March 24, 2004

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 (CPSES), UNIT 1 - ISSUANCE OF AMENDMENT RE: STEAM GENERATOR TUBE REPAIR USING LEAK LIMITING ALLOY 800 SLEEVES (TAC NO. MC0197)

Dear Mr. Blevins:

The Commission has issued the enclosed Amendment No. 112 to Facility Operating License No. NPF-87 for CPSES, Unit 1. The amendment consists of changes to the Technical Specifications (TS) in response to your application dated July 21, 2003, as supplemented by letters dated January 8, January 21, and March 8, 2004.

The amendment will revise TS 5.5.9, “Steam Generator (SG) Tube Surveillance Program,” to allow CPSES to use Westinghouse (Westinghouse Electric Company LLC) leak limiting Alloy 800 Sleeves to repair defective SG tubes.

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/

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

Docket No. 50-445

Enclosures: 1. Amendment No. 112 to NPF-87
2. Safety Evaluation

cc w/encls: See next page

March 24, 2004

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 (CPSES), UNIT 1 - ISSUANCE OF AMENDMENT RE: STEAM GENERATOR TUBE REPAIR USING LEAK LIMITING ALLOY 800 SLEEVES (TAC NO. MC0197)

Dear Mr. Blevins:

The Commission has issued the enclosed Amendment No. 112 to Facility Operating License No. NPF-87 for CPSES, Unit 1. The amendment consists of changes to the Technical Specifications (TS) in response to your application dated July 21, 2003, as supplemented by letters dated January 8, January 21, and March 8, 2004.

The amendment will revise TS 5.5.9, "Steam Generator (SG) Tube Surveillance Program," to allow CPSES to use Westinghouse (Westinghouse Electric Company LLC) leak limiting Alloy 800 Sleeves to repair defective SG tubes.

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

Docket No. 50-445
Enclosures: 1. Amendment No. 112 to NPF-87
2. Safety Evaluation

DISTRIBUTION:

PUBLIC	PDIV-1 R/F
RidsNrrDlpmPdiv (HBerkow)	RidsNrrDlpmPdivLpdiv1 (RGramm)
RidsNrrPM MThadani	RidsNrrLADJohnson
RidsOgcRp	RidsAcrsAcnwMailCenter
G.Hill(4)	DRIP/RORP/TSS
JTerrell	RidsRgn4MailCenter (AHowell)
WJohnson(Region IV)	

**see previous concurrences

Accession No.:ML040840801 ***no significant change to SE input**

OFFICE	PDIV-1/PM	PDIV-1/LA	DE/EMCB/SC	IROB/SC	OGC	PDIV-1/SC
NAME	MThadani:sp	DBaxley for DJohnson	LLund*	TBoyce**	TSmith (NLO)	RGramm
DATE	3/17/04	3/17/04	3/9/04	3/16/04	3/18/04	3/23/04

OFFICIAL RECORD COPY

TXU GENERATION COMPANY LP

COMANCHE PEAK STEAM ELECTRIC STATION, UNIT NO. 1

DOCKET NO. 50-445

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 112
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 July 21, 2003, as supplemented by letters dated January 8, January 21, and March 8, 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:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 112, 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 30 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

Robert A. Gramm, 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: March 24, 2004

ATTACHMENT TO LICENSE AMENDMENT NO. 112

TO FACILITY OPERATING LICENSE NO. NPF-87

DOCKET NOS. 50-445

Replace the following pages of the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Remove	Insert
5.0-16	5.0-16
5.0-17	5.0-17

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 112 TO

FACILITY OPERATING LICENSE NO. NPF-87

TXU GENERATION COMPANY LP

COMANCHE PEAK STEAM ELECTRIC STATION, UNIT 1

DOCKET NO. 50-445

1.0 INTRODUCTION

By letter dated July 21, 2003, as supplemented by letters dated January 8, January 21, and March 8, 2004, TXU Generating Company LLC (TXU, licensee) requested Nuclear Regulatory Commission (NRC) staff's review and approval of an amendment to revise the Technical Specifications for Comanche Peak Steam Electric Station (CPSES) Unit 1. The proposed change would permit the installation of Westinghouse (Westinghouse Electric Company LLC) Leak-Limiting Alloy 800 Sleeves as steam generator tube repair method.

The supplemental letters dated January 8, January 21, and March 8, 2004, provided clarifying information and did not change the scope of the original *Federal Register* notice or the staff's original no significant hazards consideration determination.

Comanche Peak Steam Electric Station, Unit 1 has four Westinghouse Model D4 recirculating steam generators. Each steam generator contains 4,578 mill annealed Alloy 600 tubes, which are nominally 0.75 inches in diameter and have a nominal wall thickness of 0.043 inches. Approximately 90 percent of the tubes are hardroll expanded for the full depth of the tubesheet at each end, and the remaining 10 percent of the tubes are explosively expanded (with the WEXTEX process) for the full depth of the tubesheet at each end. The tubes are supported by a number of carbon steel tube support plates with circular shaped holes and V-shaped chrome plated Alloy 600 anti-vibration bars. The licensee is authorized to implement the voltage-based tube repair criteria for degradation at the tube support plates (as discussed in Generic Letter 95-05), and the licensee is authorized to implement an F-star (F*) tube repair criteria for degradation observed below the expansion transition for the tubes that have been hardroll expanded into the tubesheet.

A sleeve is a tube segment with a diameter smaller than the parent tube. The sleeve is inserted into and expanded inside the parent tube to form a structural joint. The licensee proposes a tube repair method that uses Westinghouse leak-limiting sleeves made of Alloy 800 material. The Alloy 800 sleeve is not required to be leak tight. The design, installation, analysis, and qualification tests of the sleeve are documented in the Westinghouse topical report, "Steam Generator Tube Repair for Combustion Engineering and Westinghouse Designed Plants with 3/4 Inch Inconel 600 Tubes Using Leak Limiting Alloy 800 Sleeves," Westinghouse Commercial Atomic Power (WCAP), WCAP-15918-P, Revision 01, dated January 2004 (proprietary).

Thousands of leak-limiting Alloy 800 sleeves have been installed in several international nuclear plants and have been approved for use in the original steam generators at the Calvert Cliffs and Watts Bar nuclear plants.

2.0 REGULATORY EVALUATION

The applicable NRC regulations and guidance for review of the proposed sleeve repair method are as follows:

General Design Criterion (GDC) 14 of Appendix A of Title 10 of the *Code of Federal of Regulations* (10 CFR) Part 50 requires that the reactor coolant pressure boundary be designed, fabricated, erected, and tested so as to have an extremely low probability of abnormal leakage, of rapidly propagating failure, and of gross rupture. Steam generator tubes represent the majority of the reactor coolant pressure boundary. When a tube is defective, the tube is either repaired using a sleeve or removed from service by plugging. To repair a part of the existing reactor coolant pressure boundary, the sleeve should be qualified for service in accordance with the specifications in Section XI of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code), which refers back to Section III of the ASME Code. The original steam generator tubes are designed in accordance with Section III of the ASME Code. Because the sleeve repairs the degraded tube(s); Section III of the ASME Code is applicable to sleeve design. The sleeve should be analyzed by appropriate ASME Code equations; considering design, operating, and accident loading conditions. The resulting sleeve stresses should satisfy corresponding ASME Code limits. In addition, the sleeve wall thickness needs to satisfy the minimum wall thickness requirement of the ASME Code.

Appendix B to 10 CFR Part 50, “Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants,” requires a quality assurance program for the design, fabrication, construction, and operation of structures, systems, and components in nuclear plants. The pertinent requirements of Appendix B apply to all activities affecting the safety-related functions of the structures, systems, and components. These activities include design, purchasing, fabrication, handling, shipping, storage, cleaning, installation, inspection, testing, operation, maintenance, repair, refueling and modification.

Regulatory Guide (RG) 1.121, "Bases for Plugging Degraded PWR Steam Generator Tubes," provides guidance for determining the minimum wall thickness beyond which the degraded tube should be plugged (i.e., plugging limits). RG 1.121 also provides performance criteria that recommend that the margin of safety against tube rupture under normal operating conditions should not be less than 3 at any tube location where defects have been detected. The margin of safety against tube failure under postulated accidents, such as LOCA, steam line break, or feedwater line break concurrent with the safe shutdown earthquake, should be consistent with the margin of safety determined by the stress limits specified in Section III of the ASME Code.

3.0 TECHNICAL EVALUATION

The NRC staff reviewed the areas of the tube repair method including design, installation, material selection, qualification tests, structural analyses, and nondestructive examination of the Westinghouse Alloy 800 sleeve. The staff also reviewed the proposed changes to Technical Specification 5.5.9, in the Comanche Peak Unit 1 technical specifications to determine the acceptability of the tube repair implementation. These topics are discussed below:

Design

Two leak-limiting Alloy 800 sleeve designs were proposed for use in repairing a tube. A transition zone (TZ) sleeve is designed to repair tube degradation in the vicinity of the top of the tubesheet. A tube support (TS) sleeve is designed to repair tube degradation at the tube support plate intersections or in the freespan region. The length of the TZ and TS sleeves is sized to encompass the degraded regions of the tube. To attach the sleeve to the parent tube, the TZ sleeve uses several hydraulic expansion joints in the upper region of the sleeve and a hard roll joint in the lower region of the sleeve that is located inside the tubesheet. The TS sleeve uses several hydraulic expansion joints in the upper and lower regions of the sleeve.

Installation

Prior to sleeve installation, the inside surface of the candidate tube is mechanically conditioned with a high speed buffing tool. Buffing removes raised material and some of the oxide, and prepares the sealing surface of the tube. It was noted in the WCAP report that the buffing process may be eliminated in the future when a sufficient confidence level is developed. An expansion device is inserted into the sleeve to expand the sleeve to make the required number of hydraulic expansion joints with the parent tube. The expansion device is controlled and monitored to ensure consistent diametral expansion. The hydraulic expansion joints support the required structural and leakage integrity while minimizing residual stresses in the parent tube. The hard roll in the lower end of TZ sleeve is performed by a roll expander. The torque of the roll expander is also monitored and controlled. After the installation, all sleeve-tube joints undergo an initial acceptance and baseline inspection using an eddy current technique. TXU will plug any sleeve if (1) an unacceptable set of expansions occurred, (2) the torque value for the rolled joint did not fall within the proper torque range, (3) the two sets of expanded joints were not positioned at the proper elevation, and (4) an unacceptable indication is found in the pressure boundary of the sleeve-tube assembly.

Materials Selection

The sleeve material, Alloy 800, is a nickel-iron-chromium alloy. Westinghouse selected Alloy 800 for its favorable mechanical properties and corrosion resistance in both the primary and secondary side coolant conditions. It is procured in accordance with the requirements of the ASME Code, Section II, Part B, SB-163, NiFeCr Alloy, Unified Numbering System (UNS) N08800, and ASME Section III, Subsection NB-2000. Alloy 800 is incorporated in ASME Code Case N-20 and is considered acceptable for use in Regulatory Guide 1.85, "Materials Code Case Acceptability ASME Section III, Division 1," Revision 24, dated July 1986. Westinghouse also requires additional restriction on contents of various chemical elements and specifies a specific annealing temperature and yield strength for the Alloy 800 sleeve.

Qualification Testing

Westinghouse performed the qualification tests in accordance with Appendix B to 10 CFR 50. The testing program included mechanical load tests, leakage tests, and corrosion tests. The mechanical load tests included axial load tests, pressure tests, collapse tests, and load cycling tests. The tests were performed on sleeve-tube mock-ups that were constructed to the same dimensions as the installed sleeves in the field.

Westinghouse performed the axial load tests to determine the structural integrity of the sleeve-tube joint under differential thermal expansion of an Alloy 800 sleeve and Alloy 600 tube. The test loads include the full range loading under startup, transient, normal power, shutdown, and accident conditions. The axial load tests showed that the Alloy 800 sleeve can support differential thermal conditions and accident loads even if the parent tube is severed.

Westinghouse performed the pressure tests to determine the structural integrity of the sleeve-tube joint under primary-to-secondary pressure differentials during normal operating, transient and postulated accident conditions. The pressure tests showed that the sleeve-tube joint will maintain a margin of three with respect to the normal operating differential pressure load as specified in RG 1.121.

Westinghouse performed the collapse tests to show that the sleeve would not collapse if water is trapped in the annulus region between the inside surface of the parent tube and the outside surface of the sleeve. The trapped water may be pressurized during operation and potentially cause the sleeve to collapse. The collapse tests showed that the sleeve would not collapse under the maximum secondary side pressure.

Westinghouse performed the load cycling tests to show that the structural and leakage integrity of the sleeve-tube joint will be maintained under cyclical differential thermal expansion and internal pressure in normal operating and transient conditions. The load cycling tests included fatigue tests, thermal cycling tests, and mechanical load cycling tests. The load applied in the cycling tests was greater than three times the maximum differential pressure. These tests showed that under various temperatures, the sleeve-tube joint is not degraded by cyclic loads. The cycling tests confirm that slip during the initial heat-up is small, and the sleeve repositions itself inside of the parent tube to accommodate the thermal expansion without subsequent slip. As a part of the load cycling tests, the specimens were also tested for leakage integrity. The leak tests showed that the seal in the hydraulically expanded joints improved after load cycling.

Westinghouse performed leak rate tests on the sleeve-tube assembly for various temperatures and pressures under normal operating and main steam line break (MSLB) conditions. The test results showed that the leakage from a single sleeve is extremely small relative to the operational primary-to-secondary leakage limit in the plant technical specifications and the allowable leakage under accident conditions (see discussion below). It would take thousands of leaking sleeves to reach either operational or accident condition leakage limits.

Sleeve-tube joints increase the residual stresses in the parent tube which, in turn, may cause the tube to be susceptible to stress corrosion cracking. Westinghouse stated that the Alloy 800 sleeve is designed to impart minimal residual stresses to the parent tube to avoid potential corrosion in the hydraulic expansion joints. Westinghouse has performed various corrosion tests and assessments of Alloy 800 sleeves with full length sleeved tube mock-ups. Sleeve-tube assemblies were pressurized with highly corrosive solutions. Westinghouse also performed the corrosion tests to assess the relative time to cracking of the sleeve-tube joint. Alloy 800 sleeves did not develop any cracking in either the primary or secondary side tests. The Alloy 800 sleeve has demonstrated higher corrosion resistence than the Alloy 600 parent tube.

Westinghouse stated that the Alloy 800 sleeves have not experienced service-induced degradation or significant leakage in nuclear plants. Westinghouse also stated that besides

Alloy 800 sleeves, Alloy 800 tubing has been used in Pressurized Water Reactor (PWR) conditions in international nuclear plants without experiencing significant primary or secondary side stress corrosion cracking. This is based on experience of over 200,000 tubes in service. However, the staff judges that the time for the initiation of corrosion in sleeve-tube assemblies is difficult to quantify accurately. Although vendors traditionally conduct accelerated corrosion tests of sleeve-tube assemblies to predict service life, the staff finds this method is unreliable for deterministic predictions. The staff does consider that the corrosion tests give a viable indicator of potential performance. Presently, the staff can only assume a limited life expectancy for Alloy 800 sleeves. Considering the uncertainties in sleeve life expectancy, the staff requires licensees to inspect a sample of sleeves at each refueling outage to ensure that any degradation in the sleeve-tube assembly is detected and addressed early.

Inspection

Westinghouse specified that the +Point™ coil probe will be used in the inservice inspection of Alloy 800 sleeves. The eddy current technique has been qualified in accordance with Appendix H of the Electric Power Research Institute (EPRI) report, "PWR Steam Generator Examination Guidelines," Revision 5, September 1997. Westinghouse qualified the sleeve inspection technique on actual sleeve-tube assemblies in accordance with 10 CFR 50, Appendix B. The sleeve-tube qualification samples were fabricated with axially and/or circumferentially oriented notches representing flaws at each of the transitions and expansion zones. In addition, sleeve and tube flaws in the pressure boundary away from the expansion regions were included in the sample set. The flaws included electro-discharge machined notches and a limited number of samples with cracking in the parent tube.

The licensee indicated that an initial minimum inspection of a sample of 20 percent of the installed sleeves will be performed at each refueling outage. In addition to the 20 percent initial sample, TXU stated that additional sleeves may be inspected depending on the extent of sleeve degradation. TXU also stated that the current CPSES Unit 1 Technical Specification Table 5.5-3, "Steam Generation Repaired Tube Inspection for Unit 1 Only" reflects these sampling and expansion criteria. TXU stated that the proposed inspection sampling is consistent with the current industry guidance for steam generator sleeve examinations as specified in the latest revision of Appendix H of the EPRI report, "Pressurized Water Reactor Steam Generator Examination Guidelines." The licensee believes that the stated inspection and expansion criteria provide adequate conservatism to ensure that any degradation in the sleeve/tube assembly is detected and addressed early.

In its response to the staff's request for additional information regarding the qualification testing of cracked sleeve-tube assemblies, TXU stated that none of the assemblies contained cracks in the portion of the parent tube adjacent to (behind) the nickel band. The nickel band is applied to the lower portion of TZ sleeves, which can be used to repair tubes with indications in the expansion transition. The staff was concerned that the effectiveness of the eddy current inspection method for detecting cracks in the parent tube behind the sleeve's nickel band was not verified. The licensee responded that it will develop and provide a technical basis for the effectiveness of this inspection method in detecting parent tube flaws located behind the nickel band during the next operating cycle (Commitment Number 27311).

In its response to the staff's request for additional information, the licensee modified the Technical Specification 5.5.9.f to reflect that an Alloy 800 leak-limiting sleeved tube shall be

plugged upon detection of degradation in the sleeve and/or pressure boundary portion of the original tube wall in the sleeve-tube assembly regardless of depth. The licensee also modified Technical Specifications 5.5.9.f and 5.5.9.j to state that the F* criteria are not applicable to the parent tube located behind the leak-limiting sleeves installed in the tubesheet transition zone.

In its response to the staff's request for additional information regarding sleeved tubing that meets the definition of an F* tube, the licensee stated that, if a tube has a flaw above the lower sleeve joint, the flaw is contained by the sleeve, and the tube is allowed to stay in service. If the tube flaw is at the intended location of the lower sleeve-tube joint, then the tube will not be sleeved. In addition, the F* criteria will be applicable to tubes with leak-limiting sleeves installed in the transition zone.

The staff finds that TXU's inspection strategy is conservative and is, therefore, acceptable.

Structural Analysis

Westinghouse performed structural analyses in accordance with 10 CFR 50 Appendix B and Section III of the ASME Code. The structural analyses included applied loads from pressure, relative displacement, fatigue, axial, seismic, and thermal radial differential under normal and accident loading conditions. In the analyses, Westinghouse assumed two bounding tube configurations: (1) the tube is intact, and (2) the tube is severed at the flaw location. In addition, Westinghouse assumed two bounding tube support plate configurations: (1) the tube is free to move past the tube support plates, and (2) the tube is locked in the first tube support plate and is prevented from axial motion. The structural analyses showed that stresses and fatigue factor in the worst sleeve-tube configuration satisfy the allowables in Section III of the ASME Code.

Westinghouse's structural analysis also included calculations for minimum required sleeve thickness based on ASME Code Section III, Paragraph NB-3324.1. The calculations show that the actual sleeve wall thickness is greater than the minimum required thickness, and, therefore, is structurally acceptable. Westinghouse also calculated the percentage of sleeve wall thickness for allowable degradation considering cracking and wall thinning as specified in RG 1.121. The cracking model gives a more conservative degradation allowable than the wall thinning model. As discussed above, TXU proposed a plug-on-detection approach which will not allow any sleeve degradation to remain in service.

Under severe accident conditions in which primary system temperature may reach 1200 °F to 1500 °F, the material properties of Alloy 800 are not significantly different from that of Alloy 600. As a result, the structural integrity of the Alloy 800 sleeve is commensurate with the integrity of the Alloy 600 parent tubing under severe accident conditions.

The staff finds that licensee's structural analysis is conservative and is, therefore, acceptable.

Leakage Integrity

Westinghouse has determined via laboratory testing, the sleeve joint leakage to be small. For the leakage integrity assessment methodology, TXU will conservatively assume all installed sleeves will leak at the design basis leak rates provided in WCAP-15918-P, Rev. 1, Section 7.3.1, for the accident conditions specified. The provided leak rate values represent the upper 95 percent confidence limit on the mean value of leakage for appropriate temperature

and pressure conditions. The licensee will use the leak rates provided by the WCAP report to determine the total number of sleeves that may be installed, given the other sources of leakage from the steam generators, such as calculated leakage from alternate repair criteria. The licensee will combine the leakage attributed to the sleeves with other sources for comparisons to the leakage limits. The plant-specific operational leakage limit for CPSES Unit 1 is 150 gpd primary-to-secondary leakage through any one steam generator as stated in Technical Specification 3.4.13, "RCS Operational Leakage." The MSLB assumed leakage is 27.79 gpm as stated in the Final Safety Analysis Report Table 15.1-3, "Parameters for Postulated Main Steam Line Break Accident Analysis."

The staff finds that the leakage tests have demonstrated the adequacy of limiting the leakage capacity of the sleeve. The staff also finds that the licensee's leakage integrity assessment methodology is conservative and is, therefore, acceptable.

3.1 Proposed Changes to Technical Specifications

The licensee proposed the following changes to Technical Specification 5.5.9, "Steam Generator (SG) Tube Surveillance Program:"

a. Section 5.5.9.f - adds to the definition of Plugging or Repair Limit to include leak-limiting sleeves, including` a "plug upon detection of degradation" statement, and adds a statement on the applicability of the F* criteria. The revised Section 5.5.9.f reads as follows:

> Plugging or Repair Limit means the imperfection depth at or beyond which the tube shall be removed from service by plugging or (for Unit 1 only) repaired by sleeving and is equal to 40% of the wall thickness. The plugging limit for laser welded sleeves is equal to 43% of the nominal wall thickness. The plugging limit for Leak Tight sleeves is equal to 20% of the nominal wall thickness. This definition does not apply to that portion of the Unit 1 tubing that meets the definition of an F* tube. This definition does not apply to tube support plate intersections for which the voltage-based plugging criteria are being applied. Refer to 5.5.9.e.1m) for the repair limit applicable to these intersections. All tubes repaired with Leak Limiting sleeves shall be plugged upon detection of degradation in the sleeve and/or pressure boundary portion of the original tube wall in the sleeve/tube assembly (i.e., the sleeve-to-tube joint) regardless of depth. The F* criteria is not applicable to the parent tube located behind the Leak Limiting sleeves installed in the tubesheet transition zone.

b. Section 5.5.9.j - adds a statement on the applicability of the F* criteria. The revised Section 5.5.9.j reads as follows:

> F* Distance (Unit 1 only) is the distance of the hardroll expanded portion of the tube which provides a sufficient length of non-degraded tube expansion to resist pullout of the tube from the tubesheet. The F* distance is equal to 1.13 inches, plus an allowance for eddy current measurement uncertainty, and is measured down from the top of the tubesheet, or the bottom of the roll transition, whichever is lower in elevation. The F* criteria is not applicable to the parent tube located behind the Leak Limiting sleeves installed in the tubesheet transition zone.

c. Section 5.5.9.n - adds to the definition of Tube Repair to include Westinghouse WCAP-15918, Rev. 1. The revised Section 5.5.9.n reads as follows:

> Tube Repair (for Unit 1 only) refers to the process that establishes tube serviceability. Acceptable tube repairs will be performed in accordance with the process described in Westinghouse WCAP-13698, Rev. 3 and Westinghouse Letter WPT-16094 dated March 20, 2000, WCAP-15090, Rev. 1, CEN-630-P, Rev. 2 dated June 1997, and WCAP-15918, Rev. 1 dated January, 2004.

The staff finds that the proposed changes are consistent with the technical basis of the proposed sleeve repair method and are, therefore, acceptable.

The licensee has performed structural analyses and tests for a variety of loadings that enveloped plant-specific design, operating, transient and accident loads. The analyses, testing, and operating experience demonstrate that the Westinghouse Leak-Limiting Alloy 800 sleeve is capable of restoring steam generator tube integrity. The staff finds that TXU has demonstrated the acceptability of the sleeve repair in accordance with Appendix B to 10 CFR Part 50, GDC 14 of Appendix A to 10 CFR Part 50, Regulatory Guide 1.121, and the ASME Code. The staff concludes that the licensee may incorporate the proposed changes into the Comanche Peak Unit 1 Technical Specifications.

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 amendment changes 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 (68 FR 49820). 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 CONCLUSION

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.

Principal Contributor: J. Terrell

Date: March 24, 2004

Comanche Peak Steam Electric Station

cc:

Senior Resident Inspector
U.S. Nuclear Regulatory Commission
P. O. Box 2159
Glen Rose, TX 76403-2159

Regional Administrator, Region IV
U.S. Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 400
Arlington, TX 76011

Mr. Roger D. Walker
Regulatory Affairs Manager
TXU Generation Company LP
P. O. Box 1002
Glen Rose, TX 76043

George L. Edgar, Esq.
Morgan Lewis
1111 Pennsylvania Avenue, NW
Washington, DC 20004

County Judge
P. O. Box 851
Glen Rose, TX 76043

Environmental and Natural
Resources Policy Director
Office of the Governor
P. O. Box 12428
Austin, TX 78711-3189

Mr. Richard A. Ratliff, Chief
Bureau of Radiation Control
Texas Department of Health
1100 West 49th Street
Austin, TX 78756-3189

Mr. Brian Almon
Public Utility Commission
William B. Travis Building
P. O. Box 13326
1701 North Congress Avenue
Austin, TX 78701-3326

Ms. Susan M. Jablonski
Office of Permitting, Remediation
and Registration
Texas Commission on Environmental
Quality
MC-122
P. O. Box 13087
Austin, TX 78711-3087

Terry Parks, Chief Inspector
Texas Department of Licensing
and Regulation
Boiler Program
P. O. Box 12157
Austin, TX 78711