U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT
REGION IV

Report No. 50-298/80-08

Docket No. 50-298 License No. DPR-46

Licensee: Nebraska Public Power District
P. O. Box 499
Columbus, Nebraska 68601

Facility Name: Cooper Nuclear Station

Inspection At: Cooper Nuclear Station, Nemaha County, Nebraska

Inspection Conducted: May 6-9, 19-23, 1980

Principal Inspector: G S Madsen for 6/6/80
R. G. Spangler, Reactor Inspector
Reactor Projects Section
Date

R E Hall 6/6/80
J. Tapia, Reactor Inspector
Engineering Support Section
Date

Approved by: G S Madsen for 6/6/80
T. F. Westerman, Chief, Reactor Projects Section
Date

Reviewed by: R E Hall 6/6/80
R. E. Hall, Chief, Engineering Support Section
Date

Inspection Summary:

Inspection on May 6-9, 19-23, 1980, (Report No. 50-298/80-08)

Areas Inspected: Routine, unannounced inspection of follow-up on previously identified items, refueling activities, surveillance, surveillance of pipe supports and restraint systems, maintenance, witness of Containment Integrated Leak Rate Test, and independent inspection effort. This inspection involved 102 man hours on-site by two NRC inspectors.

Results: Within the areas inspected above, no items of noncompliance or deviations were identified.

DETAILS

1. Persons Contacted

Nebraska Public Power District

M. Allen, Engineering Technician
L. F. Bednar, Electrical Engineer
P. J. Borer, Operations Supervisor
P. F. Doan, Mechanical Engineer
*L. C. Lessor, Station Superintendent
C. R. Noyes, Technical Assistant to Station Superintendent
R. O. Peterson, Engineering Supervisor
D. L. Phillips, I&C Engineer
J. Weaver, NPPD Licensing Engineer
V. L. Wolstenholm, Quality Assurance Supervisor

*Indicates presence at exit meetings.

General Electric

J. Staley, Director of NDE Services, GE
J. Crown, Startup and Test Engineer, GE
P. Ramsey, Senior Engineer, GE
R. Wohlgemuth, NDE Specialist
E. Gulyean, NDE Specialist

2. Followup on Previously Identified Items.

(Closed) Open Item 8006-03 (Inspection Report 80-06, paragraph 8): Installation of Electrical Penetration Pigtails.

The licensee notified Region IV by letter dated May 23, 1980, that the required QA construction records have been reviewed. The installation procedure was identified and the records search produced no deviation reports concerning these installations. Any further review will be conducted in conjuction with the remaining followup activities for IEB 79-01B.

3. Refueling Activities

The inspector reviewed completed surveillance tests and observed fuel handling operations in the control room and from the refueling bridge to determine that:

- Fuel handling activities were conducted in accordance with the license, and

- Fuel manipulation and accountability methods were conducted in accordance with written approved procedures.

Surveillance Procedure 6.1.27 was performed on May 5, 1980 to verify refueling interlocks and satisfy the refueling requirements delineated in the license prior to commencing fuel handling. Refueling operations were begun at approximately 10:00 p.m. on May 5, 1980 and continued throughout the following week. The inspector observed the conduct of these activities periodically over the period May 6 to May 8, 1980 and verified the items noted above. No items of noncompliance or deviation were identified during this portion of the inspection.

4. Containment Integrated Leakage Rate Test

The second periodic Reactor Containment Integrated Leakage Rate Test (CILRT) at Cooper Nuclear Station was witnessed during this inspection. The inspection included observations of test activities, review of procedures and records, and independent calculations by the IE inspector. This inspection effort was performed in order to ascertain whether the testing was conducted in accordance with approved procedures and specified acceptance criteria. Specific requirements are contained in the following documents:

a. 10 CFR 50 Appendix J, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors"

b. ANSI N45.4, "Leakage-Rate Testing of Containment Structures for Nuclear Reactors"

c. Cooper Nuclear Station Technical Specifications, Section 4.7.A.2, Integrated Leak Rate Testing"

Surveillance Procedure 6.3.1.3, "Primary Containment Integrated Leakage Test," Revision 5, incorporates the requirements with the test procedure. This procedure was reviewed by the IE inspector and found to be in conformance with the specified requirements.

In addition to the current testing program, a review was performed of the previous type "A" test for the purpose of verifying the rationalization used by the licensee in proposing a shortened-duration Type "A" test. Technical Specifications permit a test duration less than 24 hours if it can be demonstrated that the leakage rate can be accurately determined during a shorter test period. Evidence of the accuracy of a shorter test duration consisted of a mass point analysis of the previously performed type "A" test data. The analysis, using both the Reference and Absolute Methods, was performed in accordance with the American Nuclear Society Standard N274, "Containment System Leakage Testing Requirements," Draft No. 3. This analytical method consists of determining the mass of air

in the containment, utilizing the ideal gas law, at each time point during the test and subsequently performing a straight line least squares analysis to estimate the leakage rate. The analysis results in statistically determined, 95 percent accurate, estimation of the projected 24 hour leakage rate. The IE inspector found that the previous test data showed, with a 95 percent level of confidence, that the measured leakage rate was less than the allowable leakage rate when computed using twenty data points. Although this number of data points represents six hours and forty minutes, the licensee performed the type "A" test for more than twelve hours. A Review of the plot of leakage rate versus time for the current data will be reviewed during a subsequent follow-up on the submittal of the summary technical report in accordance with 10 CFR 50, Appendix J., Section V.B.

Prior to the initiation of the type "A" test, the IE inspector accompanied the NPPD I&C engineer in charge of the test on an inspection of the suppression chamber. The placement of the temperature and dewpoint instrumentation and the reference vessel were observed by the IE inspector. The data collection panel and the containment pressurization system were also inspected.

The IE inspector witnessed the pressure decay test performed on containment penetration No. X-6, "Control Rod Drive Removal Hatch." Initial test results indicated excessive leakage and the double o-ring seals were, therefore, replaced. Subsequent testing in accordance with Surveillance Procedure 6.3.1.1, "Primary Containment Local Leakage Tests," Revision 9 showed no leakage occurring. In addition, the local leakage test on penetration No. X-200A, "Suppression Chamber Access Hatch," was also witnessed.

The operating modes for systems penetrating containment were reviewed. The valve alignment specified for the Residual Heat Removal System I, as documented on attachment "C" to the surveillance procedure, was verified.

The instrument calibration certifications traceable to the U. S. Bureau of Standards for the resistance temperature detectors (RTDs), dewcells, pressure gauges, and the flowmeter used in the verification test were reviewed.

Prior to the conduct of the type "A" test, a valve was found to be leaking in excess of the previously determined type "C" test reeults. The licensee reworked the valve stem packing and continued with the pressure stabilization period. The licensee has committed to provide information on the valve that required corrective action before the test, in accordance with Appendix J, Sections III.A.1(b) and IV.A. A review of this information along with an analysis of the raw data is an open item which will be addressed subsequent to the licensee's submittal of a final report. (Open Item 80-08/01).

During the performance of the type "A" test, the IE inspector computed the leakage rate in accordance with the Mass Point Analysis - Absolute

Method of American Nuclear Society Standard N274. The computations performed by the IE inspector were for twenty-one data points taken at twenty-minute intervals. The IE inspector also reviewed the GE computer program for verification of the inclusion of a conversion of dewpoint temperatures to partial vapor pressure of water which took into account test pressures in excess of those upon which saturation curves are based. In addition, the dewcell weight factor program adjustment, required as a result of three out of six dewcells failing, was reviewed by the IE inspector. The weight factor readjustment was verified by calculation by the IE inspector.

The data collection observed involved the first twenty-one data points. The IE inspector independently calculated the leakage rate using the Total-time procedure delineated in ANSI N45.4-1972. This analytical technique confirmed the acceptability of the test results being obtained by the licensee's contractor, General Electric. Although these data represent less than seven hours, the reference vessel mass plot leakage rate at the 95 percent confidence level, was less than the allowable leakage. Since the data, the results of analysis from the entire Integrated Leakage Rate Test, and the superimposed leakage Verification Test were not available prior to the conclusion of the inspection, these data were requested in order to permit completion of the test data analysis. The review and comparison of the data with the final CILRT report is considered an open item. (80-08/01).

5. Surveillance of Pipe Support and Restraint Systems

The inspector reviewed the licensee's procedures and programs for the inspection of hydraulic, mechanical and fixed pipe supports to determine that requirements of the license were being met in accordance with regulatory guidance and accepted industry standards. This review covered the inspections conducted in 1979 under procedures 7.2.34, Visual Inspection of Safety-Related Hydraulic Snubbers, and 6.3.10.9, Functional Testing of Safety-Related Hydraulic Snubbers. In addition, the inspector sampled data sheets from the 1980 ISI Program (ASME Section XI) for visual inspection of fixed pipe supports and mechanical snubbers in safety-related systems.

The following items were identified. Prior to the "as found" functional test conducted on November 6, 1979 the tension screw on snubber serial number 8093 was adjusted from full out to approximately one-half inserted. The snubber subsequently locked up within the acceptance criteria. The adjustment made above increased tension lockup velocity from some low value to a higher value. While this represents a conservative adjustment, the inspector discussed with the station manager the concern of possibly invalidating test results due to indiscriminante adjustments.

The acceptance criteria for lock up velocity in procedure 6.3.10.9 is specified as 1 to 40 in/min and references ITT Grinnel Technical Report

PHD 7579-S-1. This particular report and the procedure 6.3.10.9 do not include temperature correction factors to account for changes in snubber performance at test stand temperature versus in-service temperature. The Technical Assistant to the Station Superintendent has requested from ITT Grinnel a copy of Technical Report PHD-6500-7 which qualifies temperature correction coefficients. This material is to be included in the acceptance criteria of 6.3.10.9. This item is an open item (8008-02). Because of repeated fitting leaks, the licensee has implemented MDC 74-159 and rebuilt hydraulic snubber utilizing one-fourth inch stainless steel tubing. ITT Grinnel initially questioned this but subsequently, verbally confirmed the acceptability of one-fourth inch tubing. They are to forward a written confirmation to the licensee.

This item will remain as an open item pending a review of this letter (8008-03).

In addition to the above, the inspector selected the following five hydraulic supports and visually examined them for operability: HP-S-11, HP-S-15, CS-S-6, CS-S-7, CS-VE-7. Rigid pipe and component supports within the general areas of the above snubbers were also visually examined. No unacceptable conditions were observed. Further reviews in this area will be conducted; however, to date no items of noncompliance or deviations have been identified.

6. Maintenance

The inspector selected the torus modifications and repairs to the number 2 Diesel Generator for record review and observation to ascertain that they were conducted in accordance with written administrative procedures. The torus modifications were conducted under MDC 76-110. The replacement of a cracked cylinder head on the number 2 diesel generator was conducted under MWR 80-4-55. During subsequent testing of this diesel a bolt at the connecting rod to piston pin of one cylinder failed causing cylinder and piston damage. Repairs were conducted under MWR 80-5-18. The licensee has replaced all connecting rod to piston pin bolts in this diesel. The results of an examination of the removed bolts by NDT methods will determine the extent of examination for the number 1 diesel and the generic implications of the bolt failure. This item is reportable and followup will be tracked in conjunction with the LER closeout. No further items were identified.

7. Independent Inspection Effort

The inspector viewed tape one of the Core Verification Videotape to confirm proper bundle orientation and placement by serial number. No adverse findings were identified.

8. Exit Meeting

Exit meetings with the Station Superintendent were conducted at the conclusion of each portion of this inspection. Areas inspected and the findings noted above were identified by the inspectors and acknowledged by the Station Superintendent.