



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

ENERGY OPERATIONS, INC.

ARKANSAS NUCLEAR ONE, UNIT NO. 2

DOCKET NO. 50-368

1.0 INTRODUCTION

10 CFR 50.55a(a)(3) states that alternatives to the requirements of paragraph (g) may be used if (1) the proposed alternatives would provide an acceptable level of quality and safety, or (2) compliance with the specified requirements would result in hardship or unusual difficulties without a compensating increase in the level of quality and safety. After evaluation of the determination, pursuant to 10 CFR 50.55a(a)(3), 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.

On March 9, 1992, Arkansas Nuclear One, Unit 2 (ANO-2), began a forced shutdown because of a leaking steam generator (SG) tube. Entergy Operations, Inc. (the licensee), has since conducted extensive eddy current testing in both SGs and found 420 defective tubes in the "A" SG and 67 defective tubes in the "B" SG. The licensee is in the process of pulling five SG tubes from the ANO-2 SGs. These tubes will be tested, as was discussed in the April 16, 1992, meeting between the licensee and the NRC staff in Rockville, Maryland, and repaired by welding a plug in the hotleg side of the tubesheet where the tube was located. The coldleg side of the tubesheet will be plugged with a rolled plug.

By letter dated April 22, 1992, the licensee requested approval to use the 1989 Edition of Section XI of the ASME Code for use in the welded repair of the ANO-2 steam generators. The request supports the effort to start up ANO-2 by April 27, 1992. The licensee requested relief because the qualification of the tube plugging procedure and the qualification of the welders were found to be performed in accordance with the 1989 Edition of Section XI of the ASME Code, rather than with the 1986 Edition of the Code, which is ANO-2's code of record. A Federal Register notice proposing to amend 10 CFR 50.55a to incorporate Section XI of all Editions and Addenda up to the 1989 Edition of the ASME Code was published on January 31, 1991.

## 2.0 EVALUATION

The information provided by the licensee in support of the request for relief has been evaluated. The basis for granting relief from the requirement is a reconciliation of the 1986 Edition and the 1989 Edition of the ASME Code, for the purpose of steam generator tube plugging in accordance with IWB-4440.

The weld qualification evaluation rules in the 1986 Edition of the Code require the metallographic cross sectioning of each of the five welds through the center to produce a total of 20 weld faces for evaluation. The 1989 Edition of the Code requires metallographic cross sectioning to expose the center line of the welds.

Although the new requirements require 10 faces evaluated per qualification test versus 20 faces per qualification test, no loss in confidence in the weld procedure results. The evaluation to the old requirements provided redundant information since two sets of 10 faces were only a saw-cut apart. Furthermore, the licensee stated that the new code requires the minimum throat be measured to meet the minimum leakage path specified by the design specification. When cross sectioning the weld to the old code requirements, typically 0.125 inch is removed from the center, so that the throat measurement is not perpendicular to the plug weld and the measurement could be larger than an actual correctly-measured throat. As a result, the 1989 Edition of the ASME Code provides revised words that improve the evaluation criteria for SG tube plug weld qualification.

## 3.0 CONCLUSION

Based on the information provided, the staff concluded that relief may be granted from the 1986 Edition of the Code for welder qualifications on the basis that the proposed alternatives provide an acceptable level of quality and safety. Relief is being granted based on the burden that would be put on the licensee if the welders' qualifications from the 1989 Edition of the ASME Code were not accepted and based on the finding that relief will not endanger life or 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.

Therefore, pursuant to 10 CFR 50.55a(a)(3)(i), relief is granted.

Principal Contributor: S. Peterson

Date: April 24, 1992

If you have any questions regarding this evaluation, please contact the NRC project manager.

Sincerely,

Original signed by Paul W. O'Connor for:

John T. Larkins, Director  
Project Directorate IV-1  
Division of Reactor Projects III/IV/V  
Office of Nuclear Reactor Regulation

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