



April 22, 1992

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U. S. Nuclear Regulatory Commission
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Subject: Arkansas Nuclear One - Unit 2
Docket No. 50-368
License No. NFP-6
Request for Approval to Use
Alternative to Requirements of
10CFR50.55a, "Codes and Standards"

Gentlemen:

Entergy Operations is in the process of pulling five (5) steam generator tubes from the Arkansas Nuclear One, Unit 2 (ANO-2) steam generators. These tubes will be tested as was discussed in the April 16, 1992, meeting with the NRC in Rockville, Maryland. The steam generators will be repaired by welding a plug in the hotleg side of the tubesheet where the tube once was. The coldleg side of the tubesheet will be plugged with a rolled plug.

The qualification of the tube plugging procedure and the qualification of the welders was performed in accordance with Section XI of the 1989 Edition, no Addenda of the ASME Code. (A Federal Register notice which proposed to amend 10CFR50.55a to incorporate all Editions and Addenda up to the 1989 Edition, no Addenda of the ASME Code for Section XI was published on January 31, 1991.)

A reconciliation has been made between the 1989 Code Edition, no Addenda with the 1986 Edition, no Addenda of the Code, which is ANO-2's Code of record. This reconciliation confirmed that the 1989 Edition, no Addenda, provides revised words that improve the evaluation criteria for steam generator plug weld qualification. The details of the reconciliation are attached.

Therefore, as allowed by 10CFR50.55a(a)(3)(i), Entergy Operations requests approval of the 1989 Edition, no Addenda, of the ASME Code, Section XI for use in the repair of the ANO-2 steam generators. In order to support the startup of ANO-2, Entergy Operations requests approval by April 27, 1992.

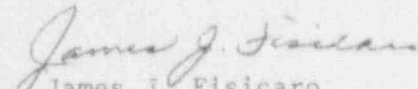
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If you have any questions, or require additional information, with regards to this submittal, please contact my office.

Very truly yours,


James J. Fisicaro
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JJF/RWC/sjf
Attachment

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RECONCILIATION OF THE 1986 EDITION, NO ADDENDA
AND THE 1989 EDITION OF THE ASME CODE

The Code of record of Arkansas Nuclear One, Unit 2 (ANO-2) is the 1986 Edition, no Addenda of the ASME Code. This reconciliation is prepared to meet the requirements of subparagraph IWB-7210(c) of the ASME Code, Section XI, 1986 Edition, no Addenda, for the purpose of steam generator tube plugging in accordance with IWB-4440.

Existing Code Requirements

The 1986 Edition, no Addenda, of the ASME Code, Section XI, paragraph IWB-4443(b) requires weld qualification to be evaluated per NB-4357, Special Qualification Requirement for Tube to Tubesheet Welds.

IWB-4443(b)

"The tube plugging procedure and welders shall be qualified with a minimum of five consecutive acceptable tube plugging operations as specified in the procedure of (a) above on the qualification test assembly of (c) below. The assemblies shall be examined in accordance with the requirements of NB-4357."

NB-4357

"The assembly shall be examined by a liquid penetrant method in accordance with the requirements of NB-5110 and shall meet the acceptance standards of NB-5350. Following this, the assembly shall be sectioned longitudinally through each tube. The thickness of the assembly may be reduced to 1/2 inch prior to this sectioning. The four faces of each tube exposed by sectioning shall be polished and etched with a suitable etchant, and shall be visually examined for cracks. The weld throat, minimum leakage path, shall not be less than two thirds of the specified tube wall thickness, and the weld shall be free from cracks on visual examination with X10 magnification."

These evaluation rules require the metallographic cross sectioning of each of the five welds through the center to produce a total of twenty welds faces to be evaluated.

New Code Requirements

Starting with the first addenda to the 1986 Edition of the Code, Section XI, the Code changed the words to make them more appropriate for tube plugging qualification and evaluation. These new requirements for steam generator tube plug qualification are now totally contained within Section XI rules per IWB-4432.3(b).

IWB-4432.3(b)

"Five consecutive welds of the test assembly shall be examined by a liquid penetrant method in accordance with the requirements of IWA-2200 and shall meet the acceptance standards of NB-5350. These welds shall then be cross sectioned longitudinally through the center of each plug. The thickness of the assembly may be reduced to facilitate sectioning. One section of each plug shall be polished, etched with a suitable etchant, and visually examined at X10 magnification. The weld throat and minimum leakage path shall not be less than that required by the Design Specification. The weld shall be free of cracks and lack of fusion. Porosity shall not reduce the weld throat thickness below the required minimum leakage path.

These new words require metallographic cross sectioning to expose the center line of the welds.

Reconciliation

Although the new requirements at face value would appear to be less restrictive, i.e., requires ten (10) faces evaluated per qualification test versus twenty (20) faces per qualification test, there is no loss in confidence in the weld procedure. The evaluation to the old requirements provided redundant information since the two (2) sets of ten (10) faces were only a saw cut apart.

Furthermore, and the most significant rationale for evaluating to the new words is that the minimum throat must be measured to meet the minimum leakage path specified by the Design Specification. If you cross section to the old requirements, you remove typically 0.125 inch out of the center which now means you measure a throat that is not perpendicular to the plug weld and consequently your measurement would be larger than an actual correctly measured throat. It would therefore, be possible to accept a qualification that in fact would not meet the Design Specification minimum leakage path requirement.

Summary

The 1989 Edition, no Addenda, of the ASME Code, and later, provides revised words that improve the evaluation criteria for steam generator tube plug weld qualification.