Omaha Public Power District
444 South 16th Street Mall
Omaha, NE 68102-2247

August 16, 2010
LIC-10-0065

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555

Reference: Docket No. 50-285

SUBJECT: 10 CFR 50.55a Request Number RR-12, "Omaha Public Power District (OPPD) Request for Relief from Code Case N-722 Visual Examination (VE) of the Reactor Vessel Hot Leg Nozzle to Safe End Dissimilar Metal Welds"

Pursuant to 10 CFR 50.55a(a)(3)(i), OPPD requests NRC approval of an alternative to American Society of Mechanical Engineers (ASME), Code Section XI, Code Case N-722 VE requirements.

For reactor vessel (RV) hot leg nozzle to safe end dissimilar metal (DM) welds at Fort Calhoun Station, Unit No. 1, OPPD proposes to credit the following measures in lieu of the VE required by Code Case N-722:

1. Augmented examinations performed during previous refueling outages.
2. Deterministic analyses of crack growth with positive results.
3. The addition of zinc to the reactor coolant system to mitigate primary water stress corrosion cracking.

Attachment 1 contains the proposed relief request. Attachment 2 contains an affidavit from Westinghouse Electric Company LLC that supports withholding Enclosure 1 from public disclosure.

Enclosure 1 contains a technical justification to support alternative VE intervals for FCS RV hot leg (outlet) nozzle to safe end DM welds that is proprietary to Westinghouse Electric Company LLC. Accordingly, pursuant to 10 CFR 2.390, OPPD requests that Enclosure 1 be withheld from public disclosure.

Enclosure 2 is a nonproprietary version of Enclosure 1 suitable for public disclosure.

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OPPD requests approval of this relief request by April 1, 2011 to support the 2011 refueling outage.

No commitments to the NRC are contained in this submittal.

If you have any questions regarding this submittal, please contact Mr. Bill Hansher at (402) 533-6894.

Sincerely,

H. J. Faulhaber
Division Manager-Nuclear Engineering

HJF/BL/mle

Attachments:

1. Relief Request in Accordance with 10 CFR 50.55a(a)(3)(i)
2. Affidavit for Withholding Information Pursuant to 10 CFR 2.390

Enclosures:

1. LTR-PAFM-10-123-P, Revision 0, "Technical Justification to Support Alternative Visual Examination Intervals for Fort Calhoun Reactor Vessel Outlet Nozzle to Safe End Dissimilar Metal Welds" (Proprietary)
2. LTR-PAFM-10-123-NP, Revision 0, "Technical Justification to Support Alternative Visual Examination Intervals for Fort Calhoun Reactor Vessel Outlet Nozzle to Safe End Dissimilar Metal Welds" (Non-Proprietary)

c: E. E. Collins, NRC Regional Administrator, Region IV (w/o Attach. 2/Encl. 1)
L. E. Wilkins, NRC Project Manager
J. C. Kirkland, NRC Senior Resident Inspector (w/o Attach. 2/Encl. 1)

10 CFR 50.55a Request Number RR-12

Proposed Alternative in Accordance with 10 CFR 50.55a(a)(3)(i)

Alternative to the Visual Examination Requirements of ASME Code Case N-722 for the Reactor Vessel Hot Leg Nozzle to Safe End Dissimilar Welds for Fort Calhoun Station, Unit No. 1

ASME Code Components Affected

Code class: 1
System: RC
Examination Categories: B15.90, Inservice Inspection Program

TABLE 1

WELD NUMBERS BY ISI DESIGNATION

Item	Location	Nozzle to Safe End Weld	Weld Type
1	N1A Outlet (Hot Leg) Nozzle (0°)	MRC-1/01	Shop
2	N1B Outlet (Hot Leg) Nozzle (180°)	MRC-2/01	Shop

Applicable Code Edition and Addenda

Fort Calhoun Station (FCS) is currently in the fourth 10-year Inservice Inspection (ISI) interval ending in 2013. The American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code) of record for the current 10-year ISI interval is Section XI, 1998 Edition, including Addenda through 2000 (Reference 1). Code Case N-722 has been incorporated into the ISI Program Plan as required by 10 CFR 50.55a(g)(6)(ii)(E).

Applicable Code Requirement

Code Case N-722, "Additional Examinations for PWR Pressure Retaining Welds in Class 1 Components Fabricated With Alloy 600/82/182 Materials, Section XI, Division 1."

Reactor Vessel, Item B15.90

Hot leg nozzle to pipe connections require a visual examination (VE) each refueling outage (RFO). Code Case N-722, Table 1, Note (5) states that an ultrasonic examination, performed from the component inside or outside surface in accordance with the requirements of Table IWB-2500-1 and Appendix VIII (1995 Edition with the 1996 Addenda or later) shall be acceptable in lieu of the VE requirement.

Reason for Request

The proposed alternative provides an acceptable level of quality and safety. During the 2009 RFO, FCS performed inspections of the two hot leg nozzle to piping welds as required by Code Case N-722. No indications were identified. In lieu of additional periodic inspections, OPPD and Westinghouse have evaluated potential crack propagation using the techniques described in ASME Section XI, paragraph IWB-3640 with conservative estimates of initial crack size, and weld conditions. Based on this evaluation, OPPD and Westinghouse conclude that for the current interval ending September 25, 2013, cracks will not exceed Code Case N-722 acceptance criteria.

Proposed Alternative and Basis for Use

OPPD proposes to credit examination data taken during the 2003, 2008, and 2009 RFOs, which found no indications or change in examination data in either hot leg (outlet) nozzle dissimilar metal (DM) weld. The hot leg nozzle DM welds were extremely clean, as evidenced most recently by no data interpretation issues for the Westinghouse analyst during the 2009 RFO. In accordance with ASME Code Case N-722, an ultrasonic testing (UT) examination performed from the inside of the component is an acceptable alternative to a visual examination. Inspection of the reactor vessel (RV) hot leg nozzle DM welds at FCS was accomplished in 2003 and 2009 using state of the art Performance Demonstration Initiative (PDI) qualified examinations. Volumetric UT, augmented with surface sensitive plus point eddy current testing (ECT), and complemented with pancake coil ECT achieved 100% coverage from the component inside surface during the 2009 RFO. The hot leg nozzles were also examined from the inside surface using ECT during the 2008 RFO.

OPPD proposes to take credit for Westinghouse deterministic crack growth analyses as described in Enclosures 1 and 2. Deterministic crack growth analyses were performed postulating a hypothetical flaw at the DM weld region. The objective of these analyses was to determine the service life required for a postulated inside surface flaw to propagate to a size that exceeds the end-of-evaluation period allowable flaw depth. Since no indications were detected at the DM welds during the Fall 2009 inspection, an initial flaw depth of 0.125 inch and an initial flaw length of 0.25 inch were used as a conservative basis for the hypothetical undetected flaw size in the crack growth analysis. Crack growth due to primary water stress corrosion cracking (PWSCC) was calculated for both axial and circumferential flaws using the normal operating condition steady-state stresses. The PWSCC crack growth rate used is based on the Electric Power Research Institute (EPRI) recommended crack growth curves for Alloy 182 weld material, which is conservatively higher than the Alloy 82 weld material crack growth curves. (Fort Calhoun Station has both Alloy 82 and Alloy 182 weld material in the hot leg nozzle DM welds.)

FCS is scheduled to implement an extended power uprate (EPU) following the Fall 2012 RFO. Both pre-EPU and post-EPU piping loads were used in the enclosed Westinghouse deterministic crack growth analyses. A hypothetical 25% inside surface weld repair was also conservatively assumed in the residual stress profiles used in the Westinghouse deterministic crack growth analyses even though fabrication records show no prior weld repairs were made. The conclusion of the Westinghouse deterministic crack growth analyses is that any hypothetical undetectable flaw in the DM welds would not reach the maximum allowable end-of-evaluation period flaw size in accordance with ASME Section XI paragraph IWB-3640 before the Spring 2014 RFO, thus assuring component integrity.

OPPD proposes to take credit for a chemical program adding zinc to the reactor coolant system (RCS). FCS has been adding zinc to the RCS since January 23, 2003 and, as of June 26, 2009 has reached a cumulative zinc level of 300 parts per billion (ppb)-months, which is considered to be the level at which significant PWSCC mitigation is achieved. FCS continues to add zinc at a level of 6 ppb/month.

It should also be noted that FCS has relatively low hot leg nozzle DM weld operating temperatures, which over the last two cycles have averaged 591.8°F. This relatively low temperature as compared to the rest of the PWR fleet results in these welds having a low susceptibility to PWSCC.

Thirty-one US pressurized water reactors (PWRs) have DM welds in their RV nozzles. There are at least two other PWRs (Indian Point 2 and Indian Point 3) that have the same nozzle fabrication and, therefore, similar access and radiation exposure hardships in performing Code Case N-722, VE requirements. EPRI, Material Reliability Program (MRP), document MRP-139, contains similar hot leg VE requirements as Code Case N-722. Prior to Nuclear Regulatory Commission (NRC) approval of Code Case N-722, any PWR that could not adhere to the requirements of MRP-139 had to seek approval from the EPRI MRP. In March 2008, the EPRI MRP allowed Indian Point 2 to deviate from MRP-139 VE requirements due to the hardships noted above (Reference 2). Indian Point 3 is also expected to apply for relief from Code Case N-722. Thus, there is precedent within the nuclear industry for deviating from these VE requirements.

For the 2003 RFO, OPPD obtained NRC approval for relief from ISI required outside diameter, surface inspections for RV DM nozzle welds greater than 4 inches (B5.10) by substituting a UT examination from the inner surface (Reference 3). The NRC approved that relief request for a ten-year ISI interval. The current relief request encompasses all the reasons given for relief in 2003, with additional support provided by augmented inspections that have occurred in the interim, the enclosed deterministic flaw analyses, a zinc addition program to mitigate PWSCC and a low operating temperature. In conclusion, it is OPPD's position that the proposed relief from Code Case N-722, VE requirements is justified for a period of two fuel cycles.

Duration of Proposed Alternative

The alternative requirements of this request will be applied for the duration of the Fourth 10-year ISI interval ending September 25, 2013.

References

1. ASME Code, Section XI, 1998 Edition, including Addenda through 2000
2. Deviation from NEI 03-08 Mandatory Requirement for MRP-139 Visual Examinations, EN-DC-202, Revision 0, dated March 12, 2008
3. Letter from NRC (S. Dembek) to OPPD (R. T. Ridenoure), "Safety Evaluation for Fort Calhoun Station, Third 10-Year Inservice Inspection Interval, Request for Relief (RR) 9 (TAC No. MC1115)," dated June 8, 2004 (NRC-04-0072) (ML041600502)

LIC-10-0065
Attachment 2

Affidavit for Withholding Information Pursuant to 10 CFR 2.390

Westinghouse Electric Company
Nuclear Services
P.O. Box 355
Pittsburgh, Pennsylvania 15230-0355
USA

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555-0001

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Proj letter: CFTC-10-118
CAW-10-2906

July 30, 2010

APPLICATION FOR WITHHOLDING PROPRIETARY INFORMATION FROM PUBLIC DISCLOSURE

Subject: LTR-PAFM-10-123-P, "Technical Justification to Support Alternative Visual Examination Intervals for Fort Calhoun Reactor Vessel Outlet Nozzle to Safe End Dissimilar Metal Welds" (Proprietary)

The proprietary information for which withholding is being requested in the above-referenced report is further identified in Affidavit CAW-10-2906 signed by the owner of the proprietary information, Westinghouse Electric Company LLC. The affidavit, which accompanies this letter, sets forth the basis on which the information may be withheld from public disclosure by the Commission and addresses with specificity the considerations listed in paragraph (b)(4) of 10 CFR Section 2.390 of the Commission's regulations.

Accordingly, this letter authorizes the utilization of the accompanying affidavit by Omaha Public Power District.

Correspondence with respect to the proprietary aspects of the application for withholding or the Westinghouse affidavit should reference this letter, CAW-10-2906, and should be addressed to J. A. Gresham, Manager, Regulatory Compliance and Plant Licensing, Westinghouse Electric Company LLC, P.O. Box 355, Pittsburgh, Pennsylvania 15230-0355.

Very truly yours,

J. A. Gresham, Manager
Regulatory Compliance and Plant Licensing

Enclosures

CAW-10-2906

AFFIDAVIT

COMMONWEALTH OF PENNSYLVANIA:

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COUNTY OF ALLEGHENY:

Before me, the undersigned authority, personally appeared J. A. Gresham, who, being by me duly sworn according to law, deposes and says that he is authorized to execute this Affidavit on behalf of Westinghouse Electric Company LLC (Westinghouse), and that the averments of fact set forth in this Affidavit are true and correct to the best of his knowledge, information, and belief:

J. A. Gresham, Manager
Regulatory Compliance and Plant Licensing

Sworn to and subscribed before me
this 30th day of July 2010

Notary Public

COMMONWEALTH OF PENNSYLVANIA
NOTARIAL SEAL
Renee Giampole, Notary Public
Penn Township, Westmoreland County
My Commission Expires September 25, 2013

(1) I am Manager, Regulatory Compliance and Plant Licensing, in Nuclear Services, Westinghouse Electric Company LLC (Westinghouse), and as such, I have been specifically delegated the function of reviewing the proprietary information sought to be withheld from public disclosure in connection with nuclear power plant licensing and rule making proceedings, and am authorized to apply for its withholding on behalf of Westinghouse.

(2) I am making this Affidavit in conformance with the provisions of 10 CFR Section 2.390 of the Commission's regulations and in conjunction with the Westinghouse Application for Withholding Proprietary Information from Public Disclosure accompanying this Affidavit.

(3) I have personal knowledge of the criteria and procedures utilized by Westinghouse in designating information as a trade secret, privileged or as confidential commercial or financial information.

(4) Pursuant to the provisions of paragraph (b)(4) of Section 2.390 of the Commission's regulations, the following is furnished for consideration by the Commission in determining whether the information sought to be withheld from public disclosure should be withheld.

(i) The information sought to be withheld from public disclosure is owned and has been held in confidence by Westinghouse.

(ii) The information is of a type customarily held in confidence by Westinghouse and not customarily disclosed to the public. Westinghouse has a rational basis for determining the types of information customarily held in confidence by it and, in that connection, utilizes a system to determine when and whether to hold certain types of information in confidence. The application of that system and the substance of that system constitutes Westinghouse policy and provides the rational basis required.

Under that system, information is held in confidence if it falls in one or more of several types, the release of which might result in the loss of an existing or potential competitive advantage, as follows:

(a) The information reveals the distinguishing aspects of a process (or component, structure, tool, method, etc.) where prevention of its use by any of

Westinghouse's competitors without license from Westinghouse constitutes a competitive economic advantage over other companies.

(b) It consists of supporting data, including test data, relative to a process (or component, structure, tool, method, etc.), the application of which data secures a competitive economic advantage, e.g., by optimization or improved marketability.

(c) Its use by a competitor would reduce his expenditure of resources or improve his competitive position in the design, manufacture, shipment, installation, assurance of quality, or licensing a similar product.

(d) It reveals cost or price information, production capacities, budget levels, or commercial strategies of Westinghouse, its customers or suppliers.

(e) It reveals aspects of past, present, or future Westinghouse or customer funded development plans and programs of potential commercial value to Westinghouse.

(f) It contains patentable ideas, for which patent protection may be desirable.

There are sound policy reasons behind the Westinghouse system which include the following:

(a) The use of such information by Westinghouse gives Westinghouse a competitive advantage over its competitors. It is, therefore, withheld from disclosure to protect the Westinghouse competitive position.

(b) It is information that is marketable in many ways. The extent to which such information is available to competitors diminishes the Westinghouse ability to sell products and services involving the use of the information.

(c) Use by our competitor would put Westinghouse at a competitive disadvantage by reducing his expenditure of resources at our expense.

(d) Each component of proprietary information pertinent to a particular competitive advantage is potentially as valuable as the total competitive advantage. If competitors acquire components of proprietary information, any one component may be the key to the entire puzzle, thereby depriving Westinghouse of a competitive advantage.

(e) Unrestricted disclosure would jeopardize the position of prominence of Westinghouse in the world market, and thereby give a market advantage to the competition of those countries.

(f) The Westinghouse capacity to invest corporate assets in research and development depends upon the success in obtaining and maintaining a competitive advantage.

(iii) The information is being transmitted to the Commission in confidence and, under the provisions of 10 CFR Section 2.390; it is to be received in confidence by the Commission.

(iv) The information sought to be protected is not available in public sources or available information has not been previously employed in the same original manner or method to the best of our knowledge and belief.

(v) The proprietary information sought to be withheld in this submittal is that which is appropriately marked in LTR-PAFM-10-123-P, "Technical Justification to Support Alternative Visual Examination Intervals for Fort Calhoun Reactor Vessel Outlet Nozzle to Safe End Dissimilar Metal Welds" (Proprietary), for submittal to the Commission, being transmitted by Omaha Public Power District letter and Application for Withholding Proprietary Information from Public Disclosure, to the Document Control Desk. The proprietary information as submitted by Westinghouse is that associated with the technical justification to support alternative visual examination intervals for Fort Calhoun reactor vessel outlet nozzle to safe end dissimilar metal welds, and may be used only for that purpose.

This information is part of that which will enable Westinghouse to:

(a) Provide technical justification to support alternative visual examination intervals for Fort Calhoun reactor vessel outlet nozzle to safe end dissimilar metal welds.

Further this information has substantial commercial value as follows:

(a) Westinghouse plans to sell the use of the information to its customers for the purpose of providing technical justification to support alternative visual examination intervals for reactor vessel outlet nozzle to safe end dissimilar metal welds.

(b) The information requested to be withheld reveals the distinguishing aspects of a methodology which was developed by Westinghouse.

Public disclosure of this proprietary information is likely to cause substantial harm to the competitive position of Westinghouse because it would enhance the ability of competitors to provide similar evaluation and licensing defense services for commercial power reactors without commensurate expenses. Also, public disclosure of the information would enable others to use the information to meet NRC requirements for licensing documentation without purchasing the right to use the information.

The development of the technology described in part by the information is the result of applying the results of many years of experience in an intensive Westinghouse effort and the expenditure of a considerable sum of money.

In order for competitors of Westinghouse to duplicate this information, similar technical programs would have to be performed and a significant manpower effort, having the requisite talent and experience, would have to be expended.

Further the deponent sayeth not.

PROPRIETARY INFORMATION NOTICE

Transmitted herewith are proprietary and/or non-proprietary versions of documents furnished to the NRC in connection with requests for generic and/or plant-specific review and approval.

In order to conform to the requirements of 10 CFR 2.390 of the Commission's regulations concerning the protection of proprietary information so submitted to the NRC, the information which is proprietary in the proprietary versions is contained within brackets, and where the proprietary information has been deleted in the non-proprietary versions, only the brackets remain (the information that was contained within the brackets in the proprietary versions having been deleted). The justification for claiming the information so designated as proprietary is indicated in both versions by means of lower case letters (a) through (f) located as a superscript immediately following the brackets enclosing each item of information being identified as proprietary or in the margin opposite such information. These lower case letters refer to the types of information Westinghouse customarily holds in confidence identified in Sections (4)(ii)(a) through (4)(ii)(f) of the affidavit accompanying this transmittal pursuant to 10 CFR 2.390(b)(1).

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