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April 28, 1995

Office of the Secretary of the Commission
Attn: Docketing and Service Branch
U S Nuclear Regulatory Commission
Washington, DC 20555

PRAIRIE ISLAND NUCLEAR GENERATING PLANT

Comments on Proposed Rule: Primary Reactor Containment
Leakage Testing for Water-Cooled Power Reactors

Northern States Power Company has reviewed the proposed changes to 10 CFR Part 50, Appendix J, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors". We believe promulgation of the Appendix J Proposed Rule will greatly reduce the containment testing burden currently imposed on the nuclear industry and therefore we encourage the Nuclear Regulatory Commission to expeditiously issue this rule.

We have also reviewed the comments to be submitted by the Nuclear Energy Institute (NEI) on this subject and endorse them in their entirety. Additionally, Northern States Power Company offers the following comments.

Appendix J Proposed Rule

The proposed rule requires, "Type A tests . . . be conducted under conditions representing design basis loss-of-coolant accident containment peak pressure." We propose that this requirement be broadened to allow performance based Type A testing at reduced test pressures.

Type A testing at full pressure is unnecessary to assure that containment leak-tightness specifications are met. The predominant source of containment leakage is through the penetrations and seals. The penetrations and seals are periodically tested at full loss-of-coolant accident containment peak pressure in accordance with

their Type B and C tests. Testing the penetrations and seals again during a full pressure Type A test does not add any new information.

The containment structural members are the only containment features tested by a Type A test which are not tested by the Type B and C tests. The accessible interior and exterior surfaces of the containment structures and components will be thoroughly inspected in association with each Type A test (or more often if required by the final Appendix J rule) to uncover evidence of structural deterioration which may affect either the containment structural integrity or leak-tightness. This inspection coupled with a reduced pressure test will adequately assure that the containment structural members are leak-tight.

We believe that reduced pressure Type A tests are mathematically a more conservative test. The allowable test leakage rate, L_t, for a reduced pressure Type A test is reduced from the full pressure leakage rate, L_a, as prescribed by calculations defined in the current 10 CFR Part 50, Appendix J, III.A.4.(a)(iii). The allowable leakage rate is reduced to compensate for reduced leakage associated with the reduced test pressure. However, penetrations and seals do not necessarily leak at a lower rate when the pressure is reduced. Due to the design of some penetrations and seals, the sealing surfaces do not seal as well when the pressure is reduced. Thus for reduced pressure Type A tests, the leakage rate of the predominant contributor to leakage, the penetrations and seals, does not decrease proportional to the reduction in the acceptance criteria, L_t. This mathematical reduction in the test allowable leakage rate results in the reduced pressure test being more stringent and therefore more conservative than a full pressure test.

Full pressure testing imposes extra stress on the containment shell which, for a free-standing containment vessel such as those at the Prairie Island plant, may cause significant deformation of the structure. The containment is designed to sustain this deformation and continue to perform during accident conditions, however, it may cause permanent structural damage to the containment shell. Thus, subjecting the containment to full accident pressure during Type A tests may actually reduce its ability to properly perform during a subsequent accident.

We further believe that any additional assurances full pressure testing may provide are not warranted by the additional costs associated with performing a full pressure test. Performing full pressure Type A tests at Prairie Island would likely require an additional 9 hours to pump containment to full pressure and depressurize following the test. This additional time is usually critical path in our outages and could cost Northern States Power Company is excess of $90, 000 for each Type A test performed at full pressure.

Reduced pressure Type A tests are legally acceptable tests as prescribed in the current 10 CFR Part 50, Appendix J and the Prairie Island Technical Specifications. Furthermore, we have been unable to find any written technical basis for the

requirement to perform full pressure tests. No technical basis for this requirement has been provided in the proposed rule nor any of the supporting documents, Draft Regulatory Guide DG-1037, "Performance-Based Containment Leak Test Program", NUREG-1493, "Performance-Based Containment Leak Test Program", NEI 94-01, DRAFT Revision D, "Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J".

Prairie Island Nuclear Generating Plant Units I and II have performed eleven Type A containment integrated leakrate tests since commencement of plant operation in 1973 and 1974 respectively. All of these tests were performed at reduced pressure and have demonstrated excellent containment performance.

Northern States Power Company urges the NRC to consider revising the subject proposed rule to allow use of reduced test pressures for performance based Type A tests.

NEI 94-01, DRAFT Revision D, Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J

We have submitted comments to NEI on the draft NEI 94-01. Since the Proposed Rule, through the implementing Regulatory Guide will invoke NEI 94-01, we also submit these comments on NEI 94-01 to the Commission for your information and consideration.

NEI 94-01, DRAFT Revision D, "Industry Guidelines for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J" on page 11 states, "In the event where previous Type A tests were performed at reduced pressure, at least one of the two consecutive periodic Type A tests shall be performed at peak accident pressure (P_{ac})." NSP requests that this statement be deleted or modified such that a full pressure test is not required prior to implementing a performance based test program.

NSP's Prairie Island plant has performed all eleven of its Appendix J Type A retests at reduced pressure over more than 20 years of operation of each unit. Through a request for specific exemption to the NRC, the Prairie Island Unit II Type A retest scheduled for June 1995 has been postponed to January 1997. It has been our intent to implement a performance based Appendix J program for Unit II and thereby avoid performing a Type A test until sometime in the year 2002. However, the above quoted statement from NEI 94-01 would require a Type A test at full pressure prior to implementing a performance based program.

There is no legal basis for requiring performance of a full pressure test as a prerequisite for implementing a performance based test program. Reduced pressure tests are legally acceptable Type A tests as prescribed in the existing 10 CFR Part 50, Appendix J and the Prairie Island Technical Specifications. We are unable to

find a written technical basis for this requirement. The proposed Appendix J rule does not state a basis for requiring full pressure tests, nor does Draft Regulatory Guide DG-1037, "Performance-Based Containment Leak Test Program", nor NUREG-1493, "Performance-Based Containment Leak Test Program", nor NEI 94-01.

We believe the comments given above on the proposed Appendix J rules also apply to this requirement for a prerequisite full pressure test. However, this prerequisite requirement is more costly to NSP than the program requirements because the prerequisite requirement may result in two additional Type A tests, one for each unit, over the remaining life of the Prairie Island plant.

Northern States Power Company urges the NRC to support a revision to NEI 94-01 which will allow use of two reduced pressure Type A tests as prerequisites for a performance based Type A test program.

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