



South Texas Project Electric Generating Station P.O. Box 289 Wadsworth, Texas 77483

June 13, 2003  
NOC-AE-03001551  
10CFR50.55a

U. S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
One White Flint North  
11555 Rockville Pike  
Rockville, MD 20852

South Texas Project  
Unit 1  
Docket No. STN 50-498  
Request for Alternatives to ASME Section XI Requirements  
Associated with Mechanical Processing of Thermally Cut Surfaces  
(Relief Request RR-ENG-2-35)

Pursuant to 10 CFR 50.55a(a)(3)(i), STP Nuclear Operating Company (STPNOC) hereby requests NRC approval of a request for alternative to mechanical processing of thermally cut surfaces as part of the repair/replacement program for the reactor vessel bottom mounted instrument (BMI) penetrations in Unit 1.

STPNOC requests approval on an expedited basis by July 7, 2003 based on the schedule for repairing BMI penetrations in the Unit 1 reactor pressure vessel during the current forced outage.

If there are any questions regarding this relief request, please contact Mr. Michael Lashley at 361-972-7523 or me at 361-972-7162.

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Attachment: 10CFR50.55a Request RR-ENG-2-35

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**10CFR50.55a Request RR-ENG-2-35**

**Proposed Alternative  
in Accordance with 10 CFR 50.55a(a)(3)(i)**

**--Alternative Provides Acceptable Level of Quality and Safety—**

1. ASME Code Components Affected

Reactor vessel bottom mounted instrumentation (BMI) nozzle penetrations. There are 58 BMI nozzles welded to the bottom head of the reactor vessel. The ASME Code Class is Class 1.

2. Applicable Code Edition and Addenda

ASME Code Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components," 1989 Edition, no Addenda

3. Applicable Code Requirement

ASME Section XI, Division 1, Article IWA-4300 provides requirements related to defect removal.

IWA-4322 specifies:

If thermal removal processes are used on P-No. 8 and P-No.43 materials, a minimum of 1/16 in. material shall be removed from the thermally processed area.

4. Proposed Alternative

STP Nuclear Operating Company (STPNOC) proposes to use ASME Section XI Code, 1998 Edition, Division 1 with addenda through 2000 Addenda (1998 A2000), Paragraph IWA-4461.4, "Alternative to Mechanical Processing", which states that mechanical processing of thermally cut surfaces for P-No. 8 and P-No. 43 materials is not required when using a thermal metal removal process that meets the qualification requirements contained in this paragraph.

5. Basis of Alternative for Providing an Acceptable Level of Quality and Safety

ASME Code Section XI, 1989 Edition, no Addenda, Paragraph IWA-4120(c) states:

Later Editions and Addenda of Section XI, either in their entirety or portions thereof, may be used for the repair program, provided these Editions and Addenda of Section XI at the time of the planned repair have been incorporated by reference in amended regulations of the regulatory authority having jurisdiction at the plant site.

The January 1, 2003 version of 10CFR50.55a(b)(2) states:

As used in this section, references to Section XI of the ASME Boiler and Pressure Vessel Code refer to Section XI, and include the 1970 Edition through the 1976 Winter Addenda, and the 1977 Edition (Division 1) through the 2000 Addenda (Division 1), subject to the following limitations and modifications...

There are no limitations or qualifications cited for Paragraph IWA-4461.4.

Therefore, the 1998 Edition with addenda through the 2000 Addenda of ASME Code Section XI has been incorporated by reference by the regulatory authority having jurisdiction at the South Texas Project.

STP proposes to remove boat samples from two BMI nozzle penetrations (#1 and #46) inside the bottom of the flooded reactor vessel in Unit 1 using an electrodischarge machining (EDM) process. Mechanical removal of 1/16-inch of material in the thermally processed area as required by IWA-4322 of ASME Section XI 1989 Edition is extremely difficult at this location. Furthermore, removal of 1/16 inch of material in the thermally processed area is generally recognized to be unnecessary since only a very shallow heat affected zone on the order of 2 mils results from the EDM process. This EDM application will be performed under water which will further minimize the heating effects. STP proposes to remove the boat samples using an EDM process qualified in accordance with IWA-4461.4 of ASME Section XI 1998 Edition through 2000 Addenda which will demonstrate that the removal of material as specified in IWA-4461.3 is not necessary.

This will provide an acceptable level of quality and safety.

6. Related Requirements of IWA-4000 in the 1998 Edition through 2000 Addenda

6.1 10CFR50.55a(g)(4)(iv) allows the use of requirements contained in editions and addenda of Section XI Code referenced in 10CFR50.55a(b)(2) provided all related requirements of the respective edition and addenda are met.

- 6.2 STPNOC has identified the requirements of IWA-4000 in the 1998 –A2000 Section XI Code which are related to this request for alternative. These requirements are summarized below along with the STPNOC implementation or disposition.
- 6.2.1 IWA-4120(b)(5): This paragraph clarifies that repair/replacement requirement do not apply to non-pressure retaining material such as the Alloy 600 BMI nozzles in Penetrations 1 and 46 after repair/replacement with the half-nozzle process. Therefore, removal of boat samples from the Alloy 600 nozzles in Penetrations 1 and 46 do not require any further repair processes or NDE.
- 6.2.2 IWA-4120(c)(e): This paragraph clarified that the J-groove welds between the Alloy 600 nozzles and the reactor vessel bottom head Penetrations 1 and 46 are subject to the repair/replacement requirements of IWA-4000. Therefore, removal of a boat sample from this weld requires that all related requirements be met for the cavity and its effect on the weld.
- 6.2.3 IWA-4422.1(b): This paragraph allows defect removal cavities to remain in service without weld metal repair when the resulting section thickness is less than the minimum required thickness based on either a Section XI or Section III Code evaluation. The original J-groove welds of Penetrations 1 and 46 have been evaluated for flaw growth, including the effect of a boat sample cavity, and determined to be acceptable for continued service. This evaluation is available for review at the STP site.

7. Duration of Proposed Alternative

Relief is requested only for repair of the BMI penetrations in the Unit 1 reactor vessel.