TXU Power
Comanche Peak Steam
Electric Station
P O Box 1002 E01
Glen Rose, TX 76043
Tel: 254 897 5209
Fax: 254 897 6652
mike.blevins@txu.com

Mike Blevins
Senior Vice President &
Chief Nuclear Officer

Ref: 10 CFR 50.54(f)
EA-03-009

CPSES- 200401627
Log # TXX-04116

July 2, 2004

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

SUBJECT: COMANCHE PEAK STEAM ELECTRIC STATION (CPSES)
DOCKET NOS. 50-445 AND 50-446
60 DAY RESPONSE REGARDING NRC BULLETIN 2003-02
AND NRC ORDER EA-03-009

REF:
1. TXU Electric letter logged TXX-03008, from C. L. Terry to the NRC dated January 10, 2003.

2. TXU Electric letter logged TXX-03163, from C. L. Terry to the NRC dated September 19, 2003.

3. NRC Bulletin 2003-02, "Leakage from Reactor Pressure Vessel Lower Head Penetrations and Reactor Coolant Pressure Boundary Integrity" dated August 21, 2003

4. NRC Order EA-03-009, "Issuance of First Revised Order Establishing Interim Inspection Requirements for Reactor Pressure Vessel Heads at Pressurized Water Reactors" dated February 20, 2004

5. NRC Bulletin 2001-01, "Reactor Pressure Vessel Head Degradation and Reactor Coolant Pressure Boundary Integrity" dated August 3, 2001.

6. NRC Bulletin 2002-02, "Reactor Pressure Vessel Head Degradation and Reactor Coolant Pressure Boundary Integrity" dated August 9, 2002.

A109

Gentlemen:

In accordance with 10CFR50.54(f), attached is the TXU Generation Company LP (TXU Power) 60-day response to U.S. 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 (reference 3). In addition, this response fulfills requirements of NRC Order EA-03-009, "Issuance of Order Establishing Interim Inspection Requirements for Reactor Pressure Vessel Heads at Pressurized Water Reactors" (reference 4) for reporting results of visual inspections performed pursuant to the order.

During refueling outage 1RF10 in April 2004, bare metal visual inspections were performed of the upper and lower reactor pressure vessel (RPV) heads of CPSES Unit 1. The inspection of the lower head was the first such inspection of Unit 1 performed at CPSES since the unit went into commercial operation as reported previously in response to NRC Bulletin 2003-02 (reference 2). The inspection of the upper head repeated the inspection completed during 1RF09 as previously reported (reference 1) in response to NRC Bulletin 2001-01, "Reactor Pressure Vessel Head Degradation and Reactor Coolant Pressure Boundary Integrity" (reference 5) and Bulletin 2002-02, "Reactor Pressure Vessel Head Degradation and Reactor Coolant Pressure Boundary Integrity" (reference 6).

If you should have any questions regarding this submittal, please call Mr. J. D. Seawright at (254) 897-0140 (Email - jseawright@txu.com).

No new commitments are identified in this letter.

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

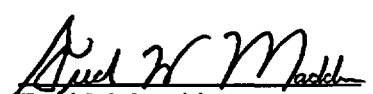
Executed on July 2, 2004.

Sincerely,

TXU Generation Company LP

By: TXU Generation Management Company LLC,
Its General Partner

Mike Blevins

By: 
Fred W. Madden
Regulatory Affairs Manager

JDS
Attachment

c - B. S. Mallett, Region IV
W. D. Johnson, Region IV
M. C. Thadani, NRR
Resident Inspectors, CPSES

NRC Bulletin 2003-02 Required Action

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.

CPSES Response

During 1RF10, bare metal visual inspections were performed of the upper and lower RPV heads of CPSES Unit 1. The inspection of the lower head was the first such inspection performed on CPSES Unit 1 since the unit went into commercial operation as reported previously in response to NRC Bulletin 2003-02. The inspection of the upper head repeated the inspection completed during 1RF09.

BMI Penetration Bare Metal Visual Inspection

A bare metal visual inspection covering 100% of the bottom mounted instrumentation (BMI) penetrations on the lower RPV head was conducted for evidence indicative of potential BMI penetration leakage. The inspection was conducted via remote video camera delivered by robotic crawler but a partial direct visual inspection was also conducted in conjunction with equipment setup and removal. The camera's resolution was demonstrated as adequate to resolve relevant indications over the distances and general conditions encountered in the inspection. The crawler traversed the top surface of the lower RPV head reflective metallic insulation panels. From that vantage point, the annulus area where each tube emerges from the RPV lower head interface was clearly visible and readily inspected in quadrants to ensure 100% coverage.

The lower head was observed to be rather clean and exhibited limited evidence of water flow from sources above the BMI penetrations. Such evidence consisted of small flow trails clearly traceable to an unidentified source well above the BMI penetration elevation. These flow trails deposited only a thin two-dimensional film of rust colored material as they dried and there was no consequential buildup of this material at any point on the lower RPV head or the BMI penetration tubing. The flow trails down the vessel did not have the white appearance as seen in the limited number of similar flow trails in Unit 2. The rust stained trails appeared to have resulted from water that flowed at moderate to low temperatures and there was no indication of recent flow activity. These flow trails continued down the tubes in some locations, generally near the downhill quadrant of the affected tube. This resulting stain typically didn't reach the insulation suggesting a limited water supply. In a few cases, the associated segment of the annulus around the tube base was bridged by the rust-colored residue. The residue did not appear

to emerge from within the annulus as might suggest growth arising from within the annulus but rather appears to have been deposited there, and clearly presented no evidence of recent activity indicative of leakage. No deposits indicative of boric acid were observed.

The lower head appeared to have been painted during construction of the plant. A review of construction photographs clearly show both CPSES RPVs having arrived on-site with the bottom head painted black. However, a distinct change in color was noted just outside the outer BMI penetrations with the upper vessel wall exhibiting a brownish-black color and the lower head exhibiting a generally gray color. Around the base of some penetrations there was an angular "ring" with sort of a two-dimensional "hex nut" appearance where the brownish-black color of the upper vessel appears to be exposed suggesting that the tubes were masked in preparation for painting. This condition was generally less pronounced, but otherwise similar to the observed condition of the Unit 2 reactor vessel and is therefore assumed to account for the color difference.

No indications of through-wall leakage were observed in any area of the lower head and no boric acid deposits were identified. Therefore, no corrective actions were taken.

NRC Order EA-03-009 Required Action

For each inspection required in Paragraph C [Bare metal visual examination of 100% of the RPV head surface], the Licensee shall submit a report detailing the inspection results within sixty (60) days after returning the plant to operation.

CPSES Response

In response to NRC Order EA-03-009, a description is provided below of the inspection results for Unit 1, Cycle 11 operation.

CRDM Penetration Bare Metal Visual Inspection

During 1RF10 in spring 2004, CPSES completed the second bare metal visual inspection of the Unit 1 upper head. However, this was the first such inspection implemented for this unit since the issuance of NRC Order EA-03-09. The initial bare metal visual inspection of the Unit 1 reactor vessel head occurred during the preceding refueling outage in the fall of 2002 and was reported to the NRC via letter logged TXX-03008 (reference 1). Both inspections were performed via video camera delivered by a remotely controlled crawler. Still images of the inspection areas from the initial inspection were available for comparison purposes during the second inspection and no relevant changes were identified.

Minor inspection limitations at seven specific locations were experienced during the initial bare metal visual inspection conducted during 1RF09 but were judged inconsequential to the final determination of the condition of the head relative to both leakage and wastage. These locations consist of a ring-shaped area around the head obscured by the permanently installed insulation and small portions of the annulus area at the base of six tubes, all of which are discussed in more detail below. During the recent 1RF10 inspection, these locations were carefully reevaluated as to extent of inspection coverage under the requirements of Order EA-03-09. Again, the judgment was made that the minor inspection limitations were not consequential to the overall determination of no visual evidence of pressure boundary leakage from any location on the reactor vessel head.

The outer vertical ring of permanently installed three-inch thick reflective metallic insulation is sandwiched between the CRDM cooling shroud and the peripheral tubes. This ring rests directly on the head surface and is not generally accessible except for an approximate one-inch gap under the CRDM cooling shroud, which is also permanently installed. The amount of head surface area that was not directly visible via the crawler camera due to the insulation resting on the head surface is on the order of four percent. However, the head surface area just above and just below this ring was thoroughly inspected. The uphill side was inspected via the crawler cameras and a direct visual inspection was conducted on the down hill side, with no signs of wastage or boric acid deposits. This ring of insulation was wedged up slightly in several local areas during the initial bare metal visual exam to insert a small diameter video probe for inspection of tube locations judged inaccessible to the crawler. This allowed incidental direct visual inspection of a portion of the area otherwise obscured under the insulation ring. However, these same tube locations were successfully accessed with the crawler in the recent second bare metal visual inspection and wedging the insulation panels to gain this access was not necessary.

The six tube locations with inspection limitations are all related to the insulation package being physically installed slightly lower in CPSES Unit 1 than in Unit 2. In each case, a direct, straight-in approach to the subject tube quadrant with the crawler was not possible but the same quadrant was readily approached from two sides as an alternate method during both bare metal visual inspections. After the recent outage, the video inspection record was reviewed to attempt a more definitive determination whether the minor inspection limitations experienced at these tube locations actually resulted in areas not directly inspected via the crawler cameras.

The insulation structural support member (2" angle) that spans the top of the head next to penetration tube #1 creates an obstruction that prevents direct close up inspection of this tube in one quadrant. However, this quadrant was inspected from both sides by positioning the crawler at various short distances and different angles to view the area of interest with no deposits or wastage detected. The post-outage video review concluded that the entire tube-base circumference was inspected.

Adjacent to the five outermost peripheral tubes, the insulation is coped to accommodate the position of these tubes that would otherwise interfere with the insulation. The insulation at each of these locations is neatly coped approximately one inch deep to match the tube curvature and leave a small gap on the order of one-half inch. The five tubes were carefully inspected to the limits of the crawler capability during these two bare metal visual inspections. The crawler was positioned in multiple advantageous locations on both sides of each of the five subject tubes to inspect the area at the tube's down hill apex through this vertical gap between the insulation and the tube. Subsequent evaluation of the videotape record since the outage suggests that a small, roughly triangular area of the head surface at the base of these five tubes, estimated to total less than one square inch per tube and including less than one linear inch along the tube circumference, may not have been directly inspected. No signs of boric acid were seen at the downhill edges of these small triangular areas or from the down hill side of the insulation below these tubes. Furthermore, no change was observed at these limited access locations over the course of two bare metal visual inspections in sequential outages.

Although the insulation configuration does present very minor visual interferences, these limitations were evaluated as not consequential, either individually or collectively. Therefore, the examined areas of the head surface at the base of the insulation ring as well as around the base of the five peripheral tubes discussed above adequately support the overall determination of no visual evidence of pressure boundary leakage from any location on the reactor vessel head per the visual inspection requirements of NRC Order EA-03-09.