APPENDIX B

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 50-285/88-28 Operating License: DPR-40

Docket: 50-285

Licensee: Omaha Public Power District
1623 Harney Street
Omaha, Nebraska 68102

Facility Name: Fort Calhoun Station (FCS)

Inspection At: FCS, Blair, Nebraska

Inspection Conducted: August 22-26, 1988

Inspectors:

M. E. Murphy, Reactor Inspector, Test Programs Section, Division of Reactor Safety — Date 9/15/88

R. P. Mullikin, Project Engineer, Project Section B, Division of Reactor Projects — Date 9/15/88

C. E. Johnson, Reactor Inspector, Plant Systems Section, Division of Reactor Safety — Date 9/14/88

Approved:

W. C. Seidle, Chief, Test Programs Section Division of Reactor Safety — Date 9/14/88

Inspection Summary

Inspection Conducted August 22-26, 1988 (Report 50-285/88-28)

Areas Inspected: Routine, unannounced inspection of the fire protection/prevention program, the triennial postfire safe shutdown capability reverification, and followup on previously identified items.

Results: Within the areas inspected, two violations were identified (failure to take prompt corrective action in response to an NRC identified concern, paragraph 2; and failure to comply with Section III.J of 10 CFR 50, Appendix R, paragraph 4).

DETAILS

1. Persons Contacted

OPPD

D. Bannister, Training Instructor
H. Faulhaber, Manager, Electrical Engineering
*J. Gasper, Manager, Training
*W. Gates, Manager, Fort Calhoun Station (FCS)
*L. Gundrum, Nuclear Licensing Engineer
*K. Henry, Lead System Engineer
*J. Kecy, Supervisor, System Engineering
J. Lechner, Plant Engineer
*D. Matthews, Supervisor, Nuclear Licensing
*A. Mechtenberg, Fire Protection System Engineer
*T. Patterson, Assistant Manager, FCS
*A. Richard, Manager, Quality Assurance (QA)/Quality Control (QC)
*R. Sanchez, Lead Performance Engineer
*J. Tucker, Engineer

*Denotes personnel attending exit interview.

The NRC inspectors also contacted other operations, engineering, and administrative personnel.

2. Followup on Previously Identified Items (92701)

a. (Closed) Unresolved item (285/8715-03): Effect of Tendon Grease on a Seismic Gap Fire Seal - This item involved the seismic gap fire seal located in the northwest corner of the upper electrical penetration room where the auxiliary building joins the containment building. Tendon grease was noted to be coming from the fire seal. The licensee was requested to evaluate the possible effect the tendon grease had on the adequacy of the fire seal since this was not in the tested configuration.

The licensee, subsequently, contacted Dow Corning, the manufacturer of the fire seal material, on November 2, 1987, requesting assistance on this matter. Dow Corning verbally notified the licensee that the grease would not deteriorate the material. In an internal OPPD memorandum (FC-1816-87), dated November 20, 1987, the licensee concluded that the tendon grease presented no problem based upon the information from Dow Corning, the high flash point (400°F) of the grease, and the small quantity of the grease. In an NRC inspection in January 1988, the licensee was informed that their response was inadequate since no analysis of the particular seal was performed. At that time, the licensee verbally agreed to have the seal analyzed.

During this inspection, it was discovered that no analysis had been performed to determine whether the seismic gap seal in the upper electrical penetration room was adequate as a 3-hour fire barrier. This concern was brought to the licensee's attention in July 1987 and as of August 1988, no action had been taken to determine the functional capability of the seal nor to stop the intrusion of tendon grease. However, the licensee did have compensatory measures (fire watches) in place during this period. This is an apparent violation. (285/8828-01)

b. (Closed) Deviation (285/8724-01): Failure to Issue a Memo Establishing Committed Interim Measures - In a letter dated June 26, 1987, in response to Violation 285/8710-01, the licensee stated that a memorandum would be issued to all personnel with unescorted site access to establish interim measures for control of fire barriers. The interim measures were to be established until the appropriate procedures were revised and a permanent program implemented. This memorandum was not issued until September 30, 1987.

The licensee has, besides issuing the memorandum, instituted weekly meetings among their staff and monthly meetings with the NRC resident inspectors to review commitments made to the NRC. This deviation is considered closed.

c. (Closed) Open Item (285/8811-05): Failure to Seal Some Electrical Conduits - As a result of an NRC inspection documented in Inspection Report 50-285/88-09, the licensee committed to perform the following actions:

- Continue hourly fire watch patrols until the openings inside conduits, discovered during walkdowns by licensee personnel, were sealed in accordance with the draft criteria presented at the enforcement conference.

- Any openings inside conduits that were not sealed would be evaluated for adequacy by a fire protection engineer. These analyses would be maintained on file and would be completed by the end of May 1988.

- The licensee would update and clarify its commitments on this issue, including its association with the utility group currently addressing the issue of internal conduit seals. This would be submitted to the NRC for review by the end of April 1988.

The NRC inspectors reviewed the licensee's documentation on the results of their walkdown and were satisfied with the results. This open item is considered closed.

3. Fire Protection/Prevention Program (64704)

This part of the inspection was conducted to determine that the licensee had established and was implementing a program for fire protection and

prevention in conformance with regulatory requirements, technical specifications (TS) and industry guides and standards.

The NRC inspectors reviewed the following administrative procedures:

- o Housekeeping (SO-G-6, Revision 24, dated July 25, 1988)
- o Station Fire Protection Plan (SO-G-28, Revision 11, dated March 4, 1988)
- o Fire Protection System Inspection and Test (OI-FP-6, Revision 53, dated October 22, 1987)

In addition to the above procedures, the NRC inspectors also reviewed a proposed procedure change for SO-M-9 "Fire Prevention During Flame Cutting and Welding Operations." This change was to incorporate comments made during a recent audit of the fire protection program.

This procedure review verified that the licensee had technically adequate procedures to implement the fire protection program.

Procedural guidance was provided to control combustible material and reduce fire hazards. Administrative procedures also provided for maintenance and surveillances on fire suppression, detection, and support equipment. Personnel training, qualifications, and responsibilities were adequately provided. Maintenance evolutions that significantly increase fire risk were properly controlled.

The NRC inspectors conducted a walkdown of the fire suppression water system and verified that it was operable as required by TS.

A tour of accessible areas of the plant was conducted to assess general area condition, work activities in progress, and the visual condition of fire protection systems and equipment. Combustible materials and flammable and combustible liquid and gas usage were restricted or properly controlled in areas containing safety-related equipment and components. Items checked included positions of selected valves, fire barrier conditions, hose stations, hose houses, halon system lineups, fire lockers, and fire extinguishers for type, location, and condition.

There were no construction activities in progress in the toured areas. There was some maintenance work, surveillance testing, and outage preparations noted. General housekeeping conditions were found to be good. There was an increase in the combustible loading noted in the lower level of the turbine building due to the temporary relocation of the carpenter shop. A licensee representative stated that this will clear up when the carpenter shop is permanently located in the new maintenance building.

Fire protection systems and equipment installed for protection of safety-related areas were found to be functional and tested in accordance

with the requirements specified in the TS. Fire brigade equipment, including emergency breathing apparatus, was found to be properly stored and maintained.

The NRC inspectors also reviewed fire brigade training and drill records. The records were in order and confirmed that training and drills were being conducted at the specified intervals.

The last annual QA and triennial independent audits were reviewed by the NRC inspectors. System and equipment alterations, tests, surveillances, maintenance, records, and overall program procedures were addressed. Discrepancies identified were formally presented to the affected organization. Responses were tracked to close out, and actions taken were reviewed for adequacy. However, it was noted that prompt resolutions in all cases were lacking and items that could be of safety significance were not yet resolved. Specifically, completion of engineering evaluations on the adequacy of the halon suppression systems and the diesel generator sprinkler systems.

There were no violations or deviations identified in this area of the inspection.

4. Triennial Postfire Safe Shutdown Reverification (64150)

The NRC inspectors reviewed the licensee's program to maintain the postfire safe shutdown, emergency lighting, and reactor coolant pump oil collection capabilities achieved during the initial 10 CFR Part 50, Appendix R inspection.

a. Postfire Safe Shutdown Capability

The NRC inspectors reviewed documentation to determine whether plant modifications made since the last safe shutdown analysis received an adequate safe shutdown evaluation. It was noted that Sargent & Lundy Engineers had already performed a review for the licensee of all plant modification packages since the latest issue of the FCS Safe Shutdown Analysis.

Also reviewed by the NRC inspectors was the list of modifications made or proposed for 1987-89. From this list, the NRC inspectors chose five modifications that appeared to have the potential to affect the safe shutdown analysis. The five modifications were found to have had an adequate licensee assessment of potential effects on safe shutdown capability. The following modification requests were reviewed:

- FC81-051, "Control Room Air Conditioning Unit Replacement"
- FC86-046, "Qualification of Pressurizer Level Control Instrumentation"

- o FC87-026, "Transfer of the P250 Computer Functions to the MODCOMP Computer"
- o FC87-037, "Diesel Generator Electrical Modifications"
- o FC88-060, "Diesel Exhaust Seismic Supports"

The NRC inspectors reviewed the OPPD Generating Station Engineering Guides GEG-3, "Preparation of Design Packages," and GEG-4, "Fire Protection System Interaction" which instructs the reviewer on possible safe shutdown effects due to plant modifications. These procedures appeared adequate to perform their intended functions.

No violations or deviations were identified.

b. Emergency Lighting

A review was performed of the adequacy of emergency lighting required to perform the safe shutdown functions when a fire requires the evacuation of the control room.

In a previous NRC inspection in January 1988, it was noted that when exiting the control room, after a fire, the operators must travel along a corridor to the stairway leading down to the alternate shutdown panel and the switchgear rooms. The operators would have had to rely on the use of hand-held lights and battery powered exit signs for illumination in this corridor. NRC Region IV requested from NRC Headquarters a clarification of the adequacy of this emergency lighting. Their response on June 23, 1988, stated that the reliance on hand-held lights and exit signs for illumination does not satisfy the technical requirements of Section III.J of Appendix R to 10 CFR Part 50.

Section III.J of Appendix R states that "Emergency lighting units with at least an 8-hour battery power supply shall be provided in all areas needed for operation of safe shutdown equipment and in access and egress routes thereto." Thus, the licensee does not satisfy this requirement. This is an apparent violation. (285/8828-02)

The licensee, at the exit interview, committed to performing compensatory measures for the lack of adequate emergency lighting in the control room corridor. They have subsequently installed, as verified by the senior resident inspector, a battery powered emergency lighting unit in the corridor. The unit has two lamps which are directed in such a direction to allow for adequate emergency illumination for operators travelling this corridor.

c. Reactor Coolant Pump Oil Collection System

The NRC inspectors reviewed the design of the reactor coolant pump oil collection system. The design appeared adequate with the

exception of the capacity of the oil collection tanks. Section III.O of Appendix R requires that oil leakage be collected and drained to a vented closed container that can hold the entire lube oil system inventory. The licensee's design is for two collection tanks with a capacity of 150 gallons each. Each of the four reactor coolant pumps has an oil capacity of less than 115 gallons. Thus, there is a total tank capacity of 300 gallons to collect a total oil supply of approximately 460 gallons. However, according to the FCS Fire Hazard Analysis the largest oil leak has been determined to be less than 80 gallons total.

Since the oil collection system, including collection pans, drain lines, and collection tanks has enough capacity to hold all of the oil from the pumps, there appears to not be a safety concern. However, the present system does not comply with Section III.O of Appendix R and an exemption is required. This will be considered an unresolved item pending the licensee's submittal and NRR's review and acceptance of the exemption request for the reactor coolant pump oil collection system. (285/8828-03)

No violations or deviations were identified.

5. Prestressing Post-Tensioning System (61701)

During the inspection of the fire area barrier in the upper electrical penetration room, tendon grease was observed on the fire barrier seal. Tendon grease was also observed on the outer perimeter of the tendon buttress. The NRC inspectors asked the licensee two questions: (1) has the tendon grease been isolated to a specific location; and (2) is the tendon grease leakage within acceptable limits.

The licensee could not address the issue at the time; however, they did inform the NRC inspectors that Inryco performed the surveillance requirements for the prestress tendon system as required by TS and found no significant problems.

Prior to the exit interview the licensee gave the NRC inspector the surveillance report performed by Inryco. The NRC inspector reviewed the results of the report. The results indicated that the tendons were observed for tendon grease volume and were within the acceptance criteria. Even though the results of the last surveillance requirements were acceptable, the NRC inspector noted that since the surveillance report only included a sampling of the tendons, there may be tendons that were not included in the sample selection performed by Inryco. These tendons may not have an adequate volume of grease which could leave insufficient corrosion protection. This issue was discussed with licensee personnel at which time the NRC inspector stated that a determination of what tendons are leaking grease and if this grease leakage has affected tendon operability needs to be conducted.

This is considered to be an Unresolved Item (50-285/8828-04).

6. Unresolved Item

Unresolved items are matters about which more information is required in order to ascertain whether or not the items are acceptable, violations, or deviations. The following unresolved items were discussed in the report:

Paragraph	Item	Subject
4	285/8828-03	Submittal and acceptance or reactor coolant pump oil collection system exemption
5	285/8828-04	Effect of leaking tendon grease or tendon operability

7. Exit Interview

The NRC inspectors met with Mr. W. G. Gates and other members of the licensee staff at the end of the inspection. At this meeting, the NRC inspectors summarized the scope of the inspection and the findings. The licensee did not identify as proprietary any of the information provided to, or reviewed by, the NRC inspectors.