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

Ref: 10CFR50.90

CPSES-200200907  
Log # TXX-02041  
File # 00236

April 1, 2002

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  
LICENSE AMENDMENT REQUEST (LAR) 02-03  
REVISION TO TECHNICAL SPECIFICATIONS (TS)  
TS 4.2, "DESIGN FEATURES" AND 5.6.5, "CORE OPERATING  
LIMITS REPORT (COLR)"**

Gentlemen:

Pursuant to 10CFR50.90, TXU Generation Company LP (TXU Energy) hereby requests an amendment to the CPSES Unit 1 Operating License (NPF-87) and CPSES Unit 2 Operating License (NPF-89) by incorporating the attached change into the CPSES Unit 1 and 2 Technical Specifications (TS). This change request applies to Units 1 and 2.

The proposed change will revise TS 4.2 and 5.6.5 entitled "Reactor Core" and "Core Operating Limits Report (COLR)," respectively. TXU Energy is changing to Westinghouse as the vendor for fuel assemblies for both Units 1 and 2 as of the Unit 1, Cycle 10 core load. The fuel assemblies use fuel cladding made of a zirconium based alloy known commercially as ZIRLO™. The proposed change requires inclusion of the topical report ERX-2001-005, "ZIRLO™ Cladding and Boron Coating Models for TXU Electric's Loss of Coolant Accident Analysis Methodologies" as part of the acceptable methodologies for the Core Operating Limits Report. This Topical report is currently under review with the NRC. Upon approval of this topical report, inclusion of the report into the list of acceptable methodologies would be administrative.

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Attachment 1 provides a detailed description of the proposed changes, a safety analysis of the proposed changes, TXU Energy's determination that the proposed changes do not involve a significant hazard consideration, a regulatory analysis of the proposed changes and an environmental evaluation. Attachment 2 provides the affected Technical Specification pages marked-up to reflect the proposed changes. Attachment 3 provides retyped Technical Specification pages which incorporate the requested changes.

TXU Energy requests approval of the proposed License Amendment by October 1, 2002, to be implemented within 60 days of the issuance of the license amendment. The approval date was selected to coincide with the next Unit 1 refueling outage and is required to enter MODE 4 following the refueling of Unit 1.

In accordance with 10CFR50.91(b), TXU Energy is providing the State of Texas with a copy of this proposed amendment.

This communication contains no new or revised commitments.

Should you have any questions, please contact Mr. J. D. Seawright at (254) 897-0140.

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

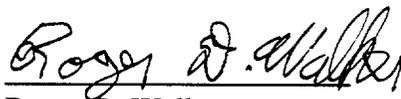
Executed on April 1, 2002

Sincerely,

TXU Generation Company LP

By: TXU Generation Management Company LLC,  
Its General Partner

C. L. Terry  
Senior Vice President and Principal Nuclear Officer

By:   
Roger D. Walker  
Regulatory Affairs Manager

JDS/js

Attachments 1. Description and Assessment  
2. Markup of Technical Specifications pages  
3. Retyped Technical Specification Pages

c - E. W. Merschoff, Region IV  
C. E. Johnson, Region IV  
D. H. Jaffe, NRR  
Resident Inspectors, CPSES

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

**ATTACHMENT 1 to TXX-02041**  
**DESCRIPTION AND ASSESSMENT**

## **LICENSEE'S EVALUATION**

- 1.0 INTRODUCTION
- 2.0 DESCRIPTION OF PROPOSED AMENDMENT
- 3.0 BACKGROUND
- 4.0 REGULATORY REQUIREMENTS & GUIDANCE
- 5.0 TECHNICAL ANALYSIS
- 6.0 REGULATORY ANALYSIS
- 7.0 NO SIGNIFICANT HAZARDS CONSIDERATION (NSHC)
- 8.0 ENVIRONMENTAL CONSIDERATION
- 9.0 PRECEDENTS
- 10.0 REFERENCES

## **1.0 INTRODUCTION**

Proposed change LAR 02-03 is a request to revise Technical Specifications (TS) 4.2 and 5.6.5 entitled "Reactor Core" and "Core Operating Limits Report (COLR)," respectively for Comanche Peak Steam Electric Station (CPSES) Units 1 and 2. Presently, fuel used at CPSES is clad in Zircaloy. Beginning with Unit 1, Cycle 10, TXU Generation Company LP (TXU Energy) will begin a transition to Westinghouse fuel containing ZIRLO™ as a clad material for use in the reactor core of Units 1 and 2. The purpose of this amendment is to allow the use of ZIRLO™ clad Westinghouse fuel assemblies in future reloads and to include topical report ERX-2001-005, "ZIRLO™ Cladding and Boron Coating Models for TXU Electric's Loss of Coolant Accident Analysis Methodologies" in the list of approved methodologies for use in generating the COLR Report.

## **2.0 DESCRIPTION OF PROPOSED AMENDMENT**

This proposed amendment will include topical report ERX-2001-005, "ZIRLO™ Cladding and Boron Coating Models for TXU Electric's Loss of Coolant Accident Analysis Methodologies" in the list of approved methodologies for use in generating the COLR Report and include ZIRLO™ clad in the description of the fuel assemblies.

TXU Energy is beginning the transition from the use of Framatome ANP supplied fuel assemblies to Westinghouse supplied assemblies in both CPSES units, beginning with the Unit 1, Cycle 10 core reload. TXU Energy's licensing methodologies for the Emergency Core Cooling System (ECCS) analyses have been approved by the NRC and previously applied to Zircaloy fuel assemblies provided by Framatome ANP as well as Westinghouse. A topical report (ERX-2001-005) demonstrating the acceptability of the CPSES evaluation models for use with ZIRLO™ has been submitted to the NRC (see Reference 10.4). The purpose of including topical report ERX-2001-005, "ZIRLO™ Cladding and Boron Coating Models for TXU Electric's Loss of Coolant Accident Analysis Methodologies" in the list of approved methodologies for use in generating the COLR Report and including ZIRLO™ in the description of the fuel assembly cladding is to allow use of ZIRLO™ clad at CPSES in future reloads. Subsequent to NRC approval of the topical report, including the report in the list of approved COLR methodologies is administrative in nature. TXU Energy is requesting NRC approval for use of ZIRLO™ clad fuel for complete reloads at CPSES Units 1 and 2.

## **3.0 BACKGROUND**

Westinghouse Topical Report, WCAP-12610-P-A, "Vantage + Fuel Assembly Reference Core Report," dated July, 1991, (Westinghouse Proprietary) describes the fuel rod design bases, criteria, and models which are affected by the use of ZIRLO™ cladding. The topical report (WCAP-12610-P-A) is applicable to 17x17 fuel arrays with fuel rod outside diameters of 0.360"

to 0.422", which includes the fuel assembly designs intended to be used at CPSES. This report (WCAP-12610-P-A) has been previously reviewed and approved by the NRC.

ZIRLO™ is similar in chemical composition, physical properties, and mechanical properties to the Zircaloy cladding material current in use at CPSES, but exhibits improved corrosion performance and dimensional stability. Fuel assemblies manufactured with ZIRLO™ meet the same design basis requirements as fuel assemblies manufactured with Zircaloy cladding, and the regulatory requirements of 10CFR50.46 are applicable to either material. ZIRLO™ has already received extensive irradiation experience in PWR plants similar in design to CPSES. In fact, ZIRLO™ has virtually replaced Zircaloy in current domestic orders for Westinghouse fuel. No concerns have been identified pertaining to reactor operation with a core comprised of fuel assemblies containing either Zircaloy or ZIRLO™ clad fuel rods.

TXU Energy's licensing methodologies for the ECCS analyses explicitly include Zircaloy fuel cladding materials. These methodologies have been approved by the NRC and previously applied to Zircaloy fuel assemblies provided by Framatome ANP as well as Westinghouse. Analyses using versions of TXU Energy's ECCS evaluation models, modified to include ZIRLO™ material properties, have shown that with the use of the ZIRLO™ fuel cladding material, the 10CFR50.46 acceptance limits continue to be met; in fact, sensitivity studies have shown the use of ZIRLO™ to have essentially no effect on any analytical result (reference 10.3).

Due to the material similarities of Zircaloy and ZIRLO™, the other analytical methods (including non-LOCA transient analysis and nuclear design) used by TXU Energy to support CPSES operation remain valid without modification..

The TXU Energy's ECCS evaluation model changes to incorporate ZIRLO™ material properties must be approved by the NRC prior to use. TXU Energy submitted topical report ERX-2001-005, "ZIRLO™ Cladding and Boron Coating Models for TXU Electric's Loss of Coolant Accident Analysis Methodologies" on October 8, 2001 via Reference 10.4.

#### **4.0 REGULATORY REQUIREMENTS & GUIDANCE**

10 CFR § 50.44, 50.46, and Part 50 Appendix K are applicable to fuel with ZIRLO™ cladding. The material properties of zircaloy and ZIRLO™ are similar. WCAP-12610-P-A, "Vantage + Fuel Assembly Reference Core Report," dated July, 1991, (Westinghouse Proprietary), which has been previously reviewed and approved by the NRC, describes the fuel rod design bases, criteria, and models which are affected by the use of ZIRLO™ material.

## 5.0 TECHNICAL ANALYSIS

Prior to use at operating reactors, the NRC approves new fuel designs, including cladding materials, as well as the analytical methodologies used to demonstrate that the use of the fuel designs meets all relevant acceptance criteria. The acceptability of the ZIRLO™ cladding material has been previously reviewed and approved for use by the NRC in Westinghouse reactors (WCAP-12610-P-A). The ECCS evaluation model intended to be used to support the use of this fuel cladding material in the CPSES cores (ERX-2001-005) is expected to be approved by the NRC. The other analytical methods used by TXU Energy to support the CPSES core design have been previously reviewed and approved by the NRC and are currently listed in the Technical Specification 5.6.5.b. Thus, all aspects of the proposed technical Specification changes will have been approved by the NRC for the states purpose at CPSES.

## 6.0 REGULATORY ANALYSIS

Use of approved ECCS Evaluations with ZIRLO™ clad material ensures that use of ZIRLO™ clad fuel assemblies remain within existing design basis and operating limits. Accordingly, the acceptance criteria described in 10CFR50.46, (b)(1) through (b)(5) will be met.

Use of fuel assemblies of a design approved by the NRC is consistent with existing design basis accident and transient assumptions, preserves the effectiveness of accident mitigation systems, preserves currently licensed dose consequences and, hence, does not involve a significant hazards consideration.

In conclusion, based on the considerations discussed above, (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 amendment will not be inimical to the common defense and security or to the health and safety of the public.

## 7.0 NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

TXU Energy has evaluated whether or not a significant hazards consideration is involved with the proposed amendment(s) by focusing on the three standards set forth in 10CFR50.92, "Issuance of amendment," as discussed below:

1. Do the proposed changes involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No

Administrative changes to the Technical Specifications that do not affect the accident analyses cannot change the probability of an accident previously evaluated, nor will it

increase radiological consequences predicted by the analyses of record. Controlling the use of fuel assemblies within limitations previously approved by the NRC constrains fuel performance to within limits bounded by existing design basis accident and transient analyses.

Therefore, the proposed changes do not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Do the proposed changes create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No

Use of ZIRLO™ clad fuel assemblies in accordance with NRC approved methodologies and of a design approved by the NRC ensures that their effect on core performance remains within existing design limits. Use of fuel assemblies whose design has been previously approved by the NRC is consistent with current plant design bases, does not adversely affect any fission product barrier, and does not alter the safety function of safety significant systems, structures and components or their roles in accident prevention or mitigation. Currently licensed design basis accident and transient analyses of record remain valid.

Therefore, the proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

3. Do the proposed changes involve a significant reduction in a margin of safety?

Response: No

The proposed change does not alter the manner in which Safety Limits, Limiting Safety System Setpoints, or Limiting Conditions for Operation are determined. This proposed change to TS 4.2 and 5.6.5 is bounded by existing limits on reactor operation. It leaves current limitations for use of fuel assemblies in place, conforms to plant design bases, is consistent with the safety analyses as accepted in the topical report, and limits actual plant operation within analyzed and NRC approved boundaries.

Therefore the proposed change does not involve a reduction in a margin of safety.

Based on the above evaluations, TXU Energy concludes that the proposed amendment(s) present no significant hazards consideration under the standards set forth in 10CFR50.92(c) and, accordingly, a finding of “no significant hazards consideration” is justified.

## **8.0 ENVIRONMENTAL CONSIDERATION**

TXU Energy has determined that the proposed amendment would change requirements with respect to the installation or use of a facility component located within the restricted area, as defined in 10CFR20, or would change an inspection or surveillance requirement. Specifically, the proposed change modifies ECCS analysis methodologies used in preparation of the Core Operating Limits Report (COLR). This revised reference could impact operating limits, specified in the COLR, used in the performance of surveillance requirements. TXU Energy has evaluated the proposed changes and has determined that the changes do not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amount of effluent that may be released offsite, or (iii) a significant increase in the individual or cumulative occupational radiation exposure. Accordingly, the proposed change meets the eligibility criterion for categorical exclusion set forth in 10CFR51.22 (c)(9). Therefore, pursuant to 10CFR51.22 (b), an environmental assessment of the proposed change is not required.

## **9.0 PRECEDENTS**

None

## **10.0 REFERENCES**

- 10.1 Letter from A. C. Thadani (NRC) to S. R. Tritch (Westinghouse), "Acceptance for Referencing of Topical Report WCAP-12610-P-A, 'VANTAGE+ Fuel Assembly Reference Core Report,'" (TAC NO. 77258), dated July 1, 1991
- 10.2 NRC Safety Evaluation Report (SER) and PNL Technical Evaluation Report (TER) on Topical Report WCAP-12610-P-A and Appendices A through E, July 1, 1991
- 10.3 Topical Report ERX-2001-005-P, "ZIRLO™ Cladding and Boron Coating Models for TXU Electric's Loss of Coolant Accident Analysis Methodologies"
- 10.4 TXU Generation Company LP Letter, logged TXX-01171, from C. L. Terry to the NRC dated October 8, 2001

**ATTACHMENT 2 to TXX-02041**  
**MARKUP OF TECHNICAL SPECIFICATION PAGE**

**Pages 4.0-1**  
**5.0-34**

## 4.0 DESIGN FEATURES

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### 4.1 Site Location

The site area is approximately 7,700 acres located in Somervell County in North Central Texas. Squaw Creek Reservoir (SCR), established for station cooling, extends into Hood County. The site is situated along Squaw Creek, a tributary of the Paluxy River, which is a tributary of the Brazos River. The site is over 30 miles southwest of the nearest portion of Fort Worth and approximately 4.5 miles north-northwest of Glen Rose, the nearest community.

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### 4.2 Reactor Core

#### 4.2.1 Fuel Assemblies

The reactor shall contain 193 fuel assemblies. Each assembly shall consist of a matrix of Zircaloy or ZIRLO™ clad fuel rods with an initial composition of natural or slightly enriched uranium dioxide (UO<sub>2</sub>) as fuel material. Limited substitutions of zirconium alloy or stainless steel filler rods for fuel rods, in accordance with approved applications of fuel rod configurations, may be used. Fuel assemblies shall be limited to those fuel designs that have been analyzed with applicable NRC staff approved codes and methods and shown by tests or analyses to comply with all fuel safety design bases. A limited number of lead test assemblies that have not completed representative testing may be placed in non-limiting core regions.

#### 4.2.2 Control Rod Assemblies

The reactor core shall contain 53 control rod assemblies. The control material shall be silver-indium-cadmium as approved by the NRC.

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5.6 Reporting Requirements

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5.6.5 Core Operating Limits Report (COLR) (continued)

- 10) RXE-88-102-P-A, "TUE-1 Departure from Nucleate Boiling Correlation", July 1992.
  - 11) RXE-88-102-P, Sup. 1, "TUE-1 DNB Correlation - Supplement 1", December 1990.
  - 12) RXE-89-002-A, "VIPRE-01 Core Thermal-Hydraulic Analysis Methods for Comanche Peak Steam Electric Station Licensing Applications", September 1993.
  - 13) RXE-91-001-A, "Transient Analysis Methods for Comanche Peak Steam Electric Station Licensing Applications", October 1993.
  - 14) RXE-91-002-A, "Reactivity Anomaly Events Methodology", October 1993.
  - 15) ERX-2000-002-P, "Revised Large Break Loss of Coolant Accident Analysis Methodology", March 2000.
  - 16) TXX-88306, "Steam Generator Tube Rupture Analysis", March 15, 1988.
  - 17) RXE-91-005-A, "Methodology for Reactor Core Response to Steamline Break Events," February 1994.
  - 18) RXE-94-001-A, "Safety Analysis of Postulated Inadvertent Boron Dilution Event in Modes 3,4, and 5," February 1994.
  - 19) RXE-95-001-P-A, "Small Break Loss of Coolant Accident Analysis Methodology," September 1996.
  - 20) Caldon, Inc. Engineering Report-80P, "Improving Thermal Power Accuracy and Plant Safety While Increasing Operating Power level Using the LEFM $\checkmark$  System," Revision 0, March 1997 and Caldon Engineering Report - 160P, "Supplement to Topical Report ER-80P; Basis for a Power Uprate With the LEFM $\checkmark$  System," Revision 0, May 2000.
  - 21) *ERX-2001-005-p, "ZIRLO<sup>TM</sup> Cladding and Boron Coating Models for TXU Electric's Loss of Coolant Accident Analysis Methodologies," October 2001.*
- c. The core operating limits shall be determined such that all applicable limits (e.g., fuel thermal mechanical limits, core thermal hydraulic limits, Emergency Core Cooling Systems (ECCS) limits, nuclear limits such as SDM, transient analysis limits, and accident analysis limits) of the safety analysis are met.
- d. The COLR, including any midcycle revisions or supplements, shall be provided upon issuance for each reload cycle to the NRC.

**ATTACHMENT 4 to TXX-02041**

**RETYPE TECHNICAL SPECIFICATION PAGE**

**Pages 4.0-1  
5.0-34**

## 4.0 DESIGN FEATURES

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(continued)

## 5.6 Reporting Requirements

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### 5.6.5 Core Operating Limits Report (COLR) (continued)

- 10) RXE-88-102-P-A, "TUE-1 Departure from Nucleate Boiling Correlation", July 1992.
  - 11) RXE-88-102-P, Sup. 1, "TUE-1 DNB Correlation - Supplement 1", December 1990.
  - 12) RXE-89-002-A, "VIPRE-01 Core Thermal-Hydraulic Analysis Methods for Comanche Peak Steam Electric Station Licensing Applications", September 1993.
  - 13) RXE-91-001-A, "Transient Analysis Methods for Comanche Peak Steam Electric Station Licensing Applications", October 1993.
  - 14) RXE-91-002-A, "Reactivity Anomaly Events Methodology", October 1993.
  - 15) ERX-2000-002-P, "Revised Large Break Loss of Coolant Accident Analysis Methodology", March 2000.
  - 16) TXX-88306, "Steam Generator Tube Rupture Analysis", March 15, 1988.
  - 17) RXE-91-005-A, "Methodology for Reactor Core Response to Steamline Break Events," February 1994.
  - 18) RXE-94-001-A, "Safety Analysis of Postulated Inadvertent Boron Dilution Event in Modes 3,4, and 5," February 1994.
  - 19) RXE-95-001-P-A, "Small Break Loss of Coolant Accident Analysis Methodology, " September 1996.
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  - 21) ERX-2001-005-p, "ZIRLO™ Cladding and Boron Coating Models for TXU Electric's Loss of Coolant Accident Analysis Methodologies," October 2001.
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- d. The COLR, including any midcycle revisions or supplements, shall be provided upon issuance for each reload cycle to the NRC.