



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

REQUEST TO USE ASME SECTION XI, IWA-5250 (a)(2) FOR

DUKE POWER COMPANY

CATAWBA NUCLEAR STATION, UNITS 1 AND 2

DOCKET NOS. 50-413 AND 50-414

1.0 INTRODUCTION

The Technical Specifications for Catawba Nuclear Station, Units 1 and 2, state that the inservice inspection and testing of the American Society of Mechanical Engineers (ASME) Code Class 1, 2, and 3 components shall be performed in accordance with Section XI of the ASME Boiler and Pressure Vessel Code and applicable Addenda as required by Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.55a(g), except where specific written relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i). Section 50.55a(a)(3) states that alternatives to the requirements of paragraph (g) may be used, when authorized by the NRC, if (i) the proposed alternatives would provide an acceptable level of quality and safety, or (ii) compliance with the specified requirements would result in hardship or unusual difficulties without a compensating increase in the level of quality and safety.

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2, and 3 components (including supports) shall meet the requirements, except the design and access provisions and the preservice examination requirements, set forth in the ASME Code, Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," to the extent practical within the limitations of design, geometry, and materials of construction of the components. The regulations require that inservice examination of components and system pressure tests conducted during the first 10-year interval and subsequent intervals comply with the requirements in the latest edition and addenda of Section XI of the ASME Code incorporated by reference in 10 CFR 50.55a(b) on the date 12 months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein. The applicable edition of the ASME Code, Section XI, for Catawba Nuclear Station, Units 1 and 2, during the second and the first 10-year inservice inspection (ISI) interval, are the 1989 Edition, and the 1980 Edition through Winter 1981 Addenda (80W81), respectively. The components (including supports) may meet the requirements set forth in subsequent editions and addenda of the ASME Code incorporated by reference in 10 CFR 50.55a(b) subject to the limitations and modifications listed therein and subject to Commission approval.

ENCLOSURE

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Pursuant to 10 CFR 50.55a(g)(5), if the licensee determines that conformance with an examination requirement of Section XI of the ASME Code is not practical for its facility, information shall be submitted to the Commission in support of that determination and a request made for relief from the ASME Code requirement. After evaluation of the determination, pursuant to 10 CFR 50.55a(g)(6)(i), the Commission may grant relief and may impose alternative requirements that are determined to be authorized by law, will not endanger life, property, or the common defense and security, and are otherwise in the public interest, giving due consideration to the burden upon the licensee that could result if the requirements were imposed.

By letter dated June 24, 1996, Duke Power Company, the licensee for Catawba Nuclear Station, requested approval to use an alternative to the 1989 Edition and BOW81 of the ASME Boiler and Pressure Vessel Code, Section XI, in regard to the requirement that the source of leakage detected during the conduct of a system pressure test shall be located and evaluated by the owner for corrective measures. If leakage occurs at a bolted connection, the bolting shall be removed, VT-3 visually examined for corrosion, and evaluated in accordance with IWA-3100.

The licensee, however, proposes to apply the requirements of the 1990 Addenda to ASME Code, Section XI, which requires that if leakage occurs at a bolted connection, one of the bolts shall be removed, VT-3 examined, and evaluated in accordance with IWA-3100.

The staff has reviewed and evaluated the licensee's request and the supporting information to use the provisions of IWA-5250(a)(2) in the 1990 Addenda as a proposed alternative to the requirements of the same subsection in the 1989 Edition of the ASME Boiler and Pressure Vessel Code, Section XI, for Catawba Nuclear Station, Units 1 and 2.

## 2.0 EVALUATION

### Request to Use Alternative to 1989 Edition of ASME Code, Section XI, Serial No. 96-03

Subsection IWA-5250(a)(2) requires that the source of leakage detected during the conduct of a system pressure test shall be located and evaluated by the owner for corrective measures. If leakage occurs at a bolted connection, the bolting shall be removed, VT-3 visually examined for corrosion, and evaluated in accordance with IWA-3100.

The licensee requested approval to use the provisions of IWA-5250(a)(2) in the 1990 Addenda to ASME Code, Section XI. The bolt selected shall be the one closest to the source of leakage. When the removed bolt has evidence of degradation, all remaining bolting in the connection shall be removed, VT-3 examined, and evaluated in accordance with IWA-3100.

The licensee stated:

Duke Power Company believes these requirements described above create a hardship for utilities and compromises radiation safety. Removal of all bolting from a mechanical joint is not always required to assure the connection has not degraded. In addition, some connections are more difficult to seal after disassembly when compared to retorquing an already assembled connection. Complete disassembly of a connection in a radiation area would also increase personnel exposure. ASME has recognized such situations and changed this requirement to allow removal and evaluation of one bolt closest to the leak in a bolted connection identified as leaking.

The removal and examination of one bolt by a VT-3 inspector, is consistent with the requirements of the 1990 Addenda to ASME Code, Section XI. The subject addenda to the Code considers the evaluation of the bolt closest to the leak to be a sound engineering practice to detect evidence of degradation and assess the potential for failure. When the removed bolt has evidence of degradation, all remaining bolting in the connection shall be removed, VT-3 examined, and evaluated in accordance with IWA-3100. This concept provides an acceptable level of quality and safety since the area exposed to leakage is evaluated. Contrary to the requirement of 1989 ASME Code, Section XI, governing Catawba Unit 1, the 1980 Code including the Winter 1981 Addenda, currently applicable to Unit 2, does not address a specific method to detect evidence of degradation due to leakage at a bolted connection. However, the licensee proposes to use the provisions of the 1990 Addenda for Catawba Unit 2, as a prudent method to determine the condition of bolting and/or the root cause of the leak.

Based on above, the licensee's proposed alternative to use the provisions of IWA-5250 (a)(2) in the 1990 Addenda to the ASME Code, Section XI, is authorized pursuant to 10 CFR 50.55a(a)(3)(i).

### 3.0 CONCLUSIONS

The staff concludes that the licensee's proposed use of IWA-5250(a)(2) in the 1990 Addenda to the ASME Code, Section XI, ensures an acceptable level of quality and safety and is authorized pursuant to 10 CFR 50.55a(a)(3)(i).

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Dated: September 10, 1996