

APPENDIX

U.S. NUCLEAR REGULATORY COMMISSION  
REGION IV

NRC Inspection Report: 50-285/91-27

Operating License: DPR-40

Docket: 50-285

Licensee: Omaha Public Power District  
444 South 16th Street Mall  
Omaha, Nebraska 68102-2247

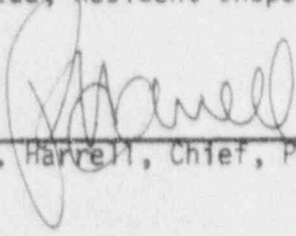
Facility Name: Fort Calhoun Station

Inspection At: Fort Calhoun Station, Blair, Nebraska

Inspection Conducted: December 22, 1991, through February 1, 1992

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

Approved:

  
P. H. Harrell, Chief, Project Section C

Date

2/13/92

Inspection Summary

Inspection Conducted December 22, 1991, through February 1, 1992  
(Report: 50-285/91-27)

Areas Inspected: Routine, unannounced inspection of onsite followup of events, operational safety verification, maintenance and surveillance observations, review of outage preparations, and a walkdown of the fire protection system.

Results:

- o During Emergency Diesel Generator 1 surveillance activities, excellent preplanning and attention to detail by the operators and technicians involved were noted (paragraph 6).
- o Preplanning of maintenance activities was found to be good (paragraph 5).
- o Although efforts were made to maintain good radiological protection practices, one instance was noted where failure to have properly sized replacement parts prolonged a technician's stay in a radiation area (paragraph 5).
- o Walkdown of the fire protection system identified the system to be properly aligned and operable (paragraph 7).
- o Management involvement in preparation for the refueling outage was notable (paragraph 8).

DETAILS1. Persons Contacted

- \*R. Andrews, Division Manager, Nuclear Services
- J. Chase, Assistant Manager, Fort Calhoun Station
- \*O. Clayton, Supervisor, Emergency Planning
- \*G. Cook, Supervisor, Station Licensing
- \*J. Gasper, Manager, Training
- \*W. Gates, Division Manager, Nuclear Operations
- \*R. Jaworski, Manager, Station Engineering
- \*W. Jones, Senior Vice President
- \*L. Kusek, Manager, Nuclear Safety Review Group
- \*D. Lovett, Supervisor, Radiation Protection
- \*W. Orr, Manager, Quality Assurance and Quality Control
- \*T. Patterson, Manager, Fort Calhoun Station
- \*R. Phelps, Manager, Design Engineering
- A. Richard, Assistant Manager, Fort Calhoun Station
- \*J. Sefick, Manager, Security Services
- C. Simmons, Station Licensing Engineer
- \*F. Smith, Supervisor, Chemistry
- \*R. Short, Manager, Nuclear Licensing and Industry Affairs
- J. Tills, Assistant Manager, Fort Calhoun Station
- D. Trausch, Supervisor, Operations
- \*S. Willrett, Manager, Nuclear Materials and Administration

The inspectors also contacted additional personnel during this inspection period.

\*Denotes attendance at the monthly exit interview on January 31, 1992.

2. Plant Status

The Fort Calhoun Station operated at 100 percent power until January 4, 1992, when the licensee began reducing power to compensate for the end-of-life fuel burnup. On January 31, at 5:25 p.m., the licensee began the plant shutdown, from 71 percent power, at a rate of 7 percent per hour. On February 1, at 2:05 a.m., the licensee manually tripped the turbine. At 2:14 a.m., the generator output breaker was opened, marking the beginning of the Fort Calhoun Station 13th refueling outage.

3. Onsite Followup of Events (93702)a. Loss of Radioactive Waste Building Radiation Monitors

On January 21, 1991, the licensee experienced a 5-minute loss of power to the sample pump for particulate Monitors RM-041, -042, and -043. At the time of the event, exhaust fans were operating, which resulted in an unmonitored release from the radioactive waste building.

The loss of power to the sample pump resulted from a momentary interruption to the 161-kV offsite power supply, which caused the onsite 13.8-kV supply breaker to open. The sample pumps, as well as the radioactive waste building exhaust fans, are supplied through this breaker. When the breaker was reset, the exhaust fans restarted but, due to the circuitry design, the sample pump had to be restarted locally. The operators were aware of this and dispatched an operator to restart the sample pump. However, for the 5 minutes that it took to restart the pump, the exhaust fans were operating which constituted an unmonitored release. It was determined that no regulatory limits were exceeded during this time period.

The licensee subsequently installed Temporary Modification 92-004, which will start the pump when the breaker is reset.

The inspectors will perform further review of this event during routine review of Licensee Event Report (LER) 92-001.

b. Personnel Access Lock (PAL) Leak Test Failure

On January 27, 1992, the inner door of the containment PAL failed the surveillance leak test between the two seals on the inner PAL door. This test is required after a containment entry.

The licensee evacuated the PAL, closed, and successfully tested the outer door. However, a breach of containment integrity occurred before the outer PAL door was successfully secured. The licensee entered Technical Specification (TS) 2.0.1, which requires a plant shutdown and the declaration of a Notification of Unusual Event (NOUE). Since the outer door passed its leak test before the declaration of a NOUE had been made, a NOUE was not declared. Notification was made to the NRC duty officer and to the states of Nebraska and Iowa for informational purposes.

The leak testing of the inner door seals from within the PAL area was a result of the licensee's determination, on December 16, 1991, that the leak rate test connections outside of containment were nonqualified. See NRC Inspection Report 50-285/91-24 for details.

The licensee maintained the outer PAL door closed and submitted, to the NRC, a request for a waiver of compliance in order to repair the inner door seals. This waiver was granted on January 30, 1992, for a 24-hour period beginning at 8 a.m. on January 31. The door was repaired and successfully tested on January 31. In addition, the licensee is scheduled to submit a TS change, which will reduce the need for waivers of compliance in those cases, like the one described above, where the safety significance of violating containment integrity is minimal.

The inspectors will perform further review of this event during routine review of LER 92-002.

c. Main Steam Safety Valves Failed Surveillance Test

On February 1, 1992, while in hot shutdown, the licensee found 5 of the 10 main steam safety valves to be outside of the TS-required tolerances. At the time of the test, the Fort Calhoun Station was in Day 1 of its 13th refueling outage. The safety valves that failed were Valves MS-276, -278, and -291 on Steam Generator RC-2A and Valves MS-280 and -292 on Steam Generator RC-2B. The valves were subsequently adjusted to within acceptable tolerances.

TS 2.1.6 requires 8 of the 10 safety valves to be operable while in power operation with their lift settings between 1000 psia and 1050 psia, with a tolerance of plus or minus 1 percent. The as-found tolerances of the lift settings for the 5 valves were between + 2.3 and + 3.2 percent. The licensee made a 4-hour notification to the NRC headquarters duty officer under 10 CFR Part 50.72 for being in a degraded condition while shut down.

The licensee had submitted, on June 28, 1991, a request for a TS change which would increase the lift tolerance on the safety valves to +3 and -2 percent. This change had not been granted as of the date of the testing. With the new tolerances only, Valve MS-292 would have failed.

The inspectors will perform further review of this event during routine review of LER 92-004.

Conclusion

The licensee's response to plant events was prompt and demonstrated good safety and regulatory awareness.

4. Operational Safety Verification (71707)

a. Routine Control Room Observations

The inspectors observed operational activities throughout this inspection period. Control room activities were observed to be well controlled. Proper control room staffing was maintained and professional conduct was continuously observed. Discussions with operators determined that they were cognizant of plant status and understood the importance of, and reason for, lit annunciators. The inspectors observed selected shift turnover meetings and noted that information concerning plant status and planned evolutions was communicated to the oncoming operators.

b. Plant Tours

The inspectors routinely toured various areas of the plant to verify that system lineups and proper housekeeping were being maintained. In addition, the inspector accompanied the auxiliary building and

turbine building operators on their respective tours. The operators were cognizant of their responsibilities and, based on questions posed by the inspector, were found to be knowledgeable of the systems and equipment that were located in the areas that they were touring.

c. Radiological Protection Program Observations

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. Health physics personnel were observed to be touring work areas, ensuring proper implementation of radiological protection practices and radiological control requirements. Radiation monitors were properly utilized to check for contamination.

d. Security Program Observations

The inspectors observed security personnel perform their duties of vehicle, personnel, and package search. Vehicles were properly authorized and controlled or escorted within the protected area. The inspectors conducted site tours to ensure that compensatory measures were properly implemented, as required. Personnel access was observed to be controlled in accordance with established procedures. The isolation zones were free of transient materials and were properly illuminated at night.

Conclusion

Personnel in the areas of operations, radiological protection, and security were found to be knowledgeable of their responsibilities and performed their duties in a professional manner.

5. Maintenance Observations (62703)

The inspectors reviewed and/or observed selected maintenance activities on safety-related systems and components to verify that the maintenance was conducted in accordance with approved procedures, regulatory requirements, and the TS.

a. Cleaning and Flushing of the Low Pressure Safety Injection (LPSI) Seal Water Cooler

On January 2, 1992, the inspector monitored a preventive maintenance activity on the component cooling water (CCW) side of a LPSI pump (SI-1A) seal water cooler. This work was performed as directed by Preventive Maintenance Order 9107231, using Maintenance

Procedure MP-AC-FLUSH, "Cleaning and Flushing of Coolers Supplied by the CCW System." This effort was the result of requirements set forth in Generic Letter 89-13 and Licensee Memo LIC-90-0050.

In preparation for this effort, redundant LPSI equipment was determined to be operable. In addition, required administrative approvals and tagouts were obtained prior to initiating the work. This activity accomplished by qualified personnel. Quality control hold points were established in the procedure and were observed during this effort. A health physics technician was present, providing continuous monitoring of the maintenance technician working in the area of the pump. Although efforts were made to maintain good radiological protection practices by prestaging equipment, failure to have the properly sized replacement gaskets prolonged the maintenance technician's stay in the area. With the aid of the health physics technician, the maintenance technician was able to wait in a low dose area while properly sized gaskets were obtained.

b. Replacement of a Raw Water Pump

On January 29, 1992, the licensee initiated efforts to remove and replace Raw Water Pump AC-10B. This maintenance activity was performed per Maintenance Work Order 913765 and, as directed by Maintenance Procedure MM-RR-RW-0001, "Removal and Installation of Raw Water Pumps." The pump replacement was performed after several attempts were made by the licensee to improve the pump's performance, when performance began to decline. The licensee will inspect the pump, once it is removed, to determine the cause of this decline.

This effort was performed per approved procedures, as designated by the appropriate signatures. Quality control personnel were present to inspect and witness those portions of this activity that were specified in the procedure. Appropriate precautions were taken to prevent personnel injury. This maintenance activity was accomplished by qualified personnel.

Conclusion

Preplanning of maintenance activities was found to be good. Although efforts were made to maintain good radiological protection practices, one instance was noted where failure to have properly sized replacement parts prolonged a technician's stay in a radiation area.

6. Surveillance Observation (61726)

On January 9, 1992, the inspector witnessed the monthly surveillance testing of the Emergency Diesel Generator 1 auto-start initiating circuitry and fuel oil transfer pumps. This surveillance effort was performed per Attachments 5 and 8 of Procedure OP-ST-DG-0001, "Diesel Generator 1 Check." Proper approvals and tagouts were obtained prior to test initiation. Limiting conditions for operation were met during this surveillance.

The surveillance procedure was reviewed and found to have the proper licensee review and approvals as identified by the appropriate signatures. The procedure was also in conformance with associated TS.

It was noted that the procedural format for the attachments, although workable, was not inherently easy to follow, providing a certain degree of distraction to the operators performing the test (i.e., flipping back and forth between the "local" and "control room" portions of the procedures). Operators interviewed disclosed a certain amount of discomfort with this procedural format. Despite this distraction, excellent prejob planning and attention to detail by the operators and technicians involved, contributed to the smooth performance of this surveillance. The concern regarding the procedural format was provided to licensee management for review.

#### Conclusion

Excellent prejob planning and attention to detail by the operators and technicians was noted during surveillance testing.

#### 7. Safety-Related System Walkdown (71710)

The inspector walked down accessible portions of the fire protection system to verify operability, as determined by verification of selected valve and switch positions. The proper valve positions were identified using the appropriate piping and instrumentation drawings. The valve positions indicated in these drawings were further verified by comparing them to Procedure OI-FP-1, "Fire Protection System Water System." No errors or discrepancies were noted.

The overall condition of the system piping and valves was good. No valve packing leaks or other notable valve damage such as bent valve stems, missing handwheels, or improper labeling was identified.

Halon bottles for the Halon 1301 system were found to be fully charged and properly restrained. The inspector witnessed surveillances on the fire protection system alarms and control room indications.

#### Conclusion

Walkdown of the fire protection system identified that the system was properly aligned and operable.

#### 8. Preparation for Refueling (60705)

During this inspection period, the inspectors reviewed the licensee's preparation for the upcoming refueling outage. This included a review of a selected number of procedures that the licensee was scheduled to use during the refueling outage, as noted below:

- o Operating Procedure OP-6, Revision 3, "Hot Shutdown to a Cold or Refueling Condition and Conduct of Shutdown Cooling Operations"
- o Operating Procedure OP-11, Revision 2, "Reactor Core Refueling"
- o Operating Instruction OI-SF-2, Revision 10, "Spent Fuel Pool Cooling Makeup"
- o Operating Instruction OI-SF-5, Revision 2, "Alternate Spent Fuel Pool Cooling"
- o Operating Instruction OI-SFP-4A, Revision 0, "Spent Fuel Pool Cooling Emergency Cross Tie with Shutdown Cooling Already in Service"
- o Operating Instruction OI-SFP-6, Revision 0, "Spent Fuel Pool Heat-Up Rate"

The new procedures were found to have proper approvals, as designated by the appropriate signatures. The recently approved procedures were found to be adequate and technically accurate, providing the appropriate TS surveillance requirements. In addition, recent changes to the already established procedures were found not to alter their technical adequacy.

Management involvement in refueling preparations was noted by the creation of an outage control center (OCC). The OCC is designed to better coordinate refueling activities by becoming the focal point where all maintenance, surveillance, and other outage activities are to be reviewed, approved, and coordinated, prior to being sent to the control room for final review and approval. This effort is expected to reduce both the traffic in the control room and the burden on control room personnel. In addition, the charter for the OCC provides a clear definition of the lines of supervision for the refueling outage. Another area where management involvement has also been noted, included the area of personnel training (i.e., providing presentations and supporting the development of training aids such as steam generator and reactor coolant pump mockups). These efforts by site management were found to be notable.

Based on interviews with site management, the inspectors identified that the quality assurance and radiation protection departments had taken steps to prepare for the increased number of personnel and activities that will occur during this outage. These steps included supplementing their personnel staff with contract personnel and providing 24-hour coverage by establishing rotating shifts. The contract personnel for radiation protection and quality assurance have already been trained and qualified prior to the beginning of the outage.

The inspectors previously observed and confirmed the satisfactory completion of fuel receipt and inspection. In addition, the inspectors confirmed that equipment checkouts of the spent fuel pool fuel movement machine had been satisfactorily completed.



### Conclusion

The licensee has taken appropriate steps in preparation for the outage. Management involvement in preparation for the outage was notable.

### 9. Exit Interview

The inspectors met with Mr. W. G. Gates (Division Manager, Nuclear Operations) and other members of the licensee staff on January 31, 1992. The meeting attendees are listed in paragraph 1 of this inspection report. At this meeting, the inspectors summarized the scope of the inspection and the findings. During the exit meeting, the licensee did not identify as proprietary, any information provided to, or reviewed by, the inspectors.