

APPENDIX B

U. S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 50-298/85-20

License: DPR-46

Docket: 50-298

Licensee: Nebraska Public Power District (NPPD)
P. O. Box 499
Columbus, Nebraska 68601

Facility Name: Cooper Nuclear Station (CNS)

Inspection At: CNS Site, Brownville, Nebraska

Inspection Conducted: June 24-28, 1985

Inspector:

I. Barnes

I. Barnes, Reactor Inspector, Project Section A
Reactor Projects Branch

8/22/85

Date

Approved:

J. P. Gaudon

J. P. Gaudon, Chief, Project Section A
Reactor Projects Branch

8/23/85

Date

Inspection Summary

Inspection Conducted June 24-28, 1985 (Report 50-298/85-20)

Areas Inspected: Nonroutine, unannounced inspection of jet pump installation problems, closeout of IE Bulletin 80-07, and review of head spray system modification. The inspection involved 35 inspector-hours onsite by one NRC inspector.

Results: Within the three areas inspected, one violation was identified (failure to specify the of applicability of 10 CFR Part 21 in purchase documents, paragraph 4).

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DETAILS

1. Persons Contacted

NPPD

- *P. V. Thomason, Division Manager, Nuclear Operations
- *D. A. Whitman, Technical Staff Manager
- *J. Meacham, Technical Manager
- *V. L. Wolstenholm, CNS Quality Assurance (QA) Manager
- *C. R. Goings, Regulatory Compliance Specialist
- G. Horn, CNS Construction Manager
- F. Schaaf, Technical Supervisor, Construction

NRC

D. L. Dubois, Senior Resident Inspector, Region IV, CNS

In addition to those listed, the NRC inspector held discussions with several other licensee employees.

*Denotes those present at the exit interview.

2. Followup on Jet Pump Installation Problems

Seating problems were encountered by CNS during reinstallation of jet pumps, following completion of recirculation, core spray, and reactor water cleanup piping replacement. Five pairs of jet pumps exhibited normal fitup, with no problems encountered. Three pairs of jet pumps exhibited a minor alignment problem with one jet pump in the pair. These three pairs of jet pumps were properly seated prior to the inspection by the General Electric Company (GE) use of a "tensioning-in" procedure. The remaining two pairs (i.e., the external pairs on Loop B, Nos. 1 and 2 and 9 and 10) were found to be misaligned to an extent precluding seating by "tensioning-in."

The NRC inspector reviewed the methodology used for recirculation inlet nozzle, safe end and thermal sleeve replacement, in an attempt to ascertain whether the practices used could have lead to unrecognized axial and lateral displacement of jet pump risers. Specific attention was paid to types of dimensional inspections performed and dimensional tolerances.

The NRC inspector noted no anomalies during this review and found no reason to question the approach and controls used for safe end and thermal sleeve replacement. A review was additionally performed of the process control records (i.e., task work packages) applicable to the safe end and

thermal sleeve replacement activities on the 30° and 150° recirculation inlet nozzles, to assess compliance with specified dimensional requirements. These nozzles are the specific vessel recirculation inlet nozzles which are connected via the thermal sleeve to the jet pump risers leading to the Nos. 1 and 2 and 9 and 10 jet pump pairs. A comparative review was also made of the safe and thermal sleeve replacement records for the 60° recirculation inlet nozzle which was connected to a jet pump pair, Nos. 7 and 8, that had been installed without encountering any seating problems. The dimensional data was noted to be similar for the replacements on all three recirculation inlet nozzles and did not suggest any significant displacement from original position had occurred on the jet pump risers leading from the 30° and 150° nozzles.

The NRC inspector reviewed an outline of the assessments that had been performed with respect to options for resolution of jet pump alignment problems. The GE proposed approach for seating the remaining two pairs of jet pumps involved cutting adjusting set screws on the assembly restrainer bracket and replacing them with a new design of wedge after successful pump installation. A mockup of the wedge was examined by the NRC inspector. Design change documents, including a 10 CFR 50.59 evaluation, were stated to be in the course of preparation by GE and were thus not available for review during this inspection. Review of the formal design change records is considered an open item (298/8520-01).

Within this area of inspection, no violations or deviations were identified.

3. Closeout of IE Bulletin 80-07: BWR Jet Pump Assembly Failure

IE Bulletin 80-07 was issued as a result of a BWR jet pump failure and disassembly occurrence at Dresden 3. Investigation established that the hold-down beam for the jet pump failed as a result of the propagation of intergranular stress corrosion cracks through the beam. Subsequent visual and ultrasonic (UT) examinations of other hold-down beams at Dresden 3 and other facilities found more such cracks. IE Bulletin 80-07 was issued April 4, 1980, to licensees of all GE BWR/3 and BWR/4 operating facilities to require daily operability surveillance of jet pumps and nondestructive examinations every refueling outage. CNS responded to the bulletin on May 5, 1980, and May 21, 1980, indicating that there were no cracked beams at CNS and that required surveillance had been implemented. These responses were verified by NRC Inspection Report 50-298/80-09.

The closeout status of IE Bulletin 80-07 is documented in NUREG/CR-3052, which was published in November 1984. This report includes recommended actions for long-term resolution of the jet pump problem and suggested followup actions for the NRC Regional Offices. The specific suggestions for Region IV followup at CNS were to verify that: (a) the improved

operability surveillance described in Bulletin Item B.2 or GE SIL #330 continues to be implemented daily until either the plant Technical Specifications are revised to call for this surveillance or all improved BWR/4-6 beams with new heat treatment and 25 kips preload are installed; (b) original BWR/4-6 beams with 30 kips preload are UT examined every refueling outage; and (c) all beams, including BWR/4-6 beams with new heat treatment and 25 kips preload, are scheduled for inservice inspection at intervals of 10 years.

The NRC inspector ascertained, upon commencing the suggested CNS followup, that CNS had procured the improved BWR/4-6 beams with new heat treatment in May 1984 by Purchase Order (PO) No. 226028. These beams are being installed by GE during the current outage. Installation of the improved BWR/4-6 beams thus reduced the scope of the NUREG/CR-3052 suggested followup items to verification that provisions were being made for performance of inservice inspection at 10-year intervals. Review of the design change for the beam replacement activity, MDC No. 85-41, approved June 7, 1985, showed the following requirement in paragraph VIID, "Update ISI program to reflect jet pump beam replacement." This subject is considered an open item pending verification that the inservice inspection program has been formally revised to reflect inspection of the new beams at 10-year intervals (298/8520-02).

Within this area of inspection, no violations or deviations were identified.

4. Review of Vessel Head Spray System Modification

The NRC inspector performed a review of the planned partial elimination of the vessel head spray system. This activity, which will be accomplished during the current outage, involves removal of inside containment system piping and placement of blind flanges on the vessel head spray nozzle flange and on the piping flange located before the refueling bulkhead penetration. The NRC inspector reviewed the contents of Special Test Procedure No. STP-85-8, approved June 7, 1985, pertaining to the modification. The supporting calculations for the flanges were examined and a review made of the provisions made to isolate and leak rate test inside and outside containment system motor operated valve Nos. MO-32 and MO-33. The applicable POs for the flanges and studs, Nos. 231236 and 236067, respectively, were examined for compliance with CNS QA program requirements and original system specification requirements; i.e., NPPD Contract E69-4, "Mechanical Piping, Equipment and Erection," Vendor certified material test reports (CMTRs) were examined for compliance with PO requirements and also to ascertain that required receiving inspection had been performed.

During review of the POs, the NRC inspector noted that the items had been classified as essential-commercial grade by engineering personnel. A review was made of the definition of essential-commercial grade contained

in QAI-9, Revision 9, effective date May 4, 1982, "Guidelines for Establishing Quality Classifications of Components and Materials." This classification was defined as, "essential items that are not subject to design or specification requirements which are unique to nuclear facilities or activities, and are to be ordered from the manufacturer's published product description, e.g., catalog, as off-the-shelf items." As a result of this classification, 10 CFR Part 21 was not denoted in the POs for the flanges and studs as being applicable. Review of NPPD Contract E69-4 showed that the original piping system had been designed in accordance with the USAS B31.7 Code, "Nuclear Power Piping." Paragraph 2.4 in the CNS Quality Assurance Program for Operation states, in part, "... To maximum practicable, the as-built drawings and specifications for Cooper Nuclear Station will be utilized in procurement of spare parts, materials, and replacement parts" Review by the NRC inspector indicated that, as a minimum, the blind flange and studs utilized to attach the flange to the vessel head spray nozzle flange fell within the 10 CFR Part 21 definition of a basic component necessary to assure the integrity of the reactor coolant pressure boundary. Accordingly, the failure to impose in procurement documents that the provisions of 10 CFR Part 21 apply is an apparent violation (298/8520-03).

The NRC inspector additionally noted, during review of vendor CMTRs for the blind flanges, that identical mechanical properties were stated for the ordered 1500lb and 900lb flanges. The flanges, which were received separately in November 1984 and March 1985, were reported on the respective CMTRs as having received a normalizing heat treatment at 1600-1650°F for 12 hours (1500lb) and 5 hours (900lb). Paragraph 6.1.1.1 in the applicable material specifications, ASME Material Specification SA 350, requires that the test block receive the same heat treatment as the finished products represented. The apparent use of a single test block to cover two different normalizing furnace times is considered an unresolved item (298/8520-04), pending licensee action to resolve the question concerning CMTRs. The NRC inspector did conclude that the 1500lb flange (i.e., the reactor pressure boundary flange) was apparently satisfactory for installation.

5. Unresolved Item

An unresolved item is one about which more information is required in order to determine whether or not it is a violation, a deviation, or acceptable. There was one unresolved item found during this inspection; it was as follows:

<u>Para</u>	<u>Subject</u>	<u>Number</u>
4	Certified Material Test Report	8520-04

6. Exit Interview

An exit interview was conducted on June 28, 1985, at the CNS site with those personnel denoted in paragraph 1 of this report. The NRC inspector summarized the scope and findings of the inspection.