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May 18, 1995

U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attention: Document Control Desk

Subject: Catawba Nuclear Station
Docket Numbers 50-413 and -414
Technical Specification Revision and Exemption to 10 CFR 50 Appendix J

Attached is a request for a change to Catawba Nuclear Station's Technical Specifications to defer the next scheduled containment integrated leak rate test (ILRT) at Catawba Unit 2 for one outage, from the end-of-cycle (EOC) 7 refueling outage (scheduled for October, 1995) to EOC 8 (scheduled for March, 1997). 10 CFR 50, Appendix J, requires that three integrated leak rate tests (ILRTs) be performed at approximately equal intervals during each 10-year service period at a nuclear station. "Approximately equal intervals" is defined in Catawba Nuclear Station's Technical Specifications as 40 $\pm$ 10 months. The proposed one-time change would allow Catawba to extend that interval to $\leq$ 70 months.

Appendix J and Technical Specifications aiso require that the third ILRT of each 10-year service interval be performed during the 10-year in-service inspection (ISI) outage. While the ISI work has been staggered over several outages, the upcoming outage will occur approximately 10 years after the plant was licensed (February, 1986). Therefore, an exemption to this requirement is also requested, as well as the associated Technical Specification change.

It is concluded that the proposed change, a one-time extension of the interval between the second and third ILRTs at Catawba Unit 2, is justified for the following reasons:

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Previous testing history

The Catawba Unit 2 test history provides substantial justification for the proposed test interval extension. In each of the 2 previous periodic ILRTs at Catawba Unit 2, the as-found leakage was less than or equal to 48.7% of the allowable leakage, L_a, thereby demonstrating that Catawba Unit 2 is a low-leakage containment.

Structural Capability of Containment

There are no known mechanisms which would adversely affect the structural integrity of the containment, or that would be a factor in extending the test interval by 20 months. However, as a preventative maintenance measure, a containment civil inspection will be performed during EOC-7 to verify that no structural degradation exists.

Risk Assessment

Any additional risk created by the longer interval between ILRTs is considered to be negligible, in part because Type B and C testing will continue unchanged, and the probability of gross containment failure is very low.

The NRC's own analysis, published in draft NUREG-1493, concluded that increasing the ILRT interval to once every 20 years would "lead to an imperceptible increase in risk." It follows logically that increasing a test interval from 40 $\pm$ 10 months to $\leq$ 70 months would amount to a fraction of that already "imperceptible" increase in risk. As evidence of this minimal risk, it is noted that for the 2 previous periodic ILRTs at Catawba Unit 2, the as-found leakage was equal to or less than 48.7% of the allowable leakage, L_a.

Approval of this one-time exemption and Technical Specification change is expected to save Duke Power approximately $900,000 in avoided replacement power cost, with additional savings associated with labor and employee exposure. This is consistent with the NRC's initiatives to reduce sigificant cost associated with unnecessary regulatory requirements, and reduce exposure.

This proposed change is applicable to Unit 2 of Catawba Nuclear Station only.

The bases for exemption from the requirements of 10 CFR 50 Appendix J, and the justification for Technical Specification change appears in Attachment I, the appropriate marked-up Technical Specification page in Attachment II, and a No Significant Hazards Analysis in Attachment III.

By copy of this letter, the State of South Carolina is being notified of this proposed Technical Specification change.

If any additional information is required, please call Scott Gewehr at (704) 382-7581.

Very truly yours,

M. S. Tuckman

M. S. Tuckman

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M. S. Tuckman, being duly sworn, states that he is Senior Vice President of Duke Power Company; that he is authorized on the part of said Company to sign and file with the Nuclear Regulatory Commission this revision to the Facility Operating Licenses NPF-35 and NPF-52 of the Catawba Nuclear Station; and that all the statements and matter set forth herein are true and correct to the best of his knowledge.

M. S. Tuckman

M. S. Tuckman, Senior Vice President

Subscribed and sworn to before me this 19th day of May, 1995

Mary P. Dklms

Notary Public

My Commission Expires:

JAN 22, 1996

Attachment I

Bases for Exemption From the Requirements of 10 CFR 50 Appendix J

and

Justification for Technical Specification Change

Basis for Exemption

10 CFR 50.12 states the NRC may grant exemptions to its regulations if: no undue risk to the health and safety of the public is created, and if special circumstances exist.

No Undue Risk to the Public

In order to justify the granting of an exemption to the requirements of 10 CFR Part 50, paragraph 50.12(a)(1) requires that the licensee show that the proposed exemption will not pose an undue risk to the public. That this proposed change will **not** pose an undue risk is demonstrated by the analysis presented in draft NUREG-1493, which concludes that an increase in the test interval to once every 20 years would "lead to an imperceptible increase in risk." The analyses in draft NUREG-1493 are considered to be specifically applicable to Catawba because: 1) the requested exemption would result in a one-time increase in the test interval to about 5 years, not 20; 2) the population density around Catawba is less than that used in the study (329 people per square mile, vs. 340 used in the study); 3) no ILRT at Catawba has failed; 4) the core inventory used in the study was represented by a 3412 Mwt PWR. Catawba is a 3411 Mwt PWR. Other factors which lead to the conclusion that the proposed change will not pose an undue risk include the fact that local leak rate testing, which identifies 97% of leakage in excess of prescribed limits, will remain in place at its current test frequency; the detailed, proceduralized containment civil inspection which is normally performed in conjunction with an ILRT will be performed in place of the scheduled ILRT, to identify potential structural deteriorations; and the historical leak-tightness of the containment structure, as evidenced by 2 successive ILRTs in which the as-found leakage did not exceed 48.7% of the allowable leakage rate. A table which shows the leak test history of Catawba Unit 2 follows this Attachment.

A comparison was made between the risk analysis presented in draft NUREG-1493 and a probabilistic risk assessment performed for Catawba Nuclear Station. While the quantitative results of the NUREG are not directly applicable to plants not used in the study, conclusions similar to those presented in the NUREG can be made concerning Catawba. NUREG-1493 indicates that reactor accident risks are dominated by accident sequences that result in failure or bypass of the containment. This conclusion is also valid for Catawba. Considering only the Catawba accident sequences that do not result in containment failure, containment leakage contributes approximately 0.08 to 0.09 percent to off-site risk (whole-body person-rem,

thyroid nodules, and latent fatalities). NUREG-1493 indicated that containment leakage contributed from 0.02 to 0.10 percent to latent cancer risk. The comparison between the analysis of NUREG-1493 and the Catawba PRA concludes that increases in containment leakage at Catawba are expected to produce increases in accident risk similar to the results in NUREG-1493.

Special Circumstances Present

Special circumstances, as defined in 10 CFR 50.12(a)(2)(ii), are considered to exist if "application of the regulation ...**is not necessary to achieve the underlying purpose of the rule.**" The purposes of the rule, as stated in Section I of Appendix J, are to ensure that: a) leakage through the primary reactor containment and systems and components penetrating containment shall not exceed allowable values, and b) periodic surveillance of reactor containment penetrations and isolation valves is performed so that proper maintenance and repairs are made. One of the significant factors in assuring that the proposed exemption will not pose an undue risk to the public, as noted above, is the local leak rate testing (LLRT) which is performed. That the LLRT program at Catawba provides an effective mechanism for maintaining containment integrity is perhaps best demonstrated by the fact that the most recent ILRT at Catawba Unit 2 was performed at the front end of the refueling outage; before any repairs or adjustments were made to valves or penetrations. Nevertheless, the as-found leakage did not exceed 48.7% of the allowable leakage rate. The fact that no leakage paths were identified by an ILRT, and that the ILRT met the acceptance criteria with significant margin confirms the results of the Type B and C testing.

The frequency and scope of the Type B and C LLRT program are not being changed by this exemption request. The LLRT program will continue to effectively detect containment leakage resulting from the degradation of active containment isolation components, as well as containment penetrations. Administrative limits have been established for each Type B or C component at a fraction of the allowable leak rate, such that any leakage detected in excess of the administrative limit will indicate a potential valve or penetration degradation. In instances in which a component's leakage exceeds its administrative limit, proceduralized controls in the test program require that a work order be written to repair the component.

The requirement that tests be performed during the inservice inspection outage is not necessary to achieve that purpose. In fact, the NRC staff recognized long ago that the requirement to perform the ILRT during the ISI outage is of minimal safety significance, and proposed rulemaking (Federal Register, Vol. 51, Page 39538, October 29, 1986) to eliminate the requirement. For the reasons outlined below it may be concluded that decoupling the ILRT from the ISI outage, and deferring the ILRT for one outage, will have no significant effect on achieving the underlying purpose of the rule.

Additional Justification

Type B and C leak rate testing programs are used to determine leakage rates through systems and components that penetrate containment. These tests are currently performed at least every 2 years. This frequency will not be affected by this proposed change. Therefore, the major safety benefit achieved by performance of the Type A test is the detection of gross containment failure. This is a very low probability event. Past ILRT history shows that Catawba Unit 2 has easily passed each of its previous ILRTs.

Containment Structural Capability

The Containment System consists of a free-standing cylindrical steel shell surrounded by a separate reinforced concrete reactor building. A six foot annular space is provided between the exterior surface of the steel containment vessel and the inner wall of the reactor building. The Annulus Ventilation system maintains this space at a negative pressure relative to the outside atmosphere during accident conditions. Although the Containment System incorporates the Annulus Ventilation, assurance of leak-tightness does not depend on this system at any time. This leak rate is a property of the containment vessel alone and the effect of the Annulus Ventilation System may be considered a margin of conservatism as the system collects, delays and filters containment air leaking from the containment vessel.

Two mechanisms could adversely affect the passive structural integrity of containment. The first is deterioration of the structure itself, due to pressure, temperature, radiation, chemical, or other such effects. Secondly, modifications can be made to the structure which, if not carefully controlled, could leave the structure with reduced capability.

Prior to the performance of the Type A test, a general visual inspection of all accessible interior and exterior surfaces of both the steel containment vessel and the reactor building shield wall is conducted. This inspection is performed in accordance with procedure. The purpose of the inspection is to detect any evidence of structural deterioration which may affect either the containment structural integrity or its leak-tightness. At the same time, the adjoining areas are inspected to ensure that there are no significant interferences with other structures which would restrict the differential movement of the steel vessel. The civil inspections conducted in support of each of the two periodic Type A tests have identified no evidence of structural deterioration that would impact structural integrity or leak tightness of containment.

Absent actual accident conditions, structural deterioration is a gradual phenomenon requiring periods of time well in excess of the proposed interval extension. However, as a preventive maintenance measure, the containment civil inspection will be performed in lieu of the scheduled Type A test in October, and again during the end of the following cycle refueling outage (currently scheduled for March, 1997) as part of the deferred Type A test.

Modifications that would alter the passive containment structure are infrequent and would receive extensive review to ensure containment capabilities are not diminished. In addition, 10 CFR 50, Appendix J, Section IV.A, requires Type A testing to be performed following any major modification to primary containment boundary. This requirement will be maintained.

Risk Assessment

Draft NUREG-1493 includes the results of a sensitivity study performed to explore the risk impact of several alternate leak rate testing schedules. Alternative 4 from this study examines relaxing the ILRT frequency from 3 tests in 10 years to 1 test in 10 years. Using best estimate data, the draft NUREG concludes that the increase in population exposure risk to those in the vicinity of the five representative plants ranged from .02% to .14%. This very low impact on risk is attributable to: 1) the effectiveness of Type B and C tests in identifying potential leak paths (only about 3% of leakages that exceed current requirements are detectable only by Type A tests, and those few failures were only marginally above prescribed limits), 2) a low likelihood of ILRT-identified leakages in excess of 2 times allowable, and 3) the insensitivity of risk to containment leak rate (e.g., no discernable increase in population dose risk with containment leak rates 100 times greater than currently allowed). This led the authors of draft NUREG-1493 to conclude that even increasing the ILRT frequency to once in 20 years would "lead to an imperceptible increase in risk."

Summary

The proposed exemption to the requirements of 10 CFR 50 Appendix J, and the concurrent Technical Specification change, are considered to be justified based upon the minimal safety significance.