

February 9, 2000

Mr. William T. Cottle  
President and Chief Executive Officer  
STP Nuclear Operating Company  
South Texas Project Electric  
Generating Station  
P. O. Box 289  
Wadsworth, TX 77483

SUBJECT: SOUTH TEXAS PROJECT, UNITS 1 AND 2 - SECOND 10-YEAR INTERVAL  
INSERVICE INSPECTION PROGRAM PLAN - RELIEF RR-ENG-2-10-R (TAC  
NOS. MA6848 AND MA6849)

Dear Mr. Cottle:

By letter dated October 7, 1999, as supplemented by letter dated November 15, 1999, STP Nuclear Operating Company (STPNOC) submitted relief request RR-ENG-2-10-R for relief from Section XI of the American Society of Mechanical Engineers Code nondestructive examination requirements of IWA-5250(a)(2). STPNOC proposes to use Code Case N-566-1 along with a commitment to perform a VT-1 visual examination of any bolting that is removed.

The Nuclear Regulatory Commission staff has evaluated the information provided by STPNOC. The staff concludes that STPNOC's proposed alternative to use Code Case N-566-1, with its commitment to perform a VT-1 visual examination on the removed bolting, provides an acceptable level of quality and safety. The staff's findings are documented in the enclosed safety evaluation. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i), the alternative proposed in relief request RR-ENG-2-10-R is authorized for the second 10-year inservice inspection interval or until such time as Code Case N-566-1 is published in Regulatory Guide (RG) 1.147. At that time, if STPNOC intends to continue to implement Code Case N-566-1, STPNOC should follow all conditions specified in RG 1.147, if present.

Sincerely,

*/RA/*

Robert A. Gramm, Chief, Section 1  
Project Directorate IV & Decommissioning  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Docket Nos. 50-498 and 50-499

Enclosure: Safety Evaluation

cc w/encl: See next page

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cc w/encl: See next page

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO THE SECOND 10-YEAR INSERVICE INSPECTION PROGRAM

RELIEF REQUEST RR-ENG-2-10-R

STP NUCLEAR OPERATING COMPANY

SOUTH TEXAS PROJECT, UNITS 1 AND 2

DOCKET NOS. 50-498 AND 50-499

1.0 INTRODUCTION

Inservice inspection (ISI) 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 Section 50.55a(g) of Title 10 of the Code of Federal Regulations (10 CFR 50.55a(g)), except where specific written relief has been granted by the Commission pursuant to 10 CFR 50.55a(g)(6)(i). The regulation at 10 CFR 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 difficulty 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. For South Texas Project (STP), Units 1 and 2, the applicable edition of Section XI of the ASME Code for the second 10-year ISI interval is the 1989 Edition.

2.0 LICENSEE'S REQUEST

STP Nuclear Operating Company (STPNOC or the licensee) originally submitted Relief Request RR-ENG-2-10 by letter dated October 7, 1999. Subsequently, the licensee revised the relief request (i.e., RR-ENG-2-10-R) in its letter dated November 15, 1999. The licensee's relief request seeks an alternative to the requirements of Section XI of the ASME Code, for STP Units 1 and 2.

Enclosure

## 2.1 Request for Relief No. RR-ENG-2-10-R

ASME Code, Section XI, IWA-5250(a)(2) requires that if leakage is detected at a bolted connection, the bolting is to be removed, VT-3 visually examined for corrosion, and evaluated in accordance with IWA-3100.

Pursuant to 10 CFR 50.55a(a)(3)(i) the licensee proposed to use Code Case N-566-1, "Corrective Action for Leakage Identified at Bolted Connections," as an alternative to ASME Code, Section XI, IWA-5250(a)(2) with the additional commitment to perform a VT-1 visual exam in lieu of the code-required VT-3 exam.

## 2.2 Licensee's Justification (as stated)

Evaluation of the leak in accordance with the proposed alternative requirements will ensure that the most appropriate corrective measures are taken if a leak is detected. While disassembly of the connection may be necessary to stop a leak, some leaks may be stoppable by means that do not require disassembly of the connection.

Based upon the above, in accordance with the provisions of 10CFR50.55a(a)(3)(i), the proposed alternative to IWA5250(a)(2) will provide an acceptable level of quality and safety.

## 2.3 Licensee's Proposed Alternative (as stated)

The South Texas Project requests Nuclear Regulatory Commission approval of Code Case N-566-1, "Corrective Action for Leakage Identified at Bolted Connections," and the alternative visual examination techniques and acceptance standards specified below for use as an acceptable alternative. The South Texas Project proposes that the following requirements from ASME Section XI Code Case N-566-1 be implemented as an alternative to IWA-5250(a)(2) in response to detection of leakage at a pressure-retaining bolted connection:

- (a) Stop the leak, and evaluate the bolting and the component material for joint integrity as described in (c).
- (b) If the leakage is not stopped, evaluate the joint for joint integrity in accordance with IWB-3142.4. This evaluation shall include the considerations listed in (c).
- (c) The evaluation in (a) and (b) is to determine the susceptibility of the bolting to corrosion and failure. The evaluation shall include the following:
  - the number and service age of bolts;
  - bolt and component material;
  - corrosiveness of process fluid;
  - leakage location and system function;
  - leakage history at the connection or other system components; and
  - visual evidence of corrosion at the assembled connection.

When evaluation of the above considerations indicates the need for further examination, the bolt nearest to the source of leakage will be removed, VT-1 examined, and evaluated in accordance with IWB-3517. If leakage is identified with the bolted connection in service, and an evaluation supports continued service, the VT-1 examination may be deferred to the next outage of sufficient duration. If the removed bolt has evidence of rejectable degradation, all remaining bolts in the connection shall be removed, VT-1 examined, and evaluated in accordance with IWB-3517.

The South Texas Project has intentionally specified a VT-1 visual examination and the IWB-3517 bolting acceptance standard in lieu of the VT-3 examination and IWA-3100 acceptance standard provided in IWA-5250(a)(2). The South Texas Project believes these are equivalent requirements because a detailed visual examination (i.e., VT-1) is required to verify the removed bolting meets the requirements of the original construction code per IWA-3100(b).

#### 2.4 Licensee's Basis for Requesting Relief (as stated)

Application of the IWA-5250(a)(2) requirement to a leaking connection necessitates draining of the affected system to allow disassembly of the connection. This requirement imposes an unnecessary expense in terms of man-hours and system outage, potential increased radiation exposure to craft personnel, as well as potential consequences of cycling the plant to allow the connection to be drained and disassembled.

When leakage is detected at a bolted connection, an engineering evaluation should first be performed to determine whether it is necessary to stop the leakage, evaluate the joint bolting and component material for integrity, and determine the need for bolting removal. The bolting should not be removed from the connection unless removal is necessary to determine the extent of corrosion or failure of the bolting or component material. The engineering evaluation should give consideration to the susceptibility of the bolting to corrosion and failure before bolting removal is undertaken. Additionally, it may be possible to stop the leakage by using sealants or other techniques without removing the bolting.

#### 3.0 EVALUATION

In accordance with IWA-5250(a)(2), if leakage occurs at a bolted connection, the bolting must be removed, VT-3 visually examined for corrosion, and evaluated in accordance with IWA-3100. In lieu of this requirement, the licensee has proposed to evaluate the bolting to determine its susceptibility to corrosion. Based on the items included in the evaluation process and the commitment to perform a VT-1 visual examination of any bolting that is removed, the evaluation proposed by the licensee provides a sound engineering approach. This approach will result in removal of bolting when necessary to assure the integrity of the joint, rather than in all cases regardless of the merits of bolt removal. If the engineering evaluation indicates the need for examination of the bolting, the bolt closest to the source of the leakage will be removed, VT-1 examined, and evaluated for further corrective action in accordance with IWB-3517.

The staff concludes that the licensee's proposed alternative to use Code Case N-566-1 with its commitment to perform a VT-1 visual examination on the removed bolting provides an acceptable level of quality and safety.

#### 4.0 CONCLUSION

The staff concludes that the licensee's proposed alternative to use Code Case N-566-1 with its commitment to perform a VT-1 visual examination on the removed bolting provides an acceptable level of quality and safety. Therefore, pursuant to 10 CFR 50.55a(a)(3)(i), the licensee's proposed alternative is authorized for the second 10-year ISI interval or until such time as Code Case N-566-1 is published in Regulatory Guide (RG) 1.147. At that time, if the licensee intends to continue to implement Code Case N-566-1, the licensee should follow all conditions specified in RG 1.147, if present.

Principal Contributor: T. McLellan

Date: February 9, 2000