



**Nebraska Public Power District**

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10 CFR 50.55a

NLS2009006  
February 16, 2009

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

Subject: 10 CFR 50.55a Request Number RI-21, Revision 0, and Request Number RI-22,  
Revision 0  
Cooper Nuclear Station, Docket No. 50-298, DPR-46

Dear Sir or Madam:

The purpose of this letter is to request that the Nuclear Regulatory Commission (NRC) grant the Nebraska Public Power District (NPPD) relief from certain inservice inspection (ISI) code requirements for Cooper Nuclear Station (CNS) pursuant to 10 CFR 50.55a.

10 CFR 50.55a Request Number RI-21, Revision 0, and Request Number RI-22, Revision 0, are applicable to the fourth ten-year ISI interval, which began March 1, 2006. NPPD requests NRC approval of the attached requests by February 28, 2010, which represents a standard twelve-month review period following submittal. Approval of these requests is not needed to support future work at CNS.

RI-21 is contained in Attachment 1 to this letter. NPPD has determined that compliance with the code requirements of achieving essentially 100% coverage of the welds listed in this attachment is impractical for CNS. Therefore, relief is required due to not achieving essentially 100% coverage. CNS performed the examinations using the alternative examination volume defined in Code Case N-613-1, Figure 1, as approved in Regulatory Guide 1.147, Revision 15. The proposed alternative and basis for use is provided in Attachment 1 to this letter.

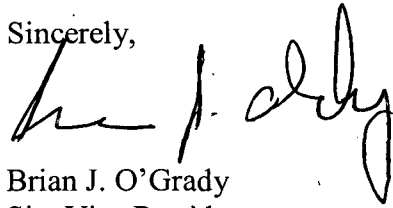
RI-22 is contained in Attachment 2 to this letter. Similar to RI-21, NPPD has determined that compliance with the code requirements of achieving essentially 100% coverage of welds listed in this attachment is impractical for CNS. The proposed alternative and basis for use is provided in Attachment 2 to this letter.

The examinations associated with both requests were performed in accordance with Appendix VIII of American Society of Mechanical Engineers Section XI using qualified personnel, procedures and equipment with the applicable limitations set forth in 10 CFR 50.55a.

A047  
LRR

Should you have any questions concerning this matter, please contact David Van Der Kamp, Licensing Manager, at (402) 825-2904.

Sincerely,

A handwritten signature in black ink, appearing to read "Brian J. O'Grady". The signature is fluid and cursive, with a large, stylized "B" and "O".

Brian J. O'Grady  
Site Vice President

/dm

Attachments

cc: Regional Administrator w/attachments  
USNRC - Region IV

Cooper Project Manager w/attachments  
USNRC - NRR Project Directorate IV-1

Senior Resident Inspector w/attachments  
USNRC - CNS

NPG Distribution w/attachments

CNS Records w/attachments

10 CFR 50.55a Request Number RI-21, Revision 0

**Relief Request  
in Accordance with 10 CFR 50.55a(g)(5)(iii)**

--Inservice Inspection Impracticality--

**ASME Code Components Affected**

Code Class:	1
References:	IWB-2500, Table IWB-2500-1
Examination Category:	B-D – Full Penetration Welded Nozzles in Vessels
Item Number:	B3.90
Description:	Reactor Pressure Vessel Nozzle-to-Vessel Welds
Component Numbers:	NVE-BD-N1A, NVE-BD-N2E, NVE-BD-N2H, NVE-BD-N2K, NVE-BD-N3A, NVE-BD-N5A

**Applicable Code Edition and Addenda**

American Society of Mechanical Engineers (ASME) Code Section XI, 2001 Edition, 2003 Addenda.

**Applicable Code Requirement**

Table IWB-2500-1, Examination Category B-D, Item B3.90, requires 100% volumetric examination of the reactor vessel nozzle-to-vessel welds as defined by Figure IWB-2500-7(a). However, Cooper Nuclear Station (CNS) performed the examinations using the alternative examination volume defined in Code Case N-613-1, Figure 1, as approved in Regulatory Guide 1.147, Revision 15.

**Impracticality of Compliance**

Pursuant to 10 CFR 50.55a(g)(5)(iii), Nebraska Public Power District has determined that compliance with the code requirements of achieving essentially 100% coverage of the welds listed in Table RI-21-1 is impractical for CNS. The CNS construction permit was issued before the effective date of implementation for ASME Section XI, thus the plant was not designed to meet the requirements of inservice inspection. The configuration of the nozzles, the design of the vessel insulation support rings and the nozzle access hatches, and interferences from thermocouple pads, instrument lines, etc., prevent 100% examination of the required weld volumes.

**Burden Caused by Compliance**

A major modification to the reactor vessel nozzles and access hatches would be required in order to improve overall examination coverage. Therefore, obtaining essentially 100% coverage is not feasible or practical.

## 10 CFR 50.55a Request Number RI-21, Revision 0

**Proposed Alternative and Basis for Use**

In lieu of performing the code-required examinations, CNS proposes to examine the accessible portions of reactor vessel nozzle-to-vessel welds to the extent practical.

The examinations were performed in accordance with Appendix VIII of ASME Section XI using qualified personnel, procedures and equipment with the applicable limitations set forth in 10 CFR 50.55a. The extent of the nozzle restrictions and the total volume accessible for examination, based on the examinations performed in the fourth interval are compared to examinations performed in the previous third interval. In all cases, the coverage achieved in the fourth interval exceeded the coverage achieved in the previous interval.

**Duration of Proposed Alternative**

Relief is requested for the fourth ten-year interval of the Inservice Inspection Program for CNS.

**Precedents**

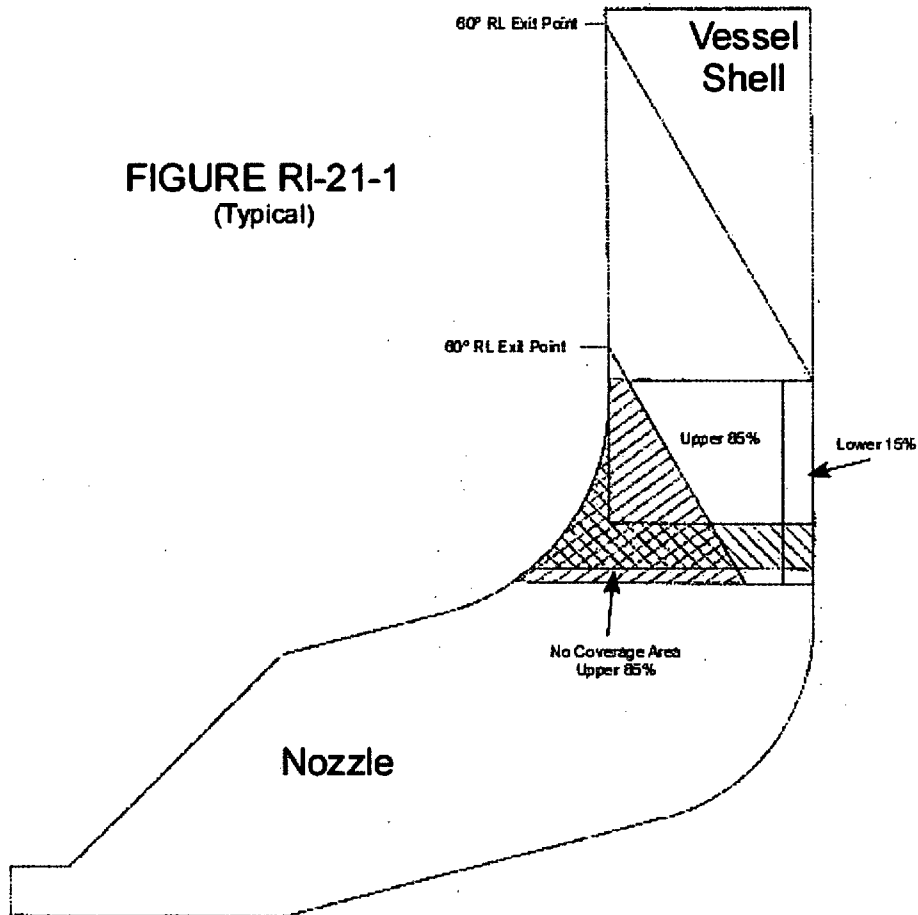
1. Relief Request RI-21, Revision 2, was approved by the Nuclear Regulatory Commission on February 24, 2006, (TAC No. MC8512) for the third ten-year interval of the Inservice Inspection Program.

**Relief Request Table RI-21-1**

Nozzle Number	Nozzle Description	Access Restrictions	% Examined 3 <sup>rd</sup> Interval	% Examined 4 <sup>th</sup> Interval
N1A	Recirculation Inlet	Nozzle configuration, and insulation support frame	32%	46%
N2E, H & K	Recirculation Outlet	Nozzle configuration, and insulation support frame	40%	55%
N3A	Main Steam	Nozzle configuration	35%	49%
N5A	Core Spray	Nozzle configuration, insulation support frame, and thermocouple pads	31%	51%

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The figure below shows the examination volume limitations to the applicable examination zones as required per ASME Section XI, Figure IWB-2500-7(a):



10 CFR 50.55a Request Number RI-22, Revision 0

**Relief Request  
in Accordance with 10 CFR 50.55a(g)(5)(iii)**

--Inservice Inspection Impracticality--

**ASME Code Components Affected**

Code Class:	1
References:	IWB-2500, Table IWB-2500-1
Examination Category:	B-F – Pressure Retaining Dissimilar Metal Welds in Vessel Nozzles (R-A)
Item Number:	B5.10
Description:	Nozzle-to-Safe End Butt Welds
Component Numbers:	CSA-BF-1x, RRH-BF-1, RRK-BF-1, RRE-BF-1

**Applicable Code Edition and Addenda**

American Society of Mechanical Engineers (ASME) Code Section XI, 2001 Edition, 2003 Addenda.

**Applicable Code Requirement**

Table IWB-2500-1, Examination Category B-F, Item B5.10, requires 100% volumetric examination of the pressure retaining dissimilar metal welds in vessel nozzles as defined by Figure IWB-2500-8.

**Impracticality of Compliance**

Pursuant to 10 CFR 50.55a(g)(5)(iii), Nebraska Public Power District has determined that compliance with the code requirements of achieving essentially 100% coverage of welds listed in Table RI-22-1 is impractical for Cooper Nuclear Station (CNS).

CNS replaced the Class 1 stainless steel piping in the mid- 1980's. The best techniques available to mitigate intergranular stress corrosion cracking (IGSCC) were used: IGSCC resistant material, corrosion resistant cladding on the internal diameter of the nozzle buttering, and Induction Heat Stress Improvement (IHSI). These activities provided welds that are Generic Letter 88-01 IGSCC Category "A." The resultant welds were examined using the standard industry techniques for IGSCC at that time. Typical volumetric examination coverage was previously reported to be greater than 90%. The radial shrinkage caused by the IHSI in the heat affected zone areas during the construction of the welds prevents full contact of the ultrasonic testing (UT) probes.

**Burden Caused by Compliance**

Removal of the nozzle base metal by grinding or machining would be required to obtain a surface conducive for examination. Therefore, obtaining essentially 100% coverage is not feasible or practical.

**Proposed Alternative and Basis for Use**

In lieu of performing the code-required examinations, CNS proposes to examine the accessible portions of reactor vessel nozzle-to-safe-end welds to the extent practical. The examinations were performed in accordance with Appendix VIII of ASME Section XI using qualified personnel, procedures and equipment with the applicable limitations set forth in 10 CFR 50.55a. The current Performance Demonstration Initiative (PDI) techniques that implement Appendix VIII of ASME Section XI are more restrictive on the requirements for weld profiles. The current examinations are considered more reliable than previously performed volumetric examinations.

The weld profile shown in Figure RI-22-1, indicates that the shrinkage in the heat affected zone on the nozzle side caused a greater than 1/32" gap between the UT search unit and examination surface. Both axial UT scans obtained 100% coverage necessary to detect circumferential flaws. However, the circumferential scans necessary to detect axial flaws could not be fully obtained. The circumferential scan on the safe-end was obtained but the circumferential scan on the nozzle side could not be obtained thus resulting in the combined volumetric coverage estimates provided in Table RI-22-1.

The examination coverage achieved for the required examination volume of ASME Section XI Figure IWB-2500-8 and the CNS Risk-Informed Program was obtained as follows:

- 50% Code volume based on achieving 100% coverage of the two required axial scans for the detection of circumferentially oriented flaws
- 25% Code volume based on achieving 100% coverage of one the two required circumferential scans for the detection of axially oriented flaws

The coverage calculation is based on obtaining full coverage on three of the four scans:

- Axial scan coverage (50%) + Circumferential scan coverage ( $50\%/2=25\%$ ) = 75%

**Duration of Proposed Alternative**

Relief is requested for the fourth ten-year interval of the Inservice Inspection Program for CNS.

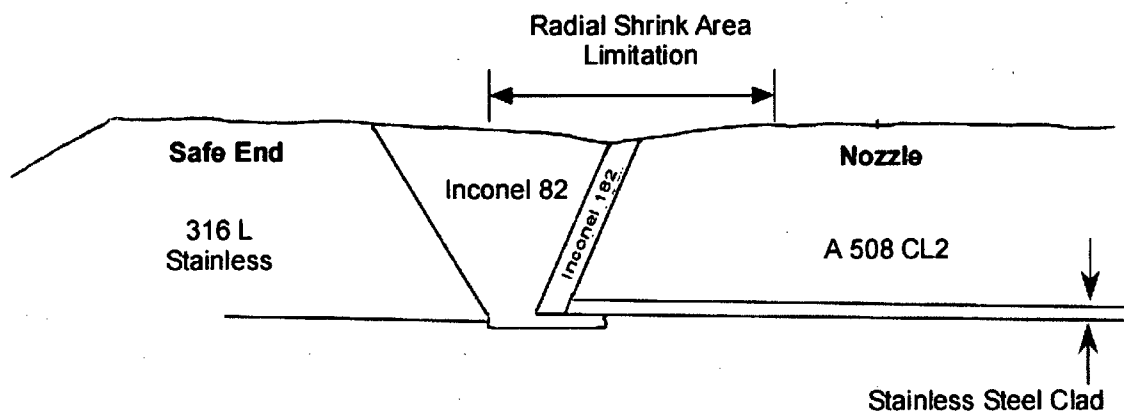
**Relief Request Table RI-22-1**

<b>Weld Number</b>	<b>System</b>	<b>Access Restrictions</b>	<b>% Examined</b>
CS-BF-1x	Core Spray	Weld Contour	75
RRE-BF-1	Recirculation Outlet	Weld Contour	75
RRH-BF-1	Recirculation Outlet	Weld Contour	75
RRK-BF-1	Recirculation Outlet	Weld Contour	75

The figure below shows the examination volume limitations to the applicable examination zones as required per ASME Section XI, Figure IWB-2500-8:

**FIGURE RI-22-1**

(Typical)





Correspondence Number: NLS2009006

The following table identifies those actions committed to by Nebraska Public Power District (NPPD) in this document. Any other actions discussed in the submittal represent intended or planned actions by NPPD. They are described for information only and are not regulatory commitments. Please notify the Licensing Manager at Cooper Nuclear Station of any questions regarding this document or any associated regulatory commitments.

COMMITMENT	COMMITMENT NUMBER	COMMITTED DATE OR OUTAGE
None	N/A	N/A