Nebraska Public Power District
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NLS2009072
September 18, 2009

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

Subject: Response to Request for Additional Information Regarding 10 CFR 50.55a Request RI-21, Revision 0, and Request RI-22, Revision 0
Cooper Nuclear Station, Docket No. 50-298, DPR-46

References:
1. Letter from Carl F. Lyon, U. S. Nuclear Regulatory Commission, to Stewart B. Minahan, Nebraska Public Power District, dated July 31, 2009, "Cooper Nuclear Station – Request for Additional Information Re: Relief Request Nos. RI-21 and RI-22 (TAC Nos. ME0687 and ME0688)"
2. Letter from Brian J. O'Grady, Nebraska Public Power District, to the U. S. Nuclear Regulatory Commission, dated February 16, 2009, "10 CFR 50.55a Request Number RI-21, Revision 0, and Request Number RI-22, Revision 0"

Dear Sir or Madam:

The purpose of this letter is for the Nebraska Public Power District to submit a response to the Nuclear Regulatory Commission (NRC) Request for Additional Information (RAI) dated July 31, 2009 (Reference 1). The additional information requested by the RAI is in support of the NRC review of 10 CFR 50.55a requests for Cooper Nuclear Station (CNS) submitted by letter dated February 16, 2009 (Reference 2). The 10 CFR 50.55a requests submitted by Reference 2 proposed alternatives to the weld coverage requirements of Section XI of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code concerning Reactor Pressure Vessel nozzle-to-vessel welds and nozzle-to-safe end butt welds.

The response to the RAI is provided in the attachment to this letter.

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As stated in Reference 2, approval of these requests is requested 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.

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

Sincerely,

Brian J. O'Grady
Site Vice President

/dm

Attachment

cc: Regional Administrator w/ attachment
USNRC - Region IV

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

Senior Resident Inspector w/ attachment
USNRC - CNS

Nebraska Health and Human Services w/ attachment
Department of Regulation and Licensure

NPG Distribution w/ attachment

CNS Records w/ attachment

Attachment

**Response to Request for Additional Information
Regarding 10 CFR 50.55a Request RI-21, Revision 0, and Request RI-22, Revision 0**

Cooper Nuclear Station (CNS), Docket No. 50-298, DPR-46

The U. S. Nuclear Regulatory Commission (NRC) staff has reviewed the information provided by the Nebraska Public Power District (the licensee) for Cooper Nuclear Station in its letter dated February 16, 2009, and determined that additional information is necessary to complete the review of relief request nos. RI-21 and RI-22. Please provide a response which addresses the following questions.

RI-21

NRC Question No. 1

Provide a more detailed description of the physical interferences (i.e., limitations that make increasing ultrasonic examination coverage impractical.)

Nebraska Public Power District (NPPD) Response

The nozzle geometry itself limits the physical access of the ultrasonic examination (UT) probes to only single sided access as shown in Figure RI-21-1 of the Relief Request. The UT examinations can only be performed from the vessel side of the nozzle to vessel weld as no current qualified techniques exist for performing UT examinations from the nozzle bore or reactor vessel inside diameter (ID) in order to achieve >90% coverage.

NRC Question No. 2

Provide a more detailed description of the design changes necessary to obtain the required degree of non-destructive examination (NDE) coverage.

NPPD Response

Complete redesign and replacement of the reactor vessel nozzles would be needed to provide enough clearance so the nozzle to vessel weld could be examined from the nozzle side as well as the vessel side. Such a replacement is considered impractical due to the significant dose and extensive outage time needed to complete these changes without a compensating increase in safety for an installed reactor vessel.

NRC Question No. 3

Explain how the proposed partial examination, alternative, or additional examinations provide reasonable assurance of the continued structural integrity of the components.

NPPD Response

The proposed alternative recognizes the limitations in the nozzle geometry that affect examination coverage. The inner 15% of the nozzle to vessel weld (i.e., the vessel ID side) was fully interrogated which is the key area of interest for service induced flaws initiated on the inside diameter of the weld and heat affected zone. No indications were identified providing reasonable assurance that continued structural integrity will be maintained. Furthermore, as described in BWRVIP-108 which has been reviewed by the NRC, the total probabilities of failure for the nozzle-to-vessel welds are consistent with NRC goals.

NRC Question No. 4

Provide a description of all inspections performed on the subject components during the fourth inspection interval, including volumetric, surface, and visual inspections. Provide all results of those examinations.

NPPD Response

The nozzle-to-shell welds in this request have been examined ultrasonically once during the fourth interval and are visually examined (VT-2) during the ASME Section XI Class 1 system pressure test each refueling outage. The UT examinations performed in this interval did not detect any service induced flaws. The VT-2 examinations performed as part of the reactor vessel pressure test also did not detect any leaks in these welds.

NRC Question No. 5

Describe how imposing the applicable regulatory requirement from which relief is being sought would be a burden on the licensee.

NPPD Response

As stated in the response to question 2, it is impractical to modify the nozzle-to-shell configuration to improve examination coverage.

RI-22

NRC Question No. 1

Provide a more detailed description of the design changes necessary to obtain the required degree of NDE coverage.

NPPD Response

Examination coverage was limited due to weld shrinkage in the heat affected zone on the nozzle resulting in a greater than 1/32" gap between the search unit and examination surface. As stated in RI-22, no external weld conditioning is possible without removing the nozzle base material in order to achieve a smooth surface needed for the additional circumferential scan that could not be performed thus limiting the examination coverage to 75%. As an alternative, a modification that would improve examination coverage by improving the nozzle weld surface would be to install a weld overlay subject to NRC approval. We believe that the installation of this repair method to improve weld coverage is impractical as the significant cost and estimated dose to install this type of modification is not commensurate with the incremental increase in safety.

NRC Question No. 2

Explain how the proposed partial examination, alternative, or additional examinations provide reasonable assurance of the continued structural integrity of the components.

NPPD Response

The examination was able to interrogate the root area and the heat affected zones in the inner 1/3 of the weld. This is the primary area of concern for service induced intergranular stress corrosion cracking (IGSCC) flaws. These welds along with the safe-ends were replaced in the 1984-85 outage with material resistant to IGSCC using Inconel-82 welds that included an Inconel-82 corrosion resistant cladding over the existing Inconel-182 weld butter, and a secondary mitigation method of Induction Heating Stress Improvement was applied. 100% coverage of the two axial scans did not detect any circumferentially oriented flaws. 100% coverage of one of the two required circumferential scans for the detection of axially oriented flaws did not detect any flaws. The examinations performed plus the IGSCC resistance of these welds provides reasonable assurance of the continued structural integrity of these welds.

NRC Question No. 3

Provide a description of all inspections performed on the subject components during the fourth inspection interval, including volumetric, surface, and visual inspections. Provide all results of those examinations.

NPPD Response

The nozzle-to-safe end welds in this request have been examined ultrasonically once during the fourth interval and are visually examined during the system pressure test each refueling outage in accordance with ASME Section XI, Category B-P. Surface examinations are not required in accordance with the CNS Risk-Informed ISI Program. The UT examinations performed in this interval did not detect any service induced flaws. The VT-2 examinations performed as part of the reactor vessel pressure test also did not detect any leaks in these welds.

NRC Question No. 4

The American Society of Mechanical Engineers (ASME) Code Section XI, 2001 Edition, 2003 Addenda, Table IWB-2500-1, Examination Category B-F, Item B5.10, requires 100 percent volumetric and a surface examination of the pressure retaining dissimilar metal welds in vessel nozzles as defined by Figure IWB-2500-8. Discuss the surface examination and provide the results of this examination.

NPPD Response

The B-F welds did not receive a surface examination but only received an ultrasonic examination in accordance with Relief Request RI-34 that implements the CNS Risk-Informed ISI Program consistent with the methodology as described in EPRI TR-112657B-A "Revised Risk-Informed Inservice Inspection Evaluation Procedure" as reviewed by the NRC per Safety Evaluation dated October 28, 1999. RI-34 was approved by the NRC on 11/3/2006 per TAC No. MD0283.

NRC Question No. 5

Describe how imposing the applicable regulatory requirement from which relief is being sought would be a burden on the licensee.

NPPD Response

As stated in the response to question 1, it is impractical to modify the nozzle-to-safe end configuration to improve examination coverage. 75% of the required volume was examined.

ATTACHMENT 3 LIST OF REGULATORY COMMITMENTS©[4]

Correspondence Number: NLS2009072

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