



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

April 10, 2014

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, UNITS 1 AND 2 – REQUEST FOR RELIEF NO. 1/2E3-1 FROM CERTAIN AMERICAN SOCIETY OF MECHANICAL ENGINEERS BOILER AND PRESSURE VESSEL CODE SECTION XI INSPECTION REQUIREMENTS FOR THE THIRD 10-YEAR IWE INSERVICE INSPECTION INTERVAL (TAC NOS. MF2998 AND MF2999)

Dear Mr. Flores:

By letter dated October 31, 2013 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML13312A124), Luminant Generation Company LLC (the licensee) submitted Request for Relief No. 1/2E3-1 to the U.S. Nuclear Regulatory Commission (NRC). The licensee stated that compliance with certain inspection requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI, related to IWE inservice inspection (ISI) of electrical penetrations would result in an unnecessary hardship or unusual difficulty without a compensating increase in the level of quality and safety. The licensee requested the relief pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR), paragraph 50.55a(a)(3)(ii) for third 10-year IWE ISI interval at Comanche Peak Nuclear Power Plant (CPNPP), Units 1 and 2. The third 10-year ISI interval started on September 10, 2012, and will end on September 9, 2021, at CPNPP, Units 1 and 2.

The NRC staff has reviewed the submittal and concluded that (1) compliance with the ASME Code, Section XI inspection requirements to perform a general visual examination of the surfaces of electrical penetrations included in this relief request, would result in a hardship or unusual difficulty without compensating increase in the level of quality and safety; and (2) there is reasonable assurance that the structural integrity and leak tightness of electrical penetrations will be maintained during the third 10-year IWE ISI interval, thus fulfilling the technical requirements of 10 CFR 50.55a(a)(3)(ii).

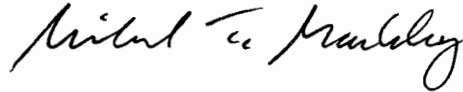
All other ASME Code, Section XI, requirements for which relief has not been specifically requested and approved remain applicable, including third-party review by the Authorized Nuclear Inservice Inspector.

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The NRC staff's safety evaluation is enclosed. If you have any questions, please contact Balwant K. Singal at 301-415-3016 or by e-mail at [Balwant.Singal@nrc.gov](mailto: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" being more prominent.

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

Docket Nos. 50-445 and 50-446

Enclosure:  
Safety Evaluation

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 NO. 1/2E3-1

THIRD 10-YEAR IWE INSERVICE INSPECTION INTERVAL PROGRAM

LUMINANT GENERATION COMPANY LLC

COMANCHE PEAK NUCLEAR POWER PLANT, UNITS 1 AND 2

DOCKET NOS. 50-445 AND 50-446

1.0 INTRODUCTION

By letter dated October 31, 2013 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML13312A124), Luminant Generation Company LLC (the licensee) submitted Request for Relief No. 1/2E3-1 to the U.S. Nuclear Regulatory Commission (NRC). The licensee stated that compliance with certain inspection requirements of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI, related to IWE inservice inspection (ISI) of electrical penetrations would result in an unnecessary hardship or unusual difficulty without a compensating increase in the level of quality and safety. The licensee requested the relief pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR), paragraph 50.55a(a)(3)(ii) for third 10-year ISI interval at Comanche Peak Nuclear Power Plant (CPNPP), Units 1 and 2.

The third 10-year IWE ISI interval for CPNPP, Units 1 and 2, began on September 10, 2012, and ended on September 9, 2021.

2.0 REGULATORY EVALUATION

The regulations in 10 CFR 50.55a(g), "Inservice inspection requirements," specify that ISI of nuclear power plant components shall be performed in accordance with the requirements of the ASME Code, Section XI, except where alternatives have been authorized pursuant to paragraphs 10 CFR 50.55a(a)(3)(i) or (a)(3)(ii). Subsections IWE and IWL of Section XI of the ASME Code provide the requirements for ISI of Class CC (concrete containments) and Class MC (metallic containments), including integral attachments of MC and metallic liners of Class CC components of light-water cooled power plants.

Paragraph 10 CFR 50.55a(a)(3) specifies that alternatives to the requirements of paragraph (g) may be used, when authorized by the NRC, if (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

Enclosure

and safety. Also, as required by 10 CFR 50.55a(a)(3), any proposed alternatives must be submitted and authorized prior to implementation.

### 3.0 TECHNICAL EVALUATION

#### 3.1 ASME Code Components Affected

CPNPP, Unit 1 Electrical Penetrations:

E-0006, E-0009, E-0016, E-0018, E-0029, E-0039, E-0040, E-0056, and E-0060

CPNPP, Unit 2 Electrical Penetrations:

2-E-0006, 2-E-0009, 2-E-0015, 2-E-0016, 2-E-0018, 2-E-0039, 2-E-0040, 2-E-0045, 2-E-0056, 2-E-0060, and 2-E-0066

#### 3.2 Applicable Code Edition and Addenda

The applicable Code of record for CPNPP, Units 1 and 2, is the 2007 Edition through the 2008 Addenda of Section XI of the ASME Code.

#### 3.3 Applicable Code Requirements

A general visual inspection of 100 percent of the accessible containment surface areas including the steel liner and liner penetrations is required, during each inspection period, in accordance with ASME Code, Section XI, Table IWE-2500-1, Examination Category E-A, Item No. E1.11.

#### 3.4 Reason for Request (as stated by the licensee)

The surfaces of 20 of 21 electrical penetrations are currently covered with Radiant Energy Shielding (RES) material[,] which precludes the General Visual examination of the surface required by Table IWE-2500-1, Examination Category E-A, Item No. E1.11. This RES material is designed for post fire safe shutdown protection. RES is made from a custom sewn ceramic fiber blanket in a fireproof fabric envelope which is banded in place and is not designed for removal and reinstallation. The construction of the RES is such that, if damaged, the fibrous material can create excessive waste, and will require additional attention to prevent sump clogging. Electrical Penetration 2-E-0061 will have RES material installed during the 2RF14 refueling outage.

Relief Request 1/2E3-1 pertains to the visual examination of 21 stainless steel electrical penetration assemblies covered with radiant energy shielding material that are proposed to not be visually examined each period (3) during the third IWE interval. The local areas of the containment liner around these 21 electrical penetrations will be visually examined each period during the third interval. Electrical Penetration 2-E-0061 is included for future inspection periods during

the third IWE interval. A visual examination will be performed prior to installation of the RES material on 2-E-0061.

A total of 1200 man-hours per Unit would be required to remove the RES, perform the examination, repair and/or replace damaged RES, and re-install install the shielding. The total radiation exposure to perform these activities is estimated to exceed 3.5 man-Rem per unit over the inspection interval. The extensive craft and radiation protection support that would be required for scaffolding, RES material removal, repair or replacement of damaged RES material, and RES material re-installation on these 21 electrical penetrations would not be compensated for by an increase in the level of plant quality and safety.

In its letter dated October 31, 2013, the licensee stated, in part, that:

The accessible surface areas of the metal containment liner, including all mechanical penetrations and the remaining 66 Unit 1 and 34 Unit 2 electrical penetrations are not covered with RES and are accessible for the required examination. An evaluation of these covered penetrations would be performed and the RES would be removed if conditions exist in accessible areas that indicate degradation could also exist or extend into the RES covered areas. This relief is being requested for 21 electrical penetrations (9 for Unit 1, 12 for Unit 2) which are all of stainless steel construction and represent less than 1 percent of the total IWE metal containment surface area. The previously examined mechanical penetration assemblies and the containment liner are of carbon steel construction and are more susceptible to corrosion type damage mechanisms. The carbon steel containment liner and mechanical penetrations and the remaining stainless steel electrical penetrations have all been examined each period during the second interval without any degradation or corrosion identified. Also, Comanche Peak has adequate confidence that the stainless steel surfaces of the electrical penetrations are not susceptible to the damage mechanisms that may affect the carbon steel surfaces. Therefore, there are no additional safety benefits in examining these penetration surfaces.

The NRC staff notes that the licensee's request contains a typographical error relative to the number of CPNPP, Unit 2 remaining stainless steel electrical penetrations without RES material, which is listed as 34 instead of 64 (not including penetration 2-E-0061.) As the licensee plans to have penetration 2-E-0061 covered by RES material in the upcoming 2RF14 refueling outage, the remaining CPNPP, Unit 2 electrical penetrations that are not covered with RES will be 63 following the 2RF14 refueling outage.

The licensee also provided the results of the containment integrated leak rate test (Type A) and the results of the local leak rate testing (Type B) of CPNPP, Units 1 and 2 containment electrical penetrations, included in relief request 1/2E3-1, along with their comparison with the allowable leakage rate. These results showed compliance with the acceptance criteria specified in the Technical Specifications and the administrative limits established for Type B leakage rate tests for CPNPP, Units 1 and 2.

### 3.5 Proposed Alternative and Basis for Use

The licensee has proposed no alternative examination for the penetrations for which relief is requested. However, as described above, the licensee stated that an evaluation of the covered penetrations would be performed and the RES would be removed if the conditions exist in accessible areas that indicate degradation could also exist or extend into the RES covered areas.

### 3.6 Duration of the Proposed Alternative

The third 10-year IWE ISI interval for CPNPP, Units 1 and 2, began on September 10, 2012, and will end on September 9, 2021. The third interval has been shortened to nine years due to extending the second interval to 11 years.

### 3.7 NRC Staff Evaluation

There are a total of 75 electrical penetrations in each CPNPP, Unit 1 and Unit 2, containment, as shown in Figure 8.3-16 of the CPNPP Final Safety Analysis Report (FSAR). As indicated in the licensee's request, the accessible surface areas of the carbon steel containment liner and all mechanical penetrations and the remaining 66 (CPNPP, Unit 1) and 64 (CPNPP, Unit 2) stainless steel electrical penetrations (including penetration 2-E-0061), which are not covered with RES, have all been examined each period during the second 10-year IWE ISI interval without identifying any degradation or corrosion. A visual examination of electrical penetration 2-E-0061 will be performed prior to installation of the RES material. The unexamined surface areas of the stainless steel electrical penetrations, included in relief request 1/2E3-1, represent a minimal percentage of the containment metal surface area. In addition, the licensee has committed to remove the RES material and examine the electrical penetrations, if conditions exist in accessible areas that indicate degradation could also exist in the RES-covered areas.

The leak-tight integrity of the containment penetrations is verified through Type B local leak rate tests and the overall leak-tight integrity of the containment structure is verified through a Type A test, as required by 10 CFR Part 50, Appendix J, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors." The periodic leakage rate testing requirements of 10 CFR 50 Appendix J and the containment in-service inspection requirements mandated by 10 CFR 50.55a together ensure the continued leak-tight and structural integrity of the containment during its service life. In its letter dated October 31, 2013, the licensee provided the following information:

- a) The as-found and the as-left leakage rate results of the containment integrated leak rate test (Type A) for CPNPP, Units 1 and 2, performed in April 2007 and October 2012, respectively, were in compliance with the acceptance criteria specified in the CPNPP, Units 1 and 2, Technical Specifications.
- b) The historical results of local leak rate testing (Type B) of CPNPP, Units 1 and 2 containment electrical penetrations included in relief request 1/2E3-1 were acceptable and in compliance with the CPNPP, Units 1 and 2 administrative limits established for Type B leak rate tests.

Based on the above, the NRC staff determined that (1) compliance with the ASME Code, Section XI inspection requirements to perform a general visual examination of the surfaces of 21 electrical penetrations, included in relief request 1/2E3-1, would result in a hardship or unusual difficulty without compensating increase in the level of quality and safety; and (2) there is reasonable assurance that the structural integrity and leak-tightness of 21 electrical penetrations will be maintained throughout the third 10-year IWE ISI interval.

#### 4.0 CONCLUSION

Based on the above, the NRC staff concludes that (1) compliance with the ASME Code, Section XI inspection requirements to perform a general visual examination of the surfaces of electrical penetrations included in this relief request, would result in a hardship or unusual difficulty without compensating increase in the level of quality and safety; and (2) there is reasonable assurance that the structural integrity and leak-tightness of the electrical penetrations will be maintained during the third 10-year IWE ISI interval. Therefore, the proposed relief request 1/2E3-1 is authorized pursuant to 10 CFR 50.55a(a)(3)(ii) for the third 10-year IWE ISI interval at CPNPP, Units 1 and 2, which began on September 10, 2012, and will end on September 9, 2021.

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

Principal Contributor: Farhad Farzam, NRR/DE/EMCB

Date: April 10, 2014

R. Flores

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The NRC staff's safety evaluation is enclosed. If you have any questions, please contact Balwant K. Singal at 301-415-3016 or by e-mail at [Balwant.Singal@nrc.gov](mailto: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 Nos. 50-445 and 50-446

Enclosure:  
Safety Evaluation

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**\*Memo dated 3/26/14**

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DATE	3/31/14	3/31/14	3/26/14	4/10/14

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