



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
OF THE SECOND 10-YEAR INTERVAL INSERVICE INSPECTION PROGRAM PLAN  
AND ASSOCIATED REQUESTS FOR RELIEF  
DUKE POWER COMPANY  
CATAWBA NUCLEAR STATION, UNIT 2  
DOCKET NO. 50-414

1.0 INTRODUCTION

The Technical Specifications (TS) for Catawba Nuclear Station, Unit 2, state that the inservice inspection 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 (ASME 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 pre-service 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) 12 months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein. The applicable edition of Section XI of the ASME Code for the Catawba Nuclear Station, Unit 2, second 10-year inservice inspection (ISI) interval is the 1989 Edition. The second 10-year interval start date is August 19, 1996.

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.

In a letter dated February 14, 1996, Duke Power Company (licensee), submitted to the NRC its second 10-year inservice inspection interval program plan and associated requests for relief for Catawba Nuclear Station, Unit 2. The licensee also provided additional information in its letters dated August 19, 1996, and October 23, 1996.

## 2.0 EVALUATION

The staff, with technical assistance from its contractor, the Idaho National Engineering Laboratory (INEL), has evaluated the information provided by the licensee in support of its second 10-year inservice inspection interval program plan and associated requests for relief for Catawba Nuclear Station, Unit 2. Based on the information submitted, the staff adopts the contractor's conclusions and recommendations presented in the attached Technical Evaluation Report (TER), which is hereby made a part of this safety evaluation.

The Catawba Nuclear Station, Unit 2, Second 10-Year Inservice Inspection (ISI) Program Plan, Revision 1, has been reviewed for: (1) compliance with the appropriate edition/addenda of Section XI; (2) acceptability of examination sample; (3) correctness of the application of system or component examination exclusion criteria; and (4) compliance with ISI-related commitments identified during the NRC's previous reviews. Based on its review, the staff determined that no deviations from requirements or commitments were identified in the Catawba Nuclear Station, Unit 2, Second 10-Year Inservice Inspection Program Plan, Revision 1.

Request for Relief 94-05, Revision 1, pertains to Examination Category B-D, Items B3.90 and B3.100, Examination Scheduling Requirements of Reactor Pressure Vessel Nozzle-to-Vessel Welds and Inner Radius sections. Section XI, Table IWB-2500-1, Examination Category B-D, Items B3.90 and B3.100 require that, for reactor pressure vessel nozzle welds and inner radius sections at least 25% but not more than 50% (credited) of the nozzle welds, shall be examined by the end of the first inspection period and the remainder by the end of the inspection interval. The licensee requested relief from the Code requirement to examine at least 25% of the vessel-to-nozzle welds and nozzle inner radius sections during the first examination period of the second interval. The licensee proposed to use automated examination technique to re-examine all Reactor Vessel Nozzle-to-Vessel Welds, Nozzle inside Radius Section, Nozzle-to-Safe End Welds, and Nozzle Safe End-to-Reactor Coolant System Piping Welds in the last period of the Second 10-Year inspection interval.

The requirement to examine the subject welds in the first period of the second interval when the same examinations were performed during the previous period is a hardship. The proposed alternative to reschedule the reactor pressure vessel (RPV) examinations for the Examination Category B-D, Items B3.90 and B3.100 welds in the last period of the second 10-year interval will maintain an acceptable level of quality and safety, because it maintains essentially 10 years between examinations.

The Request for Relief No. 94-04, Revision 1, pertains to Table IWB-2500-1, Examination category B-H, Item B-8.20, that requires a 100% volumetric or surface examination, for integrally welded attachments to the pressurizer as defined by figures IWB-2500-13, 14, and 15. The licensee requested relief from the Code-required surface examination for Weld 2PZR-SKIRT. The staff determined that it is impractical to perform the Code examinations for the following reasons:

1. The pressurizer heater cables must be disconnected for access, and this frequently causes some of the ceramic cable insulators to fail;
2. The maximum clearance between the inside surface of the support skirt and the outside row of pressurizer heaters is 14 inches, which is an insufficient clearance for performing the required magnetic particle testing; and
3. The inside diameter (ID) of the pressurizer support skirt has a high radiation field, and personnel performing the required examination would receive significant dose.

The licensee's proposed alternative is to examine by magnetic particle the outside diameter (OD) surface A-B of the weld and ultrasonically examine the ID surface area C-D of the weld. Based on the licensee's proposed alternative to the Code examinations, it can be concluded that degradation, if present, will be detected. Therefore, reasonable assurance of structural integrity will be provided.

### 3.0 CONCLUSION

Based on its review of the Catawba Nuclear Station, Unit 2, Second 10-Year Inservice Inspection Program Plan, Revision 1, the staff has concluded that no deviations from requirements or commitments were identified in the licensee's program plan. The staff's conclusions for the licensee's proposed alternative to the Code requirements contained in Request for Relief No. 94-05 and request for relief from the Code requirements contained in Request for Relief No. 94-04 are noted below.

The licensee's proposed alternative to the RPV examinations contained in Request for Relief No. 94-05 to reschedule Examination Category B-D, Items B3.90 and B3.100 welds for the second 10-year interval provides an acceptable level of quality and safety, because it maintains essentially 10 years between examinations. Therefore, the licensee's proposed alternative is authorized pursuant to 10 CFR 50.55a(a)(3)(i) as requested.

For Request for Relief No. 94-04, Revision 1, the staff has concluded that the Code requirements are impractical to perform. Compliance with the Code requirements would be an undue burden on the licensee without any compensating increase in the level of quality and safety. The subject components would need to be redesigned and replaced. The staff also concluded that the licensee's proposed alternative provides reasonable assurance of operational readiness of the subject component. Therefore, relief is granted pursuant to 10 CFR 50.55a(g)(6)(i) for Request for Relief No. 94-04, Revision 1, as requested. The granting of this relief will not endanger life, property, or the common defense and security, and is otherwise in the public interest, giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility.

Request for Relief No. 96-01 regarding Snubber Functional and Visual Testing Program is not in the scope of this review and is being addressed under a separate licensing action (TAC No. M97482).

Attachment: Technical Evaluation Report

Principal Contributors: T. K. McLellan, NRC  
M. T. Anderson, INEL  
E. J. Feige, INEL  
A. M. Porter, INEL

Date: February 27, 1997