

April 30, 2004

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

Subject: Duke Energy
Oconee Nuclear Station, Unit 1
Docket Nos. 50-269
Third Ten Year Inservice Inspection Interval
Requests for Relief No. 02-009 and 02-010

By letter of December 16, 2002, Duke Energy Corporation (DEC) submitted a Request for Alternative and a Request for Relief associated with repairs made to the Unit 1 Condenser Circulating Water (CCW) Pump "1B" between March and June of 2000.

Subsequently, the Nuclear Regulatory Commission (NRC) responded by E-mail with a request for additional information. This resulted in several conference calls between DEC and the NRC to assure that the questions were both properly understood and adequately addressed.

As a result of these communications, DEC has revised the requests to incorporate the responses to the NRC's questions and to reflect additional enhancements intended to address weaknesses in the original requests.

These revised requests are attached, along with a list of questions contained in the NRC's request for additional information. The list includes references to the specific sections of the requests which have been amended to address the question.

To summarize from the letter which transmitted the original requests, DEC, through a vendor, made repairs to the Unit 1 Condenser Circulating Water (CCW) Pump "1B" between March and June of 2000. This pump was not originally designed, procured, or constructed to any code or QA standard. Therefore the application of any degree of code requirement constitutes an

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enhancement. The Oconee CCW pumps were upgraded from non-QA to QA-1 (pressure boundary only) as a part of the Oconee Service Water Project in 1998. As part of the upgrade, Duke committed to maintain the pumps as QA-1 equipment for all future maintenance. The CCW system construction code was USAS B31.1.0, 1967. Therefore this code was selected as the construction code to be used for the repair activity since no original component construction code exists.

However, discrepancies were discovered with respect to welder qualifications and need to be resolved.

Request for Relief 02-009 addresses the fact that the welders were qualified on plate rather than pipe. Request for Relief 02-010 addresses the fact that the welders were qualified to weld in the "1G" (flat) position only.

The relief requests essentially seek approval to accept the repairs "as is". Approval is requested pursuant to 10 CFR 50.55a (a) (3) (ii) because the extensive effort that would be necessary to remove the pump from service, remove the previous weld repairs, perform NDE, and remake the weld repairs would constitute a significant hardship without a compensating increase in the level of quality and safety.

If there are any questions or further information is needed you may contact R. P. Todd at (864) 885-3418.

Very truly yours,



R. A. Jones
Site Vice President

Attachments:

- Request for Relief No. 02-009
- Request for Relief No. 02-010
- Response to Request for Additional Information

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**Duke Energy Corporation
Oconee Nuclear Station, Unit 1
Request for Relief No. 02-009**

I. System/Component for Which Relief is Requested:

Oconee Condenser Circulating Water (CCW) Pump "1B"
(Equipment Number ON1CCWPU0002, ISI Class C)

There are 12 CCW pumps at Oconee or 4 per unit. These pumps are single stage vertical pumps which take their suction directly out of Lake Keowee. Their normal function is to provide cooling for the plant by pumping lake water through the condenser. This water is also used as cooling water for various loads throughout the plant. They also provide flow via a siphoning effect during certain design basis events, including fire, LOCA, LOOP, and LOCA/LOOP.

The pumps were not originally designed, procured, or constructed to any code or QA standard. The Oconee CCW pumps were upgraded from non-QA to QA-1 (pressure boundary only) as a part of the Oconee Service Water Project in 1998. As part of the upgrade, Duke committed to maintain the pumps as QA-1 equipment for all future maintenance.

In March 2000 the "1B" CCW pump was removed from the system for a routine refurbishment. The pump was shipped to a vendor shop for this work. The planned work concentrated on inspecting the pump, replacing worn parts, rebuilding the pump, and coating the pump. During the inspection, needed weld repairs were identified. These weld repairs were completed along with other refurbishment work. The pump was returned to service in June 2000.

During work on a subsequent pump ("3D") performed in March of 2001, the ANII raised issues with code compliance. These issues were immediately addressed on the "3D" pump. It was also decided to investigate whether the same issues applied to the previously completed "1B" pump. This document requests relief from certain code requirements as a result of this investigation. See also Duke Energy Corporation Request for Relief No. 02-010.

II. Code Requirement:

The 1B CCW pump was not originally built to any construction code. When it was reclassified to QA-1 by Duke, it was also placed within the scope of ASME Section XI which provides requirements for Repair Replacement Activities. The effective code for the Oconee Repair-Replacement Program is ASME Section XI 1989 (no Addenda). Subparagraph IWA-4120 (a) states "Repairs shall be performed in accordance with the Owner's Design Specification and the original construction code of the component or system". The CCW system construction code was USAS B31.1.0, 1967. This system construction code was selected as the construction code to be used for this repair-replacement activity since no original component construction code exists.

USAS B31.1.0, 1967 Subsection 127.5.1 states "Qualification of the welding procedures to be used, and of the performance of welders and welding operators, is required, and shall comply with the requirements of ASME Boiler and Pressure Vessel Code (Section IX) except as modified by this Par. 127.5."

Paragraph 127.5 then has several modifications. The modification relevant to this submittal is Section 127.5.4 paragraph (a) which states, "Test joints for both procedure qualification and performance qualification shall be made as groove welds in pipe in one or more of the specified basic qualification test positions."

III. Code Requirement for Which Relief is Requested

The vendor's welders were qualified to Section IX requirements, but were qualified on plate rather than pipe, which does not meet the requirements of USAS B31.1.0, 1967, Section 127.5.4 paragraph (a). Therefore, this submittal requests relief from the requirement of USAS B31.1.0, 1967, Section 127.5.4 (a) that welders must specifically qualify on pipe in order to perform the listed welds.

IV. Basis for Relief

Complying with the code requirement would result in hardship or unusual difficulty without a compensating increase in quality or safety pursuant to 10 CFR 50.55a (a) (3) (ii).

V. Alternate Examinations or Testing

No other additional examinations or tests are planned.

VI. Justification for the Granting of Relief

Reference Attachment 1 for a complete list of the pressure boundary weld joints repaired.

The majority of the pump is located below lake level, requiring pump removal for inspections and repairs other than those which could be performed by underwater divers. The size of this pump, the equipment required to lift the pump out of the intake structure, the number of welds affected, and the number of hours to remove the previous weld repairs, recertify the welders to this specific standard, remake the weld repairs, and perform NDE would result in a significant hardship.

The vendor's welders were qualified to ASME Section IX. The qualification test was groove welding on plate in the 1G (flat) position. Section IX, Table QW-461.9 provides the position and diameter limitations for performance qualification. According to this table, qualification using groove welding on plate in the flat position also qualifies the welder for groove welding on pipe over 24 inches O.D. in the flat position and fillet welding on plate and pipe in the flat position. Section IX recognizes that for large diameter piping, the welding is similar to welding on plate. All the welds repaired were groove welds on the CCW pump diameter which varies from approximately 65 inches to approximately 96 inches or fillet welds. Therefore, due to the large diameter of the CCW pumps, the welder qualification meets Section IX.

There are additional items that also support the reasonable assurance of structural integrity:

- The welder qualification requirements of ASME Section IX were met.
- NDE was performed on all weld repairs. This included visual examinations of all weld repairs and magnetic particle exams on some specific welds. This supports the acceptable quality of the current welds.

- The Oconee CCW pumps were not originally designed, procured, or constructed to any code or QA standard. Duke Power and Sulzer Pumps worked together to develop an "as found inspection guide" for the refurbishment of the Oconee CCW pumps. No weld inspections were required by ASME code as a part of this inspection. However, weld inspections were included in the guide based on good maintenance practices. The type of as found weld inspection to be performed on each part was identified (Visual Inspection or Magnetic Particle Inspection) in this inspection guide. The same inspection method that identified a weld defect was used to verify acceptable defect removal, weld repair preparation, and final weld repair. Duke and Sulzer also worked together to define an acceptance criteria for defect identification and defect removal/repair that met code intent. Weld inspections were performed using a structured process with inspection criteria clearly identified. This process included:

Qualified personnel performed the inspections. Personnel performing Visual Inspections were qualified to ANSI/AWS-QC-1, Standard for AWS Certification of Welding Inspectors. Personnel performing Magnetic Particle Inspection were qualified to ASNT-TC-1A, level II

Weld inspection procedures were used to perform the inspections

Specific criteria was developed to identify defects

Acceptance criteria for defect removal, weld repair preparation, and final weld repair inspection was also identified and controlled per procedure

The process used to perform visual inspections on the 1B CCW pump is adequate to ensure acceptable quality of the weld repairs. A surface examination is not a code requirement based on ASME Code Interpretation XI-1-95-29 and subsequent code changes as discussed below.

The position established in Interpretation XI-1-95-29 addresses rules in the 1988 Addenda through the 1990

Addenda in Question 1 and addresses the rules of the 1991 Addenda through the 1995 Edition in Question 2. The responses to both questions state the IWA-4300 requirements for defect removal and examination are not applicable to repair activities performed in accordance with the Construction Code. They are only applicable when using the alternative weld repair methods in Section XI.

The applicability of the Interpretation ends in 1995 because the Code incorporated the Interpretation into the 1996 Addenda. In the 1989 Edition, Paragraph IWA-4340, Defect Removal was listed under IWA-4300. By the 1995 Addenda, IWA-4424, Examination Following Metal Removal contained the requirements from the 1989 paragraph IWA-4340. In the 1995 Addenda the requirements were listed under a new section called IWA-4400 Welding, Brazing, Metal Removal and Installation. This section allowed repair/replacement activities to be performed under the construction code or by the alternative methods in Section XI in IWA-4600. In the 1996 Addenda, IWA-4424 was redesignated as IWA-4611.4 under IWA-4600 Alternative Welding Methods to finally clarify that the requirements only applied when using the alternative welding methods in Section XI. This Addenda was then endorsed by rulemaking in 1999. Therefore, it is reasonable for a Code user to surmise that the Interpretation is not objectionable to the NRC since its content is incorporated into later Editions and Addenda approved in 10CFR50.

- The pump was pressure tested with air to 13.5 PSIG after installation. The pump passed this inspection with no leaks noted. It was tested again using this same method approximately 4 months later to 14.5 PSIG with no leaks noted.

The normal operating pressure for the CCW pumps is 12.47 PSID (28.8 feet head @ 177,000 GPM). The shut-off head for the CCW pumps is 27.3 PSID (63 feet head).

- The pump has operated successfully for over 3 years since the refurbishment work was performed.

- Tech Spec 3.7.8 requires verification of the siphon header every 18 months. Verification is via a flow test of the header in the siphon mode per Surveillance Requirement 3.7.8.9. This test has been completed successfully three times since the pump was refurbished.

As a result, rework simply to conform with minor differences in the qualifications does not appear to provide a compensating increase in quality or safety pursuant to 10 CFR 50.55a (a) (3) (ii).

Sponsored By Ronnie C. Henderson Date 04/27/04

Approved By Joe D. P. H. Date 04/27/04

WELDER AND WELD FILLER MATERIAL RECORD SHEET

Sales Order 01711760

Information relating to the table below:

1. Welds described as combination groove and fillet - these are welds that are fillet on the ID or OD of the pump, and the other side of the weld is a groove weld.
2. Pressure retaining: If the column indicates "Y" the weld is on a pressure retaining component. If the column indicates "Y ATT" the weld is on an attachment to a pressure retaining component, such as a bearing housing strut or a vane in the diffuser. Non pressure boundary welds are not included in this list.
3. NDE column indicates the method of inspection following completion of the weld repair.
4. Welds on flange faces and flange registers were performed to restore the alignment and fit specifications between the major pump parts.

Weld Joint	Part Name	Weld Type	Pressure Retaining	NDE	Welder ID	Drawing	Weld Procedure	Weld Filler ID	Material & Size
1	Impeller Housing	Groove & Fillet	Y	VT&MT	94076	E14597-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
2	Impeller Housing	Groove & Fillet	Y	VT	94076	E14597-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
Lower end register	Impeller Housing		Y	VT	94076	E14597-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
Upper end register	Impeller Housing		Y	VT	94076	E14597-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
Upper end register	Impeller Housing		Y	VT	T-14	E14597-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
1	Impeller Housing	Groove & Fillet	Y	VT&MT	T-14	E14597-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
2	Impeller Housing	Groove & Fillet	Y	VT	T-14	E14597-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2

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Weld Joint	Part Name	Weld Type	Pressure Retaining	NDE	Welder ID	Drawing	Weld Procedure	Weld Filler ID	Material & Size
3	Impeller Housing	Groove	Y	VT	94076	E14597-02	CSI-6	Q00-725	5/32" E7018H4R
19	Diffuser	Groove	N	VT	94076	Z7384	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
20	Diffuser	Fillet	Y Att	VT&MT	94076	Z7384	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
24	Diffuser	Fillet	Y Att	VT&MT	94076	Z7384	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
25	Diffuser	Fillet	Y Att	VT	94076	Z7384	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
26	Diffuser	Fillet	Y Att	VT&MT	94076	Z7384	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
20	Diffuser	Fillet	Y Att	VT&MT	94076	Z7384	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
21	Diffuser	Fillet	Y Att	VT	94076	Z7384	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
22	Diffuser	Fillet	Y Att	VT	94076	Z7384	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
23	Diffuser	Fillet	Y Att	VT	94076	Z7384	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
24	Diffuser	Fillet	Y Att	VT&MT	94076	Z7384	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
25	Diffuser	Fillet	Y Att	VT	94076	Z7384	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
26	Diffuser	Fillet	Y Att	VT&MT	94076	Z7384	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
27	Diffuser	Fillet	Y Att	VT	94076	Z7384	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
1	Increaser Column	Groove & Fillet	Y	VT	940976	E14596-02	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
2	Increaser Column	Fillet	Y	VT	940976	E14596-02	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
3	Increaser Column	Groove	Y	VT	940976	E14596-02	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
4	Increaser Column	Groove	Y	VT	940976	E14596-02	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
5	Increaser Column	Groove	Y	VT	940976	E14596-02	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R

Weld Joint	Part Name	Weld Type	Pressure Retaining	NDE	Welder ID	Drawing	Weld Procedure	Weld Filler ID	Material & Size
6	Increaser Column	Fillet	Y Att	VT	940976	E14596-02	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
7	Increaser Column	Fillet	Y Att	VT	940976	E14596-02	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
8	Increaser Column	Fillet	Y Att	VT	940976	E14596-02	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
9	Increaser Column	Fillet	Y Att	VT	940976	E14596-02	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
1	Increaser Column	Groove & Fillet	Y	VT	T14	E14596-02	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
2	Increaser Column	Fillet	Y	VT	T14	E14596-02	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
3	Increaser Column	Groove	Y	VT	T14	E14596-02	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
4	Increaser Column	Groove	Y	VT	T14	E14596-02	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
5	Increaser Column	Groove	Y	VT	T14	E14596-02	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
10	Increaser Column	Fillet	Y Att	VT	T14	E14596-02	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
11	Increaser Column	Fillet	Y Att	VT	T14	E14596-02	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
12	Increaser Column	Fillet	Y Att	VT	T14	E14596-02	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
13	Increaser Column	Fillet	Y Att	VT	T14	E14596-02	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
Register B	Increaser Column		Y	VT	T14	E14596-02	CSI-1 Rev. 15	Q00-726	.035" ER70S-2
Register A	Increaser Column		Y	VT	T14	E14596-02	CSI-1 Rev. 15	Q00-726	.035" ER70S-2
Top flange	Support Column		Y	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
Bottom flange	Support Column		Y	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
OD register	Support Column		Y	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
Bore	Support Column		Y	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2

Weld Joint	Part Name	Weld Type	Pressure Retaining	NDE	Welder ID	Drawing	Weld Procedure	Weld Filler ID	Material & Size
Top flange	Support Column		Y	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
Bottom flange	Support Column		Y	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
OD register	Support Column		Y	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
Bore	Support Column		Y	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
1	Support Column	Groove	Y	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
2	Support Column	Fillet	Y	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
3	Support Column	Fillet	Y	VT & MT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
12	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
13	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
14	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
15	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
16	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
17	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
18	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
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21	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
22	Support Column	Fillet	Y Att	VT & MT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
23	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2

Weld Joint	Part Name	Weld Type	Pressure Retaining	NDE	Welder ID	Drawing	Weld Procedure	Weld Filler ID	Material & Size
24	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
25	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
26	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
27	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
28	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
29	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
30	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
31	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
32	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
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36	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
37	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
38	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
39	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
40	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
41	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
42	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2

Request for Relief No. 02-009

Weld Joint	Part Name	Weld Type	Pressure Retaining	NDE	Welder ID	Drawing	Weld Procedure	Weld Filler ID	Material & Size
43	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
1	Support Column	Groove	Y	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
2	Support Column	Fillet	Y	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
3	Support Column	Fillet	Y	VT & MT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
12	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
13	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
14	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
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23	Support Column	Fillet	Y Att	VT & MT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
24	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
25	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
26	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2

Weld Joint	Part Name	Weld Type	Pressure Retaining	NDE	Welder ID	Drawing	Weld Procedure	Weld Filler ID	Material & Size
27	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
28	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
29	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
30	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
31	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
32	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
33	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
34	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
35	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
36	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
37	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
38	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
39	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
40	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
41	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
42	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
43	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
31	Motor Support	Fillet	Y Att	VT	94076	E14606	CS-1 Rev. 15	Q00-724	1/8" E7018H4R
32	Motor Support	Fillet	Y Att	VT	94076	E14606	CS-1 Rev. 15	Q00-724	1/8" E7018H4R

Weld Joint	Part Name	Weld Type	Pressure Retaining	NDE	Welder ID	Drawing	Weld Procedure	Weld Filler ID	Material & Size
33	Motor Support	Fillet	Y Att	VT	94076	E14606	CS-1 Rev. 15	Q00-724	1/8" E7018H4R
34	Motor Support	Fillet	Y Att	VT	94076	E14606	CS-1 Rev. 15	Q00-724	1/8" E7018H4R
35	Motor Support	Fillet	Y Att	VT	94076	E14606	CS-1 Rev. 15	Q00-724	1/8" E7018H4R
36	Motor Support	Fillet	Y Att	VT	94076	E14606	CS-1 Rev. 15	Q00-724	1/8" E7018H4R
37	Motor Support	Fillet	Y Att	VT	94076	E14606	CS-1 Rev. 15	Q00-724	1/8" E7018H4R
38	Motor Support	Fillet	Y Att	VT	94076	E14606	CS-1 Rev. 15	Q00-724	1/8" E7018H4R
39	Motor Support	Fillet	Y Att	VT	94076	E14606	CS-1 Rev. 15	Q00-724	1/8" E7018H4R
40	Motor Support	Fillet	Y Att	VT	94076	E14606	CS-1 Rev. 15	Q00-724	1/8" E7018H4R

**Duke Energy Corporation
Oconee Nuclear Station, Unit 1
Request for Relief No. 02-010**

I. System/Component for Which Relief is Requested:

Oconee Condenser Circulating Water (CCW) Pump "1B"
(Equipment Number ON1CCWPU0002, ISI Class C)

There are 12 CCW pumps at Oconee or 4 per unit. These pumps are single stage vertical pumps which take their suction directly out of Lake Keowee. Their normal function is to provide cooling. This water is also used as cooling water for various loads throughout the plant. They also provide flow via a siphoning effect during certain design basis events, including fire, LOCA, LOOP, and LOCA/LOOP.

The pumps were not originally designed, procured, or constructed to any code or QA standard. The Oconee CCW pumps were upgraded from non-QA to QA-1 (pressure boundary only) as a part of the Oconee Service Water Project in 1998. As part of the upgrade, Duke committed to maintain the pumps as QA-1 equipment for all future maintenance.

In March 2000 the "1B" CCW pump was removed from the system for a routine refurbishment. The pump was shipped to a vendor shop for this work. The planned work concentrated on inspecting the pump, replacing worn parts, rebuilding the pump, and coating the pump. During the inspection, needed weld repairs were identified. These weld repairs were completed along with other refurbishment work. The pump was returned to service in June 2000.

During work on a subsequent pump ("3D") performed in March of 2001, the ANII raised issues with code compliance. These issues were immediately addressed on the "3D" pump. It was also decided to investigate whether the same issues applied to the previously completed "1B" pump. This document requests relief from certain code requirements as a result of this investigation. See also Duke Energy Corporation Request for Relief No. 02-009.

II. Code Requirement:

The 1B CCW pump was not originally built to any construction code. When it was reclassified to QA-1 by Duke, it was also placed within the scope of ASME Section XI which provides requirements for Repair Replacement Activities. The effective code for the Oconee Repair-Replacement Program is ASME Section XI 1989 (no Addenda). Subparagraph IWA-4120 (a) states "Repairs shall be performed in accordance with the Owner's Design Specification and the original construction code of the component or system". The CCW system construction code was USAS B31.1.0, 1967. This system construction code was selected as the construction code to be used for this repair-replacement activity since no original component construction code exists.

USAS B31.1.0, 1967 Subsection 127.5.1 states, "Qualification of the welding procedures to be used, and of the performance of welders and welding operators, is required, and shall comply with the requirements of ASME Boiler and Pressure Vessel Code (Section IX) except as modified by this Par. 127.5."

Paragraph 127.5 then has several modifications. The modification relevant to this submittal is Section 127.5.4 paragraph (c) which states, in part, "Qualifications in Position 1G qualifies for welds in that position only."

III. Code Requirement for Which Relief is Requested

Vendor welders were qualified to weld in the "1G" (flat) position. Welders were witnessed performing welds out of the welder's qualified position on the "3D" CCW pump (welds were witnessed being performed in the horizontal rather than flat position). These were removed and rewelded. Based on a review of the pump parts, some fillet weld repairs on the "1B" pump could not have been positioned to perform the repair in a true flat position due to the geometry of the part. Based on this, it is concluded that some fillet welds were performed out of position. Relief from the requirements of USAS B31.1.0, 1967, Section 127.5.4 (c) is requested by this submittal.

IV. Basis for Relief

Complying with the code requirement would result in hardship or unusual difficulty without a compensating increase in quality or safety pursuant to 10 CFR 50.55a (a) (3) (ii).

V. Alternate Examinations or Testing

No other additional examinations or tests are planned.

VI. Justification for the Granting of Relief

Out of position welding was not actually witnessed by the ANII or Duke Energy on the 1B CCW pump refurbishment. However, experience on the 3D CCW pump refurbishment and examination of the 1B CCW pump parts indicate that some of the 1B CCW pump parts requiring fillet welds were welded out of position. Since we can not verify which welds were actually made out of position, we are conservatively considering all fillet weld repairs as being made out of position (horizontal rather than flat). Although this is a technical non-compliance with the welder qualification, welding in this position is allowed by the code and there is no indication that the welds themselves are defective. Considering that the pumps were originally designed and fabricated without Quality Assurance or code requirements, the conservative decision in 1998 to apply QA and code requirements to the pumps for future pump maintenance assures that the quality and safety of the pumps always exceeds the original requirements.

The majority of the pump is located below lake level, requiring pump removal for inspections and repairs other than those which could be performed by underwater divers. The size of this pump, the equipment required to lift the pump out of the intake structure, and the number of hours to remove the previous weld repairs, remake the weld repairs, and perform NDE would result in a significant hardship. There would be no compensating increase in the level of quality and safety because the QA requirements for these pumps have been increased over original requirements. Reference Attachment 1 for a complete list of the pressure boundary weld joints repaired.

There are additional items that also support the reasonable assurance of structural integrity:

- NDE was performed on all weld repairs. This included visual examinations of all weld repairs and magnetic particle exams on some specific welds. This supports the acceptable quality of the current welds.
- The Oconee CCW pumps were not originally designed, procured, or constructed to any code or QA standard. Duke Power and Sulzer Pumps worked together to develop an "as found inspection guide" for the refurbishment of the Oconee CCW pumps. No weld inspections were required by ASME code as a part of this inspection. However, weld inspections were included in the guide based on good maintenance practices. The type of as found weld inspection to be performed on each part was identified (Visual Inspection or Magnetic Particle Inspection) in this inspection guide. The same inspection method that identified a weld defect was used to verify acceptable defect removal, weld repair preparation, and final weld repair. Duke and Sulzer also worked together to define acceptance criteria for defect identification and defect removal/repair that met code intent. Weld inspections were performed using a structured process with inspection criteria clearly identified. This process included:

Qualified personnel performed the inspections. Personnel performing Visual Inspections were qualified to ANSI/AWS-QC-1, Standard for AWS Certification of Welding Inspectors. Personnel performing Magnetic Particle Inspection were qualified to ASNT-TC-1A, level II.

Weld inspection procedures were used to perform the inspections.

Specific criteria were developed to identify defects.

Acceptance criteria for defect removal, weld repair preparation, and final weld repair inspection was also identified and controlled per procedure.

The process used to perform visual inspections on the 1B CCW pump is adequate to ensure acceptable quality of the weld repairs. A surface examination is not a code requirement based on ASME Code Interpretation XI-1-95-29 and subsequent code changes as discussed below.

The position established in Interpretation XI-1-95-29 addresses rules in the 1988 Addenda through the 1990 Addenda in Question 1 and addresses the rules of the 1991 Addenda through the 1995 Edition in Question 2. The responses to both questions state the IWA-4300 requirements for defect removal and examination are not applicable to repair activities performed in accordance with the Construction Code. They are only applicable when using the alternative weld repair methods in Section XI.

The applicability of the Interpretation ends in 1995 because the Code incorporated the Interpretation into the 1996 Addenda. In the 1989 Edition, Paragraph IWA-4340, Defect Removal was listed under IWA-4300. By the 1995 Addenda, IWA-4424, Examination Following Metal Removal contained the requirements from the 1989 paragraph IWA-4340. In the 1995 Addenda the requirements were listed under a new section called IWA-4400 Welding, Brazing, Metal Removal and Installation. This section allowed repair/replacement activities to be performed under the construction code or by the alternative methods in Section XI in IWA-4600. In the 1996 Addenda, IWA-4424 was redesignated as IWA-4611.4 under IWA-4600 Alternative Welding Methods to finally clarify that the requirements only applied when using the alternative welding methods in Section XI. This Addenda was then endorsed by rulemaking in 1999. Therefore, it is reasonable for a Code user to surmise that the Interpretation is not objectionable to the NRC since its content is incorporated into later Editions and Addenda approved in 10CFR50.

- As noted on the attached Welder and Weld Filler Material Record Sheet (attachment 1), the majority of the fillet welds are attachment welds connecting pump bearing supports or diffuser vanes to the pressure retaining boundary component rather than welds which

directly comprise the pressure retaining boundary.

- The pump was pressure tested with air to 13.5 PSIG after installation. The pump passed this inspection with no leaks noted. It was tested again using this same method approximately 4 months later to 14.5 PSIG with no leaks noted.

The normal operating pressure for the CCW pumps is 12.47 PSID (28.8 feet head @ 177,000 GPM). The shut-off head for the CCW pumps is 27.3 PSID (63 feet head).

- The pump has operated successfully for over 3 years since the refurbishment work was performed.
- Tech Spec 3.7.8 requires verification of the siphon header every 18 months. Verification is via a flow test of the header in the siphon mode per Surveillance Requirement 3.7.8.9. This test has been completely successfully three times since the pump was refurbished.

As a result, rework simply to conform with minor differences in the qualifications does not appear to provide a compensating increase in quality or safety pursuant to 10 CFR 50.55a (a) (3) (ii).

Sponsored By Ronnie C. Henderson Date 04/27/04

Approved By Jason D. Patton Date 04/27/04

WELDER AND WELD FILLER MATERIAL RECORD SHEET (Fillet Welds Only)

Sales Order 01711760

Information relating to the table below:

1. Welds described as combination groove and fillet - these are welds that are fillet on the ID or OD of the pump, and the other side of the weld is a groove weld.
2. Pressure retaining: If the column indicates "Y" the weld is on a pressure retaining component. If the column indicates "Y ATT" the weld is on an attachment to a pressure retaining component, such as a bearing housing strut or a vane in the diffuser. Non pressure boundary welds are not included in this list.
3. NDE column indicates the method of inspection following completion of the weld repair.

Weld Joint	Part Name	Weld Type	Pressure Retaining	NDE	Welder ID	Drawing	Weld Procedure	Weld Filler ID	Material & Size
1	Impeller Housing	Groove & Fillet	Y	VT&MT	94076	E14597-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
2	Impeller Housing	Groove & Fillet	Y	VT	94076	E14597-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
1	Impeller Housing	Groove & Fillet	Y	VT&MT	T-14	E14597-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
2	Impeller Housing	Groove & Fillet	Y	VT	T-14	E14597-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
20	Diffuser	Fillet	Y Att	VT&MT	94076	Z7384	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
24	Diffuser	Fillet	Y Att	VT&MT	94076	Z7384	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
25	Diffuser	Fillet	Y Att	VT	94076	Z7384	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
26	Diffuser	Fillet	Y Att	VT&MT	94076	Z7384	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
20	Diffuser	Fillet	Y Att	VT&MT	94076	Z7384	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
21	Diffuser	Fillet	Y Att	VT	94076	Z7384	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R

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Weld Joint	Part Name	Weld Type	Pressure Retaining	NDE	Welder ID	Drawing	Weld Procedure	Weld Filler ID	Material & Size
22	Diffuser	Fillet	Y Att	VT	94076	Z7384	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
23	Diffuser	Fillet	Y Att	VT	94076	Z7384	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
24	Diffuser	Fillet	Y Att	VT&MT	94076	Z7384	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
25	Diffuser	Fillet	Y Att	VT	94076	Z7384	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
26	Diffuser	Fillet	Y Att	VT&MT	94076	Z7384	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
27	Diffuser	Fillet	Y Att	VT	94076	Z7384	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
1	Increaser Column	Groove & Fillet	Y	VT	940976	E14596-02	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
2	Increaser Column	Fillet	Y	VT	940976	E14596-02	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
6	Increaser Column	Fillet	Y Att	VT	940976	E14596-02	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
7	Increaser Column	Fillet	Y Att	VT	940976	E14596-02	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
8	Increaser Column	Fillet	Y Att	VT	940976	E14596-02	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
9	Increaser Column	Fillet	Y Att	VT	940976	E14596-02	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
1	Increaser Column	Groove & Fillet	Y	VT	T14	E14596-02	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
2	Increaser Column	Fillet	Y	VT	T14	E14596-02	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
10	Increaser Column	Fillet	Y Att	VT	T14	E14596-02	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
11	Increaser Column	Fillet	Y Att	VT	T14	E14596-02	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
12	Increaser Column	Fillet	Y Att	VT	T14	E14596-02	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
13	Increaser Column	Fillet	Y Att	VT	T14	E14596-02	CSI-1 Rev. 15	Q00-725	5/32" E7018H4R
2	Support Column	Fillet	Y	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2

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Weld Joint	Part Name	Weld Type	Pressure Retaining	NDE	Welder ID	Drawing	Weld Procedure	Weld Filler ID	Material & Size
3	Support Column	Fillet	Y	VT & MT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
12	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
13	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
14	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
15	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
16	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
17	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
18	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
19	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
20	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
21	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
22	Support Column	Fillet	Y Att	VT & MT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
23	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
24	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
25	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
26	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
27	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
28	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
29	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2

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Weld Joint	Part Name	Weld Type	Pressure Retaining	NDE	Welder ID	Drawing	Weld Procedure	Weld Filler ID	Material & Size
30	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
31	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
32	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
33	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
34	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
35	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
36	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
37	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
38	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
39	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
40	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
41	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
42	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
43	Support Column	Fillet	Y Att	VT	T14	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
2	Support Column	Fillet	Y	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
3	Support Column	Fillet	Y	VT & MT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
12	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
13	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
14	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2

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Weld Joint	Part Name	Weld Type	Pressure Retaining	NDE	Welder ID	Drawing	Weld Procedure	Weld Filler ID	Material & Size
15	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
16	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
17	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
18	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
19	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
20	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
21	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
22	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
23	Support Column	Fillet	Y Att	VT & MT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
24	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
25	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
26	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
27	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
28	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
29	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
30	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
31	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
32	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
33	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2

Request for Relief No. 02-010

Weld Joint	Part Name	Weld Type	Pressure Retaining	NDE	Welder ID	Drawing	Weld Procedure	Weld Filler ID	Material & Size
34	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
35	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
36	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
37	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
38	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
39	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
40	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
41	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
42	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
43	Support Column	Fillet	Y Att	VT	94076	E14589-02	CS-4 Rev. 0	Q00-726	.035" ER70S-2
31	Motor Support	Fillet	Y Att	VT	94076	E14606	CS-1 Rev. 15	Q00-724	1/8" E7018H4R
32	Motor Support	Fillet	Y Att	VT	94076	E14606	CS-1 Rev. 15	Q00-724	1/8" E7018H4R
33	Motor Support	Fillet	Y Att	VT	94076	E14606	CS-1 Rev. 15	Q00-724	1/8" E7018H4R
34	Motor Support	Fillet	Y Att	VT	94076	E14606	CS-1 Rev. 15	Q00-724	1/8" E7018H4R
35	Motor Support	Fillet	Y Att	VT	94076	E14606	CS-1 Rev. 15	Q00-724	1/8" E7018H4R
36	Motor Support	Fillet	Y Att	VT	94076	E14606	CS-1 Rev. 15	Q00-724	1/8" E7018H4R
37	Motor Support	Fillet	Y Att	VT	94076	E14606	CS-1 Rev. 15	Q00-724	1/8" E7018H4R
38	Motor Support	Fillet	Y Att	VT	94076	E14606	CS-1 Rev. 15	Q00-724	1/8" E7018H4R
39	Motor Support	Fillet	Y Att	VT	94076	E14606	CS-1 Rev. 15	Q00-724	1/8" E7018H4R

Request for Relief No. 02-010

Weld Joint	Part Name	Weld Type	Pressure Retaining	NDE	Welder ID	Drawing	Weld Procedure	Weld Filler ID	Material & Size
40	Motor Support	Fillet	Y Att	VT	94076	E14606	CS-1 Rev. 15	Q00-724	1/8" E7018H4R

Response to Request for Additional Information

Response to Request for Additional Information on Oconee Relief Requests 02-009 & 02-010

Question #1

ASME Section XI, 1989 edition, requires a surface examination of the repair surface. Duke Power must justify not performing this examination. (NRC does not accept ASME interpretations unless the staff agrees with those interpretations and NRC does not agree with Interpretation XI-1-95-29).

The following response was included in Section VI of Request for Relief No. 02-009 and Section VI of Request for Relief No. 02-010.

Response #1

The position established in Interpretation XI-1-95-29 addresses rules in the 1988 Addenda through the 1990 Addenda in Question 1 and addresses the rules of the 1991 Addenda through the 1995 Edition in Question 2. The responses to both questions state the IWA-4300 requirements for defect removal and examination are not applicable to repair activities performed in accordance with the Construction Code. They are only applicable when using the alternative weld repair methods in Section XI.

The applicability of the Interpretation ends in 1995 because the Code incorporated the Interpretation into the 1996 Addenda. In the 1989 Edition, Paragraph IWA-4340, Defect Removal was listed under IWA-4300. By the 1995 Addenda, IWA-4424, Examination Following Metal Removal contained the requirements from the 1989 paragraph IWA-4340. In the 1995 Addenda the requirements were listed under a new section called IWA-4400 Welding, Brazing, Metal Removal and Installation. This section allowed repair/replacement activities to be performed under the construction code or by the alternative methods in Section XI in IWA-4600. In the 1996 Addenda, IWA-4424 was redesignated as IWA-4611.4 under IWA-4600 Alternative Welding Methods to finally clarify that the requirements only applied when using the alternative welding methods in Section XI. This Addenda was then endorsed by rulemaking in 1999. Therefore, it is reasonable for a Code user to surmise that the Interpretation is not objectionable to the NRC since its content is incorporated into later Editions and Addenda approved in 10CFR50

Response to Request for Additional Information

Question #2

A visual examination alone of the welds in question for both relief requests does not demonstrate an acceptable level of quality in these welds.

A summary of the following response was included in Section VI of Request for Relief No. 02-009 and Section VI of Request for Relief No. 02-010.

Response #2

Summary

Duke Power and Sulzer Pumps worked together to develop an "as found inspection plan" for the refurbishment of the Oconee CCW pumps. The type of as found weld inspection to be performed on each part was identified (VT or MT) in this inspection plan. The same inspection method used to identify a weld defect was used to verify acceptable defect removal, weld repair preparation, and final weld repair. Weld inspections were performed using a structured process with inspection criteria clearly identified. This includes:

- Qualified personnel performed the inspections
- Weld inspection procedures were used to perform the inspections
- Specific criteria was developed to identify defects
- Acceptance criteria for defect removal, weld repair preparation, and final weld repair inspection was also identified and controlled per procedure

Duke Power believes the process used to perform visual inspections on the 1B CCW pump were adequate to ensure acceptable quality of the weld repairs. Supporting information is included below.

Supporting Information

The questions above refer to 129 welds in attachment 1 to Request for Relief No. 2002-09 and to 106 welds in attachment 1 to Relief for Request No. 2002-10. It should be noted that the 129 welds identified in Request for Relief No. 2002-09 is a total list of weld repairs on QA parts of this pump. The 106 welds identified in Request for Relief No. 2002-10 are a subset (all fillet weld repairs) of the welds identified in Request for

Response to Request for Additional Information

Relief 2002-09.

The Oconee CCW pumps have been in service since the station began operation. They were not originally designed, procured, or constructed to any code or QA standard. The CCW system construction code was USAS B31.1, 1967. Therefore this construction code was selected as the construction code to be used for the repair activity. The pumps have performed well and there has not been any significant preventive maintenance or rebuilding performed on these pumps prior to 2000. In 2000, Duke Power finalized plans to begin refurbishment of the Oconee CCW pumps. The goal of this refurbishment was to perform any necessary maintenance to the pumps that would prevent pump failure and result in continued reliable operation of the pumps (preventive maintenance). Duke Power planned to refurbish one pump per year for the next twelve years.

Duke Power worked with Sulzer Pump Company to develop an inspection and repair guide prior to beginning work on the pump. The inspection and repair guide that was developed focused on replacing wear parts and inspecting other parts for problems. No weld inspections were required by ASME code as a part of this inspection. However, weld inspections were included in the guide based on good maintenance practices. If a defect was detected through VT inspection, the defect removal inspection, weld prep inspection, and final repair inspection were all performed as a VT inspection, per the Sulzer approved procedure. If a defect was detected through MT inspection, the defect removal inspection, weld prep inspection, and final repair inspection were all performed as an MT inspection, per the Sulzer approved procedure.

Qualified personnel employed by GE Inspection Services performed all weld inspections on this pump (as found inspection, defect removal/weld prep inspection, and final repair inspection). The qualifications of the inspectors were as follows:

Visual Inspection - Inspection personnel were qualified to ANSI/AWS-QC-1, Standard for AWS Certification of Welding Inspectors.

Magnetic Particle Inspection - Inspection personnel were qualified to ASNT-TC-1A, level II

The 1B CCW pump was the first pump to be refurbished. It was removed from the CCW system and shipped to Sulzer Pump's Shreveport repair facility. There the pump was disassembled,

Response to Request for Additional Information

blast cleaned (steel grit or sand), and the as found inspection was started. At this point, Sulzer's Field Engineer determined that it would be difficult to address weld inspection and repair under the B31.1 construction code as requested by Duke Power. A Duke Power representative visited the Sulzer Shreveport Repair Facility and worked with Sulzer's Field Engineer and Sulzer's Weld Engineer and Metallurgist to develop acceptable weld inspection and repair guidelines to meet the intent of the codes. This meeting resulted in revision of Sulzer's Visual Inspection Procedure and Sulzer's Magnetic Particle Inspection Procedure.

Question #3

Of the approximately 129 welds shown in attachment 1 to Request for Relief No. 2002- 09 it appears that only 12 were examined by a surface method (MT or PT). Does Duke have an analysis to support the acceptable quality of the remaining welds?

Response #3

Same as question 2 response

Question #4

The requests state that the pumps were pressure tested. What was the test pressure for these tests? What is the design pressure?

A summary of the following response was included in Section VI of Request for Relief No. 02-009 and Section VI of Request for Relief No. 02-010.

Response #4

The normal operating pressure for the CCW pumps is 12.47 PSID (28.8 feet head @ 177,000 GPM). The shut-off head for the CCW pumps is 27.3 PSID (63 feet head). This is documented on page 57 of the Design Basis Specification for the CCW System, OSS-0254.00-00-1003. The pumps are vertical pumps which take their suction directly from Lake Keowee.

Testing was performed during installation of the pump following its refurbishment. Work order 98211086-03 documents the pump was pressurized to 13.5 PSI with no leaks noted. The pump was tested again in September 2000, using procedure TT/0/A/0261/007. The pump was pressurized to 14.5 PSIG during this test, with no

Response to Request for Additional Information

leakage noted.

Both tests involved pumping up the area inside the pump with air. The air is pumped through the packing flush line into the pump casing. The air then forces the water level inside the pump casing down as the air fills the casing. Since this pump's suction is open to the lake, the amount of pressure you can build inside the casing is dependent on lake level. Prior to the test start, engineering calculates the pressure required to displace the water inside the pump casing.

During pressurization of the casing, technicians watch the lake surface for air bubbles, indicating leakage. If no bubbles are noted prior to reaching the pressure which forces air out the bottom of the pump, the test is considered successful.

Question #5

Of the approximately 106 welds shown in attachment 1 to Request for Relief No. 2002- 10 it appears that only 12 were examined by a surface method (MT or PT). Does Duke have an analysis to support the acceptable quality of the remaining welds?

Response #5

Same as question 2 response

Question #6

If there is hardship in removing the pump from service, removing previous welds and performing NDE, why is relief under 10 CFR 50.55(a)(3)(i) being requested for relief request 2002-09?

Response #6

Relief 02-009 has been revised and is now seeking relief under 50.55(a)(3)(ii) as a hardship.

Question #7

The cover letter designates the relief requests 02-009 and 02-010, but the relief requests themselves, designate the relief requests 2002-09 and 2002-10. Please correct this discrepancy.

Response #7

All references have been revised to 02-009 and 02-010.

Response to Request for Additional Information

Question #8

When NDE was performed on a weld, did the weld pass the NDE? If the NDE was MT or PT, did the weld pass the first test or where repairs necessary and then were the repairs retested?

Response #8

Initial as-found NDE inspections were performed on welds per the inspection plan developed by Sulzer Pumps and Duke Power. If a defect was found, a repair plan was developed that included defect removal/weld prep inspection and final weld repair inspection. If a weld repair had failed its first inspection, Sulzer's process requires that a non-conformance report be generated. The non-conformance report could only be resolved after additional repair work and a final inspection that met the acceptance criteria in Sulzer's weld inspection procedure. Sulzer reviewed documentation from the 1B CCW pump repair and determined that no weld repairs were rejected by the VT inspection method or the MT inspection method.