

APPENDIX B

U. S. NUCLEAR REGULATORY COMMISSION  
REGION IV

NRC Inspection Report: 50-298/88-07

License: DPR-46

Docket: 50-298

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

Facility Name: Cooper Nuclear Station (CNS)

Inspection At: Cooper Nuclear Station, Nemaha County, Nebraska

Inspection Conducted: March 1-April 15, 1988

Inspectors: *E. A. Plettner*  
E. A. Plettner, Resident Inspector, (RI)

4/18/88  
Date

*W. R. Bennett*  
W. R. Bennett, Senior Resident Inspector, (SRI)

4/18/88  
Date

Approved: *E. J. Hoiler*  
E. J. Hoiler, Chief, Project Section C,  
Reactor Projects Division

5/10/88  
Date

Inspection Summary

Inspection Conducted March 1 through April 15, 1988 (Report 50-298/88-07)

Areas Inspected: Routine, unannounced inspection of operational safety verification, containment local leak rate test, monthly surveillance and maintenance observations, ESF walkdown, outage, refueling, shutdown, radiological protection, and security.

Results: Within the areas inspected, one violation was identified (failure to follow a health physics procedure, paragraph 11).

DETAILS1. Persons ContactedPrincipal Licensee Employees

- \*G. R. Horn, Division Manager of Nuclear Operations
- \*R. D. Black, Operations Supervisor
- \*D. M. Norvell, Maintenance Manager
- \*J. V. Sayer, Radiological Manager
- \*G. E. Smith, Quality Assurance Manager
- \*L. E. Bray, Regulatory Compliance Specialist
- \*G. R. Smith, Licensing Supervisor

The NRC inspectors also interviewed other licensee employees during the inspection period.

\*Denotes those present during the exit interview conducted on April 15, 1988.

2. Licensee Action on Previous Inspection Findings

(Closed) Open Item 298/8709-01: Deficient As-Built Instrument Drawing - This item involved discrepancies between System Operating Procedure (SOP) 2.2.20, Revision 23, Appendix A, "Valve Checklist Number 2" and Cooper-Bessemer as-built drawing KSV-46-5; and between SOP 2.2.12, Revision 8, Appendix A, "Valve Checklist" and Burns & Roe as-built drawing Nos. 2077 and 2011, Sheet 1. Drawing Change Notice (DCN) 87-1682 was issued to correct labeling deficiencies on KSV-46-5. DCN 88-29 was issued to correct labeling deficiencies on Drawing No. 2011, Sheet 1. DCNs 87-154 and 88-174 were issued to correct labeling deficiencies on Drawing No. 2077.

The RI compared SOP 2.2.20, Revision 27, Appendix A, to Drawing KSV-46-5; and SOP 2.2.12, Revision 10, dated October 22, 1987, Appendix A, to Drawings 2011 and 2077, and found no discrepancies.

This item is closed.

(Closed) Open Item 298/8712-01: 10 CFR 50.59 Conflict with USAR - This item involved conflict between the CNS Updated Safety Analysis Report (USAR) Section 13, paragraph 9.5, and the Safety Review and Audit Board (SRAB) Instructions and Guidelines, Section 1.2. The conflict involved the academic requirements of board members. The USAR required that all members have degrees. The SRAB Instructions and Guidelines stated that they shall have a B.S. degree, or equivalent experience. The

licensee submitted to the NRC a change to the USAR which was approved on July 22, 1987, to resolve the conflict. The RI verified agreement between the USAR and the SRAB Instructions and Guidelines.

This item is closed.

(Closed) Violation 298/8728-03: Failure to Maintain Secondary Containment Integrity - This item involved the reactor building railroad airlock doors. With the inner door open while the outer door was closed, air gaps existed between the outer door and the ground. Corrective actions taken by the licensee were to generate two new procedures, which provide detailed instructions to verify integrity of secondary containment penetrations, and to fabricate and mount signs on the airlock doors stating "Prior to shutting either railroad airlock door, insure that the associated railseal plates are installed." The RI reviewed Surveillance Procedure 6.3.10.17, "Secondary Containment Penetration Inspection," Revision 0, dated March 1, 1988, and Maintenance Procedure 7.0.10, "Railroad Airlock Door Operations," Revision 0, dated March 1, 1988, to verify that corrective actions were complete and adequate. The RI verified that signs were mounted on the railroad airlock doors.

This item is closed.

### 3. Operational Safety Verification

The NRC inspectors observed operational activities throughout the inspection period. Control room activities and conduct were observed to be well controlled. Proper control room staffing was maintained. The NRC inspectors observed selected shift turnover meetings and noted that information concerning plant status was communicated to the oncoming operators.

Tours of accessible areas at the facility were conducted to confirm operability of plant equipment including the fire suppression systems and other emergency equipment. The NRC inspectors performed a walkdown of the Residual Heat Removal (RHR) System. Results of this walkdown are documented in paragraph 7 of this report.

Operators were cognizant of maintenance being performed during the outage and how it affected operation of the plant. Limiting conditions for operation (LCOs) were properly entered when safety equipment was inoperable for maintenance. Required surveillance testing was properly performed when LCOs were in effect.

A tagout desk was setup outside the control room (CR) during the outage. This allowed qualified personnel to review work packages and initiate tagouts for work performance without having extra personnel in the CR area. This greatly reduced the congestion in the CR and aided the on-watch operators in maintaining plant status.

No violations or deviations were identified in this area.

#### 4. Containment Local Leak Rate Test

The RI performed direct observation, record review, and independent calculations associated with the Containment Local Leak Rate Test (LLRT) program conducted by CNS. The purpose of this inspection was to verify that primary containment local leak rate tests, as required by CNS TS were performed to ensure that leakage through testable containment penetrations and isolation valves would not exceed the allowable leakage specified. The RI observed the performance of Surveillance Procedure (SP) 6.3.1.1, "Primary Containment Local Leak Rate Test," Revision 22, dated February 25, 1988, Attachment 3, for RHR MOV-M021A, M026A, M031A, M0166A, and M0167A. Personnel performing the test were cognizant of all precautions associated with the test and performed the test in accordance with applicable procedures. The RI performed independent calculations of LLRT data for the above listed valves and for other valves tested by the procedure. These calculations were in agreement with those performed by licensee personnel during performance of the test.

The sum of as-found leakages determined during LLRTs exceeds the requirement of TS. The licensee will evaluate valves for repair and perform applicable LLRTs subsequent to any repairs. The licensee will issue a Licensee Event Report (LER) to document exceeding requirements for allowable leakage.

No violations or deviations were identified in this area.

#### 5. Monthly Surveillance Observations

The NRC inspectors observed and reviewed the performance of Nuclear Performance Procedure (NPP) 10.5, "LPRM Calibration," Surveillance Procedure (SP) 6.3.12.1, "Diesel Generator Operability Test," SP 6.3.5.1, "RHR Test Mode Surveillance Operation," SP 6.2.3.3., "Drywell Air Sampling System Calibration and Functional/Functional Test," and SP 6.3.8.2, "SLC Pump Operability Test."

- ° NPP 10.5, "LPRM Calibration," Revision 19, dated February 1, 1988, Attachment 1, "Tip System Operation": This test was performed on March 1, 1988, to verify that Local Power Range Monitors were within calibration. The RI observed that the test was performed by qualified personnel who were cognizant of all precautions associated with the test. The test was performed in accordance with all applicable procedures.
- ° SP 6.3.12.1, "Diesel Generator Operability Test," Revision 22, dated November 19, 1987: This test was performed on March 29, 1988, to verify operability of No. 2 Diesel Generator (DG) after performance of the annual inspection. The SRI observed that the test was performed by qualified operators who were cognizant of all surveillance requirements. Maintenance identified a potential problem with one cylinder during the test. A broken ring and scored

liner were discovered on one cylinder, and the ring and liner were replaced. SP 6.3.12.1 was repeated on April 5, 1988, and subsequently, DG No. 2 was declared operable.

- ° SP 6.3.5.1, "RHR Test Mode Surveillance Operation," Revision 27, dated February 25, 1988: This test was performed on April 6, 1988, to verify RHR Loop B (Pumps B and D) operability subsequent to maintenance performed on Loop B. The SRI reviewed the surveillance and determined that all data was properly verified to be acceptable per the procedure and TS. The test was properly reviewed by all required personnel.
- ° SP 6.2.3.3, "Drywell Air Sampling System and Functional/Functional Test," Revision 21, dated August 7, 1986. This test was performed on April 7, 1988, as acceptance testing for maintenance performed on the drywell particulate monitor per Work Item (WI) 88-1618. This test was performed by a qualified technician in accordance with approved procedures. The SRI noted that the procedure was written in such a manner that, at times, it was difficult to follow. Discussions with licensee personnel determined that the procedure was being rewritten and the revision was in the review and approval process.
- ° SP 6.3.8.2, "SLC Pump Operability Test," Revision 27, dated March 3, 1988: This test was performed on April 11, 1988, to verify operability per TS 3/4.4 and to meet requirements for inservice testing. The test was performed by qualified personnel who were cognizant of procedure requirements. The SRI verified that all test equipment used during the procedure was in calibration. The SRI observed that independent verification was properly performed and that seals were properly reinstalled on appropriate valves.

No violations or deviations were identified in this area.

#### 6. Monthly Maintenance Observation

The NRC inspectors verified that the maintenance activities were conducted in accordance with approved procedures, regulatory guides, and industry codes or standards, and in conformance with TS.

On March 16, 1988, the RI observed the performance of Preventive Maintenance (PM) No. 03728, "Inlet and Outlet Cooler Tubes Inspection," and associated Equipment Clearance and Release Order 88-378, RRLO-HX A and -HX B, dated March 15, 1988. The RI observed maintenance personnel performing the PM and noted that it was performed in a professional manner and that the personnel were cognizant of all procedural requirements. All clearance order tags were appropriately identified and hung in accordance with the equipment clearance and release order.

The NRC inspectors observed maintenance personnel perform Surveillance Procedure (SP) 6.3.12.6, "Diesel Generator Annual Inspection," Revision 20, dated June 12, 1986, and associated Maintenance Work

Request (MWR) 88-0866 for DG No. 2. This procedure was performed to meet TS requirements that the diesel generator be inspected in accordance with instructions based on the manufacturer's recommendations. The NRC inspectors observed that maintenance personnel were aware of the requirements of the inspection, and performed the inspection in accordance with the procedure. DG No. 2 was declared operable on April 5, 1988, after appropriate acceptance testing was performed.

On March 31, 1988, the SRI observed the performance of hydrostatic testing on "B" RHR heat exchangers per WI 88-1009. The hydro was performed as acceptance testing following maintenance. The SRI observed that the test was properly performed in accordance with Maintenance Procedure (MP) 7.0.8, "Pressure Testing," Revision 4, dated November 5, 1987. The SRI noted that quality control hold points were properly observed and that the proper test pressure was maintained throughout the test.

No violations or deviations were identified in this area.

#### 7. Engineered Safety (ESF) Feature Walkdown

The NRC inspectors performed an independent walkdown of Loop B of the RHR system. The inspection was performed to verify operability, to confirm that licensee system lineup procedures match plant drawings and the as-built configuration, and to identify equipment conditions or items that might degrade system performance. This system was chosen because Loop B had just been declared operable following maintenance performed during the outage.

In preparation for performing the walkdown of the RHR system, the NRC inspectors conducted a review and comparison of the following licensee system checklist and applicable as-built drawings:

- SOP 2.2.69A, "Residual Heat Removal Valve Checklist," Revision 1, dated March 3, 1988
- As-Built Drawing - Burns & Roe 2040 - "RHR System"
- General Electric Diagram 729E211BB - "RHR System"

During the walkdown minor discrepancies involving missing labels were noted which did not affect system operability. The licensee was notified of these discrepancies and initiated actions to correct them.

During the inspection, the NRC inspectors verified proper positioning and tagging of valves associated with the A Loop of the RHR system which was inoperable due to maintenance being performed on the system.

No violations or deviations were identified in this area.

## 8. Outage

The licensee commenced a refueling outage on March 5, 1988. In addition to refueling, numerous maintenance items and modifications are being performed including diesel generation inspection, replacement of 125V batteries, detailed control room design review human factors modifications, motor control center upgrades, and Standby Liquid Control System modifications.

The licensee performed maintenance on all "Loop B" safety systems simultaneously while maintaining all "Loop A" systems operable. Upon completion of "Loop B" maintenance, the NRC inspectors monitored and reviewed acceptance testing of "Loop B" safety systems as they were declared operable. The switchover from "Loop A" to "Loop B" was performed in a controlled, conservative manner. The NRC inspectors observed that acceptance testing and system lineups were properly performed. Limiting conditions for operations were properly observed at all times, and TS were properly reviewed whenever a system or systems was inoperable.

The NRC inspectors observed the implementation of Design Change 87-029B "MCC Qualification Upgrade," approved on February 25, 1988, and associated Maintenance Work Request, MWR 88-1081. The purpose of the upgrade was to refurbish breakers located within the Motor Control Centers (MCC) to meet environmental qualification standards. The NRC inspectors observed the electrical craft personnel performing their duties in a professional manner, and in accordance with procedures. Quality control hold points were observed. Quality control personnel performed their duties in a professional manner. The assigned system engineers were also observed during the implementation of the design change and during performance of acceptance testing.

On March 16, 1988, the RI observed the performance of Design Change 87-043, "Replacement of NBI Pressure Switches," approved on March 4, 1988, and associated MWR 88-1057. The purpose of the design change was to upgrade current pressure switches with environmentally qualified pressure switches. The RI observed the instrumentation and control personnel perform their duties in a professional manner and in accordance with the design change procedure. The assigned system engineer was also present at various times to observe the performance of the work.

The NRC inspectors observed the replacement of 125V battery 1B in accordance with Design Change 87-073. The design change was implemented in accordance with the applicable procedures. Surveillance Procedure (SP) 6.3.15.7, "125V Batteries 1A and 1B Service Test," Revision 0, was approved on March 31, 1988, to perform the acceptance test for the new battery. The procedure was based on manufacturer's recommendations and was performed in addition to testing previously observed by licensee personnel at the battery manufacturers. SP 6.3.15.7 was completed on April 4, 1988.

No violations or deviations were identified in this area.



## 9. Refueling

The NRC inspectors held discussions with fuel handling and control room personnel, observed fuel movement, verified fuel assemblies locations in the spent fuel pool and the reactor, accountability records, and status board updates during this inspection period. The NRC inspectors also reviewed the licensee's procedures and records concerning the movement of fuel and storage of fuel assemblies. Included as part of those reviews were SP 6.1.2.7, "Refueling Platform Interlocks and System Functional Tests," Revision 23, dated November 12, 1987, with attachments to the procedure, NPP 10.21, "Special Nuclear Materials Control and Accountability Instructions," Revision 1, dated May 14, 1987, NPP 10.25, "Fueling," Revision 8, dated February 12, 1987, and NPP 10.26, "Working Over or In Reactor Vessel Requirements," Revision 1, dated March 10, 1988. Three different operating shifts were observed during this inspection period. Each operating shift was cognizant of the requirements of the various procedures, and performed their duties in a controlled and professional manner. All required surveillances were performed including daily surveillances of "A" Standby Gas Treatment and "A" Standby Liquid Control when the "B" trains of those systems were inoperative for maintenance.

On March 7, 1988, the SRI questioned the licensee's intent to lift the reactor vessel head prior to demonstrating the ability of secondary containment to maintain 1/4-inch of water vacuum under calm wind conditions, as stated in TS 4.7.C.1.c. Paragraph 4.7.C of TS Bases implies that this test should be done prior to the time that primary containment is opened for refueling. Discussions were held among the licensee, SRI, NRR project manager, and NRC Region IV management. It was agreed that the test to demonstrate secondary containment need only be performed prior to fuel movement. The licensee committed to reviewing TS to determine if a change to TS 4.7.C Bases was required. The test (SP 6.3.10.8, "Secondary Containment Leak Test, Revision 9, dated December 17, 1987) was completed satisfactorily on March 9, 1988, prior to commencing fuel handling operations.

No violations or deviations were identified in this area.

## 10. Shutdown

The NRC inspectors held discussions with operations shift personnel and reviewed control room records including log entries, record traces, and computer printouts associated with the scheduled shutdown. The shutdown started at 4:30 a.m., on March 6, 1988. The shutdown was required in order to perform the refueling of the reactor, preventive maintenance activity on selected equipment, and install approved plant design changes. The RI reviewed General Operating Procedure (GOP) 2.1.4, "Normal Shutdown from Power," Revision 27, dated December 10, 1987. Other procedures which were reviewed in whole or in part were GOP 2.1.10, "Station Power

Changes," Revision 15, dated December 10, 1987, and GOP 2.1.20, "RPB Refueling Preparation," Revision 12, dated February 18, 1988. During the shutdown, two safety system challenges occurred:

- ° A Group II, III, and VI Isolation was received at 4:31 a.m. on March 5, 1988, because of a reactor vessel low-water setpoint (+12.5 inches) being reached. The event was attributed to a reactor vessel water level "shrink" which occurs on a reactor scram. The manual scram was initiated at 25 percent power as part of the normal shutdown procedure.
- ° A Group III Isolation was received at 2:40 p.m. on March 5, 1988, because of an indicated reactor water cleanup (RWCU) system high-flow condition. The incorrect indication was the result of pump cavitation due to the loss of net positive suction head to the pump.

Notification of each event was made to the NRC headquarters operation central duty officer as required. In addition, the SRI was notified when the events occurred.

No violations or deviations were identified in this area.

#### 11. Radiological Protection Observations

The NRC inspectors verified that selected activities of the licensee's radiological protection program were implemented in conformance with facility policies, procedures, and regulatory requirements. Radiation work permits contained appropriate information to ensure that work could be performed in a safe and controlled manner. Radiation and/or contaminated areas were properly posted and controlled. Radiation monitors were utilized to check for contamination.

During a routine plant tour on March 28, 1988, the RI observed an individual inside a posted radiation area in the heater bay room with shoe covers and gloves, which is normal attire for a tour and inspection of the area. However, in this case, Special Work Permit (SWP) 88-3-46, issued on March 21, 1988, for the area, did not allow for tour and inspection, and required additional protective clothing. No other SWP was assigned to the area. The RI questioned the individual to ascertain whether permission had been received from health physics personnel to be in the area with only shoe covers and gloves. The individual responded that no permission had been received. Failure to comply with Health Physics Procedure (HPP) 9.1.1.4, "Special Work Permit," Revision 16, dated April 15, 1987, and SWP 88-3-46, titled, "Bypass Valves," is an apparent violation. (298/8807-01)

The licensee took immediate corrective actions when notified of the problem.

No other violations or deviations were identified in this area.

12. Security

The NRC inspectors observed security personnel perform their duties of vehicle, personnel, and package search. Vehicles were properly authorized and escorted or controlled within the protected area (PA). The PA barrier had adequate illumination and the isolation zones were free of transient material. Compensatory measures were implemented in a timely manner when equipment failed or when security doors were required to be open for work being performed during the outage. These observations verified that the physical security plan was being implemented in accordance with the requirements established in the CNS Operating License.

No violations or deviations were identified in this area.

13. Exit Interview

An exit interview was conducted on April 15, 1988, with licensee representatives (identified in paragraph 1). During this interview, the SRI reviewed the scope and findings of the inspection.