



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

January 7, 2019

ANO Site Vice President
Arkansas Nuclear One
Entergy Operations, Inc.
N-TSB-58
1448 S.R. 333
Russellville, AR 72802

SUBJECT: ARKANSAS NUCLEAR ONE, UNIT 1 - REQUEST FOR RELIEF
NOS. ANO1-ISI-027, ANO1-ISI-028, ANO1-ISI-029, ANO1-ISI-030, AND
ANO1-ISI-031 FROM ASME CODE, SECTION XI, EXAMINATION
REQUIREMENTS FOR FOURTH 10-YEAR INSERVICE INSPECTION INTERVAL
(EPID L-2018-LLR-0063; EPID L-2018-LLR-0064; EPID L-2018-LLR-0065;
EPID L-2018-LLR-0066; AND EPID L-2018-LLR-0067)

Dear Sir or Madam:

By letter dated April 23, 2018, as supplemented by letter dated August 22, 2018, Entergy Operations, Inc. (Entergy, the licensee), submitted Request for Relief Nos. ANO1-ISI-027, ANO1-ISI-028, ANO1-ISI-029, ANO1-ISI-030, and ANO1-ISI-031 for relief from certain inservice inspection (ISI) requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI, at Arkansas Nuclear One, Unit 1 (ANO-1). Specifically, the licensee requested relief from certain examination coverage requirements for selected components for the fourth 10-year ISI interval, which ended May 30, 2017.

The U.S. Nuclear Regulatory Commission (NRC) staff has completed its review as set forth in the enclosed safety evaluation. Based on a review of the information provided in your application, the NRC staff determined that compliance with the ASME Code-required examination coverage is impractical and that the achieved coverage provides reasonable assurance of structural integrity of the selected components. Therefore, pursuant to paragraph 50.55a(g)(6)(i) of Title 10 of the *Code of Federal Regulations* (10 CFR), relief is granted for the fourth 10-year ISI interval at ANO-1. The NRC staff concludes 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.

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.

If you have any questions, please contact Thomas Wengert at (301) 415-4037 or by e-mail at Thomas.Wengert@nrc.gov.

Sincerely,



Robert J. Pascarelli, Chief
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-313

Enclosure:
Safety Evaluation

cc: Listserv



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

FOURTH 10-YEAR INSERVICE INSPECTION INTERVAL

REQUEST FOR RELIEF NOS. ANO1-ISI-027, ANO1-ISI-028, ANO1-ISI-029,

ANO1-ISI-030, AND ANO1-ISI-031

ENTERGY OPERATIONS, INC.

ARKANSAS NUCLEAR ONE, UNIT 1

DOCKET NO. 50-313

1.0 INTRODUCTION

By letter dated April 23, 2018 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML18115A102), as supplemented by letter dated August 22, 2018 (ADAMS Accession No. ML18234A321), Entergy Operations, Inc. (Entergy, the licensee) submitted Request for Relief Nos. ANO-1-ISI-27, ANO-1-ISI-28, ANO-1-ISI-29, ANO-1-ISI-30, and ANO-1-ISI-31 for relief from the requirements of the American Society of the Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) for Arkansas Nuclear One, Unit 1 (ANO-1). Specifically, pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) paragraph 50.55a(g)(6)(i), "Impractical ISI requirements: Granting of relief," the licensee requested relief from achieving the ASME Code-required examination coverage for certain Class 1 components that were volumetrically examined during the fourth 10-year inservice inspection interval (ISI) at ANO-1 on the basis that the ASME Code requirement is impractical.

2.0 REGULATORY EVALUATION

Components (including supports) that are classified as ASME Code Class 1, Class 2, and Class 3 must meet the requirements in 10 CFR 50.55a(g)(4), "Inservice inspection standards requirement for operating plants," throughout the service life of a boiling water reactor or pressurized water reactor. The regulations in 10 CFR 50.55a(g)(4) mandate that ASME Code Class 1, 2, and 3 components meet the ISI examination requirements set forth in Section XI of the ASME Code. The ISI examinations are to comply with the requirements in the latest edition and addenda of ASME Section XI, incorporated by reference in 10 CFR 50.55a(a), subject to the limitations and modifications listed in 10 CFR 50.55a(b). The components identified in Request for Relief Nos. ANO1-ISI-027, ANO1-ISI-028, ANO1-ISI-029, ANO1-ISI-030, and ANO1-ISI-031 are Code Class 1. Therefore, per 10 CFR 50.55a(g)(4), the ISI examination

coverage of these components must comply with the requirements of Section XI of the applicable edition and addenda of the ASME Code.

The regulation at 10 CFR 50.55a(g)(5)(iii), "ISI program update: Notification of impractical ISI Code requirements," states that "[i]f the licensee has determined that conformance with [the ASME] Code requirement is impractical for its facility, the licensee must notify the NRC [U.S. Nuclear Regulatory Commission] and submit, as specified in § 50.4, information to support the determinations. Determinations of impracticality in accordance with [10 CFR 50.55a] must be based on the demonstrated limitations experienced when attempting to comply with the Code requirements during the inservice inspection interval for which the request is being submitted. Requests for relief made in accordance with [10 CFR 50.55a] must be submitted to the NRC no later than 12 months after the expiration of the initial or subsequent 120-month inspection interval for which relief is sought."

The regulation at 10 CFR 50.55a(g)(6)(i), states that "[t]he Commission will evaluate determinations under paragraph (g)(5) of [10 CFR 50.55a] that [ASME] Code requirements are impractical. The Commission may grant such relief and may impose such alternative requirements as it determines are authorized by law, and will not endanger life or property or the common defense and security, and are otherwise in the public interest giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility."

Based on the above, and subject to the following technical evaluation, the NRC staff finds that the licensee may request relief from the ASME Code, Section XI, ISI requirements and the staff has the regulatory authority to grant the licensee's request for relief.

3.0 TECHNICAL EVALUATION

3.1 Licensee's Requests for Relief

3.1.1 ASME Code Components Affected

The ASME Code components affected by Request for Relief Nos. ANO1-ISI-027 through ANO1-ISI-031 are listed in Table 1 of this safety evaluation (SE) and are described below.

- Request for Relief No. ANO1-ISI-027 applies to the reactor pressure vessel (RPV) lower shell to transition piece circumferential weld (Item No. B1.11) and transition piece to RPV bottom head circumferential weld (Item No. B1.21).
- Request for Relief No. ANO1-ISI-028 applies to the steam generator (SG) lower head to lower ring circumferential weld (Item No. B2.31).
- Request for Relief No. ANO1-ISI-029 applies to the pressurizer (PZR) vessel to nozzle full penetration welds (Item No. B3.110), specifically, the PZR relief nozzles and PZR surge nozzle.
- Request for Relief No. ANO1-ISI-030 applies to the threads in the RPV flange (Item No. B6.40) for the 60 pressure retaining closure studs.

- Request for Relief No. ANO1-ISI-031 applies to the high pressure injection system elbow-to-pipe and pipe-to-elbow circumferential welds (Item No. R1.11) and the reactor coolant system safe-end-to-pump circumferential weld (Item No. R1.20).

3.1.2 Applicable ASME Code Edition and Addenda

The ASME Code of record for the fourth 10-year ISI program interval at ANO-1, which ended on May 30, 2017, is the 2001 Edition through the 2003 Addenda of Section XI of the ASME Code.

3.1.3 Applicable ASME Code Requirements

Table IWB-2500-1, "Examination Categories," of ASME Code, Section XI, requires volumetric examination of essentially 100 percent for the components affected by Request for Relief Nos. ANO1-ISI-027 through ANO1-ISI-031, as depicted in the corresponding IWB-2500 figures. The applicable ASME Code, Section XI, IWB-2500 figures are listed in Table 1 for each component. ASME Code Case N-460, "Alternative Examination Coverage for Class 1 and 2 Welds, Section XI, Division 1," clarifies that "essentially 100 percent" examination coverage allows for a reduction in coverage of less than 10 percent (i.e., an examination coverage of greater than 90 percent) when geometric interference prevents full coverage. All the components affected by Request for Relief Nos. ANO1-ISI-027 through ANO1-ISI-031 are ASME Code Class 1.

Table 1: ASME Code Components affected by Request for Relief Nos. ANO1-ISI-027 through ANO1-ISI-031

Request for Relief Nos.	Examination Category	Item No.	Examination Requirement ¹	Description	Estimated Coverage of Code Required Volume (percent)	Component Identification
ANO1-ISI-027	B-A	B1.11	Volumetric, Fig. IWB-2500-1	Circumferential RPV Shell Welds	71.12	01-005
		B1.21	Volumetric, Fig. IWB-2500-3	Circumferential RPV Head Welds	68.90	01-006
ANO1-ISI-028	B-B	B2.31	Volumetric, Fig. IWB-2500-3	Circumferential SG Head Welds	73.7	03-102
ANO1-ISI-029	B-D	B3.110	Volumetric, Fig. IWB-2500-7	PZR Nozzle-to-Vessel Welds	50.75	05-014
					50.75	05-015
					27.1	05-021
ANO1-ISI-030	B-G-1	B6.40	Volumetric, Fig. IWB-2500-12	Threads in RPV Flange	58.61	01-F-01 through 01-F-60
ANO1-ISI-031	R-A	R1.11	Volumetric, Fig. IWB-2500-8	Elbow-to-Pipe Circumferential Weld	88.9	23-057
		R1.11	Volumetric, Fig. IWB-2500-8	Pipe-to-Elbow Circumferential Weld	88.9	23-059
		R1.20	Volumetric, Fig. IWB-2500-8	Safe-End-to-Pump Circumferential Weld	50.0	12-001

¹ Volumetric examination in accordance with ASME Code, Section XI, Table IWB-2500-1 and corresponding IWB-2500 figure (Fig.) for each component.

3.1.4 Licensee's Basis for Relief Requests

3.1.4.1 Basis for Request for Relief No. ANO1-ISI-027

In accordance with 10 CFR 50.55a(g)(6)(i), the licensee requested relief from the ASME Code-required essentially 100 percent volumetric examination coverage for Item Nos. B1.11 and B1.21 during the third inspection period of the fourth ISI interval, as required in Table IWB-2500-1 in ASME Code, Section XI. The third inspection period and fourth ISI interval for ANO-1 ended on May 30, 2017.

In Attachment 1 to the letter dated April 23, 2018, the licensee stated that the ASME Code-required examination coverage of greater than 90 percent could not be achieved for Item Nos. B1.11 and B1.21. Table 1, "Limited B-A Examinations," of Attachment 1, indicates that an estimated coverage of 71 percent was achieved for Item No. B1.11 (ANO-1 Weld No. 01-005) and 69 percent for Item No. B1.21 (ANO-1 Weld No. 01-006). The licensee stated that the configuration of the core support lugs and flow diverters on the RPV bottom head limited the examination coverage of ANO-1 Weld No. 01-005. In addition, the licensee stated that the configuration of the bottom-mounted instrumentation (BMI) tubes and flow diverters on the RPV bottom head limited the examination coverage of ANO-1 Weld No. 01-006. The licensee further stated that the subject welds have been examined to the extent practical, and an alternative is not proposed. Thus, the licensee stated that it is impractical to achieve greater examination coverages for ANO-1 Weld No. 01-005 and ANO-1 Weld No. 01-006 without the modification or replacement of components.

3.1.4.2 Basis for Request for Relief No. ANO1-ISI-028

In accordance with 10 CFR 50.55a(g)(6)(i), the licensee requested relief from the ASME Code-required essentially 100 percent volumetric examination coverage for Item No. B2.31 during the second inspection period of the fourth ISI interval, as required in Table IWB-2500-1 in ASME Code, Section XI. The second inspection period started on May 31, 2011. The fourth ISI interval ended on May 30, 2017.

In Attachment 2 of the letter dated April 23, 2018, the licensee stated that the ASME Code-required examination coverage of greater than 90 percent could not be achieved for Item No. B2.31. Table 1, "Limited B-B Examinations," of Attachment 2, indicates that an estimated coverage of 74 percent was achieved for Item No. B2.31 (ANO-1 Weld No. 03-102). The licensee stated that the configuration of the SG limited the examination coverage of ANO-1 Weld No. 03-102 because the volumetric examination can only be effectively performed from the shell side of the weld, making this essentially a single-sided examination. The licensee further stated that the subject weld has been examined to the extent practical, and an alternative is not proposed. Thus, the licensee stated that it is impractical to achieve greater examination coverage for ANO-1 Weld No. 03-102 without the modification or replacement of components.

3.1.4.3 Basis for Request for Relief No. ANO1-ISI-029

In accordance with 10 CFR 50.55a(g)(6)(i), the licensee requested relief from the ASME Code-required essentially 100 percent volumetric examination coverage for Item No. B3.110 during the second and third inspection periods of the fourth ISI interval, as required in

Table IWB-2500-1 in ASME Code, Section XI. The second inspection period started on May 31, 2011. The third inspection period and fourth ISI interval for ANO-1 ended on May 30, 2017.

In Attachment 3 of the letter dated April 23, 2018, the licensee stated that the ASME Code-required examination coverage of greater than 90 percent could not be achieved for Item No. B3.110. Table 1, "Limited B-D Examinations," of Attachment 3, indicates that an estimated coverage of 51 percent was achieved for ANO-1 Weld No. 05-014, 51 percent for ANO-1 Weld No. 05-015, and 27 percent for ANO-1 Weld No. 05-021. The licensee states that the configuration of the PZR head and relief/surge nozzles limited the examination coverage of Weld Nos. 05-014, 05-015, and 05-021 because the volumetric examination can only be partially performed from the nozzle side of the weld, making this essentially a single-sided examination. The proximity of surrounding interfaces also contributed to the limited inspection coverage for Weld Nos. 05-014 and 05-015. The licensee further stated that the subject welds have been examined to the extent practical, and an alternative is not proposed. Thus, the licensee stated that it is impractical to achieve greater examination coverages for ANO-1 Weld Nos. 05-014, 05-015, and 05-021 without the modification or replacement of components.

3.1.4.4 Basis for Request for Relief No. ANO1-ISI-030

In accordance with 10 CFR 50.55a(g)(6)(i), the licensee requested relief from the ASME Code-required essentially 100 percent volumetric examination coverage for Item No. B6.40 during the third inspection period of the fourth ISI interval, as required in Table IWB-2500-1 in ASME Code, Section XI. The third inspection period and fourth ISI interval for ANO-1 ended on May 30, 2017.

In Attachment 4 of the letter dated April 23, 2018, the licensee stated that the ASME Code-required examination coverage of greater than 90 percent could not be achieved for Item No. B6.40. Table 1, "Limited B-G-1 Examinations," of Attachment 4, indicates that an estimated coverage of 59 percent was achieved for ANO-1 component locations 01-F-01 through 01-F-60. The licensee stated that the configuration of the seal surface and stud hole plugs limited the examination coverage of ANO-1 component locations 01-F-01 through 01-F-60. The licensee further stated that the subject items have been examined to the extent practical, and an alternative is not proposed. Thus, the licensee stated that it is impractical to achieve greater examination coverages for ANO-1 component locations 01-F-01 through 01-F-60 without the modification or replacement of components.

3.1.4.5 Basis for Request for Relief No. ANO1-ISI-031

In accordance with 10 CFR 50.55a(g)(6)(i), the licensee requested relief from the ASME Code-required essentially 100 percent volumetric examination coverage for Item Nos. R1.11 and R1.20 during the second inspection period of the fourth ISI interval, as required in ASME Code, Section XI. The second inspection period started on May 31, 2011. The fourth ISI interval ended on May 30, 2017.

In Attachment 5 of the letter dated April 23, 2018, as supplemented by letter dated August 22, 2018, the licensee stated that the ASME Code-required examination coverage of greater than 90 percent could not be achieved for Item Nos. R1.11 and R1.20. Table 1, "Limited R-A Examinations," of Attachment 5, indicates that an estimated coverage of 89 percent was achieved for ANO-1 Weld Nos. 23-057 and 23-059 and 50 percent for ANO-1 Weld No. 12-001. The licensee stated that due to the geometric configuration and material type of the components, effective volumetric examination could only be performed as described in Table 1

of Attachment 5 for each weld. The licensee further stated that the subject items have been examined to the extent practical, and an alternative is not proposed. Thus, the licensee stated that it is impractical to achieve greater examination coverages for ANO-1 Weld Nos. 23-057, 23-059, and 12-001.

In addition, the licensee stated that it used the best available and Electric Power Research Institute-approved techniques to examine the subject piping welds. The licensee indicated that in addition to the examinations of the subject welds, the ISI program examines other similar piping welds, which provide acceptable sampling-based inspections to detect degradation in the reactor coolant and high pressure injection systems.

3.2 NRC Staff Evaluation

3.2.1 Evaluation of Request for Relief No. ANO1-ISI-027

The NRC staff reviewed the configuration of the RPV lower shell to transition piece circumferential weld (i.e., Weld No. 01-005), examination plan for the circumferential weld, and examination coverage results for the circumferential weld. Figure 1, "Reactor Vessel Rollout for Component 01-005," and Figure 2, "Scan Plan for Component 01-005," of Attachment 1 to the letter dated April 23, 2018, show the relative positions of the RPV lower shell, transition piece, Weld No. 01-005 circumferential weld, core support lugs, and flow diverters. A description of the examinations performed, and results, are provided in Figure 2; Figure 3, "Coverage Calculation for Component 01-005"; and Table 1 of Attachment 1.

The NRC staff also reviewed the configuration of the transition piece to RPV bottom head circumferential weld (i.e., Weld No. 01-006), examination plan for the circumferential weld, and examination coverage results for the circumferential weld. Figure 4, "Reactor Vessel Rollout for Component 01-006," and Figure 5, "Scan Plan for Component 01-006," of Attachment 1 to the letter dated April 23, 2018, show the relative positions of the transition piece, RPV bottom head, BMI tubes, and flow diverters. A description of the examinations performed, and results, are provided in Figure 5; Figure 6, "Coverage Calculation for Component 01-006"; Figure 7, "Indication Assessment for Component 01-006"; and Table 1 of Attachment 1.

The NRC staff determined that portions of the Nos. 01-005 and 01-006 circumferential welds are inaccessible for volumetric examination, which makes it impractical to comply with the ASME Code requirements for examination coverage. The modification and/or replacement of components would be necessary to achieve the required examination coverage. The NRC staff has determined that it would be a burden on the licensee if the coverage requirements are imposed. The environment and stress of the inaccessible areas are similar to the areas that have been examined. It is reasonable to expect the condition of the areas examined to be representative of the inaccessible areas. The areas examined were found to be in an acceptable condition. It is reasonable to conclude that if significant degradation had occurred, evidence of it would have been detected by the examinations that were performed. Therefore, the NRC staff determined that there is reasonable assurance of structural integrity or leak tightness of the welds. Additionally, pressure testing will continue to be performed, as required by ASME Code, Section XI.

The NRC staff reviewed and approved a similar relief request for the ANO-1 Nos. 01-005 and 01-006 circumferential welds in an SE dated May 5, 2010 (ADAMS Accession No. ML101170119). The staff noted that a greater inspection coverage has been achieved in the current relief request.

3.2.2 Evaluation of Request for Relief No. ANO1-ISI-028

The NRC staff reviewed the configuration of the SG lower head to lower ring circumferential weld (i.e., Weld No. 03-201), examination plan for the circumferential weld, and examination coverage results for the circumferential weld. Figure 1, "Scan Plan and Coverage for Component 03-102"; Figure 2, "Photo for Component 03-102"; and Figure 3, "Sketch for Component 03-102," of Attachment 2 to the letter dated April 23, 2018, show the configuration of the SG lower head to lower ring circumferential weld. A description of the examinations performed and results are provided in Figure 1 and Table 1.

The NRC staff has determined that portions of the No. 03-201 circumferential weld are inaccessible for volumetric examination, making it impractical to comply with the ASME Code requirements for examination coverage. The modification and/or replacement of components would be necessary to achieve the required examination coverage. The NRC staff has determined that it would be a burden on the licensee if the coverage requirements are imposed. The environment and stress of the inaccessible areas are similar to the areas that have been examined. It is reasonable to expect the condition of the areas examined to be representative of the inaccessible areas. The areas examined were found to be in an acceptable condition. It is reasonable to conclude that if significant degradation had occurred, evidence of it would have been detected by the examinations that were performed. Therefore, the NRC staff has determined that there is reasonable assurance of structural integrity or leak tightness of the welds. Additionally, pressure testing will continue to be performed, as required by ASME Code, Section XI.

3.2.3 Evaluation of Request for Relief No. ANO1-ISI-029

The NRC staff reviewed the configuration of the PZR relief nozzle to vessel full penetration welds (i.e., Weld Nos. 05-014 and 05-015), examination plan for the full penetration welds, and examination coverage results for the full penetration welds. Figure 1, "Scan Plan and Coverage for Components 05-014 & 05-015"; Figure 2, "Sketch for Components 05-014 & 05-015"; and Figure 3, "Photo for Components 05-014 & 05-015," of Attachment 3 to the letter dated April 23, 2018, show the configuration of the PZR vessel, relief nozzles, welds, and proximity of surrounding interfaces (e.g., other nozzles and lifting lugs). A description of the examinations performed, and results, are provided in Figure 1 and Table 1 of Attachment 3.

The NRC staff reviewed the configuration of the PZR surge nozzle to vessel full penetration weld (i.e., Weld No. 05-021), examination plan for the full penetration weld, and examination coverage results for the full penetration weld. Figure 4, "Scan Plan and Coverage for Component 05-021," and Figure 5, "Photo for Component 05-021," of Attachment 3 to the letter dated April 23, 2018, show the configuration of the PZR vessel, surge nozzle, and weld. A description of the examinations performed, and results, are provided in Figure 4 and Table 1 of Attachment 3.

The NRC staff has determined that portions of the Nos. 05-014, 05-015, and 05-021 full penetration welds are inaccessible for volumetric examination, making it impractical to comply with the ASME Code requirements for examination coverage. The modification and/or replacement of components would be necessary to achieve the required examination coverage. The NRC staff has determined that it would be a burden on the licensee if the coverage requirements are imposed. The environment and stress of the inaccessible areas are similar to the areas that have been examined. It is reasonable to expect the condition of the areas

examined to be representative of the inaccessible areas. The areas examined were found to be in an acceptable condition. It is reasonable to conclude that if significant degradation had occurred, evidence of it would have been detected by the examinations that were performed. Therefore, the NRC staff has determined that there is reasonable assurance of structural integrity or leak tightness of the welds. Additionally, pressure testing will continue to be performed, as required by ASME Code, Section XI.

The NRC staff reviewed and approved a similar relief request for the ANO-1 Nos. 05-014, 05-015, and 05-021 full penetration welds in an SE dated May 5, 2010. The NRC staff noted that a greater inspection coverage has been achieved in the current relief request.

3.2.4 Evaluation of Request for Relief No. ANO1-ISI-030

The NRC staff reviewed the configuration of the RPV threads in flange (Item No. B6.40) and examination coverage results. Figure 1, "Sketch for Component 01-F-01 through 01-F-60," and Figure 2, "Scan Plan for Component 01-F-01 through 01-F-60," of Attachment 4 to the letter dated April 23, 2018, show the configuration of the RPV threads in flange, seal surface, and stud hole plugs. A description of the examinations performed, and results, are provided in Figure 3, "Scan Plan for Component 01-F-01 through 01-F-60," and Table 1 of Attachment 4.

The NRC staff has determined that portions of the RPV threads in flange are inaccessible for volumetric examination, making it impractical to comply with the ASME Code requirements for examination coverage. The modification and/or replacement of components would be necessary to achieve the required examination coverage. The NRC staff has determined that it would be a burden on the licensee if the coverage requirements are imposed. The environment and stress of the inaccessible areas are similar to the areas that have been examined. It is reasonable to expect the condition of the areas examined to be representative of the inaccessible areas. The areas examined were found to be in an acceptable condition. It is reasonable to conclude that if significant degradation had occurred, evidence of it would have been detected by the examinations that were performed. Therefore, the NRC staff has determined that there is reasonable assurance of structural integrity or leak tightness of the components. Additionally, pressure testing will continue to be performed, as required by ASME Code, Section XI.

The NRC staff reviewed and approved a similar relief request for ANO-1 component locations 01-F-01 through 01-F-60 in an SE dated May 5, 2010.

3.2.5 Evaluation of Request for Relief No. ANO1-ISI-031

The NRC staff reviewed the configuration of the risk-informed piping welds (i.e., Item Nos. R1.11 and R1.20), examination plans for the welds, and examination coverage results for the welds. Figure 1, "Scan Plan and Coverage of limited area for Component 23-057"; Figure 2, "Scan Plan and Coverage of limited area for Component 23-059"; Figure 3, "Photo of limited area for Component 23-057 and 23-059"; and Figure 4, "Scan Plan and Coverage for Component 12-001," of Attachment 5 to the letter dated April 23, 2018, show the relative positions of the components and the examinations performed.

The NRC staff determined that the particular design configuration of each weld imposes limitation to the ultrasonic test scanning of the welds from both sides, making it impractical to comply with the ASME Code requirements for examination coverage. The staff determined that replacing or reconfiguring the subject welds and associated components is the only reasonable

means to achieve the essentially 100-percent examination coverage as the ASME Code requires. Therefore, the staff determined that it would be a burden on the licensee if the coverage requirements are imposed.

In addition, the NRC staff finds that the examination coverage is slightly lower than the 90 percent criterion specified in ASME Code Case N-460 so that the coverage does not significantly impact the detection and monitoring of degradation in these welds. The NRC staff also notes that the pump casing associated with Weld No. 12-001 is fabricated with cast stainless steel that is resistant to environmentally assisted cracking (such as stress corrosion cracking).

The licensee further confirmed that no indication was reported in the ultrasonic examination of the subject welds described in Table 1 of Attachment 5 to the letter dated April 23, 2018. In addition, the licensee confirmed that its review of operating experience revealed no evidence of leakage from the subject welds. Therefore, the NRC staff has determined that there is reasonable assurance of structural integrity or leak tightness of the components.

The NRC staff also notes that, in addition to the volumetric examinations, system leakage tests (including visual VT-2 examination) are periodically performed on the subject welds in accordance with the ASME Code. These system leakage tests provide additional assurance that any significant degradation in the welds, if it were to occur, will be detected and the licensee will take appropriate actions (e.g., repair or replacement activities as the ASME Code requires).

4.0 CONCLUSION

As set forth above, the NRC staff determines that it is impractical for the licensee to comply with the requirement and the inspections performed provide reasonable assurance of structural integrity or leak tightness of the subject components. The NRC also 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 giving 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 Request for Relief Nos. ANO1-ISI-027, ANO1-ISI-028, ANO1-ISI-029, ANO1-ISI-030, and ANO1-ISI-031 at ANO-1.

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

Principal Contributors: C. Hovanec
S. Min

Date: January 7, 2019

SUBJECT: ARKANSAS NUCLEAR ONE, UNIT 1 - REQUEST FOR RELIEF
NOS. ANO1-ISI-027, ANO1-ISI-028, ANO1-ISI-029, ANO1-ISI-030, AND
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EPID L-2018-LLR-0066; AND EPID L-2018-LLR-0067) DATED JANUARY 7, 2019

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ADAMS Accession No. ML18346A314

*by memorandum

OFFICE	NRR/DORL/LPL4/PM	NRR/DORL/LPL4/LA	NRR/DMLR/MVIB/BC*
NAME	TWengert (MO'Banion for)	PBlechman	DAiley
DATE	12/31/18	12/18/18	7/24/18
OFFICE	NRR/DMLR/MPHB/BC*	NRR/DORL/LPL4/BC	
NAME	SRuffin	RPascarelli	
DATE	10/9/18	01/07/19	

OFFICIAL RECORD COPY