



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

September 20, 2010

NOC-AE-10002594  
File No.: G25  
10 CFR 50.55a

U. S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
One White Flint North  
11555 Rockville Pike  
Rockville, MD 20852-2746

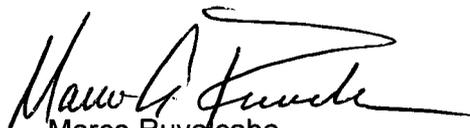
South Texas Project  
Units 1 and 2  
Docket Nos. STN 50-498, 50-499  
Request for Relief from ASME Section XI Code  
Requirements for Pump Casing Inservice Inspection Examination  
(Relief Request RR-ENG-3-03)

In accordance with the provisions of 10 CFR 50.55a(a)(3)(i), the STP Nuclear Operating Company (STPNOC) 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. Boroscopic VT-1 visual examination meets the criteria for an alternate examination specified in 10 CFR 50.55a(a)(3)(i). Consequently, STPNOC requests approval to use boroscopic VT-1 visual examination as an alternative examination method during the third inservice inspection interval.

Commitments are provided as an attachment.

STPNOC requests NRC review and approval of this relief request by March 1, 2011, to support implementation of the Unit 1 and Unit 2 Ten Year Inservice Inspection Plan for the third interval.

If there are any questions, please contact either Mr. Philip L. Walker at (361) 972-8392 or me at (361) 972-7904.

  
Marco Ruvalcaba  
Manager,  
Testing and Programs Engineering

PLW/

- Attachment: 1) Request for Relief from ASME Section XI Code Requirements for Pump Casing Inservice Inspection Examination (Relief Request RR-ENG-3-03)
- 2) List of Commitments

STI: 32733141

A047  
NRR

cc: (paper copy)

Regional Administrator, Region IV  
U. S. Nuclear Regulatory Commission  
612 East Lamar Blvd., Suite 4004  
Arlington, TX 76011-4125

Mohan C. Thadani  
Senior Project Manager  
U.S. Nuclear Regulatory Commission  
One White Flint North (MS 8 G14)  
11555 Rockville Pike  
Rockville, MD 20852

Senior Resident Inspector  
U. S. Nuclear Regulatory Commission  
P. O. Box 289, Mail Code: MN116  
Wadsworth, TX 77483

C. M. Canady  
City of Austin  
Electric Utility Department  
721 Barton Springs Road  
Austin, TX 78704

(electronic copy)

A. H. Gutterman, Esq.  
Morgan, Lewis & Bockius LLP

Mohan C. Thadani  
U. S. Nuclear Regulatory Commission

Peter Nemeth  
Crain Caton & James, P.C.

C. Mele  
City of Austin

E. Alarcon  
K. Pollo  
Richard Pena  
City Public Service

John Ragan  
C. Callaway  
J. von Suskil  
NRG South Texas LP

Richard A. Ratliff  
Alice Rogers  
Texas Department of State Health Services

**SOUTH TEXAS PROJECT  
UNITS 1 AND 2  
REQUEST FOR RELIEF FROM ASME SECTION XI CODE  
REQUIREMENTS FOR PUMP CASING INSERVICE INSPECTION EXAMINATION  
(RELIEF REQUEST RR-ENG-3-03)**

1. Reference Code: ASME Code Section XI, 2004 Edition, No Addenda

2. Components Affected:

(a) Component:

- 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) Description:

- Refer to UFSAR Section 6.2.2.2 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

3. Applicable Code Requirement:

Table IWC-2500-1, Examination Category C-G, Item C6.10 of ASME Code Section XI, 2004 Edition, no addenda, requires surface examination of 100% of the welds in all pumps in each piping run examined under Examination Category C-F. As stated in footnotes:

- (1) In case of multiple pumps or valves of similar design, size, function, and service in a system, required weld examinations may be limited to all the welds in one pump or one valve in the same group or distributed among any of the pumps or valves of that same group.
- (2) The examination may be performed from either the inside or outside surface of the component.
- (3) The pumps and valves originally selected for examination shall be reexamined in the same sequence over the service lifetime of the component, to the extent practical.

#### 4. 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 CS, LHSI, and HHSI 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 are accessible for the required Section XI surface examination.

The CS and LHSI pump casings are 24 inches in diameter with approximately a three-inch annular clearance between the casing and the pit wall. The HHSI 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-foot length of each longitudinal casing weld located inside the pump pit is 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.

The subject pumps are approximately 30 feet long 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.

#### 5. Alternative Examination:

Pursuant to 10 CFR 50.55a(a)(3)(i), STPNOC proposes an alternative to the examination method required under ASME Section XI, Table IWC-2500-1. 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 examination will verify welds and adjacent base material are free of significant service-induced degradation.

The accessible welds (or accessible portions of welds) in these pump casings will be examined with a surface examination technique as required by Section XI code requirements. If a CS, LHSI, or HHSI pump is disassembled during the third inspection

interval, STPNOC will perform the Code-required surface examination of the pump casing welds within the pump pit.

#### 6. 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 10 CFR 50.55a(a)(3)(i) as an acceptable alternative.

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 non-seismic equipment. The leak detection level instrumentation is seismic Category I and Class 1E.
- Failure of the non-seismic 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.

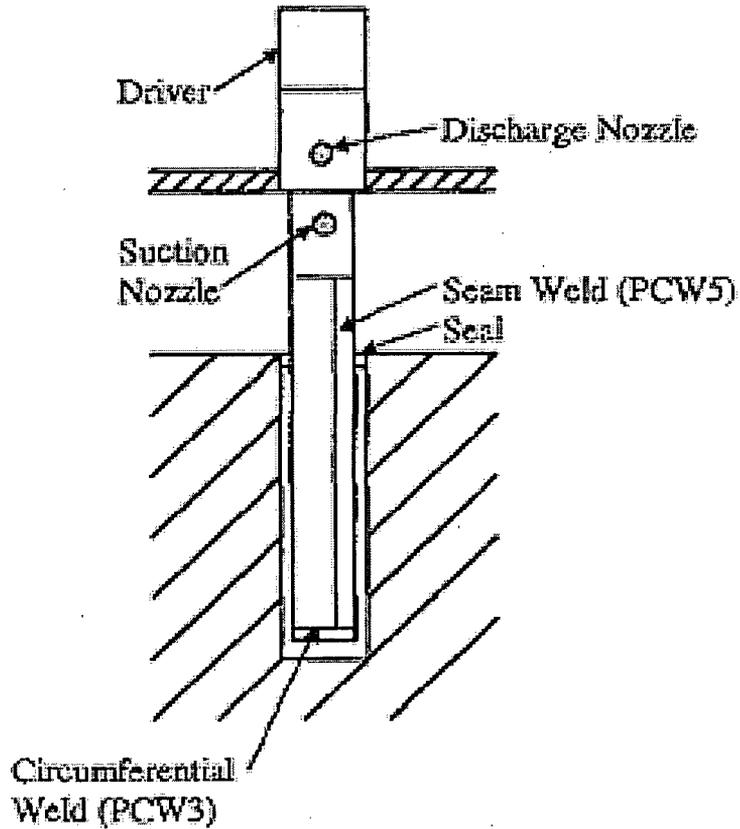
Consequently, the likelihood of a service-related weld failure is unlikely. In addition, if a leak from one of the subject welds should occur, it can be detected quickly.

#### 7. Implementation Schedule:

STPNOC requests relief from ASME Section XI nondestructive examination requirements for the inaccessible pump casing welds described above for the third ten-year inservice inspection interval beginning September 25, 2010 (Unit 1) and October 19, 2010 (Unit 2). The NRC is requested to review and approve this relief request by March 1, 2011, to support implementation of the Unit 1 and Unit 2 Ten Year Inservice Inspection Plan for the third interval.

8. Precedent

A similar request for the South Texas Project for the second inspection interval was approved by the NRC by safety evaluation dated February 7, 2000 (ML003680853).



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

**Commitment:**

If a CS, LHSI, or HHSI pump is disassembled during the third inspection interval, STPNOC will perform the Code-required surface examination of the pump casing welds within the pump pit.

Condition Report: 08-9676

Expected Completion Date: December 12, 2010 (incorporation into procedure)