AmerenUE
Callaway Plant

PO Box 620
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May 18, 2007

This letter is being reissued so that the letter date and the unsworn declaration date agree.

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

Ladies and Gentlemen: ULNRC-05416

DOCKET NUMBER 50-483
CALLAWAY PLANT UNIT 1
UNION ELECTRIC CO.
REQUEST FOR RELAXATION FROM REQUIREMENTS OF FIRST REVISED NRC ORDER EA-03-009 (REGARDING INTERIM INSPECTION REQUIREMENTS FOR REACTOR PRESSURE VESSEL HEADS AT PRESSURIZED WATER REACTORS)

Reference: AmerenUE letter ULNRC-04957, "Response to Order EA-03-009, Revision 1, 'Establishing Interim Inspection Requirements for Reactor Pressure Vessel Heads at Pressurized Water Reactors,'" dated March 5, 2004

On February 11, 2003 the NRC issued Order EA-03-009 providing interim inspection requirements for reactor pressure vessel (RPV) heads at pressurized water reactor (PWR) facilities. The order was subsequently revised, and on February 20, 2004 the NRC issued First Revised Order EA-03-009 (i.e., "First Revised Order Modifying Licenses") thus superseding the original Order. In response to First Revised Order EA-03-009, Union Electric Co. (AmerenUE) submitted a letter dated March 5, 2004 (above Reference) wherein AmerenUE consented to the revised NRC Order for Callaway Plant.

Included in the revised Order is a requirement for performing ultrasonic testing (UT) of the RPV head penetration nozzles and their associated J-groove welds. For each nozzle subject to UT examination, a specified volume is required to be covered. With respect to this requirement, and in accordance with the requirements of Section IV, paragraph F of the revised NRC Order, AmerenUE hereby requests relaxation of the required examination coverage for five particular penetration nozzles at Callaway Plant, as further addressed in the attached relaxation request, i.e., Request Number I3R-07. As explained in the attached relaxation request (provided as Attachment 1), an alternate coverage requirement

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is proposed for the five nozzles such that it provides an acceptable level of quality and safety.

The alternate coverage requirement described in Attachment 1 is supported by an engineering calculation performed for Callaway by AREVA NP Inc. Some of the information provided in the AREVA calculation is considered to be proprietary, and therefore an affidavit attesting to the proprietary and confidential nature of the information is attached (as Attachment 2). Since the proprietary information is to be withheld from public disclosure pursuant to the provisions of 10 CFR 2.390, a non-proprietary version and a proprietary version of the AREVA calculation are provided as Attachments 3 and 4 to this letter, respectively. (In the non-proprietary version of the calculation, sensitive/proprietary information has been removed.) Distribution of this letter and its attachments shall be made accordingly.

Union Electric Company requests NRC approval of the requested relaxation as soon as reasonably achievable. For any questions concerning this matter, please contact Dave Shafer at (314) 554-3104 or 573-676-4722.

I declare under penalty of perjury that the foregoing is true and correct.

Sincerely,

Executed on: 5/18/07

FOR

David T. Fitzgerald
Manager – Regulatory Affairs

TBE/jdg

Attachments:
1. Request Number I3R-07, "NRC First Revised Order EA-03-009 Relaxation Request for Inspection of Reactor Pressure Vessel Heads"
2. Affidavit
3. AREVA Calculation, "Callaway CRDM Hypothetical Flaw Evaluations," AREVA NP Document No. 32-9046889-002, Non-proprietary Version
4. AREVA Calculation, "Callaway CRDM Hypothetical Flaw Evaluations," AREVA NP Document No. 32-9045288-002, Proprietary Version

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A160.0761

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(Certrec receives ALL attachments as long as they are non-safeguards and public disclosed).

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Request Number I3R-07

NRC First Revised Order EA-03-009 Relaxation Request for Inspection of Reactor Pressure Vessel Heads

Request Number I3R-07

NRC First Revised Order EA-03-009 Relaxation Request for Inspection of Reactor Pressure Vessel Heads

Alternative Provides Acceptable Level of Quality and Safety

Components Affected

Callaway Plant reactor pressure vessel (RPV) head control rod drive mechanism (CRDM) penetration nozzles 74, 75, 76, 77, and 78.

Applicable Examination Requirements

With regard to the requirements and provisions of First Revised NRC Order EA-03-009 (Reference 1) which established interim inspection requirements for reactor pressure vessel (RPV) heads at pressurized water reactors, Callaway's RPV head is in the "Low" susceptibility category as defined in Sections IV.A and IV.B of the revised Order. The Effective Degradation Years (EDY) for Callaway operating cycles 1 through 14 are 2.8 EDY. The estimate for Cycle 15 is 0.2 EDY giving an accumulated total of 3.0 EDY at the end of cycle 15. Plants with an EDY of less than 8 and no previous inspection findings are placed in the "Low" susceptibility category per Section IV.B of the revised Order.

Pursuant to Section IV.C(3) of the revised Order, and in accordance with plants in the "Low" susceptibility category, the RPV head penetration nozzles at Callaway must undergo nondestructive examination (NDE) in accordance with Section IV.C(5)(b) of the revised Order at least once prior to February 11, 2008, and thereafter, at least every 4 refueling outages or every 7 years, whichever occurs first. Callaway's last refueling outage prior to February 11, 2008, is Refuel 15 (Spring 2007).

Section IV.C(5)(b) of the revised Order states:

For each penetration, perform a non-visual NDE in accordance with either (i), (ii) or (iii):

(i) Ultrasonic testing of the RPV head penetration nozzle volume (i.e., nozzle base material) from 2 inches above the highest point of the root of the J-groove weld (on a horizontal plane perpendicular to the nozzle axis) to 2 inches below the lowest point at the toe of the J-groove weld on a horizontal plane perpendicular to the nozzle axis (or the bottom of the nozzle if less than 2 inches); OR from 2 inches above the highest point of the root of the J-groove weld (on a horizontal plane perpendicular to the nozzle axis) to 1.0-inch below the lowest point at the toe of the J-groove weld (on a horizontal plane perpendicular to the nozzle axis) and including all RPV head penetration nozzle surfaces below the J-groove weld that have an operating stress level (including all residual and normal operation stresses) of 20 ksi

tension and greater. In addition, an assessment shall be made to determine if leakage has occurred into the annulus between the RPV head penetration nozzle and the RPV head low-alloy steel.

(ii) Eddy current testing or dye penetrant testing of the entire wetted surface of the J-groove weld and the wetted surface of the RPV head penetration nozzle base material from at least 2 inches above the highest point of the root of the J-groove weld (on a horizontal plane perpendicular to the nozzle axis) to 2 inches below the lowest point at the toe of the J-groove weld on a horizontal plane perpendicular to the nozzle axis (or the bottom of the nozzle if less than 2 inches); OR from 2 inches above the highest point of the root of the J-groove weld (on a horizontal plane perpendicular to the nozzle axis) to 1.0-inch below the lowest point at the toe of the J-groove weld (on a horizontal plane perpendicular to the nozzle axis) and including all RPV head penetration nozzle surfaces below the J-groove weld that have an operating stress level (including all residual and normal operation stresses) of 20 ksi tension and greater.

(iii) A combination of (i) and (ii) to cover equivalent volumes, surfaces and leak paths of the RPV head penetration nozzle base material and J-groove weld as described in (i) and (ii). Substitution of a portion of a volumetric exam on a nozzle with a surface examination may be performed with the following requirements:
   1. On nozzle material below the J-groove weld, both the outside diameter and inside diameter surfaces of the nozzle must be examined.
   2. On nozzle material above the J-groove weld, surface examination of the inside diameter surface of the nozzle is permitted provided a surface examination of the J-groove weld is also performed.

Reason for Request

The reason for this relaxation request is to propose an alternate examination requirement for nozzles 74, 75, 76, 77, and 78, i.e., one that provides an acceptable level of quality and safety.

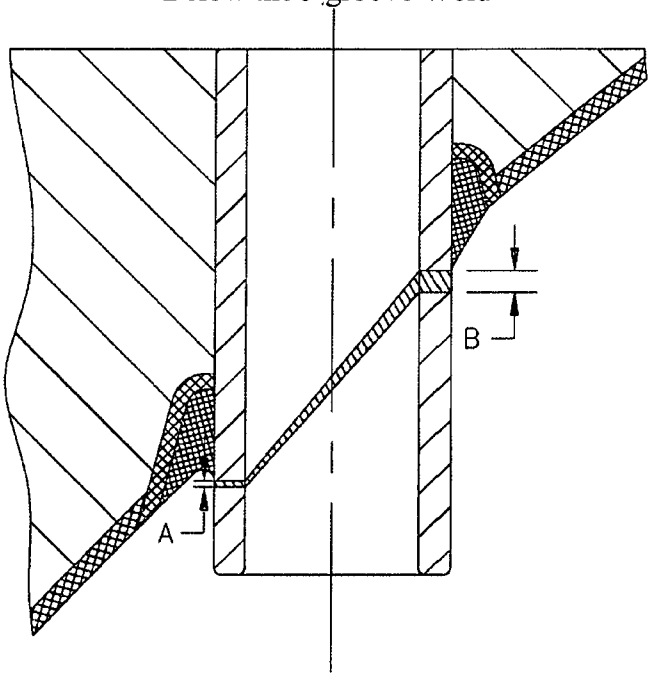
Proposed Alternative and Basis for Use

Callaway will perform ultrasonic testing per Section IV.C(5)(b)(i) of EA-03-009 with the following exception: For nozzles 74 through 78, ultrasonic testing of the penetration nozzle volume for each nozzle will be performed from 2 inches above the highest point of the root of the J-groove weld (on a horizontal plane perpendicular to the nozzle axis) to the extent practical below the toe of the J-groove weld, but not less than 0.39 inches below the lowest point at the toe of the J-groove weld on a horizontal plane perpendicular to the nozzle axis.

0.39 inches corresponds to the distance below the J-groove weld on nozzles 74 through 78 where the stresses decay to below 20 ksi, as determined by a supporting Dominion Engineering, Inc. calculation performed for Callaway. To support the acceptability of

this coverage area, flaw evaluations were performed on hypothetical flaws in CRDM nozzles 74 through 78 per Reference 4 (AREVA NP Document No. 32-9045288-002). The evaluation was limited to the portions of the CRDM nozzles from the bottom of the nozzle to the bottom of the J-groove weld. The allowable beginning-of-life (BOL) flaw size for a service period of seven years was determined, through an iterative analysis, by considering flaw growth in a PWR environment due to primary water stress corrosion cracking (PWSCC), and comparing against the allowable end-of-life (EOL) flaw size, for hypothetical axial through-wall flaws or edge cracks postulated at the bottom of the CRDM nozzles as well as hypothetical circumferential through-wall flaws below the weld. Flaw growth due to PWSCC was calculated using the NRC flaw evaluation guideline for dispositioning flaws in reactor vessel head penetration base metal material (Alloy 600). The maximum allowable EOL flaw size is based on the current NRC accepted flaw evaluation criteria in Alloy 600 reactor vessel head partial penetration nozzles (per References 2 and 3). A summary of the results of this calculation showing the minimum coverage area below the J-groove weld is given below.

Minimum Examination Band
Below the J-groove Weld



Nozzle Fillet Weld Design[1]	Minimum Examination Height	
	Downhill (inch) (A)	Uphill (inch) (B)
49A	0.200	0.631
49B	0.000	0.690
49C	0.000	0.731

[1] See Figure 2 and Figure 3 in Reference 4. Weld design 49A reflects the the design geometry; weld designs 49B and 49C assume increasing weld build-up on the downhill side of the nozzles.

Examining to 0.39 inches below the J-groove weld encompasses those areas of the nozzles having an operating stress level of 20 ksi tension and greater. Examining to 0.39 inches below the J-groove weld also provides greater coverage than that determined necessary by the flaw growth evaluations. For these reasons AmerenUE believes the proposed alternative examination requirement provides an acceptable level of quality of and safety.

The required UT examinations of the CRDM nozzles were completed in Refuel 15. Coverage of at least 2 inches above the uppermost portion of the J-groove weld and 0.67, 1.04, 1.11, 0.83, and 1.14 inches below the lowermost portion of the J-groove weld was obtained on nozzles 74, 75, 76, 77, and 78, respectively. This coverage meets the proposed alternative examination requirement.

Duration of Relaxation

Relaxation is sought for Refuel 15 and all subsequent examinations performed for the subject nozzles per Section IV.C(5)(b) of the First Revised NRC Order EA-03-009.

References

1. First Revised Order Modifying Licenses, EA-03-009, issued via NRC letter dated February 20, 2004, "Issuance of First Revised Order (EA-03-009) Establishing Interim Inspection Requirements for Reactor Pressure Vessel Heads at Pressurized Water Reactors"

2. NRC Letter form Richard Barrett, Director Division of Engineering, Office of NRR, to Alex Marion of Nuclear Energy Institute, "Flaw Evaluation Guidelines," April 11, 2003, Accession Number ML030980322

3. Attachment 2 to Reference 2 (above), "Enclosure 2 Appendix A: Evaluation of Flaws in PWR Reactor Vessel Upper Head Penetration Nozzles," April 11, 2003, Accession Number ML030980333

4. AREVA NP, Inc. (Dominion Engineering, Inc.) Calculation, "Callaway CRDM Hypothetical Flaw Evaluations," AREVA NP Document No. 32-9045288-002

Attachment 2
to ULNRC-05416

Affidavit

AFFIDAVIT

COMMONWEALTH OF VIRGINIA)
) ss.
CITY OF LYNCHBURG)

1. My name is Gayle F. Elliott. I am Manager, Product Licensing, for AREVA NP Inc. (AREVA NP) and as such I am authorized to execute this Affidavit.

2. I am familiar with the criteria applied by AREVA NP to determine whether certain AREVA NP information is proprietary. I am familiar with the policies established by AREVA NP to ensure the proper application of these criteria.

3. I am familiar with the AREVA NP information contained in Calculation Summary Sheet 32-9045288-002, "Callaway CRDM Hypothetical Flaw Evaluations," dated April 2007 and referred to herein as "Document." Information contained in this Document has been classified by AREVA NP as proprietary in accordance with the policies established by AREVA NP for the control and protection of proprietary and confidential information.

4. This Document contains information of a proprietary and confidential nature and is of the type customarily held in confidence by AREVA NP and not made available to the public. Based on my experience, I am aware that other companies regard information of the kind contained in this Document as proprietary and confidential.

5. This Document has been made available to the U.S. Nuclear Regulatory Commission in confidence with the request that the information contained in this Document be withheld from public disclosure. The request for withholding of proprietary information is made in accordance with 10 CFR 2.390. The information for which withholding from disclosure is

requested qualifies under 10 CFR 2.390(a)(4) "Trade secrets and commercial or financial information."

6. The following criteria are customarily applied by AREVA NP to determine whether information should be classified as proprietary:

(a) The information reveals details of AREVA NP's research and development plans and programs or their results.

(b) Use of the information by a competitor would permit the competitor to significantly reduce its expenditures, in time or resources, to design, produce, or market a similar product or service.

(c) The information includes test data or analytical techniques concerning a process, methodology, or component, the application of which results in a competitive advantage for AREVA NP.

(d) The information reveals certain distinguishing aspects of a process, methodology, or component, the exclusive use of which provides a competitive advantage for AREVA NP in product optimization or marketability.

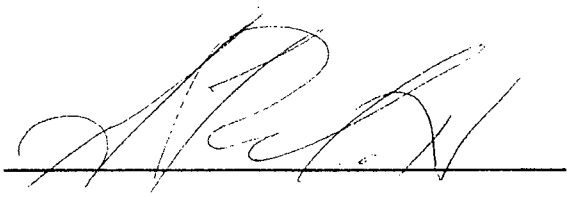
(e) The information is vital to a competitive advantage held by AREVA NP, would be helpful to competitors to AREVA NP, and would likely cause substantial harm to the competitive position of AREVA NP.

The information in the Document is considered proprietary for the reasons set forth in paragraphs 6(b) and 6(c) above.

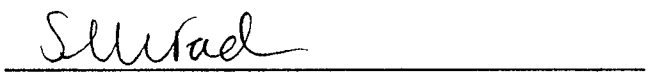
7. In accordance with AREVA NP's policies governing the protection and control of information, proprietary information contained in this Document have been made available, on a limited basis, to others outside AREVA NP only as required and under suitable agreement providing for nondisclosure and limited use of the information.

8. AREVA NP policy requires that proprietary information be kept in a secured file or area and distributed on a need-to-know basis.

9. The foregoing statements are true and correct to the best of my knowledge, information, and belief.



SUBSCRIBED before me this 25th day of April, 2007.



Sherry L. McFaden
NOTARY PUBLIC, COMMONWEALTH OF VIRGINIA
MY COMMISSION EXPIRES: 10/31/10