



**TXU Electric
Comanche Peak
Steam Electric Station**
P.O. Box 1002
Glen Rose, TX 76043
Tel: 254 897 8920
Fax: 254 897 6652
lterry1@txu.com

C. Lance Terry
Senior Vice President & Principal Nuclear Officer

Ref: TS 5.6.6

CPSES-200002389
Log # TXX-00188
File # 10010
836(PTLR)

September 22, 2000

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
TRANSMITTAL OF PRESSURE AND TEMPERATURE LIMITS
REPORT, REVISION 2

Gentlemen:

CPSES Technical Specification (TS) 5.6.6 requires that the Pressure and Temperature Limits Report (PTLR) be provided to the NRC upon issuance for each reactor vessel fluence period and for each revision or supplement thereto. Enclosed are the CPSES Unit 1 and Unit 2 PTLRs, Revision 2. This revision to the PTLR for each unit does not change the pressure temperature limits or the Low Temperature Overpressure Protection (LTOP) system setpoints.

029

TXX-00188
Page 2 of 2

This communication contains no new licensing basis commitments regarding CPSES Units 1 and 2.

Sincerely,

C. L. Terry

By: Roger D. Walker
Roger D. Walker
Regulatory Affairs Manager

JDS/js

Enclosures

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

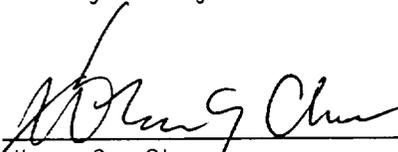
CPSSES UNIT 1

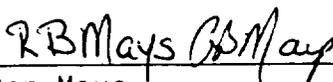
PRESSURE AND TEMPERATURE LIMITS REPORT

(APPLICABLE UP TO 16 EFPY)

September 2000

Prepared:  Date: 9/18/00
Parvez Salim
Safety Analysis

Approved:  Date: 9/18/00
Whee G. Choe
Safety Analysis Manager

Approved:  Date: 9-19-00
Ben Mays
Technical Programs Manager

DISCLAIMER

The information contained in this report was prepared for the specific requirement of TXU Electric, and may not be appropriate for use in situations other than those for which it was specifically prepared. TXU Electric PROVIDES NO WARRANTY HEREUNDER, EXPRESSED OR IMPLIED, OR STATUTORY, OF ANY KIND OR NATURE WHATSOEVER, REGARDING THIS REPORT OR ITS USE, INCLUDING BUT NOT LIMITED TO ANY WARRANTIES ON MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

By making this report available, TXU Electric does not authorize its use by others, and any such use is forbidden except with the prior written approval of TXU Electric. Any such written approval shall itself be deemed to incorporate the disclaimers of liability and disclaimers of warranties provided herein. In no event shall TXU Electric have any liability for any incidental or consequential damages of any type in connection with the use, authorized or unauthorized, of this report or of the information in it.

Pressure and Temperature Limits Report for CPSES Unit 1
(Applicable Up To 16 EFPY)

TABLE OF CONTENTS

DISCLAIMER ii
TABLE OF CONTENTS iii
LIST OF FIGURES iv
LIST OF TABLES v

SECTION PAGE

1.0 INTRODUCTION 1
2.0 OPERATING LIMITS 2
 2.1 RCS Temperature Rate-of-Change
 Limits (LCO 3.4.3) 4
 2.2 P/T Limits for Heatup, Cooldown, Inservice Leak &
 Hydrostatic Testing, and Criticality (LCO 3.4.3) 4
 2.3 LTOP System Setpoints (LCO 3.4.12) 4
 2.4 Reactor Vessel Material Surveillance Program 5
3.0 REFERENCES 9

Pressure and Temperature Limits Report for CPSES Unit 1
(Applicable Up To 16 EFPY)

LIST OF FIGURES

<u>FIGURE</u>	<u>PAGE</u>
2-1 RCS Heatup Limitations - Applicable Up To 16 EFPY .	6
2-2 RCS Cooldown Limitations - Applicable Up To 16 EFPY	7
2-3 PORV Setpoints for Overpressure Mitigation - Applicable Up To 16 EFPY	8

Pressure and Temperature Limits Report for CPSES Unit 1
(Applicable Up To 16 EFPY)

LIST OF TABLES

<u>TABLE</u>		<u>PAGE</u>
2-1	Reactor Vessel Material Surveillance Program - Withdrawal Schedule	5

Pressure and Temperature Limits Report for CPSES Unit 1
(Applicable Up To 16 EFPY)

2.0 OPERATING LIMITS

RCS P/T Limits

The RCS P/T limits presented in this report consist of the RCS (except the pressurizer) temperature rate-of-change limits and P/T limits during heatup, cooldown, inservice leak & hydrostatic testing, and criticality. The P/T limits for CPSES Unit 1 are based on the Westinghouse procedure outlined in Reference 7.

Appendix G of 10 CFR Part 50 [1] establishes specific fracture toughness requirements for ferritic materials in the Reactor Coolant Pressure Boundary (RCPB) in light water nuclear power reactors. An adequate margin to brittle failure during normal operation, anticipated operational occurrences, and system hydrostatic tests is also required by this reference. Furthermore, Reference 1 mandates the use of Appendix G, Section III of the American Society of Mechanical Engineers (ASME) Code [5] to establish P/T limits.

The RCS P/T limits for CPSES Unit 1 are presented in Reference 8.

LTOP System

The LTOP System acts as a backup to the reactor operators to mitigate RCS pressurization transients at low temperatures so the integrity of RCPB is not compromised by violating the pressure and temperature limits of Appendix G of 10 CFR 50 [1]. The reactor vessel is the limiting RCPB component for demonstrating such protection. The LTOP system provides the maximum allowable actuation logic setpoints for the Power Operated Relief Valves (PORVs) for the existing RCS cold leg

“

Pressure and Temperature Limits Report for CPSES Unit 1
(Applicable Up To 16 EFPY)

temperature during cooldown, shutdown, and heatup to meet the Reference 1 requirements during the LTOP MODES.

The LTOP setpoints for CPSES Unit 1 is presented in Reference 9 (supplemented by Reference 10).

REACTOR VESSEL MATERIAL SURVEILLANCE PROGRAM

The reduction in toughness that results from neutron radiation is measured as an increase in the Nil Ductility Reference Temperature (RT_{NDT}) and reduction of the upper-shelf energy of reactor vessel beltline materials, including welds. At CPSES, these quantities were predicted at 16 EFPY using the methods of Regulatory Guide 1.99, Revision 2 [3]. The predictions showed that the materials in the Unit 1 and Unit 2 reactor vessels responded similarly to neutron irradiation but at 16 EFPY, the plate material in the Unit 1 beltline was most limiting. Forecast properties of the limiting material were used to establish P/T limits for heatup and cooldown curves and LTOP setpoints.

The actual neutron-induced shifts in the RT_{NDT} and the upper-shelf energy is periodically measured by withdrawing a surveillance capsule and evaluating the specimens of the limiting beltline material that it contains. The CPSES capsules were built under the ASTM E 185-70 Standard [11]. The evaluation of the irradiated reactor vessel material specimens is conducted in accordance with ASTM E 185-82 [12] and Appendix H of 10 CFR 50 [2]. The operating P/T limit curves are adjusted, as necessary, based on the evaluation findings and the recommendations of Regulatory Guide 1.99, Revision 2 [3].

Pressure and Temperature Limits Report for CPSES Unit 1
(Applicable Up To 16 EFPY)

The analyses of Capsules U and Y from CPSES Unit 1 are presented in References 13 and 14, respectively.

2.1 RCS Temperature Rate-of-Change Limits (LCO 3.4.3)

2.1.1 Maximum Heatup Rate

The RCS heatup rate limit is 100°F in any 1-hour period.

2.1.2 Maximum Cooldown Rate

The RCS cooldown rate limit is 100°F in any 1-hour period.

2.1.3 Maximum Temperature Change During Inservice Leak and Hydrostatic Testing

During inservice leak and hydrostatic testing operations above the heatup and cooldown limit curves, the RCS temperature change limit is 10°F in any 1-hour period.

2.2 P/T Limits for Heatup, Cooldown, Inservice Leak & Hydrostatic Testing, and Criticality (LCO 3.4.3)

2.2.1 P/T Limits for Heatup, Inservice Leak & Hydrostatic Testing, and Criticality

The P/T limits for heatup, inservice leak & hydrostatic testing, and criticality are specified in Figure 2-1.

2.2.2 P/T Limits for Cooldown

The P/T limits for cooldown are specified in Figure 2-2.

2.3 LTOP System Setpoints (LCO 3.4.12)

The maximum allowable PORV pressure setpoints as a function of RCS

Pressure and Temperature Limits Report for CPSES Unit 1
(Applicable Up To 16 EFPY)

temperature are shown in Figure 2-3.

2.4 Reactor Vessel Material Surveillance Program

The vessel material surveillance schedule is provided in Table 2-1. This schedule was approved by the NRC in Reference 15.

= Table 2-1
Reactor Vessel Material Surveillance Program - Withdrawal Schedule

<u>CAPSULE NUMBER</u>	<u>VESSEL LOCATION</u>	<u>LEAD FACTOR</u>	<u>WITHDRAWAL TIME</u>
U	58.5°	4.20	0.9 EFPY*
Y	241.0°	4.07	6.25 EFPY*
X	238.5°	4.40	13 EFPY
V	61.0°	4.07	Standby
W	121.5°	4.35	Standby
Z	301.5°	4.35	Standby

* Capsule withdrawn and analyzed

Pressure and Temperature Limits Report for CPSES Unit 1
(Applicable Up To 16 EFPY)

MATERIAL PROPERTY BASIS

CONTROLLING MATERIAL: LOWER SHELL PLATE R1108-1

INITIAL RT_{NDT}: 0°F

ART AT 16 EFPY: 1/4T : 84°F

3/4T : 69°F

APPLICABLE FOR HEATUP RATES UP TO 100°F/HR FOR THE SERVICE PERIOD UP TO 16 EFPY. CONTAINS MARGINS OF 10°F AND 110 PSIG FOR POSSIBLE INSTRUMENTATION ERRORS.

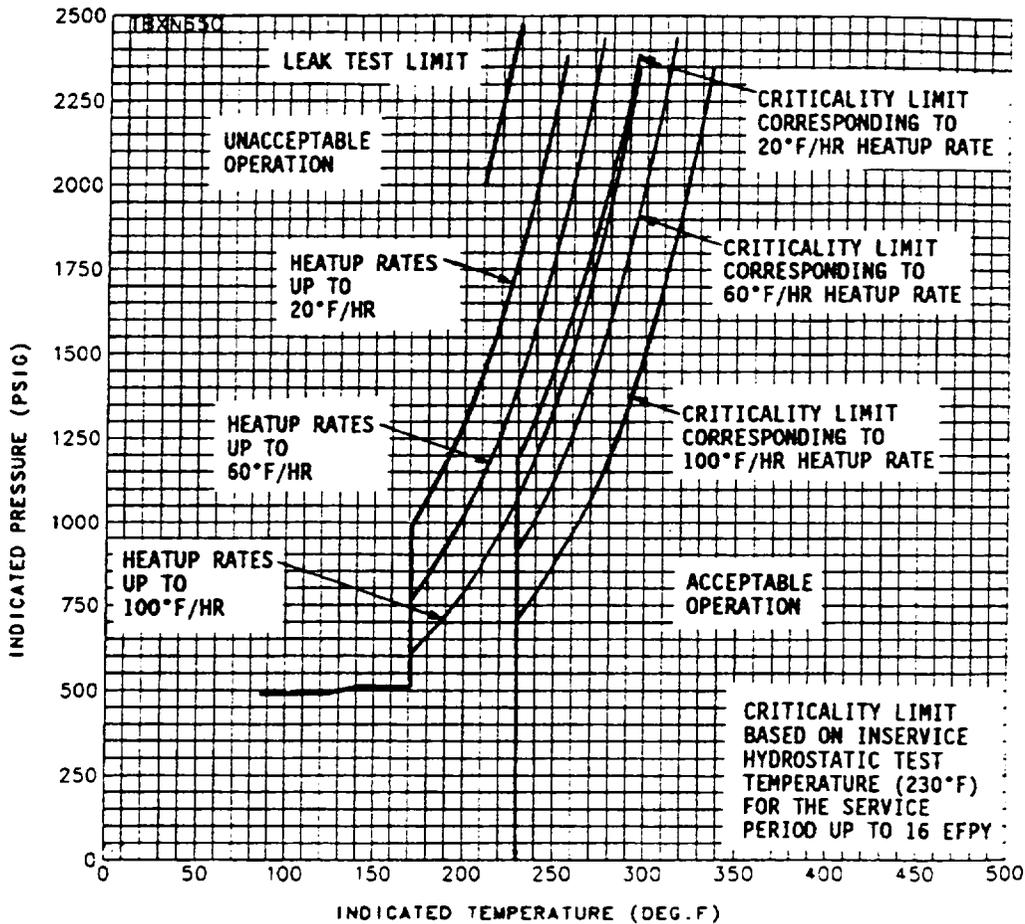


Figure 2-1

RCS Heatup Limitations - Applicable Up To 16 EFPY

Pressure and Temperature Limits Report for CPSES Unit 1
(Applicable Up To 16 EFPY)

MATERIAL PROPERTY BASIS

CONTROLLING MATERIAL: LOWER SHELL PLATE R1108-1

INITIAL RT_{NOT} : 0°F
ART AT 16 EFPY: 1/4T : 84°F
3/4T : 69°F

APPLICABLE FOR COOLDOWN RATES UP TO 100°F/HR FOR THE SERVICE PERIOD UP TO 16 EFPY. CONTAINS MARGINS OF 10°F AND 110 PSIG FOR POSSIBLE INSTRUMENTATION ERRORS.

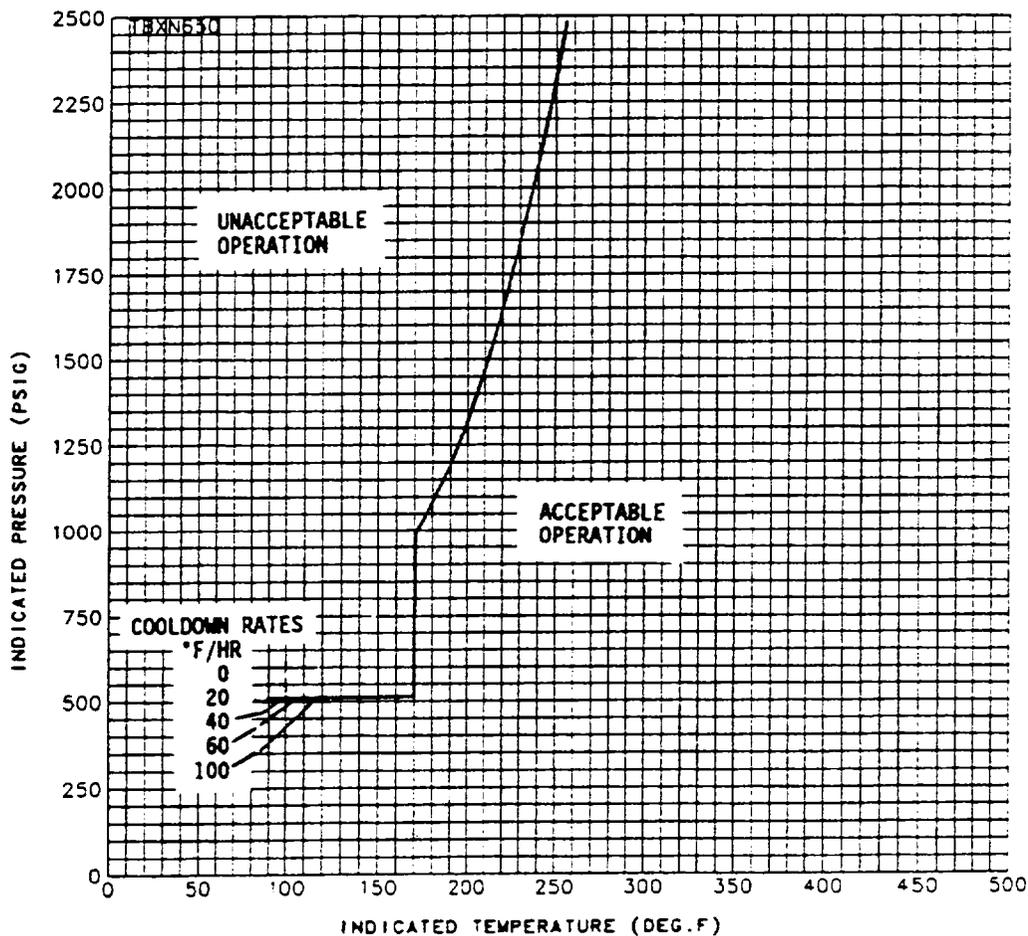


Figure 2-2

RCS Cooldown Limitations - Applicable Up To 16 EFPY

Pressure and Temperature Limits Report for CPSES Unit 1
(Applicable Up To 16 EFPY)

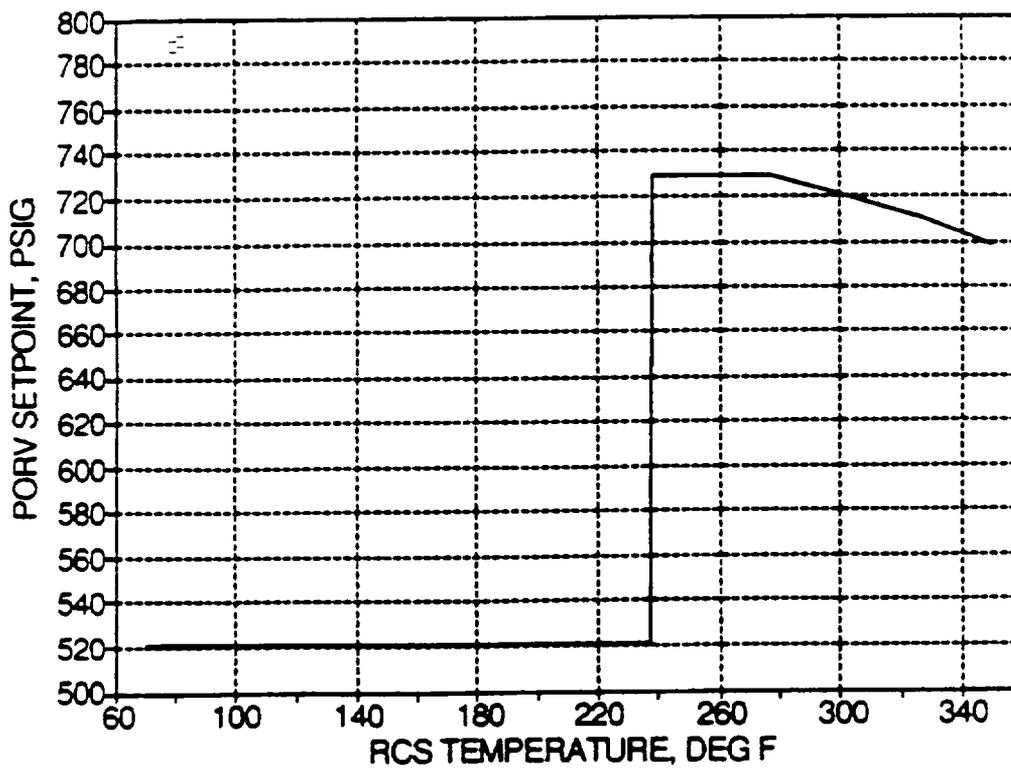


Figure 2-3

PORV Setpoints for Overpressure Mitigation - Applicable Up To 16 EFPY

Pressure and Temperature Limits Report for CPSES Unit 1
(Applicable Up To 16 EFPY)

3.0 REFERENCES

1. "Code of Federal Regulations, 10 CFR 50, Appendix G, "Fracture Toughness Requirements," U.S. Nuclear Regulatory Commission, Washington, D.C.
2. "Code of Federal Regulations, 10 CFR 50, Appendix H, "Reactor Vessel Material Surveillance Program Requirements," U.S. Nuclear Regulatory Commission, Washington, D.C.
3. Regulatory Guide 1.99, Revision 2, "Radiation Embrittlement of Reactor Vessel Materials," U.S. Nuclear Regulatory Commission, Washington, D.C., May 1988.
4. Branch Technical Position MTEB 5-2, "Fracture Toughness Requirements," NUREG-0800 Standard Review Plan 5.3.2, Pressure-Temperature Limits, July 1981, Rev. 1.
5. ASME Boiler and Pressure Vessel Code, Section III, Division 1 - Appendices, "Rules for Construction of Nuclear Power Plant Components, Appendix G, Protection Against Nonductile Failure," pp. 558-563, 1986 Edition, American Society of Mechanical Engineers, New York, 1986.
6. Branch Technical Position RSB 5-2, "Overpressurization Protection of Pressurized Water Reactors While Operating at Low Temperatures," NUREG-0800 Standard Review Plan 5.2.2, Overpressure Protection, November 1988, Rev. 2.

Pressure and Temperature Limits Report for CPSES Unit 1
(Applicable Up To 16 EFPY)

7. "Procedure for Developing Heatup and Cooldown Curves,"
Westinghouse Electric Corporation, Generation Technology Systems
Division Procedure GTSD-A-1.12 (Rev. 0), July 13, 1988.
8. "Comanche Peak Steam Electric Station Unit Numbers 1 & 2, Heatup
and Cooldown Curves Using 110 psig and 10°F Margins for
Instrument Error," Westinghouse Letter WPT-14868, October 12,
1992.
9. "Setpoint Program Determination for the Westinghouse Overpressure
Mitigation System in Comanche Peak Units 1 and 2," Westinghouse
Letter Report transmitted via Letter WPT-14228, January 3, 1992.
10. "Results of Review of Comanche Peak Cold Overpressure Mitigation
System Nonconservatism," Westinghouse Letter Report transmitted
via Letter WPT-14881, September 2, 1992.
11. ASTM E 185-70, "Standard Recommended Practice for Surveillance
Tests for Nuclear Reactor Vessels."
12. ASTM E 185-82, "Standard Practice for Conducting Surveillance
Tests for Light-Water Cooled Nuclear Power Reactor Vessels, E706
(IF)."
13. "Analysis of Capsule U from the Texas Utilities Electric Company
Comanche Peak Unit No. 1 Reactor Vessel Radiation Surveillance
Program," Westinghouse Report WCAP-13422, July 1992.
14. "Analysis of Capsule Y from the TU Electric Company Comanche Peak
Unit 1 Reactor Vessel Radiation Surveillance Program,"

Pressure and Temperature Limits Report for CPSES Unit 1
(Applicable Up To 16 EFPY)

Westinghouse Report WCAP-15144, January, 1999.

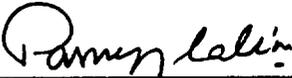
15. "Comanche Peak Steam Electric Station, Units 1 and 2 - Request to Revise Reactor Pressure Vessel Surveillance Program Capsule Withdrawal Schedule," Letter from Robert A. Gramm (NRC) to C. Lance Terry (TXU), August 9, 2000.

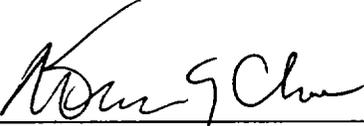
CPSSES UNIT 2

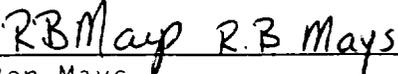
PRESSURE AND TEMPERATURE LIMITS REPORT

(APPLICABLE UP TO 16 EFPY)

September 2000

Prepared:  Date: 9/18/00
Parvez Salim
Safety Analysis

Approved:  Date: 9/18/00
Whee G. Choe
Safety Analysis Manager

Approved:  Date: 9-19-00
Ben Mays
Technical Programs Manager

DISCLAIMER

The information contained in this report was prepared for the specific requirement of TXU Electric, and may not be appropriate for use in situations other than those for which it was specifically prepared. TXU Electric PROVIDES NO WARRANTY HEREUNDER, EXPRESSED OR IMPLIED, OR STATUTORY, OF ANY KIND OR NATURE WHATSOEVER, REGARDING THIS REPORT OR ITS USE, INCLUDING BUT NOT LIMITED TO ANY WARRANTIES ON MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

By making this report available, TXU Electric does not authorize its use by others, and any such use is forbidden except with the prior written approval of TXU Electric. Any such written approval shall itself be deemed to incorporate the disclaimers of liability and disclaimers of warranties provided herein. In no event shall TXU Electric have any liability for any incidental or consequential damages of any type in connection with the use, authorized or unauthorized, of this report or of the information in it.

Pressure and Temperature Limits Report for CPSES Unit 2
(Applicable Up To 16 EFPY)

TABLE OF CONTENTS

DISCLAIMER	ii
TABLE OF CONTENTS	iii
LIST OF FIGURES	iv
LIST OF TABLES	v

<u>SECTION</u>	<u>PAGE</u>
1.0 INTRODUCTION	1
2.0 OPERATING LIMITS	2
2.1 RCS Temperature Rate-of-Change Limits (LCO 3.4.3)	4
2.2 P/T Limits for Heatup, Cooldown, Inservice Leak & Hydrostatic Testing, and Criticality (LCO 3.4.3)	4
2.3 LTOP System Setpoints (LCO 3.4.12)	4
2.4 Reactor Vessel Material Surveillance Program . .	5
3.0 REFERENCES	9

Pressure and Temperature Limits Report for CPSES Unit 2
(Applicable Up To 16 EFPY)

LIST OF FIGURES

<u>FIGURE</u>		<u>PAGE</u>
2-1	RCS Heatup Limitations - Applicable Up To 16 EFPY .	6
2-2	RCS Cooldown Limitations - Applicable Up To 16 EFPY	7
2-3	PORV Setpoints for Overpressure Mitigation - Applicable Up To 16 EFPY	8

Pressure and Temperature Limits Report for CPSES Unit 2
(Applicable Up To 16 EFPY)

LIST OF TABLES

<u>TABLE</u>		<u>PAGE</u>
2-1	Reactor Vessel Material Surveillance Program - Withdrawal Schedule	5

=

Pressure and Temperature Limits Report for CPSES Unit 2
(Applicable Up To 16 EFPY)

2.0 OPERATING LIMITS

RCS P/T Limits

The RCS P/T limits presented in this report consist of the RCS (except the pressurizer) temperature rate-of-change limits and P/T limits during heatup, cooldown, inservice leak & hydrostatic testing, and criticality. The P/T limits for CPSES Unit 2 are based on the Westinghouse procedure outlined in Reference 7.

Appendix G of 10 CFR Part 50 [1] establishes specific fracture toughness requirements for ferritic materials in the Reactor Coolant Pressure Boundary (RCPB) in light water nuclear power reactors. An adequate margin to brittle failure during normal operation, anticipated operational occurrences, and system hydrostatic tests is also required by this reference. Furthermore, Reference 1 mandates the use of Appendix G, Section III of the American Society of Mechanical Engineers (ASME) Code [5] to establish P/T limits.

The RCS P/T limits for CPSES Unit 2 are presented in Reference 8.

LTOP System

The LTOP System acts as a backup to the reactor operators to mitigate RCS pressurization transients at low temperatures so the integrity of RCPB is not compromised by violating the pressure and temperature limits of Appendix G of 10 CFR 50 [1]. The reactor vessel is the limiting RCPB component for demonstrating such protection. The LTOP system provides the maximum allowable actuation logic setpoints for the Power Operated Relief Valves (PORVs) for the existing RCS cold leg

Pressure and Temperature Limits Report for CPSES Unit 2
(Applicable Up To 16 EFPY)

temperature during cooldown, shutdown, and heatup to meet the Reference 1 requirements during the LTOP MODES.

The LTOP setpoints for CPSES Unit 2 is presented in Reference 9 (supplemented by Reference 10).

REACTOR VESSEL MATERIAL SURVEILLANCE PROGRAM

The reduction in toughness that results from neutron radiation is measured as an increase in the Nil Ductility Reference Temperature (RT_{NDT}) and reduction of the upper-shelf energy of reactor vessel beltline materials, including welds. At CPSES, these quantities were predicted at 16 EFPY using the methods of Regulatory Guide 1.99, Revision 2 [3]. The predictions showed that the materials in the Unit 1 and Unit 2 reactor vessels responded similarly to neutron irradiation but at 16 EFPY, the plate material in the Unit 1 beltline was most limiting. Forecast properties of the limiting material were used to establish P/T limits for heatup and cooldown curves and LTOP setpoints. For uniformity, the Unit 1 curves were adopted for Unit 2.

The actual neutron-induced shifts in the RT_{NDT} and the upper-shelf energy is periodically measured by withdrawing a surveillance capsule and evaluating the specimens of the limiting beltline material that it contains. The CPSES capsules were built under the ASTM E 185-70 Standard [11]. The evaluation of the irradiated reactor vessel material specimens is conducted in accordance with ASTM E 185-82 [12] and Appendix H of 10 CFR 50 [2]. The operating P/T limit curves are adjusted, as necessary, based on the evaluation findings and the recommendations of Regulatory Guide 1.99, Revision 2 [3].

Pressure and Temperature Limits Report for CPSES Unit 2
(Applicable Up To 16 EFPY)

The analysis of Capsule U from CPSES Unit 2 is presented in Reference 13.

2.1 RCS Temperature Rate-of-Change Limits (LCO 3.4.3)

2.1.1 Maximum Heatup Rate

The RCS heatup rate limit is 100°F in any 1-hour period.

2.1.2 Maximum Cooldown Rate

The RCS cooldown rate limit is 100°F in any 1-hour period.

2.1.3 Maximum Temperature Change During Inservice Leak and Hydrostatic Testing

During inservice leak and hydrostatic testing operations above the heatup and cooldown limit curves, the RCS temperature change limit is 10°F in any 1-hour period.

2.2 P/T Limits for Heatup, Cooldown, Inservice Leak & Hydrostatic Testing, and Criticality (LCO 3.4.3)

2.2.1 P/T Limits for Heatup, Inservice Leak & Hydrostatic Testing, and Criticality

The P/T limits for heatup, inservice leak & hydrostatic testing, and criticality are specified in Figure 2-1.

2.2.2 P/T Limits for Cooldown

The P/T limits for cooldown are specified in Figure 2-2.

2.3 LTOP System Setpoints (LCO 3.4.12)

The maximum allowable PORV pressure setpoints as a function of RCS

“

Pressure and Temperature Limits Report for CPSES Unit 2
(Applicable Up To 16 EFPY)

temperature are shown in Figure 2-3.

2.4 Reactor Vessel Material Surveillance Program

The vessel material surveillance schedule is provided in Table 2-1.
This schedule was approved by the NRC in Reference 14.

=- Table 2-1

Reactor Vessel Material Surveillance Program - Withdrawal Schedule

<u>CAPSULE NUMBER</u>	<u>VESSEL LOCATION</u>	<u>LEAD FACTOR</u>	<u>WITHDRAWAL TIME</u>
U	58.5°	4.10	0.9 EFPY*
X	238.5°	4.10	8 EFPY
W	121.5°	4.10	14 EFPY
Z	301.5°	4.10	Standby
V	61.0°	3.74	Standby
Y	241.0°	3.74	Standby

* Capsule withdrawn and analyzed

Pressure and Temperature Limits Report for CPSES Unit 2
(Applicable Up To 16 EFPY)

MATERIAL PROPERTY BASIS

CONTROLLING MATERIAL: INTERMEDIATE SHELL PLATE R3807-2
INITIAL RT_{NOT}: 10°F
ART AT 16 EFPY: 1/4T : 81°F
3/4T : 62°F

APPLICABLE FOR HEATUP RATES UP TO 100°F/HR FOR THE SERVICE PERIOD UP TO 16 EFPY. CONTAINS MARGINS OF 10°F AND 110 PSIG FOR POSSIBLE INSTRUMENTATION ERRORS.

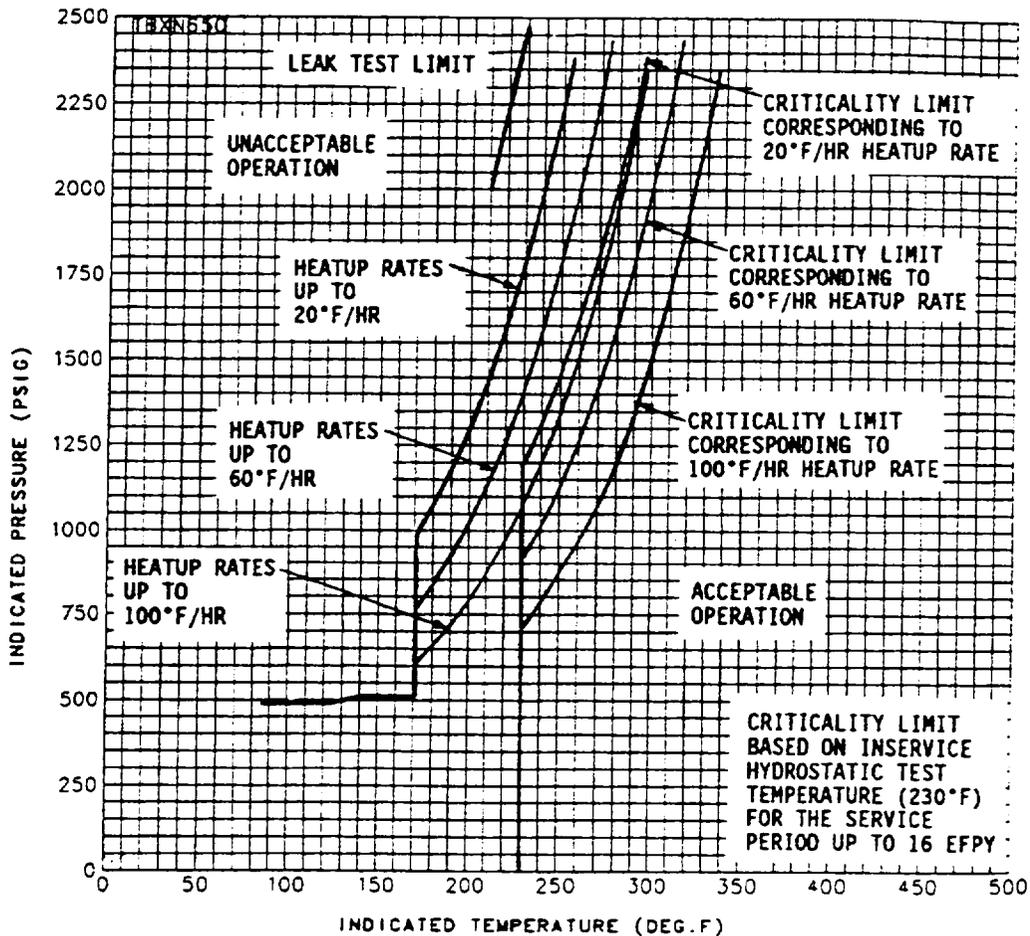


Figure 2-1

RCS Heatup Limitations - Applicable Up To 16 EFPY

Pressure and Temperature Limits Report for CPSES Unit 2
(Applicable Up To 16 EFPY)

MATERIAL PROPERTY BASIS

CONTROLLING MATERIAL: INTERMEDIATE SHELL PLATE R3807-2

INITIAL RT_{NDT}: 10°F

ART AT 16 EFPY: 1/4T : 81°F

3/4T : 62°F

APPLICABLE FOR COOLDOWN RATES UP TO 100°F/HR FOR THE SERVICE PERIOD UP TO 16 EFPY. CONTAINS MARGINS OF 10°F AND 110 PSIG FOR POSSIBLE INSTRUMENTATION ERRORS.

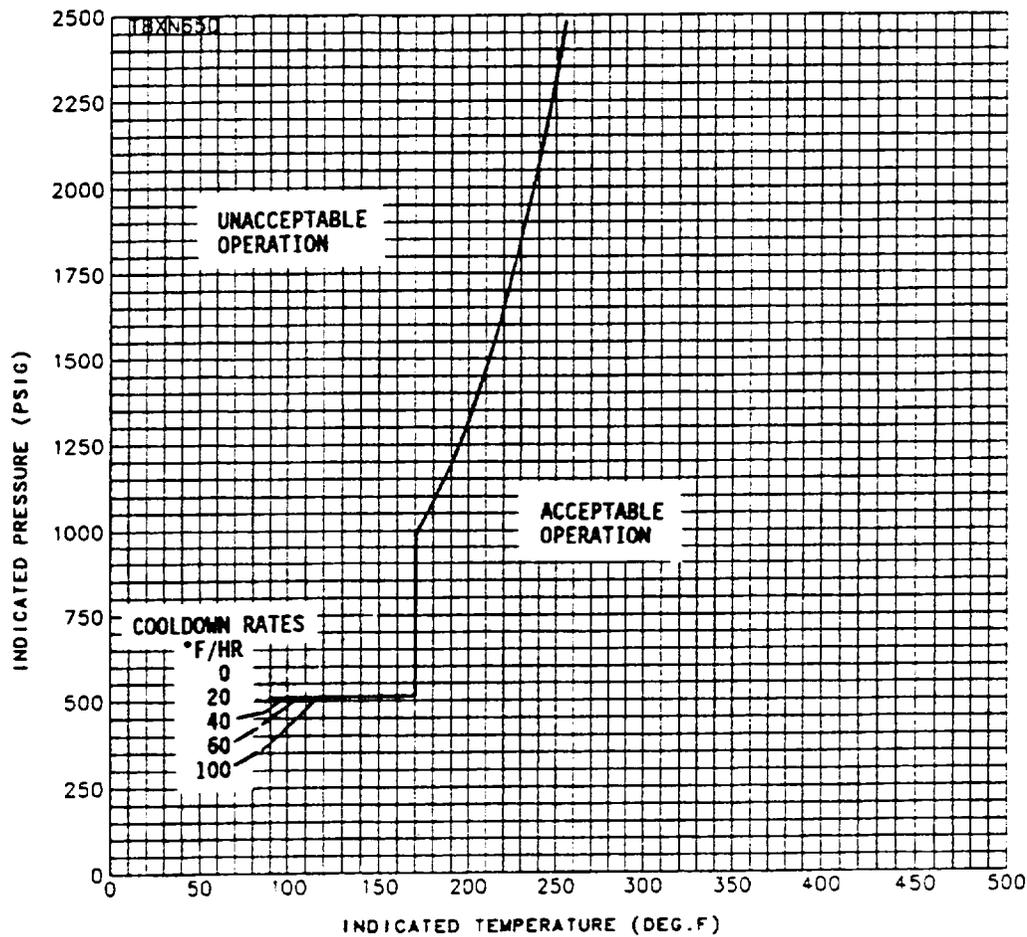


Figure 2-2

RCS Cooldown Limitations - Applicable Up To 16 EFPY

Pressure and Temperature Limits Report for CPSES Unit 2
(Applicable Up To 16 EFPY)

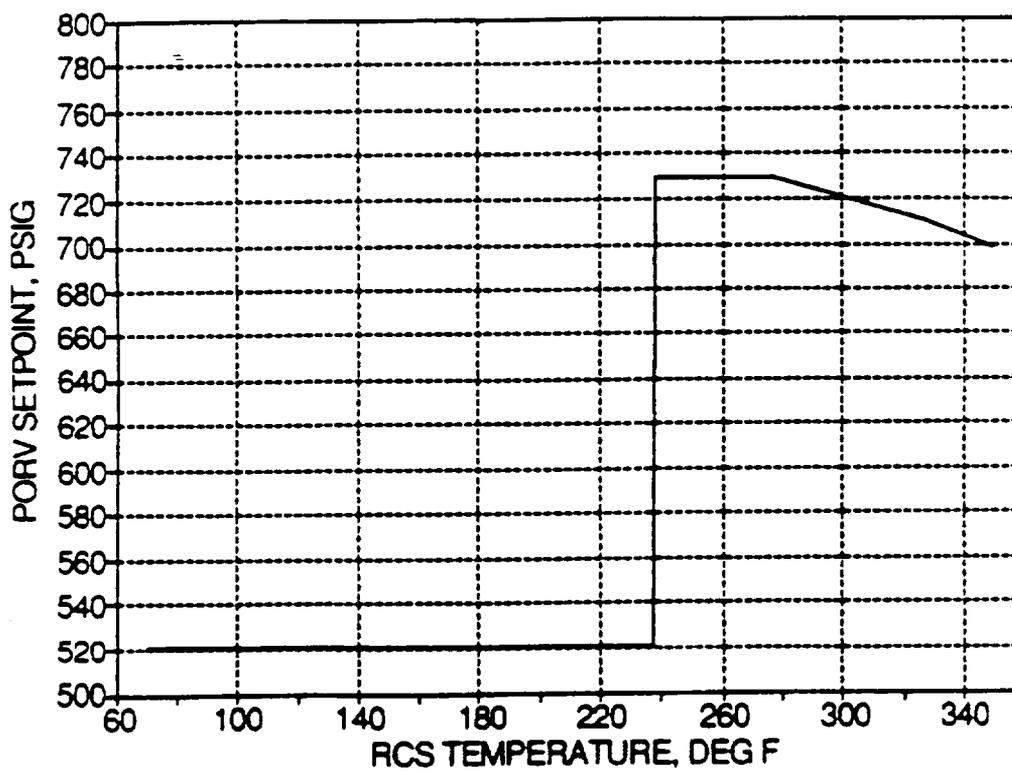


Figure 2-3

PORV Setpoints for Overpressure Mitigation - Applicable Up To 16 EFPY

Pressure and Temperature Limits Report for CPSES Unit 2
(Applicable Up To 16 EFPY)

3.0 REFERENCES

1. "Code of Federal Regulations, 10 CFR 50, Appendix G, "Fracture Toughness Requirements," U.S. Nuclear Regulatory Commission, Washington, D.C.
2. "Code of Federal Regulations, 10 CFR 50, Appendix H, "Reactor Vessel Material Surveillance Program Requirements," U.S. Nuclear Regulatory Commission, Washington, D.C.
3. Regulatory Guide 1.99, Revision 2, "Radiation Embrittlement of Reactor Vessel Materials," U.S. Nuclear Regulatory Commission, Washington, D.C., May 1988.
4. Branch Technical Position MTEB 5-2, "Fracture Toughness Requirements," NUREG-0800 Standard Review Plan 5.3.2, Pressure-Temperature Limits, July 1981, Rev. 1.
5. ASME Boiler and Pressure Vessel Code, Section III, Division 1 - Appendices, "Rules for Construction of Nuclear Power Plant Components, Appendix G, Protection Against Nonductile Failure," pp. 558-563, 1986 Edition, American Society of Mechanical Engineers, New York, 1986.
6. Branch Technical Position RSB 5-2, "Overpressurization Protection of Pressurized Water Reactors While Operating at Low Temperatures," NUREG-0800 Standard Review Plan 5.2.2, Overpressure Protection, November 1988, Rev. 2.

Pressure and Temperature Limits Report for CPSES Unit 2
(Applicable Up To 16 EFPY)

7. "Procedure for Developing Heatup and Cooldown Curves," Westinghouse Electric Corporation, Generation Technology Systems Division Procedure GTSD-A-1.12 (Rev. 0), July 13, 1988.
8. "Comanche Peak Steam Electric Station Unit Number 1 & 2, Heatup and Cooldown Curves Using 110 psig and 10°F Margins for Instrument Error," Westinghouse Letter WPT-14868, October 12, 1992.
9. "Setpoint Program Determination for the Westinghouse Overpressure Mitigation System in Comanche Peak Units 1 and 2," Westinghouse Letter Report transmitted via Letter WPT-14228, January 3, 1992.
10. "Results of Review of Comanche Peak Cold Overpressure Mitigation System Nonconservatism," Westinghouse Letter Report transmitted via Letter WPT-14881, September 2, 1992.
11. ASTM E 185-70, "Standard Recommended Practice for Surveillance Tests for Nuclear Reactor Vessels."
12. ASTM E 185-82, "Standard Practice for Conducting Surveillance Tests for Light-Water Cooled Nuclear Power Reactor Vessels, E706 (IF)."
13. "Analysis of Capsule U from the Texas Utilities Electric Company Comanche Peak Unit No. 2 Reactor Vessel Radiation Surveillance Program," Westinghouse Report WCAP-14315, July 1995.
14. "Comanche Peak Steam Electric Station, Units 1 and 2 - Request to Revise Reactor Pressure Vessel Surveillance Program Capsule Withdrawal Schedule," Letter from Robert A. Gramm (NRC) to C.

..

Pressure and Temperature Limits Report for CPSES Unit 2
(Applicable Up To 16 EFPY)

Lance Terry (TXU), August 9, 2000.