



Entergy Operations, Inc.
1448 S.R. 333
Russellville, AR 72802
Tel 479-858-4619

Dale E. James
Manager, Licensing
Nuclear Safety Assurance
Arkansas Nuclear One

1CAN050806

May 30, 2008

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

SUBJECT: Request to Use Code Case N-716
For Relief from ASME Section XI Requirements
Arkansas Nuclear One, Unit 1
Docket No. 50-313
License No. DPR-51

Dear Sir or Madam:

Pursuant to 10 CFR 50.55a(a)(3)(i), Entergy Operations, Inc. (Entergy) hereby requests approval of proposed alternatives to the requirements of the 1992 Edition and the 2001 Edition with the 2003 Addenda of ASME Section XI for Arkansas Nuclear One, Unit 1 (ANO-1). Specifically, the requirements of Examination Category B-F, B-J, C-F-1, and C-F-2 of Tables IWB-2500-1 and IWC-2500-1. Details of the request are provided in the attachment to this letter.

The request is based upon previously submitted and approved relief requests for other sites, including Waterford 3 and Grand Gulf.

In accordance with 10 CFR 50.55a(a)(3)(i), the proposed alternative to the referenced requirements may be approved by the NRC provided an acceptable level of quality and safety are maintained. Entergy believes the proposed alternative meet this requirement.

The relief request includes several new commitments that are summarized in Attachment 2.

Entergy requests approval of the proposed alternatives by October 1, 2008, in order to support the fall 2008 refueling outage. ANO-1 will withdraw the Request for Alternative CEP-ISI-007 pertaining to the application of Code Case N-663 for use at ANO-1 upon NRC approval of this risk-informed ISI program submittal. Although this request is neither exigent nor emergency, your prompt review is requested.

If you have any questions or require additional information, please contact me.

Sincerely,



DEJ/rwc

Attachments:

1. Request for Relief ANO1-ISI-012
2. List of Regulatory Commitments

cc: Mr. Elmo E. Collins
Regional Administrator
U. S. Nuclear Regulatory Commission
Region IV
612 E. Lamar Blvd., Suite 400
Arlington, TX 76011-4125

NRC Senior Resident Inspector
Arkansas Nuclear One
P. O. Box 310
London, AR 72847

U. S. Nuclear Regulatory Commission
Attn: Mr. Alan B. Wang
MS O-7 D1
Washington, DC 20555-0001

Mr. Bernard R. Bevill
Director Division of Radiation
Control and Emergency Management
Arkansas Department of Health & Human Services
P.O. Box 1437
Slot H-30
Little Rock, AR 72203-1437

Attachment 1

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Request for Relief

ANO1-ISI-012

**REQUEST FOR RELIEF
ANO1-ISI-012**

Components/Numbers: Class 1, 2, 3 or Non-Class piping components

Code Classes: 1, 2, 3 or Non-Class

References: ASME Section XI, Division 1, 1992 Edition with portions of
1993 Addenda IWB-2500 and IWC-2500

ASME Section XI, Division 1, 2001 Edition with the 2003
Addenda IWB-2500 and IWC-2500

EPRI TR-112657, Rev. B-A "Revised Risk-Informed Inservice
Inspection Evaluation Procedure," dated December 1999

ASME Code Case N-716

Examination Category: B-F, B-J, C-F-1, and C-F-2

Item Number(s): Various

Description: Alternative Piping Classification and Examination
Requirements

Unit / Inspection Interval Applicability: Arkansas Nuclear One, Unit 1 / Third (3rd) and Fourth (4th)
10-year intervals

I. Code Requirement(s)

The code of record governing in-service inspection for Arkansas Nuclear One, Unit 1 (ANO-1), is the 1992 Edition with portions of the 1993 Addenda for the third interval and the 2001 Edition with the 2003 Addenda for the fourth interval. ASME Section XI IWB-2500 and IWC-2500 require components to be examined and pressure tested as specified in Tables IWB-2500-1 and IWC-2500-1, respectively. These tables require a sampling of piping welds (as well as other components) be subjected to various types of nondestructive examination (NDE) (i.e., volumetric and/or surface examinations) and pressure testing (i.e., visual, VT-2).

II. Proposed Alternative Examinations

Pursuant to 10 CFR 50.55a(a)(3)(i), Entergy Operations, Inc. (Entergy) proposes to use a risk-informed / safety-based inservice inspection (RIS-B) program as an alternative to the requirements provided in Tables IWB-2500-1 and IWC-2500-1 for Class 1 and 2 piping. Other non-related portions of the ASME Section XI Code will be unaffected.

The proposed RIS-B program for piping is described in ASME Code Case N-716 with four (4) additional requirements. These requirements are based upon lessons learned from the pilot plant and follow-on applications of N716 (e.g., DC Cook, Grand Gulf and Waterford). These additional requirements are:

1. A flooding analysis must be performed that considers both the direct and indirect effects of pressure boundary failure and the different failure modes of the piping. The flooding analysis is to be consistent with ASME Standard RA-Sb-2005, "Standard for Probabilistic Risk Assessment for Nuclear Power Plant Applications" and Regulatory Guide (RG) 1.200, Revision 1. Supporting Requirements (SR) IF-D5a must meet Capability Category III (i.e., spans Category II and III), SR IF-C3, IF-C6, IF-C8, IF-D3a. SR IF-E3a must meet Capability Category II, SR IF-A1a, IF-C3b, and SR IF-D3 must meet Capability Category I. SR IF-D6 need not be met.
2. Any piping segment with a total estimated Core Damage Frequency (CDF) greater than 1 E-6 per year or a Large Early Release Frequency (LERF) greater than 1 E-7 per year must be assigned to the High Safety Significant (HSS) category. Any piping that has inspections added or removed in accordance with Code Case N-716 is required to be included in the change in risk assessment. An acceptable change in risk estimate is to be used to demonstrate compliance with the Regulatory Guide (RG) 1.174 acceptance criteria. The metrics on CDF and LERF are only to be used to add HSS segments and not to remove system parts generically assigned to the HSS in Section 2(a)(1) through 2(a)(4) of ASME Code Case N-716.
3. The EPRI Materials Reliability Project (MRP) Topical Report MRP-139, "Materials Reliability Program: Primary System Piping Butt Weld Inspection and Evaluation Guideline," July 14, 2005, Electric Power Research Institute, Palo Alto, CA, allows use of alternatives to reduce examination extent and schedules for categories of dissimilar metal welds susceptible to primary water stress corrosion cracking. Except for Category A welds, Code Case N-716 shall not be used as an alternative in accordance with MRP-139.
4. 10% of the HSS welds shall be selected for examination in accordance with Code Case N-716. All butt welds and socket welds categorized as HSS must be included in this examination population. Any socket welds selected for examination shall be examined per footnote 8 of Code Case N-716.

Entergy will add these four additional criteria to the use of Code Case N-716 to the ANO-1 RIS-B program prior to implementation of the program.

It should be noted that Code Case N-716 was largely founded on the risk informed Inservice Inspection (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."

III. Basis for Alternative

Over the last thirty years there have been significant gains in the understanding of pressure boundary component integrity, factors that impact component reliability, the impact of inspections and the type of inspection, as well as risk assessment insight related to operating nuclear power reactors. This experience has brought about changes related to operating and inspection requirements including changes to Section XI requirements and augmented inspection programs mandated by the regulator, as well as plant specific actions taken by individual owners.

For Section XI programs, these efforts have included revised code cases and the development of pilot and follow-on plant specific applications. For NRC mandated programs, these efforts have included integration with risk-informed Inservice Inspections (RI-ISI) programs and performance based initiatives, as well as extension to new areas including break exclusion / high energy line break (BER / HELB) requirements.

Code Case N-716 takes advantage of the aforementioned work and proposes a balanced and reasonable code action that reduces undue burden while ensuring plant safety. Code Case N-716 represents the next step in the use of risk-informed technology for defining Section XI requirements. This code case builds upon the work done at ASME Section XI, the industry and the NRC in developing and implementing risk-informed classification, inservice and pre-service inspection activities. This code case provides a reasonable alternative to existing requirements for pressure boundary classification, pre-service and inservice inspection activities. This approach provides for transparency, reproducibility and stability to the code and the code users, as well as regulatory bodies.

It is important to note that this code case applies to passive component functions only (e.g., pressure boundary integrity) versus active functions. By limiting this application to integrity management, concerns associated with relative risk ranking, conservative modeling practices, PRA completeness issues, integration of internal and external events models, truncation, human reliability analyses, etc. are avoided.

There are four elements of this code case. These elements consist of:

1. Classification requirements
2. Inservice inspection requirements
3. Pre-service inspection requirements
4. Change-in-risk evaluation

A technical basis for each of these elements is provided below.

Classification Requirements

A listing of every unit that has received permission from the NRC, as of February 2003, to implement a risk informed ISI program has been developed. From that listing the Class 2, 3 and no code class inspections were identified as a result of the application of the various RI-ISI processes. Based on the generic insights provided by this effort, a bounding set of HSS piping was identified.

This code case also requires the owner to conduct a plant-specific probabilistic risk assessment (PRA) of pressure boundary failures (e.g., pipe whip, jet impingement, spray, inventory losses) and any risk significant segments (CDF greater than 1 E-6 per year or LERF greater than 1 E-7 per year) that is outside the scope of generic insights above be included within the HSS scope.

The combination above prevents the overly aggressive use of plant-specific analyses thereby providing reduction in undue burden while providing a substantive and ongoing inspection program.

This element also contains requirements for the quality of the PRA. These requirements are identical to those already approved by the NRC. The code case also requires that the PRA be maintained up to date in accordance with industry standards.

Inservice Inspection Requirements

A review and analysis of the results of the RI-ISI plant-specific applications has been conducted. These applications total greater than forty units and cover Class I only applications and, Class 1 and 2 applications, as well as several full scope applications (i.e., Class 1, 2, 3 and some non-Nuclear safety (NNS)). In addition, a review of the requirements of the applicable ASME code cases (i.e., N560, N577, and N578) has been conducted. Further, an extension to the RI-ISI methodology to address break exclusion regions (BER, aka high energy piping, HELB) which results in additional / augmented inspections due to NRC regulations was reviewed for applicability.

Results of these evaluations provide the following conclusions:

1. For Class 1 systems, except for augmented programs due to Intergranular Stress Corrosion Cracking (IGSCC) in Boiling Water Reactors (BWRs), results are at or below 10%.
2. Class 2 piping tends to be at 0.1 to 2.0 percent range.
3. Class 2 inspections are dominated by the shutdown heat removal function encompassing 40 to 60 percent of inspections, depending upon where the system boundaries are defined (e.g., Low Pressure Safety Injection, Refueling Water Storage Tank).
4. Augmented programs (e.g., flow-accelerated corrosion (FAC), localize corrosion) also cover a large portion of the RI-ISI identified Class 2, 3, and NNS inspections.

5. BER for Pressurized Water Reactor (PWR) applications, quantitative results have suggested on the order of less than 10 percent of locations need to be inspected. However, for defense in depth purposes and to reflect the safety impact of high energy piping failures (e.g., personnel safety), plants are inspecting approximately 10 percent of this piping.
6. This code case continues the existing requirements on Class 3 and NNS items. These requirements are currently allowed and are being implemented by plants not implementing RI-ISI program. In addition, of the 43 follow-on RI-ISI applications that have been approved by the NRC, none have required inspections of Class 3 / NNS components.
7. The code case requires the plant to have augmented programs in place to monitor and / or inspect for localized corrosion (e.g., microbiologically influenced corrosion (MIC)) and FAC, as applicable. This is another step that assures that component reliability for category B systems and subsystems will continue to be maintained.
8. Augmented inspections may be credited towards the inspection population as appropriate.
9. Some risk-based evaluations have concluded that additional inspections beyond the augmented programs are not necessary. However, for defense in depth and component reliability purposes, this code case conservatively requires additional inspections thereby providing a substantive ongoing assessment of the condition of the pressure boundary function.
10. Consistent with many approved RI-ISI applications, augmented programs are independent and will be continued as committed to by the licensee and will not become part of the ISI plan. Therefore, the augmented programs are not subject to the requirements of Section XI unless credited in this code case.

Pre-Service Inspection Requirements

Consistent with Code Cases N560, N577 and N578, the RI-ISI volumes / requirements are based upon an "inspection for cause" philosophy and have been shown to provide adequate levels of quality and safety.

Change-in-Risk Evaluation

The change-in-risk evaluation process and acceptance criteria are identical to that contained in the Non Mandatory Appendix R, Method B, and are compatible with other approaches (e.g., Method A). These approaches have been determined by the NRC to meet the requirements of RG 1.174. Therefore, any increases in risk should be small and consistent with the intent of the Commission's Safety Goal Policy Statement.

Note Code Case N-716 has requirements for PRA quality that are identical to that approved by the NRC in other risk informed applications (e.g., RI-BER).

Additional Requirements

The bases for the additional requirements are the same as those listed above. These limitations provide additional conservatisms to the program.

Other ASME Section XI examination requirements for the subject piping components, including volumetric examinations and pressure testing, will continue to be performed. Examination requirements for other components will continue to meet all Section XI requirements and are not subject to this request.

Code Case N-716 was approved by the ASME Boiler and Pressure Vessel Code Committee on April 19, 2006. It has not yet been included in the most recent listing of NRC approved code cases provided in RG 1.147, "Inservice Inspection Code Case Acceptability – ASME Section XI Division 1."

IV. Conclusion

10 CFR 50.55a(a)(3) states:

"Proposed alternatives to the requirements of paragraphs (c), (d), (e), (f), (g) and (h) of this section or portions thereof may be used when authorized by the Director of the Office of Nuclear Reactor Regulation. The applicant shall demonstrate that:

- (i) The proposed alternatives would provide an acceptable level of quality and safety, or
- (ii) Compliance with the specified requirements of this section would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety."

Entergy believes the proposed risk-informed / safety-based inservice inspection (RIS-B) program as an alternative to the requirements of provided in Tables IWB-2500-1 and IWC-2500-1 for Class 1 and 2 piping provides an acceptable level of quality and safety. The proposed RIS-B program for piping is described in ASME Code Case N-716 with four (4) additional requirements. Therefore, Entergy requests the NRC authorize the use of Code Case N-716 with the four requirements listed in accordance with 10 CFR 50.55a(a)(3)(i).

Attachment 2

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List of Regulatory Commitments

List of Regulatory Commitments

The following table identifies those actions committed to by Entergy in this document. Any other statements in this submittal are provided for information purposes and are not considered to be regulatory commitments.

COMMITMENT	TYPE (Check one)		SCHEDULED COMPLETION DATE (If Required)
	ONE-TIME ACTION	CONTINUING COMPLIANCE	
A flooding analysis must be performed that considers both the direct and indirect effects of pressure boundary failure and the different failure modes of the piping. The flooding analysis is to be consistent with ASME Standard RA-Sb-2005, "Standard for Probabilistic Risk Assessment for Nuclear Power Plant Applications" and Regulatory Guide (RG) 1.200, Revision 1. Supporting Requirements (SR) IF-D5a must meet Capability Category III (i.e., spans Category II and III), SR IF-C3, IF-C6, IF-C8, IF-D3a. SR IF-E3a must meet Capability Category II, SR IF-A1a, IF-C3b, and SR IF-D3 must meet Capability Category I. SR IF-D6 need not be met.	X		Prior to implementation of the RIS-B
Any piping segment with a total estimated Core Damage Frequency (CDF) greater than 1 E-6 per year or a Large Early Release Frequency (LERF) greater than 1 E-7 per year must be assigned to the High Safety Significant (HSS) category. Any piping that has inspections added or removed in accordance with Code Case N-716 is required to be included in the change in risk assessment. An acceptable change in risk estimate is to be used to demonstrate compliance with the Regulatory Guide (RG) 1.174 acceptance criteria. The metrics on CDF and LERF are only to be used to add HSS segments and not to remove system parts generically assigned to the HSS in Section 2(a)(1) through 2(a)(4) of ASME Code Case N-716.	X		Prior to implementation of the RIS-B

**List of Regulatory Commitments
 (continued)**

COMMITMENT	TYPE (Check one)		SCHEDULED COMPLETION DATE (If Required)
	ONE-TIME ACTION	CONTINUING COMPLIANCE	
The EPRI Materials Reliability Project (MRP) Topical Report MRP-139, "Materials Reliability Program: Primary System Piping Butt Weld Inspection and Evaluation Guideline," July 14, 2005, Electric Power Research Institute, Palo Alto, CA, allows use of alternatives to reduce examination extent and schedules for categories of dissimilar metal welds susceptible to primary water stress corrosion cracking. Except for Category A welds, Code Case N-716 shall not be used as an alternative in accordance with MRP-139.	X		Prior to implementation of the RIS-B
10% of the HSS welds shall be selected for examination in accordance with Code Case N-716. All butt welds and socket welds categorized as HSS must be included in this examination population. Any socket welds selected for examination shall be examined per footnote 8 of Code Case N-716.	X		Prior to implementation of the RIS-B
ANO-1 will withdraw the Request for Alternative CEP-ISI-007 pertaining to the application of Code Case N-663 for use at ANO-1.	X		Upon NRC approval of this risk-informed ISI program submittal.