August 18, 2005

Mr. James J. Sheppard
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 - RE: ADDITION OF WELDED ATTACHMENTS TO PIPING SYSTEMS FROM WHICH ARBITRARY INTERMEDIATE BREAKS WERE PREVIOUSLY ELIMINATED (TAC NOS. MC5191 AND MC5192)

Dear Mr. Sheppard:

Section 3.6.2.1 of Supplement 3 to NUREG-0781, "Safety Evaluation Report related to Operation of South Texas Project, Units 1 and 2," dated May 1987, states that, "...during ongoing and future design work, any relocations of, modifications to, or additions of welded attachments to piping systems in which AIBs [arbitrary intermediate breaks] are eliminated should be reviewed by the staff to ensure that the enveloping assessments described above still provide adequate protection against pipe breaks resulting from high local stress due to welded attachments." By letter dated November 18, 2004, STP Nuclear Operating Company, the licensee, informed the NRC staff that, as a result of plant modifications associated with Steam Generator replacement, welded attachments were added to two feedwater piping locations in each Unit where AIBs had been previously eliminated.

The NRC staff reviewed the information contained in the November 18, 2004, letter, and the supplement dated May 19, 2005, and concludes that the stresses and fatigue usage factors as provided by the licensee for the new Integrated Welded Attachments (IWAs) are bounded by the design basis analysis of the existing welded attachments. As a result, installation of additional IWAs does not invalidate the basis in the original staff determination to eliminate AIBs, since the resulting piping stress at these IWAs still conforms to the stress criteria for elimination of AIBs discussed in Section 3.6.2.1.1 of the STP Updated Final Safety Analysis Report.

Should you have any questions, please contact me at 301-415-1439.

Sincerely,

/RA/

David H. Jaffe, Senior Project Manager, Section 1
Project Directorate IV
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

Should you have any questions, please contact me at 301-415-1439.

Sincerely,

/RA/

David H. Jaffe, Senior Project Manager, Section 1
Project Directorate IV
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Enclosure: Safety Evaluation

cc w/encl: See next page

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO ADDITION OF WELDED ATTACHMENTS TO PIPING SYSTEMS FROM WHICH ARBITRARY INTERMEDIATE BREAKS WERE PREVIOUSLY ELIMINATED

STP NUCLEAR OPERATING COMPANY, ET AL.

SOUTH TEXAS PROJECT, UNITS 1 AND 2

DOCKET NOS. 50-498 AND 50-499

1.0 INTRODUCTION

Section 3.6.2.1 of Supplement 3 to NUREG-0781, "Safety Evaluation Report related to Operation of South Texas Project, Units 1 and 2," dated May 1987, states that, "...during ongoing and future design work, any relocations of, modifications to, or additions of welded attachments to piping systems in which AIBs [arbitrary intermediate breaks] are eliminated should be reviewed by the staff to ensure that the enveloping assessments described above still provide adequate protection against pipe breaks resulting from high local stress due to welded attachments." By letter dated November 18, 2004 (Agencywide Documents Access and Management Systems Accession Number ML043350028), STP Nuclear Operating Company (the licensee) informed the U. S. Nuclear Regulatory Commission (NRC) staff that, as a result of plant modifications associated with Steam Generator replacement, welded attachments were added to two feedwater piping locations in each South Texas Project (STP) Unit where AIBs had been previously eliminated.

The Integrated Welded Attachments (IWAs) at STP were evaluated in compliance with the requirements of American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code) Section III NC/ND-3645, and Code Cases N-122, N-391, and N-318-2, and also in consideration of the Standard Review Plan (SRP) Section 3.6.2 provision for the elimination of AIBs.

By letter dated May 19, 2005 (ML051470162), the licensee provided supplemental information in response to the NRC staff's requests for additional information.

2.0 REGULATORY EVALUATION

The NRC staff's evaluation included the structural and functional integrity of piping systems, components, and their supports, which are designed in accordance with the rules of the ASME Code, Section III, Division 1, USAS B31.1 Power Piping Code, and General Design Criteria (GDC) 1, 2, and 4. The NRC staff review focused on verifying that the licensee has provided reasonable assurance of the structural and functional integrity of piping systems, components, and their supports under normal and vibratory loadings, including those due to fluid flow, postulated accidents, and natural phenomena such as earthquakes.

The acceptance criteria are based on continued conformance with the requirements of the following regulations: (1) Title 10, *Code of Federal Regulations* (10 CFR) Part 50, 50.55a and 10 CFR Part 50, Appendix A, GDC 1 as they relate to structures and components being designed, fabricated, erected, constructed, tested, and inspected to quality standards commensurate with the importance of the safety function to be performed, (2) GDC 2 as it relates to structures and components important to safety being designed to withstand the effects of earthquakes combined with the effects of normal or accident conditions, and (3) GDC 4 as it relates to structures and components important to safety being designed to accommodate the effects of, and to be compatible with, the environmental conditions of normal and accident conditions.

The specific review areas are contained in the NRC SRP Sections 3.6.2 and 3.9.3.

3.0 EVALUATION

The NRC staff reviewed the licensee's submittal pertaining to the design change notices (DCN) documents for new additional welded attachments that are installed in the rerouted feedwater piping following the Steam Generator Replacement at STP. These DCNs include DCN 9704761, DCN 9704763, and DCN 9800678 for Unit 1, and DCN 0000065, DCN 0000067, and DCN 0001956 for Unit 2.

In the licensee's May 19, 2005, supplement, the licensee indicated that the feedwater piping is analyzed using the computer code ME101 to determine the primary and secondary stresses and the support loads. The evaluation was performed in compliance with ASME Section III, Code Class 2 design stress limits for various service conditions. The support loading combinations are the same for both the original and the modified feedwater piping. The ME916 program calculates piping stresses at the integral attachments using ASME Code Cases N-122, N-391, and N-318-2 for both the original IWAs and the new IWAs. The evaluation was performed in accordance with the rules of Section III of the ASME Code, 1977 Edition through 1983, Section III paragraph NC/ND-3645, and the above Code Cases N–122, N–391, and N–318-2. The methods of analysis is documented in a Houston Lighting & Power Company letter to NRC entitled, "Elimination of Arbitrary Intermediate Breaks," ST-HL-AE-2290, dated July 8, 1987. The NRC staff finds the methodology to be acceptable since these code cases were approved by the staff and can be applied for analysis of ASME Class 2 piping integral Welded attachments.

In Table 2 of the May 19, 2005, supplement, the licensee provided maximum primary plus secondary stresses and the cumulative fatigue usage factors (CUFs) for the new additional IWAs, that are bounded by the existing feedwater IWAs. These stresses and CUFs are all below the code allowable limits, and still satisfy the provisions of SRP Section 3.6.2, consistent with the premise in the original staff's approval for the elimination of AIBs.

Based on the above review, the NRC staff concludes that all IWAs, including new additional IWAs, remain in compliance with applicable code allowable limits. As a result, the structural integrity of the new additional IWAs does not invalidate the basis in the original NRC staff's determination for approval to eliminate AIBs. Therefore, adequate protection against pipe breaks resulting from local stresses due to welded attachments is maintained.

4.0 CONCLUSION

Based on the above review in Section 3.0, the staff concludes that the stresses and fatigue usage factors, as provided by the licensee for the new IWAs, are bounded by the design basis analysis of the existing welded attachments. As a result, installation of additional IWAs does not invalidate the basis in the original staff determination to eliminate AIBs, since the resulting piping stress at these IWAs still conform to the stress criteria for elimination of AIBs discussed in Section 3.6.2.1.1 of the STP Updated Final Safety Analysis Report.

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Date: August 18, 2005

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