

APPENDIX

U.S. NUCLEAR REGULATORY COMMISSION  
REGION IV

NRC Inspection Report: 50-285/94-18

Operating License: DPR-40

Licensee: Omaha Public Power District  
Fort Calhoun Station FC-2-4 Adm.  
P.O. Box 399, Hwy. 75 - North of Fort Calhoun  
Fort Calhoun, Nebraska

Facility Name: Fort Calhoun Station

Inspection At: Blair, Nebraska

Inspection Conducted: July 31 through September 10, 1994

Inspectors: R. Mullikin, Senior Resident Inspector  
R. Azua, Resident Inspector

Approved: WD Johnson  
William D. Johnson, Chief, Project Branch A

9/15/94  
Date

Inspection Summary

Areas Inspected: Routine, unannounced inspection of operational safety verification, plant support activities, maintenance and surveillance activities, and onsite engineering.

Results:

• Plant Operations

Control room activities were performed in a manner to assure safe plant operation (Section 2.1.1).

Leaving an unsecured, upright stepladder in the plant was a poor work practice. However, there would be minimal impact on safety-related equipment if the ladder fell (Section 2.3.1).

Leaving a half-filled plastic sprayer near an emergency diesel generator was another example of a poor work practice. However, the chemical represented no significant concern to safety-related equipment or plant personnel, if uncontrollably released from the sprayer. In addition, the potential effect on safety-related equipment as a missile hazard was slight (Section 2.4.1).

The ventilation systems for the auxiliary building and the control room were in the correct alignment for normal operation. However, the local position indicators of some of the dampers could cause operator confusion as to the actual position (Section 2.5.1).

- Maintenance

Routine maintenance activities were performed in a proper manner. The observation that a step in a construction work order deemed not applicable, but not annotated as such at the time, was considered another example of a poor work practice. However, there was no safety concern with this observation and the discrepancy would probably have been discovered prior to completion of the work and review (Section 4).

Routine surveillance activities were performed properly with no significant observations noted (Section 5).

- Engineering

The licensee's interim solution to a steam leak was proper. This solution did not put the plant through any transient and did not pose any threat to containment integrity. Group interaction and coordination were excellent during this evolution. A heightened concern for personnel and plant safety was demonstrated (Section 2.9.1).

The licensee properly implemented the requirements of the temporary modification program for Temporary Modification 94-041 (Section 6.1.1).

Scaffolding was properly planned, erected, and inspected to minimize effect on the safe operation of the plant (Section 6.2.1).

Observed system engineering personnel performance was excellent (Section 6.3.1).

- Plant Support

The shift supervisor's response to an offsite ammonia release was excellent. In addition, an off-duty employee exhibited a heightened awareness of offsite events that could affect the plant by notifying the control room. However, the failure to receive official prompt notification of the offsite chemical release could have delayed the licensee's response to an emergency (Section 2.7.1).

Poor plant-wide communication during an emergency exercise created an undue disruption to normal control room activities (Section 2.10.1).

The radiation protection program was being properly implemented. Excellent radiation protection performance was noted in support of the resolution of a

minor steam leak inside containment (Section 3.1.1). General plant housekeeping and overall material condition of equipment was very good (Section 3.3.1).

Summary of Inspection Findings:

None

Attachment:

- Persons Contacted and Exit Meeting

## DETAILS

### 1 PLANT STATUS

The Fort Calhoun Station operated at 100 percent power throughout the inspection period.

### 2 OPERATIONAL SAFETY VERIFICATION (71707)

#### 2.1.1 Routine Control Room Observations

The inspectors observed activities throughout this inspection period to verify that proper control room staffing and control room professionalism were maintained. Shift turnover meetings were conducted in a manner that provided for proper communication of plant status from one shift to the other. Discussions with operators indicated that they were aware of plant and equipment status and reasons for lit annunciators. The inspectors observed that Technical Specification limiting conditions for operation were properly documented and tracked. The inspectors noted that operators were consistently declaring equipment inoperable during surveillance testing. Control room traffic was observed to be effectively limited to personnel requiring access to conduct related work activities. Operations management was observed in the control room on a routine basis. The inspectors observed that good communication existed between operators and instrumentation and control personnel performing control room surveillances and that only operators acknowledged annunciator alarms.

#### 2.1.2 Conclusion

The inspectors concluded that control room activities were performed in a manner to assure safe plant operation.

### 2.2 Plant Tours

The inspectors routinely toured various areas of the plant to assess the safety conditions and status of plant equipment. The inspectors verified that various valve and switch positions were correct for the current plant conditions. Personnel were observed obeying rules for personnel safety and rules for escorts, visitors, and entry and exits into and out of vital areas.

#### 2.3.1 Unattended Stepladder

On August 29, 1994, the inspector observed an unattended 10-foot stepladder which was positioned upright against Spent Regenerant Tank WD-13A. The inspector observed that, although the ladder was unsecured, large piping would prevent damage to any safety-related equipment in the room. The inspector notified the control room and was informed the same day that the ladder had been removed. The ladder had been used to perform an equipment tagout for maintenance on a spent regenerant tank pump. Section 5.2.6 of Standing

Order SO-G-6, "Housekeeping," requires that ladders which are upright may not be left unattended unless they are properly secured to ensure personnel and equipment safety. The failure to control ladders was the subject of Violation 285/9409-01. The licensee's response to this violation was pending at the end of this inspection period.

### 2.3.2 Conclusion

The inspectors concluded that leaving an unsecured, upright stepladder was a poor work practice. However, the inspectors concluded that there would be minimal impact on safety-related equipment if the ladder fell.

### 2.4.1 Unsecured Plastic Sprayer Near Emergency Diesel Generator 1

On September 5, 1994, the inspector observed a floor mounted scaffold erected between the east wall and Emergency Diesel Generator 1. On the scaffold platform, about 7 feet high, was a 2-gallon plastic sprayer which had a chemical label indicating it contained Certane 2075. The sprayer had approximately 1 gallon of chemical in it and was not secured in any manner. The inspector notified the shift supervisor, who sent an auxiliary operator to remove the sprayer and store it in a proper location. The inspector determined that the scaffold had been erected so insulation could be removed under Maintenance Work Order 940534 to perform thickness measurements of large and small bore piping. This was being done due to a licensee commitment made from an inspector identified concern of the piping integrity in the diesel generator rooms. Section 5.6.1 of Standing Order SO-G-70, "Chemical Control," states that chemicals shall be stored in accordance with the requirements of the chemical permit or field chemical permit. Chemicals are considered to be in storage except when being used in the conduct of a work activity. The inspector reviewed the chemical permit and the material safety data sheet for Certane 2075. The chemical was being used as a wetting solution to keep the fiber count down when removing asbestos insulation. The information showed that the chemical was nonflammable and presented only a minimal health hazard. No specific storage requirements were defined. The chemistry supervisor stated that the solution essentially was soap and water. The observation by the inspector was on Labor Day, indicating that the chemical had been stored in the Diesel Generator 1 room at least since the previous Friday. While it was unattended, the sprayer posed a potential as a missile hazard. However, the inspector observed that any potential for adverse impact would be slight.

### 2.4.2 Conclusion

The inspectors concluded that leaving the plastic sprayer near the diesel generator represented a poor work practice. However, the inspectors concluded that the chemical represented no significant concern to safety-related equipment or to plant personnel, if uncontrollably released from the sprayer. In addition, the inspectors concluded that its potential adverse impact on safety-related equipment as a missile hazard was slight.

### 2.5.1 Safety-Related System Walkdown

On August 19, 1994, the inspector performed a valve position verification walkdown of the auxiliary building and control room ventilation systems. The following procedures were used in the walkdown:

- Operating Instruction OI-VA-2, "Auxiliary Building Ventilation System - Normal Operation"
- Operating Instruction OI-VA-3, "Control Room Ventilation System - Normal Operation"

The inspector verified that the control room indications for ventilation damper positions were in accordance with procedural requirements. However, the inspector noted that local indicated positions for several dampers in the auxiliary building ventilation system were not in agreement with the control room indications. The inspector asked the auxiliary building operator to confirm the position of the dampers by visual observation. He observed the external position indicators and could not verify the correct positions. The inspector informed the Plant Manager of this observation. The applicable system engineer researched the concern and determined that there were two external indicators for the dampers, but that neither were an accurate indication. These only tell what position the manual handjack feature is in. The system engineer stated that the actual indicator is a line of indentations on the end of the shaft opposite from the valve operator. After an inspection by the system engineer and the Plant Manager they found that these indentations had been painted over in many cases and were not easily recognized.

The inspector subsequently asked a licensed operator and another auxiliary building operator to verify the position of these dampers. In both cases, the operators looked at the incorrect external indicators and did not know that the actual position was determined from the shaft indentations. The system engineer submitted a request for training to incorporate the correct method of local damper position verification into operator training.

The inspectors reviewed the safety significance of this issue. According to Technical Specification 3.2, the safety injection pump room air treatment system consists of charcoal adsorbers which are installed in normally bypassed ducts. This system is designed to reduce the potential release of radioiodine in these rooms during the recirculation phase following a design basis loss of coolant accident. The inspector determined that routine testing of the ventilation system provides assurance that the position of the dampers correctly correlated to control room indications.

### 2.5.2 Conclusion

The inspectors concluded that the ventilation systems for the auxiliary building and the control room were in the correct alignment for normal operation. However, the local position indicators of some of the dampers could cause operator confusion as to the actual position.

### 2.6.1 Verification of Commitment in a Licensee Event Report

On August 29, 1994, the inspector reviewed Licensee Event Report 93-012 to verify that interim corrective action was still in effect. This report involved the licensee's discovery that five motor-operated valves had power cables that were inadequately sized to withstand sustained locked-rotor current. The result could be fires in more than one fire area of the plant. The licensee's interim corrective action was to enable the thermal overloads for the five valves and attach danger tags to these breakers on the motor control center. The inspector verified that danger tags were still attached to each breaker and that the thermal overloads were enabled.

### 2.6.2 Conclusion

The inspectors concluded that the licensee was maintaining commitments made to the NRC based on the one observation noted.

### 2.7.1 Offsite Ammonia Leak

On August 18, 1994, an ammonia leak originated from a chemical storage tank that is located approximately 2 miles north of the Fort Calhoun Station. The leak was caused by an inadvertent opening of a relief valve and approximately 1000 pounds of ammonia was released to the atmosphere before the leak was isolated. The initial notification to the Fort Calhoun Station control room was made at 2:43 a.m. by an off-duty employee. This employee was a member of the local fire department that had received the call about the leak. Upon notification, the shift supervisor immediately directed that the control room ventilation system be put into the recirculation mode of operation. In addition, a plant wide announcement was made, wind speed and direction were verified, and atmospheric samples were taken. The shift supervisor directed all onsite employees to notify the control room upon any ammonia smell. There was no detectable ammonia at the plant site, nor was any detected later. After receiving information from the local fire department that there was no additional release of ammonia, the control room ventilation was placed into normal alignment.

This event had no consequences to the safe operation of the plant nor to personnel at the plant. However, there were 22 workers at a construction site adjacent to the ammonia tank that were affected by the chemical and were taken to the hospital. The wind direction and velocity at the time of the release prevented the ammonia from reaching the Fort Calhoun Station. However, the consequences to plant operation could have been different during the time of the year when the prevailing wind direction would put the plant in the path of

the release. In addition, the failure to receive prompt notification about the release could have major consequences when more employees were on site. The control room has toxic gas monitors which monitor for ammonia and would result in the control room ventilation being shifted into the recirculation mode.

The licensee's Emergency Plan Implementing Procedure EPIP-OSC-1, "Emergency Classification," required the licensee to declare emergency classifications based upon the concentrations of ammonia detected on site. The failure to receive notification of an offsite release could delay the activation of the emergency team to respond to an onsite hazard.

The licensee initiated Incident Report 940287 to investigate the lack of formal notification about the leak. This has not been completed at the end of the inspection period.

#### 2.7.2 Conclusion

The inspectors concluded that the shift supervisor's response to this event was excellent. In addition, an off-duty employee exhibited a heightened awareness of offsite events that could affect the plant. However, the failure to receive official prompt notification of offsite chemical releases could delay the licensee's response to an emergency.

#### 2.8.1 Equipment Tagout Verification

On August 29, 1994, the inspector independently verified that valve and switch alignments were as specified in Danger Tag Verification Sheet 94-1031. This tagout was made for breaker work and to replace seal water lines for Main Feedwater Pump FW-4C. On September 7, the inspector independently verified the valve alignment specified in Danger Tag Verification Sheet 94-0662. This tagout was created to isolate the auxiliary steam supply to both emergency diesel generator rooms. The inspector concluded that all valves were in the correct position and that a proper working boundary had been established to safely perform the required maintenance.

#### 2.8.2 Conclusion

The inspectors concluded that the licensee had properly implemented the equipment tagout program for the two cases reviewed.

#### 2.9.1 Steam Generator Blowdown Sample Line Valve Leak

On September 1, 1994, licensee personnel observed, while adding oil to a reactor coolant pump, that a small steam leak was originating from Valve FW-180. This 1-inch valve is the blowdown sample line isolation valve for Steam Generator RC-2A. It provides flow to Blowdown Radiation Monitor RM-054 and also provides the path for alternate grab samples. The observed leak was a body-to-bonnet leak.

The inspector observed the licensee's process for the resolution of this issue. The following solutions were considered:

- Install a temporary modification which would close Valve FW-180 and install an alternate sampling location using existing penetrations. This would be contingent on the leak being stopped when the valve was closed. This solution would allow continued plant operation until the next plant shutdown.
- Install a box using a temporary modification around the leaking valve and inject sealant material to seal the leak while at power. This solution would also allow continued plant operation until the next plant shutdown.
- Shut down the plant to perform the temporary leak repair activities.

The inspector observed two discussion meetings on the suggested solutions. Present at these meetings were the Acting Plant Manager and representatives from operations, engineering, radiation protection, and chemistry. The inspector noted an excellent exchange of information and ideas. System engineering was well represented and provided an excellent evaluation of the pros and cons of each possible solution. In addition, operations, radiation protection, and chemistry also provided their expertise on each solution. Radiation protection had already calculated and charted the expected exposure doses to perform a temporary leak repair at different power levels and for different stay times. This was a valuable tool which aided plant management in making their decision.

The licensee decided to defer a decision until the following week in order to proceed with the planning of an alternate sampling path and to pursue the feasibility of all solutions. The licensee continued to monitor the leak for degradation. Engineering had concluded that a significant failure of the valve would take months. The inspector concluded that the licensee's decision to wait was appropriate.

On September 9, the licensee proceeded with Temporary Modification 94-041, which connected a sample line to the normal 3-inch blowdown line. This was then connected into the normal sampling path for Radiation Monitor RM-054. The inspector reviewed the completed field installation and concluded that no safety concerns were created by the installation of the sample tubing. The success of the temporary modification was contingent on the leak at Valve FW-180 stopping when the valve was shut. A containment entry was made on September 9 and the leak was successfully stopped. The new sample path was put into service and tested prior to the valve being shut.

### 2.9.2 Conclusion

The inspectors concluded that the licensee's interim solution to the steam leak was proper. This method used did not put the plant through any transient

and did not pose any threat to containment integrity. Group interaction and coordination were excellent during this process. A heightened concern for personnel and plant safety was demonstrated.

#### 2.10.1 Licensee Emergency Drill

On September 7, 1994, the licensee was performing an emergency exercise. During a tour of the control room while the exercise was in progress, the inspector observed that the control room was being required to answer drill requests over the plant-wide Gaitronics communication system. This was due to individuals not specifying that it was a drill message intended for the simulator control room.

#### 2.10.2 Conclusion

The inspectors concluded that poor plant-wide communication practices during an emergency exercise created an undue disruption to normal control room activities.

### 3 PLANT SUPPORT ACTIVITIES (71750)

#### 3.1.1 Radiological Protection Program Observations

The inspectors verified that selected activities of the licensee's radiological protection program were properly implemented. Health physics personnel were observed routinely touring the controlled area. Contaminated areas and high radiation areas were properly posted, and restricted high radiation areas doors were found to be locked, as required. Plant personnel were observed to be following procedures for entry and exit of contaminated areas. Area surveys posted outside each room in the auxiliary building were found to be current as noted by the posting date.

The inspector observed excellent performance by radiation protection personnel and management during the leaking steam valve (FW-180) resolution process. Plant management was provided with the expected radiation dose calculations for the various job alternatives. Radiation protection personnel coordination during the containment entry to close the valve was also excellent.

#### 3.1.2 Conclusion

The inspectors concluded that the radiation protection program was being properly implemented. Excellent performance was noted during the work activity to stop a leaking steam valve.

#### 3.2.1 Security Program Observations

Security personnel were observed performing their duties in a professional manner. Vehicles were properly controlled or escorted within the protected area. Designated vehicles parked and unattended within the protected area were found to be locked with the keys removed. The inspectors routinely

toured the protected area perimeter and found it maintained at an excellent level. Proper compensatory measures were taken when a security barrier was inoperable. Plant personnel assigned escort responsibilities appropriately maintained control of their assigned personnel.

### 3.2.2 Conclusion

The inspectors concluded that the security program was properly implemented.

### 3.3 Housekeeping

General plant housekeeping and overall material condition of equipment was very good. Exceptions were discussed in Sections 2.3.1 and 2.4.1 of this report.

## 4 MAINTENANCE OBSERVATIONS (62703)

The maintenance activities listed below were observed and documentation reviewed to verify that the activities were conducted in a manner which resulted in reliable safe plant operation.

### 4.1 Maintenance Observations

The following maintenance activities were observed:

- Maintenance Work Order 942102, "Repair Steam Leak on High Pressure Turbine IV-3 Relief Line"
- Construction Work Order 94099, "Install New Motor Mounts on Diesel Driven Auxiliary Feedwater Pump FW-54"
- Maintenance Work Order 941206, "Install Prop Reset Spring on Breaker 1A4-5"
- Maintenance Work Order 923705, "Inspection of Containment Tendon AE-H1046"

Routine maintenance activities observed by the inspector were performed properly with no significant observations noted. However, the inspector observed during the performance of Construction Work Order 94099 that Step 4.2 had not been signed. This construction work order was written to install new engine mounts for Pump FW-54, which had been experiencing vibration. This pump is the nonsafety-related auxiliary feedwater pump. Step 4.2 required the uncoupling of the engine and the speed increaser in order to remove existing mounts and install new ones. The inspector noted that there was no need to uncouple in order to remove and install engine mounts. However, the step was left blank but was not noted as being "not applicable (N/A)" as would be expected. The inspector notified the applicable maintenance supervisor of this observation. The supervisor had the step appropriately signed off and a

comment recorded of the reason for the use of an N/A. Section 5.6 of Standing Order SO-G-7, "Operating Manual," provided general rules for the use of N/As in procedures. Section 5.6.7 stated that all N/As not specifically authorized by the procedure shall be initialed and dated by the person entering the N/A. An explanation shall also be included in the remarks (comments) section of the procedure. At the time of the observation, the work under Construction Work Order 94099 had not been completed and reviewed.

#### 4.2 Conclusion

The inspectors concluded that routine maintenance activities were performed in a proper manner. Failure to annotate a work step which had been determined to be not applicable was considered a poor work practice. However, there was no safety concern with this observation and the discrepancy would probably have been identified and corrected prior to completion of the work and review.

### 5 SURVEILLANCE OBSERVATIONS (61726)

The inspector observed the surveillance testing listed below to verify that the activities were being performed in accordance with the licensee's approved programs and the Technical Specifications.

#### 5.1 Surveillance Observations

The following surveillance activities were observed:

- Surveillance Test EM-ST-EE-0009, "Monthly Surveillance Test for Station Battery Chargers"
- Surveillance Test IC-ST-RPS-026, "Monthly Functional Test of Thermal Margin/Low Pressure Channel A"

#### 5.2 Conclusion

The inspectors concluded that routine surveillance activities were performed properly, with no significant observations noted.

### 6 ONSITE ENGINEERING (37551)

#### 6.1.1 Review of Temporary Modification 94-041

The inspector reviewed the Temporary Modification 94-041 package completed by system engineering. This modification was the installation of a temporary sample line for Steam Generator RC-2A due to the closing of a leaking valve (FW-180) on the blowdown sample line. The details of this modification are described in Section 2.9.1. The inspector noted that the package was complete with a very good safety evaluation. In addition, the inspector verified that affected control room drawings and procedures were updated as required, and the package was filed in the control room and document control. A field

verification found that the work was performed as described and that temporary modification tags were placed denoting the temporary modification.

#### 6.1.2 Conclusion

The inspectors concluded that the licensee properly implemented the requirements of the temporary modification program for Temporary Modification 94-041.

#### 6.2.1 Review of Scaffold Control Form S-94-084

The inspector reviewed Scaffold Control Form S-94-084 for the installation of an 8-foot scaffold in the Emergency Diesel Generator 1 room. This scaffold was installed to provide for thickness testing of the auxiliary steam lines in the room. The form and safety evaluation were completed by system engineering and was noted by the inspector to accurately reflect the manner in which the scaffold was installed. The inspector reviewed the enclosed 10 CFR 50.59 applicability screening and determined that all impact on safety-related equipment was properly considered.

#### 6.2.2 Conclusion

The inspectors concluded that this scaffolding was properly planned, erected, and inspected to minimize effect on the safe operation of the plant.

#### 6.3.1 Observation of System Engineering Performance

The inspector observed the performance of various system engineers during the discussion and planning of the solution to the leaking valve (FW-180) on the Steam Generator RC-2A blowdown sampling line. During discussion meetings, the inspector noted that system engineering input was extensive. System engineers presented various solutions and were prompt in providing comments, both pro and con, on the various recommendations presented. The inspector felt that this flow of information was a valuable asset to licensee management and assured that the final solution represented the safest course of action.

#### 6.3.2 Conclusion

The inspectors observed system engineering performance to be excellent.

## ATTACHMENT

### 1 PERSONS CONTACTED

#### 1.1 Licensee Personnel

- \*R. Andrews, Division Manager, Nuclear Services
- G. Cavanaugh, Licensing Engineer
- \*J. Chase, Manager, Fort Calhoun Station
- \*G. Cook, Supervisor, Station Licensing
- M. Frans, Supervisor, Systems Engineering
- \*J. Gasper, Manager, Training
- \*W. Gates, Vice President, Nuclear
- \*R. Jaworski, Manager, Station Engineering
- \*W. Jones, Senior Vice President
- \*W. Orr, Manager, Quality Assurance and Quality Control
- \*A. R. Patel, Nuclear Safety Review Group Specialist
- \*R. Phelps, Acting Manager, Production Engineering
- \*M. Sandhoefner, Shift Supervisor
- J. Sefick, Manager, Security Services
- F. Smith, Supervisor, Chemistry
- J. Tills, Operations Supervisor
- \*D. Trausch, Manager, Nuclear Licensing and Industry Affairs

\*Denotes personnel that attended the exit meeting. 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 September 13, 1994. During this meeting, the inspector reviewed the scope and findings of the inspection. The licensee acknowledged the inspection findings. The licensee did not identify as proprietary any information provided to, or reviewed by, the inspectors.