AmerenUE
Callaway Plant

PO Box 620
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May 18, 2006

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Mail Stop P1-137
Washington, DC 20555-0001

Ladies and Gentlemen:

ULNRC-05291
10 CFR 50.55a

DOCKET NUMBER 50-483
UNION ELECTRIC COMPANY
CALLAWAY PLANT
10 CFR 50.55a REQUESTS FOR RELIEF FROM
ASME SECTION XI INSERVICE INSPECTION REQUIREMENTS
FOR THIRD 10-YEAR INSPECTION INTERVAL
(RELIEF REQUESTS I3R-05 and I3R-06)

Pursuant to 10 CFR 50.55a(a)(3), Union Electric Company (AmerenUE) requests NRC approval of the relief requested per the attached two relief requests, I3R-05 and I3R-06. The requests are for the third 10-year inservice inspection interval at the Callaway plant. The Code Edition (and Addenda) applicable to Callaway for its third inspection interval, which began December 19, 2005, is the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, 1998 Edition through 2000 Addenda.

The attached 10CFR50.55a requests pertain to ultrasonic testing requirements for pressure-retaining welds associated with the reactor pressure vessel. I3R-05 is a request to implement proposed Supplement 14 to Appendix VIII of ASME Section XI, as developed per the industry's Performance Demonstration Initiative (PDI) program, for specifying the necessary qualifications pertaining to examination of various RPV welds examined from the inside surface. Proposed Supplement 14 provides for implementation of the requirements of Supplements 2 and 10 of Appendix VIII using a coordinated rather than aggregate approach to meeting those requirements for the applicable welds.

I3R-06 is a request to allow use of a PDI-qualified procedure for completing ultrasonic testing of the RPV shell- and head-to-flange welds, in accordance with Supplements 4 and 6 to Appendix VIII (as modified by amendment of 10 CFR Part

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50 per the Final Rule published in 64 FR 51370-51400) in lieu of the method specified per Section V, Article 4, of the ASME Code. (These welds are the only RPV circumferential welds not specifically included in Appendix VIII; however, a qualification process to Appendix VIII criteria is deemed to be appropriate for the examination and evaluation techniques to be applied to these welds.)

Supporting information and essential details, including justification, is provided for each relief request as attached.

These 10 CFR 50.55a requests support inservice inspection activities to be conducted throughout Callaway's third 10-year inspection interval which began December 19, 2005. In particular, the requested relief is needed to support examinations to be conducted during the next refueling outage (i.e., the first of those that will occur during the third inspection interval) which is scheduled for Spring 2007. In order to plan and prepare for those activities sufficiently in advance of the outage, AmerenUE respectfully requests NRC review and approval of the attached relief requests by January 31, 2007.

It may be noted that no new regulatory commitments have been made or identified pursuant to this letter and its attachments. Please contact me at 573-676-8659 or Dave Shafer at 314-554-3104 for any questions you may regarding these relief requests.

Sincerely,

Keith D. Young

Keith D. Young
Manager - Regulatory Affairs

TBE/jdg

Attachments: Attachment 1, Relief Request I3R-05
Attachment 2, Relief Request I3R-06

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Proposed Alternative
In Accordance with 10 CFR 50.55a(a)(3)(i)
--Alternative Provides Acceptable Level of Quality and Safety--

1. ASME Code Component(s) Affected

Class 1 pressure-retaining piping welds examined from the inside surface of pressurized water reactors using procedures, personnel, and equipment qualified to ASME Section XI, Appendix VIII, Supplement 2 or 10 criteria.

SAFE-END WELDS CODE CATEGORY B-F

Code Item	Description	Weld No.
B5.10	Safe-end to Loop A RPV Inlet Nozzle	2-RV-302-121-A (Note 1)
B5.10	Safe-end to Loop A RPV Outlet Nozzle	2-RV-301-121-A (Note 1)
B5.10	Safe-end to Loop B RPV Inlet Nozzle	2-RV-302-121-B (Note 1)
B5.10	Safe-end to Loop B RPV Outlet Nozzle	2-RV-301-121-B (Note 1)
B5.10	Safe-end to Loop C RPV Inlet Nozzle	2-RV-302-121-C (Note 1)
B5.10	Safe-end to Loop C RPV Outlet Nozzle	2-RV-301-121-C (Note 1)
B5.10	Safe-end to Loop D RPV Inlet Nozzle	2-RV-302-121-D (Note 1)
B5.10	Safe-end to Loop D RPV Outlet Nozzle	2-RV-301-121-D (Note 1)

SAFE-END WELDS CODE CATEGORY B-J

Code Item	Description	Weld No.
B9.11	Elbow to Loop A RPV Inlet Safe-End Weld	2-BB-01-F102
B9.11	Pipe to Loop A RPV Outlet Safe-End Weld	2-BB-01-F103
B9.11	Elbow to Loop B RPV Inlet Safe-End Weld	2-BB-01-F202
B9.11	Pipe to Loop B RPV Outlet Safe-End Weld	2-BB-01-F203
B9.11	Elbow to Loop C RPV Inlet Safe-End Weld	2-BB-01-F302 (Note 2)
B9.11	Pipe to Loop C RPV Outlet Safe-End Weld	2-BB-01-F303
B9.11	Elbow to Loop D RPV Inlet Safe-End Weld	2-BB-01-F402
B9.11	Pipe to Loop D RPV Outlet Safe-End Weld	2-BB-01-F403

Note 1: Welds will be examined during Refuel 15 (Spring 2007) to address alloy 600 issues in accordance with Material Reliability Program (MRP) 139 guidelines.

Note 2: Weld number 2-BB-01-F302 will be examined during Refuel 15 (Spring 2007) to address successive inspection requirements of ASME Sec XI IWB-2420. Indications for this weld were originally detected during Refuel 13 (Spring 2004).

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2. Applicable Code Edition and Addenda

ASME Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," 1998 Edition, with 2000 Addenda.

3. Applicable Code Requirement

Relief is requested from the qualification requirements contained in ASME Section XI, 1998 Edition with 2000 Addenda, Appendix VIII Supplement 2 and Supplement 10 as specified in Table VIII-3110-1, for applicable piping welds.

4. Reason for Request

Callaway's reactor pressure vessel (RPV) nozzle to main coolant piping is fabricated using ferritic, austenitic, and cast stainless components and assembled using austenitic and dissimilar metal welds. These austenitic and dissimilar metal welds are in close proximity to each other, which means the same ultrasonic essential variables are used for each weld and the most challenging ultrasonic examination process is employed (e.g., the ultrasonic examination process associated with a dissimilar metal weld would be applied to a ferritic or austenitic weld).

With regard to qualification requirements for the inspection of such welds, separate qualifications to Supplements 2, 3, and 10 are redundant when done in accordance with the industry's Performance Demonstration Initiative (PDI) Program. For example, during a personnel qualification to the PDI Program, the candidate would be exposed to a minimum of 10 flawed grading units for each individual supplement. Personnel qualification to Supplements 2, 3, and 10 would therefore require a total of 30 flawed grading units. Test sets this large and tests of this duration are impractical. Additionally, a full procedure qualification (i.e. 3 personnel qualifications) to the PDI Program requirements would require 90 flawed grading units. This is particularly burdensome for a procedure that will use the same essential variables or the same criteria for selecting essential variables for all 3 supplements.

To resolve these issues, the PDI Program recognizes the Supplement 10 qualification as the most stringent and technically challenging ultrasonic application. The same essential variables are used for the examinations subject to the requirements of Supplements 2, 3, and 10. A coordinated add-on approach to implementation would be sufficiently stringent for qualification to the requirements of Supplements 2 and 3 if the requirements used for qualification to Supplement 10 are satisfied as a prerequisite. The basis for this conclusion is the fact that the majority of the flaws addressed in Supplement 10 are located wholly in austenitic weld material. This configuration is known to be challenging for ultrasonic techniques due to the variable dendritic structure of the weld material. Conversely, the flaws addressed in Supplements 2 and 3 initiate in fine-grained base materials.

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Additionally, use of the PDI program for implementation of Supplement 2 requirements in coordination with Supplement 10 implementation would be more stringent than current Code requirements for a detection and length sizing qualification. For example, the current Code would allow a detection procedure, personnel, and equipment to be qualified to Supplement 10 requirements with 5 flaws, Supplement 2 requirements with 5 flaws, and Supplement 3 requirements with 5 flaws, for a total of only 15 flaws. The proposed alternative of qualifying to Supplement 10 requirements using 10 flaws and adding on Supplement 2 requirements with 5 flaws and Supplement 3 requirements with 3 flaws results in a total of 18 flaws which will be multiplied by a factor of 3 for the procedure qualification.

Based on the above, the use of a limited number of Supplement 2 or 3 flaws is sufficient to assess the capabilities of procedures and personnel who have already satisfied Supplement 10 requirements. The statistical basis used for screening personnel and procedures is still maintained at the same level with competent personnel being successful and less skilled personnel being unsuccessful. The proposed alternative is consistent with other coordinated qualifications currently contained in Appendix VIII.

The proposed alternate program developed by the industry for the PDI program is attached and is identified as Supplement 14 since it was submitted to the ASME Code for consideration as new Supplement 14 to Appendix VIII. Supplement 14 was approved by the Subcommittee on Nuclear Inservice Inspection in 2002 and was subsequently published in the 2004 Edition of Section XI. Supplement 14 is also addressed in Code Case 696 which has been approved by the Code committee but not yet listed in a revision of Regulatory Guide 1.147.

5. Proposed Alternative and Basis for Use

In lieu of the requirements of ASME Section XI, 1998 Edition, 2000 Addenda, Appendix VIII, Table VIII-3110-1, the Performance Demonstration Initiative (PDI) Program for implementation of Appendix VIII, i.e., Supplement 2 in coordination with Supplement 10 implementation, is desired to be used (as prescribed per Supplement 14). Pursuant to 10 CFR 50.55a(a)(3)(i), therefore, approval is requested to use the proposed alternative in lieu of the ASME Section XI, Appendix VIII, Supplement 2 and 10 requirements. Supplement 14, the PDI Program alternative, is summarized in the attached.

For reasons stated in section 4 above, compliance with the proposed alternative will provide an adequate level of quality and safety for examination of the affected welds.

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6. Duration of Proposed Alternative

The proposed alternative would be applicable for the duration of the third inservice inspection interval at Callaway, which began on December 19, 2005.

7. Precedent

The relief requested per this 10CFR50.55a request was previously granted for Callaway per 10CFR50.55a Request Number ISI-27. That identical relief was requested per AmerenUE letter ULNRC-04879 dated August 14, 2003, and was approved by the NRC via NRC letter dated April 7, 2004, "Callaway Plant, Unit 1 – Relief Requests ISI-27 Through ISI-31 Pertaining to Implementation of ASME Section XI Appendix VIII Requirements (TAC Nos. MC0478 Through MC0482, Respectively)"

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SUPPLEMENT 14 - QUALIFICATION REQUIREMENTS FOR COORDINATED IMPLEMENTATION OF SUPPLEMENT 10, 2 AND 3 FOR PIPING EXAMINATIONS PERFORMED FROM THE INSIDE SURFACE	
Proposed Requirements	**Technical Basis**
1.0 SCOPE	
This Supplement is applicable to wrought austenitic, ferritic and dissimilar metal piping welds examined from the inside surface. This Supplement provides for expansion of Supplement 10 qualifications to permit coordinated qualification for Supplements 2 and 3.	There is currently no available Code action allowing for a coordinated implementation of the fundamental qualifications required for the typical examinations performed from the ID of PWR nozzles. Without this Code Case/Change, qualifications would require an excessive amount of flawed and unflawed grading units. This proposed supplement uses the more technically stringent Supplement 10 qualification as a base and then incorporates a limited number of Supplement 2 and Supplement 3 samples. This proposal is consistent with the philosophy of Supplement 12, the proposed changes to Supplement 10, and the approved changes to Supplement 2 and 11.
2.0 SPECIMEN REQUIREMENTS Qualification test specimens shall meet the requirements listed herein, unless a set of specimens is designed to accommodate specific limitations stated in the scope of the examination procedure (e.g., pipe size, access limitations). The same specimens may be used to demonstrate both detection and sizing qualification.	
2.1 General The specimen set shall conform to the following requirements.	
(a) Specimens shall have sufficient volume to minimize spurious reflections that may interfere with the interpretation process.	
(b) The specimen set shall include the minimum and maximum pipe diameters and thicknesses for which the examination procedure is applicable. Applicable	Tolerances are from the applicable Supplements because Supplement 2 and 3 dimensions and tolerances are typically based on wrought nominal pipe size that is

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SUPPLEMENT 14 - QUALIFICATION REQUIREMENTS FOR COORDINATED IMPLEMENTATION OF SUPPLEMENT 10, 2 AND 3 FOR PIPING EXAMINATIONS PERFORMED FROM THE INSIDE SURFACE	
Proposed Requirements	**Technical Basis**
tolerances are provided in Supplements 2, 3, and 10.	not appropriate for DM welds that are typically associated with forged and machined safe ends.
(c) The specimen set shall include examples of the following fabrication conditions: (1) geometric and material conditions that normally require discrimination from flaws (e.g., counterbore or weld root conditions, cladding, weld buttering, remnants of previous welds, adjacent welds in close proximity, and weld repair areas); (2) typical limited scanning surface conditions (e.g., internal tapers, exposed weld roots, and cladding conditions).	
2.2 Supplement 2 Flaws (a) At least 70% of the flaws shall be cracks, the remainder shall be alternative flaws. (b) Specimens with IGSCC shall be used when available. (c) Alternative flaws, if used, shall provide crack-like reflective characteristics and shall comply with the following: (1) Alternative flaws shall be used only when implantation of cracks produces spurious reflectors that are uncharacteristic of service-induced flaws. (2) Alternative flaws shall have a tip width of less than or equal to 0.002 in. (0.05 mm).	
2.3 Supplement 3 Flaws Supplement 3 flaws shall be mechanical or thermal fatigue cracks.	
2.4 Distribution The specimen set shall contain a representative distribution of flaws. Flawed and unflawed grading units shall be randomly mixed.	Since the number of flaws will be limited, words such as "uniform distribution" could lead to testmanship and are considered inappropriate.

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SUPPLEMENT 14 - QUALIFICATION REQUIREMENTS FOR COORDINATED IMPLEMENTATION OF SUPPLEMENT 10, 2 AND 3 FOR PIPING EXAMINATIONS PERFORMED FROM THE INSIDE SURFACE	
Proposed Requirements	**Technical Basis**
3.0 PERFORMANCE DEMONSTRATION	
Personnel and procedure performance demonstration tests shall be conducted according to the following requirements. (a) The same essential variable values, or, when appropriate, the same criteria for selecting values as demonstrated in Supplement 10 shall be used. (b) The flaw location and specimen identification shall be obscured to maintain a "blind test." (c) All examinations shall be completed prior to grading the results and presenting the results to the candidate. Divulgence of particular specimen results or candidate viewing of unmasked specimens after the performance demonstration is prohibited.	
3.1 Detection Test	
(a) The specimen set for Supplement 2 qualification shall include at least five flawed grading units and ten unflawed grading units in austenitic piping. A maximum of one flaw shall be oriented axially.	
(b) The specimen set for Supplement 3 qualification shall include at least three flawed grading units and six unflawed grading units in ferritic piping. A maximum of one flaw shall be oriented axially.	
(c) Specimens shall be divided into grading units. (1) Each grading unit shall include at least 3 in. (76 mm) of weld length. (2) The end of each flaw shall be separated from an unflawed grading unit by at least 1 in. (25 mm) of unflawed material. A flaw may be less than 3 in. (76 mm) in length.	

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SUPPLEMENT 14 - QUALIFICATION REQUIREMENTS FOR COORDINATED IMPLEMENTATION OF SUPPLEMENT 10, 2 AND 3 FOR PIPING EXAMINATIONS PERFORMED FROM THE INSIDE SURFACE	
Proposed Requirements	**Technical Basis**
(3) The segment of weld length used in one grading unit shall not be used in another grading unit.	
(4) Grading units need not be uniformly spaced around the pipe specimen.	
(d) All grading units shall be correctly identified as being either flawed or unflawed.	
3.2 Length-sizing Test	
(a) The coordinated implementation shall include the following requirements for personnel length sizing qualification.	
(b) The specimen set for Supplement 2 qualification shall include at least four flaws in austenitic material.	Axial flaws are not length sized in Supplement 2.
(c) The specimen set for Supplement 3 qualification shall include at least three flaws in ferritic material.	
(d) Each reported circumferential flaw in the detection test shall be length sized. When only length-sizing is being tested, the regions of each specimen containing a flaw to be sized may be identified to the candidate. The candidate shall determine the length of the flaw in each region.	
(e) Supplement 2 or Supplement 3 examination procedures, equipment, and personnel are qualified for length-sizing when the flaw lengths estimated by ultrasonics, as compared with the true lengths, do not exceed 0.75 in. (19 mm) RMS, when they are combined with a successful Supplement 10 qualification.	
3.3 Depth-sizing Test	
The coordinated implementation shall include the following requirements for personnel depth-sizing qualification.	

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SUPPLEMENT 14 - QUALIFICATION REQUIREMENTS FOR COORDINATED IMPLEMENTATION OF SUPPLEMENT 10, 2 AND 3 FOR PIPING EXAMINATIONS PERFORMED FROM THE INSIDE SURFACE	
Proposed Requirements	**Technical Basis**
(a) The specimen set for Supplement 2 qualification shall include at least four circumferentially oriented flaws in austenitic material.	Axial flaws are not depth sized in Supplement 2.
(b) The specimen set for Supplement 3 qualification shall include at least three flaws in ferritic material.	
(c) For a separate depth-sizing test, the regions of each specimen containing a flaw to be sized may be identified to the candidate. The candidate shall determine the depth of the flaw in each region.	
(d) Supplement 2 or Supplement 3 examination procedures, equipment, and personnel are qualified for depth-sizing when the flaw depths estimated by ultrasonics, as compared with the true depths, do not exceed 0.125 in. (3 mm) RMS, when they are combined with a successful Supplement 10 qualification.	
4.0 PROCEDURE QUALIFICATION	
Procedure qualifications shall include the following additional requirements. (a) The specimen set shall include the equivalent of at least three personnel performance demonstration test sets. Successful personnel performance demonstrations may be combined to satisfy these requirements. (b) Detectability of all flaws in the procedure qualification test set that are within the scope of the procedure shall be demonstrated. Length and depth sizing shall meet the requirements of 3.1, 3.2, and 3.3. (c) At least one successful personnel demonstration shall be performed.	

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SUPPLEMENT 14 - QUALIFICATION REQUIREMENTS FOR COORDINATED IMPLEMENTATION OF SUPPLEMENT 10, 2 AND 3 FOR PIPING EXAMINATIONS PERFORMED FROM THE INSIDE SURFACE	
Proposed Requirements	**Technical Basis**
(d) To qualify new values of essential variables, at least one personnel performance demonstration is required. The acceptance criteria of 4.0(b) shall be met.	

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Proposed Alternative
In Accordance with 10 CFR 50.55a(a)(3)(i)
--Alternative Provides Acceptable Level of Quality and Safety--

1. ASME Code Component(s) Affected

ASME Category B-A pressure-retaining welds in the reactor pressure vessel (RPV), Item Nos. B1.30, shell-to-flange weld, and B1.40, head-to-flange weld.

Weld Nos.: 2-CH-101-101 and 2-RV-101-121

2. Applicable Code Edition and Addenda

ASME Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," 1998 Edition, 2000 Addenda.

3. Applicable Code Requirement

ASME Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," 1998 Edition, 2000 Addenda, Subsection IWA-2232, requires ultrasonic testing (UT examination) of the RPV head-to-flange weld to be in accordance with ASME Code, Section V, Article 4. In addition, Regulatory Guide (RG) 1.150, Revision 1, "Ultrasonic Testing of Reactor Vessel Welds During Preservice and Inservice Examinations," serves as regulatory guidance for the UT examination of RPV welds.

4. Reason for Request

Callaway is required to perform inservice examination of the RPV flange welds in accordance with the requirements of ASME Section V Article 4 and the subsequent guideline requirements of Regulatory Guide 1.150 Rev 1.

Federal Register Notice 64 FR 51370 through 51400, dated September 22, 1999, revised the 1999 Edition of 10 CFR 50.55(a) Codes and Standards. This revision requires that ASME Section XI, Appendix VIII, Supplement 4, "Qualification Requirements for the Clad/Base Metal Interface of Reactor Vessel," and Supplement 6, "Qualification Requirements for Reactor Vessel Welds Other Than Clad/Base Metal Interface," be implemented for most of the RPV welds by November 22, 2000. The RPV vessel-to-flange and flange to head welds are the only RPV circumferential welds not included in Appendix VIII.

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Relief is requested to allow the use of a PDI-qualified procedure to complete the UT examination of the RPV vessel to-flange weld when performed from the vessel side of the weld and the RPV head-to-flange weld in accordance with ASME Section XI, Div. 1, 1998 Edition with 2000 Addenda, Appendix VIII Supplement 4 and 6 as modified by amendment of 10 CFR 50 per the Final Rule published in the Federal Register (64 FR 51370 through 51400) dated September 22, 1999, in lieu of ASME Section V, Article 4.

5. Proposed Alternative and Basis for Use

Callaway will be employing personnel, procedures and equipment that are demonstrated and qualified by a Performance Demonstration Initiative (PDI) and in accordance with ASME Section XI, Div.1, 1998 Edition with 2000 Addenda, Appendix VIII, Supplements 4 and 6 as modified by amendment of 10 CFR 50 per the Final Rule published in the Federal Register (64 FR 51370 through 51400), dated September 22, 1999 for applicable RPV welds.

Appendix VIII was developed to ensure the effectiveness of UT examinations within the nuclear industry by means of a rigorous, item-specific performance demonstration. The performance demonstration was conducted on an RPV mockup containing flaws of various sizes and locations. The demonstration established the capability of equipment, procedures, and personnel to find flaws that could be detrimental to the integrity of the RPV.

Although Appendix VIII is not a requirement for these welds, the qualification process to Appendix VIII criteria demonstrates that the examination and evaluation techniques are equal to or surpass the requirements of paragraph IWA-2232, "Ultrasonic Examination," of Section XI of the ASME Code and the guidance in RG 1.150.

A comparison between the UT methods of ASME Code, Section V, Article 4 and the procedures developed to satisfy the PDI/Appendix VIII can be best described as a comparison between a compliance-based procedure (ASME Code, Section V, Article 4) and a results-based procedure (PDI Appendix VIII). ASME Code, Section V procedures use an amplitude-based technique and a known reflector. The proposed alternate UT method was established independently from the acceptance standards for flaw size found in ASME Code, Section XI. The associated examination and sizing procedure uses echo-dynamic motion and tip diffraction characteristics of the flaw instead of the amplitude characteristics required by ASME Code, Section V, Article 4. The search units interrogate the same examination volume as depicted by ASME Code, Section XI, Figure IWB 2500-4 and 2500-5, "Shell-to-Flange and head-to-flange weld joints."

The PDI-qualified sizing method is considered more accurate than the method used in ASME Code, Section V, Article 4. The PDI Program is in compliance with the detection

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and sizing tolerance requirements of Appendix VIII. The PDI qualification method is based on a group of samples that validate the acceptable flaw sizes in ASME Section XI. The sensitivity to detect these flaws is considered to be equal to or greater than the sensitivity obtained through ASME Section V Article 4. The proposed alternate UT examination technique thus provides an acceptable level of quality and examination repeatability as compared to the Article 4 requirements.

The procedure for satisfying the requirements of ASME Code, Section V, Article 4 for the UT examination of the RPV-flange welds has not received the same qualifications as a PDI-qualified procedure. The PDI-qualification specimens are curved vessel shell plate sections and do not have taper transition geometry. However, the procedure is used to examine reactor vessel shell welds which have taper transitions at weld joints of dissimilar thickness. The PDI qualification for Supplements 4 and 6 allows for examination of material thickness up to 12.3 inches or a metal path distance of 17.5 inches in the case of the 45 degree transducer. This qualified test range bounds a significant percentage of the flange welds examination volume even in the thicker portion above the weld centerline.

The use of Appendix VIII Supplements 4 and 6 for examination of the RPV vessel-to-flange weld from the shell side and the RPV head-to-flange weld (which PDI has qualified) is expected to reduce examination time, which translates to reduced personnel radiation exposure.

Additionally, this relief would allow a smooth transition to the welds adjacent to the RPV circumferential and longitudinal welds (welds B 1.11, B 1.12, B1.21 and B1.22) which do require an examination in accordance with Appendix VIII, Supplements 4 and 6. This would eliminate the need to switch to the different calibrations, procedure, and technique required by ASME Code, Section V, Article 4 and Regulatory Guide 1.150, Rev 1. This would result in a reduction in transition time to the different calibration, procedure, and technique required which translates to reduced personnel radiation exposure and is more cost effective.

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Alternate Examinations

In lieu of the ASME Code, Section V, Article 4 method, the shell-to-flange and head-to-flange weld examinations shall be performed using a qualified procedure in accordance with ASME Code, Section XI, Div. 1, 1998 Edition with 2000 Addenda, Appendix VIII, Supplements 4 and 6 as modified by amendment of 10 CFR 50 per the Final Rule published via Federal Register Notice 64 FR 51370 through 51400, dated September 22, 1999. The flange-to-vessel welds when performed from the flange face will continue to be performed in accordance with ASME Code Section V, Article 4 and Regulatory Guide 1.150, Rev. 1.

The Appendix VIII criteria were developed to ensure the effectiveness of UT examinations within the nuclear industry by means of a rigorous, item-specific performance demonstration. The performance demonstration was conducted on RPV mockups containing flaws of various sizes and locations. The demonstration established the capability of equipment, procedures, and personnel to find flaws that could be detrimental to the integrity of the RPV. The performance demonstration showed that the proposed UT technique is equal to or surpasses the requirements of the Code and the recommendations of RG 1.150. Therefore, there is reasonable assurance that the proposed alternative provides an acceptable level of quality and safety.

6. Duration of Proposed Alternative

The proposed alternative would be applicable for the duration of the third inservice inspection interval at Callaway, which began on December 19, 2005.

7. Precedents

The relief requested per this 10CFR50.55a request was previously granted for Callaway per 10CFR50.55a Request Number ISI-30 except that per that request, relief was requested only for the RPV shell-to-flange weld (i.e., weld No. 2-RV-101-121). That relief was requested per AmerenUE letter ULNRC-04879 dated August 14, 2003, and was approved by the NRC via NRC letter dated April 7, 2004, "Callaway Plant, Unit 1 – Relief Requests ISI-27 Through ISI-31 Pertaining to Implementation of ASME Section XI Appendix VIII Requirements (TAC Nos. MC0478 Through MC0482, Respectively)"

In addition, the NRC has granted similar relief to Salem Generating Station, Unit 1 (Reference 8.a), and Comanche Peak Steam Electric Station, Unit 2 (Reference 8.b).

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8. References

a) Letter from J. Clifford (NRC) to H. W. Keiser (PSEG Nuclear) dated May 3, 2001; Subject: Salem Nuclear Generating Station, Unit No.1-Relief from ASME Code Requirements Related to the Inservice Inspection Program, Second 10-Year Interval, Relief Request RR-B1 1 (TAC No. MB1234)

b) Letter from Robert A. Gramm (NRC) to C. Lance Terry (JXU Generation Company) dated April 16, 2002; Subject: Comanche Peak Steam Electric Station (CPSES), Unit-2, Re: First 10-Year Inservice Inspection (ISI) Interval Request for Relief from the Requirements of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code) concerning Relief Requests A-4, Revision 1; A-5, Revision 2; A-6, A-7 and A-8 (TAC No. MB3039)

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May 18, 2006

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Ladies and Gentlemen:

ULNRC-05290
10 CFR 50.55a

DOCKET NUMBER 50-483
UNION ELECTRIC COMPANY
CALLAWAY PLANT
REQUEST FOR RELIEF FROM
ASME SECTION XI CODE INSERVICE INSPECTION REQUIREMENTS
(RELIEF REQUEST ISI-33)

Pursuant to 10 CFR 50.55a(a)(3), Union Electric Company (AmerenUE) hereby requests NRC approval of the attached relief request, identified as 10CFR50.55a Request Number ISI-33, for the Callaway plant. The requested relief is intended for the second and third 10-year inservice inspection intervals of Callaway's Inservice Inspection (ISI) Program. With regard to the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, i.e., Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components, the Code Edition (and Addenda) applicable to Callaway's second 10-year ISI interval is the1989 Edition, with no Addenda, and for Callaway's third 10-year ISI interval, it is the 1998 Edition, with 2000 Addenda.

The relief request specifically pertains to examination requirements for the safe-end weld associated with the reactor pressure vessel Loop C inlet nozzle. Review of the depth-sizing procedure used by Callaway's contractor for evaluation of an indication found for this weld determined that the approach used was not in accordance with the program to which Callaway was (and still is) committed, as based on the industry's Performance Demonstration Initiative program and proposed Supplement 14 to Appendix VIII of ASME Section XI. The relief request would permit application of an alternative that compensates for the program-procedure difference, as further explained in the attached relief request.

The indication in the subject weld was identified during Refuel 13 (Spring 2004). The weld will be re-examined in Refuel 15 (Spring 2007) and in future outages, in accordance with the schedule specified in Subsection IWB-2420(b) of the Code. In December 2005, the transition from Callaway's second ten-year ISI interval (which had been extended by one year) to the plant's third ten-year ISI interval occurred. The examination done for the subject weld during Refuel 13 was thus done within the second interval. The examinations to be done during future outages (including Refuel 15) will be done during the third interval. The intent is to perform the future examinations for the subject weld using the same or similar equipment and the same procedure as used for the examination done in Refuel 13. The requested relief (if approved) would thus apply to the future examinations in the same way that it is to be applied to evaluation of the examination done in Refuel 13. On this basis, AmerenUE is requesting application of the requested relief to both the second and third ISI intervals for Callaway.

As noted above, the attached 10 CFR 50.55a request is needed to support examination of the subject weld during the next refueling outage (Refuel 15) which is currently scheduled to begin in March 2007. In order to plan and prepare for that inspection activity sufficiently in advance of the outage, AmerenUE respectfully requests NRC review and approval of the attached relief request by January 31, 2007.

It may be noted that no new regulatory commitments have been made or identified pursuant to this letter and its attachment. Please contact me at 573-676-8659 or Dave Shafer at 314-554-3104 for any questions you may regarding the relief request.

Sincerely,

Keith D. Young

Keith D. Young
Manager - Regulatory Affairs

TBE/jdg

Attachment

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Proposed Alternative
In Accordance with 10 CFR 50.55a(a)(3)(i)
--Alternative Provides Acceptable Level of Quality and Safety--

1. ASME Code Component(s) Affected

Class 1 Pressure Retaining Piping Welds examined from the inside surface of Pressurized Water Reactors using procedures, personnel, and equipment qualified to ASME Section XI, Appendix VIII, Supplement 14 criteria.

SAFE-END WELDS CODE CATEGORY B-J

Code Item	Description	Weld No.
B9.11	Elbow to Loop C RPV Inlet Safe-End Weld	2-BB-01-F302

Note: This weld was not required to be examined per the ISI Program Plan. Due to hot leg nozzle cracking identified at V. C. Summer, however, Callaway chose to examine all inlet and outlet nozzle-to-safe end and all inlet and outlet safe end-to-piping welds.

2. Applicable Code Edition and Addenda

- ASME Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," 1989 Edition, with no Addenda, for Callaway Plant's second 10-year inservice inspection interval. Ultrasonic examinations were performed in accordance with Appendix VIII as contained in the ASME Section XI 1995 Edition, with the 1996 Addenda, as required by amendment of 10 CFR Part 50 per the Final Rule published via 64 FR 51370 - 51400.
- ASME Section XI, 1998 Edition, 2000 Addenda, for Callaway Plant's third 10-year inservice inspection interval.

3. Applicable Code Requirement

Relief is requested from the qualification requirements contained in ASME Section XI, 1995 Edition with 1996 Addenda, Appendix VIII Supplement 14, as established per Reference 7.b.

4. Reason for Request

Prior to Refuel 13, Callaway requested and gained relief from the qualification requirements contained in ASME Section XI, 1995 Edition with 1996 Addenda, Appendix VIII Supplement 2 and Supplement 10 as specified in Table VIII-3110-1, for

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applicable piping welds.[1] The alternative granted was to use the Performance Demonstration Initiative (PDI) Program for implementation of Appendix VIII, Supplement 2 in coordination with Supplement 10 (per new, proposed Supplement 14) in lieu of the requirements of ASME Section XI, 1995 Edition, 1996 Addenda, Appendix VIII, Table VIII-3110-1.

When the procedure used by Callaway's ISI contractor for depth sizing capability was evaluated, the overall performance did not satisfy the acceptance criteria specified in Supplement 14 which requires an overall error less than or equal to 0.125" RMS. Actual performance was determined to be 0.245" RMS for Supplement 2 & 10 combined (Supplement 14).

Subsequent to this, during Refuel 13 (Spring 2004), one indication (Flaw #2) was identified on the Loop C cold leg safe end-to-piping stainless steel weld, which required depth sizing. The indication was accepted by analytical evaluation in accordance with IWB 3132.3. [Note: Another small recordable flaw (Flaw #1) was identified in Loop C cold leg during RF-13, but this flaw was determined to be embedded and acceptable in accordance with IWB-3500. However, as a conservative measure, it was also evaluated in accordance with IWB-3600 as being surface breaking for the purpose of flaw evaluation.]

5. Proposed Alternative and Basis for Use

Callaway Plant proposes that the difference between the achieved performance of the vendor's procedure (0.245" RMS) and the Code-required value of 0.125" RMS be added to the size measured during the examination for the purpose of flaw evaluation. This will result in the measured depth of 0.82 inches (for Flaw #2) being increased to 0.94 inches for the purpose of flaw evaluation. This additional margin of error is a conservative measure which ensures that the actual flaw depth is bounded by the flaw depth used for evaluation.

Additionally, because IWB-2420(b) requires reexamination of the area containing this flaw during the next three inspection periods listed in the inspection program, AmerenUE requests continued use of this Relief Request to support such re-examinations (for the duration specified below). Per Callaway's inspection plan, the intent is that all re-examinations will be performed using the same or similar equipment and procedures as those by which the flaw was initially identified, thus to provide a proper comparison of results.

[1] See References 7.a and 7.b.

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6. Duration of Proposed Alternative

The second ten-year inservice inspection interval for Callaway ended on December 18, 2005. In support of the examination conducted during the second ten-year interval at Callaway, as well as for examinations/re-examinations to be conducted in the next refueling outage (Refuel 15) and future outages, AmerenUE requests application of the above proposed alternative for the second inservice inspection interval and for the third interval (which began on December 19, 2005, subsequent to Refuel-14) to support required subsequent, supplemental re-examinations during the next three inspection periods listed in the inspection program, as required by IWB-2420(b).

7. References

a. Callaway 10 CFR 50.55a Request Number ISI-27 (submitted via AmerenUE letter ULNRC-04879, dated August 14, 2003).

b. Safety Evaluation by the Office of Nuclear Reactor Regulation, Related to Relief Requests ISI-27 Through ISI-31, Union Electric Company, Callaway Plant Unit 1, Docket No. 50-483 (issued via NRC Letter dated April 7, 2004, "Relief Requests ISI-27 Through ISI-31 Pertaining to Implementation of ASME Section XI Appendix VIII Requirements (TAC Nos. MC0478 Through MC0482, Respectively")