

NUCLEAR REGULATORY COMMISSIONNEBRASKA PUBLIC POWER DISTRICTCOOPER NUCLEAR STATIONDOCKET NO. 50-298EXEMPTION[NRC-2009-0398]1.0 BACKGROUND

Nebraska Public Power District (NPPD or the licensee) is the holder of Facility Operating License No. DPR-46 which authorizes operation of the Cooper Nuclear Station (CNS). The license provides, among other things, that the facility is subject to the rules, regulations, and orders of the Nuclear Regulatory Commission (NRC, the Commission) now or hereafter in effect.

The facility consists of a boiling-water reactor located in Nemaha County, Nebraska.

2.0 REQUEST/ACTION

Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, paragraph 50.54(o), requires primary reactor containments for water-cooled power reactors to be subject to the requirements of Appendix J to 10 CFR Part 50. Appendix J specifies the leakage test requirements, schedules, and acceptance criteria for tests of the leak-tight integrity of the primary reactor containment and systems and components that penetrate the containment. Appendix J, Option B, "Performance-Based Requirements," Section III.A., "Type A Test," requires, among other things, that the overall integrated leakage rate must not exceed the allowable leakage rate (L_a) with margin, as specified in the Technical Specifications (TSs). The overall integrated leakage rate is defined in 10 CFR Part 50, Appendix J as "the total leakage rate through all tested leakage paths, including containment welds, valves, fittings, and

components that penetrate the containment system." This includes the contribution through the four main steam (MS) lines and the MS inboard drain line (penetration X-8). The MS Pathway includes leakage from the MS line penetrations plus the MS inboard drain line.

Option B, Section III.B of 10 CFR Part 50, Appendix J, "Type B and C Tests," requires, among other things, that the sum of the leakage rates at accident pressure of Type B tests and pathway leakage rates from Type C tests be less than the performance criterion (La) with margin, as specified in the TSs.

By application dated October 13, 2008, as supplemented by letters dated April 8, May 29, June 12, and September 1, 2009, the licensee requested exemption from Option B, Section III.A requirements in order to permit exclusion of MS Pathway leakage from the overall integrated leak rate test measurement. The licensee also requested exemption from Option B, Section III.B requirements in order to permit exclusion of the MS Pathway leakage contributions from the sum of the leakage rates from Type B and Type C tests. The licensee's application included a license amendment request to revise the radiological assessment calculation methodology for the design basis loss-of-coolant accident at CNS through application of the alternative source term, in accordance with the provisions of 10 CFR 50.67 and 50.90, and to revise the TSs accordingly.

The NRC previously granted a license amendment (Amendment No. 226, dated October 31, 2006) and an exemption (letter to licensee dated October 30, 2006) from (1) Option B, Section III.A requirements in order to permit exclusion of MS isolation valve (MSIV) leakage from the overall integrated leakage rate measured when performing a Type A test, and (2) Option B, Section III.B requirements in order to permit exclusion of the MSIV leakage from the combined leakage rate of the penetrations and valves subject to Type B and Type C tests. The

only difference in the current exemption request is the inclusion of the leakage contribution from the MS inboard drain line with the MSIV leakage in the MS Pathway.

The MS leakage effluent has a different pathway to the environment, when compared to a typical containment penetration. It is not directed into the secondary containment and filtered through the standby gas treatment system as is other containment leakage. Instead, the MS leakage is collected and treated via an alternative leakage treatment (ALT) path having different mitigation characteristics.

In performing accident analyses, it is appropriate to group various leakage effluents according to the treatment they receive before being released to the environment (e.g., from MS pathways). The proposed exemption would more appropriately permit ALT pathway leakage to be independently grouped with its unique leakage limits. In this manner, the CNS containment leakage testing program will be more consistent with the limiting assumptions used in the associated accident consequence analyses.

The licensee has analyzed the MS Pathway leakage separately from the overall containment integrated leakage, local leakage across pressure retaining, leakage limiting boundaries, and containment isolation valve leakage in its dose consequence analyses. Specifically, the alternative source term design-basis accident analyses use the MS piping, MS drain lines, and main condenser as an alternate means for MS Pathway leakage treatment. The dose consequences were found to be within the acceptance criteria of 10 CFR 50.67, "Accident source term," and the guidance of NRC Regulatory Guide 1.183, "Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors," dated July 2000.

Therefore, the separation of the MS Pathway from the other containment leakage pathways is warranted because a separate radiological consequence term has been provided

for these pathways. The revised design-basis radiological consequences analyses address these pathways as individual factors, exclusive of the primary containment leakage. Therefore, the NRC staff finds the proposed exemption from Appendix J, to separate MS leakage from other containment leakage, to be acceptable.

3.0 DISCUSSION

Pursuant to 10 CFR 50.12, the Commission may, upon application by any interested person or upon its own initiative, grant exemptions from the requirements of 10 CFR Part 50 when (1) the exemptions are authorized by law, will not present an undue risk to public health or safety, and are consistent with the common defense and security; and (2) when special circumstances are present. The licensee's exemption request was submitted with a license amendment request to use the alternative source term methodology for use in calculating the dose consequences of the design-basis loss-of-coolant accident analysis. The NRC staff will issue the proposed amendment in conjunction with the exemption. The exemption and amendment together would implement the alternative source term methodology. The special circumstances associated with the MS Pathway leakage testing are fully described in the licensee's application dated October 13, 2008, as supplemented by letters dated April 8, May 29, June 12, and September 1, 2009, and discussed below.

Authorized by Law

This exemption would permit exclusion of the MS Pathway leakage contribution from the overall integrated leakage rate Type A test measurement and from the sum of the leakage rates from Type B and Type C tests. As stated above, 10 CFR 50.12 allows the NRC to grant exemptions from the requirements of 10 CFR Part 50. The NRC staff has determined that granting of the licensee's proposed exemption will not result in a violation of the Atomic Energy

Act of 1954, as amended, or the Commission's regulations. Therefore, the exemption is authorized by law.

No Undue Risk to Public Health and Safety

The underlying purposes of 10 CFR Part 50, Appendix J, Option B, Sections III.A and III.B are to ensure that containment leak-tight integrity is maintained (a) as tight as reasonably achievable and (b) sufficiently tight so as to limit effluent release to values bounded by the analyses of radiological consequences of design-basis accidents. Based on the above, no new accident precursors are created by exclusion of the MS Pathway leakage contribution from the overall integrated leakage rate Type A test measurement and from the sum of the leakage rates from Type B and Type C tests, thus, the probability of postulated accidents is not increased. Also, based on the above, the consequences of postulated accidents are not increased. Therefore, there is no undue risk to public health and safety.

Consistent with Common Defense and Security

The proposed exemption would exclude the MS Pathway leakage contribution from the overall integrated leakage rate Type A test measurement and from the sum of the leakage rates from Type B and Type C tests. This change to the operation of the plant has no relation to security issues. Therefore, the common defense and security is not impacted by this exemption.

Special Circumstances

Special circumstances include, in part, the special circumstances defined in 10 CFR 50.12(a)(2)(ii), which states, "Application of the regulation in the particular circumstances would not serve the underlying purpose of the rule or is not necessary to achieve the underlying purpose of the rule."

The underlying purpose of 10 CFR Part 50, Appendix J, is to ensure that containment leak-tight integrity is maintained as tight as reasonably achievable and sufficiently tight so as to limit effluent release to values bounded by the analyses of radiological consequences of design-basis accidents. The intent of the rule is not compromised by the licensee's proposed action because the containment leak rates will continue to be limited by CNS's TSSs. The proposed action will appropriately permit ALT pathway leakage to be independently grouped with its unique leakage limits and maintain the accident dose analyses consequences within the acceptance criteria of 10 CFR 50.67.

Therefore, since the underlying purposes of 10 CFR Part 50, Appendix J, is achieved, the special circumstances required by 10 CFR 50.12(a)(2)(ii) for the granting of an exemption from 10 CFR Part 50, Appendix J, Option B, Sections III.A and III.B exist.

4.0 CONCLUSION

Accordingly, the Commission has determined that, pursuant to 10 CFR 50.12, the exemption is authorized by law, will not present an undue risk to the public health and safety, and is consistent with the common defense and security. Also, special circumstances are present. Therefore, the Commission hereby grants NPPD an exemption (1) from the requirements of 10 CFR Part 50, Appendix J, Option B, Section III.A, to allow exclusion of the MS Pathway leakage from the overall integrated leakage rate measured when performing a Type A test; and (2) from the requirements of 10 CFR Part 50, Appendix J, Option B, Section III.B, to allow exclusion of the MS Pathway leakage from the combined leakage rate of all penetrations and valves subject to Type B and C tests for CNS.

Pursuant to 10 CFR 51.32, the Commission has determined that the granting of this exemption will not have a significant effect on the quality of the human environment (74 FR 47030; September 14, 2009).

This exemption is effective upon issuance.

Dated at Rockville, Maryland, this 14th day of September 2009.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

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