

March 15, 2001

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 - REQUEST FOR RELIEF FROM
AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) SECTION XI,
CONTAINMENT IN-SERVICE INSPECTION (ISI) REQUIREMENTS
(TAC NOS. MA9508 AND MA9509)

Dear Mr. Cottle:

South Texas Project Nuclear Operating Company (the licensee), in a letter dated July 10, 2000, as supplemented by its letter of September 14, 2000, submitted relief request RR-ENG-IWL-01 for the first 10-year containment ISI interval for South Texas Project, Units 1 and 2. The licensee requested relief from certain ASME Code, Section XI, Subsection IWL requirements. The licensee requested relief pursuant to 10 CFR 50.55a(a)(3)(ii), stating that conducting the inspection in accordance with the code requirements would result in hardship without a compensating increase in the level of quality and safety.

The staff has reviewed the licensee's determination. Based on the review, the staff did not agree with the licensee's determination that completion of the required examinations represents a hardship and met the requirements of Section 10 CFR 50.55a(a)(3)(ii). However, the alternative proposed by the licensee in its Relief Request RR-ENG-IWL-01 is more stringent than the requirements of Subsection IWL. The staff found that the licensee's alternative; providing for examination pursuant to requirements that are more stringent than Subsection IWL requirements, and completion of an engineering evaluation when abnormal degradation is detected in accordance with Subsection IWL-3310; provides an acceptable level of quality and safety, and meets the relief requirements provided pursuant to Section 10 CFR 50.55a(a)(3)(i) instead. Accordingly, the requested relief RR-ENG-IWL-01 is authorized by law pursuant to Section 10 CFR 50.55a(a)(3)(i).

W. Cottle

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The staff's evaluation and conclusions are contained in the enclosed safety evaluation. Should you have questions regarding this safety evaluation, please contact Mr. Mohan C. Thadani, at (301) 415-1476.

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

W. Cottle

-2-

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cc w/encl: See next page

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ACCESSION NO: ML010740230 NRR-106 No legal objection*No substantive change from SE**

OFFICE	PDIV-1/PM	PDIV-D/LA	*EMEB/SC	OGC**	PDIV-1/SC
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February 2000

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELIEF FROM AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) SECTION XI,
CONTAINMENT IN-SERVICE INSPECTION (ISI) REQUIREMENTS
SOUTH TEXAS PROJECT, UNITS 1 AND 2
SOUTH TEXAS PROJECT NUCLEAR OPERATING COMPANY
DOCKET NOS. 50-498 AND 50-499

1.0 INTRODUCTION

In *Federal Register* Notice No. 154, Volume 61, dated August 8, 1996, the Nuclear Regulatory Commission announced an amendment to its regulation, 10 CFR 50.55a (rule). The rule incorporated by reference the 1992 edition with 1992 addenda of IWE and IWL of Section XI of the ASME *Boiler and Pressure Vessel Code* (the Code). Subsections IWE and IWL provide the requirements for ISI of Class CC (concrete containments), and class MC (metallic containments) including integral attachments of MC and metallic liners of Class CC components of light-water cooled plants. The effective date for the amended rule was September 9, 1996, and it requires licensees to incorporate the new requirements into their ISI plans and complete the first containment inspection by September 9, 2001. However, a licensee may submit a request for relief or propose an alternative to one or more requirements of the regulation pursuant to 10 CFR 50.55a(g)(6) or 10 CFR 50.55a(a)(3), respectively.

The regulation at 10 CFR 50.55a(g)(6)(ii)(B)(1) states that the in-service examinations specified for the first period of the first inspection interval in Subsection IWE of the 1992 Edition and 1992 Addenda as modified in paragraph 10 CFR 50.55a(b)(2)(x) will serve the same purpose for operating plants as the preservice examination. Paragraph 10 CFR 50.55a(g)(6)(ii)(B)(2) allows licensees to implement the in-service examinations which correspond to the number of years of operation which is specified in Subsection IWL of the 1992 Edition and 1992 Addenda as modified in 10 CFR 50.55a(b)(2)(ix) and will serve the same purpose for operating plants as the preservice examination specified for plants not yet in operation. South Texas Project Nuclear Operating Company, licensee, developed its containment ISI program using Subsections IWE/IWL of the 1992 Edition and 1992 Addenda.

By letter dated July 10, 2000, as supplemented in a letter dated September 14, 2000, the licensee requested relief from certain Section XI requirements of IWL pursuant to 10 CFR 50.55a(a)(3)(ii). This evaluation addresses the merits of the request for relief.

2.0 RELIEF REQUEST AND CODE REQUIREMENT

By letter dated July 10, 2000, as supplemented in a letter dated September 14, 2000, the licensee requested relief from certain Section XI requirements of IWL pursuant to 10 CFR 50.55a(a)(3)(ii).

ASME Section XI, 1992 Edition and 1992 Addenda, Subsection IWL-2520, Examination of Unbonded Post-Tensioning Systems, paragraph IWL-2521.1(c) Exemptions, requires each randomly selected tendon deemed exempt be examined in accordance with Subsections IWL-2524 and IWL-2525 to the extent that the end anchorages of the exempt tendon are accessible either during operation or at an outage.

3.0 EVALUATION OF RELIEF REQUEST

BACKGROUND:

Licensee's Proposed Alternative: Pursuant to 10 CFR 50.55a(a)(3)(ii), the licensee proposed to examine substitute tendons in accordance with IWL-2520 and not to examine exempt tendon end anchorages in accordance with IWL-2521.1(c) when they become accessible during operation or at an outage. However, the licensee proposed to examine the end anchorages of an additional tendon near the exempt tendon subject to the same environmental conditions. In addition, if abnormal degradation is detected on the substitute tendon or the end anchorages of the additional tendon, an engineering evaluation will be performed in accordance with IWL-3310 and if necessary the exempt tendon will be included within the evaluation to ensure structural integrity of the containment is maintained.

Licensee's Basis for Proposed Alternative (as stated):

"Containment Design:

"The Reactor Containment Building is constructed with three vertical buttresses located 120° apart. The horizontal tendons extend 360° around the containment building, with both ends of a given tendon anchored at the same buttress. Each successive horizontal tendon is progressively offset 120° from the one beneath it. Every third horizontal tendon is located within the same buttress so two tendons are located between the exempt tendons and are accessible from the other two buttresses. Each horizontal tendon is basically the same length, has virtually identical end anchorage hardware, and is exposed to the same environmental conditions as its neighbor.

"In addition to the horizontal tendons, tendons are also mounted vertically. The vertical U-shaped tendons are continuous over the dome, forming a two-way post-tensioning system for the dome. These tendons are anchored in a continuous gallery beneath the base slab which is provided for the installation and inspection of the vertical tendons.

“Effect on Tendon Population:

“Surveillance of every tendon is not necessary. The selected tendons are a small percentage of the entire tendon population, and they will represent the entire population (accessible and inaccessible). All tendons were designed, fabricated, installed, and inspected using identical methods. There are no significant differences between the accessible tendons and the inaccessible ones. Therefore, the selected tendons will be just as representative of the inaccessible population as they are of the non-selected portion of the accessible population.

“The 24 tendons listed in Section A constitute 18% of 133 horizontal tendons and 10% of the 229 total tendons. Therefore, 82% of the horizontal tendons and 100% of the vertical tendons remain within the scope of the proposed surveillance program. The South Texas Project believes this constitutes a sufficiently large and representative population for selection of tendons for surveillance.

“Previous Test Results:

“Surveillance testing of containment building tendons is performed one, three, and five years following the initial Structural Integrity Test and every five years thereafter. The initial structural integrity tests for Units 1 and 2 were completed March 26, 1987, and September 29, 1988, respectively. The following inspections have been performed:

<u>Unit 1</u>	<u>Unit 2</u>
1 st Year completed 6/88	1 st Year completed 12/89
3 rd Year completed 3/90	3 rd Year completed 3/92
5 th Year completed 5/92	5 th Year completed 10/93
10 th Year completed 7/98	10 th Year completed 9/98

“The tendons listed in section A were not included in these surveillances except for the first inspection of Unit 1. The grease caps, including those of the excluded tendons, have been examined to identify grease leakage or deformation. No relevant indications were found during the inspections.

“Additional Examination Requirements”

“Containment tendons are inspected under 10 CFR 50.55a(b)(2)(viii)(A) as follows:

Grease caps that are accessible must be visually examined to detect grease leakage or grease cap deformations. Grease caps must be removed for this examination when there is evidence of grease cap deformation that indicates deterioration of anchorage hardware.”

“As stated in 10 CFR 50.55a(b)(2)(viii)(E):

For Class CC applications, the licensee shall evaluate the acceptability of inaccessible areas when conditions exist in accessible areas that could indicate the presence of or result in degradation to such inaccessible areas. For each inaccessible area identified, the licensee shall provide the following in the ISI Summary Report required by IWA-6000:

- a. A description of the type and estimated extent of degradation, and the conditions that led to the degradation;
- b. An evaluation of each area, and the result of the evaluation; and
- c. A description of necessary corrective actions.”

STAFF EVALUATION:

To comply with 10 CFR 50.55a(g)(6)(ii)(B), licensees must complete the ISI requirements for reinforced concrete and post-tensioning systems of Class CC components, which corresponds to the number of years of operation that are specified in Subsection IWL. The Code allows exemptions from examination requirements of IWL-2000 provided that the specific conditions for exemption are met. The licensee, in accordance with IWL-1220(a), has determined that certain tendon end anchorages are exempt from particular examination requirements of IWL-2000. IWL-1220(a) states that tendon end anchorages that are inaccessible are exempt from the requirements of IWL-2000, subject to the requirements of IWL-2521.1. Subparagraph IWL-2521.1(c) states each exempted tendon shall be examined in accordance with IWL-2524 and IWL-2525 to the extent that the end anchorages of the exempt tendon are accessible either during operation or at an outage.

The licensee proposed to examine the end anchorages of an additional tendon in accordance with IWL-2524 and IWL-2525 and not examine the exempt tendon end anchorages even when they become accessible during an outage. The licensee stated that it would provide and examine substitute tendons for exempted tendons in accordance with IWL requirements, and, in addition, provide an additional tendon for each exempted tendon beyond IWL requirements for examination in accordance with IWL-2524 and IWL-2525. Further, the licensee has committed to completing an engineering evaluation in accordance with IWL-3310 if abnormal degradation is detected on the substitute tendon or end anchorages of the additional tendon. This evaluation may extend to the exempt tendon to ensure structural integrity of the containment is maintained.

In accordance with 10 CFR 50.55a(a)(3)(ii), the licensee requested relief from the Code-required examination. The licensee noted that conducting the inspection in accordance with IWL-2521.1(c) would result in hardship without a compensating increase in the level of quality and safety.

The staff does not fully agree with the licensee that completion of the required exams on exempted tendon end anchorages represents a hardship when the tendon anchorages become accessible during the outage. However, the licensee's alternative examination provides more stringent requirements than IWL requirements by providing examination of additional tendon anchorages exposed to a similar environment in close proximity to the randomly selected tendon that has been exempted due to personnel safety concerns during operations. Therefore, the staff concludes that the selection and examination of substitute tendons in accordance with IWL requirements, examination of end anchorages of an additional tendon for all exempt tendons by

IWL-2524 and IWL-2525, and completion of an engineering evaluation when abnormal degradation is detected in accordance with IWL-3310 provide an acceptable level of quality and safety.

4.0 CONCLUSION

Based on the evaluation of licensee's information, the staff did not fully agree with the licensee that completion of the required examinations on exempted tendon end anchorages represents a hardship. However, as discussed above, the alternative proposed in Relief Request RR-ENG-IWL-01 provides more stringent requirement and an acceptable level of quality and safety. Therefore, the requested relief RR-ENG-IWL-01 is authorized pursuant to 10 CFR 50.55a(a)(3)(i).

Principal Contributor: G. Hatchet

Date: March 15, 2001