

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

REGION III

Report No. 50-263/77-21

Docket No. 50-263

License No. DPR-22

Licensee: Northern States Power Company  
414 Nicollet Mall  
Minneapolis, MN 55401

Facility Name: Monticello Nuclear Generating Plant

Inspection at: Monticello Site, Monticello, MN

Inspection Conducted: November 5-8, 1977

Inspector: *F. A. Maura*  
F. A. Maura

*11/23/77*

Approved by: *W. S. Little*  
W. S. Little, Chief  
Nuclear Support Branch

*11/23/77*

Inspection Summary

Inspection on November 5-8, 1977 (Report No. 50-263/77-21)

Areas Inspected: Routine, announced inspection to review the procedure, witness the test, and review the results of the containment integrated leak rate test. The inspection involved 41 inspector-hours onsite by one NRC inspector.

Results: No items of noncompliance or deviations were found.

## DETAILS

### 1. Persons Contacted

- \*L. Eliason, Plant Manager
- \*M. Clarity, Superintendent, Plant Engineering and Radiation Protection
- \*D. Antony, Plant Engineer, Operation
- M. Shamla, Plant Engineer, Technical
- \*D. Goranson, Engineer
- H. Theobalt, Computer Engineer

The inspector also talked with and interviewed several other licensee employees including shift supervisors, reactor operators, instrumentation personnel, plant engineers and student engineers.

\*denotes those present at the exit interview.

### 2. Test Procedure

Test procedure #3016, Rev. 3, approved November 4, 1977, was reviewed prior to the performance of the test and found to comply with the requirements of the Technical Specifications and 10 CFR 50 Appendix J. In general the procedure also complied with proposed ANS N274, Rev. 3. Procedure changes required during the test were processed in accordance with Technical Specification requirements. Among the items discussed with the licensee prior to the test were:

- a. The acceptance criteria did not specifically require the upper confidence limit to be within .075 Lt, however, the licensee stated their policy has always been to include the upper confidence limit.
- b. The procedure permits the subtracting of local leakage rates from the ILRT results in case penetrations leak excessively during the tests and require repairs following the ILRT. The inspector discussed with the licensee the problems created by allowing this practice. This item was further discussed at the exit interview.
- c. The valve alignment checklist for the instrument air, nitrogen, and service air lineups depended on one closed valve to

prevent the air or nitrogen from leaking into the containment during the test. After discussing the problem with the licensee the procedure was revised to include at least two closed valves in series with the line between both valves vented to the reactor building. The inspector verified during the test that the agreed upon valve lineup had been implemented.

The inspector verified that a copy of the procedure and changes to it were being utilized by the personnel performing the test. Sign offs to indicate completion of specific steps were being observed.

No items of noncompliance or deviations were identified.

### 3. Test Instrumentation

Twenty RTD's and six dewcells were used to measure temperature and dewpoint of the five subvolumes into which the containment was divided. Each sensor was calibrated, separate from its transmitter, and the 3 point calibrations were traceable to NBS standards. The transmitters were calibrated separately to match the standard model curve which had been entered in the computer. (Model 104 heavy duty curve for the RTD's, and Foxboro NR-226 and DI-2 curves for the dewcells) While this is not the preferred method to calibrate this equipment, the inspector, by comparing the results of each sensor calibration to the standard curve to which the transmitters were calibrated, determined that the largest deviation for the temperature sensors was  $\pm 0.2F$  and for the dewcells of  $\pm 0.6F$ . The inspector discussed with the licensee the desirability of having the sensors and transmitters, as a unit, calibrated to the curve entered in the computer.

A pressure gauge (0-60 psig) with a readability of 0.01 psi was used to monitor containment pressure. Another pressure gauge with a readability of 0.1 psi monitored reference system pressure. An inclined manometer (0-20 inches of water) with a readability of 0.01 inch was used to measure the  $\Delta P$  between the reference system and the containment. A digital manometer (0-60 inches of water) with a display to 0.01 inches was used as backup to the inclined manometer. For the superimposed leak rate test a flowrator rotameter (0.5 to 4.5 scfm at 14.7 psia and 70F) with a resolution of  $\pm 0.005\%$  was utilized.

Calibration traceable to NBS exist for all of the above pressure gauges, differential pressure devices and the flowmeter.

No items of noncompliance or deviations were identified.

4. Integrated Leak Rate Test

The ILRT was performed during the period of November 6-8, 1977. Temperature and vapor pressure data was printed by the process computer every 10 minutes. All other readings were recorded manually every 30 minutes. Data was reduced every 30 minutes in accordance with the point to point and total time methods described in ANSI N45.4-1972 and the mass plot method described in ANS N274, Rev. 3. The upper confidence limit was based on the T-distribution function with N-1 degrees of freedom for the point to point and total time methods, and N-2 degrees of freedom for the mass plot method. The obtained 95% confidence band is more restrictive than the requirements of ANS N274.

A stabilization period of ~6 hrs was observed. By 2000 hrs on November 6, 1977, the stabilization criteria of ANS N274 was met. The test commenced at 2100 hrs on November 6, 1977. At the end of 24 hours, the results in wt%/day, were as follows:

	<u>Licensee's</u> <u>(Reference Vessel)</u>	<u>Inspector's</u> <u>(Absolute Pressure)</u>
Point to Point	0.2582 ± 0.0246	---
Total Time	0.3108 ± 0.0139	---
Mass Plot	0.2488 ± 0.0069	0.3795 ± 0.0092

It should be noted that the equations used by the inspector are those of ANS N274 which give a 90% confidence band.

The Technical Specifications limit, 0.75 Lt, is 0.90 wt%/day.

Following completion of the ILRT the licensee introduced a leak rate of 4.63 scfm (approximately 60% Lt) or the equivalent of 0.71 wt%/day. The measured leak rate in wt%/day as determined by the licensee's data reduction method after 6 hrs was:

Point to Point -  $0.9697 \pm 0.0342$

Total Time -  $0.9883 \pm 0.0205$

Mass Plot -  $0.9996 \pm 0.0089$

The results were well within the acceptance criteria of 10 CFR 50 Appendix J.

No items of noncompliance or deviations were identified.

#### Exit Interview

The inspector met with licensee representatives (denoted in Paragraph 1) at the conclusion of the inspection on November 8, 1977. The inspector summarized the scope and findings of the inspection and praised the outstanding job done by the station personnel in the performance of the integrated leak rate test. The licensee made the following remarks in response to certain of the items discussed by the inspector:

A permanent procedure revision will be made to ensure all systems which could introduce air or nitrogen into the containment during the test are isolated by two valves and the volume between the two valves is vented; and that the acceptance criteria will state that the upper confidence limit shall be  $\leq 0.75$  Lt. (Paragraph 2)

If they ever have to use the subtraction of leakages, enough testing will be performed and the documentation will be available to show that the subtracted leakage rate did not include leakage into the containment. (Paragraph 2)

In the future, the calibration of the RTD's transmitters and dewcells converters will be performed to match their respective sensors calibration to the standard curve entered in the computer. (Paragraph 3)