

U. S. ATOMIC ENERGY COMMISSION
REGION III
DIVISION OF COMPLIANCE

Report of Inspection

CO Report No. 263/70-13

Licensee: Northern States Power Company
Monticello Nuclear Generating Plant
Construction Permit No. CPPR-31
Category B

Dates of Inspection: July 16 and 21-23, 1970

Dates of Previous Inspection: July 6-8, 1970

Inspected By: C. D. Feierabend Responsible Reactor Inspector August 12, 1970

E. Jordan E. Jordan Reactor Inspector August 12, 1970

Reviewed By: H. D. Thornburg H. D. Thornburg Sr. Reactor Inspector August 13, 1970

Proprietary Information: None

SUMMARY

The sheet metal workers strike has been settled, and construction efforts have resumed. Plant construction is estimated to be 99% complete. (Section II.A.)

A third primary containment leak rate test was completed on July 16. Preliminary calculations indicate that an acceptable leak rate was obtained. The final report of the test is not complete; therefore, CO:III review of this matter is considered to be incomplete. (Section II.B.)

Additional action was required to correct the problem involving the reactor protection system relays. (Section II.C.)

DETAILS

I. Scope of Inspection

Announced inspections at the Monticello Nuclear Generating Plant were conducted on July 16, 1970, by E. Jordan, and on July 21-23, 1970, by C. Feierabend. The inspections were to observe a portion of the primary

containment leak rate test, to observe the status of construction and testing and to follow up on previous inspection items.

The following personnel were contacted during the course of these inspections:

Northern States Power Company (NSP)

J. Sullivan - Principal Quality Assurance Representative
P. Krumpos - Metallurgical Engineer
C. Larson - Plant Superintendent (Operations)
M. Clarity - Assistant Plant Superintendent (Operations)
E. Eliason - Radiation Protection Engineer
G. Jacobson - Plant Results Engineer
D. Antony - Test Engineer

General Electric Company (GE)

R. Goettge - Site Manager
J. Sherman - Site Quality Assurance Representative
J. Miller - Operations Manager
J. Staley - Test Engineer

Bechtel Corporation (Bechtel)

T. Walsch - Test Engineer

II. Results of Inspection

A. Status of Plant Completion

The sheet metal workers strike that was mentioned in a previous inspection report^{1/} has been settled. Work resumed on July 13, and all crafts are back onsite. The inspector observed that a general cleanup had been completed and that final grading of the area around the plant was in progress.

The inspector discussed the status of plant construction with Mr. Goettge. He estimated the plant to be 99% complete. Appendix A, attached, tabulated the GE estimate of construction status as of July 15. Several major items have been completed since the general status was last discussed in an inspection report.

1. The fuel storage pool leaks have been repaired, and the pool has subsequently been tested to verify that there are no leaks.

2. The reactor vessel modifications are completed, and the vessel hydrostatic test, following the modification, has been completed.
3. Cleaning and flushing of the reactor vessel internals is complete.
4. The turbine has been completed and is now on the turning gear.
5. The primary containment leak rate test has been performed.

Discussions of completion schedules included completion of remaining construction tests and the tentative schedule for completion of all work required prior to fuel loading. The tentative schedules indicated that the secondary containment leak rate test would be completed during the week of August 3, and that the plant should be physically ready for fuel loading by August 21.

B. Testing

1. Primary Containment Leak Rate Test

The inspector observed a portion of the primary containment leak rate test being conducted on July 16. Preliminary test results were calculated to be less than 0.5%/day. This compares favorably with the leak rate test^{2/} criteria of 0.9%/day contained in the Technical Specifications.^{2/}

The test was performed by reference volume method, with one volume located in the neck, one in the bulb and one in the torus. The three volumes were manifolded together with a line exiting the drywell for differential pressure measurement between the containment and the reference volume. A total of 17 thermocouples were used to establish the temperature of the air volume within containment. The thermocouples were air volume weighted to establish the average value. A total of four dew cells were utilized. The relative worth of the dew cells was also volume weighted.

Observations of the test in progress and discussions with NSP and GE test personnel indicated that a deviation from the test procedure was necessary to complete the test. During initial pressurization it was necessary to connect the HPCI

^{2/} FSAR Vol. VII, Appendix A, Technical Specifications for the Monticello Nuclear Generating Plant

system steam line to a containment spray test connection, via a hose connection, in order to physically connect the drywell to the reactor vessel. The test data was recorded and preliminary calculations were being performed during the progress of the test. The site calculation indicated that the leak rate was less than 0.5%/day of the contained volume, however the test personnel stated that all of the data would be included in a final report, which would include an error analysis. In response to further questions concerning the deviation from the procedure, the inspector was informed that it was a problem concerning one of the vent valves for the reactor vessel. The problem was described as a "maloperation" of the valve, in that the valve had been opened and apparently was closed during tightening of the valve packing.

2. Preoperational Testing

The inspector reviewed the status of preoperational testing procedures (PTP) and the results of some of the testing. Over 90% of the procedures have been approved by the NSI Operations Committee. Those not yet approved are primarily concerned with the turbine generator, inerting system and heating and ventilation systems. Several of the tests are complete except for preparation of the final test report and completion of maintenance items. The inspector reviewed records associated with some of the preoperational tests that are essentially complete.

a. Liquid Process Monitors, PTP C-8a

Preoperational tests have been completed on all the liquid monitors with the exception of final calibrations with a liquid cesium source. The systems have been calibrated electronically, alarm and trip set points have been adjusted, and response to radioactive check sources has been verified.

b. Stack Monitoring, PTP C-4a

The stack monitor has been calibrated electronically. Discriminator curves have been plotted, utilizing Cs 137, Ba 133 and Am 241 solid sources. Final calibration is scheduled for the week of August 3.

c. Off-Gas Monitor, PTP C-4b

The off-gas monitor preoperational testing is complete except for grab sample checkout and verification. Trip points were adjusted and source checks have been made to verify system response.

d. Reactor Protection System, PTP C-1

The instrument response time measurements were discussed in previous inspection reports.³ These measurements are now in progress, approximately 75% complete. The inspector observed photographic test records for several channels.

C. Reactor Protection System (RPS) Relays

Malfunction of several electronical relays was discussed in a previous report.² Extensive investigation and additional testing by GE has determined that additional corrective action was needed to eliminate the problem. The best solution was determined to be to mechanically remove the paint from the pole piece of the relay. The inspector observed that this operation was in progress, and that subsequent testing of each relay will be performed. GE provides detailed procedures for the corrective action.

D. Committee Meetings

The inspector reviewed the minutes of the most recent committee meetings. The Operations Committee has approved the last chapter of Volume E of the Operations Manual. All of the procedures concerning radiation safety and control have now been approved.

The Safety Audit Committee reviewed and discussed an analysis of loss of instrument air. There were no problems identified concerning nuclear safety.

E. Exit Interviews

Mr. Jordan conducted a brief exit interview with Mr. Jacobson on July 16. Mr. Jacobson stated that the apparent source of leak which caused the previous tests to be unsatisfactory was the access ports to the reactor vessel stabilizers, which had now been repaired and

3/ CO Report Nos. 263/69-12 thru 70-5.

4/ CO Report No. 263/70-10.

retested. Mr. Jordan stated that all of the test data was not yet available for review. Mr. Jacobson stated that all of the data, including the deviations from procedure, would be included in a final test report which would be reviewed and approved by NSP.

Mr. Feierabend conducted an exit interview with Mr. Larson at the conclusion of the inspection to discuss the results of the inspection. The inspector stated that the progress noted since the end of the strike was encouraging, but that there was still much left to be done prior to issuance of a license. Mr. Larson agreed and stated that NSP has taken action to expedite completion of all "critical path" items. The plant supervisory and technical staffs are working overtime to complete evaluations of test results and to accelerate completion of the operation manual. The inspector discussed the procedures for approving test results and commented favorably on the depth of review and discussion prior to approval. He cautioned that acceleration of schedules can be a concern, and that the established requirements for any changes to test procedures be closely adhered to. He also cautioned that NSP continue to fully and thoroughly evaluate all tests prior to approval.

The inspector discussed the results of the containment leak rate test. He stated that although the preliminary test data appears satisfactory, there was a deviation from the test procedure which must be evaluated. Mr. Larson stated that the final test report would include all procedure changes and would be evaluated by the Safety Audit Committee. He also stated that committee review is required before NSP considers the test to be satisfactory. The inspector concurred and reminded Mr. Larson of the technical specification requirement that a final report of the leak rate test be forwarded to DRL.

Attachment:
Appendix A