

UNITED STATES NUCLEAR REGULATORY COMMISSION
NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNITS NOS. 1 AND 2
DOCKETS NOS. 50-282 AND 50-306
ENVIRONMENTAL ASSESSMENT AND
FINDING OF NO SIGNIFICANT IMPACT

The U. S. Nuclear Regulatory Commission (the Commission) is considering issuance of an exemption from the requirements of Appendix J to 10 CFR Part 50 to Northern States Power Company (the licensee) for the Prairie Island Nuclear Generating Plant, Units Nos. 1 and 2, located in Goodhue County, Minnesota.

ENVIRONMENTAL ASSESSMENT

Identification of Proposed Action:

The licensee requested an exemption from Paragraph III.A.3 of 10 CFR Part 50, Appendix J, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors." In 1973, Appendix J was issued to establish requirements for primary containment leakage testing and incorporated, by reference, ANSI N45.4-1972, "Leakage Rate Testing of Containment Structures for Nuclear Reactors." This standard requires that containment leakage calculations be performed by using either the Point-to-Point method or the Total Time method. The Total Time method was used the most by the nuclear industry until about 1976.

At this time, licensees who wish to use the Mass-Point method of calculating containment integrated leakage must submit an application for exemption from the Appendix J requirement that containment integrated leak rate tests will conform to ANSI N45.4. The exemption proposed by the licensee would be granted until pending changes to Appendix J are promulgated. In the Mass-Point method, the mass of air in containment is calculated and plotted as

a function of time, and leakage is calculated from the slope of the linear least squares.

With the present developments in technology, the Mass-Point method has gained increasing recognition.

The superiority of the Mass-Point method becomes apparent when it is compared with the two other methods. In the Total Time method, a series of leakage rates are calculated on the basis of air mass differences between an initial data point and each individual data point thereafter. If for any reason (such as instrument error, lack of temperature equilibrium, ingassing or outgassing) the initial data point is not accurate, the results of the test will be affected. In the Point-to-Point method, the leak rates are based on the mass difference between each pair of consecutive points which are then averaged to yield a single leakage rate estimate. Mathematically, this can be shown to be the difference between the air mass at the beginning of the test and the air mass at the end of the test expressed as percentage of the containment air mass. It follows from the above that the Point-to-Point method ignores any mass readings during the test and thus the leakage rate is calculated on the basis of the difference in mass between two measurements taken at the beginning and at the end of the test, which are 24 hours apart.

The licensee's request and bases for exemption are contained in a letter dated August 1, 1988, as supplemented by letter dated August 23, 1988. The exemption would permit the licensee to use the Mass-Point method for calculating containment leakage rates as an acceptable alternative to the Point-to-Point and Total Time methods currently specified in Appendix J.

The Need for the Proposed Action:

The proposed exemption is needed to allow use of the Mass-Point analysis

method at Prairie Island Nuclear Generating Plant, Units Nos. 1 and 2, and for improved analysis of the test results.

Environmental Impacts of the Proposed Action:

The erraticism of the Total Time method creates a higher probability of unnecessarily failing a containment integrated leakage rate test (note that the calculational procedure is independent of containment tightness) possibly resulting in increased test frequency, critical path outage time, and exposure to test personnel.

Radiological releases will not be greater than previously determined, nor does the proposed exemption otherwise affect radiological plant effluents, or have any other environmental impact. Therefore, the Commission concludes that there are no measurable radiological or nonradiological environmental impacts associated with the proposed exemption.

Alternative to the Proposed Action:

The Commission has concluded that there is no measurable impact associated with the proposed exemption; any alternatives to the exemption will have either no environmental impact or greater environmental impact.

Alternative Use of Resources:

This action does not involve the use of any resources beyond the scope of resources used during normal plant operation, which have been considered by the Commission in the Final Environmental Statements for the Prairie Island Nuclear Generating Plant, Units Nos. 1 and 2.

Agencies and Persons Consulted:

The Commission's staff reviewed the licensee's request that supports the proposed exemption. The staff did not consult other agencies or persons.

FINDING OF NO SIGNIFICANT IMPACT

Based upon the foregoing environmental assessment, the Commission concludes that the proposed action will not have a significant effect on the

quality of the human environment. Accordingly, the Commission has determined not to prepare an environmental impact statement for the proposed exemption.

For further details with respect to this action, see the request for the exemption dated August 1, 1988, as supplemented by letter dated August 23, 1988, which is available for public inspection at the Commission's Public Document Room, 1717 H Street, NW., Washington, DC, and at the Minneapolis Public Library, Technology and Science Department, 300 Nicollet Mall, Minneapolis, Minnesota 55401.

Dated at Rockville, Maryland, this 21st day of September 1988.

FOR THE NUCLEAR REGULATORY COMMISSION

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