

UNITED STATES NUCLEAR REGULATORY COMMISSION

NORTHERN STATES POWER COMPANY  
MONTICELLO NUCLEAR GENERATING PLANT

Docket No. 50- 263

REQUEST FOR AMENDMENT TO  
OPERATING LICENSE NO. DPR- 22  
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(License Amendment Request Dated September 2, 1977)

Northern States Power Company, a Minnesota corporation, requests authorization for changes to the Technical Specifications as shown on the attachments labeled Exhibit A and Exhibit B. Exhibit A describes the proposed changes along with reasons for the change. Exhibit B is a set of Technical Specification pages incorporating the proposed changes.

This request contains no restricted or other defense information.

NORTHERN STATES POWER COMPANY

By *L. J. Wachter*  
L J Wachter  
Vice President, Power Production &  
System Operation

On this 2nd day of September, 1977, before me a notary public in and for said County, personally appeared L J Wachter, Vice President, Power Production & System Operation, and first being duly sworn acknowledged that he is authorized to execute this document in behalf of Northern States Power Company, that he knows the contents thereof and that to the best of his knowledge, information and belief, the statements made in it are true and that it is not interposed for delay.

*Denise E. Halvorson*

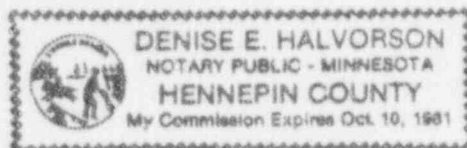


EXHIBIT A

MONTICELLO NUCLEAR GENERATING PLANT  
DOCKET NO. 50-263

License Amendment Request Dated September 2, 1977

Proposed Changes to the Technical Specifications, Appendix A  
of Provisional Operating License DPR-22

Pursuant to 10 CFR 50, Section 50.59, the holders of Provisional Operating License DPR-22 hereby propose the following change to Appendix A, Technical Specifications:

Specification 4.7.A.2(a)(5), Integrated Primary Containment Leak Test (IPCLT)

PROPOSED CHANGE

Change Specification 4.7.A.2(a)(5) to read:

- (5) Test duration shall be at least eight hours and shall include at least 20 sets of data taken at approximately equal time intervals. In addition, the test shall have a duration sufficiently long to accumulate and analyze enough data to verify that the measured leakage rate, at the 95% confidence level, is less than the acceptance criterion contained in Specification 4.7.A.2(b)(2).

Add new Specification 4.7.A.2(a)(6) as follows:

- (6) Each test shall be immediately following by a verification test using a known superimposed leak in accordance with Appendix C to ANSI N45.4 - 1972. The verification test shall have a duration sufficiently long to accumulate and analyze enough data to verify that at the 95% confidence level the measured composite leakage lies within  $0.25L_a$  of the sum of the superimposed leak rate and the measured overall containment leak rate.

REASON FOR CHANGE

The Technical Specifications currently require a minimum integrated primary containment leak test duration of 24 hours. We have found that improvements in test instrumentation and procedures made over the last several years permit a valid test to be accomplished in a shorter interval. The containment leak test is generally on the critical path of each refueling outage schedule. Being able to complete the test in a shorter time interval will permit a more rapid return to power operation following refueling with a resulting improvement in plant annual capacity factor, plant availability, and a reduction in costs to NSP's customers.

10 CFR 50, Appendix J, requires containment leak test procedures to conform to ANSI N45.4 - 1972, "Leakage-Rate Testing of Containment Structures for Nuclear Reactors." ANSI N45.4 - 1972 permits a leak test to be concluded in less than 24 hours if it can be demonstrated to the Commission that the

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leakage rate can be accurately determined during a shorter test period. The proposed change substitutes a test completion criterion which is based on statistical analysis of the data. Under the proposed changes, the test could not be terminated unless:

- a) At least eight hours have elapsed since equilibrium conditions were reached in containment following pressurization, and
- b) At least 20 data points have been established, and
- c) The measured leakage rate, at the 95% confidence level, is less than  $0.75L_a$ .

The proposed changes would also require the verification test to last at least as long as it takes to establish the validity of the test at the 95% confidence level.

DESCRIPTION OF TEST PROCEDURE, INSTRUMENTATION, AND COMPUTATIONAL METHODS

Upon approval of this change request, our procedure for conducting the primary containment integrated leakage rate test will be revised to provide for the following:

- a) Data taking intervals reduced to 20 - 30 minutes.
- b) Leakage rate computed using two methods - the mass plot method (reference 1) and the point to point method recommended in ANSI N45.4 - 1972 (used to detect spurious data points)
- c) Calculation of leakage rate and 95% confidence interval following each data point.
- d) Completion of the test when the upper limit leakage using the mass plot method at the 95% confidence level falls below  $0.75L_a$ , when at least eight hours have elapsed, and when at least 20 data points have been taken.
- e) Establishment of a controlled leak in the range of 0.5 to 1.0  $L_a$ .
- f) Verification test leakage rate computed using two methods in (b) above with data obtained at 20 - 30-minute intervals.
- g) Completion of the verification test when the composite leakage using the mass plot method at the 95% confidence level falls within  $0.25L_a$  of the sum of the superimposed leak rate and the measured overall containment leak rate.

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All other aspects of the test procedure will follow procedures used in previous primary containment integrated leak rate tests (references 2, 3, and 4). These procedures conform to the requirements for Type A tests contained in Appendix J to 10 CFR 50.

Test instrumentation is described in reference 3. Included in the instrumentation to be used are:

### Temperature Sensors

Rosemount Model 442A ALPHALINE temperature transmitters are used. Each instrument consists of a platinum RTD, local transmitter, and power supply. All transmitters are connected to the plant process computer where temperature conversion and volume weighting takes place. Twenty instruments are used. Estimated standard deviation for average containment air temperature measurement is 0.013 °F.

### Vapor Pressure Sensors

Foxboro Model 2701 RPG Dewcells are used. All Dewcells are connected to the plant process computer where vapor pressure conversion and volume weighting takes place. Six instruments are used. Estimated standard deviation for average containment vapor pressure measurement is 0.043 inches of water.

### Reference Vessel - Containment Differential Pressure

In previous tests a certified water filled manometer was used to measure the differential pressure between the reference vessel and the containment atmosphere. Estimated standard deviation in this parameter was 0.014 inches of water. This instrument is adequate, however we are considering the purchase of a high resolution precision electronic manometer for this application.

### Containment Pressure

A Wallace Tiernan Model 1500 pressure gauge is used. Estimated standard deviation for containment pressure measurement is 0.578 inches of water.

### Overall Figure of Merit

An overall figure of merit for the instrumentation system, based on the reference vessel method using a point-to-point leak rate calculation over a 24-hour interval was reported in references 3 and 5. This figure of merit, or overall standard deviation in leak rate, is 0.004 wt%/day. This is less than 1% of the allowable containment leakage rate.

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We believe that the described procedural changes and instrumentation are fully capable of concluding the primary containment integrated leak rate test in about 50% of the time now allotted for testing (exclusive of pressurization and depressurization times).

### SAFETY EVALUATION

The requested change is submitted in accordance with the requirements of Appendix J to 10 CFR 50 and Section 7.6 of ANSI N45.4 - 1972, "Leakage-Rate Testing of Containment Structures for Nuclear Reactors." The requirement for a 24-hour primary containment integrated leak rate test is arbitrary and is based on state-of-the-art procedures and instrumentation of a decade ago. The proposed change substitutes a generally recognized statistical basis for concluding a test and the associated verification test. There are no nuclear safety implications involved.

### REFERENCES

1. Fleshood, David L, Carolina Power & Light Co., "Containment Leak Rate Testing: Why the Mass-Plot Analysis Method is Preferred," Power Engineering, February, 1976
2. Reactor Containment Building Integrated Leak Test - May 1973, submitted by NSP for NRC review August 3, 1973
3. Reactor Containment Building Integrated Leak Test - May 1974, submitted by NSP for NRC review August 12, 1974
4. Reactor Containment Building Integrated Leak Test - November 1975, submitted by NSP for NRC review January 23, 1976
5. Supplement No. 1 to Report of Containment Building Integrated Leak Test - November, 1976, submitted by NSP for NRC review March 16, 1976