

APPENDIX B

U. S. NUCLEAR REGULATORY COMMISSION  
REGION IV

NRC Inspection Report: 50-298/88-06

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: February 1-29, 1988

Inspectors: E. A. Plettner 3/1/88  
E. A. Plettner, Resident Inspector, (RI) Date

W. R. Bennett 3/1/88  
W. R. Bennett, Senior Resident Inspector, (SRI) Date

Approved: E. J. Haller 3/28/88  
E. J. Haller, Chief, Project Section C, Date  
Reactor Projects Division

Inspection SummaryInspection Conducted through, 1987 (Report 50-298/86-06)

Areas Inspected: Routine, unannounced inspection of licensee actions on previous inspection findings, operational safety verification, licensee event report followup, IE Bulletin 84-02 followup, monthly surveillance and maintenance observations, radiological protection, and security.

Results: Within the areas inspected, three violations were identified (failure to verify jet pump operability, paragraph 3, failure to follow fire protection procedures, paragraph 3, and failure to perform adequate review, paragraph 3).

## DETAILS

### 1. Persons Contacted

#### Principal Licensee Employees

- \*G. R. Horn, Division Manager of Nuclear Operations
- \*J. M. Meacham, Senior Manager, Technical Support
- \*LuAnn Bray, Regulatory Compliance Specialist
- \*G. E. Smith, Manager, Operations Quality Assurance
- \*R. D. Black, Supervisor, Operations
- \*D. M. Norvell, Manager, Maintenance
- \*M. D. Hamm, Supervisor, Security
- \*R. Brungardt, Manager, Operations
- \*E. M. Mace, Manager, Engineering

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

\*Denotes those present during exit interview March 1, 1988.

### 2. Licensee Action on Previous Inspection Findings

(Closed) Violation 298/8601-01: Failure to Have Procedures for Preventative Maintenance.

This item involved the lack of Preventative Maintenance (PM) procedures for all of the plant equipment that could affect nuclear safety. Cooper Nuclear Station did not have procedures which prescribed the manner in which the existing PM program had been developed, or which required the station program to be maintained current with changing vendor recommendations. Corrective action taken by the licensee was to initiate a PM upgrade program. The program consisted of comparing the existing station PM requirements to the vendor recommendation, and resolving the differences either by generating new PMs or surveillance procedures, or by an engineering evaluation to provide a documented disposition for not performing vendor recommended actions. The NRC Resident Inspector (RI) reviewed Cooper Nuclear Station's Operation Manual Procedure 0.24, "Generating and Dispositioning Vendor Manual Change Requests," Revision 2, dated July 30, 1987, and CNS Procedure 0.25, "Vendor Manual Change Order Review and Approval," Revision 3, dated December 23, 1987 to verify that formal procedure controls for maintaining the program were implemented. Vendor manuals relating to plant equipment that could affect safety were reviewed to verify that vendor manual updates had been received.

This item is closed.

## (Closed) Open Item 8724-01: Labeling Deficiencies

This item identified labeling deficiencies among System Operating Procedures (SOP) 2.2.23, "120 V/240 V AC Instrument Power System," Revision 14, dated December 28, 1986, Appendix "B" Breaker and Fuse Index, Revision 12; SOP 2.2.24, "250 V DC Electrical System," Revision 13, dated February 6, 1986, Appendix "B" Breaker and Fuse Index, Revision 10; SOP 2.2.25, "125 V DC Electrical System," Revision 16, dated February 20, 1987, Appendix "B" Breaker and Fuse Index, Revision 10; and SOP 2.2.26, "24 V DC Electrical System," Revision 7, dated March 5, 1987, Appendix "B" Breaker and Fuse Index, Revision 4. The licensee's corrective actions were to issue correct labels on the breaker boxes and submit new revisions to Appendix "B" for each of the SOPs listed above. The RI reviewed the latest revisions to the above SOPs dated January 14, 1988, and compared those revisions to various breaker panels to verify that licensee's corrective actions were completed and adequate.

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. Discussions with operators determined that they were cognizant of plant status and understood the importance of, and reason for, each lit annunciator. The NRC inspectors observed selected shift turnover meetings and noted that information concerning plant status was communicated to the oncoming operators.

On February 7, 1988, the NRC Senior Resident Inspector (SRI) observed a reactor startup. The plant had experienced a reactor scram on January 28, 1988, which was documented in NRC Inspection Report 50-298/87-33. All conditions for startup were properly met and documented in General Operating Procedure (GOP) 2.1.1.2, "Technical Specification Pre-Startup Checks," Revision 7, dated December 10, 1987. The startup was conducted in a controlled, professional manner in accordance with GOP 2.1.1, "Cold Startup Procedure," Revision 48, dated December 10, 1987.

Some difficulty was initially encountered in verifying normal jet pump indication as required by GOP 2.1.1.2 and jet pump operability as required by Technical Specification (TS) 3.6.E.1. The December 10, 1987, revision to GOP 2.1.1.2 added a reference to CNS Surveillance Procedure (SP) 6.2.4.1, which does the daily jet pump operability check. When the surveillance test was run, it failed. Subsequently, TS requirements were met when log readings for the previous startup were compared with actual readings. The SRI asked operations personnel how jet pump operability had been verified for previous startups and was informed that it had generally not been done until the reactor was at power. Subsequent questioning of other senior operators verified that the TS was not specifically checked until the reactor was at power, however, several operators stated that they checked

jet pump differential pressure to verify it was normal prior to startup. This failure to verify jet pump operability prior to startup is an apparent violation (298/8806-01) of TS 3.6.E.1.

Tours of accessible areas at the facility were conducted to confirm operability of plant equipment including the fire suppression systems and other emergency equipment. Facility operations were performed in accordance with the requirements established in the CNS Operating License and TS.

On February 8, 1988, the NRC inspector was performing a normal routine plant inspection. While reviewing fire extinguisher monthly inspection tags for fire extinguishers located on electric welders and oxygen-acetylene welders, it was noted that inspections had not been performed during the month of January. Review of SP 6.4.5.17, "Fire Fighting Equipment Monthly Inspection," Revision 14, dated July 16, 1987, performed January 1988, confirmed that the monthly inspection had not been performed on fire extinguishers located on electric and oxygen-acetylene welders. Interviews conducted with the individuals involved verified that the surveillance procedure had not been performed.

The results of the interviews indicate the root cause of the missed surveillance to be both a programmatic problem and a personnel error. The programmatic problem is that no formal program exists to alert other individuals of surveillance requirements when the regularly assigned person is not available for an extended period of time. The personnel error in this case was that the individual regularly assigned for scheduling the surveillance forgot to update his desk calendar when the new year started. The desk calendar was the means he used to identify the time frame for the surveillance.

Failure to perform SP 6.4.5.17, "Fire Fighting Equipment Monthly Inspection," Revision 14, dated July 15, 1987, Attachment "A," for fire extinguishers located on various electric and oxygen-acetylene welders during January 1988 is an apparent violation. (298/8806-02)

The RI reviewed the test results of completed SP 6.4.5.17 covering the time from August 1987 to January 1988. During the review it was noted that the "verified-by" block had not been initialed as completed on page 3 of Attachment E for 23 entries for the inspection performed during the month of December 1987. The "verified-by" block had not been initialed as completed on page 3 of Attachment E for 1 entry for the inspection performed during January 1988. The documents were reviewed by the surveillance coordinator and reviewed and signed by the system engineer. The RI reviewed the test results of SP 6.4.5.1, "Fire Protection System monthly Inspection," Revision 44, dated March 19, 1987, and Revision 45, dated December 17, 1987 performed from August 1987 to January 1988. During the review it was noted that an out-of-specifications reading was

recorded in Attachment "A," page 7, Section E, performed on December 19, 1987. The main output amps reading for fire protection tank 1A was recorded as 0.16 amps with the limits printed next to the reading as (0-0.15 amps.) This procedure was reviewed by a shift supervisor and the surveillance coordinator, and reviewed and signed by the system engineer.

The SRI reviewed GOP 2.1.1.2 "Technical Specifications Pre-Startup Checks," Revision 7, dated December 10, 1987, performed on February 7, 1988. During the review it was noted that Item 13 on page 5 was not signed as completed. This procedure was reviewed by the shift supervisor. The procedure does not require review in addition to that of the shift supervisor. The NRC inspectors were able to determine through interviews that the SPs and GOP had been completed as required. Failure to perform an adequate review of the SPs and GOP identified above is an apparent violation. (298/8806-03)

No other violations or deviations were identified in this area.

#### 4. Licensee Event Report (LER) Followup

(Closed) LER 87-009, "Unanticipated Reactor Scram and Group Isolations Due to Low Reactor Vessel Water Level Caused by Inadvertent Manual Trip of the Operating Reactor Feedwater Pump."

This event occurred when a station operator (nonlicensed) locally tripped the only running reactor feed pump during a local trip test for placing the second feed pump in service. This action resulted in a low reactor water level scram. Normal scram recovery procedures were implemented and the plant was placed into cold shutdown. A contributing factor to this event was a lack of human factor labeling of plant components and equipment. Corrective actions taken by the licensee included: (a) discussion of the event with operations department shift personnel during weekly meetings, (b) a comprehensive review of plant component/equipment identification and the marking for human factors consideration, and (c) an engineering evaluation to determine the basis for the local trip test. The RI reviewed attendance forms for weekly meetings for operations department shift operating personnel and interviewed several operators to verify that the event was discussed with the required personnel. The licensee completed the plant component/equipment identification program in December 1987. All major plant components were appropriately labeled with large placards painted on the item to clearly mark the component. The licensee through its engineering evaluation determined that the local trip test should be performed during a startup after a planned outage. System Operating Procedure (SOP) 2.2.28, "Feedwater System," Revision 43, dated July 1, 1987, contained the appropriate revision.

This item is closed.

5. IE Bulletin 84-02

IE Bulletin 84-02 concerns failures of General Electric Type HFA relays in use in class 1E safety systems. The licensee, in Letter NLS8400018, dated July 16, 1984, committed to replace all HFA relays associated with safety-related systems at CNS during the Fall, 1984 refueling outage. This bulletin was interpreted by the licensee to require changeout of AC HFA relays only. This bulletin was closed out in NRC Inspection Report 50-298/84-20.

During review of the bulletin, the licensee determined that the bulletin required replacement of all (AC and DC) HFA relays. This error was discussed by the licensee with the SRI, and the licensee committed to issue a supplemental response to IE Bulletin 84-02 explaining the additional actions which will be taken in response to the bulletin. The bulletin is considered open for purposes of tracking.

No violations or deviations were identified in this area.

6. Monthly Surveillance Observations

The NRC inspectors observed and reviewed the performance of Surveillance Procedure (SP) 6.3.5.1, "RHR Test Mode Surveillance Operation," SP 6.2.4.1, "CS Test Mode Surveillance Operation," SP 6.3.5.5, "RHR Pump Operability Test," and SP 6.3.3.1, "HPCI Test Mode Surveillance Operation."

- o SP 6.3.5.1 "RHR Test Mode Surveillance Operation," Revision 26, dated October 8, 1987; SP 6.3.4.1, CS Test Mode Surveillance Operation," Revision 21, dated September 11, 1987; and SP 6.3.5.5, "RHR Pump Operability Test," Revision 15, dated October 8, 1987. These surveillances were performed on February 7, 1988, to prove operability after testing and maintenance (described in paragraph 7 of this report), and prior to startup. SP 6.3.5.5 verified operability of RHR Pump "B" and flow verifications for Pump "B" and loop "B" (pumps "B" and "D"). These surveillances were performed by qualified operators who were cognizant of all surveillance requirements. Limiting conditions for operations were properly entered for the surveillance testing. The SRI observed that the operators performing the tests were aware of all precautions associated with the tests, and performed the tests in accordance with applicable procedures. All data was properly reviewed and verified to be acceptable per the procedures and TS.
- o The RI observed in its entirety the performance of SP 6.3.3.1, "HPCI Test Mode Surveillance Operation," Revision 27, dated October 29, 1987. The surveillance was performed on February 24, 1988, to meet the HPCI Pump Monthly Operability Requirement of TS. Testing was performed by two licensed reactor operators in accordance with the procedure which included minor changes as designated by a temporary procedure change notice. The operators performed the procedure in a

professional manner and were cognizant of all procedure requirements. The NRC Resident Inspector reviewed the completed procedure to verify that all test results conformed with TS and procedure requirements.

No violations or deviations were identified in this area.

7. 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 Technical Specifications.

The SRI monitored maintenance action associated with "B" Residual Heat Removal (RHR) pump. On January 28, 1988, "B" RHR pump breaker tripped when the pump was started to transfer water following the reactor scram which occurred on the same day. Troubleshooting determined that there was a ground in the motor. The motor was subsequently removed and shipped to General Electric to determine the source of the ground. It was subsequently determined that there was an "end turn" ground on one of the coils of the motor. No root cause for the ground has been determined as yet. To ensure that the ground was not associated with other ECCS pumps, the licensee performed a polarization index measurement on all ECCS pump motors to evaluate the insulation. In addition, an AC hipot test was performed on RHR pump "C" and "D" motors to demonstrate ample ground wall insulation strength. After testing proved operability of all other ECCS pumps, RHR "B" pump motor was replaced with another motor which was equivalent. The new motor was qualified by the licensee and replaced in accordance with Design Change 88-071 "RHR Pump Motor Replacement" and Maintenance Work Request 88-0598.

No violations or deviations were identified in this area.

8. 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 RI reviewed an employee time report for assigned security personnel for February 10, 1988. The review was performed to verify that manning requirements stated in the security plan in the CNS operating license were in compliance. Site tours were conducted by the NRC inspectors to ensure that compensatory measures were properly implemented as required because of some nonfunctional security equipment. The PA barrier had adequate illumination and the isolation zones were free of transient material.

No violations or deviations were identified in this area.

9. 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. Personnel in radiation controlled areas were wearing the required personnel monitoring equipment and protective clothing. Radiation and/or contaminated areas were properly posted and controlled based on the activity levels within the area. Radiation monitors were utilized to check for contamination.

No violations or deviations were identified in this area.

10. Exit Interviews

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