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Ref: 10 CFR 50.55a (a)(3)(i)

CPSES-200600994
Log # TXX-06053
File # 10010

May 18, 2006

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555

SUBJECT: COMANCHE PEAK STEAM ELECTRIC STATION (CPSES)
DOCKET NO. 50-445
RELIEF REQUEST A-7 TO THE UNIT 1 INSERVICE INSPECTION (ISI) PROGRAM PLAN FROM THE 1998 EDITION OF ASME CODE, SECTION XI, THROUGH 2000 ADDENDA (INTERVAL START DATE - AUGUST 13, 2000, SECOND INTERVAL)

Gentlemen:

Pursuant to 10 CFR 50.55a (a)(3)(i), TXU Generation Company LP (hereafter TXU Power) hereby requests NRC approval of the following relief request for the second interval of the Unit 1 Inservice Inspection (ISI) Program Plan. The details of the request are attached.

TXU Power proposes as an alternative to the technique requirements of the construction codes that the performance of the radiographic examination be in accordance with American Society of Mechanical Engineers (ASME), Boiler and Pressure Vessel Code (BPVC), Code Case N-659-1 "Use of Ultrasonic Examination in Lieu of Radiography for Weld Examination Section III, Division 1."

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TXU Power desires to utilize ultrasonic (UT) examination in lieu of radiography during the 2007 refueling outage for Comanche Peak Steam Electric Station Unit 1. During this outage, the following major components will be replaced:

Four (4) steam generators
Reactor vessel closure head

These replacements require that Class 1 and Class 2 piping be severed. They will be restored in accordance with the requirements of the ASME BPVC Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components" (ASME Section XI, 1998 Edition through 2000 Addenda)

In each case, the ASME Section XI Code requires that construction codes be selected to control the preparation, welding, examination, testing, and acceptance of the new components into plant systems.

The extent of examination (and re-examination), and the acceptance of the results will be governed by the applicable construction code; also governed by these codes is the actual technique for performance of the radiographic examination.

TXU Power is confident that ultrasonic examination will provide the acceptable level of quality and safety required by 10 CFR 50.55a (a)(3)(i). This communication contains no new licensing basis commitments regarding Comanche Peak Steam Electric Station Unit 1.

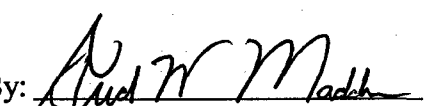
TXU Power requests approval of this relief request by September 30, 2006. The approval date was selected to allow time to support qualification and training of personnel, development of qualification blocks, and procedure revisions required prior to the 12th refueling outage for Unit 1, scheduled to start in February of 2007.

Sincerely,

TXU Generation Company LP

By: TXU Generation Management Company LLC
Its General Partner

Mike Blevins

By: 
Fred W. Madden
Director, Regulatory Affairs

JCH
Attachment

c - B. S. Mallet, Region IV
M. C. Thadani, NRR
Resident Inspectors, CPSES
T. Parks, Chief Inspector, TDLR

TXU Power
Comanche Peak Steam Electric Station (CPSES), Unit 1
Second 10-Year Interval
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Proposed Alternative in Accordance with 10 CFR 50.55a (a)(3)(i)
Alternative Provides Acceptable Level of Quality and Safety

I. ASME Code Components Affected:

This request for relief is applicable, in part, to the following Class 1 and Class 2 components in the following systems:

Component	Class	Category
Reactor Coolant Piping System	1	B-J
Main Steam Piping System	2	C-F-2
Feedwater Piping System	2	C-F-2
Auxiliary Feedwater Piping System	2	C-F-2

This request for relief is applicable to the above identified piping systems at connections between (1) the safe ends of the steam generators and (2) pipe-to-pipe connections or pipe-to-elbow connections within each system.

II. Applicable Code Edition and Addenda:

The original construction codes for the identified components are as follows:

Component	Construction Code
Shop fabrication of Reactor Coolant System (RCS) Loop Piping	ASME Section III, 1977 Edition through the Summer 1979 Addenda
Installation of Reactor Coolant Piping	ASME Section III, 1974 Edition through the Summer 1975 Addenda
Class 1 piping (Non-RCS) and Class 2 piping	ASME Section III, 1974 Edition through the Summer 1974 Addenda
Class 1 and Class 2 Piping Systems	ASME Section XI, 1998 Edition through the 2000 Addenda

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III. Applicable Code Requirement:

TXU Power will replace the Comanche Peak Steam Electric Station (CPSES) Unit 1 steam generators and reactor vessel closure head during the 2007 refueling outage.

ASME Section XI, 1998 Edition through the 2000 Addenda, Subsection IWA-4150 requires that the Owner (TXU Power) identify a construction code for the installation of these components. The construction codes require, in part, radiographic examination of certain piping welds in the reactor coolant system and certain welds in the other Class 1 and 2 piping systems. This is a requirement to use film radiographic technology (RT).

TXU Power is requesting relief from the current CPSES Code of Record and invoke ASME Code Case N-659-1 "Use of Ultrasonic Examination in Lieu of Radiography for Weld Examination Section III, Division 1."

IV. Reason for Request:

TXU Power desires to utilize ultrasonic examination in lieu of radiography during the 2007 refueling outage for Comanche Peak Steam Electric Station (CPSES) Unit 1. During this outage, the following major components will be replaced:

Four (4) steam generators
Reactor vessel closure head

These replacements require that Class 1 and Class 2 piping be severed. They will be restored in accordance with the requirements of the American Society of Mechanical Engineers (ASME), Boiler and Pressure Vessel Code (BPVC) Section XI, "Rules for Inservice Inspection of Nuclear Power Plant Components" (ASME Section XI, 1998 Edition through 2000 Addenda)

Radiograph examination is an intrusive process that challenges the radiological controls of the plant with another radiation source. This results in additional personnel exposure and adds cost to the accomplishment of work.

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The ASME Code, Section III, Subsection NB-5200 and NC-5200 , "Required Examination of Welds," require that circumferential welded joints in piping, pumps, and valves be examined using the radiographic (RT) method and either liquid penetrant or magnetic particle examination methods.

In addition to the effectiveness of the proposed alternative (discussed in the following sections of this request), TXU Power proposes to use a qualified UT method in lieu of the RT method specified in the ASME Code, Section III in order to remove the inherent hazards associated with industrial radiography. Based on the review of the anticipated joint configuration of the planned welds it has been determined that approximately 30 to 36 hours are required to do the radiographic examination for one weld. Since the performance of RT involves the use of highly radioactive isotopes, the personnel safety risk of inadvertent or accidental exposure and also the normal anticipated exposure associated with transporting, positioning and exposing a source for radiography is eliminated. Moreover, outage duration and costs will be reduced by allowing parallel path work to progress uninterrupted during examination of welds.

V. Proposed Alternative and Basis for Use:

The alternative involves ultrasonic and surface examinations of Class 1 and Class 2 repair replacement welds. The alternative examinations will be made to satisfy the construction code requirement for radiographic examination. This proposed alternative ultrasonic examination will ensure an adequate level of safety and quality and will provide adequate verification that the Class 1 and Class 2 welds are free of significant flaws that could affect structural integrity.

Prior to the use of the alternative examination, the effectiveness of the ultrasonic techniques will be demonstrated on a qualification block containing a weld with representative flaws.

The proposed alternative method will meet the requirements of ASME Section III Code Case N-659-1, "Use of Ultrasonic Examination in Lieu of Radiography for Weld Examination Section III, Division 1." TXU Power's strategy to meet all requirements of the code case is discussed below.

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(a) Code Case Requirement:

The ultrasonic examination area shall include 100% of the volume of the entire weld, plus 1/2 in. (13 mm) of each side of the welds. The ultrasonic examination area shall be accessible and scanned by angle beam examination in four directions, two directions perpendicular to the weld axis and two directions parallel to the weld axis. Where perpendicular scanning is limited on one side of the weld, a technique using the second leg of the V-path may be credited as access for the second perpendicular examination direction provided that the detection capability of that technique is included in the procedure demonstration described in (c) and (d) below.

TXU Power Strategy:

100% of the volume of the entire weld, plus 1/2 inch of each side of the welds will be examined during the ultrasonic inspection. The weld volume for the piping is accessible to be scanned by angle beam examination in two directions perpendicular to the weld axis and two directions parallel to the weld axis. Coverage and detection capability will be demonstrated on the qualification block.

(b) Code Case Requirement:

In accordance with (a) above the ultrasonic examination shall be performed in accordance with Section V, Article 5 up to and including the 2001 Edition or Article 4 for later edition and addenda. A straight beam and two angle beams having nominal angles of 45 degrees and 60 degrees should generally be used; however, other pairs of angle beams may be used provided the measured difference between the angles is at least 10 degrees. Alternatively, ultrasonic examination that includes a straight beam may be performed by a procedure qualified in accordance with the performance demonstration methodology of Section Xl, Appendix VI provided the entire volume of the weld examination is included in the demonstration.

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TXU Power Strategy:

The ultrasonic examination shall be performed in accordance with ASME Code, Section V, 2001 Edition, Article 5, using automated phase array equipment. The beam angles will include 0 degrees through 60 degrees longitudinal waves.

c) Code Case Requirement:

A written procedure shall be followed. The procedure shall be demonstrated to perform acceptably on a qualification block or specimen with both surface and subsurface flaws as described in (d) below.

TXU Power Strategy:

A procedure will be written and performed to demonstrate its success on the qualification block described in (d).

(d) Code Case Requirement:

The qualification block material shall conform to the requirements applicable to the calibration block. The material from which blocks are fabricated shall be one of the following: a nozzle dropout from the component; a component prolongation; or material of the same material specification, product form, and heat treatment condition as one of the materials joined. For piping, if material of the same product form and specification is not available, material of similar chemical analysis, tensile properties, and metallurgical structure may be used. Where two or more base material thicknesses are involved, the calibration block thickness shall be of a size sufficient to contain the entire examination path. The qualification block configuration shall contain a weld representative of the joint to be examined, including, for austenitic materials, the same welding process. The qualification blocks shall include at least two planar flaws in the weld, one surface, and one subsurface oriented parallel to the fusion line, no larger in the through-wall direction than the diameter of the applicable side-drilled hole in the calibration block shown in Fig. T-542.2.1 of Section V, Article 5, for Editions and Addenda through the 2001 Edition and T-434.2.1 of Article 4 for later Editions and Addenda and no longer than the shortest unacceptable elongated

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discontinuity length listed in NB-5330, NC- 5330, or ND-5330 for the thickness of the weld being examined. Where a Section XI, Appendix VIII, performance demonstration methodology is used, supplemental qualification to a previously approved procedure may be demonstrated through the use of a blind test with appropriate specimens that contain a minimum of three different construction-type and fabrication-type flaws distributed throughout the thickness of the specimen.

TXU Power Strategy:

The qualification block will conform to all material and weld requirements discussed above. The qualification block will include one surface crack and two subsurface lack of side-wall fusion flaws oriented parallel to the fusion line with dimensions meeting the specifications of ASME Code, Section V, 2001 Edition, Article 5, and ASME Code, Section III, latest Edition, NB-5330 and NC-5330.

(e) Code Case Requirement:

This Case shall not be applied to weld examination volumes that include cast products forms or corrosion-resistant-clad austenitic piping butt welds.

TXU Power Strategy:

The welds being examined will not include cast product forms or corrosion-resistant-clad austenitic piping butt welds.

(f) Code Case Requirement:

A documented examination plan shall be provided showing the transducer placement, movement, and component coverage that provides a standardized and repeatable methodology for weld acceptance. The examination plan shall also include ultrasonic beam angle used, beam directions with respect to weld centerline, and volume examined for each weld.

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TXU Power Strategy:

A documented examination plan containing the information requested above will be provided.

(g) Code Case Requirement:

The evaluation and acceptance criteria shall be in accordance with NB-5330, NC-5330, or ND-5330, as acceptable. Any flaws characterized as surface-connected cracks, lack of fusion, or lack of penetration may be evaluated by a supplemental surface examination (MT or PT) performed in accordance with NB-5000, NC-5000, or ND-5000, as applicable.

TXU Power Strategy:

The evaluation and acceptance criteria will be in accordance with NB-5330 and NC 5300, and any flaws characterized as surface-connected cracks, lack of fusion, or lack of penetration may be evaluated by a supplemental surface examination (MT or PT) performed in accordance with NB-5000 and NC-5000.

(h) Code Case Requirement:

For welds subject to in-service ultrasonic examination, the examination and evaluation shall also meet the requirements of the applicable Edition of Section Xl for pre-service examination.

TXU Power Strategy:

These welds are subject to a Section Xl volumetric pre-service or in-service examination, and shall be examined as such.

(i) Code Case Requirement:

The ultrasonic examination shall be performed using a device with an automated computer data acquisition system.

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TXU Power Strategy:

The UT examination will be performed using a device with an automated computer data acquisition system.

(j) Code Case Requirement:

Data shall be recorded in unprocessed form. A complete data set with no gating, filtering, or thresholding for response from examination volume in (a) shall be included in the data record.

TXU Power Strategy:

Data will be recorded in its raw form and fully documented when creating data records.

(k) Code Case Requirement:

Personnel who acquire and analyze UT data shall be qualified and trained using the same type of equipment as in (i), and demonstrate their capability to detect and characterize the flaws using the procedure as described in (c).

TXU Power Strategy:

UT Level II and Level III examiners will acquire the UT data, and a UT Level III will analyze the data. All participants will demonstrate their capability to detect and characterize the flaws using the procedure prior to inspections.

(l) Code Case Requirement:

Review and acceptance of the procedure by the Authorized Nuclear Inspector is required.

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TXU Power Strategy:

Review and acceptance of the procedure by the Authorized Nuclear Inspector will be achieved prior to beginning inspections.

(m) Code Case Requirement:

All other related requirements of the applicable subsection shall be met.

TXU Power Strategy:

Related requirements of the applicable subsection will be met.

(n) Code Case Requirement:

Flaws exceeding the acceptance criteria referenced in this Case shall be repaired, and the weld subsequently reexamined using the same ultrasonic examination procedure that detected the flaw.

TXU Power Strategy:

Flaws exceeding the acceptance criteria will be repaired and reexamined using the same ultrasonic examination procedure.

(o) Code Case Requirement:

This Case number shall be recorded on the Data Report.

TXU Power Strategy:

The Data Report will reference Code Case N-659-1.

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VI. Justification for Granting of Alternative:

Ultrasonic and radiographic examination methods are complimentary and are not directly comparable or equivalent. Depending on flaw type (i.e., volumetric or planar) and orientation, ultrasonic examination may be superior to radiography or vice versa. Radiography is most effective in detection of volumetric type flaws (i.e., slag and porosity) and detection of planar type flaws (i.e., lack of fusion and cracks) that are oriented in a plane parallel to the x-ray beam.

However, radiography is limited in detection of planar flaws not oriented parallel to the beam. In contrast, ultrasonic examination is effective in detection of planar type flaws that are not oriented in a plane parallel to the sound beam and less effective in detecting flaws in a plane parallel to the sound beam. Finally, ultrasonic examination is capable of detecting volumetric type flaws such as slag or porosity but is limited, compared to radiography, in ability to characterize volumetric flaws.

The proposed alternative ultrasonic examination requirements and provisions address the known limitations of the ultrasonic method to ensure both planar and volumetric flaws in all orientations are detected properly.

To overcome the limitations in detecting flaws in planes parallel to the sound beam, a straight beam, as well as two angle beams with a measured difference of at least 10 deg., must be scanned in two directions perpendicular and two directions parallel to the weld axis. Furthermore, to overcome the difficulties of characterizing volumetric flaws, if an indication is not characterized as volumetric, it will be characterized as a planar flaw and subjected to the acceptance criteria of NB-5330 and NC-5330. These acceptance criteria are the same for crack-type flaws detected by RT. By meeting the requirements of ASME Section III Code Case N-659-1, assurance is provided that planar flaws, regardless of orientation, will be detected and non-planar, construction flaws will be easier to discern from inhomogeneities. Additionally, EPRI Technical Report 1003545, "Alternative Volumetric Examination Methods: UT in Lieu of RT for Repair/Replacement Activity," states in part that "...the flaw types that affect the structural integrity the most are the ones most reliably detected with UT. The same cannot be said for RT examinations."

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In conclusion, given their intended use as described in this alternative request, ultrasonic methods are an acceptable substitute for radiography, and therefore are in accordance with 10 CFR 50.55a (a)(3)(i). A qualified UT method would provide results equivalent or superior to the RT method specified by the ASME Code, Section III, for detecting construction related flaws. NRC staff approval is requested based on the proposed alternative examination providing an acceptable level of quality and safety.

VII. Duration of Proposed Alternative:

This alternative will be applicable to ultrasonic examinations performed in lieu of radiography as part of the CPSES Unit 1 2007 Refueling Outage for steam generator replacement.

VIII. Precedents:

This proposed alternative is similar, but not identical, to a relief request submitted by Union Electric Company's Callaway Plant in a letter dated November 18, 2004 and approved by NRC letter dated May 19, 2005 (ADAMS Accession Number ML050760129).