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

June 17, 2004
NOC-AE-04001736
STI: 31754174
10CFR50

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

South Texas Project
Unit 2
Docket No. STN 50-499

South Texas Project Unit 2, 60-Day Response to NRC Bulletin 2003-02,
"Leakage from Reactor Pressure Vessel Lower Head Penetrations and
Reactor Coolant Pressure Boundary Integrity"

Reference: Letter dated November 4, 2003 from T. J. Jordan, STP to NRC Document Control Desk, "Response to NRC Bulletin 2003-02 "Leakage From Reactor Pressure Vessel Lower Head Penetrations and Reactor Coolant Pressure Boundary Integrity" (NOC-AE-03001586)

In accordance with the referenced correspondence, attached is the South Texas Project Nuclear Operating Company (STPNOC) Unit 2, 60-Day Response to NRC Bulletin 2003-02, "Leakage From Reactor Pressure Vessel Lower Head Penetrations and Reactor Coolant Pressure Boundary Integrity" dated August 21, 2003. This response fulfills a STPNOC commitment in the original bulletin response to inform the NRC of inspection results on the STP reactor vessel lower heads.

There are no new licensing commitments identified in this letter. If you should have any questions regarding this submittal, please contact me at 361-972-7902 or Mr. Tim Bowman at 361-972-7454.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on: June 17, 2004

T. J. Jordan
Vice President, Nuclear Engineering
and Technical Services

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Attachment: STPNOC Unit 2 60-day Response to Bulletin 2003-02

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cc:
(paper copy)

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**South Texas Project Unit 2 60 Day Response to NRC Bulletin 2003-02,**
"Leakage from Reactor Pressure Vessel Lower Head Penetrations
and Reactor Coolant Pressure Boundary Integrity"

Below is the South Texas Project Nuclear Operating Company (STPNOC) Unit 2 60-day response to Nuclear Regulatory Commission (NRC) Bulletin 2003-02, "Leakage From Reactor Pressure Vessel Lower Head Penetrations And Reactor Coolant Pressure Boundary Integrity", dated August 21, 2003.

**Bulletin 2003-02 Request:**

**Within 60 days of plant restart following the next inspection of the RPV lower head penetrations, the subject PWR addressees should submit to the NRC a summary of the inspections performed, the extent of the inspections, the methods used, a description of the as-found condition of the lower head, any findings of relevant indications of through-wall leakage, and a summary of the disposition of any findings of boric acid deposits and any corrective actions taken as a result of indications found.**

**STPNOC Response:**

STPNOC completed the Unit 2 10th Refueling Outage (2RE10) on April 27, 2004 and submits the information below describing the results of the STP Unit 2 reactor pressure vessel (RPV) lower head inspection.

**Inspections Performed**

The lower head and bottom mounted instrumentation (BMI) penetrations of the STP Unit 2 RPV were visually inspected on three instances in 2RE10.

The lower head of the reactor is surrounded by an insulating box structure with no insulation directly in contact with the lower head. The inspection of all 58 BMI penetrations in the vessel lower head was accomplished by removing three to six equidistant inspection panels of the twelve insulation panels forming the periphery of the insulating structure. Inspections were performed on these dates:

- April 01, 2004: This inspection was governed by Generic Letter 88-05 and STPNOC procedure (0PGP03-ZE-0033), "RCS Pressure Boundary Inspection for Boric Acid Leaks" and entailed the removal of three panels. No indications of through-wall leakage were observed. Minor deposits of foreign material were photographed.

- April 17, 2004: Inspection was performed to obtain samples of foreign materials observed on April 01, 2004 to confirm their origin was not through-wall leakage and to remove these deposits to facilitate future inspections. Six inspection panels were removed for this inspection and cleaning.

- April 25, 2004: This inspection was performed at system normal operating pressure in compliance with the ASME Boiler and Pressure Vessel Code, Section XI, Articles IWA-5000 and IWB-5000. Inspections were performed from three inspection panels with no foreign material observed.

**Extent of the Inspections**

A local visual check of the exterior of the tubing is performed from a minimum of three directions, 120° apart. This provides assurance that the entire annulus area between each tube and the vessel is viewed. In addition, an observation of the area (including the insulation beneath the vessel) is made for signs of leakage or boric acid residue.

**Methods Used**

Visual VT-2 methods were employed for all inspections. Personnel performing inspections are certified in accordance with Section XI IWA 2300 and Code Case N546. With the inspection panels removed, the view to the vessel bottom head and BMI tubes is unobstructed. The maximum viewing distance to the center tubes is about 5 feet. Still photographs were obtained during the first two inspections.

**Description of the As-found Condition of the Lower Head**

The lower head and BMI penetrations were generally clean. Seven penetrations were identified as having some foreign material on them, believed to be either a coating or sealant material or adhesive residue based on visual appearance. Four representative samples of the observed foreign material were taken and analyzed.

Based on the low concentration of lithium [<0.005%], low concentration of boron [<0.15 %] and the presence of calcium [> 2%], the analysis confirmed that the deposits were from a source other than reactor coolant. By comparison, analysis previously performed on Unit 1 BMI RCS Leakage showed deposits from RCS leakage were approximately 20% boron and approximately 5% lithium.

Trace amounts of Cobalt-60 were observed on all samples and Cesium-137 was evident on one of the samples. The radioisotopic analysis results were consistent with general area contamination on the bottom of the reactor vessel rather than BMI leakage, which would have been expected to produce much higher levels of cesium isotopes. The concentration of Cesium-137 found was 3 orders of magnitude less than the minimum Cesium-137 concentration found in the Unit 1 RCS leakage samples. Analysis previously performed on samples to assess STP Unit 1 BMI RCS leakage determined that small concentrations of cobalt-60 is not an indicator of RCS leakage, but rather is a product of general area contamination on the bottom of the reactor vessel.

**Findings of Relevant Indications of Through-Wall Leakage**

No indications of through-wall leakage were observed.

**Summary of the Disposition of Any Findings of Boric Acid Deposits and Any Corrective Actions Taken as a Result of Indications Found**

The minimal deposits found were determined to be from a source other than reactor coolant by visual inspection and chemical analysis. The seven penetrations identified as having foreign material were cleaned to facilitate future inspections.