



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

February 24, 1999  
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File No.: G09.16  
10CFR50.55a

U. S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, DC 20555

South Texas Project  
Units 1 and 2  
Docket Nos. STN 50-498, STN 50-499  
Request for Relief from ASME Boiler and Pressure Vessel Code  
Section XI Requirements (Relief Request RR-ENG-24)

In accordance with the provisions of 10CFR50.55a(a)(3)(i), the South Texas Project requests relief from ASME Section XI Code Table IWC-2500-1. This table includes a requirement that a surface examination be performed on essentially 100% of the length of each weld of one pump casing among each group of multiple Class 2 pumps. However, some welds (or portions of welds) in the pump casings of the Containment Spray, Low Head Safety Injection, and High Head Safety Injection pumps are located in a pump pit and are not accessible for surface examination. Consequently, the South Texas Project requests approval to use an alternative examination method.

The South Texas Project has performed boroscopic VT-1 visual examinations on the subject welds. The South Texas Project proposes that the boroscopic VT-1 visual examination be allowed as an alternative to the Section XI surface examination of the pump casing welds, or portions of welds, within the pits. The South Texas Project expects the boroscopic VT-1 visual examination to adequately verify that the weld and adjacent base material surfaces are free of significant service-induced degradation and consequently provide an acceptable level of quality and safety. Consequently, the boroscopic VT-1 visual examination meets the criteria for an alternate examination specified in 10CFR50.55a(a)(3)(i).

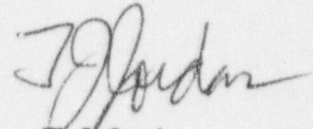
The accessible welds (or accessible portions of welds) in these pump casings have been examined as required by Section XI code requirements and no flaws were detected. If one or more of these pumps in either unit are disassembled for maintenance before the end of the inspection interval, the pump casing welds within the pump pit will receive a surface examination. The attached relief request includes a discussion of the basis and justification for the relief request and an implementation schedule.

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The South Texas Project requests approval of this relief request by the Nuclear Regulatory Commission by September 1, 1999, in order to support the upcoming Unit 2 outage in October 1999.

If there are any questions, please contact Mr. C. A. Murry at (512) 972-8285 or me at (512) 972-7902.



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Attachment: Request for Relief from ASME Boiler and Pressure Vessel Code Section XI Requirements (Relief Request RR-ENG-24)

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**SOUTH TEXAS PROJECT UNITS 1 AND 2  
REQUEST FOR RELIEF FROM ASME BOILER AND  
PRESSURE VESSEL CODE SECTION XI REQUIREMENTS  
(RELIEF REQUEST RR-ENG-24)**

Reference Code: ASME Boiler and Pressure Vessel Code, Section XI  
1983 Edition through Summer 1983 Addenda

A. Components for Which Alternative is Requested:

(a) Name and Identification Number:

- Containment Spray (CS) Pumps 1A (Unit 1) and 2A (Unit 2): longitudinal seam weld PCW5 and circumferential weld PCW3
- Low Head Safety Injection (LHSI) Pumps 1A (Unit 1) and 2A (Unit 2): longitudinal seam weld PCW5 and circumferential weld PCW3
- High Head Safety Injection Pumps (HHSI) 1A (Unit 1) and 2A (Unit 2): longitudinal seam weld PCW5 and circumferential weld PCW3

(b) Function:

- Refer to UFSAR Section 6.2.2.2.2 for Containment Spray pumps
- Refer to UFSAR Section 6.3.2 for Low and High Head Safety Injection pumps

(c) Class: ASME Code Class 2

B. Code Requirement from Which Relief is Requested:

ASME Section XI Code Table IWC-2500-1, Examination Category C-G, Item No. C6.10, requires surface examination of 100% of the welds of one pump among each group of multiple pumps of similar design, size, function, and service in a system.

C. Basis for Relief from Code Requirements

The subject outer barrel (pump casing) welds of the affected pumps are located in pump pits. In order to perform a surface examination on the subject casing welds, either the pump would have to be pulled from the associated pit, or the pump motor and pump internals would have to be removed to allow access to the interior of the pump casing. The South Texas Project proposes to use a boroscopic VT-1 visual examination as an alternative to the surface examination. The South Texas Project believes the boroscopic VT-1 visual examination provides sufficient confirmation that the weld and adjacent base

material surfaces are free of significant service-induced degradation and so provides an acceptable level of quality and safety. The accessible welds (or accessible portions of welds) in these pump casings have been examined as required by Section XI code requirements. No flaws were detected by these examinations. In addition, a surface examination will be performed on the subject welds if a Containment Spray, Low Head Safety Injection, or High Head Safety Injection pump is disassembled for maintenance within the inspection interval, allowing access to the subject welds. Consequently, the boroscopic VT-1 visual examination meets the criteria of 10CFR50.55a(a)(3)(i) as an alternate means of examination.

The Containment Spray, Low Head Safety Injection, and High Head Safety Injection pumps are of a similar centrifugal multiple stage vertical design, and are manufactured by Pacific Pumps. There are five pressure-retaining casing welds associated with each of the subject pump casings: three circumferential casing welds; one suction nozzle weld; and one longitudinal casing weld. Of these welds, only the lower circumferential weld and the lower portion of the longitudinal casing weld are inaccessible for surface examination while a pump is in its pit. The remaining welds have received the required Section XI surface examination.

The Containment Spray and Low Head Safety Injection pump casings are 24 inches in diameter with approximately a 3-inch annular clearance between the casing and the pit wall. The High Head Safety Injection pump casing is 18 inches in diameter with approximately a 6-inch annular clearance. A debris seal covers the annular opening between each pump casing and the edge of the pit. The lower circumferential weld in each pump casing, located approximately 10 feet down in the pump pit, is inaccessible for surface examination. The 10 feet of each longitudinal casing weld located inside the pump pit are also inaccessible for surface examination. The upper portion of each longitudinal casing weld is accessible for Section XI surface examination for approximately 50 to 55 inches of its overall length. A sketch depicting the typical pump casing and pump pit configuration is attached.

D. Proposed Alternate Examination:

Due to the small annular space between the pump casing and the pit wall and the distance of the welds from the access opening at the top of the pit (i.e., up to ten feet), performing a complete surface examination of these welds in the installed condition is not practical. However, this configuration is compatible with a boroscopic visual examination of these welds. Boroscopic VT-1 visual examinations were performed December 1 and 2, 1998 (Unit 1) and February 3, 1999 (Unit 2) on the entire length of the circumferential and longitudinal pump casing welds within the pit of each pump subject to inservice inspection. No relevant conditions were identified during these examinations.

In addition to the alternative VT-1 visual examination, a surface examination will be performed on the subject welds if a Containment Spray, Low Head Safety Injection, or



High Head Safety Injection pump is disassembled for maintenance within the inspection interval, allowing access to the subject welds. The accessible welds (or accessible portions of welds) in these pump casings have been examined with a surface examination technique as required by Section XI code requirements.

E. Justification for Granting Relief:

The referenced ASME Section XI Code requires a surface examination of 100% of the pump casing welds of each pump required to be inspected. However, a boroscopic VT-1 visual examination of the pump casing welds within the pump pits is expected to provide an acceptable level of quality and safety by verifying the weld and adjacent base material surfaces are free of significant service-induced degradation. Consequently, the boroscopic VT-1 visual examination meets the criteria of 10CFR50.55a(a)(3)(i) as an acceptable alternative. The accessible welds (or accessible portions of welds) in these pump casings have been examined with a surface examination technique as required by Section XI code requirements. No flaws were detected by these examinations. Additionally, the South Texas Project will perform a surface examination on the specified welds if any of the applicable pumps are disassembled for maintenance within the current inspection interval, allowing access to the subject weld(s).

The subject pumps are approximately 30 feet tall with the driver mounted. Alignment of the shaft along the multiple vertical stages to the driver coupling is critical to proper operation. Improper rigging or alignment can result in a bent pump shaft or vibration and subsequent impaired operation and pump damage. Therefore, removal of the pump casing from the pit or removal of the pump internals to gain access to the specified welds to perform a surface examination would present an undue hardship without a compensating increase in quality and safety. Removal could also have a negative impact on quality and safety if the precise alignment required for these vertical pumps is not achieved when they are returned to their positions.

In addition, the following design considerations apply:

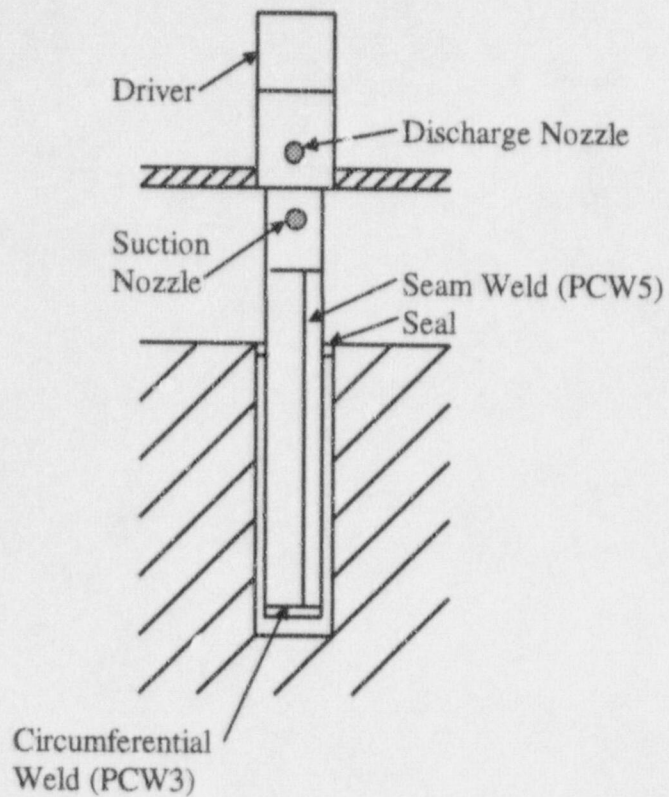
- The outer barrel (pump casing) is exposed to relatively low system suction pressure.
- Detection of excessive leakage from the Safety Injection System and Containment Spray System and rooms in the Fuel Handling Building is provided by level instrumentation in the appropriate sump. Each train of the Safety Injection System and Containment Spray System is located in a separate room with its own sump and duplex sump pumps. The sump pumps and associated piping from the Safety Injection System and Containment Spray System equipment rooms are designated as nonseismic equipment. The leak detection level instrumentation is seismic Category I and Class 1E. Failure of the nonseismic pumps or piping would not affect the functional integrity of the equipment in the room because the equipment is located such that sufficient time is available for operator action.

- Leakage and flooding into Safety Injection System and Containment Spray System pump compartments are alarmed on the Qualified Display Processing System by switches on the level instrumentation for the collection sumps in these compartments. Two independent Class 1E high level alarms are provided. Only one alarm must remain functional to provide the minimum leak detection capability.

Consequently, the likelihood of a service-related weld failure is unlikely. In addition, if a leak from one of the subject welds occurs, it should be detected early.

F. Implementation Schedule:

The South Texas Project requests approval for the proposed alternative VT-1 visual examination described above for use during the current (first) ten-year inservice inspection interval.



Reference Drawing 6F-18-9-N-5062, rev. 9 (Typical for Containment Spray, Low Head Safety Injection, and High Head Safety Injection pumps)