



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

February 21, 2013

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 NOS. ANO2-
ISI-009, ANO2-ISI-011, AND ANO2-ISI-012 FOR THIRD 10-YEAR INTERVAL
INSERVICE INSPECTION (TAC NOS. ME8271, ME8273, AND ME8274)

Dear Sir or Madam:

By letter dated March 26, 2012, Entergy Operations, Inc. (the licensee), proposed Request for Relief (RR) Nos. ANO2-ISI-009, ANO2-ISI-011, and ANO2-ISI-012 (in addition to other RRs) from certain requirements of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (ASME Code), under the provisions of Title 10 of the *Code of Federal Regulations* (10 CFR), paragraph 50.55a(g)(5)(iii), for the third 10-year in-service inspection (ISI) program for Arkansas Nuclear One (ANO), Unit 2. Additionally, in response to two U.S. Nuclear Regulatory Commission (NRC) requests for additional information dated July 18, 2012, the licensee supplemented the application by letter dated December 17, 2012, for all three RRs.

The ANO, Unit 2, third 10-year ISI interval ended on March 25, 2010. The licensee extended the third 10-year ISI interval by 1 year in accordance with ASME Code, Section XI, Paragraph IWA-2430 for the 2R21 (21st) refueling outage.

RR ANO2-ISI-009 covers the steam generator (SG) shell integral attachment weld. In its letter dated March 26, 2012, the licensee stated that during surface examination of the vessel integral attachment weld, 100-percent coverage of the required examination area could not be obtained, due to the geometric configuration of the integrally welded attachment and associated welded insulation bracket, the code examination area, as depicted in ASME Section XI. Pursuant to 10 CFR 50.55a(g)(6)(i), Entergy requested permission to perform surface examination within the limitations described in Table 1 of its application dated March 26, 2012.

Based on the above, the NRC staff concludes that the licensee has shown that it is impractical to meet the ASME Code-required 100 percent surface examination coverage for the subject welds due to the proximity of an adjacent component. However, based on the surface coverage obtained, it is reasonable to conclude that if significant service-induced degradation had occurred, evidence of it would have been detected by the examinations that were performed. This is further supported by prior inspection results that showed no unacceptable fabrication indications. Hence, the NRC staff concluded that the examinations were performed to the extent practical, on the subject SG support bracket welds and provide reasonable assurance of structural integrity of the subject weld and is, therefore, acceptable.

RR No. ANO2-ISI-011 covers the feedwater nozzle-to-shell weld where, during surface examination of the pipe support integral attachment weld, 100-percent coverage of the required examination area could not be obtained due to the geometric configuration of the integrally welded attachment and associated pipe support. The code examination area, as depicted in ASME Section XI, cannot be examined to the extent of obtaining full ASME Code coverage. Entergy requested, pursuant to 10 CFR 50.55a(g)(6)(i), permission to perform surface examination within the limitations described in Table 1 of its application dated March 26, 2012.

Based on the above, the NRC staff concludes that the licensee has shown that it is impractical to meet the ASME Code-required 100 percent volumetric or surface examination coverage for the subject welds due to the proximity of an adjacent hanger strap. However, based on the volumetric and surface coverage obtained, it is reasonable to conclude that if significant service-induced degradation had occurred, evidence of it would have been detected by the examinations that were performed. This is further supported by prior inspection results that showed no recordable indications. Hence, the NRC staff concluded that the examinations were performed, to the extent practical, on the subject pipe lug welds and provide reasonable assurance of structural integrity of the subject welds and is, therefore, acceptable.

RR No. ANO2-ISI-012 covers pressure retaining welds in pressure vessels, where, during ultrasonic examination of the Letdown Heat Exchanger Flange-to-Channel Circumferential Weld and the Shutdown Cooling Heat Exchanger Flange-to-Channel Cylinder and Channel Cylinder-to-Tubesheet Welds, 100 percent coverage of the required examination volumes could not be obtained. Entergy requested, pursuant to 10 CFR 50.55a(g)(6)(i), relief from achieving the Code-required coverage when performing volumetric examinations

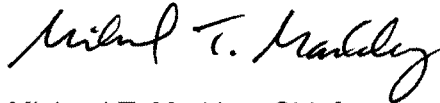
Based on the above, the NRC staff concludes that the licensee has shown that it is impractical to meet the ASME Code-required 100 percent volumetric examination coverage for the subject heat exchanger circumferential welds due to geometry configuration and interference from surrounding components. However, based on the volumetric coverage obtained, it is reasonable to conclude that if significant service-induced degradation had occurred, evidence of it would have been detected by the examinations that were performed. Hence, the NRC staff concluded that the examinations performed to the extent practical on the subject welds provide reasonable assurance of structural integrity of the subject welds and is, therefore, acceptable. Past examination results for these three welds are available in the March 26, 2012, submittal, which showed no recordable flaw indications for Weld 45-001 and acceptable indications not requiring flaw evaluations for Welds 49-001 and 49-002, further supporting the structure integrity of these welds.

In summary, the NRC staff has determined that granting relief pursuant to 10 CFR 50.55a(g)(6)(i) is authorized by law and will not endanger life or property, or the common defense and security, and is otherwise in the public interest given due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(g)(6)(i). Therefore, the NRC staff grants relief from the specified ASME Code, Section XI, examination coverage requirements of the subject welds contained in RRs ANO2-ISI-009, ANO2-ISI-011 and ANO2-ISI-012 for the ANO, Unit 2, third 10-year ISI interval. The NRC staff has not imposed any additional alternative requirements.

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

The NRC staff's safety evaluation is enclosed.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael T. Markley". The signature is fluid and cursive, with the first name "Michael" and last name "Markley" clearly distinguishable.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

THIRD 10-YEAR INSERVICE INSPECTION INTERVAL

REQUEST FOR RELIEF NOS. ANO2-ISI-009, ANO2-ISI-011, AND ANO2-ISI-012

ARKANSAS NUCLEAR ONE, UNIT 2

ENTERGY OPERATIONS, INC.

DOCKET NO. 50-368

1.0 INTRODUCTION

By letter dated March 26, as supplemented December 17, 2012 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML12086A293 and ML12354A202), Entergy Operations, Inc. (the licensee), proposed Request for Relief (RR) Nos. ANO2-ISI-009, ANO2-ISI-011, and ANO2-ISI-012 (in addition to four other RRs) from certain requirements of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (ASME Code), under the provisions of Title 10 of the *Code of Federal Regulations* (10 CFR), paragraph 50.55a(g)(5)(iii), for the third 10-year inservice inspection (ISI) program for Arkansas Nuclear One (ANO), Unit 2.

The proposed changes in RRs ANO2-ISI-009, ANO2-ISI-011, and ANO2-ISI-012 would revise the inspection requirements for certain components from those based on ASME Code, Section XI. The component for RR ANO2-ISI-009 is the steam generator (SG) shell integral attachment weld. The component for RR ANO2-ISI-011 is the pipe support integral attachment weld. The components for RR ANO2-ISI-012 are the letdown heat exchanger flange-to-channel, shutdown cooling heat exchanger flange-to-channel, and shutdown cooling heat exchanger channel cylinder-to-tube sheet circumferential welds.

2.0 REGULATORY EVALUATION

ISI of the ASME Code Class 1, 2, and 3 components is performed in accordance with Section XI of the ASME Code and applicable addenda as a way to detect anomaly and degradation indications so that structural integrity of these components can be maintained. This is required by 10 CFR 50.55a(g), except where specific relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i). Section 50.55a(a)(3) of 10 CFR states that alternatives to the requirements of paragraph (g) may be used, when authorized by the U.S. Nuclear Regulatory Commission (NRC), if: (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.

Enclosure

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2, and 3 components (including supports) shall meet the requirements, except the design and access provisions and the preservice examination requirements, set forth in the ASME Code, Section XI, 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, which was 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 ASME Code of record for ANO-2 for the third 10-year interval ISI program is the 1992 Edition of the ASME Code, Section XI.

3.0 TECHNICAL EVALUATION

3.1 Request for Relief ANO2-ISI-009

3.1.1 ASME Code Requirement

ASME Code, Section XI, Examination Category B-H, Item B8.30, "Steam Generator Integrally Welded Attachments," requires essentially 100 percent volumetric or surface examination, as defined by Figure IWB-2500-14 for the volumetric examination, of the welds in one generator support. "Essentially 100 percent," as clarified by ASME Code Case N-460, "Alternative Examination Coverage for Class 1 and Class 2 Welds," is greater than 90 percent coverage of the examination volume, or surface area, as applicable. ASME Code Case N-460 has been approved for use by the NRC in Regulatory Guide (RG) 1.147, Revision 16, "Inservice Inspection Code Case Acceptability."

3.1.2 Licensee's ASME Code Relief Request

In accordance with 10 CFR 50.55a(g)(6)(i), the licensee requested relief from the ASME Code-required surface examination for the Class 1 SG support welds shown in Table 3.1.

Table 3.1 – ASME Code, Section XI, Examination Category B-H			
ASME Code Item	Weld Identifier	Description	ASME Coverage Obtained
B8.30	04-008	Integrally Welded Attachment – Key Bracket	62%
B8.30	04-009	Integrally Welded Attachment – Key Bracket	62%

3.1.3 Licensee's Basis for Relief Request (as stated by the licensee):

During surface examination of the vessel integral attachment weld, 100% coverage of the required examination area could not be obtained.

The configuration of the subject component is a metal key bracket with dimensions approximately twenty-two inches by eight inches welded on four sides. The bracket is integrally welded to the steam generate shell. The angle iron insulation support below the bracket is welded in place and restricts access to the lower portion of the weld. Code examination of this type of integral attachment weld requires a surface examination technique, such as a Liquid Dye Penetrate or Magnetic Particle Testing, of the weld crown surface and ½ inch of base material on either side of the weld toes. However, due to the configuration of this integral attachment and associated welded insulation support, access to the lower weld and surrounding base material for examination purposes is limited.

In order to perform additional or alternative Code examinations, modification and/or replacement of the insulation support would be required. The examination performed on the available surface area of the subject item would detect generic degradation, if it existed, demonstrating an acceptable level of integrity.

3.1.4 Licensee's Proposed Alternative Examination (as stated by the licensee):

No alternative testing is proposed at this time. Entergy has examined the subject item to the extent practical.

3.1.5 NRC Staff Evaluation

The ASME Code requires essentially 100 percent volumetric or surface examination, as applicable, of the length of the attachment welds in one SG support bracket. However, according to the technical description included in the licensee's submittal, the ANO-2 SG support bracket has an angle iron insulation support right below it, and this insulation support restricts access to the lower portion of the SG support bracket welds. As a result, the licensee obtained 62 percent surface coverage of the ASME Code-required inspection area for the subject welds. Increasing surface coverage for the subject welds would require modification or replacement of the insulation support and would place a burden on the licensee. Therefore, the ASME Code-required 100 percent surface examination is considered impractical. However, to ensure that the proposed inspection coverage provides reasonable assurance of structural integrity for this component, the staff issued request for additional information (RAI)-1 to determine whether the inspection results from the 62 percent of the area is representative of the entire area and whether recordable indications were observed during any of the prior examinations. In its response dated December 17, 2012, the licensee stated that even if 50 percent of the bracket and its welds are carrying all the load, the resulting maximum stress indicator is less than the design value with a 36 percent margin. Further, the licensee indicated that prior ISI results showed no indications for one component and acceptable fabrication indications for another, giving additional assurance that the weld did not have any service induced indications and the proposed coverage of 62 percent is acceptable. This reasonably

demonstrated that the proposed inspection provides reasonable assurance of structural integrity for the component.

Based on the above, the NRC staff determined that the licensee has shown that it is impractical to meet the ASME Code-required 100 percent surface examination coverage for the subject welds due to the proximity of an adjacent component. However, based on the surface coverage obtained, it is reasonable to conclude that if significant service-induced degradation had occurred, evidence of it would have been detected by the examinations that were performed. This is further supported by prior inspection results that showed no or acceptable fabrication indications. Hence, the NRC staff concluded that the examinations were performed, to the extent practical, on the subject SG support bracket welds and provide reasonable assurance of structural integrity of the subject weld and is, therefore, acceptable.

3.2 Request for Relief ANO2-ISI-011,

3.2.1 ASME Code Requirement

ASME Code, Section XI, Examination Category B-K-1, Item B10.20, "Pumps Integrally Welded Attachments," requires essentially 100 percent volumetric or surface examination, as defined by Figure IWB-2500-14 for the volumetric examination, of the welds in the welded attachments. "Essentially 100 percent," as clarified by ASME Code Case N-460 is greater than 90 percent coverage of the examination volume, or surface area, as applicable. ASME Code Case N-460 has been approved for use by the NRC in RG 1.147, Revision 16.

3.2.2 Licensee's ASME Code Relief Request

In accordance with 10 CFR 50.55a(g)(6)(i), the licensee requested relief from the ASME Code-required surface examination for the Class 1 pipe support weld shown in Table 3.2.

Table 3.2 – ASME Code, Section XI, Examination Category B-K-1			
ASME Code Item	Weld Identifier	Description	ASME Coverage Obtained
B10.20	22-071W	Integrally Welded Attachment – 1-Way Vertical Restraint	88%

3.2.3 Licensee's Basis for Relief Request (as stated by the licensee):

During surface examination of the pipe support integral attachment weld, 100 percent coverage of the required examination area could not be obtained.

The configuration of the subject component is four 5/8" x 1" x 1" lugs, placed 4 1/16" apart end-to-end in pairs at 0° and 180° on the vertical pipe. The lugs are integrally welded to the pipe with full penetration welds. The two piece four-inch wide hanger strap is positioned and bolted between the end to end lugs, contacting the upper lugs which support the vertical pipe. Code examination of this type of integral attachment weld requires a surface examination technique, such as Liquid Dye Penetrate or Magnetic Particle Testing, of the weld crown

surface and ½ inch of base material on either side of the weld toes. However, due to the configuration of this integral attachment and associated hanger strap, access to the weld ends and surrounding base material for examination purposes is limited.

In order to perform additional or alternative Code examinations, modification and/or replacement of the component would be required. The examination performed on the available surface area of the subject item would detect generic degradation, if it existed, demonstrating an acceptable level of integrity.

3.2.4 Licensee's Proposed Alternative Examination

No alternative testing is proposed at this time. Entergy has examined the subject item to the extent practical.

3.2.5 NRC Staff Evaluation

The ASME Code requires essentially 100 percent volumetric or surface examination, as applicable, of the length of the attachment welds in the vertical pipe lugs. However, according to the technical description included in the licensee's submittal, the subject ANO-2 pipe lugs has associated hanger strap in the proximity, and this hanger strap restricts access to the weld ends and surrounding base material. As a result, the licensee obtained 88 percent surface coverage of the ASME Code-required inspection area for the subject welds. Increasing surface coverage for the subject welds would require modification or replacement of the component and would place a burden on the licensee. Therefore, the ASME Code-required 100 percent surface examination is considered impractical. However, to ensure that the proposed inspection coverage provides reasonable assurance of structural integrity for this component, the staff issued RAI-2 to determine whether the inspection results from 88 percent of the area is representative of the entire area and whether recordable indications were observed during any of the prior examinations. Similar to the licensee's response to RAI-1, the December 17, 2012, response to RAI-2 indicated that even if 80 percent of the lug and its welds are effective, the resulting maximum stress indicator is less than the design value with a 49 percent margin. This demonstrated that the proposed inspection provides reasonable assurance of structural integrity for this component. Further, the licensee's December 17, 2012, response indicated that prior ISI results showed no indications for this component, giving additional assurance that the weld did not have any service induced indications and the proposed coverage of 88 supplement is acceptable. RAI-2 is thus resolved. The licensee's RAI-2 response also confirmed an inadvertent error regarding the ASME Code Item Number for this component, which was revised to "B10.20."

Based on the above, the NRC staff determined that the licensee has shown that it is impractical to meet the ASME Code-required 100 percent volumetric or surface examination coverage for the subject welds due to the proximity of an adjacent hanger strap. However, based on the volumetric and surface coverage obtained, it is reasonable to conclude that if significant service-induced degradation had occurred, evidence of it would have been detected by the examinations that were performed. This is further supported by prior inspection results that showed no recordable indications. Hence, the NRC staff concluded that the examinations were

were performed, to the extent practical, on the subject pipe lug welds and provide reasonable assurance of structural integrity of the subject welds and is, therefore, acceptable.

3.3 Request for Relief ANO2-ISI-012.

3.3.1 ASME Code Requirement

ASME Code, Section XI, Examination Category C-A, Items C1.10 and C1.30 require essentially 100 percent volumetric examination, as defined by Figure IWC-2500-1 and Figure IWC-2500-2, of the length of shell circumferential welds and tubesheet-to-shell weld in Class 2 pressure vessels. "Essentially 100 percent," as clarified by ASME Code Case N-460, is greater than 90 percent coverage of the examination volume, or surface area, as applicable. ASME Code Case N-460 has been approved for use by the NRC in RG 1.147, Revision 16.

3.3.2 Licensee's ASME Code Relief Request

In accordance with 10 CFR 50.55a(g)(6)(i), the licensee requested relief from the ASME Code-required volumetric examinations of the Class 2 pressure-retaining welds shown in Table 3.3 below.

Table 3.3 – ASME Code, Section XI, Examination Category C-A			
ASME Code Item	Weld Identifier	Weld Type	ASME Coverage Obtained
C1.10	45-001	Letdown Heat Exchanger Flange-to-Channel Circumferential Weld	45.7%
C1.10	49-001	Shutdown Cooling Heat Exchanger Flange-to-Channel Cylinder Circumferential Weld	69.5%
C1.30	49-002	Shutdown Cooling Heat Exchanger Channel Cylinder-to-Tubesheet Circumferential Weld	81.8%

3.3.3 Licensee's Basis for Relief Request (as stated by the licensee):

During ultrasonic examination of the Letdown Heat Exchanger Flange-to-Channel Circumferential Weld and the Shutdown Cooling Heat Exchanger Flange-to-Channel Cylinder and Channel Cylinder-to-Tubesheet Welds listed in Table 1 below, 100% coverage of the required examination volumes could not be obtained.

Due to the geometric configuration of the components and the close proximity of other structures which limited scan paths, the use of approved beam angles in the axial and circumferential direction were not able to achieve greater than 90% code required volume. See Table 1 below for additional information.

Radiography is not practical on these types of nozzle-to-vessel weld configurations which prevent placement of the film and exposure source. To effectively perform any significant additional Code allowable ultrasonic examinations, modification and/or replacement of the component would be required. The examinations performed on the subject items in addition to the examination of other vessel welds contained in the Inservice Inspection (ISI) program would detect generic degradation, if it existed, demonstrating an acceptable level of integrity.

3.3.4 Licensee's Proposed Alternative Examination (as stated by the licensee):

No alternative testing is proposed at this time. Entergy has examined these welds to the extent practical and will continue to perform pressure testing on the subject components as required by the Code.

3.3.5 NRC Staff Evaluation

The ASME Code requires essentially 100 percent volumetric examination of ASME Code Class 2 vessel shell circumferential welds and tubesheet-to-shell weld. However, for the subject welds on the letdown and shut down cooling heat exchangers, complete examinations are restricted by the design configuration and the proximity of adjacent appurtenances. As a result, the licensee obtained from approximately 45.7 to 81.8 percent of the ASME Code-required volumetric coverage of the ASME Code-required inspection area for the three subject welds. Increasing volumetric coverage on these welds would require modification or replacement of these heat exchangers and would place a burden on the licensee. Therefore, the ASME Code examinations are considered impractical. However, to ensure that the proposed inspection coverage provides reasonable assurance of structural integrity for these components, the staff issued RAI-3 to determine whether the inspection results from each of the three welds (with coverage ranging from 45.7 percent to 81.8 percent) are representative of the entire weld.

For the letdown heat exchanger flange-to-channel circumferential weld 45-001, the licensee performed manual, single-sided ultrasonic test (UT) examinations (45.7 percent coverage) from the shell side using 45- and 70-degree shear waves to achieve limited circumferential and axial coverage along the weld length. Scans from the opposite side of the welds were limited due to the proximity of the channel head flange. The licensee's response to RAI-3 states that, "due to the single-side access of a stainless steel component, examination volume coverage was limited from the start to 50%. The inlet and outlet piping obstructions resulted in an approximate limitation of 4.3%." The staff found that the limitation of 4.3 percent represents only a small portion of the circumferential weld length. Therefore, the proposed UT will not miss the highly stressed portion of the weld caused by bending and would detect structurally significant flaws, which have the same likelihood to occur on either side of the subject weld. The NRC staff thus concluded that the proposed inspection coverage provides reasonable assurance of structural integrity for this component. Since all three welds are circumferential having similar stress characteristics, the only difference in the request regarding the three components is the percentage coverage of code required volume of which C1.10 is the most limiting. As such, the basis for the NRC staff's conclusion for the letdown heat exchanger are applicable to the shutdown cooling heat exchanger flange-to-channel cylinder circumferential weld 49-001

(69.5 percent coverage) and the shutdown cooling heat exchanger channel cylinder-to-tubesheet circumferential weld 49-002 (81.8 percent coverage).

Based on the above discussion, the staff determined that the licensee has shown that it is impractical to meet the ASME Code-required 100 percent volumetric examination coverage for the subject heat exchanger circumferential welds due to geometry configuration and interference from surrounding components. However, based on the volumetric coverage obtained, it is reasonable to conclude that if significant service-induced degradation had occurred, evidence of it would have been detected by the examinations that were performed. Hence, the NRC staff concluded that the examinations performed to the extent practical on the subject welds provide reasonable assurance of structural integrity is, therefore, acceptable. Past examination results for these three welds are available in the March 26, 2012, submittal, which showed no recordable flaw indications for Weld 45-001 and acceptable indications not requiring flaw evaluations for Welds 49-001 and 49-002, further supporting the structure integrity of these welds.

4.0 CONCLUSION

The staff has reviewed the licensee's submittals and concludes that ASME Code examination coverage requirements are impractical for the subject welds listed in RRs ANO2-ISI-009, ANO2-ISI-011, and ANO2-ISI-012. The staff has concluded that based on the volumetric and/or surface examination coverage obtained that the examinations performed to the extent practical provide reasonable assurance of structural integrity of the subject components. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(g)(6)(i) and is in compliance with the requirements of 10 CFR 50.55a with the granting of these reliefs. Therefore, the NRC staff grants relief for the subject examinations of the components contained in RRs ANO2-ISI-009, ANO2-ISI-011, and ANO2-ISI-012 for ANO-2 for the third ISI interval.

The staff has further determined that granting these RRs to 10 CFR 50.55a(g)(6)(i) is authorized by law and will not endanger life or property or the common defense and security, and is otherwise in the public interest given due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility.

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

Principal Contributor: Simon Sheng

Date: February 21, 2013

Table 1 Limited C-A Examinations									
Component Description				Examination Summary	Scan Plan	Additional Information			
Item Number	Comp. ID	Item Description	Estimated % Coverage of Code Required Volume			Exam Method and Limitations	Search Units	Surface Examination	Exam Results
C1.10	45-001	Letdown Heat Exchanger Flange-to-Channel Circumferential Weld	45.7	This was a single-sided exam due to the configuration and close proximity of the channel head flange. Additionally, scan paths from the shell side were limited due to the inlet and outlet piping configurations attached to the shell.	See the attached sketch (Figure 1) derived from ultrasonic test (UT) examination report ISI-UT-08-065 on file at ANO.	Manual UT examination. Figure 1 depicts the component configuration and weld profile.	Wave modality used included shear. Insonification angles included 45° shear (S) and 70°S.	None required.	No indications were recorded.
C1.10	49-001	Shutdown Cooling Heat Exchanger Flange-to-Channel Cylinder Circumferential Weld	69.5	This was a single-sided exam due to the configuration and close proximity of the channel head flange. Additionally, scan paths from the shell side were limited due to the inlet and outlet piping configurations attached to the shell.	See the attached sketch (Figure 2) derived from UT examination report 204ISIUT001 on file at ANO.	Manual UT examination. Figure 2 depicts the component configuration and weld profile.	Wave modality used included shear. Insonification angles included 45°S and 70°S.	None required.	One indication identified as a plate segregate located outside the code exam volume, ~0.50" from the shell inside diameter, was recorded. Evaluated as acceptable by the Entergy Level III.
C1.30	49-002	Shutdown Cooling Heat Exchanger Channel Cylinder-to-Tubesheet Circumferential Weld	81.8	This was a single-sided exam due to the configuration and close proximity of the channel head flange. Additionally, scan paths from the shell side were limited due to the inlet and outlet piping configurations attached to the shell.	See the attached sketch (Figure 3) derived from UT examination report 204ISIUT003 on file at ANO.	Manual UT examination. Figure 3 depicts the component configuration and weld profile.	Wave modality used included shear. Insonification angles included 45°S and 70°S.	None required.	Acceptable plate segregation and clad interface indications identified during the 2nd ISI Interval examination were confirmed. No new indications recorded.

NOTE: Figures 1, 2, 3 referenced in this table are not reproduced for this SE. See Attachment 5 of the licensee's submittal dated March 26, 2012, for the subject figures.

In summary, the NRC staff has determined that granting relief pursuant to 10 CFR 50.55a(g)(6)(i) is authorized by law and will not endanger life or property, or the common defense and security, and is otherwise in the public interest given due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility. Accordingly, the NRC staff concludes that the licensee has adequately addressed all of the regulatory requirements set forth in 10 CFR 50.55a(g)(6)(i). Therefore, the NRC staff grants relief from the specified ASME Code, Section XI, examination coverage requirements of the subject welds contained in RRs ANO2-ISI-009, ANO2-ISI-011 and ANO2-ISI-012 for the ANO, Unit 2, third 10-year ISI interval. The NRC staff has not imposed any additional alternative requirements.

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

The NRC staff's safety evaluation is enclosed.

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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