

**From:** [Galvin, Dennis](#)  
**To:** [Drew Richards \(amrichards@stpegs.com\)](mailto:amrichards@stpegs.com)  
**Subject:** RE: South Texas Project – Request for Additional Information - Proposed Alternative to ASME Code Requirements for the Repair of Essential Cooling Water System Class 3 Buried Piping (EPID: L 2019-LLR-0096)  
**Date:** Tuesday, February 04, 2020 5:24:00 PM  
**Attachments:** [STP RR CFRP Piping Repair Final RAI L-2019-LLR-0096 2020-02-04 Redacted.pdf](#)

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Mr. Richards,

By letter dated September 26, 2019 (Agencywide Documents and Access Management System (ADAMS) Accession No. ML19274C393), as supplemented by letter dated November 26, 2019 (ADAMS Accession No. ML19331A202), STP Nuclear Operating Company (the licensee) requested Nuclear Regulatory Commission (NRC) approval of a proposed alternative to Section XI, IWA-4221(b) of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), which requires repaired/replacement piping to meet the original Construction Code requirements. The proposed alternative is to allow the use of a carbon fiber reinforced polymer (CFRP) composite system for the internal repair of the buried Essential Cooling Water (ECW) piping during the third and fourth 10-year ISI intervals at South Texas Project Electric Generation Station (STP), Units 1 and 2.

The NRC staff has determined that additional information is needed to complete its review. The requests for additional information (RAIs) were transmitted to the licensee in draft form on January 27, 2020. A RAI clarification call was held on February 4, 2020. During the call, the licensee agreed to provide responses to the RAIs by March 5, 2020. The NRC staff agreed with this date.

The NRC staff has determined that its documented RAIs contain proprietary information pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Section 2.390, "Public inspections, exemptions, requests for withholding." Accordingly, the NRC staff has prepared a redacted, nonproprietary version. However, the NRC will delay placing the nonproprietary RAIs in the public document room for a period of 10-working days from the date of this email to provide the licensee the opportunity to comment on any proprietary aspects. If you believe that any information in the redacted RAIs is proprietary, please identify such information line-by-line and define the basis pursuant to the criteria of 10 CFR 2.390. After 10-working days, the nonproprietary RAIs will be made publicly available.

If you have any questions, please contact me at (301) 415-6256 or [Dennis.Galvin@nrc.gov](mailto:Dennis.Galvin@nrc.gov).

Respectfully,

Dennis Galvin  
Project Manager  
U.S Nuclear Regulatory Commission  
Office of Nuclear Reactor Regulation  
Division of Operating Reactor Licensing  
Licensing Project Branch 4  
301-415-6256

Docket No. 50-498, 50-499

REQUEST FOR ADDITIONAL INFORMATION

PROPOSED ALTERNATIVE TO ASME SECTION XI REQUIREMENTS FOR

REPAIR/REPLACEMENT OF ESSENTIAL COOLING WATER CLASS 3

BURIED PIPING IN ACCORDANCE WITH 10 CFR 50.55a(z)(1)

STP NUCLEAR OPERATING COMPANY

SOUTH TEXAS PROJECT UNITS 1 AND 2

DOCKET NOS. 50-498 AND 50-499

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To complete its review, the NRC staff requests the following additional information. The proprietary information in this document is marked with double brackets and bold font such as **[[Example]]**.

**NPHP RAI 1**

Enclosure 1, Section 4, page 5 of 21 of the request states that the ECW piping is fabricated of aluminum-bronze material. Discuss what measures have been conducted to demonstrate that CFRP can be applied to the inside surface of aluminum-bronze pipes with adequate adhesion and strength for the intended application (e.g. mockup tests).

**NPHP RAI 2**

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**NPHP RAI 3**

Discuss whether a pressure test will be performed in accordance with the ASME Code, Section XI, IWA-5000 and IWD-5000 after the CFRP repair is installed and prior to system startup.

**NPHP RAI 4**

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**NPHP RAI 5**

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**NPHP RAI 6**

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NPHP RAI 7

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EMIB RAI 1

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EMIB RAI 2

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#### **EMIB RAI 4**

Section 5B.6 of Attachment 5B to Enclosure 5 of the request discusses CFRP composite system termination detail at straight ends. Repair terminations at host pipe substrate at the ends of repair with a good bond are critical to maintain structural integrity so that the CFRP composite system can transfer loads to the host pipe. Provide information or a sketch to address the following related to the intact or non-repaired side of terminations:

- (a) Address whether the intact piping on the non-repaired side of terminations is buried, or whether all non-repaired side is exposed. If buried, discuss whether credit is taken for attenuation along the buried length.
- (b) The distance from termination end to the end of buried portion of pipe or to the beginning of aboveground piping in the buildings.
- (c) The distance from termination end to the piping supports or anchors in the vicinity for the aboveground piping.
- (d) Repair terminations interface with the repaired and the non-repaired sides of the piping. It appears that the loads from the repaired side are considered. Provide a discussion on structural integrity of the terminations from any dead weight, thermal, seismic, and any other applicable loadings from the non-repaired side.

#### **EMIB RAI 5**

Table 1 in Attachment B of Enclosure 4 on page 11 of 42 of the request lists Mechanical Property Tests Required for V-Wrap CFRP Composite System. The table lists ASTM Standard D3526, which does not address testing of Shear Bond Strength Between CFRP and aluminum-bronze. Please provide the applicable ASTM Standard for testing this property.

#### **EMIB RAI 6**

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EMIB RAI 7

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EMIB RAI 8

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