

APPENDIX

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Inspection Report: 50-298/92-24

Operating License: DPR-46

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

Facility Name: Cooper Nuclear Station

Inspection At: Brownville, Nebraska

Inspection Conducted: November 15 through December 26, 1992

Inspectors: R. A. Kopriva, Senior Resident Inspector
W. C. Walker, Resident Inspector
C. J. Paulk, Regional Inspector
L. E. Ellershaw, Regional Inspector

Approved: John E. Gagliardo for
J. E. Gagliardo, Chief, Projects Section C

1/1/93
Date

Inspection Summary

Areas Inspected: Routine, announced inspection of operational safety verification, maintenance and surveillance observations, corrective actions for violations followup, and licensee event report followup.

Results:

- The inspectors identified a missing nut on the jacket cooling water restraint for Diesel Generator 2. The licensee was responsive in correcting the problem and performing operability determination (Section 2.2).
- The licensee identified a missing nut from a residual heat removal pipe restraint. Again, corrective actions and operability determination were performed in a timely manner (Section 2.3).
- A fire drill performance was good. Postdrill critiques appeared to be informative and accurate. There was no apparent management review of drill activities or disposition of items (Section 2.4).
- A low voltage condition on the 69 kV transmission line resulted in declaring the site emergency transformer inoperable. Licensee actions for correcting the problem were good, and followup activities appear to be thorough (Section 2.7).

- Maintenance activities were well planned, organized, and executed (Section 3.0).

Summary of Inspection Findings:

- Violation 298/9215-01 was closed (Section 5.1).
- Unresolved Item 298/9123-03 was closed (Section 6.1).
- Licensee Event Reports 91-011 and 92-014 were closed (Section 7).
- Inspection Followup Item 298/9224-01 was opened (Section 2.8).

Attachment:

- Persons Contacted and Exit Meeting

DETAILS

1 PLANT STATUS

During this inspection period, the plant was operating at or near full power. Minimal power reductions took place on weekends to perform routine surveillances (i.e., rod adjustments, control rod operability, and main steam line isolation valve functionality.) The power changes were performed properly in accordance with technical requirements and procedures. No anomalies were noted.

2 OPERATIONAL SAFETY VERIFICATION (71707)

2.1 Control Room Observations

The inspectors observed operational activities throughout this inspection period and verifies that proper control room staffing and control room professionalism were maintained. Control room shift supervisor log book, tag out log book, and control room balance-of-plant log book entries were reviewed and verified that appropriate entries were made.

2.2 Plant Tours

The inspectors toured various areas of the plant to verify that proper housekeeping was being maintained. Housekeeping was generally found to be adequate.

On November 30, 1992, during a walkdown of Diesel Generator 2, the inspectors identified a loose nut lying under the jacket water piping in the northwest corner of the diesel generator room. The nut appeared to be from a U-bolt hanger used to support the jacket water piping.

To repair the hanger, the licensee removed the U-bolt from the piping support. An engineering analysis was performed to verify that the piping was not degraded during the repair period such that it could not perform its intended safety function. The licensee concluded that the diesel generator was operable at all times during the repair.

The inspectors reviewed Maintenance Work Request 92-3233 for the hanger repairs and discussed the repairs with the system engineer responsible for the diesel generators. Based on this review and discussion, it appeared that the licensee had addressed operability concerns of the diesel during performance of the maintenance activity. The inspectors also reviewed the licensee's seismic analysis for the diesel generator with the U-bolt hanger removed for repair. Maintenance on the diesel was performed promptly and all necessary approvals were obtained prior to, during, and after completion of the repair activity.

2.3 Residual Heat Removal Missing Nut on Pipe Restraint

On November 30, 1992, the licensee was performing a routine walkdown of the reactor building. While inspecting the Residual Heat Removal B heat exchanger room, a loose nut was found on the floor. The nut had come from the load pin for a seismic clamp on Structural Support RH-H42A which supports the 16-inch inlet piping to the Residual Heat Removal B Heat Exchanger. The pin was fully engaged with the strut paddle and both clamp ears and had not been removed for any purpose. The nut was replaced promptly upon discovery.

The licensee reviewed the impact of the discrepancy on the operability of the support and concluded that the support was operable for the following reasons:

- Due to the pin's orientation (horizontal) it was not prone to fall out and cause the strut paddle to disengage from the clamp.
- The pin was loaded in shear only. Since the pin was found fully engaged with the strut paddle and clamp ears, its purpose was fulfilled.
- If a seismic event had taken place, the friction loads created when the seismic loads were applied to the support would have locked the pin into place.

The inspectors verified the as-found condition of the seismic support, reviewed the seismic analysis, and discussed the operability determination with licensee representatives. As a result of this finding, the licensee performed a walkdown of other similar systems within the plant to assure no other support pins were missing nuts. The inspectors considered this to be a conservative effort by the licensee. The inspectors also performed independent walkdowns of several other piping systems and found no additional discrepancies.

2.4 Fire Drill Observation

On December 1, 1992, the inspector observed the licensee conduct an announced fire drill. The scenario involved a fire in the Diesel Generator 1 room. The inspector noted that fire brigade members responded in a timely manner, set up the equipment necessary to fight the fire, and wore appropriate protection apparel to fight the fire. All equipment needed to fight the fire appeared to be present and properly connected.

A postdrill debriefing was conducted by the station fire protection engineer. The licensee noted that the radio needed by the fire brigade members in the diesel generator room was not functioning properly, thus making communications with the fire brigade leader impossible. The hose connected to the fire cart needed to be longer to cover all areas located in the diesel generator room. During the debrief of the drill, the shift supervisor raised a concern of the possible need for an auxiliary operator to stay in the control room to facilitate use of emergency plan implementing procedures, rather than accompanying the fire brigade. The inspectors discussed with the fire

protection engineer how comments identified during the debrief would be addressed, and what type of review they would receive. The inspector also questioned the fire protection engineer regarding the corrective action program that existed to address and track the exercise evaluation concerns. The licensee did not appear to have formal management review of items and concerns identified during drills. Management's review of fire drill critiques was questionable. To enhance management review and disposition of fire drill discrepancies, the licensee instituted a mechanism to ensure management involvement/overview. The licensee planned to send fire drill critiques to the technical staff manager for evaluation as an action and commitment tracking item and planned to place a copy of the drill critique in management routing.

The quality assurance manager and members of his staff were interviewed to determine the number and scope of audits and surveillances conducted of fire drill activities. The inspectors found that at least one quality assurance audit was conducted per quarter. Several audit reports were reviewed by the inspectors and discussed with quality assurance management to determine how the audit findings would be addressed and resolved.

The audit report findings which were reviewed were addressed in timely and complete manner. Licensee fire brigade members performed their assigned duties in an efficient and professional manner.

2.5 Radiological Protection Observations

During the performance of plant tours and other inspection activities, the inspectors verified that selected activities of the licensee's radiological protection program were properly implemented in conformance with facility policies, procedures, and regulatory requirements. Radiation and/or contaminated areas were properly posted and controlled. Health physics personnel were observed to be touring work areas to ensure that proper radiological protection practices and radiological control requirements were properly implemented. The inspectors independently verified radiation levels of waste materials packaged for disposal and monitored various areas within the reactor building. No discrepancies were found.

2.6 Security Program Observations

During the performance of plant tours and other inspection activities, the inspectors observed various aspects of the licensee's security program, such as responses to door alarms, access control at the primary access point, and escort controls. There were no concerns or anomalies identified.

2.7 Low Voltage of the 69 kV Transmission Line

On November 16, 1992, at approximately 8:57 a.m., the operators received a low voltage alarm for the emergency transformer. The licensee declared the emergency transformer inoperable, which placed the plant in a limiting condition for operation per Technical Specification Section 3.9. Upon

investigation, the licensee discovered a low voltage condition on the 69 kV transmission line which supplied power to the emergency transformer. The low voltage condition was caused by offsite electrical distribution lineup changes. A capacitor bank was placed into service which increased the line voltage and cleared the under-voltage problem. The licensee declared the transformer operable at 1:15 p.m. The inspectors reviewed the licensee's response to the low voltage condition and concluded that the licensee's actions for correcting the problem were good and that their followup activities appeared to be thorough.

2.8 High Pressure Coolant Injection Suction Valve Automatic Actuation During Test

On December 9, 1992, while performing Surveillance Procedure 6.2.2.8.6, "PCIS Suppression Chamber Water Level Calibration Test," the high pressure core injection system pump suction automatically transferred to the suppression chamber (torus) from the emergency condensate storage tank. The pump suction transfer occurred while backfilling the reference leg for Level Transmitter PC-LT-12. The reference leg was common to two float switches, HPCI-LS-91A and -B. When the reference leg was backfilled, the flow rate was too high. The water could not drain out of the level switch(es) as quickly as it was being added, resulting in the float level for one or both switches to increase, causing the unplanned actuation. A suction path to the high pressure coolant injection pump was maintained; therefore, the high pressure coolant injection system remained fully operable during the event. The preferred suction path to the high pressure coolant injection system was restored approximately 15 minutes following the event.

On December 10, at 10:30 a.m., while the licensee was reviewing the deficiency report documenting this occurrence, the licensee determined that NRC notification was required in accordance with 10 CFR 50.72(b)(2)(ii) because of an unplanned actuation of an engineering safety feature component. The licensee completed the notification at 10:45 a.m.

The licensee responded well to the actuation event. Although there was a delay in reporting the event to the NRC, the licensee's deficiency report program caught the error, which was good. Review of the licensee's reportability evaluations for deficiency reports will be an Inspection Followup Item (IFI 298/9224-01).

3 MAINTENANCE OBSERVATIONS (62703)

3.1 Reactor Recirculation Motor/Generator Set Ventilation Fan Repair

The inspectors observed work activities associated with Maintenance Work Request 92-2709 to repair reactor recirculation motor/generator set Exhaust Fan HV-FAN-(EF-210). Operations personnel had identified several problems, including broken belts, a loose belt guard, and the exhaust damper did not appear to close. The mechanics found the top sheave worn and the belts were off and broken. Also, the belt guard was broken. A new top sheave and belts

were installed. The belt guard was weld-repaired and secured. The damper linkage was adjusted and lubricated. It was noted that the adjusting linkage had been worn from normal wear and the licensee is reviewing for possible replacement. Also, the mechanics repaired a broken motor mount which secured the motor to the fan body. On November 23, the mechanics had completed repairs and the exhaust fan was ready for testing. On November 25, the operations department completed testing with satisfactory results and returned the exhaust fan to service.

The inspectors noted that repair work, welding, and operational testing was performed in accordance with Maintenance Work Request 92-2709 and the approved procedures.

3.2 Service Water Pump Seal Inspection

The inspectors observed routine disassembly and inspection of Service Water Pump B. The licensee had previously performed a modification of the cooling water to the service water pump seals. The seals had been supplied cooling water from gland seal water system. The modification changed the seal cooling water source to the service water system. The licensee declared Service Water Pump B inoperable and commenced disassembly of the pump seal. Once the pump seal had been disassembled the licensee performed a visual and mechanical inspection on the pump seals and shaft. The inspection revealed minimum wear. The licensee reassembled the pump seal, ran the pump successfully and, on November 19, the pump was declared operable. The inspectors noted that the activity was performed in accordance with the work instructions.

3.3 Replacement of Traversing In-Core Probe Detector

On November 20, the inspector observed the preparation for replacement of Traversing In-Core Probe Detector C. The purpose of this effort was to correct erratic readings (i.e., zero to full scale) received while driving the traversing in-core probe detector into the reactor core. The personnel involved in this effort adhered to the procedure requirements and maintained good communication and cooperation with health physics personnel. Adherence to radiation protection principles was found to be good (i.e., preplanning was notable in minimizing personnel stay times in area.) In addition, work on the detector was postponed 3 days due to ALARA considerations. Management oversight of this effort was apparent. The inspectors reviewed the completed calibration documentation and found it to be satisfactory.

4 SURVEILLANCE OBSERVATIONS (61726)

4.1 High Pressure Coolant Injection (HPCI) Pump Operability

On November 25, 1992, the inspector observed the performance of Surveillance Procedure 6.3.3.1, "HPCI Test Mode Surveillance Operation," Revision 39. The HPCI pump operability test is a monthly test to assess the operational readiness of the HPCI pump. The inspector determined that the procedure addressed the surveillance requirements of Technical Specification 4.5.C.1.b.

The inspector visually observed the condition and operation of the HPCI pump and observed the auxiliary operator take readings of pump flow rate and pressure. Good communication was observed between the control room and the auxiliary operator. The inspector observed good ALARA practices by the auxiliary operator and the health physics technician while obtaining various readings of the HPCI pump.

Upon completion of the HPCI pump operability surveillance, the auxiliary operator walked down the accessible parts of the HPCI system. During the walkdown, two turbine exhaust line drain pot valves (AOV70 and AOV71) were observed to have slight packing leakage. The auxiliary operator completed the proper maintenance work request forms for repair of the leaks.

The inspector also observed the quality assurance verification of the completed surveillance procedure. All necessary signoffs were completed and no discrepancies were noted. Good communication was noted between operations and other plant personnel. Adherence to principles of ALARA were excellent and the health physics technician was thorough in assuring low radiation exposure during the surveillance.

5 CORRECTIVE ACTIONS FOR VIOLATIONS (92702)

5.1 (Closed) Violation 298/9215-01: State and Local Notifications not Completed within 15 Minutes of the Declaration of Notification of Unusual Event

This violation stated that the licensee failed to notify state organizations within 15 minutes of the declaration of an emergency. The licensee took the following corrective actions:

- To improve communications with the control room, the licensee revised Station Operations Review Committee Procedure 0.3 to allow the shift supervisor to be involved in Station Operations Review Committee discussions which might affect the operational status of the plant.
- The licensee changed the answering service company used for the Missouri State Emergency Management Agency, new pagers were procured, a backup State Emergency Management Agency duty officer was added, a revision was made to the duty officer's response manual concerning power plant emergency notification, and training for duty officers was instituted.
- The licensee successfully tested the system on August 19, 1992, at 8 a.m., August 20 at 8 p.m., and September 1 at 8 a.m.

The inspectors reviewed the revision to Station Operations Review Committee Procedure 0.3 allowing shift supervisor participation in operability discussions, the documentation for the completed offsite communications enhancements, and the documentation for the state notifications tests. The actions appeared to be appropriately completed.

6 FOLLOWUP (92701)

6.1 (Closed) Unresolved Item 298/9123-03: EGS Conduit Seals

During a previous inspection, an inspector identified a concern that the licensee might not have documentation to demonstrate the qualification of EGS conduit seals in accordance with 10 CFR 50.49, "Environmental Qualification of Electrical Equipment Important to Safety for Nuclear Power Plants." Subsequent to that inspection, the licensee provided an evaluation of the qualification test report that indicated the seals would be qualified for the environmental conditions to which they could be subjected.

The inspectors reviewed the licensee's evaluation against the requirements of 10 CFR 50.49. The inspectors found that the licensee's evaluation was acceptable to demonstrate the qualification of the conduit seals for use in the reactor building outside the drywell and in the standby gas treatment room.

7 ONSITE REVIEW OF LICENSEE EVENT REPORTS (92700)

7.1 (Closed) Licensee Event Report 298/91-011: Reactor Protection System and Engineered Safety Feature Trips Due to Spurious Trip of Two Reactor Protection System Reactor Vessel Water Level Instruments

This report documented an unplanned engineered safeguards features actuation during plant shutdown with the residual heat removal system in the shutdown cooling mode of operation. The spurious level signal occurred upon restoration from local leak rate testing on a core spray system. A reactor protection system trip resulted in actuation of isolations for the reactor coolant system and reactor water cleanup system. The actuation of the level instruments was caused by either introduction of air or water leakage into the instrument reference leg. The hydraulic effects of the air bubble in the condensing chamber reference column resulted in tripping the reactor protection system level instruments. The licensee's corrective actions included revision of local leak rate drawings to ensure that the reference leg is maintained full during local leak rate testing of Core Spray Subsystems A and B. The inspectors reviewed the revised drawings to verify that the identified changes were completed. The licensee's actions appear to be adequate.

7.1 (Closed) Licensee Event Report 298/92-014: High Pressure Core Injection Inoperability Due to an Oil Leak in the Turbine Hydraulic Control System

This report documented the licensee's discovery of an oil leak from the diaphragm area of the mechanical/hydraulic overspeed trip auto reset control assembly. The valve was disassembled and two 1/4-inch through-wall slits, approximately 1 inch apart, were found on the edge of the diaphragm. The diaphragm had been replaced in October 1991 and was scheduled for replacement every outage per the preventive maintenance program. The valve assembly was replaced and the manufacturer of the overspeed trip auto reset control

assembly was contacted. The manufacturer of the diaphragm concluded that the failure was due to a material defect from the manufacturing process, (i.e., improper and nonuniform coverage of the reinforcing material). The manufacturer of the diaphragm was in the process of reviewing the defect for a 10 CFR Part 21 report. The inspector verified documentation of correspondence between the licensee's supplier and the manufacturer concerning the defective diaphragm.

ATTACHMENT 1

1 PERSONS CONTACTED

S. L. Bray, Operations Quality Assurance Supervisor
L. E. Bray, Regulatory Compliance Specialist
R. Brungardt, Operations Manager
J. W. Dutton, Training Manager
C. M. Estes, Management Trainee
J. R. Flaherty, Engineering Manager
R. L. Gardner, Plant Manager
C. R. Moeller, Acting Technical Staff Manager
J. V. Sayer, Radiological Manager
R. L. Wenzl, NED Site Engineering Manager
M. F. Young, Maintenance Supervisor

The licensee personnel listed above attended the exit meeting held on December 28, 1992. In addition to the personnel listed above, the inspectors contacted other personnel during this inspection period.

2 EXIT MEETING

An exit meeting was conducted on December 28, 1992. During this meeting, the inspector reviewed the scope and findings of this report. The licensee did not identify as proprietary any information provided to, or reviewed by, the inspectors.