

February 22, 2007

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

SUBJECT: COMANCHE PEAK STEAM ELECTRIC STATION, UNITS 1 AND 2 -  
ISSUANCE OF AMENDMENTS RE: REVISE TECHNICAL SPECIFICATION  
5.6.6 ON REACTOR COOLANT SYSTEM PRESSURE AND TEMPERATURE  
LIMITS REPORT (TAC NOS. MC9500 AND MC9501)

Dear Mr. Blevins:

The Nuclear Regulatory Commission (NRC) has issued the enclosed Amendment No. 132 to Facility Operating License No. NPF-87 and Amendment No. 132 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 December 16, 2005 (CPSES-200502416), as supplemented by letters dated August 31 and September 29, 2006 (CPSES-200601734 and CPSES-200601971, respectively).

The amendments revise TSs 1.1 and 5.6.6 consistent with the NRC-approved Technical Specification Task Force (TSTF) Standard Technical Specification Change Traveler, TSTF-419, "Revise PTLR [Pressure Temperature Limits Report] Definition and References in ISTS [Improved Standard Technical Specification] 5.6.6, RCS PTLR."

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/*

Jack Donohew, Senior Project Manager  
Plant Licensing Branch IV  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket Nos. 50-445 and 50-446

Enclosures: 1. Amendment No. 132 to NPF-87  
2. Amendment No. 132 to NPF-89  
3. Safety Evaluation

cc w/encls: See next page

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Docket Nos. 50-445 and 50-446  
Enclosures: 1. Amendment No. 132 to NPF-87  
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Comanche Peak Steam Electric Station

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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. 132  
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 December 16, 2005, as supplemented by letters dated August 31 and September 29, 2006, 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 and paragraph 2.C.(2) of Facility Operating License No. NPF-87 as indicated in the attachment to this license amendment.

3. The license amendment is effective as of its date of issuance and shall be implemented within 120 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

***/RA/***

David Terao, Chief  
Plant Licensing Branch IV  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Attachment: Changes to the Facility  
Operating License and  
Technical Specifications

Date of Issuance: February 22, 2007

TXU GENERATION COMPANY LP  
COMANCHE PEAK STEAM ELECTRIC STATION, UNIT NO. 2  
DOCKET NO. 50-446  
AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 132  
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 December 16, 2005, as supplemented by letters dated August 31 and September 29, 2006, 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 and paragraph 2.C.(2) of Facility Operating License No. NPF-89 as indicated in the attachment to this license amendment.

3. This license amendment is effective as of its date of issuance and shall be implemented within 120 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

*/RA/*

David Terao, Chief  
Plant Licensing Branch IV  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Attachment: Changes to the Facility  
Operating License and  
Technical Specifications

Date of Issuance: February 22, 2007

ATTACHMENT TO LICENSE AMENDMENT NO. 132

TO FACILITY OPERATING LICENSE NO. NPF-87

AND AMENDMENT NO. 132

TO FACILITY OPERATING LICENSE NO. NPF-89

DOCKET NOS. 50-445 AND 50-446

Replace the following pages of the Facility Operating Licenses, Nos. NPF-87 and NPF-89, and 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.

Facility Operating License No. NPF-87

REMOVE

INSERT

- 3 -

- 3 -

Facility Operating License No. NPF-89

REMOVE

INSERT

- 3 -

- 3 -

Technical Specifications

REMOVE

INSERT

1.1-5

1.1-5

5.0-35

5.0-35

- (3) TXU Generation Company LP, pursuant to the Act and 10 CFR Part 70, to receive, possess, and use at any time, special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operation, and described in the Final Safety Analysis Report, as supplemented and amended;
  - (4) TXU Generation Company LP, pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess, and use, at any time, any byproduct, source, and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;
  - (5) TXU Generation Company LP, pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess, and use in amounts as required, any byproduct, source, and special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; and
  - (6) TXU Generation Company LP, pursuant to the Act and 10 CFR Parts 30, 40 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.
- C. This license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR Chapter I and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:
- (1) Maximum Power Level  
TXU Generation Company LP is authorized to operate the facility at reactor core power levels not in excess of 3458 megawatts thermal in accordance with the conditions specified herein.
  - (2) Technical Specifications and Environmental Protection Plan  
The Technical Specifications contained in Appendix A as revised through Amendment No. 132 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) TXU Generation Company LP, pursuant to the Act and 10 CFR Part 70, to receive, possess, and use at any time, special nuclear material as reactor fuel, in accordance with the limitations for storage and amounts required for reactor operation, and described in the Final Safety Analysis Report, as supplemented and amended;
- (4) TXU Generation Company LP, pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess, and use, at any time, any byproduct, source, and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;
- (5) TXU Generation Company LP, pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess, and use in amounts as required, any byproduct, source, and special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; and
- (6) TXU Generation Company LP, pursuant to the Act and 10 CFR Parts 30, 40 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility.

C. This license shall be deemed to contain and is subject to the conditions specified in the Commission's regulations set forth in 10 CFR Chapter I and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

TXU Generation Company LP is authorized to operate the facility at reactor core power levels not in excess of 3458 megawatts thermal in accordance with the conditions specified herein.

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A as revised through Amendment No. 132 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) Antitrust Conditions

DELETED

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 132 TO  
FACILITY OPERATING LICENSE NO. NPF-87  
AND AMENDMENT NO. 132 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 December 16, 2005, as supplemented by letters dated August 31 and September 29, 2006 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML053560311, ML062490287, and ML062790150, respectively), TXU Generation Company LP (the licensee), requested changes to the Technical Specifications (TSs) for Comanche Peak Steam Electric Station, Units 1 and 2 (CPSES). The requested changes would revise (1) TS 5.6.6, "Reactor Coolant System (RCS) Pressure and Temperature Limits Report (PTLR)," and (2) the definition of the PTLR.

The proposed changes would revise the TSs consistent with the Nuclear Regulatory Commission (NRC)-approved Technical Specification Task Force (TSTF) Standard Technical Specification Change Traveler, TSTF-419, "Revise PTLR Definition and References in ISTS [Improved Standard Technical Specification] 5.6.6, RCS PTLR" (ADAMS Accession No. ML012690234). The proposed changes would have (1) the NRC-approved PTLR methodologies to determine pressure-temperature (P/T) limits listed in TS 5.6.6 by only title and report number such that the licensee may use later versions of these methodologies without having to request NRC approval.

The licensee has an NRC-approved PTLR for CPSES. At the present, changes to methodology in the PTLR must be approved by the NRC staff; however, the TSTF-419 allows the references to NRC-approved PTLR methodologies to be listed in TS 5.6.6 in a manner that the licensee may use later versions of the approved methodology without requiring NRC approval.

The supplemental letters dated August 31 and September 29, 2006, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on March 14, 2006 (71 FR 13182).

## 2.0 REGULATORY EVALUATION

Section 182a of the Atomic Energy Act requires applicants for nuclear power plant operating licenses to include TSs as part of the license. The TSs ensure the operational capability of structures, systems, and components that are required to protect the health and safety of the public. The NRC's regulatory requirements related to the content of the TSs are contained in Section 50.36 of Title 10 of the *Code of Federal Regulations* (10 CFR 50.36), which requires that the TSs include items in the following categories: (1) safety limits, limiting safety systems settings, and limiting control settings; (2) limiting conditions for operation (LCOs); (3) surveillance requirements (SRs); (4) design features; and (5) administrative controls. However, the rule does not specify the particular requirements to be included in a plant's TSs. SRs are, in accordance with 10 CFR 50.36(c)(3), "requirements relating to tests, calibration, or inspection to assure that the necessary quality of the systems and components is maintained, that facility operation will be within safety limits, and that the limiting conditions for operation will be met." The administrative controls are the provisions relating to organization and management, procedures, recordkeeping, review and audit, and reporting necessary to assure operation of the facility in a safe manner. There are no requirements stated in 10 CFR 50.36 on the definition of terms listed in the TSs.

The NRC has established requirements in 10 CFR Part 50 to protect the integrity of the reactor coolant pressure boundary in nuclear power plants. The staff evaluates the acceptability of a facility's proposed PTLR methodology and initial PTLR based on the following NRC regulations and guidance:

- Appendix G to 10 CFR Part 50;
- Appendix H to 10 CFR Part 50;
- Regulatory Guide (RG) 1.99, Revision 2, "Radiation Embrittlement of Reactor Vessel Materials" (ADAMS Accession No. ML003740284);
- Generic Letter (GL) 92-01, Revision 1, Supplement 1, "Reactor Vessel Structural Integrity" (ADAMS Accession No. ML031070449);
- Standard Review Plan (SRP) Section 5.3.2, "Pressure-Temperature Limits and Pressurized Thermal Shock"; and
- GL 96-03, "Relocation of the Pressure Temperature Limit Curves and Low Temperature Overpressure Protection System Limits" (ADAMS Accession No. ML031110004).

Appendix G to 10 CFR Part 50 requires that facility P/T limit curves for the reactor pressure vessel (RPV) be at least as conservative as those obtained by applying the methodology of Appendix G to Section XI of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code). Appendix H to 10 CFR Part 50 establishes requirements related to facility RPV material surveillance programs. RG 1.99, Revision 2, contains methodologies for determining the increase in transition temperature and the decrease in upper-shelf energy resulting from neutron radiation. GL 92-01, Revision 1, requested that licensees submit the RPV data for their plants to the staff for review, and GL 92-01, Revision 1, Supplement 1,

requested that licensees provide and assess data from other licensees that could affect their RPV integrity evaluations. SRP Section 5.3.2 provides an acceptable method for determining the P/T limit curves for ferritic materials in the beltline of the RPV based on the linear elastic fracture mechanics methodology of Appendix G to Section XI of the ASME Code. GL 96-03 addresses the technical information necessary for a licensee's implementation of a PTLR. In addition, GL 96-03 establishes the information that must be included in: (1) an acceptable PTLR methodology (which will be used to develop the PTLR) and, (2) the PTLR itself. These information requirements are principally addressed in a table contained in GL 96-03, Attachment 1, entitled "Requirements for Methodology and PTLR," and are subdivided into seven technical elements, which are numbered by rows in the table.

GL 96-03 also addresses the appropriate modifications to the administrative controls section of a facility's TS that are necessary to implement a PTLR. TSTF-419 provides guidance on an alternative set of facility TS administrative controls section changes that may be made to implement a PTLR.

RG 1.99, "Radiation Embrittlement of Reactor Vessel Materials," Revision 2, describes methodologies acceptable to the NRC staff for (1) calculating the adjusted reference temperature (ART) values and (2) using surveillance capsule test results.

RG 1.190, "Calculation and Dosimetry Methods for Determining Pressure Vessel Neutron Fluence," (ADAMS Accession No. ML010890301), describes the attributes of methodologies acceptable to the NRC staff for the calculation of RPV neutron fluence.

### 3.0 TECHNICAL EVALUATION

In its application, the licensee identified the following changes to the TSs:

1. Revise the definition of the PTLR in Technical Specification 1.1 by deleting the following sentence at the end of the definition: "Plant Operation within these limits is addressed in LCO [Limiting Condition for Operation] 3.4.3, 'RCS [Reactor Coolant System] Pressure and Temperature (P/T) Limits,' and LCO 3.4.12, 'Low Temperature Overpressure Protection (LTOP) System.'"
2. Replace the sentence in TS 5.6.6.b that "Because plant specific analytic methods have not been approved for CPSES, the P/T Limits and the LTOP System Setpoints shall not be revised without prior NRC approval" with the topical report "WCAP-14040-NP-A; "Methodology used to Develop Cold Overpressure Mitigating System Setpoints and RCS Heatup and Cooldown Limit Curves."

TS 5.6.6 is in the administrative controls section of the TSs. The current text in TS 5.6.6.b was adopted in CPSES Amendment No. 81 issued November 27, 2000, which used GL 96-03 as the basis to relocate the PTLR requirements from the TSs to a separate document. This document was set up as part of the conversion of the TSs to the improved TSs in Amendment No. 64 issued February 26, 1999.

### 3.1 Delete Sentence from Definition of PTLR

The existing definition in TS 1.1 of the PTLR is the following:

The PTLR is the unit specific document that provides the reactor vessel pressure and temperature limits, including heat and cooldown rates, the power operated relief valve (PORV) lift settings, and the LTOP arming temperature associated with the Low Temperature Overpressurization Protection (LTOP) system, for the current reactor vessel fluence period. These pressure and temperature limits shall be determined for each fluence period in accordance with Specification 5.6.6. Plant operation within these operating limits is addressed in LCO 3.4.3, RCS Pressure and Temperature (P/T) Limits, and LCO 3.4.12, “Low Temperature Overpressure Protection (LTOP) System.”

The licensee has proposed to delete from the definition of the PTLR the last sentence of the above paragraph, which is underlined. This sentence identifies the two specifications in the TSs in which the P/T and cold overpressure mitigating system (COMS) limits are addressed. The remaining part of the definition will be unchanged.

In its application, the licensee stated that TS 5.6.6.a lists the same two specifications in the TSs in which the P/T and COMS limits (hereafter referred to as the PTLR limits) are addressed. The licensee concluded that the PTLR definition duplicated the list of specifications that exists in TS 5.6.6.a and the sentence in the PTLR definition should be deleted from the TSs.

The definition of PTLR includes the identification of the specifications in which the P/T limits are addressed. Specification 5.6.6.a requires that the individual specifications that address RCS P/T limits be referenced. The NRC staff concludes that the proposed change to the definition of the PTLR will eliminate the duplication between the definition of PTLR and TS 5.6.6.a in that the two specifications will only be listed in TS 5.6.6.a.

### 3.2 Westinghouse Topical Report Proposed as NRC-Approved PTLR Methodology

In proposing to have WCAP-14040-NP-A listed in TS 5.6.6.b as the NRC-approved analytical method to be used to determine the P/T limits in the CPSES PTLR, the licensee is proposing to have this topical report provide the “analytical methods used to determine the RCS pressure and temperature limits” for CPSES that have been previously reviewed and approved by the NRC to be in WCAP-14040-NP-A, Revision 4.

In its supplemental letter dated August 31, 2006, which is its response to the NRC staff’s Question 1 in its request for additional information (RAI), the licensee clarified the status of the current CPSES, Unit 1 and 2 PTLR and stated the following:

Comanche Peak currently uses the Pressure Temperature Limits Report for each unit; however, the current reports merely contain the information relocated from the affected Technical Specifications. The content is not consistent with GL 96-03 nor are the reported values based on the approved methodology of WCAP-14040-NP-A Revision 4.

The sample PTLR, attached to the License Amendment Request, and re-submitted [in this letter] as part of the responses to these [RAI] Questions, is intended to be formally issued as the CPSES PTLR upon which approval of the License Amendment Request 05-007 [submitted by licensee's letter dated December 16, 2005]. A single PTLR will be issued to bound both CPSES units.

Enclosed with the letter dated August 31, 2006, is the plant-specific report WCAP-16346-NP, "Comanche Peak Units 1 and 2 Heatup and Cooldown Limit Curves for Normal Operation," which was developed by the Westinghouse Electric Corporation for CPSES in accordance with WCAP-14040-NP-A, Revision 4. Based on its response to NRC Question 2 in its RAI, the licensee revised the initial version of the draft PTLR to include information required by GL 96-03.

WCAP-14040-NP-A, Revision 4, is the NRC-approved version of WCAP-14040-NP, Revision 3. A few mistakes in the PTLR submitted on August 31, 2006, were corrected by the licensee and the revised PTLR was submitted in its letter dated September 29, 2006, which was the licensee's response to the NRC staff's second RAI. These corrections brought the licensee's proposed P/T limits into full compliance with the proposed PTLR methodology and GL 96-03.

### 3.2.1 Detailed Information Regarding CPSES, Unit 1 and 2 P/T Limits

The licensee stated that its ART values and P/T limit curves are valid for up to 36 effective full power years (EFPY) of facility operation, documented in the proposed PTLR, and based on information from WCAP-16346-NP. This plant-specific WCAP report is based on WCAP-14040-NP-A, Revision 4.

The licensee identified the limiting material for the CPSES, Unit 1 RPV as intermediate shell plate R-1107-1, and for the CPSES, Unit 2 RPV as intermediate shell plate R-3807-2. The key parameters in determining the licensee's ART values for the limiting material for both the one-quarter of the RPV wall thickness (1/4t) and three-quarter of the RPV wall thickness (3/4t) locations are shown in the table on the next page of this safety evaluation (SE), of the key plant-specific parameters in determining ART and P/T values for CPSES, Units 1 and 2.

WCAP-16346-NP documents the detailed thermal and fracture mechanics evaluations used to establish the proposed CPSES, Unit 1 and 2 P/T limits. The RPV coolant temperature, metal temperature, and the applied thermal-stress intensity factors ( $K_{It}$ ) at the tip of the postulated flaw at the 1/4t location for the 100 degrees Fahrenheit per hour ( $^{\circ}\text{F/hr}$ ) cooldown transient and at the 1/4t and 3/4t locations for the 100  $^{\circ}\text{F/hr}$  heatup transients are presented in Appendix B of the WCAP. Based on the applied  $K_{It}$  values and the plane-strain fracture toughness ( $K_{Ic}$ ) values at the crack tip, the WCAP calculated the corresponding applied pressure-stress intensity factors ( $K_{Ip}$ ) at the tip of the postulated flaw at the 1/4t and 3/4t locations, and subsequently the pressure itself. This approach in the WCAP is different from that in SRP Section 5.3.2.

### 3.2.2 NRC Staff Evaluation of Proposed PTLR for CPSES

#### 3.2.2.1 PTLR for CPSES

The current PTLR, as clarified in the licensee's August 31, 2006, letter, merely contains the information relocated from the affected TSs, its content is not consistent with GL 96-03, and the

reported values are not based on the NRC-approved methodology of WCAP-14040-NP-A, Revision 4. The NRC staff's review objective is to ensure that the proposed PTLR is consistent with GL 96-03, and the reported plant-specific values are based on the NRC-approved methodology of WCAP-14040-NP-A, Revision 4. NRC approved the use of this topical report for nuclear power plants in its letter and SE approving WCAP-14040-NP, Revision 3, dated February 27, 2004 (ADAMS Accession No. ML040620297).

As noted in Section 2.0, five of the technical elements from the "Requirements for Methodology and PTLR," table in Attachment 1 to GL 96-03 are addressed by the safety evaluation. For each of these technical elements, the staff reviewed the licensee's submittal to determine whether adequate information had been included within: (1) the PTLR methodology (which will be used to develop the PTLR) and (2) the proposed PTLR itself. Each of the five review topics is addressed in one of the following subsections.

**Table - Key Plant-Specific Parameters in Determining ART and P/T Values for CPSES, Units 1 and 2**

Unit	Limiting Material	Location	Initial RT <sub>NDT</sub> (°F)	Fluence (n/cm <sup>2</sup> )	Chemistry Factor <sup>(1)</sup> (°F)	ΔRT <sub>NDT</sub> (°F)	Margin <sup>(2)</sup> (°F)	ART (°F)
1	Intermediate Shell Plate R-1107-1	1/4 t	10	1.10 x 10 <sup>19</sup>	44	48.4	34 (σ <sub>i</sub> = 0, σ <sub>Δ</sub> = 17)	92
1	Intermediate Shell Plate R-1107-1	3/4 t	10	0.82 x 10 <sup>19</sup>	44	36.1	34 (σ <sub>i</sub> = 0, σ <sub>Δ</sub> = 17)	80
2	Intermediate Shell Plate R-3807-2	1/4 t	10	1.09 x 10 <sup>19</sup>	37	40.3	34 (σ <sub>i</sub> = 0, σ <sub>Δ</sub> = 17)	84
2	Intermediate Shell Plate R-3807-2	3/4 t	10	0.80 x 10 <sup>19</sup>	37	29.6	29.6 (σ <sub>i</sub> = 0, σ <sub>Δ</sub> = 16.8)	69

<sup>(1)</sup> The chemistry factors for these plates were determined from the chemistry factor table using RG 1.99, Revision 2, Position 1.1. The CPSES, Unit 1 limiting plate does not have surveillance data. The CPSES, Unit 2 limiting plate has surveillance data; however, they are not used because using Position 1.1 is conservative in this application.

<sup>(2)</sup> The margin term for each ART calculation was based on the establishment of initial material property uncertainty (σ<sub>i</sub>) and shift in material property uncertainty (σ<sub>Δ</sub>) consistent with the guidance in RG 1.99, Revision 2.

### 3.2.2.1.1 Reactor Vessel Material Surveillance Program

With respect to the licensee's reactor vessel material surveillance program, GL 96-03 directs, at a minimum, that a licensee's proposed PTLR methodology:

Briefly describe the surveillance program. Licensee transmittal letter should identify by title and number report containing the Reactor Vessel Surveillance Program and surveillance capsule reports.

The NRC staff concluded in its SE approving WCAP-14040, Revision 3, that:

The provisions of the methodology described in WCAP-14040[-NP], Revision 3, do not specify how the plant-specific RPV surveillance programs should be maintained in order to be in compliance with Appendix H to 10 CFR Part 50. Licensees who wish to use WCAP-14040, Revision 3, as their PTLR methodology must submit additional information to address the methodology requirements discussed in provision 2 in the table of Attachment 1 to GL 96-03 related to the RPV material surveillance program.

Although WCAP-14040-NP-A, Revision 4, did not address the above NRC staff SE conclusion, the licensee included required plant-specific information regarding the CPSES RPV material surveillance programs in the final version of its proposed CPSES PTLR, which was submitted in its letter dated September 29, 2006. Based on its review of this information, the NRC staff concludes that this information satisfactorily addressed the RPV material surveillance program technical element specified in GL 96-03 and, therefore, this criterion is satisfied.

GL 96-03 also directs, at a minimum, that a licensee's proposed PTLR:

Provide the surveillance capsule withdrawal schedule, or reference by title and number of the documents in which the schedule is located. Reference the surveillance capsule reports by title and number if ART [values] are calculated using surveillance data.

The NRC staff reviewed the information provided in Section 2.4 of the proposed PTLR, submitted in the letter dated September 29, 2006, and found that the licensee provided the surveillance capsule withdrawal schedule for CPSES, Unit 2. The surveillance capsule withdrawal schedule for CPSES, Unit 1, was not provided in the proposed PTLR because, as stated in the PTLR, all the CPSES, Unit 1, capsules had been withdrawn. The proposed PTLR also lists in its references all applicable surveillance capsule reports that provide information relevant to the calculation of CPSES, Unit 1 and 2 RPV material ART values. Based on this, the NRC staff concludes that the above GL 96-03 criterion is satisfied.

#### 3.2.2.1.2 Calculation of RPV Material ART Values

With respect to the licensee's calculation of RPV material ART values, GL 96-03 directs, at a minimum, that a licensee's proposed PTLR methodology to:

Describe the method for calculating the ART [values] using Regulatory Guide 1.99, Revision 2.

The NRC staff concluded in its February 27, 2004, SE that WCAP-14040-NP, Revision 3 meets the minimum requirements for a licensee's PTLR methodology for this technical element. This element remains unchanged in WCAP-14040-NP-A, Revision 4. Since the licensee includes WCAP-14040-NP-A, Revision 4, in its PTLR methodology references, as shown by the proposed amendment which has this topical report being listed as the analytical method used to determine the RCS P/T limits in TS 5.6.6 and the NRC has approved the use of the topical report for this purpose, the NRC staff concludes that this criterion is also satisfied.

GL 96-03 also directs, at a minimum, that a licensee's proposed PTLR:

Identify both the limiting ART values and limiting materials at the 1/4t and 3/4t locations (i.e., locations 1/4 of the way through the thickness of the ferritic RPV wall from the inside and outside surface) and PWRs [pressurized-water reactors] shall identify the RPV's limiting  $RT_{PTS}$  value in accordance with 10 CFR 50.61.

Based on its review of the licensee's letters, the NRC staff finds that the above-required information was provided in Table 2-1 of the final proposed PTLR, which was submitted in the licensee's letter dated September 29, 2006. Based on this, the NRC staff concludes that this criterion is also satisfied.

### 3.2.2.1.3 Calculation of P/T Limit Curves Based on Limiting Material ART Values

Concerning the licensee's calculation of P/T limit curves based on limiting material ART values, GL 96-03 directs, at a minimum, that a licensee's proposed PTLR methodology:

Describe the application of fracture mechanics in constructing P/T limit curves based on Appendix G to Section XI of the ASME Code and NRC Standard Review Plan Section 5.3.2.

In the NRC staff's February 27, 2004, SE approving the use of WCAP-14040-NP, Revision 3, the NRC staff stated that:

[T]he NRC staff has concluded that the basic methodology specified in WCAP-14040[-NP], Revision 3, for establishing P/T limit curves meets the regulatory requirements of Appendix G to 10 CFR Part 50 and the guidance provided in SRP Section 5.3.2. However, the NRC staff has concluded that the discussion provided in WCAP-14040[-NP], Revision 3, regarding the use of optional guidelines for the development of P/T limit curves, including the use of ASME Code Cases N-588, N-640, and N-641 is not acceptable. The NRC staff has concluded, based on guidance provided by the NRC's Office of the General Counsel, that licensees do not need to obtain exemptions to use the provisions of ASME Code Case N-588, N-640, or N-641. The basis for this decision is as follows. Appendix G to 10 CFR Part 50 references the use of ASME Code Section XI, Appendix G and defines the acceptable Editions and Addenda of the Code by reference to those endorsed in 10 CFR 50.55a. The 2003 Edition of 10 CFR Part 50, 10 CFR 50.55a, endorses editions and addenda of ASME Section XI up through the 1998 Edition and 2000 Addenda. The provisions of N-588, N-640, and N-641 have been directly incorporated into the Code in the 2000 Addenda version of ASME Section XI, Appendix G. Therefore, licensees may freely make use of the provisions in Code Cases N-588, N-640, and N-641 by using the methodology in the 2000 Addenda version of ASME Section XI without the need for an exemption. When published, the approved revision of TR [topical report] WCAP-14040 should be modified to reflect this NRC staff conclusion.

The correction above, which was cited by the NRC staff regarding WCAP-14040[-NP], Revision 3, does not affect the technical adequacy of the methodology specified in

WCAP-14040-NP-A, Revision 4, because WCAP-14040-NP-A, Revision 4, was modified to address the NRC staff's comment. Since it is WCAP-14040-NP-A, Revision 4, that is referenced in the proposed PTLR for CPSES and this version of the topical report acceptably addresses the use of ASME Code Cases N-588, N-640, and N-641, the NRC staff concludes that this criterion is also satisfied.

GL 96-03 also directs, at a minimum, that a licensee's proposed PTLR:

Provide the P/T limit curves for heatup, cooldown, criticality, and hydrostatic and leak rate testing.

In the licensee's proposed PTLR, Figures 2-1 and 2-2 provide P/T limit curves for inservice hydrostatic testing and P/T limit curves applicable to heatup and cooldown of the RPV with the core not critical which were developed using the licensee's proposed PTLR methodology in WCAP-14040-NP-A, Revision 4. These P/T limit curves were reviewed by the NRC staff and found to be acceptable in that they comply with the requirements specified in 10 CFR Part 50, Appendix G. Hence, the NRC staff concludes that this criterion is also satisfied.

#### 3.2.2.1.4 P/T Limit Curve Minimum Temperature Requirements

Concerning the licensee's incorporation of P/T limit curve minimum temperature requirements as specified by Appendix G to 10 CFR Part 50, GL 96-03 directs, at a minimum, that a licensee's proposed PTLR methodology:

Describe how the minimum temperature requirements in Appendix G to 10 CFR Part 50 are applied to P/T limit curves.

The NRC staff concluded in its February 27, 2004, SE, which approved WCAP-14040[~~NP~~], Revision 3, that the topical report was adequate to meet the minimum requirements for licensee's PTLR methodology for this technical element. This element remains unchanged in WCAP-14040-NP-A, Revision 4. Since the licensee includes WCAP-14040-NP-A, Revision 4, in its PTLR methodology references by the amendment adding the topical report to TS 5.6.6, and the topical report was approved by the NRC staff as meeting this technical element, the NRC staff concludes that this criterion is also satisfied.

In addition, GL 96-03 also directs, at a minimum, that a licensee's proposed PTLR:

Identify minimum temperatures on the P/T limit curves such as minimum boltup temperature and hydrotest temperature.

The proposed PTLR Figures 2-1 and 2-2 provide P/T limit curves, which include minimum temperature requirements specified in 10 CFR Part 50, Appendix G. The NRC staff reviewed the minimum temperature requirements incorporated into these figures and found them to be acceptable in that they comply with the requirements specified in 10 CFR Part 50, Appendix G. Hence, the NRC staff concludes that this criterion is also satisfied.

### 3.2.2.1.5 Evaluation and Use of RPV Surveillance Data

Concerning the licensee's evaluation and use of RPV surveillance data, GL 96-03 directs, at a minimum, that a licensee's proposed PTLR methodology:

Describe how the data from multiple surveillance capsules are used in the ART calculation. Describe the procedure used if measured values of transition temperature shift from the surveillance capsules exceed predicted values. If data from other facilities is being used, identify the facilities which are providing data and identify by title and number the NRC SE which approved the use of the data for the facility.

In the NRC staff's February 27, 2004, SE, the NRC staff stated that:

Requirement 2 of Section 2.4 of WCAP-14040[-NP], Revision 3, addresses the determination of changes in material properties due to irradiation. This information includes a description of how surveillance capsule test results may be used to calculate RPV material properties in a manner which is consistent with Section C.2.1 of RG 1.99, Revision 2, and other NRC staff guidance.

The NRC staff has reviewed the information in Section 2.4 of the TR [topical report] and determined that it is consistent with NRC staff guidance, including RG 1.99, Revision 2, and is, therefore, acceptable.

This text in WCAP-14040-NP, Revision 3, that was addressed above in the NRC staff's SE, remains unchanged in WCAP-14040-NP-A, Revision 4. Hence, based on the licensee's incorporation of WCAP-14040-NP-A, Revision 4, into the proposed PTLR methodology in that the amendment adds the topical report to TS 5.6.6, the NRC staff concludes that this criterion is also satisfied.

In addition, GL 96-03 also directs, at a minimum, that a licensee's proposed PTLR:

Provide supplemental data and calculations of the chemistry factor in the PTLR if the RPV surveillance data are used to establish RPV material ART values. The PTLR shall also include an evaluation of RPV surveillance data to determine if they meet the credibility criteria in RG 1.99, Revision 2, and the results of this evaluation.

The proposed PTLR Section 2.2, Tables 2-2 and 2-3, present calculated chemistry factor values for CPSES, Unit 1 and 2, RPV beltline materials. As stated in the titles for these tables, these values used surveillance capsule data. After considering all credible surveillance data, the licensee reported in proposed PTLR Section 2.2, Table 2-1, the limiting beltline materials for CPSES, Unit 1 and Unit 2. Because the proposed PTLR for CPSES has the limiting beltline materials for the two units, the NRC staff concludes that this criterion is also satisfied.

### 3.2.2.1.6 Evaluation of the Detailed Information Regarding CPSES P/T Limits

The evaluation of the embrittlement of the RPV beltline materials relies on a neutron fluence prediction that is demonstrated to be accurate and conservative, and, therefore, acceptable to the NRC staff. In its SE dated February 27, 2004, which approved the use of WCAP-14040-NP, Revision 3, the NRC staff stated that the methodology in the topical report for the calculation of (1) RPV neutron fluence adheres to the guidance in RG 1.190 and is, therefore, acceptable and (2) lift settings for the power-operated relief valves is the same methodology that was approved by the NRC in Revision 2 of WCAP-14040 and is, therefore, acceptable. Based on these statements in the NRC staff SE that approved WCAP-14040-NP, Revision 2, the NRC staff concludes that the proposed PTLR is acceptable because it will be based on this topical report.

To evaluate the proposed P/T limits for CPSES, Units 1 and 2, the NRC staff performed independent calculations of the ART values for the limiting material for each CPSES RPV using the RG 1.99, Revision 2, methodology. The NRC staff's ART values for the limiting materials at the 1/4t and 3/4t locations were calculated using materials information for CPSES, Units 1 and 2 in the NRC Reactor Vessel Integrity Database. Based on these calculations, the NRC staff verified that the licensee's limiting material, which bounds both RPVs, is the intermediate shell plate R-1107-1 for CPSES, Unit 1. The licensee's ART values for the limiting material of the CPSES, Unit 1, RPV are more conservative than the NRC staff's values because the licensee's copper and nickel values are from the average of two data points listed on the Combustion Engineering Certified Material Test Report, which result in a larger chemistry factor, and, therefore, larger ART values at 1/4t and 3/4t.

The NRC staff then evaluated the licensee's P/T limit curves for acceptability by performing independent calculations using the methodology referenced in Appendix G to Section XI of the ASME Code (as indicated by SRP 5.3.2) based on information submitted by the licensee. The proposed P/T limits were based on the use of the  $K_{Ic}$  curve in accordance with the ASME Code (2001 Edition through 2003 Addenda of the ASME Code, endorsed in 10 CFR 50.55a). ASME Code, Section XI, Appendix G, permits two approaches to calculate  $K_{Ic}$ : use of the bounding  $K_{Ic}$  formulas based on heatup and cooldown rates, or the use of the  $K_{Ic}$  formulas based on the thermal-stress distribution from a thermal model (e.g., a finite element model) for heatup and cooldown. WCAP-16346-NP used the latter approach and provided RPV coolant temperature, metal temperature, and the applied  $K_{Ic}$  values at the tip of the postulated flaw at the 1/4t location during cooldown and at the 1/4t and 3/4t locations during heatup. Based on this information, the NRC staff verified that the licensee's proposed P/T limits satisfy the requirements of Appendix G to 10 CFR Part 50.

In conclusion, based on the above discussion, the NRC staff concludes that the licensee's proposed P/T limit curves are acceptable for operation of the CPSES, Unit 1 and 2 RPVs for 36 EFPY.

### 3.2.3 Conclusions

Based on the NRC staff evaluation in Section 3.2 of this SE on the licensee's proposed PTLR, which is based on the topical report WCAP-14040-NP-A, Revision 4, the NRC staff concludes the following:

- (a) The proposed PTLR for CPSES, Units 1 and 2, submitted in the licensee's letter dated September 29, 2006, meets the requirements for PTLRs in GL 96-03 for its use as a plant-specific PTLR, and is, therefore, acceptable for use at CPSES.
- (b) The licensee has proposed an acceptable PTLR methodology in WCAP-14040-NP-A, Revision 4, to base the PTLR for CPSES in that the NRC staff has approved the use of the topical report for developing PTLRs at nuclear power plants like CPSES in its SE dated February 27, 2004.
- (c) The listing of WCAP-14040-NP-A in TS 5.6.6.b as the NRC-approved analytical method to be used to determine the P/T limits in the CPSES PTLR is acceptable without the revision number because the only revisions of WCAP-14040-NP-A that have been approved by NRC may be used to calculate and determine the P/T limits for CPSES. Not listing the revision number and date of the topical report will allow the licensee to use later revisions of the topical report without requiring staff review and approval. This allowance is acceptable to the NRC staff because for the licensee to use later revisions of WCAP-14040-NP-A, it would need to address any conditions in the NRC staff's SE approving the use of the later revisions of the topical report and show that the conditions are met by the licensee before that later revision of the topical report could be used at CPSES.

### 3.3 Conclusions on the Proposed Amendment

Based on the NRC staff's conclusions in Sections 3.1 and 3.2.3 of this SE, the NRC staff further concludes that the proposed changes to (1) delete the last sentence in the definition of the PTLR in TS 1.1 and (2) the replacement of the paragraph in TS 5.6.6.b by the listing of WCAP-14040-NP-A, are acceptable for the safe operation of CPSES and, accordingly, concludes that the proposed changes meet 10 CFR 50.36. Based on the conclusion that the proposed changes to the TSs in the amendment meet 10 CFR 50.36, the NRC staff further concludes that the proposed amendment is acceptable.

In its application dated December 16, 2005, the licensee proposed a period of no more than 120 days to implement the amendment. This period is acceptable to the NRC staff.

### 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 (71 FR 13182; published on March 14, 2006). 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.

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