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**C. Lance Terry**  
Senior Vice President & Principal Nuclear Officer

Ref: 10CFR50.90

CPSES-200101928  
Log # TXX-01139  
File # 00236

August 23, 2001

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**  
**RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION**  
**TO LICENSE AMENDMENT REQUEST 01-06 SUPPLEMENT 01**

REF: 1) TXU Electric letter logged TXX-01127, dated July 31, 2001, from  
C. L. Terry to the NRC

Gentlemen:

This letter provides TXU Electric's response to an NRC Request for Additional Information (RAI) regarding the bases of the proposed schedule for an extended maintenance outage on CPSES Startup Transformer XST2 as submitted in Licensing Amendment Request (LAR) 01-06 Supplement 01, reference 1.

As a point of clarification, the descriptive phrase "high voltage bushings" is used in LAR 01-06 Supplement 01 to generically refer to the transformer terminal bushings located on both the low voltage and high voltage sides of the XST2 transformer. The planned maintenance to be implemented on Startup Transformer XST2 during the proposed outage includes replacement of all eight (8) low voltage side bushings and gasket replacement on the three (3) high voltage side bushings located on the transformer.

Attachment 1 is the required affidavit, attachment 2 is the response to the NRC Request for Additional Information (RAI), and attachment 3 lists the commitment made in this letter.

In accordance with 10CFR50.91(b), TXU Electric is providing the State of Texas with a copy of this RAI response.

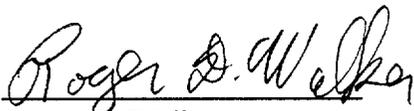
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Should you have any questions, please contact Mr. Mike Riggs at (254) 897-5218.

Sincerely,

C. L. Terry

By:   
Roger D. Walker  
Regulatory Affairs Manager

MJR/mjr

Attachments 

1. Affidavit
2. Response to LAR 01-06 Supplement 01 Request  
for Additional Information
3. Commitments

c - E. W. Merschoff, Region IV  
J. A. Clark, Region IV  
D. H. Jaffe, NRR  
Resident Inspectors, CPSES

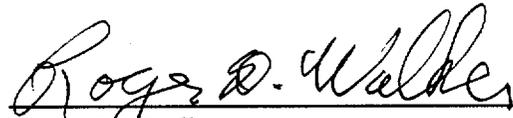
Mr. Authur C. Tate  
Bureau of Radiation Control  
Texas Department of Public Health  
1100 West 49th Street  
Austin, Texas 78704

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

In the Matter of	)	
	)	
TXU Electric	)	Docket Nos. 50-445
	)	50-446
(Comanche Peak Steam Electric Station,	)	License Nos. NPF-87
Units 1 & 2)	)	NPF-89

AFFIDAVIT

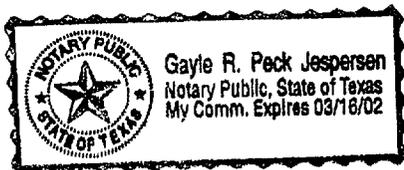
Roger D. Walker, being duly sworn, hereby deposes and says that he is the Regulatory Affairs Manager of TXU Electric, the licensee herein; that he is duly authorized to sign and file with the Nuclear Regulatory Commission this Response to the NRC Request for Additional Information regarding License Amendment Request 01-06 Supplement 01; that he is familiar with the content thereof; and that the matters set forth therein are true and correct to the best of his knowledge, information and belief.

  
 Roger D. Walker  
 Regulatory Affairs Manager

STATE OF TEXAS            )  
   )  
 COUNTY OF Somervell    )

Subscribed and sworn to before me, on this 23<sup>rd</sup> day of August, 2001.

  
 Notary Public



**ATTACHMENT 2 TO TXX-01139**

**RESPONSE TO RAI**

**TXU Electric Response to NRC Request for Additional Information (RAI)  
Regarding Licensing Amendment Request (LAR) 01-06 Supplement 01**

The following information is provided in response to the NRC's RAI regarding the proposed outage schedule for maintenance on CPSES Startup Transformer XST2.

Per reference 1, TXU Electric has requested approval of a one-time only change to the CPSES Technical Specifications to extend the required Completion Time (CT) for restoration of an inoperable offsite circuit from 72 hours to 21 days. This change would allow for a one time preventive maintenance outage on Startup Transformer XST2 to be completed by February 28, 2002, prior to the start of the Unit 2 Spring refueling outage, 2RF06. This change is needed to ensure the continued long term reliability of 345 kV offsite circuit Startup Transformer XST2 which is common to both CPSES units. NRC approval of this request would allow sufficient time to perform preventive maintenance on the XST2 transformer while both units remain at power.

Overall CPSES has a good history in regards to transformer events as there have been no catastrophic incidents. However, TXU Electric is well aware that since 1990 there have been a significant number of transformer events at nuclear stations in the United States. INPO reports in its Operations and Maintenance Reminder (O&MR) 430 that there are an average of 23 events per year relating to power transformers. Additionally, between January 1997 and June 1999, there have been nine manual or automatic reactor scrams, six off-site power failures, two extended plant outages, and a plant shutdown related to transformer events. As such, Electrical Maintenance personnel have reviewed the significant transformer events since January 1997 until present to determine their root cause(s) and to identify any vulnerability to a similar event.

From these operating experience reports, transformer events have occurred with little or no warning, with generally serious impact to plant operations, and that have had major financial impacts. These events serve to heighten the level of awareness of the importance of proper maintenance and monitoring of transformers here at CPSES, as well as to emphasize the need to review strategic plans for CPSES transformers, maintenance processes, and contingency planning.

Regular inspections of site transformers by CPSES Electrical Maintenance personnel have identified several current oil leaks, though minor, from offsite circuit Startup Transformer XST2 and suspect that the XST2 transformer low side bushings are a likely source of the oil leakage. Alternate Startup Transformer XST1 is of a different manufacturer and type and is not exhibiting similar leakage. TXU Electric has gained experience with similar type transformers installed in the TXU transmission system and has identified the need to perform preventive maintenance on offsite circuit Startup transformer XST2. Based on this experience, all eight high voltage bushings that are located on the low voltage side of the transformer will be replaced with a revised bolting configuration, and the bushing gaskets will be replaced on all three transformer

high voltage side bushings. Replacement of the bushings located on the low voltage side of the transformer is needed due to their horizontal mounting with bolted connections located below the normal oil level. The transformer high side bushings are vertically mounted above the normal oil level. Since no oil leakage from the high side bushings has been observed, only the gaskets will be replaced on these bushings. TXU Electric has successfully performed the recommended maintenance on similar transformers in the TXU transmission system.

Under current TS requirements, however, both CPSES Units would need to be placed in the Cold Shutdown state simultaneously for an extended period of time in order to perform maintenance on Startup Transformer XST2. This is due to the fact that Startup Transformer XST2 provides one of the two TS required offsite power sources to both Unit 1 and Unit 2 and both Units are required to maintain two offsite power sources when above Cold Shutdown conditions. Based on experience with similar transformers, the proposed preventive maintenance could not be completed in the relatively short duration currently allowed by TS. CPSES TS allow 72 hours to restore the transformer to an operable status. A plant shutdown to Cold Shutdown is required if the transformer is not restored to an operable status within the Completion Time limits. Little preventive maintenance could be performed in such a short period of time. Also, due to power generation demands and overall economic considerations, it is not anticipated that planned outage schedules would include overlapping, or simultaneous shutdown of both Units. Given the importance of the offsite power sources, TXU recognizes that it is prudent to maintain them in a highly reliable condition while minimizing their unavailability. In support of performing preventive maintenance on Startup Transformer XST2 at the earliest opportunity, TXU Electric has completed probabilistic risk based evaluations and obtained results that support the requested offsite circuit Completion Time extension and indicate that the proposed maintenance activities may be performed with both Units at steady state power while resulting in an insignificant impact to overall station risk.

In preparing this request, extensive pre-planning has been performed to ensure the selection of an optimum performance window to minimize overall risks for the full duration of the XST2 outage. Pre-planning has included confirming the availability of needed equipment and qualified personnel to perform the maintenance prior to taking the transformer out of service. Work Scheduling has also determined that routine testing and preventive maintenance activities, which are normally performed on a 12 week rotating basis, can be adjusted to insure that surveillance testing of equipment identified as important to Loss of Offsite Power and Station Blackout considerations is demonstrated current prior to the start of the XST2 outage work window, and that additional routine testing and preventive maintenance should not be required on the equipment for the duration of the planned XST2 outage.

Based on these considerations, the CPSES Work Planning and Scheduling group has recommended that the XST2 transformer outage be implemented during a two week window in the Fall months of October or November 2001.

**Considerations for Startup Transformer XST2 outage at power rather than during a planned outage on one of the units:**

1. Risk consideration

There are some differences in risk, however, as discussed below, the conclusions do not change. That is, the risk associated with performing the maintenance at power is less than the risk of performing the same maintenance during either a planned refueling outage or a forced shutdown.

A typical outage involves diesel generator maintenance. The diesel generators are taken out of service on a scheduled basis, the first immediately upon entering mode 5. This is the same period when XST2 would be worked. Thus, for a significant period of time, both XST2 and one of the Unit's diesel generators would be out of service simultaneously. This assumes that the diesel generator and XST2 work can proceed in parallel. While most of the configuration risk in mode 5 is due to things other than availability of electric power, there is an increase in risk with this configuration.

It is expected that the transformer work can be completed within the mode 5 to mode 4 time frame, assuming the transformer and the diesel generators can be worked in parallel. However, there may be reasons based on configuration risk management that will dictate that such work not be done in parallel but rather in series. If these activities must be worked in series, or if the length of the transformer repair becomes longer than the typical mode 5 to mode 4 duration, then additional time would be required in mode 5 or mode 6 (most likely mode 5) awaiting completion of the transformer or other work. This involves added risk to the normal outage. Because the risk levels in shutdown modes are generally higher than at-power levels, and because the risk of performing the maintenance at power is relatively small, an extension of time in mode 5 adds risk greater than the at-power risk.

In summary, the following are the conclusions of the submittal with regard to comparative risk:

- The risk of performing the transformer maintenance at power is small absolutely, meeting the requirements of the applicable regulatory guide.
- The at-power maintenance risk is the same order of magnitude as the transition risk for a shutdown to perform the maintenance, not even considering the mode 5 or 6 risk, the modes when the maintenance on the transformer will be done.
- The shutdown maintenance risk is dominated by the mode 5 risk and is significantly higher than the at power maintenance risk.
- Whether the transformer maintenance is conducted during a forced or planned shutdown, or during a planned outage, the maintenance risk for these conditions is higher than the at-power risk. This is because there are either higher risk levels, or because working transformers in series with other outage work extends the time in higher risk

configurations.

2. CPSES refueling outages are planned for either the Spring or Fall during lower power demand periods. Reduced atmospheric stability during Spring weather conditions contributes to decreased grid stability and increase risk of Loss of Offsite Power (LOSP). This would suggest waiting for the Fall outage as the single available work window. This would further defer the maintenance another year. The Fall time frame is also prior to harsh winter weather that may include severe ice storms with impact on the transmission system. The proposed November 2001 outage schedule anticipates the most favorable weather conditions, 24 hours a day and 7 days a week for the duration of the work conducive to the performance of the mostly outdoor transformer maintenance tasks. Expected favorable weather conditions during this period also would be advantageous to equipment protection needs, minimized job interruptions, and overall good worker conditions.
3. During an outage there are increased coordination demands on plant operations and outage personnel due to rapidly changing plant and equipment conditions, and due to multiple competing tasks that all occur in a relatively short time frame. This could result in an increased potential for challenges to the availability of important LOSP mitigating equipment. The transformer outage would occur during a time frame when no major competing plant modifications or other outage activities are planned. By performing the XST2 transformer maintenance on line, when no other significant activities are taking place, the plant operators, maintenance personnel, and plant management would be able to provide added focus on ensuring that risks and challenges to supporting equipment are minimized during this activity. Performance of this significant activity while remaining at power would receive specific management attention and overall heightened plant awareness.
4. Transformer work is performed by a select, trained group of personnel. Typically, work on two transformers is within the work group capability within an outage without impacting the outage critical path and the possibility of extending the outage. Any increased outage duration impacts the risk as indicated in item 1 above. Competing demands on available resources results in less focus and attention on XST2 work if performed during an outage. The transformer outage at power this Fall would ensure the availability of experienced manpower and technical support personnel and reduce the potential for distraction due to competing job demands.

**ATTACHMENT 3 TO TXX-01139**

**COMMITMENTS**

This communication contains the following new or revised commitment which will be completed as noted:

1. The planned maintenance to be implemented on Startup Transformer XST2 during the proposed outage includes replacement of all eight (8) low voltage side bushings and gasket replacement on the three (3) high voltage side bushings located on the transformer.