December 27, 2007

Mr. Charles D. Naslund
Senior Vice President and Chief Nuclear Officer
Union Electric Company
Post Office Box 620
Fulton, MO 65251

SUBJECT: CALLAWAY PLANT, UNIT 1 - RELIEF REQUESTS ISI-34 AND ISI-40 FOR SECOND 10-YEAR INSERVICE INSPECTION INTERVAL (TAC NOS. MD3433 AND MD3436, RESPECTIVELY)

Dear Mr. Naslund:

By letter dated October 25, 2006 (ULNRC-05183), the Union Electric Company (the licensee) requested relief from certain examination requirements of Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (i.e., the ASME Code) for the second 10-year inservice inspection (ISI) interval at the Callaway Plant (Callaway). The second 10-year interval ended on December 18, 2005. Relief Requests (RRs) ISI-34 through ISI-41 were submitted.

This letter addresses RRs ISI-34 and ISI-40. RRs ISI-35 and ISI-41 were approved in our two letters to the licensee dated January 18, 2007; RRs ISI-36, ISI-37, and ISI-39 were addressed in our letter dated September 17, 2007; and RR ISI-38 was addressed in our letter dated October 30, 2007. This letter addresses the remaining RRs, for which the licensee also provided supplemental information by letters dated June 29 and December 13, 2007. On December 13, 2007, the licensee responded to a second request for additional information with a letter that superseded both RRs ISI-34 and ISI-40 in the October 25, 2006, letter.

For RR ISI-34, the licensee has proposed an alternative to the examination volume of selected welds in the Callaway risk-informed ISI program. For RR ISI-40, the licensee has requested relief from portions of the preservice examination volume of selected repair and replacement welds. The relevant requirements are part of the Callaway risk-informed ISI program, which was approved as an alternative to the ASME Code in a letter dated January 30, 2002.

Based on the enclosed safety evaluation (SE), the NRC staff has determined the following: (1) that the ASME Code-required examination coverage for the subject welds in RR ISI-34 is impractical and (2) that compliance with the ASME Code for the subject welds in RR ISI-40 is impractical, because of the significant burden on the licensee to achieve the ASME Code requirement.

Based on the enclosed SE on the RRs, the NRC granting relief retroactively, pursuant to paragraph 50.55a(g)(6)(i) of Title 10 of the *Code of Federal Regulations*, 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. Therefore, the NRC staff grants the relief in RRs ISI-34 and ISI-40 for the second 10-year ISI interval at Callaway. All other ASME Code,

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

Sincerely,

/RA by Balwant Singal for/

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

Docket No. 50-483

Enclosure: Safety Evaluation

cc w/encl: See next page

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

Sincerely,

/RA by Balwant Singal for/

Thomas G. Hiltz, Chief
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cc w/encl: See next page

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO RELIEF REQUESTS ISI-34 AND ISI-40

FOR SECOND 10-YEAR INSERVICE INSPECTION INTERVAL

UNION ELECTRIC COMPANY

CALLAWAY PLANT, UNIT 1

DOCKET NO. 50-483

1.0 INTRODUCTION

By application dated October 25, 2006, as supplemented by letters dated June 29 and December 13, 2007 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML063050203, ML072390353, and ML073540751, respectively), Union Electric Company (the licensee) requested relief from certain examination requirements of Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (i.e., the ASME Code) for the second 10-year inservice inspection (ISI) interval at the Callaway Plant (Callaway). Relief Requests (RRs) ISI-34 through ISI-41 were submitted in the application; however, this safety evaluation (SE) only addresses RRs ISI-34 and ISI-40.

In the December 13, 2007, letter, the licensee responded to a second request for additional information from NRC with a letter that supersedes the RRs ISI-34 and ISI-40 that were submitted in the licensee's October 25, 2006, application.

The relevant requirements are part of the Callaway risk-informed ISI (RI-ISI) program, which was approved as an alternative to the ASME Code in a letter dated January 30, 2002 (ADAMS Accession No. ML013460265).

Of the eight RRs submitted in the licensee's letter dated October 25, 2006, RRs ISI-35 and ISI-41 were approved in two NRC letters to the licensee dated January 18, 2007; RRs ISI-36, ISI-37, and ISI-39 were addressed in the letter dated September 17, 2007; and RR ISI-38 was addressed in the letter dated October 30, 2007 (ADAMS Accession Nos. ML063520318, ML070030336, ML072400092, and ML072980397, respectively).

2.0 REGULATORY REQUIREMENTS

In accordance with Title 10 of the *Code of Federal Regulations* (10 CFR) 50.55a(g)(4), ASME Code Class 1, 2, and 3 components must meet the requirements set forth in ASME Code, Section XI, “Rules for Inservice Inspection of Nuclear Power Plants Components,” to the extent practical within the limitations of design, geometry, and materials of construction of the components. The regulations require that all inservice examinations and system pressure tests

ENCLOSURE

conducted during the first 10-year interval, and subsequent intervals, comply with the requirements in the latest edition and addenda of ASME Code, Section XI, incorporated by reference in 10 CFR 50.55a(b) on the date 12 months prior to the start of the 10-year interval. The licensee stated that the code of record for the second 10-year ISI interval for Callaway is the 1989 Edition of Section XI of the ASME Code and the second 10-year interval for Callaway ended on December 18, 2005.

Alternatives to requirements may be authorized or relief granted by the Nuclear Regulatory Commission (NRC) pursuant to 10 CFR 50.55a(a)(3)(i), 10 CFR 50.55a(a)(3)(ii), or 10 CFR 50.55a(g)(6)(i). In proposing alternatives or requesting relief, the licensee must demonstrate that: (1) the proposed alternatives provide an acceptable level of safety; (2) compliance would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety; or (3) conformance is impractical for the facility. Pursuant to the requirements in 10 CFR 50.55a(g)(4)(iv), ISI items may meet the requirements set forth in subsequent editions and addenda of the ASME Code that are incorporated by reference in 10 CFR 50.55a(b), subject to the limitations and modifications listed therein, and subject to Commission approval. Portions of editions and addenda may be used provided that related requirements of the respective editions and addenda are met.

3.0 NRC STAFF EVALUATION OF RRS. ISI-34 AND ISI-40

3.1 RR ISI-34

In its letter dated October 25, 2006, and June 29 and December 13, 2007, the licensee proposed an alternative to the examination volume of selected pipe welds in the Callaway RI-ISI program, which was approved in the NRC letter dated January 30, 2002. On December 13, 2007, the licensee responded to a second request for additional information with a letter that supersedes RR ISI-34 in the October 25, 2006 letter. This section of the SE addresses only RR ISI-34.

3.1.1 Applicable ASME Code Components

The applicable ASME Code components are the eight pipe welds listed below:

AFFECTED PIPE WELDS

Weld Number	Description (1)	RI-ISI Item No.	Administrative Record Item	Degradation Mechanism (2)
2-BG-02-FW040	2" Pipe to Valve	R1.20-4	B-J, B9.11	None
2-BB-04-F004	4" Pipe to BBPCV0455B Weld	R1.20-4	B-J, B9.11	None
2-BB-02-F019	3" Pipe to Valve PCV-456A	R1.11-2	B-J, B9.21	Thermal Fatigue
2-BG-24-FW061	2" Pipe to Pup-piece Weld	R1.11-5	B-J, B9.21	Thermal Fatigue
2-BG-24-FW062	2" Pup-piece to Pipe Weld	R1.11-2	B-J, B9.21	Thermal Fatigue
2-BG-24-FW067	2" x 2" x 3/4" Tee to 2" Pipe	R1.20-4	B-J, B9.21	None
2-BG-02-S046-A	4" Straight Tee to 4" Pipe	R1.20-4	C-F-1, C5.21	None
2-BG-02-S046-C	4" Pipe to 4" Straight Tee	R1.20-4	C-F-1, C5.21	None

(1) Piping size is the National Pipe Standard (NPS).
(2) Degradation Mechanism identified as “None” were examined as thermal fatigue.

3.1.2 Applicable ASME Code Requirements

The required examinations are according to the 1989 Edition with no addenda of Section XI of the ASME Code. For Class 1 piping, examination volume is shown in Figure IWB-2500-8(c) for 4 NPS (nominal pipe size) and larger pipe and Figure IWB-2500-8(b) for less than 4 NPS. For Class 2 piping, examination volume is shown in Figure IWC-2500-7(a)

The NRC-approved examination volume for the Callaway risk-informed program is shown in the Electric Power Research Institute Topical Report TR-112657 Revision B-A, "Revised Risk-Informed Inservice Inspection Evaluation Procedure," Figure 4-1 for piping welds less than 4 NPS and Figure 4-2 for piping welds 4 NPS and larger. The Callaway risk-informed program does not require surface examinations of the subject welds.

3.1.3 Proposed Alternative

As stated in its letter dated December 13, 2007, the licensee explained that ultrasonic testing (UT) of the subject welds were performed to the maximum extent practical due to design configuration restrictions. This included a best effort examination of the far side of each component to the extent possible utilizing a longitudinal search unit that provides adequate coverage on the far side of the weld for components with thickness greater than 0.5 inch, and utilizing a 70-degree shear-wave search unit for components with thickness equal to or less than 0.5 inch.

The licensee also stated that pressure test VT-2 visual examinations were performed as required by the ASME Code, Examination Category B-P during the second 10-year interval. No evidence of leakage was identified for these components.

3.1.4 Licensee Basis for the Alternative

The licensee also stated in its letters that there are currently no qualified single-side examination procedures that demonstrate equivalency to two-sided examination procedures on austenitic piping welds. Current technology is not capable of reliably detecting or sizing flaws on the far side of an austenitic weld for configurations common to U.S. nuclear applications.

The licensee does not have the means or the expertise to perform experimental nondestructive examinations (NDE). As such, the licensee employs the Electric Power Research Institute (EPRI) as the research facility for the industry. Based upon the work that is being performed at EPRI Performance Demonstration Initiative (PDI), the best qualified techniques were employed. PDI has not been able to develop an examination procedure that meets 10 CFR 50.55a(b)(xv)(A) requirements for single-side examinations, therefore, the licensee stated that only 50 percent coverage can be claimed with single sided access.

The licensee examined 100 percent of the welds but only credited 50 percent coverage in those areas where only single-sided access was available. No UT procedures are qualified on wrought austenitic piping welds for detection or flaw sizing on the far side of the weld when only single-side access is available. The method used to examine the far side of the weld was that offered by EPRI as the "best effort" technology for these configurations. Industry experience shows that failure of pipe-to-component welds not subject to either a damage mechanism or to thermal fatigue are most likely to occur on the pipe side of the weld. Therefore, while only 50 percent coverage can be claimed, greater than 50 percent of the risk associated with the welds were addressed by the licensee.

The licensee routinely monitors plant operations for leakage. Welds 2-BB-04-F004, 2-BB-02-F019, 2-BG-24-FW061, 2-BG-24-FW062, and 2-BG-24-FW067 are located outside the bioshield in the containment building. The licensee performs periodic at-power walkdowns in these areas to check for leaks. Welds 2-BG-02-S046-A, 2-BG-02-S046-C, and 2-BG-02-FW040 are located in the Auxiliary Building in rooms which the licensee stated are checked twice per shift by operation personnel.

The containment atmosphere and sump levels are monitored from the Control Room, and leak rate calculations are performed as part of the Control Room log requirements.

The licensee provided the following on weld coverage and limitations for the 8 welds that are the subject pipe welds of RR ISI-34:

Weld Coverage and Limitations

Weld Number	Description	Coverage Achieved %	Limitation
2-BG-02-FW040	2" Pipe to Valve	50	Pipe to valve weld with limited access to the valve side. The weld configuration obstructs 100% of one circumferential and one axial scan.
2-BB-04-F004	4" Pipe to BBPCV0455B Weld	50	Pipe to valve weld with limited access to the valve side. The weld configuration obstructs 100% of one circumferential and one axial scan.
2-BB-02-F019	3" Pipe to Valve PCV-456A	50	Pipe to valve weld with limited access to the valve side. The weld configuration obstructs 100% of one circumferential and one axial scan.
2-BG-24-FW061	2" Pipe to Pup-piece Weld	50	Examination is limited to one side due to outside diameter configuration. The pipe and pup piece are of different thickness. The circumferential and axial scans are 100% obstructed from one side.
2-BG-24-FW062	2" Pup-piece to Pipe Weld	83.3	Weld is obstructed on one side due to lift off in crotch area of tee. The length of the obstruction is 2.5-inch and obstructs 33% of the circumferential and axial scans on one side of the weld.
2-BG-24-FW067	2" x 2" x 3/4" Tee to 2" Pipe	83.3	Weld is obstructed on one side due to lift off in crotch area of tee. The length of the obstruction is 2.5-inch and obstructs 33% of the circumferential and axial scans on one side of the weld.
2-BG-02-S046-A	4" Straight Tee to 4" Pipe	50	Pipe to Tee weld is considered 50% coverage due to geometry of tee. Performed best effort examination of both sides of weld.
2-BG-02-S046-C	4" Pipe to 4" Straight Tee	50	Pipe to valve weld with limited access to the valve side. The weld configuration obstructs 100% of one circumferential and one axial scan.

3.5 NRC Evaluation

The ASME Code requires 100 percent volumetric and surface examination of selected Class 1 and Class 2 circumferential pipe welds. In addition, the ASME Code requires that the volumetric

examination be conducted from both sides of these pressure retaining welds. However, the geometric configurations of the subject welds limit UT from scanning both sides of the welds. For the licensee to achieve 100 percent volumetric coverage, the subject welds would have to be redesigned and modified by the licensee. This would place a significant burden on the licensee, and, therefore, achieving the ASME Code-required 100 percent volumetric examination coverage is impractical.

10 CFR 50.55a(g)(6)(ii)(C) requires the licensee performing UT examinations of pipe to use the 1995 Edition with 1996 Addenda of the ASME Code, Section XI, Appendix VIII, "Performance Demonstration for Ultrasonic Examination Systems." UT examinations of the subject welds are performed with personnel and procedures qualified to the requirements of Appendix VIII, Supplement 2, "Qualification Requirements for Wrought Austenitic Piping Welds." The examination scanning requirements are in 10 CFR 50.55a(b)(2)(xv)(A) which states that piping must be examined in two axial directions and when examination in the circumferential direction is required, the circumferential examination must be performed in two directions, provided access is available. The regulation also states that, "Where examination from both sides is not possible on austenitic welds or dissimilar metal welds, full coverage credit from a single-side[1] [examination] may be claimed only after completing a successful single-sided Appendix VIII demonstration using flaws on the opposite side of the weld." The nuclear power industry developed the EPRI PDI program to implement the requirements of Appendix VIII.

The licensee has determined that UT volumetric coverage was less than 100 percent because of limitations encountered during the UT examinations of the subject welds. Axial scanning of the subject welds is restricted on the far-side by component configuration which prevents scanning in the opposite axial direction. When PDI purchased mockups for Appendix VIII, Supplement 2 performance demonstrations, the mockups were designed to represent as-built weld conditions which normally had weld crowns. Because of the difficulties in scanning over a weld crown, the PDI program implemented Supplement 2 performance demonstration testing as a near-side test which did not included scanning of the weld surface. The personnel and procedures satisfying the screening criteria of the performance demonstration are qualified for examination of the volume on the near-side of the weld (50 percent of the volume). The PDI program does not have performance demonstration criteria in place for the qualification of personnel and procedures which include scans of the accessible weld and far-side base metal.

The subject welds are part of the licensee's risk-informed program which is described in the EPRI Topical Report (TR) TR-112657, Revision B-A. The TR does not require surface examination for the subject welds; it only requires volumetric examinations. The TR states the following: "When access to both sides of the weld is not possible, examination procedures must be modified to detect flaws oriented nominally parallel to the weld.... The weld crown should be ground flush or flat-topped and the weld and far-side base metal should be examined using refracted longitudinal and shear-wave search units by scanning across the accessible base metal and weld."

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[1] When the transducer is located on the same side of the base metal and weld centerline, the examination is considered on the near-side, and when the transducer is located on the opposite side of the weld center line and opposite base metal, the examination is considered far-side. An examination performed with the transducer scanning in only one direction axially or one direction circumferentially is considered a single-side examination.

Licensees using the TR had to condition the weld crowns to support scanning on the weld. The licensee examined the accessible weld crowns and far-side base metal with the same qualified UT technique that was used for the near-side examination, and identified this portion of the examination as a best effort. There may be a slight increase in difficulty associated with scanning over the base metal-to-weld interface from the weld to far-side base metal. However, the slight increase in difficulty, if any, should not preclude experienced UT personnel from detecting flaws.

3.1.6 Conclusions for RR ISI-34

Based on the above evaluation, the NRC staff concludes that achieving the ASME Code-required examination coverage for the subject welds is impractical. Based on the level of examination coverage obtained for the subject welds, if significant service-induced degradation were occurring, there is reasonable assurance that the degradation would have been detected by the examinations that were performed. In addition, the licensee maintains an active leakage and radiation monitoring systems to detect unexpected leakage. Therefore, pursuant to 10 CFR 50.55a(a)(g)(6)(i), RR ISI-34 is granted for the second 10-year ISI interval at Callaway. This grant of relief 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.

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

3.2 RR ISI-40

In its letters dated October 25, 2006, and June 29 and December 13, 2007, the licensee requested relief from portions of the preservice examination volume of selected repair and replacement welds. In the December 13, 2007, letter, the licensee responded to a second request for additional information from NRC with a letter that supersedes the RR ISI-40 that was submitted in the licensee's October 25, 2006, application. This section of the SE addresses only RR ISI-40.

3.2.1 Applicable ASME Code Components

The applicable ASME Code components are the following 12 pipe-to-valve and pipe-to-flange welds associated with the emergency core cooling system accumulators listed below:

Affected Preservice Examination Pipe Welds

Weld Number	Description (NPS)	Examination Category, Item No.	Coverage %[2]	Degradation Mechanism
2-EP-01-8818A-1	6" Pipe to Valve	B-J, B9.11	50	None
2-EP-01-8818A-2	6" Pipe to Valve	B-J, B9.11	50	None
2-EP-01-8818B-1	6" Pipe to Valve	B-J, B9.11	50	None
2-EP-01-8818B-2	6" Pipe to Valve	B-J, B9.11	50	None
2-EP-01-8818C-1	6" Pipe to Valve	B-J, B9.11	50	None
2-EP-01-8818C-2	6" Pipe to Valve	B-J, B9.11	50	None
2-EP-01-8818D-1	6" Pipe to Valve	B-J, B9.11	50	None
2-EP-01-8818D-2	6" Pipe to Valve	B-J, B9.11	50	None
2-EP-01-3066A-WDC-002-FW2	6" Pipe to Flange	B-J, B9.11	50	None
2-EP-01-3066A-WDC-003-FW3	6" Pipe to Flange	B-J, B9.11	50	None
2-EP-01-3066D-WDC-002-FW2	6" Pipe to Flange	B-J, B9.11	50	None
2-EP-01-3066D-WDC-003-FW3	6" Pipe to Flange	B-J, B9.11	50	None

3.2.2 Applicable ASME Code Requirements

ASME Code, Section XI, Figure IWB-2500-8(c), 1989 Edition with no addenda requires surface examination of the weld crown and ½-inch on either side of the weld crown 360 degrees around the pipe, and volumetric examination of a minimum volume of the inner 1/3 through-wall thickness extending into the piping base metal for a distance of 1/4 inches past the edge of the weld crown.

ASME Code Case N-460, “Alternative Examination Coverage for Class 1 and Class 2 Welds,” permits a reduction in coverage of less than 10 percent to be considered as essentially 100 percent weld coverage.

3.2.3 Proposed Alternative

In its letter dated December 13, 2007, the licensee proposed performing UT examination of the subject welds to the maximum extent practical due to design configuration restrictions. This includes a best effort examination of the far side of each component to the extent possible utilizing a 70-degree shear-wave search unit.

3.2.4 Licensee Basis for Proposed Alternative

There are currently no qualified single-side UT examination procedures that demonstrate equivalency to two-side examination procedures on austenitic piping welds. Current technology

[2] The coverage does not include the weld portion that was UT examined as a best effort examination.

is not capable of reliable detecting or sizing flaws on the far side of an austenitic weld for configurations common to U.S. nuclear applications.

The ASME Code requires 100 percent volumetric coverage of the subject welds, but only 50 percent coverage can be credited in those areas where only single-side access is available. No UT procedures are qualified on wrought austenitic piping welds for detection or flaw sizing on the far side of the weld when only single-side access is available. The method used to examine the far side of the weld was that offered by the EPRI PDI as the "best effort" technology for these configurations. Industry experience shows that failure of pipe-to-component welds not subject to either a damage mechanism or to thermal fatigue are most likely to occur on the pipe side of the weld. Therefore, while only 50 percent coverage can be claimed, greater than 50 percent of the risk associated with the welds were addressed.

3.2.5 NRC Staff Evaluation

The ASME Code requires 100 percent volumetric and surface examination of selected Class 1 and Class 2 circumferential pipe welds. In addition, the current ASME Code as modified by the 10 CFR 50.55a requires that the volumetric examination be conducted from both sides of these pressure retaining welds. However, the geometric configurations of the subject welds restricts UT testing to the near side of the weld and in one axial scanning direction. The regulation 10 CFR 50.55a(g)(6)(ii)(C) requires the licensee to use the 1995 Edition with 1996 Addenda of the ASME Code, Section XI, Appendix VIII, "Performance Demonstration for Ultrasonic Examination Systems," for UT examination of pipe. UT examinations of the subject welds are performed with personnel and procedures qualified to the requirements of Appendix VIII, Supplement 2, "Qualification Requirements for Wrought Austenitic Piping Welds." The examination scanning requirements are in 10 CFR 50.55a(b)(2)(xv)(A) which states that "Piping must be examined in two axial directions and when examination in the circumferential direction is required, the circumferential examination must be performed in two directions, provided access is available." The regulation also states that, "Where examination from both sides is not possible on austenitic welds or dissimilar metal welds, full coverage credit from a single-side[3] [examination] may be claimed only after completing a successful single-sided Appendix VIII demonstration using flaws on the opposite side of the weld." The nuclear power industry developed the EPRI PDI program to implement the requirements of Appendix VIII.

The licensee used a radiographic testing (RT) method to examine for fabrication flaws in the repaired welds in accordance with the Section III of the ASME Code. The acceptance criteria for Section III flaws are more stringent than those of ASME Code, Section XI flaws. The RT examination found no rejectable fabrication flaws. However, RT is normally not used as the volumetric examination method of choice for preservice and ISI examinations. RT is effective in detecting volumetric type flaws and cracks with wide openings while UT is effective in detecting sound reflective surfaces common with cracks. For Section XI applications, RT is not required to demonstrate its effectiveness in detecting service generated flaws with a performance demonstration.

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[3] When the transducer is located on the same side of the base metal and weld centerline, the examination is considered on the near-side, and when the transducer is located on the opposite side of the weld center line and opposite base metal, the examination is considered far-side. An examination performed with the transducer scanning in only one direction axially and one direction circumferentially is considered a single-side examination.

The ASME Section XI required preservice examination was performed using a Supplement 2 qualified UT technique. The licensee has determined that UT volumetric coverage was less than 100 percent because axial scanning of the subject welds was restricted on the far side by component configuration which prevented scanning in the opposite axial direction. The licensee stated that they are dependent on EPRI PDI to develop UT techniques for far-side examinations.

When PDI purchased mockups for Appendix VIII, Supplement 2 performance demonstrations, the mockups were designed to represent as-built weld conditions which normally had weld crowns. Because of the difficulties in scanning over a weld crown, the PDI program implemented Supplement 2 performance demonstration testing as a near-side test which did not include scanning on the weld surface. The personnel and procedures satisfying the screening criteria of the performance demonstration are qualified for examination of the volume on the near-side of the weld (50 percent of the volume). The PDI program does not have performance demonstration criteria in place for the qualification of personnel and procedures which include scans of the accessible weld and far-side base metal.

After the preservice examination, the subject welds will become part of the licensee's RI-ISI program. As part of the RIISI program, the weld crowns are ground flush or flat-topped. The licensee examined the accessible weld crowns and far-side base metal with the same qualified UT techniques that were used for the near-side examination. The licensee identified scanning over the weld and far side base metal as a best effort examination. Because the procedures and personnel have demonstrated the capability of detecting flaws on the near side of the weld, the best effort is reasonably effective in detecting flaws in the volume examined on the far side of the weld.

At the time when the licensee received its construction permit (April 16, 1976), the ASME Code preservice examination requirements were achievable. Since then, the UT examination requirements have changed which affected the percentage of achievable UT volumetric coverage. For the licensee to achieve 100 percent volumetric coverage, the subject welds would have to be redesigned and modified. This would result a significant hardship on the licensee.

Due to the change in ASME Code requirements for UT after Callaway was built, the use of a best effort using qualified procedures and personnel, and the difficulties in redesigning and replacing the subject components or welds, the staff finds that compliance with ASME Code UT examination coverage requirements is impractical. The volume on the component side of the weld was examined during fabrication with RT and found acceptable. Therefore, the combined UT and RT examinations performed for the subject welds provide reasonable assurance of their structural integrity.

3.2.6 Conclusions for RR ISI-40

Based on the above evaluation, the staff concludes that compliance with the preservice volumetric examination coverage requirement for the subject welds is impractical. Based on the combine UT, RT, and best effort UT examinations, the volumetric coverage obtained on the subject welds provides reasonable assurance that evidence of any significant defects would have been detected and recorded for future reference, if needed. Therefore, pursuant to 10 CFR 50.55a(g)(6)(i), relief request ISI-40 is granted for the second 10-year ISI interval at

Callaway. This grant of relief 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.

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

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Date: