

APPENDIX A

U. S. NUCLEAR REGULATORY COMMISSION  
REGION IV

NRC Inspection Report: 50-298/84-14

License/CP: DPR-46

Docket: 50-298

Licensee: Nebraska Public Power District  
P. O. Box 499  
Columbus, NE 68601

Facility Name: Cooper Nuclear Station (CNS)

Inspection At: General Office, Columbus, Nebraska, and CNS Site,  
Brownville, Nebraska

Inspection Conducted: June 25-29, 1984

Inspectors: E.H. Johnson 7/31/84  
FOL I. Barnes, Reactor Inspector, Reactor Project Date  
Section A, Branch 1

Approved: E.H. Johnson 7/31/84  
FOL J. P. Jaudon, Chief, Reactor Project Section A, Date  
Branch 1

Inspection Summary

Inspection Conducted June 25-29, 1984 (Report 50-298/84-14)

Areas Inspected: Routine, unannounced inspection of facility modification activities associated with recirculation loop, core spray loop, and reactor water clean-up piping replacement.

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The inspection involved 13 inspector-hours onsite and 16 inspector-hours at the Columbus General Office by one NRC inspector.

Results: Within the one area inspected, no violations or deviations were identified.

DETAILS

1. Persons Contacted

- \*\*C. Goings, Regulatory Compliance Specialist
- \*\*G. Horn, Construction Manager, CNS
  - L. Kohles, Project Manager, IGSCC, Nuclear Services
- \*L. Kuncil, Assistant General Manager, Nuclear
- \*J. Pilant, Manager, Technical Staff, Nuclear Power Group
- \*\*P. Thomason, Division Manager, Nuclear Operations
  - G. Trevors, Division Manager, Quality Assurance
  - R. Warnke, Construction Administrator, CNS
- \*J. Weaver, Manager, Licensing and Safety, Nuclear Services
- \*R. Wilbur, Division Manager, Nuclear Services
- \*F. Williams, General Office Quality Assurance Manager
- \*\*V. Wolstenholme, CNS Quality Assurance Manager

\*Indicates presence at exit interview conducted June 27, 1984, at the Columbus General Office.

\*\*Indicates presence at exit interview conducted June 29, 1984, at the CNS site.

2. Facility Modification Activities

The purpose of this inspection was to ascertain whether or not procurement activities associated with planned replacement of recirculation loop, core spray loop and reactor water clean-up piping were being accomplished in conformance with licensee commitments. The inspection additionally included both an initial review of the piping installation contract and a review of the licensee and installation contractor project organizations that have been established to perform and control the piping replacement activities.

- a. Procurement Control - The NRC inspector reviewed the procurement control commitments contained in: (1) Appendix D to the CNS Updated Safety Analysis Report (Quality Assurance Program for Operation); Quality Assurance Instruction QAI-16, Revision 7 (Vendors Qualification); and Quality Assurance Plan QAP-1400, Revision 11 (Procurement and Control of Essential Spare Parts, Equipment, Materials and Service). Specific technical and quality assurance requirements for the replacement piping subassemblies were ascertained by review of NPPD Contract No. 83-41 through Addendum No. 2, dated November 23, 1983. From this review and examination of vendor documentation and audit records, the NRC inspector identified the following information and inspection findings:

- (1) Fabricator Service Selection and Surveillance - Contract No. 83-41 required that the contractor possess a documented quality

assurance program which implemented applicable portions of ANSI N45.2, Appendix B to 10 CFR Part 50, and the ASME Section III Code for Class 1 components. Material manufacture, identification, and certification were required to be in accordance with Section III of the ASME Code. The NRC inspector ascertained that Ishikawajima-Harima Heavy Industries (IHI) had been selected for fabrication of the replacement piping subassemblies, with pipe and fittings being furnished to IHI by Sumitomo Metal Industries (SMI). General Office Quality Assurance had approved IHI, a holder of ASME Certificates of Authorization for N and NPT stamps, on the basis of their ASME accepted QA manual and an implementation audit performed in March 1984. This method of approval was consistent with NPPD quality assurance program commitments. The audit of IHI was performed by a joint Westinghouse and NPPD audit team, with Westinghouse also being retained to perform source surveillance of IHI and their subcontractors. Surveillance records were not reviewed during this inspection. Contract No. 83-41 also required that the material manufacturer either hold an ASME Quality System Certificate (Materials), or be surveyed, qualified, and approved by NPPD or the material supplier. SMI, the selected material manufacturer, has facilities which hold current ASME Quality System Certificates (Materials) for manufacture of both tubular and wrought ferrous products.

- (2) Contract No. 83-41 Technical Requirements - Replacement piping subassemblies were specified to be fabricated, examined, and tested in accordance with the provisions of the 1983 Edition of Section III (Subsection NB, Class 1 Components) and Section IX of the ASME Code. The selected composition was a Type 316 austenitic stainless steel of restricted chemistry. Limitations were also imposed on permissible melting processes and the maximum ferrite content that could be developed, as determined by use of Figure NB-2433.1, in Section III of the ASME Code. Material grain size and cleanliness requirements were invoked and supplementary analyses and mechanical tests to those required by the material specifications were also specified. Solution annealing heat treatment was invoked for material items and fabricated subassemblies. Freedom from susceptibility to intergranular attack was required to be demonstrated for each base material product form and weld material by testing in accordance with the requirements of ASTM A-262.

During review of Contract No. 83-41, the NRC inspector noted that IHI was required to perform radiographic and liquid penetrant examinations of welds. This is in conformance with the nondestructive examination requirements of Section III of the ASME Code for Class 1 components. It did not appear from

review of the contract that IHI was required to perform ultrasonic examination (UT) of pressure boundary welds, nor were specific instructions included in the finishing requirements with respect to achieving a weld surface condition that would permit a meaningful UT. In that UT is the common method for performing Section XI of the ASME Code inservice inspections, the NRC inspector attempted to ascertain what commitments had been made to the NRC with respect to baseline examination of the replacement piping welds. The NRC inspector was unable to determine this information since the CNS project engineer was on leave during the inspection.

This is considered an unresolved item pending determination of licensee baseline examination commitments and planning.  
(298/8414-01)

- (3) Procurement Document Control - The NRC inspector made a comparison review of Contract No. 83-41 against the Impell design specifications for the CNS piping replacement program, in order to verify that the technical requirements were consistent. During review of fabricator source selection information referenced above in paragraph 2.a.(1), it was noted that one of the findings of the audit of IHI pertained to the identification of a permissible maximum cobalt content in an IHI material procurement specification of 0.3%, rather than the 0.15% maximum value allowed by Contract No. 83-41. This finding was attributed in the audit report to an error in a telex instruction to IHI. The NRC inspector was informed that the telex had been transmitted by Impe11 for the purpose of increasing permissible maximum base material copper content to 0.3%, but had inadvertently used the chemical symbol for cobalt rather than copper. A formal revision to the contract had not been made as of this inspection to denote the change in permissible copper content. A draft contract amendment dated June 14, 1984, was, however, made available which included this change.

The NRC inspector ascertained during the inspection that IHI had recently been requested to qualify welding procedures using the Type 316 restricted composition welding materials which had been specified for the contract. It was noted, however, that the General Office Quality Assurance copies of IHI submitted welding procedures, which had utilized Type 308 filler materials for procedure qualification, were stamped as being approved by NPPD. An index had not currently been prepared by NPPD to show the scope and status of revisions made to Contract No. 83-41 since issue of Addendum No. 2 dated November 23, 1983. Similarly, use of telexes without formal revision of the contract precluded

ready determination of whether document control was consistent with quality assurance program commitments. Project document control is considered an open item pending verification that contract revisions and vendor responses are being appropriately reviewed and approved. (298/8414-02)

- (4) Installer Source Selection - The NRC inspector ascertained that Chicago Bridge and Iron Company (CB&I) had been selected for installation of the replacement piping subassemblies. File review for this vendor showed that approval had been recommended by CNS Quality Assurance by memorandum, based upon review of the CB&I Nuclear Quality Assurance Manual, Issue 10, and an implementation audit performed at the Fermi Site in March 1984. Quality Assurance Instruction QAI-16, Revision 7, requires that each audit be performed using formal QA Audit Work Sheets or similar checklists. A copy of the audit report for the memorandum referenced audit of CB&I at the Fermi Site was not in the General Office Quality Assurance files. The NRC inspector was informed that, as a result of the NPPD failure to prepared a documented report for the audit of CB&I at the Fermi Site, Gilbert Commonwealth had performed an additional audit of CB&I for NPPD. A copy of the Gilbert Commonwealth audit report was also not in the CB&I vendor file. This was attributed by the General Office Quality Assurance Manager to Gilbert Commonwealth not transmitting audit reports until audit findings are closed out.

This is considered an open item pending review of the audit report. (8414-03)

- (5) Receiving Inspection - The NRC inspector was informed that receiving inspection of fabricated piping subassemblies would be performed at the CNS Site. Receiving inspection instructions and storage details had not been established as of this inspection. From discussions with CNS Site personnel, it was ascertained that it was planned to augment the CNS Site Quality Assurance staff with four additional personnel for the duration of the piping replacement project. Review of Project Procedure No. NPM-01, Revision 01 (Document and Correspondence Control) indicated that responsibility for review of all vendor data was assigned to the project engineer, with discipline engineers being assigned as appropriate for participation in the review process.

There were no violations or deviations identified in this area of the inspection.

- b. Piping Installation Contract - The NRC inspector made an initial review of the welding and nondestructive examination requirements contained in the piping installation contract, Contract No. 84-2. This review was performed to verify both conformance with the provisions of Section III of the ASME Code for Class 1 components and the use of similar technical criteria to those imposed on the piping fabricator. A total of five required procedures had been submitted by CB&I for NPPD review as of this inspection, with most being required by contract to be submitted 60 days before scheduled shutdown; i.e., approximately mid-July 1984. A listing of required CB&I contract documentation had not been completed as of this inspection, but was stated by the CNS Construction Administrator to be in preparation. No specific provisions were noted in Contract No. 84-2 with respect to UT of pressure boundary welds at weld finish requirements to allow performance of UT by others.

The NRC inspector was informed that CB&I had made a mockup of the drywell area at their Memphis facility for the purpose of training welding supervision and developing welding procedures for nozzle safe end replacement activities. Use of mockups for training craft welding personnel was also stated to be planned for the CNS Site. Remote controlled cutting and welding equipment are being furnished by GAPCO for removal and replacement of the piping systems.

There were no violations or deviations identified in this area of the inspection.

- c. Licensee and Contractor Project Organizations - From discussions with NPPD personnel and review of organization charts for the piping replacement project, it was ascertained that the senior licensee project representative at the CNS Site is the Construction Manager. The Construction Manager reports for this project to the Project Manager - IGSCC, who is based at the NPPD Columbus General Office in the Division of Nuclear Services. CB&I has submitted a project organization to NPPD. Management, supervisory, and technical personnel will be furnished by CB&I, with Union craft personnel from Omaha being utilized for the project. Technicians are also being provided by GAPCO, in addition to the automated cutting and welding equipment.

There were no violations or deviations identified in this area of the inspection.

### 3. Unresolved Items

An unresolved item is an inspection finding about which more information is needed in order to determine whether the item is acceptable, a

violation, or a deviation. There was one unresolved item discussed in this report. This item was:

<u>Number</u>	<u>Paragraph</u>	<u>Description</u>
298/8414-01	2	Provisions for baseline inspection of replacement piping welds

4. Exit Interview

Exit interviews were conducted with those personnel denoted in paragraph 1 of this report on June 27, 1984, at the Columbus General Office, and on June 29, 1984, at the CNS Site. The senior resident inspector and section chief, Reactor Project Section A, also attended the meeting at the CNS Site. At these interviews, the NRC inspector summarized the scope and findings of the inspection. During the exit at the CNS Site, the NRC inspector was informed that it was planned to perform baseline UT of replacement piping pressure boundary welds in parallel with the radiographic examinations required by Contract No. 84-2.