APPENDIX B

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 50-285/88-26 Operating License: DRP-40
Docket: 50-285

Licensee: Omaha Public Power District (OPPD)

Facility Name: Fort Calhoun Station (FCS)

Inspection At: Fort Calhoun, Nebraska

Inspection Conducted: July 25-29 and August 15-19, 1988

Inspector: R D Taylor 9/14/88
R. C. Stewart, Reactor Inspector, Materials and Quality Programs Section, Division of Reactor Safety for Date

Approved: James L. Milhoan 9/14/88
J. Barnes, Chief, Materials and Quality Programs Section, Division of Reactor Safety Date

Inspection Summary

Inspection Conducted July 25-29, and August 15-19, 1988 (Report 50-285/88-26)

Areas Inspected: Routine, unannounced inspection of actions on previous inspection findings and the licensee's implementation of the Inservice Testing (IST) program for pumps and valves. Activities reviewed in the IST area included test procedures and results, test witnessing, IST training, and maintenance activities.

Results: Within the area inspected, two violations were identified (failure to control and calibrate stopwatches, paragraph 4.b and failure to clearly identify vibration test locations, paragraph 4.a).

DETAILS

1. Persons Contacted

OPPD

+*W. Gary Gates, Manager, Fort Calhoun Station (FCS)
+*Carl Simmons, Onsite Licensing Engineer
*D. Matthews, Supervisor, Nuclear Licensing
*L. Wigdahl, Supervisor, Technical Training
*S. Willrett, Manager, Administrative Service
*G. Roach, Supervisor, Radiation Protection
*F. Smith, Plant Chemist
*K. Morris, Division Manager, Nuclear Operations
*D. Trausch, Supervisor, Operations
+*R. Jaworski, Manager, Station Engineering
*T. Patterson, Assistant Manager, FCS
+J. Drahola, Maintenance Support Supervisor
+K. Henry, Lead Systems Engineer
*P. Hamer, ISI Site Supervisor
+A. Richard, Manager, Quality Assurance (QA)/Quality Control (QC)

The NRC inspector also interviewed other licensee employees during the inspection.

*Denotes those attending the exit interview on July 29, 1988.
+Denotes those attending the exit interview on August 18, 1988.

2. Followup On Previously Identified Items

(Closed) Open Item 285/8722-01: Main steam, power operated stopcheck Valves HCV-1041A and HCV-1042A. Inservice Test Procedure, ST-ISI-MS-1, does not provide instructions for a leak rate test.

During this inspection, the NRC inspector reviewed the NRR approved IST program requirements for testing those valves. Valves HCV-1041A and HCV-1042A are classified as Section XI, Code Category B, Valves ("Valves for which seat leakage in the closed position is inconsequential for fulfillment of their function"). These valves serve to isolate the main steam headers and are stroke tested during cold shutdown. IST test records reviewed by the NRC inspector during this inspection included those valves. This item is considered closed.

(Closed) Open Item 285/8722-02: Maintenance Order (MO) No. 830044 was written on November 3, 1983, because Check Valve AC-104 was making noise; however, the MO was cancelled because there were no parts available to perform maintenance.

During this inspection, the NRC inspector's review of this matter revealed that records indicated the "noise suspected to be vibrations from Check Valve AC-104 was not the point of origin of the vibrations. The source was found elsewhere (broken element upstream)." The NRC inspector reviewed the subsequent quarterly functional test record for this valve. There were no abnormal characteristics observed. This item is considered closed.

(Closed) Open Item 285/8722-03: Questions regarding IST functional testing of check valves in various plant systems.

During this inspection, the NRC inspector made a comparative review of the IST program relative to each of the 45 valves identified under this open item.

With the exception of Check Valves CH-203, CH-204, FW-161, and RW-162 which do not perform a safety function, all remaining 41 check valves were incorporated in the licensee's IST program and are functionally tested in accordance with the NRR approved program. This item is considered closed.

LER Followup

(Closed) LER 87-010: The licensee committed to an independent verification review of the IST program and to incorporate Feedwater Valves FW-173 and -174 in the IST program. During this inspection, the NRC inspector reviewed the independent verification report, dated September 21, 1987, and verified the IST functional testing was performed on Valves FW-173 and -174. There were no further questions by the NRC inspector. This matter is considered closed.

3. IST Program Pumps and Valves (MC73756)

The objectives of this inspection were to evaluate the implementation of the FCS IST program for safety-related pumps and valves, and to assess the adequacy of the testing performed with respect to the licensee commitments and requirements of Section XI of the ASME Code.

a. IST Program Overview

The NRC inspector ascertained from review of the IST Program Plan that the FCS IST Program is subject to the requirements of 10 CFR 50.55(g) and the ASME Boiler and Pressure Vessel Code, Section XI, Subsections IWP and IWV, 1980 edition through Winter 1980 addenda. The FCS IST Program Plan is currently being implemented under Revision 3, dated December 1987, and covers the second 10-year testing interval from September 26, 1983, to September 1993. The plan is presently under transition to Revision 4, which is to incorporate changes submitted to the NRC, dated December 16, 1987, and July 29, 1988, respectively.

b. Test Procedures/Data Review

During the inspection, the NRC inspector made a random selection of completed IST surveillance Test Procedures. Those were reviewed to ensure that they contained reference values and other pertinent attributes prescribed by guidelines of the ASME Code, Section XI, Articles IWP/IWV-3000. Procedure selection included the following:

- Test Procedure ST-ISI-MS-1, "Main Steam Valve Inservice Testing." Operability tests, Valves YCV-1045A, YCV-1045B, IV-1045A-C, HCV-1041A, and HCV-1042A, test dates June 3, 1987, and June 14, 1988.

- Test Procedure ST-ISI-CC-1-1, "Component Cooling Water Valves," Valves 402 A/C, 402 B/D, 403 A/C, and 403B, test dated April 28, 1988.

- Test Procedure ST-ISI-CC-3-1, "Component Cooling Water Pump AC-3B," test dated April 25, 1988.

- Test Procedure ST-ISI-CC-3-1, "Component Cooling Water Pump AC-3C" test dates June 27 and August 3, 1988. Test conducted August 3, 1988, was in conjunction with Maintenance Orders MO-88-3230 and MO-88-3287, dated July 26 and July 28, 1988, respectively.

- Test Procedure ST-ISI-CC-1-1 "Valve Operability Test," HCV-474, test dated April 19, 1988.

During this inspection, the NRC inspector reviewed the above completed Surveillance Test Procedures. The NRC inspector observed that the procedures were well structured, organized, and detailed, including such attributes as references, special instrumentation, prerequisites, precautions, and sequential sign-offs and approvals. However, test procedures, involving full-stroke timing of valves, did not contain the identity of the specific stopwatches used in the stroke times recorded.

4. Test Witness

a. Pump Test

On July 26, 1988, the NRC inspector witnessed plant operations and engineering personnel conduct a postmaintenance IST functional test performed on Component Cooling Water Pump AC-3C. The test was conducted after maintenance personnel had replaced the outboard pump bearings (previously found to be exhibiting higher than normal operating temperatures). Subsequent to witnessing the initial test, the NRC inspector observed that records indicated that during an addition test conducted on July 27, 1988, the outboard bearings were still running high, 131°F (Alert Range 140°F to 170°F).

On July 28, 1988, the pump was rebuilt under MO-88-3287, wherein, replacement parts included bearings, wear rings, impeller and seals (see paragraph 5).

On August 3, 1988, Surveillance Test ST-ISI-3-1 was again performed. The test results indicated that the outboard bearing temperatures were still running hot, measuring 149.4°F. The pump was operationally declared to be in the "Alert" range, necessitating a retest on August 23, 1988.

Subarticle IWP-4520 states, in part, "The vibration reference point shall be clearly identified to permit subsequent duplication in both location and plane." During the test witness of Pump AC-3C performed on July 26, 1988, the NRC inspector observed that response points on the bearing housing of Pump AC-3C and adjacent component cooling water pumps, did not have discernible markings that would comply with Subarticle IWP-4520. This matter was discussed with the cognizant licensee representatives and identified by the NRC inspector as an apparent violation of NRC requirements (285/8826-01).

During the inspection, the licensee initiated immediate action to correct this apparent violation. Although it was apparent that some other pumps were correctly marked, all IST pump bearing housings were remarked. This activity was verified by the NRC inspector during a partial plant walkdown. Adequate corrective action relative to this violation was initiated and completed during this inspection period.

b. Valve Test

The NRC inspector, accompanying the NRC resident inspector, witnessed the IST Full-Stroke Surveillance Test performed on main steam bypass Valve YCV-1041A.

During the test, the NRC inspector witnessed the sequential steps of the test procedure performed by the operations staff and had no questions regarding the operational performance of the test. The NRC inspector observed that the two stopwatches used during the performance of the test did not have an identification number or a calibration due date sticker, as required by FCS Standing Order M-28, and is an apparent violation of 10 CFR 50, Appendix B, Criterion XII, which states, "that tools, gauges, instruments, and other measuring and testing devices used in activities affecting quality are properly controlled, calibrated, and adjusted at specified periods to maintain accuracy within necessary limits." The FCS Standing Order M-28, "Calibration of Test Equipment and Plant Process Equipment Used To Support the Inservice Inspection of Nuclear Plant Components

Program," identifies, under Appendix A, stopwatches to be calibrated annually. (285/8826-02)

During the inspection, the licensee initiated the following corrective actions:

- An ICOM Model IC-R71A Communications Receiver was purchased and installed to receive the National Bureau of Standards (NBS) WWV signal.
- All site stopwatches were retrieved, assigned identification numbers, and calibrated.
- Stopwatches were calibrated in accordance with Procedure CP-IC-352, using the NBS signal. All stopwatches were found to be within tolerance.
- A memorandum, FC-1668-88, dated August 12, 1988, was written to all supervisors advising them of the requirement to use only controlled, calibrated stopwatches, with reference to the FCS Standing Order M-28.

In addition, temporary written instructions were immediately attached to control room valve test procedures identifying requirements for stopwatch identification numbers and calibration due dates to be recorded.

The above corrective actions were verified by the NRC inspector during the inspection.

5. IST Maintenance Activities

During this inspection, the NRC inspector conducted a review of MO-88-3287, dated July 28, 1988. The MO was initiated as the result of high bearing temperatures identified during testing of Component Cooling Water Pump AC-3C. Maintenance Procedure, MP-AC-3-1, "Inspection and Overhaul of Component Cooling Water Pumps," dated February 21, 1985, prescribed the teardown and inspection requirements. It was observed by the NRC inspector that mechanical seals, bearings, bearing housings, oil seals, wear rings, and impeller were replaced. Data recorded included "as-found" and "as-left" conditions.

There were no violations or deviations identified.

In addition, in conjunction with the followup review of LER 87-10, the NRC inspector reviewed the documents related to the disassembly and inspection of Feedwater Check Valve FW-174, performed during the 1987 refueling

outage. The work was initiated under MO-87-2111, and performed as prescribed by Inservice Test Procedure ST-FW-1," Feedwater Valve Inservice Testing."

No violations or deviations were identified.

6. IST Trending

During this inspection, the NRC inspector reviewed the licensee's IST Component Trending Program Status. A random sampling of valve stroke times and pump trending data showed that the appropriate corrective actions were being performed as prescribed by IST criteria.

No violations or deviations were identified.

7. Exit Inverview

The NRC inspector met with the licensee personnel denoted in paragraph 1 on July 29 and August 18, 1988, respectively. The NRC inspector summarized the purpose, scope, and findings of the inspection. The NRC senior resident inspector was also in attendance.