April 13, 2005

Mr. M. R. Blevins Senior Vice President & Principal Nuclear Officer TXU Energy ATTN: Regulatory Affairs P. O. Box 1002 Glen Rose, TX 76043

SUBJECT: COMANCHE PEAK STEAM ELECTRIC STATION, UNITS 1 AND 2 -ISSUANCE OF AMENDMENTS TO EXTEND SURVEILLANCE FREQUENCY FOR CONTAINMENT PURGE, HYDROGEN PURGE, AND CONTAINMENT PRESSURE RELIEF VALVES (TAC NOS. MC0911 AND MC0912)

Dear Mr. Blevins:

The Commission has issued the enclosed Amendment No. 116 to Facility Operating License No. NPF-87 and Amendment No. 116 to Facility Operating License No. NPF-89 for Comanche Peak Steam Electric Station (CPSES), Units 1 and 2, respectively. The amendments consist of changes to the Technical Specifications (TSs) in response to your application dated September 23, 2003, as supplemented by letter dated June 9, 2004.

The amendments revise the TSs for CPSES, Units 1 and 2, to extend the interval between local leakage rate tests for the containment purge and vent valves with resilient seats (containment purge valves, hydrogen purge valves, and containment pressure relief valves). The test intervals will be extended from the current 184 days to 18 months between tests for all three types of valves and the "within 92 days after opening the valves" requirement will be deleted.

A copy of our related Safety Evaluation is enclosed. The Notice of Issuance will be included in the Commission's next biweekly *Federal Register* notice.

Sincerely,

/RA by D.Jaffe for/

Mohan C. Thadani, Senior Project Manager, Section 1 Project Directorate IV Division of Licensing Project Management Office of Nuclear Reactor Regulation

Docket Nos. 50-445 and 50-446

Enclosures: 1. Amendment No. 116 to NPF-87

- 2. Amendment No. 116 to NPF-89
- 3. Safety Evaluation

cc w/encls: See next page

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Dear Mr. Blevins:

DATE

3/8/05

3/7/05

The Commission has issued the enclosed Amendment No. 116 to Facility Operating License No. NPF-87 and Amendment No. 116 to Facility Operating License No. NPF-89 for Comanche Peak Steam Electric Station (CPSES), Units 1 and 2, respectively. The amendments consist of changes to the Technical Specifications (TSs) in response to your application dated September 23, 2003, as supplemented by letter dated June 9, 2004.

The amendments revise the TSs for CPSES, Units 1 and 2, to extend the interval between local leakage rate tests for the containment purge and vent valves with resilient seats (containment purge valves, hydrogen purge valves, and containment pressure relief valves). The test intervals will be extended from the current 184 days to 18 months between tests for all three types of valves and the "within 92 days after opening the valves" requirement will be deleted.

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Sincerely, /RA by D.Jaffe for/ Mohan C. Thadani, Senior Project Manager, Section 1 Project Directorate IV **Division of Licensing Project Management** Office of Nuclear Reactor Regulation Docket Nos. 50-445 and 50-446 Enclosures: 1. Amendment No. 116 to NPF-87 2. Amendment No. 116 to NPF-89 3. Safety Evaluation cc w/encls: See next page **DISTRIBUTION:** PUBLIC RidsNrrLADBaxley **MStutzke** PDIV-1 Reading RidsOgcRp RidsNrrDlpmDpr RidsNrrDlpmLpdiv (HBerkow) RidsAcrsAcnwMailCenter RidsNrrDlpmLpdiv1 (AHowe) GHill(4) RidsNrrPMMThadani RidsNrrDssaspsb (RDennig) RidsNrrDssaspsb(MRubin) JPulsipher RidsRgn4MailCenter (AHowell, WJohnson) Accession No.: ML050540419 *No major changes to SE input. OFFICE PDIV-1/PM PDIV-1/LA SPSB-C-SC* SPSB-A-SC* OGC PDIV-1/SC DJaffe for RPalla for NAME DBaxley RDennig AHodgdon AHowe MThadani MRubin

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TXU GENERATION COMPANY LP

COMANCHE PEAK STEAM ELECTRIC STATION, UNIT NO. 1

DOCKET NO. 50-445

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 116 License No. NPF-87

- 1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by TXU Generation Company LP dated September 23, 2003, as supplemented by letter dated June 9, 2004, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, as amended, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this license amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
- 2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C.(2) of Facility Operating License No. NPF-87 is hereby amended to read as follows:

The Technical Specifications contained in Appendix A, as revised through Amendment No. 116, and the Environmental Protection Plan contained in Appendix B, are hereby incorporated into this license. TXU Generation Company LP shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. The license amendment is effective as of its date of issuance and shall be implemented within 60 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Allen G. Howe, Chief, Section 1 Project Directorate IV Division of Licensing Project Management Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: April 13, 2005

TXU GENERATION COMPANY LP

COMANCHE PEAK STEAM ELECTRIC STATION, UNIT NO. 2

DOCKET NO. 50-446

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 116 License No. NPF-89

- 1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The application for amendment by TXU Generation Company LP dated September 23, 2003, as supplemented by letter dated June 9, 2004, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
 - B. The facility will operate in conformity with the application, as amended, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this license amendment will not be inimical to the common defense and security or to the health and safety of the public; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
- 2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C.(2) of Facility Operating License No. NPF-89 is hereby amended to read as follows:

The Technical Specifications contained in Appendix A, as revised through Amendment No. 116, and the Environmental Protection Plan contained in Appendix B, are hereby incorporated into this license. TXU Generation Company LP shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance and shall be implemented within 60 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/**RA**/

Allen G. Howe, Chief, Section 1 Project Directorate IV Division of Licensing Project Management Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical Specifications

Date of Issuance: April 13, 2005

ATTACHMENT TO LICENSE AMENDMENT NO. 116

TO FACILITY OPERATING LICENSE NO. NPF-87

AND AMENDMENT NO. 116

TO FACILITY OPERATING LICENSE NO. NPF-89

DOCKET NOS. 50-445 AND 50-446

Replace the following page of the Appendix A Technical Specifications with the attached revised page. The revised page is identified by amendment number and contains marginal lines indicating the areas of change.

<u>Remove</u>	Insert
3.6-14	3.6-14

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 116 TO

FACILITY OPERATING LICENSE NO. NPF-87

AND AMENDMENT NO. 116 TO

FACILITY OPERATING LICENSE NO. NPF-89

TXU GENERATION COMPANY LP

COMANCHE PEAK STEAM ELECTRIC STATION, UNITS 1 AND 2

DOCKET NOS. 50-445 AND 50-446

1.0 INTRODUCTION

By application dated September 23, 2003 (ML032790201), as supplemented by letter dated June 9, 2004 (ML041680389), TXU Generation Company LP (the licensee) requested a Technical Specification (TS) change for the Comanche Peak Steam Electric Station (CPSES), Units 1 and 2. Specifically, the change would extend the interval between local leakage rate tests of the containment purge and vent valves with resilient seats (i.e., containment purge, hydrogen purge, and containment pressure relief valves) to 18 months.

Currently, TS Surveillance Requirement (SR) 3.6.3.7 requires leakage rate testing of the containment purge, hydrogen purge, and containment pressure relief valves with resilient seats every 184 days and within 92 days after opening the valves. The proposed change extends the interval to 18 months between tests and deletes the "within 92 days after opening the valves" requirement. These changes will allow the required leakage rate testing to be performed no more frequently than once per refueling outage.

2.0 REGULATORY EVALUATION

At the time that CPSES, Units 1 and 2, received their operating licenses, Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, Appendix J, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors," required containment isolation valves, including containment purge and vent valves, to be subjected to local leakage rate tests at every refueling outage, but not to exceed two year intervals. Then and now, compliance with Appendix J provides assurance that the leakage rate of the containment, including those systems and components that penetrate the containment, does not exceed the allowable leakage rate specified in the TS and Bases. The allowable leakage rate is determined so that the leakage rate assumed in the safety analyses is not exceeded.

However, in the 1970s, the staff had determined that containment purge and vent valves were, as a class, a special problem in terms of leakage rate. Experience had shown that containment purge and vent valves with resilient seals were more susceptible than other containment isolation valves to degradation caused by environmental factors (such as temperature extremes, changes in humidity, and barometric pressure) and mechanical factors (such as wear and tear, and hardening of resilient seals due to aging and exposure to radiation). This degradation not only could cause high and rapidly increasing leakage rates, but also the radiological consequences of such leaks were more significant than for other valves because of the containment purge and vent valves' typically large diameters and the direct connection they provided between the containment atmosphere and the outside environment.

As part of the resolution of Generic Issue B-20 (also known as Multi-Plant Action MPA-B020), "Containment Leakage Due to Seal Deterioration," the staff decided to increase the frequency of local leakage rate testing of containment purge and vent valves, beyond the frequency required by Appendix J (additional background may be found in IE Circular 77-11, "Leakage of Containment Isolation Valves with Resilient Seals," issued September 6, 1977). This would limit the time during which the valves might be inoperable due to excessive leakage, and make it more likely that a licensee would catch and correct advancing degradation before it became extreme. Although there was some variation, a typical testing arrangement was to have "passive" valves (those not opened during plant operation) tested every 6 months and "active" valves (those opened during plant operation) tested every 3 months. This is essentially the current testing arrangement at CPSES, Units 1 and 2, where the test interval is 184 days if the valves have not been opened (the containment and hydrogen purge valves are sealed closed during plant operation), and 92 days for valves that have been opened (the containment pressure relief valves are sometimes opened during plant operation).

The staff would like to note that the NRC did not impose the increased testing frequencies through regulations, but rather through plant TS. Appendix J does not contain any special requirements for containment purge and vent valves, and the 3 and 6 month tests are not Appendix J tests <u>per se</u>, although the same tests are usually used to fulfill Appendix J requirements when they come due.

In 1995, the NRC revised Appendix J to add a new, performance-based option for testing, called Option B. The NRC also published Regulatory Guide (RG) 1.163, "Performance-Based Containment Leak Test Program," dated September 1995, which was developed as a method acceptable to the NRC staff for implementing Option B. This regulatory guide states that the Nuclear Energy Institute (NEI) guidance document NEI 94-01, Rev. 0, "Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J," dated July 26, 1995, provides methods acceptable to the NRC staff for complying with Option B, with four exceptions which are described therein. Virtually all of the plants that have adopted Option B, including CPSES, Units 1 and 2, have committed to complying with the provisions of RG 1.163.

RG 1.163 allows an extension in Type A (integrated leakage rate) test frequency to at least one test in 10 years based upon two consecutive successful tests. Type B tests (local leakage rate tests of containment penetrations such as electrical penetrations) may be extended up to a maximum interval of 10 years based upon completion of two consecutive successful tests. Type C tests (local leakage rate tests of containment isolation valves) may have intervals extended up to 5 years based on two consecutive successful tests.

However, despite the fact that most other containment isolation valves may have test intervals of up to 5 years, RG 1.163 does not let the containment purge and vent valves go to an extended interval. This is in consideration of their past poor operating experience and the safety significance of their large diameter and direct connection between the containment atmosphere and the outside environment. Also, although RG 1.163 discusses a 30-month interval, this still does not directly affect the more frequent (3 and 6 month) tests contained in the plant TS, which, as before, go beyond the requirements of Appendix J.

Subsequent to the problems observed in the 1970s, the industry has made considerable strides in correcting the deficiencies of containment purge and vent valves with resilient seals. Improved seal materials, quality control, and modifications of equipment and environmental conditions have largely corrected valve deficiencies in many plants. Several plants have requested, and the staff has granted, TS changes to eliminate the more frequent testing requirements, allowing testing at what is essentially a refueling outage interval (e.g., see references 1 through 4). The staff has granted these reliefs on the basis of good valve performance demonstrated by plant-specific historical leakage rate testing results. Each plant must show that its containment purge and vent valves have had consistently good performance and are thus unlikely to experience significant degradation between tests when the test interval is lengthened.

3.0 TECHNICAL EVALUATION

3.1 System Description

Valves with resilient seals are located in the containment purge, hydrogen purge and containment pressure relief systems.

Containment Purge System

The containment purge system supplies cooled or heated (as appropriate) outside air to the containment for ventilation to allow prolonged access during plant shutdowns and refueling outages. The system may also be used to reduce the concentration of noble gases within containment prior to and during personnel access. It consists of a supply subsystem, which passes through penetration MV-1, and an exhaust system, which passes through penetration MV-2. Each subsystem contains two 48-inch, air-operated butterfly valves with resilient seats arranged in a series configuration, with one valve outside the containment and the other inside the containment. Exhaust air is passed through an exhaust filtration unit, which consists of a prefilter, two HEPA filters, and an iodine adsorber, and discharged into the atmosphere through the plant ventilation vent. The valves are automatically closed upon a containment ventilation isolation signal and fail closed on loss of power. The valves are not qualified for automatic closure from their open position under design basis accident (DBA) conditions; therefore, they are closed during Modes 1, 2, 3, and 4 to ensure that the containment boundary is maintained.

Hydrogen Purge System

The hydrogen purge system is a supplementary system for the electric hydrogen recombiners and is operated for hydrogen dilution in the containment following a loss-of-coolant accident (LOCA) once pressure is below 5 pounds per square inch gauge (psig). System flow passes through two valves inside the containment arranged in a parallel configuration, penetration MIII-19, a single valve outside the containment, and ultimately to atmosphere via particulate, iodine adsorbers, and HEPA filters. All valves are 12-inch, motor-operated butterfly valves with resilient seats. The valves are automatically closed upon a containment ventilation isolation signal and fail as-is on loss of power. The valves are not qualified for automatic closure from their open position under DBA conditions; therefore, they are closed during Modes 1, 2, 3, and 4 to ensure that the containment boundary is maintained.

Containment Pressure Relief System

The containment pressure relief system is designed to relieve containment pressure of up to 1.5 psig. It consists of two 18-inch, air-operated butterfly valves with resilient seats arranged in a series configuration, with one valve outside the containment at penetration MV-14 and the other inside the containment. The piping inside the containment contains a debris screen and restrictive orifice that yields an effective opening of only 3 inches. Discharge from the system is directed to the containment purge exhaust subsystem and is therefore filtered before release to the atmosphere. The valves are automatically closed upon a containment ventilation isolation signal, fail closed on loss of power, and may be opened as needed in Modes 1, 2, 3, and 4.

3.2 Containment Purge and Vent Valve Performance

The licensee has provided information on purge and vent valve test failures since 1993. The licensee's review of the test results identified one instance of unacceptable seat leakage on September 23, 1999, out of over 200 tests performed. One of the CPSES, Unit 1, containment purge penetrations (MV-2) was found to have leakage exceeding the acceptance criterion. It was corrected by adjusting the valve stop nut which fully engaged the valve disk into the seat, followed by a satisfactory retest. The one failure that did occur was found to have been in one of two valves; the other valve did maintain pressure. There have been no other failures of these valves during this period.

Based on the above test results, the staff finds that extending the maximum interval between the leakage rate tests of the above described resilient seal valves would be acceptable. The staff has further evaluated the licensee's request for TS changes by considering the insights gained from risk considerations.

3.3 Risk Insights

The proposed change does not impact the core-damage frequency because none of the systems affected by the proposed change are used to prevent an initiating event from deteriorating into a core-damage accident.

The licensee's probabilistic risk assessment defines a large early release as a rapid, unscrubbed release of airborne fission products from the plant to the environment that occurs before the effective implementation of the offsite emergency response protective actions. This definition has been refined by the licensee to be the release of one containment volume within one hour, which occurs before or within four hours of vessel breach. The licensee has estimated that a large early release equates to a leakage rate of about 2×10^8 standard cubic centimeters per minute, which is over four orders of magnitude greater than the administrative limit for measured leakage through the valves of any of the affected systems.

The licensee used two methods to determine the change in large early release frequency (LERF) that would result from the proposed change of the test interval. The first method is based on NUREG/CR-5102, "ISLOCA Evaluation Guidelines." The staff does not agree with this first method because it is based on valve failure rates obtained from generic sources (as opposed to rates developed from the licensee's operational history) and does not address the potential for common-cause failure (CCF) of the resilient valve seats. The second method is based on the licensee's risk-informed inservice testing program methodology. The staff does not agree with this second method because it only considers leakage through a single penetration and, similar to the first method, does not address the potential for CCF of the resilient valve seats.

Based on information provided by the licensee, the staff made a confirmatory calculation of the change in LERF that would result from the proposed change of the test interval. Leakage from all systems affected by the proposed changes was included. The licensee's operating experience was used to develop an estimate of the valve failure rate, assuming that the one experienced valve failure resulted in a leakage rate that is equivalent to a large early release. The alpha-factor method described in NUREG/CR-5485, "Guidelines on Modeling Common-Cause Failures in Probabilistic Risk Assessment," and conservative screening data obtained from NUREG/CR-5497, "Common-Cause Failure Parameter Estimations," were used to address CCF. The result of the staff's confirmatory calculation indicates that the change in LERF is below 10⁻⁷/year.

Therefore, since the change in LERF satisfies the risk acceptance guidelines in RG 1.174, the staff concludes that the change in LERF due to the proposed change in test interval is very small and that there are no issues that rebut the presumption of adequate protection provided by the licensee's meeting the currently specified regulatory requirements.

Based on the evaluations above, the staff finds that the proposed TS changes are acceptable.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Texas State official was notified of the proposed issuance of the amendment. The State official had no comments.

5.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration, and there has been no public comment on such finding published November 12, 2003 (68 FR 64140). Accordingly, the amendments meet the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

6.0 <u>CONCLUSION</u>

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

7.0 <u>REFERENCES</u>

- Letter to Robert E. Link (Point Beach) from Allen G. Hansen (NRC), Subject: Amendment Nos. 169 and 173 to Facility Operating License Nos. DPR-24 and DPR-27 -Point Beach Nuclear Plant, Unit Nos. 1 and 2 (TAC Nos. M95668 and M95669), dated October 9, 1996.
- Letter to Ted C. Feigenbaum (Seabrook) from Albert W. De Agazio (NRC), Subject: Amendment No. 49 to Facility Operating License NPF-86: Implementation of 10 CFR 50 Appendix J, Option B - License Amendment Request 96-05 (TAC No. M95312), dated February 24, 1997 (ADAMS Accession No. ML011830237).
- Letter to H. B. Barron (McGuire) from Robert E. Martin (NRC), Subject: McGuire Nuclear Station, Units 1and 2 Re: Issuance of Amendments Regarding Option B of Appendix J for Local Leakage Rate Testing (TAC Nos. MB3565 and MB3566), dated September 4, 2002 (ADAMS Accession No. ML022540005).
- Letter to William T. Cottle (South Texas) from Mohan Thadani (NRC), Subject: South Texas Project, Units 1 and 2 - Issuance of Amendments Re: Extension of the Intervals Between Operability Tests of the Normal and Supplementary Containment Purge Valves (TAC Nos. MB4048 and MB4049), dated January 7, 2003 (ADAMS Accession No. ML030140325).

Principal Contributors: J.Pulsipher M. Stutzke

Date: April 13, 2005

Comanche Peak Steam Electric Station

CC:

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