



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

September 2, 2011

Mr. Rafael Flores
Senior Vice President and
Chief Nuclear Officer
Attention: Regulatory Affairs
Luminant Generation Company LLC
P.O. Box 1002
Glen Rose, TX 76043

SUBJECT: COMANCHE PEAK NUCLEAR POWER PLANT, UNIT 1 – APPROVAL OF
RELIEF REQUEST NOS. C-6 AND C-7 FOR THE SECOND 10-YEAR
INSERVICE INSPECTION INTERVAL (TAC NOS. ME5215 AND ME5216)

Dear Mr. Flores:

By letters dated December 15, 2010 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML103560593 and ML103560594), as supplemented by letter dated April 21, 2011 (ADAMS Accession No. ML11119A005), Luminant Generation Company LLC (the licensee) submitted requests for relief (C-6 and C-7) from the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI, requirements for weld examinations pursuant to paragraph 50.55a(g)(5)(iii) of Title 10 of the *Code of Federal Regulations* (10 CFR) for Comanche Peak Nuclear Power Plant (CPNPP), Unit 1.

The relief requests relate to the weld examinations for the excess letdown heat exchanger head circumferential weld TBX-2-1110-1 and the containment spray heat exchanger shell-to-flange weld TBX-2-1180-2, for the second 10-year inservice inspection (ISI) interval. Both of these weld examinations fall under the requirements of the 1998 Edition of the ASME Code with 2000 Addenda. The ASME Code, Section XI, Figure IWC-2500-1(a), requires a minimum volumetric examination of the weld volume extending one-half inch into the base metal on the vessel and flange sides of the circumferential weld. The licensee stated that the examination of the subject component welds during the second 10-year inspection interval was limited by the configuration of the flange design.

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed the subject requests and concludes, as set forth in the enclosed safety evaluation, that compliance with the ASME Code requirements with respect to the subject welds is impractical. An imposition of the ASME Code requirements would be a burden on the licensee. The weld examination coverages achieved by the licensee provide reasonable assurance of the structural integrity of the subject welds. Therefore, the licensee's requests for relief are granted pursuant to 10 CFR 50.55a(g)(6)(i) for the CPNPP, Unit 1, second 10-year ISI interval, which ended on August 12, 2010. The NRC staff has determined that granting relief pursuant to 10 CFR 50.55a(g)(6)(i) 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.

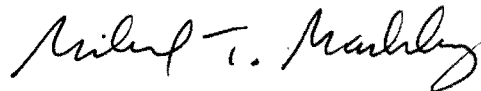
R. Flores

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All other requirements of the ASME Section XI requirements for which relief has not been specifically requested remain applicable, including a third-party review by the Authorized Nuclear Inservice Inspector.

If you have any questions, please contact Balwant K. Singal at 301-415-3016 or by e-mail at Balwant.Singal@nrc.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael T. Markley". The signature is fluid and cursive, with the first name "Michael" and last name "Markley" clearly distinguishable.

Michael T. Markley, Chief
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-445

Enclosure:
As stated

cc w/encl: Distribution via Listserv



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

REQUEST FOR RELIEF NOS. C-6 AND C-7

SECOND 10-YEAR INSERVICE INSPECTION INTERVAL PROGRAM

LUMINANT GENERATION COMPANY LLC

COMANCHE PEAK NUCLEAR POWER PLANT, UNIT 1

DOCKET NO. 50-445

1.0 INTRODUCTION

By letters dated December 15, 2010 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML103560593 and ML103560594), as supplemented by letter dated April 21, 2011 (ADAMS Accession No. ML11119A005), Luminant Generation Company LLC (the licensee) submitted requests for relief (C-6 and C-7) from the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI, requirements for weld examinations pursuant to paragraph 50.55a(g)(5)(iii) of Title 10 of the *Code of Federal Regulations* (10 CFR) for Comanche Peak Nuclear Power Plant (CPNPP), Unit 1. The relief requests (RRs) relate to the weld examinations for the excess letdown heat exchanger head circumferential weld TBX-2-1110-1 and the containment spray heat exchanger shell-to-flange weld TBX-2-1180-2, for the second 10-year inservice inspection (ISI) interval.

Both of these weld examinations fall under the requirements of the 1998 Edition of the ASME Code with 2000 Addenda. The ASME Code, Section XI, Figure IWC-2500-1(a), requires a minimum volumetric examination of the weld volume extending one-half inch into the base metal on the vessel and flange sides of the circumferential weld. The licensee stated that the examination of the subject component welds during the second 10-year ISI interval was limited by the configuration of the flange design. Approval of this request would allow the licensee to achieve less than the ASME Code-required examination coverage for the excess letdown heat exchanger head circumferential weld TBX-2-1110-1 and the containment spray heat exchanger shell-to-flange weld TBX-2-1180-2. The second 10-year ISI interval for CPNPP, Unit 1, began on August 13, 2000, and ended on August 12, 2010.

2.0 REGULATORY EVALUATION

Pursuant to 10 CFR 50.55a(g)(4), ASME Code Class 1, 2, and 3 components (including supports) must meet the requirements, except the design and access provisions and the preservice examination requirements, set forth in the ASME Code, Section XI, to the extent

Enclosure

practical within the limitations of design, geometry, and materials of construction of the components. The regulations require that ISI of components and system pressure tests conducted during the 10-year intervals be in compliance 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. The ASME Code of record for CPNPP, Unit 1, is the 1998 Edition of the ASME Code, Section XI with 2000 Addenda. ASME Code Case N-460, "Alternative Examination Coverage for Class 1 and Class 2 Welds, Section XI, Division 1," which has been approved in NRC Regulatory Guide 1.147, Revision 16, "Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1," October 2010 (ADAMS Accession No. ML101800536), allows that "a reduction in examination coverage on any Class 1 or Class 2 weld may be accepted provided that the reduction in coverage for that weld is less than 10%."

The regulations in 10 CFR 50.55a(g)(5)(iii) state that

If the licensee has determined that conformance with certain code requirements is impractical for its facility, the licensee shall notify the Commission and submit, as specified in [10 CFR] §50.4, information to support the determinations.

The regulations in 10 CFR 50.55a(g)(6)(i) state that

The Commission will evaluate determinations [submitted by the licensee] under paragraph (g)(5) of this section [10 CFR 50.55a] that code requirements are impractical. The Commission may grant such relief and may impose such alternative requirements as it determines are 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.

3.0 TECHNICAL EVALUATION

3.1 RR No. C-6 for Excess Letdown Heat Exchanger Head Circumferential Weld TBX-2-1110-1

3.1.1 ASME Code Requirement

The ASME Code, Section XI, Table IWC-2500-1, Item No. C1.20 component examination requires a volumetric examination. The extent of the examination is "essentially 100%" of the weld length. The weld length includes the material 0.5 inches to either side of the weld. ASME Code Case N-460 states, in part, that 90 percent coverage is adequate to meet the ASME Code requirement of "essentially 100%."

3.1.2 System/Component for Which Relief is Requested

Relief is requested for the examination of the excess letdown heat exchanger head circumferential weld TBX-2-1110-1, a C1.20 component.

3.1.3 ASME Code Requirement for Which Relief is Requested

Relief is requested from meeting the required 100 percent inspection coverage of the ASME Code requirements for these welds.

3.1.4 Licensee's Proposed Alternative Examination (as stated by the licensee)

The following alternatives are proposed in lieu of the required examination coverage of essentially 100 percent:

1. Ultrasonic testing (UT) of the subject component weld was performed to the maximum extent practical during the second ten-year interval.
2. Pressure test VT-2 visual examinations were performed, as required by Code Category C-H, during the second ten-year interval. No evidence of leakage was identified for this component.

3.1.5 Licensee's Basis for Requesting Relief

In its application dated December 15, 2010, for RR C-6, the licensee stated, in part, that,

The examination of the subject component weld is limited by the configuration of the flange design and the location of two four-inch and two-three inch nozzles on the tube side of the heat exchanger.

In addition, the licensee included diagrams within the RR detailing the obstructions and design limitations. The licensee stated it achieved only 50 percent ultrasonic coverage due to the obstruction of perpendicular scans by the nozzles, and the obstruction of parallel scans due to the flange configuration.

3.1.6 NRC Staff Evaluation

The ASME Code requirement for the subject weld requires a volumetric examination of "essentially 100%"; however, due to geometric and design issues, the licensee only achieved 50 percent coverage. The NRC staff reviewed the provided diagrams detailing the examination and obstructions. The flange and nozzle geometries present clear obstacles to perpendicular and parallel scans. The NRC staff, therefore, concludes that the inspection requirements are impractical. No recordable indications were found within the examined volume.

The NRC staff concludes that evidence of a pattern of degradation within the subject weld would have been detected by examinations performed by the licensee within the examined area. Redesigning the heat exchanger to increase coverage would present a burden and would not significantly increase confidence in the weld.

Based on the above, the NRC staff concludes that relief should be granted from further action in examining weld TBX-2-1110-1 for the CPNPP, Unit 1, second 10-year ISI interval.

3.2 RR No. C-7 for Containment Spray Heat Exchanger Shell-to-Flange Weld
TBX-2-1180-2

3.2.1 ASME Code Requirement

The ASME Code, Section XI, Table IWC-2500-1, Item No. C1.10 component examinations require a volumetric examination of the containment spray heat exchanger shell-to-flange weld. The extent of the examination is "essentially 100%" of the weld length in "welds at gross structural discontinuities only." The weld length includes the material 0.5 inches to either side of the weld. ASME Code Case N-460 effectively states that 90 percent coverage is adequate to meet the ASME Code requirement.

3.2.2 System/Component for Which Relief is Requested

Relief is requested for the examination of the containment spray heat exchanger shell-to-flange weld TBX-2-1180-2, a C1.10 component.

3.2.3 ASME Code Requirement for Which Relief is Requested

Relief is requested from meeting the required 100 percent inspection coverage of the ASME Code requirements for this weld.

3.2.4 Licensee's Proposed Alternative Examination (as stated by the licensee)

The following alternatives are proposed in lieu of the required examination coverage of essentially 100 percent:

1. Ultrasonic testing (UT) of the subject component weld was performed to the maximum extent practical during the second ten-year interval.
2. Pressure test VT-2 visual examinations were performed, as required by Code Category C-H, during the second ten-year interval. No evidence of leakage was identified for this component.

3.2.5 Licensee's Basis for Requesting Relief

In its application dated December 15, 2010, for RR C-7, the licensee stated, in part, that

The examination of the subject component weld is limited by the configuration of the flange design and the proximity of two welded support plates on the shell side of the heat exchanger.

In addition, the licensee included diagrams within the subject RR detailing the obstructions and design limitations. The licensee stated it achieved only a 41.47 percent ultrasonic coverage due to the obstruction of perpendicular scans by the welded supports, and the obstruction of parallel scans due to the welded supports and flange configuration.

3.2.6 NRC Staff Evaluation

The ASME Code requirement for the subject weld requires a volumetric examination of "essentially 100 percent"; however, due to geometric and design issues, the licensee only achieved 41.47 percent coverage. The NRC staff reviewed the provided diagrams detailing the examination and obstructions. The flange and welded supports present clear obstacles to perpendicular and parallel scans; therefore, the NRC staff concludes that the inspection requirements are impractical. No recordable indications were found within the examined volume. The NRC staff concludes that evidence of a pattern of degradation would have been detected by examinations performed by the licensee within the examined area. Redesigning the heat exchanger to increase coverage would present a burden and would not significantly increase confidence in the weld.

The NRC staff found that in the first ISI interval, the licensee had documented 73 percent coverage of the subject weld at CPNPP, Unit 1. In an e-mail dated April 6, 2011 (ADAMS Accession No. ML110960698), the NRC staff requested that the licensee clarify why the coverage had been so reduced in the second ISI interval relative to the first. In its letter dated April 21, 2011, in response to the NRC staff's request for additional information, the licensee indicated that the difference stemmed from the implementation of "new EPRI [Electric Power Research Institute] guidelines regarding the acceptability of scanning surfaces." These guidelines, among other things, help an examiner determine when he/she can accept ultrasonic returns. During the first ISI interval, the examiner included the weld crown in his coverage, while during the second ISI interval, the examiner discounted this volume due to the EPRI guidelines. The NRC staff considers this an adequate explanation of the decrease in coverage as it is likely that the first ISI interval coverage was optimistically calculated.

Based on the above, the NRC staff concludes that relief should be granted from further action in examining this weld for the CPNPP, Unit 1, second 10-year ISI interval.

4.0 CONCLUSION

Due to a variety of configuration issues at CPNPP, Unit 1, the ASME Code requirements with respect to the subject welds are impractical. An imposition of the ASME Code requirements would be a burden on the licensee. The weld examination coverages achieved by the licensee provide reasonable assurance of the structural integrity of the subject welds. Therefore, the licensee's requests for relief are granted pursuant to 10 CFR 50.55a(g)(6)(i) for the CPNPP, Unit 1, second 10-year ISI interval, which ended on August 12, 2010. The NRC staff has determined that granting relief pursuant to 10 CFR 50.55a(g)(6)(i) 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.

All other ASME Code, Section XI requirements for which relief was not specifically requested and approved in the subject request for relief remain applicable, including third-party review by the Authorized Nuclear Inservice Inspector.

Principal Contributor: Dan Widrevitz

Date: September 2, 2011

R. Flores

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All other requirements of the ASME Section XI requirements for which relief has not been specifically requested remain applicable, including a third-party review by the Authorized Nuclear Inservice Inspector.

If you have any questions, please contact Balwant K. Singal at 301-415-3016 or by e-mail at Balwant.Singal@nrc.gov.

Sincerely,

/RA/

Michael T. Markley, Chief
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket No. 50-445

Enclosure:
As stated

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