

October 11, 2001

Mr. C. Lance Terry
Senior Vice President &
Principal Nuclear Officer
TXU Electric Company
Attn: Regulatory Affairs Department
P. O. Box 1002
Glen Rose, TX 76043

SUBJECT: COMANCHE PEAK STEAM ELECTRIC STATION (CPSES), UNIT 2 - FIRST
10-YEAR INTERVAL INSERVICE INSPECTION PROGRAM PLAN REQUEST
FOR RELIEF NOS. B-1, REVISION 1; B-5, REVISION 1; AND C-5
(TAC NO. MB1190)

Dear Mr. Terry:

By letter dated February 2, 2001, TXU Electric (the licensee) submitted Relief Request No. B-1, Revision 1; Relief Request No. B-5, Revision 1; and Relief Request No. C-5 concerning the first 10-year interval Inservice Inspection (ISI) Program Plan for Comanche Peak Steam Electric Station (CPSES), Unit 2. The licensee provided additional information in its letters dated June 22 and August 2, 2001.

With regard to the subject relief requests, the U.S. Nuclear Regulatory Commission staff concludes that the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (the Code) requirements are impractical for the subject welds and the examinations that have been performed, and the Code-required system pressure test performed on the subject welds each refueling outage provide reasonable assurance of structural integrity of the subject welds. Therefore, relief is granted pursuant to 10 CFR 50.55a(g)(6)(i) for the first 10-year ISI interval for CPSES, Unit 2. The staff has determined that granting relief is authorized by law; will not endanger life, property, or the common defense and security; and is otherwise in the public interest giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility.

Sincerely,

/RA/

David H. Jaffe, Senior Project Manager, Section 1
Project Directorate IV
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-446

Enclosure: Safety Evaluation

cc w/encl: See next page

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Docket No. 50-446
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cc w/encl: See next page

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***SE input

**See previous concurrence

*No legal objection

ACCESSION NO. ML012490192

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Comanche Peak Steam Electric Station

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May 1999

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

FIRST 10-YEAR INTERVAL INSERVICE INSPECTION PROGRAM PLAN

RELIEF REQUEST NOS. B-1, REVISION 1; B-5, REVISION 1; AND C-5

TXU ELECTRIC

COMANCHE PEAK STEAM ELECTRIC STATION, UNIT 2

DOCKET NUMBER 50-446

1.0 INTRODUCTION

Inservice inspection (ISI) of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code (Code) Class 1, 2, and 3 components is to be performed in accordance with Section XI of the ASME Code and applicable addenda, as required by 10 CFR 50.55a(g), except where specific written relief has been granted by the U.S. Nuclear Regulatory Commission (NRC) pursuant to 10 CFR 50.55a(g)(6)(i). Pursuant to 10 CFR 50.55a(a)(3), alternatives to the requirements of paragraph (g) may be used, when authorized by the NRC, if the licensee demonstrates that: (i) the proposed alternatives would provide an acceptable level of quality and safety, or (ii) compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety.

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2, and 3 components (including supports) shall meet the requirements, except the design and access provisions, and the pre-service examination requirements, set forth in ASME Code, Section XI, "Rules for Inservice Inspection (ISI) of Nuclear Power Plant Components," to the extent practical within the limitations of design, geometry, and materials of construction of the components. The regulations require that inservice examination of components and system pressure tests, conducted during the first 10-year interval and subsequent intervals, comply with the requirements in the latest edition and addenda of Section XI of the ASME Code, incorporated by reference in 10 CFR 50.55a(b), 12 months prior to the start of the 120-month interval, subject to the limitations and modifications listed therein. The Code of record for the Comanche Peak Steam Electric Station (CPSES), Unit 2, first 10-year ISI interval is the 1986 Edition of the ASME Code.

2.0 EVALUATION

The NRC staff has reviewed the information concerning the first 10-year ISI Program Request for Relief Nos. B-1, Revision 1; B-5, Revision 1; and C-5 for CPSES, Unit 2, in TXU Electric's (the licensee) letter dated February 2, 2001, as supplemented by letters dated June 22 and August 2, 2001.

The information provided by the licensee in support of the request for relief from Code requirements has been evaluated and the basis for disposition is documented below.

2.1 Request for Relief No. B-1, Revision 1, Category B-A, Items B1.40 and B1.21
Reactor Vessel Closure Head to Flange Weld and Reactor Vessel Closure Head Ring to
Disc Weld

Code Requirement:

1986 Edition of ASME Code, Section XI, no addenda, Examination Category B-A, Items B1.40 and B1.21 require complete ultrasonic examination of the weld length, as described in Table IWB-2500- 1.

System/Component(s) for Which Relief is Requested:

TCX-1-1300-1 - Reactor Vessel Closure Head to Flange Weld

TCX-1-1300-2 - Reactor Vessel Closure Head Ring to Disc Weld

Licensee's Code Relief Request (as stated):

Pursuant to the requirements of 10 CFR 50.55a(g)(5)(iii), relief is requested from performing the volumetric examination for 100% of the weld lengths as described in Table IWB-2500-1. Examination Category B-A, Item numbers B1.40 and B1.21.

Licensee's Basis for Requesting Relief (as stated):

Interferences from the reactor head flange, shroud and lifting lugs preclude the complete ultrasonic examination of the volume required by Figures IWB-2500-3 and IWB-2500-5, as applicable.

Approximately 15% of the examination volume of weld TCX-1-1300-1 and 17% of the examination volume of weld TCX-1-1300-2 did not receive the full code required coverage during the first period examinations.

Approximately 15% of the examination volume of weld TCX-1-1300-1 and 17% of the examination volume of weld TCX-1-1300-2 did not receive the full code required coverage during the second period examinations.

Best effort examinations were performed. Full circumferential scan coverage was obtained for both welds. Axial scan coverage was achieved in one beam path direction with two different beam angles for 99% of the examination volume of TCX-1-1300-1 and for 97% of the examination volume of TCX-1-1300-2.

See pages 3 through 9 for weld locations and surface configurations.

There were no recordable indications identified by the best effort volumetric examination or by the required surface examination performed on TCX-1-1300-1.

Licensee's Justification for Granting Relief (as stated):

The subject welds were examined to the maximum extent possible (approximately 90% and 97% of examination completed in all cases) and yielded no indications. Based on the high percentage of the examination volume completed, and the lack of any reportable indications, there is a high level of confidence in the continued structural

integrity of the welds. There is no anticipated impact upon the overall plant quality and safety, and the health and safety of the public should not be jeopardized by the granting of relief.

Licensee's Proposed Alternative Examination (as stated):

No alternative examinations are proposed in lieu of the ultrasonic examination conducted for the subject welds.

Evaluation:

The Code requires 100% ultrasonic examination of the weld length of the Reactor Vessel Closure Head to Flange and Reactor Vessel Closure Head Ring to Disc Welds. The licensee noted that interferences from the reactor head flange, shroud, and lifting lugs preclude the complete ultrasonic examination of the subject welds.

The staff determined that Code requirements are impractical and to meet the Code requirements, design modifications would be necessary to provide access for examination. Imposition of the Code requirements would result in an undue burden on the licensee.

The licensee has examined a significant portion of the subject weld, obtaining approximately 85% and 83% of the required volumetric examination coverage of the subject welds. In addition, the licensee, using 45° and 60° transducers in at least one direction, obtained 99% and 97% for welds TCX-1-1300-1 and TCX-1-1300-2, respectively. Furthermore, the licensee found no recordable indications by its best effort volumetric examination or by the required surface examination performed on TCX-1-1300-1. Based on the licensee's volumetric examination which has been performed, the Code-required surface examination for weld TCX-1-1300-1, and the Code-required VT-2 visual examination conducted during the system leakage test each refueling outage, reasonable assurance of structural integrity of the subject components has been provided; therefore, relief is granted pursuant to 10 CFR 50.55a(g)(6)(i).

2.2 Request for Relief No. B-5, Revision 1, Category B-B, Item B2.40
Steam Generator Tubesheet-to-Channel Head Welds

Code Requirement:

1986 edition of ASME Code, Section XI, no addenda, Table IWB-2500-1, Examination Category B-B, Item No. B2.40 requires complete ultrasonic examinations of the volume defined by Figure IWB-2500-1.

(As stated by licensee)

Note: The CPSES ISI Plan requires different steam generators to be examined during each inspection period. A relief request revision is processed to document the specific limitations encountered during the examination of each of the steam generators.

System/Component(s) for Which Relief is Requested:

Steam generator tubesheet-to-channel head welds TCX-1-3100-2-1 and TCX-1-3100-1-1.

Licensee's Code Relief Request (as stated):

Pursuant to the requirements of 10 CFR 50.55a(g)(5)(iii), relief is requested from performing complete ultrasonic examinations of the volume defined by Figure IWB-2500-1.

Licensee's Basis for Requesting Relief (as stated):

Interferences from the steam generator tubesheet flange (or support collar) configuration and from welded insulation support pads preclude the complete ultrasonic examination of the volume required by Figure IWB-2500-6.

Approximately 31% of the examination volume of weld TCX-1-3100-2-1 did not receive the full code required coverage. See pages 2 through 5 for weld location and examination area configurations.

Approximately 31% of the examination volume of weld TCX-1-3100-1-1 did not receive the full code required examination coverage. Refer to pages 6 through 10 for weld location and examination area configurations.

There were no recordable indications identified by the volumetric examination performed on the accessible portions of the weld.

Licensee's Justification for Granting Relief (as stated):

The subject welds were examined to the maximum extent possible and yielded no indications. Based on the high percentage of the examination volume completed, and the lack of any reportable indications, there is a high level of confidence in the continued structural integrity of the welds. There is no anticipated impact upon the overall plant quality and safety, and the health and safety of the public should not be jeopardized by the granting of relief.

Licensee's Proposed Alternative Examination (as stated):

No alternate examinations are proposed in lieu of the ultrasonic examinations conducted for the subject welds.

Evaluation:

The Code requires 100% ultrasonic examination of the weld length of the steam generator tubesheet-to-channel head welds TCX-1-3100-2-1 and TCX-1-3100-1-1. Interferences from the steam generator tubesheet flange or support collar configuration and from welded insulation support pads preclude the complete ultrasonic examination of the volume required by Figure IWB-2500-6.

The NRC staff determined that Code requirements are impractical and to meet the Code requirements, design modifications would be necessary to provide access for examination. Imposition of the Code requirements would result in an undue burden on the licensee.

The licensee has examined a significant portion of the subject welds, obtaining approximately 68% of the required volumetric examination coverage of welds TCX-1-3100-2-1 and TCX-1-3100-1-1. Furthermore, the licensee found no recordable indications by its best effort volumetric examination of the welds. Based on the

licensee's volumetric examination which has been performed and the Code-required VT-2 visual examination conducted during the system leakage test each refueling outage, reasonable assurance of structural integrity of the subject components has been provided; therefore, relief is granted pursuant to 10 CFR 50.55a(g)(6)(i).

2.3 Request for Relief No. C-5 , Category C-F-1, Item C5.11
Containment Spray Pipe to Valve and Pipe to Nozzle Welds

Code Requirement:

1986 edition of ASME Code, Section XI, no addenda, Table IWB-2500-1, Examination Category C-F-1, Item No. C5.11 requires complete ultrasonic examinations.

System/Component(s) for Which Relief is Requested:

Containment Spray
TCX-2-2577-12 pipe to valve
TCX-2-2577-20 pipe to valve
TCX-2-2578-35 pipe to nozzle

Licensee's Code Relief Request (as stated):

Pursuant to the requirements of 10 CFR 50.55a(g)(5)(iii), relief is requested from performing complete ultrasonic examinations of the volume defined in Table IWB-2500-1, Examination Category C-F-1, Item No. C5.11.

Licensee's Basis for Requesting Relief (as stated):

Complete examination of the volume defined Table IWB-2500-1 is impractical for the subject welds because of the geometrics of the examination volume for these welds.

The specific examination area geometry of the pipe to valve welds for TCX-2-2577-12 and TCX-2-2577-20 and the pipe to nozzle weld for TCX-2-2579-35 precludes the complete ultrasonic examination of the volume required by Figure IWC-2500-7. Approximately 10% of the exam volume for each weld of TCX-2-2577-12, TCX-2-2577-20, and TCX-2-2578-35 did not receive the full code required coverage.

Best effort examinations consisting of two separate base metal angle shear and longitudinal waves were performed. Full circumferential scan coverage was obtained for both welds. Axial scan coverage was achieved in at least 1 beam path direction with two beam angles (45 and 70 degrees) for the entire exam volume of both welds. (Refer to pages 3 through 8).

There were no recordable indications identified by the best effort volumetric exam or by the required surface exam performed.

Licensee's Justification for Granting Relief (as stated):

The subject welds were examined to the maximum extent possible and yielded no indications. Based on the high percentage of the examination volume completed, and the lack of any reportable indications, there is a high level of confidence in the continued structural integrity of the welds. There is no anticipated impact upon the overall plant quality and safety, and the health and safety of the public should not be jeopardized by the granting of relief.

Licensee's Proposed Alternative Examination (as stated):

No alternate examinations are proposed in lieu of the ultrasonic examinations conducted for the subject welds.

Evaluation:

The Code requires 100% ultrasonic examination of the weld length of the Containment Spray pipe to valve and pipe to nozzle welds. The licensee noted that complete examination of the volume is impractical for the subject welds because of the geometrics of the examination volume for these welds.

From the drawings that the licensee provided, the NRC staff determined that Code requirements are impractical, because the curvature of the valve or nozzle side of the respective welds prevent the licensee from performing the Code-required examination. For the licensee to meet the Code requirements, design modifications to the subject components would be necessary to provide access for examination. Imposition of the Code requirements would result in an undue burden on the licensee.

The licensee has examined a significant portion of the subject welds, obtaining approximately 90% volumetric examination coverage of welds TCX-2-2577-12, TCX-2-2577-20, and TCX-2-2578-35. Furthermore, the licensee found no recordable indications by its best effort volumetric examination or by the required surface examination performed on the subject welds. Based on the licensee's volumetric examination which has been performed, Code-required surface examinations, and the Code-required VT-2 visual examination conducted during the system leakage test each refueling outage, reasonable assurance of structural integrity of the subject components has been provided; therefore, relief is granted pursuant to 10 CFR 50.55a(g)(6)(i).

3.0 CONCLUSION

The NRC staff concludes that the Code requirements are impractical for the subject welds, and the examinations that have been performed and the Code-required system pressure test performed on the subject welds each refueling outage provide reasonable assurance of structural integrity of the subject welds; therefore, relief is granted pursuant to 10 CFR 50.55a(g)(6)(i) for the first 10-year ISI interval of CPSES, Unit 2. The NRC staff has determined that granting relief is authorized by law and will not endanger life or property, or the common defense and security, and is otherwise in the public interest giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility.

Principal Contributor: T. McLellan

Date: October 11, 2001