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OPPD
Omaha Public Power District

444 South 16th Street Mall
Omaha NE 68102-2247

May 18, 2005
LIC-05-0064

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555-0001

References:
1. Docket No. 50-285
2. Letter from Samuel J. Collins (NRC) to Ross Ridenoure (OPPD) dated February 11, 2003, Issuance of Order Establishing Interim Inspection Requirements for Reactor Pressure Vessel Heads at Pressurized Water Reactors (EA-03-009) (NRC-03-025) (ML030380470)
3. Letter from R. William Borchardt (NRC) to Ross Ridenoure (OPPD) dated February 20, 2004, Issuance of First Revised NRC Order (EA-03-009) Establishing Interim Inspection Requirements for Reactor Pressure Vessel Heads at Pressurized Water Reactors (NRC-04-0022) (ML040220181)
4. Letter from Ralph L. Phelps (OPPD) to Document Control Desk (NRC) dated May 14, 2005, Fort Calhoun Station Unit No. 1, Revised Relaxation Request for First Revised Order (EA-03-009) Establishing Interim Inspection Requirements for Reactor Pressure Vessel Heads at Pressurized Water Reactors (LIC-05-0057)
5. Letter from Ralph L. Phelps (OPPD) to Document Control Desk (NRC) dated May 17, 2005, Fort Calhoun Station Unit No. 1, Response to Request for Additional Information on the Revised Relaxation Request for First Revised Order (EA-03-009) Establishing Interim Inspection Requirements for Reactor Pressure Vessel Heads at Pressurized Water Reactors (LIC-05-0062)

SUBJECT: Fort Calhoun Station Unit No. 1, Supplemental Response to Request for Additional Information on the Revised Relaxation Request for First Revised Order (EA-03-009) Establishing Interim Inspection Requirements for Reactor Pressure Vessel Heads at Pressurized Water Reactors

In References 4 and 5, the Omaha Public Power District (OPPD) provided information in support of a relaxation request with respect to Reference 3. In a phone call on May 18, 2005, the NRC requested additional information concerning References 4 and 5. OPPD is providing the requested information as Attachment 1 to this letter.

A101

OPPD requests that the NRC complete its review and approval of this relaxation request by May 25, 2005.

If you have any questions or require additional information, please contact Thomas R. Byrne at (402) 533-7368.

Sincerely,

Ralph L. Phelps
Division Manager
Nuclear Engineering

RLP/TRB/trb

Attachment 1 - Supplemental Response to Request for Additional Information on the Revised Relaxation Request for First Revised Order (EA-03-009) Establishing Interim Inspection Requirements for Reactor Pressure Vessel Heads at Pressurized Water Reactors

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Attachment 1

Supplemental Response to Request for Additional Information on the Revised Relaxation Request for First Revised Order (EA-03-009) Establishing Interim Inspection Requirements for Reactor Pressure Vessel Heads at Pressurized Water Reactors

NRC Question 1:

Please provide a table, by nozzle number, summarizing the inspection areas for which relaxation is requested based on the three overlapping issues identified in Reference 1. Identify the analyzed stress in these areas for each nozzle and identify the bounding (worst case) Control Element Drive Mechanism (CEDM) penetration nozzle(s).

OPPD response:

Please refer to Table 1 of this attachment. The information has been extracted from the Figures provided in Attachments 1 and 2 of Reference 1. The first column provides the CEDM penetration nozzle for which relaxation is requested. The second column provides the percentage of inspection coverage obtained for each affected CEDM penetration nozzle. The third column provides the lowest distance that was able to be scanned above the J-groove weld for each affected CEDM penetration nozzle. The fourth column provides the remaining unscanned distance (less than the required 2 inches above the highest point of the root of the J-groove weld) for which relaxation is requested for each affected CEDM penetration nozzle. The fifth column provides the applicability to the three overlapping causes for the inability to scan as identified in Reference 1 for each affected CEDM penetration nozzle. The sixth column provides the maximum stress calculated for the unscanned area in each CEDM penetration nozzle. It should be noted that scanning was performed for the full circumferential area of every nozzle (except nozzle 25) and the areas in Table 1 represent only the area above the J-groove weld.

CEDM penetration nozzles 40 and 41 are the bounding (worst case) nozzles. Per Figures 6 and 7 of Attachment 2 of Reference 1, the stresses for the bounding (worst case) CEDM penetration nozzles are 15 ksi or less.

NRC Question 2:

Please provide information regarding how flaws can be seen in adjacent eddy current scan lines (This is supplementary information to the response to Question 3 in Reference 2).

OPPD response:

Various CEDM nozzles have information missing for a single scan line in some areas. OPPD has determined in each case that a single missing scan line does not prevent identification of a flaw, due to the amount of overlap of adjacent scan line coverage in adjacent eddy current traces. These areas are considered to be fully inspected.

The geometry of the probe and driver coil in combination with size of the scanning grid and the defined overlap ensures that a relevant indication will be observed. Physically, probe coverage (footprint) has an overlap of 27% as shown on Figure 1 of Reference 2. However, the eddy current exciter coil has coverage of 0.25 inches, which allows much greater overlap in the probe area from which the eddy current data is collected. The probe is sized smaller than the exciter in order to provide geometrical and spatial resolution in areas such as J-groove welds. Therefore, any relevant indications would be identified in at least three (3) adjacent scan lines. Even with a missing scan line, at least two (2) scan lines would provide eddy current data for any indication located in the missing scan width. A missing scan line is most likely caused by small boric acid deposits or crud accumulation on the nozzle or thermal sleeve surface which causes axial travel resistance on the probe.

Due to features in the scanning mechanism that prevent the probe delivery device from exceeding allowed force limits (intended to prevent probe failure during the scan), the probe automatically retracts when sufficient resistance is detected and begins to scan the next line.

Reference:

1. Letter from Ralph L. Phelps (OPPD) to Document Control Desk (NRC) dated May 14, 2005, Fort Calhoun Station Unit No. 1, Revised Relaxation Request for First Revised Order (EA-03-009) Establishing Interim Inspection Requirements for Reactor Pressure Vessel Heads at Pressurized Water Reactors (LIC-05-0057)

2. Letter from Ralph L. Phelps (OPPD) to Document Control Desk (NRC) dated May 17, 2005, Fort Calhoun Station Unit No. 1, Response to Request for Additional Information on the Revised Relaxation Request for First Revised Order (EA-03-009) Establishing Interim Inspection Requirements for Reactor Pressure Vessel Heads at Pressurized Water Reactors (LIC-05-0062)

Attachment 1, Table 1

CEDM Nozzle	Percent (%) Inspection Coverage Obtained	Lowest Coverage Obtained (inches above J-groove weld)	Relaxation Requested (remaining distance in inches above the J-groove weld)	Applicability 1 - Lack of Vertical Scan Coverage 2 - CEDM Thermal Sleeve Tab Interference 3 - Mechanical Limits of Probe Delivery System	Bounding Total Stress Per Figures 1 though 7 of Attachment 2 of Reference 1*
6	99.01	1.75	0.25	1	≤ 12 ksi
7	98.62	1.73	0.27	1	≤ 12 ksi
8	99.38	1.83	0.17	1	≤ 12 ksi
10	99.09	1.77	0.23	1	≤ 12 ksi
12	99.30	1.73	0.27	1	≤ 12 ksi
14	99.27	1.74	0.26	1	≤ 12 ksi
19	99.22	1.49	0.51	1	≤ 12 ksi
22	98.94	1.75	0.25	1, 2	≤ 14 ksi
23	99.05	1.79	0.21	1, 2	≤ 14 ksi
24	98.81	1.87	0.13	1, 2	≤ 14 ksi
26	97.79	1.61	0.39	1, 2	≤ 14 ksi
28	99.18	1.47	0.53	1, 2	≤ 14 ksi
29	99.77	1.89	0.11	1, 2	≤ 14 ksi
30	97.34	1.65	0.35	1, 2	≤ 14 ksi
31	99.53	1.81	0.19	1, 2	≤ 14 ksi
32	97.76	1.71	0.29	1, 2	≤ 14 ksi
33	96.99	1.59	0.41	1, 2	≤ 14 ksi
34	99.12	1.57	0.43	1, 2	≤ 14 ksi
35	99.25	1.83	0.17	1, 2	≤ 14 ksi
37	99.38	1.87	0.13	1, 2	≤ 14 ksi
38	94.85	1.42	0.58	1, 2, 3	≤ 15 ksi
39	93.35	1.26	0.74	1, 2, 3	≤ 15 ksi
40	93.61	1.06	0.94	1, 2, 3	≤ 15 ksi
41	93.20	1.06	0.94	1, 2, 3	≤ 15 ksi

*Figures in Attachment 2 of Reference 1 are applicable to all above nozzle configurations.