing a delay of up to 2 years in implementing the next 10-year ISI program for piping only in order for the licensee to develop and obtain approval for the risk-informed ISI program for piping.

ANO-1 is currently in the third period of the third ISI interval as defined by ASME Section XI Code for Inspection Program B. The third 10-year ISI interval began June 1997 and ends May 2007. Invoking the Code-allowed one-year extension extends the interval to May 2008.

Entergy is planning to submit to the NRC staff a request for alternative to implement a risk-informed/safety-based inservice inspection (RIS) program at ANO-1. Entergy plans to implement the RIS ISI program during 1RF21 currently scheduled for the fall 2008. To accomplish this, Entergy requires approval of this request, which extends the third ISI interval to the end of 1RF21 (approximately six months beyond the Code-allowed one-year extension).

The ANO-1 RIS_B process will be based upon ASME Code Case N-716, Alternative Piping Classification and Examination Requirements, Section XI Division 1, which is founded in large part on the RI-ISI process as described in Electric Power Research Institute (EPRI) Topical Report (TR) 112657 Rev. B-A, Revised Risk-Informed Inservice Inspection Evaluation Procedure. The associated request for alternative will demonstrate a reduction in risk (or maintains risk neutrality) while substantially reducing worker exposure and undue burden. Because risk-informed ISI programs focus inspections (and inspection methods) on locations potentially susceptible to degradation while considering the consequence of piping failure, a more robust targeted inspection program can be defined.

4.0 EVALUATION

The NRC staff has reviewed the relief request alternative ANO1-ISI-008 submitted in the licensee's letter dated March 8, 2007, for the third period of the third 10-year ISI interval of ANO-1 pertaining to Class 2 piping welds. The licensee requested approval to extend its ISI interval for piping to the end of its 21st refueling outage (1RF21), currently scheduled for fall 2008. The requested extension is approximately 6 months beyond the 1-year extension allowed by ASME Code, Section XI, IWA-2430(d).

NRC IN 98-44, "Ten-Year Inservice Inspection (ISI) Program Update for Licensees that Intend to Implement Risk-Informed ISI of Piping," states that for licensees who intend to implement an RI-ISI program for piping, per the guidance provided IN 98-44, the NRC staff will consider authorizing a delay of up to 2 years for the implementation of the ISI program for piping. The ANO-1 current ISI program for the third 10-year interval started in June 1997 and is scheduled

to end on May 2007. ANO-1 intends to submit a request for an alternative to implement a risk-informed/safety based ISI (RIS_B) program during the third period of the third 10-year ISI interval. The RIS_B program will be based on Code Case N-716, which is similar to the RI-ISI process, as described in EPRI TR 112657. The licensee indicated that the alternative is expected to demonstrate a reduction in risk (or maintain risk neutrality) while substantially reducing worker exposure and undue burden.

The licensee stated that at the end of the last refueling outage (1RF19), 66 percent of the piping weld examinations required by the ASME Code, Section XI, in the third 10-year interval, for examination categories C-F-1 and C-F-2, had been completed. Entergy will complete Class 1 piping examinations during the current ISI interval pursuant to the current program, a risk-informed ISI program based on ASME Code Case N-560. If the to-be-requested alternative to implement an RIS_B ISI program is approved prior to the 21st refueling outage (1RF21), the remaining 34 percent of the Class 2 inspection locations selected for examination pursuant to the new RIS_B process will be examined in the third period of the ISI interval. In the event that the to-be-requested alternative for an RIS_B program is not approved, the licensee plans to submit a different request for alternative to establish an RIS_B program based on ASME Code Case N-578. With that submittal, Entergy would also seek an additional extension of their third 10-year ISI interval. Therefore, the fourth 10-year ISI interval will implement 100 percent of the inspection locations selected for examination pursuant to the to-be-requested RIS_B Program. Furthermore, the licensee confirmed that during the time period needed for NRC review and approval of the third 10-year ISI interval extension, they plan to perform required augmented inspection programs as committed to the NRC staff in various correspondence. For example, augmented inspections of piping in stagnant borated water systems are scheduled to be performed during 1RF20, in accordance with NRC Bulletin 79-17, Pipe Cracks in Stagnant Borated Water Systems at PWR Plants. No other piping weld inspections are currently planned prior to 1RF21.

The NRC staff concludes that extending ANO-1's third 10-year ISI interval to the end of its 1R21 will provide an acceptable level of quality and safety because:

1. A significant percentage of the required examinations for the third 10-year ISI interval have been completed and no problems have been identified,

2. Additional piping weld examinations will be performed in the third period of the interval regardless of whether the licensee's proposed RIS_B ISI program is, in the future, approved by the NRC staff,

3. The requested extension is consistent with the criteria identified in IN 98-44, and

4. The delay requested in alternative ANO1-ISI-008 will be a one-time occurrence and will not affect future ISI intervals.

Further, the extension would allow time for the NRC to review ANO-1’s risk-informed ISI program, if submitted, while not affecting future ISI intervals. As noted above, the proposed RIB_B program will require NRC authorization prior to implementation.

5.0 CONCLUSION

Based on the information provided in the licensee's relief request for alternative ANO1-ISI-008 (and in light of the licensee's proposed submission of an alternative for the implementation of an RIS_B program, allowing, if approved, for more focused and more robustly targeted inspections on potential degradation locations) the NRC staff determined that extending ANO-1's third 10-year ISI interval to include an additional refueling outage (approximately 6 months beyond the code-allowed 1-year extension) would provide an acceptable level of quality and safety.

Pursuant to 10 CFR 50.55a(a)(3)(i), the staff authorizes ANO-1 to extend their third (current) 10-year ISI interval to the end of its 21st refueling outage. All other requirements of the ASME Code, Section XI, for which relief was not been specifically requested and authorized herein by the NRC staff, remain applicable, including third-party review by the Authorized Nuclear Inspector.

Principal Contributor: T. Lupold

Date: August 6, 2007