Nebraska Public Power District

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NLS970088
May 7, 1997

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

Subject: Inspection of Core Spray Spargers and Piping
Cooper Nuclear Station, NRC Docket 50-298, DPR-46

Reference 1. Letter (No. NLS950228) to USNRC Document Control Desk from J. H. Mueller (NPPD) dated November 22, 1995, "IE Bulletin Response; Visual Inspection of Core Spray Spargers"

2. Letter (No. NLS950244) USNRC Document Control Desk from J. H. Mueller (NPPD) dated December 18, 1995, "Follow-up Information to IE Bulletin Response; Visual Inspection of Core Spray Spargers"

3. Letter to G. R. Horn (NPPD) from J. R. Hall (USNRC) dated December 21, 1995, "Cooper Nuclear Station - Evaluation of Core Spray Piping Indications" (TAC No. M94097).

4. Letter (No. NLS960007) to USNRC Document Control Desk from J. H. Mueller (NPPD) dated March 29, 1996, "Impact of Core Spray Line Crack Indications"

5. Letter (No. NLS960198) to USNRC Document Control Desk from P. D. Graham (NPPD) dated November 27, 1996, "Inspection of Core Spray Spargers and Piping"

The purpose of this letter is to report the results of the re-examinations of three indications on the Core Spray piping in the Reactor Pressure Vessel at Cooper Nuclear Station (CNS) performed during the 1997 refueling outage.

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Background

In References 1 and 2, the Nebraska Public Power District (the District) reported the results of the Core Spray Sparger and Piping examinations performed during the 1995 refueling outage, provided an evaluation of three crack-like indications, and provided a supporting fracture mechanics evaluation. In Reference 3, the Commission provided their findings with respect to the evaluation of the indications and authorized operation for one additional cycle. In Reference 4, the District provided additional information regarding the potential impact of the postulated cracks in the Core Spray lines. In Reference 5, the District notified the Commission that future examinations of the Core Spray Spargers and Piping would be performed in accordance with the Boiling Water Reactor Vessel Internals Project guidelines, BWRVIP-18.

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The indications observed visually in 1995 were also examined ultrasonically at that time. Two of the indications were confirmed, and the surface lengths corresponded with the visual examination results. The third indication was not confirmed ultrasonically, but was conservatively assumed to be relevant.

Discussion

The District has recently (during the 1997 refueling outage) completed visual re-examinations of the three indications previously identified using enhanced visual techniques in accordance with BWRVIP-18. Prior to the visual examinations, the surfaces were cleaned with a nylon bristle brush. The examinations did not identify any change in the length in two of the indications. The third indication could not be located after cleaning. This same indication could not be confirmed by ultrasonic examination during the 1995 outage.

The three indications were also re-examined ultrasonically during the 1997 refueling outage using bi-directional, focused, dual element 65° shear wave units. This technique satisfies the BWRVIP-18 criteria and was approved by EPRI. A summary of inspection results reported in 1995 and 1997, and maximum allowable flaw sizes from the analysis submitted in Reference 1, is attached.

Although proximity guidance contained in ASME Section XI would allow the indications on the A-loop #1 weld to be considered separately, the total length was evaluated considering the indications to be connected as was done in 1995. On this basis, the length was slightly greater than the length reported in 1995; however, still within the analyzed maximum flaw length considering two cycles of crack growth. The length of the indication on the A-loop #21 weld was slightly greater than the length reported in 1995. The length reported in 1997 for this weld was well within the analyzed maximum flaw length considering two cycles of crack growth. No flaws were identified in the area of the B-loop #12 weld. We now believe that this third indication reported in 1995 is non-relevant.

The minor changes in the reported indication lengths may have resulted from either differences in UT examination methods, or from crack growth. If crack growth is indeed occurring, the rate is significantly less than the bounding rate assumed in the analysis submitted in Reference 1, and the conclusions of this analysis remain valid.

The absense of significant growth in the indications, and the fracture mechanics evaluation submitted with References 1 and 2, demonstrate that flaw sizes at the end of the next fuel cycle will not exceed the Code allowable flaw lengths. Based on the previous evaluations, the additional information submitted in Reference 4, and using the criteria in BWRVIP-18, there is sufficient justification for at least one additional cycle of operation. The District will re-examine the two indication sites again during the 1998 refueling outage in accordance with the BWRVIP-18 criteria.

As governed per CNS procedures, the results of BWRVIP-18 inspections performed during the 1997 refueling outage will be included in the ISI Summary Report.

If you have any questions regarding this submittal, please call.

Sincerely,

P D Graham

P. D. Graham
Vice President-Nuclear

/dnm
Attachment

cc: Regional Administrator
USNRC- Region IV

Senior Project Manager
USNRC-NRR Project Directorate

Senior Resident Inspector
USNRC

NPG Distribution

Summary of Inspection Results reported in 1995 and 1997 and Maximum Allowable Flaw Sizes

Weld Number	Length Reported In 1995 (inches)	Length Measured In 1997 (inches)	Projected Length At Next Cycle (inches) *	Maximum Allowable Flaw Size
A1	8.9	9.1	10.3	11.8
A21	5.5	5.6	6.8	11.8
B12	1.5	NA	NA	10.7

* Crack growth rate assumed to be 5×10^{-5} inches per hour, or 1.2 inches per 18 month operating cycle.

Correspondence No: NLS970088

The following table identifies those actions committed to by the District in this document. Any other actions discussed in the submittal represent intended or planned actions by the District. They are described to the NRC for the NRC's information 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	COMMITTED DATE OR OUTAGE
The District will re-examine the two indication sites again during the 1998 refueling outage in accordance with the BWRVIP-18 criteria.	Refueling Outage 18