

APPENDIX B

U.S. NUCLEAR REGULATORY COMMISSION  
REGION IV

NRC Inspection Report: 50-298/89-25

Operating License: DPR-46

Docket: 50-298

Licensee: Nebraska Public Power District (NPPD)  
P.O. Box 499  
Columbus, Nebraska 68602-0499

Facility Name: Cooper Nuclear Station (CNS)

Inspection At: CNS, Nemaha County, Nebraska

Inspection Conducted: July 1-31, 1989

Inspectors:

*Gregory A. Pick*

G. A. Pick, Resident Inspector, Project  
Section C, Division of Reactor Projects

8/15/89

Date

Approved:

*W.R. Bennett*

W. R. Bennett, Senior Resident Inspector  
Project Section C, Division of Reactor Projects

8/15/89

Date

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Inspection Summary

Inspection Conducted July 1-31, 1989 (Report 50-298/89-25)

Areas Inspected: Routine, unannounced inspection of followup on previously identified items, licensee event report followup, operational safety verification, and monthly surveillance and maintenance observations.

Results: Within the areas inspected, one apparent deviation was identified (improper records storage of permanent QA records, paragraph 3).

The licensee demonstrated proactive planning by requesting a study to demonstrate operation at higher-than-normal river water temperatures; however, information in the initial justification for continued operation was not comprehensive enough to demonstrate that safe operation could be assured. The licensee was taking initial steps towards establishing thermography as a predictive maintenance tool.

DETAILS

1. Persons Contacted

Principal Licensee Employees

\*G. R. Horn, Division Manager of Nuclear Operations  
\*J. M. Meacham, Senior Manager Operations  
\*E. M. Mace, Engineering Manager  
\*J. V. Sayer, Radiological Manager  
\*R. Brungardt, Operations Manager  
\*J. W. Dutton, Training Manager  
\*R. L. Gardner, Maintenance Manager  
\*G. E. Smith, Quality Assurance Manager  
\*G. R. Smith, Licensing Supervisor  
\*L. E. Bray, Regulatory Compliance Specialist  
\*M. Estes, Management Trainee

\*Denotes those present during the exit interview conducted on August 3, 1989.

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

2. Plant Status

The plant operated at essentially 100 percent power throughout the inspection period.

3. Followup on Previously Identified Findings (92702)

(Open) Violation (298/8831-01) Unescorted Access to Vital and Protected Areas with Training Expired - The inspector reviewed immediate corrective actions and activities being implemented to prevent recurrence. The inspector verified that Nuclear Training Guideline (NTG) 113, "Site Access Monthly Report," Revision 0, dated December 2, 1988, provided guidance for identifying overdue training and for transmitting this information to access control.

As stated in the licensee's response to the violation, an upgrade of the records system was being implemented. A consultant was hired in March 1989 to review the existing training records system. This report, published in April 1989, recommended revalidation of existing records, development of record keeping procedures, and improved computer data entry and reporting capabilities.

The inspector reviewed ongoing activities relative to revalidation of existing records. From discussions with the training manager and the training services coordinator, the inspector determined that formal procedures were not created, nor were they required, for revalidation of

the existing records. However, oral instructions were provided to complement the record clerks' familiarity with the documentation to assure that all required information was present on the records. The information required was determined by the training manager to be the "minimum amount of information needed to make a complete record." The missing information consisted of administrative type information such as course number, course title, and revision number. The licensee stated that attendee names were not added to the training records. When information was missing from the training forms, the clerks were required to go to the responsible training department supervisor to obtain the appropriate information. The supervisors were required to initial next to the change indicating their concurrence with the accuracy of the information. Interviews with the training department supervisors indicated that the missing information for training records had been supplied at the request of clerks.

As revalidation of the training records was completed, the data on the records was input to computer data base. Five temporary employees were hired to input data related to the historical records. The data required to be entered was requested by computer prompts, which provided "the minimum amount of information needed to make a complete record." This software package is an interim measure and a more comprehensive software package is expected to be operational in September 1989, as committed to by the licensee. Concurrent with development of the training records, computer software is the development of procedures for records receipt and inspection, training file data entry, and preparation of training records packages. These procedures will require, in part, that incomplete records be returned to the department supervisor for completion prior to acceptance in the records area.

The training department estimates an entry-on-duty date of August 1, 1989, for a "records specialist" who, the training manager stated, should bring needed experience to continue enhancement and improvement of the training records system.

The inspector reviewed the training audits for the past 2 years. The training department was responsive to quality assurance (QA) findings and QA observations contained in the 1987 audit. Responses to the 1988 audit findings were being completed; however, the site QA organization was not being apprised of the corrective action status. A memorandum, dated May 30, 1989, from the QA Department to the Division Manager Nuclear Support and the Division Manager of Quality Assurance indicated that corrective actions had not been implemented by the scheduled due date. The memorandum requested that new, estimated completion dates be provided as soon as possible, but no later than June 15, 1989. The necessity to issue this memorandum indicated a failure to request an extension in a timely manner. Additionally, prior to the memorandum being generated, several telephone contacts requesting an estimated completion date had been made with no results. The inspector determined that estimated completion dates had been provided to the QA Department by memorandum on July 28, 1989, from the Division Manager Nuclear Support. The response was 6 weeks late. The inspector noted that a QA Specialist had reviewed

the corrective actions related to two of the QA findings and determined them to be acceptable.

The inspector inspected the area where the training records are stored. These records are not duplicated elsewhere and include some that are considered QA records, such as records that support the qualification status of licensed operators.

The records area has the outer building cinder block walls on two sides and on the other two sides are interior temporary gypsum walls with aluminum studs. The records are kept in file cabinets rated at 350°F for 1 hour. Additionally, four sprinkler heads in the room are actuated at 165°F. The interior walls of the room are not coated with any sealant to protect the records from moisture or condensation. The training building has not had a fire hazards analysis conducted to determine the combustible loading for the storage of records. There was no documentation indicating that frames and hardware have a 4-hour rating. The door for entry into the room is made of wood. Additionally, a window is located in the room with no provisions to prevent vandalism.

ANSI N45.2.9-1974, "Requirements for Collection, Storage, and Maintenance of Quality Assurance Records for Nuclear Power Plants," specifies in Section 5.5 conditions for safekeeping of records to prevent larceny and vandalism and in Section 5.6 construction requirements of record storage facilities. Section 5.6 requires that: the walls are reinforced concrete, concrete block, masonry, or equal construction; sealant be applied over walls as a moisture or condensation barrier; an adequate fire protection system be installed; and structures, doors, frames and hardware be constructed to meet a 4-hour fire rating. The CNS Quality Assurance Policy Document Section 2.6, "Document Control," commits the facility to the requirements of ANSI N45.2.5-1974.

The failure of the training records storage area to provide protection from larceny or vandalism and to be constructed in accordance with plant commitments as described above is a deviation (298/8925-01).

The Nuclear Support Group was slow in responding to QA findings. Estimated completion dates for corrective actions were not provided as required by procedure. Provisions are being implemented which should assure adequate controls over training records when the computer system upgrade is completed.

#### 4. Licensee Event Reports (LERs) Followup (92700)

(Closed) LER 88-023: This LER documents a Reactor Water Cleanup (RWCU) System Valve Closure (Group 3 Isolation) due to relay failure. The cause of the event was determined to be a failed General Electric Model CR 120A, 115VAC relay.

Immediate corrective action was to replace the failed relay coil. In addition, due to this failure and other similar CR 120A relay failures,

the licensee determined that the expected inservice life of the CR 120A relay coils is 12-15 years. The licensee subsequently placed all safety-related CR 120A relay coils on a 10-year replacement cycle. In addition, the licensee committed to replace those relay coils, which were not changed out during 1988, prior to plant startup after the 1989 Maintenance and Refueling Outage.

The inspector reviewed the licensee's documentation to ensure that all required relay coils were replaced during the 1989 outage. In addition, the inspector verified that preventive maintenance items were established to place required relay coils on a 10-year replacement cycle.

LERs 88-012 and 88-025 document similar failures of CR 120A relay coils. Corrective action and closure are similar to that documented above.

The licensee demonstrated a good corrective action program in conjunction with repetitive failures of CR 120A relay coils.

LERs 88-023, 88-012, and 88-025 are closed.

#### 5. Operational Safety Verification (71707)

The 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 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. Facility operations were performed in accordance with the requirements established in the CNS Operating License and Technical Specifications (TS).

In anticipation of the higher-than-average river water temperatures due to continued drought conditions in the area, CNS contracted with General Electric (GE) in May 1989 to evaluate whether the plant safety analysis would be valid with river water temperatures as high as 90°F. The safety analysis assumed an upper limit on the service water (SW) temperature of 85°F. The SW supply is river water and is used to provide cooling to safety-related equipment such as the diesel generator room coolers, HPCI tube oil, and reactor equipment cooling heat exchangers. The licensee wrote a Justification for Continued Operation (JCO) based on the GE report utilizing engineering judgement. NRC voiced concern about the lack of quantitative data needed to provide perspective in the JCO, during a conference call with CNS on July 13, 1989. NRC questioned whether existing analysis supported their conclusions. A JCO with additional data was prepared on July 19, 1989. The data in the supplemental information

supported the conclusions reached in their 10 CFR 50.59 analysis, which demonstrated the TS margin of safety was not reduced and no unreviewed safety question existed.

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

The 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. Site tours were conducted by the inspectors to ensure that compensatory measures were properly implemented as required. The PA barrier had adequate illumination and the isolation zones were free of transient material.

During this period, the licensee completed work on the security systems upgrade. The inspector witnessed portions of the testing on the upgrade and walked down the system with licensee personnel. The licensee verified the operability of the system prior to removing the protected area fence guards who were being used for compensatory measures during the system upgrade.

No violations or deviations were identified within this area. NPPD demonstrated proactive planning by requesting the study for operating at higher-than-normal river water temperatures; although the information in the initial JCO was not sufficiently detailed to provide assurance of safe operation, the supplemental JCO was found to be satisfactory.

#### 6. Monthly Surveillance Observations (61726)

The inspectors observed performance of and/or reviewed the following surveillance procedures (SP):

- SP 6.3.3.1, "HPCI Test Mode Surveillance Operation," Revision 32, dated June 1, 1989
- SP 6.2.8.3, "ARI and ATWS/RPT Reactor Vessel High Pressure Calibration and Functional Test," Revision 14, dated April 13, 1989
- SP 6.2.2.1.3, "CSCS Reactor Low Pressure Valve Permissive Calibration and Functional/Functional Test," Revision 18, dated November 18, 1988
- SP 6.2.1.1, "PCIS Reactor High Pressure Calibration and Functional/Functional Test," Revision 15, dated September 11, 1989

- SP 6.3.4.1, "CS Test Mode Surveillance Operation," Revision 25, dated October 21, 1988

SP 6.3.3.1 was performed on July 14, 1989, as the monthly TS operability test of the high pressure coolant injection (HPCI) pump. Test data was within specifications. The operator conducting the test was knowledgeable about the precautions and limitations contained in the procedure.

SPs 6.2.8.3, 6.2.2.1.3, and 6.2.1.1 were conducted on July 14, 1989, as TS required functional tests of reactor protection instrumentation. The instrument and control (I&C) technician used proper radiological practices and had good communication with his counterpart in the control room. He had a good understanding of the purpose of the test. All test equipment was properly calibrated. The I&C technician used caution and good judgement during testing of these instruments.

SP 6.3.4.1 was performed on July 26, 1989, as a quarterly test which included inservice test (IST) requirements as well as TS required pump operability requirements. Test activities were coordinated between the reactor operator and the station operator. Pump vibration measurements were taken by the qualified station operator with the magnetic probe. All test data was within specifications. Proper approvals had been obtained prior to start of the test.

No violations or deviations were identified.

#### 7. Monthly Maintenance Observation (62703)

The inspector observed a contractor performing thermography of both recirculation pump motor generator exciter commutator rings to determine if any areas were at an elevated temperature, indicating a potential for failure. Electrical engineering and electrical maintenance utilized these services as a pilot predictive maintenance activity. The contractor had taken infrared scans prior to the 1989 outage and identified several components with indications of elevated temperatures, including the commutator rings. Repair or replacement of some identified parts occurred during the outage. The contractor returned after the outage to verify that corrective actions taken had resolved the identified deficiencies. Items which did not require immediate corrective actions were monitored for further degradation. The licensee is considering expanding this program to include mechanical components.

The inspector reviewed troubleshooting efforts related to the high vibration readings identified on Service Water Booster Pump "A." The readings were taken on July 18, 1989, during performance of SP 6.3.20.1, "RHR Service Water Booster Pump Flow Test and Valve Operability Test," Revision 21, dated June 8, 1989. This IST was being performed monthly in accordance with ASME Section XI requirements since the initial readings taken on the installed spare rotating assembly were in the "alert" range. The measurements indicated pump bearing vibrations were in the "action" range. All of the readings had been taken utilizing an unfiltered

stick-type probe. Troubleshooting by the system engineer identified that readings taken with the stick-type probe were erratic at the measuring point; however, when the magnetic probe was used, the readings were in agreement with the prior 2 months IST vibration measurements.

Mechanics utilized a filtered stick-type probe and compared the readings to initial readings taken after installation of the rebuilt spare. The new measurements indicated that the vibration at the points had slightly decreased but were still in the alert range.

The licensee concluded that the point contact of the stick-type probe, the failure to have firm attachment (similar to the magnetic probe), and variables introduced by different people using the stick-type probe created the higher readings. The licensee intends to change the procedure to specify measurements in the horizontal plane with a magnetic probe and measurements in the vertical plane with the stick-type probe. Initial values were taken using this arrangement. The licensee committed at the exit to review other IST procedures to assure that proper instrumentation (stick versus magnetic, or a combination) is specified. Inspector followup of the licensee's review of other IST and actions to prevent recurrence is an open item (298/8925-02).

No violations or deviations were identified in this area. The licensee is taking steps to implement thermography as a predictive maintenance tool.

8. Exit Interview (30703)

An exit interview was conducted on August 3, 1989, with licensee representatives identified in paragraph 1. During this interview, the inspectors reviewed the scope and findings of the inspection. Other meetings between the inspectors and licensee management were held periodically during the inspection period to discuss identified concerns. The licensee did not identify as proprietary any information provided to, or reviewed by, the inspectors.