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CP-201500749
TXX-15113

Ref. # 10CFR50.90

July 29, 2015

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

SUBJECT: COMANCHE PEAK NUCLEAR POWER PLANT
DOCKET NOS. 50-445 AND 50-446
RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION FOR
LICENSE AMENDMENT REQUEST 14-002
EXTENSION OF CONTAINMENT LEAKAGE TEST FREQUENCY

REFERENCES:
1. Letter logged TXX-15001 dated January 28, 2015 from Rafael Flores to the NRC submitting License Amendment Request 14-002 Extension of Containment Leakage Rate Testing Program
2. Email dated July 2, 2015 from Balwant Singal of the NRC to Timothy Hope of Luminant Power requesting additional information regarding License Amendment Request for Extension of Containment Leakage Rate Testing Program

Dear Sir or Madam:

Per Reference 1, Luminant Generation Company, LLC (Luminant Power) submitted License Amendment Request (LAR) 14-002, Extension of Containment Leakage Rate Testing Program. Per Reference 2, the NRC provided a request for additional information regarding the subject LAR..

Attached is the Luminant Power response to the request for additional information.

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

A017
NRR

I state under penalty of perjury that the foregoing is true and correct.

Executed on July 29, 2015.

Sincerely,

Luminant Generation Company LLC

Rafael Flores

By: Fred W. Madden
Director, External Affairs

Attachment – Response to Request for Information Regarding License Amendment Request 14-002, Extension of Containment Leakage Rate Testing Program

c - Marc L. Dapas, Region IV
Balwant K. Singal, NRR
Resident Inspectors, Comanche Peak
Robert Free, TDLR

COMANCHE PEAK NUCLEAR POWER PLANT UNITS 1 AND 2 RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION REGARDING LICENSE AMENDMENT REQUEST 14-002 EXTENSION OF CONTAINMENT LEAKAGE RATE TESTING PROGRAM TAC NOS. MF5621 AND MF5622

NRC REQUEST APLA RAI-1

Electric Power Research Institute (EPRI) TR-1009325, Revision 2-A, "Risk Impact Assessment of Extended Integrated Leak Rate Testing Intervals", states:

> [w]here possible, the analysis should include a quantitative assessment of the contribution of external events (e.g., fire and seismic) in the risk impact assessment for extended ILRT [Integrated Leak Rate Test] intervals. For example, where a licensee possesses a quantitative fire analysis and that analysis is of sufficient quality and detail to assess the impact, the methods used to obtain the impact from internal events should be applied for the external event.

The external events analysis is provided in Section 7.3 of Attachment 6 to the License Amendment Request (LAR), dated January 28, 2015 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15036A032).

a. The LAR states the following, in part, regarding the fire risk assessment:

   Comanche Peak is currently performing a Fire-PRA to update the risk associated with fire. Until those results are available the ILRT guidance provides a method to estimate a fire LERF [large early release frequency] by using the most recent internal events CDF [core damage frequency] to LERF ratio. Using that methodology a bounding fire induced CDF was calculated as 2.09E-05/[year].

   Please clarify where the fire CDF and LERF were taken from and what were their values.

b. The LAR did not provide the seismic risk values. The Attachment 7 to the LAR states the following, in part, regarding the seismic risk:

   Given that CPNPP's [Comanche Peak Nuclear Power Plant's] updated Ground Motion Response Spectrum (GMRS) is well below the SSE [Safe Shutdown Earthquake] at all frequencies, seismic risk at the site is extremely unlikely to be a significant issue for any risk-informed application.

   Provide an estimate of seismic CDF and LERF and include it in the assessment of impact from external events.

c. The total change in LERF from three tests in 10 years to once in 15 years is estimated in the LAR as 2.83E-07/year for Unit 1 and 2.84E-07/year for Unit 2. These changes are considered to be "small" (i.e., between 1E-06/year and 1E-07/year) per the acceptance guidelines in Regulatory Guide 1.174, Revision 2 "An Approach for Using Probabilistic Risk Assessment in Risk-Informed Decisions on Plant-Specific Changes to the Licensing Basis," May 2011 (ADAMS Accession No. ML100910006). An assessment of total baseline LERF is also required to show that the total LERF is less than 1E-05/year. Please provide an estimate of the total LERF for internal and external events including effects from steel liner corrosion and proposed change in ILRT frequency, for both units, and justify acceptability of the ILRT extension application.

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LUMINANT POWER RESPONSE TO NRC REQUEST APLA RAI-1a

The value for Fire CDF provided in Table 7-2 of the submittal (2.09E-05/year) was taken from the CPNPP IPEEE (Reference 24 of the LAR).

The IPEEE did not provide a value for LERF. Therefore the ILRT guidance provides a method to estimate LERF by using the most recent internal events CDF to LERF ratio. Using CDF and LERF values from the model of record, Revision 4B:

EPRI Guidance Ratio = $\frac{LERF_{4B}}{CDF_{4B}}$ = (2.67E-7/4.08E-6) = 6.54E-2

$LERF_{Fire}$ = EPRI Ratio x $CDF_{IPEEE\ Fire}$ = (6.54E-2)(2.09E-05/year) = 1.37E-06 per year

Based on this approach the value of LERF for Fire based on the IPEEE CDF value is estimated to be 1.37E-06 per year (applicable for Unit 1/Unit 2).

LUMINANT POWER RESPONSE TO NRC REQUEST APLA RAI-1b

As stated in the LAR, the seismic risk at CPNPP is not expected to be a significant contributor to CDF or LERF and has little impact on the results of the ILRT extension assessment. This is based on the results documented in the CPNPP IPEEE results and also based on the updated Ground Motion Response Spectrum (GMRS) being well below the SSE [Safe Shutdown Earthquake] at all frequencies. However, as a seismic PRA is not available and is not being developed to support the post Fukushima initiatives, a bounding value will be used to support the ILRT extension request. Without a seismic PRA, a plant specific estimate of seismic CDF and LERF has not been derived.

The NRC recently published information on the estimates of the seismic risk levels for all plants in the Central and Eastern United States (CEUS) as part of Generic Issue 199 (Generic Issue 199, "Implications of Updated Probabilistic Seismic Hazard Estimates in Central and Eastern United States on Existing Plants," IN2010-18, September 2, 2010). Seismic hazards are a subject of considerable uncertainty. In order to address the changing state of knowledge on seismic hazards, the NRC Staff developed a technical analysis (Staff Report, "Implications of Updated Probabilistic Seismic Hazard Estimates In Central And Eastern United States On Existing Plants, Safety/Risk Assessment," ML100270639, August 2010) that computed conservative estimates of seismic risk for all plants in the Central and Eastern United States (CEUS) using estimates of the seismic risk levels developed as part of Generic Issue 199. The NRC Staff analysis used a variety of calculation approaches to compute a conservative estimate of the SCDF using three different seismic hazard sources. The results of these analyses for the CPNPP site are presented in the table below.

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**Estimates of Total Seismic Core Damage Frequency
From Appendix D of Staff Report, "Implications of Updated Probabilistic Seismic Hazard Estimates In Central And Eastern United States On Existing Plants, Safety/Risk Assessment," ML100270639, August 2010**

	Calculation Approach				
Hazard Source	Maximum Spectral Result	Simple Average	IPEEE Weighted Average	Weakest Link Model	Highest Estimate
1994 LLNL	6.0E-6	2.9E-6	2.4E-6	6.0E-6	6.0E-6
1989 EPRI	1.2E-6	4.8E-7	3.7E-7	1.2E-6	1.2E-6
2008 USGS	4.0E-6	2.1E-6	1.8E-6	4.0E-6	4.0E-6

These estimates span a fairly wide range, with the maximum value generated using the 1994 Lawrence Livermore National Lab (LLNL) hazard curve along with conservative estimates of the seismic fragility. Using these conservative analyses, the maximum total SCDF is estimated at 6.0E-6/yr. By adopting the maximum estimate generated by various methods, this provides a bounding estimate of the SCDF for use in this ILRT extension request.

The IPEEE did not provide a value for LERF. Therefore the ILRT guidance provides a method to estimate LERF by using the most recent internal events CDF to LERF ratio. Using CDF and LERF values from the model of record, Revision 4B:

EPRI Guidance Ratio $= \frac{LERF_{4B}}{CDF_{4B}}$ = (2.67E-7/4.08E-6) = 6.54E-2

$LERF_{Bounding\ Seismic}$ = EPRI Ratio x $CDF_{Bounding\ Seismic}$ = (6.54E-2)(6.00E-06/year) = 3.93E-07 per year

Based on this approach the value of LERF for Seismic based on the bounding estimate of the SCDF is estimated to be 3.93E-07 per year (applicable for Unit 1/Unit 2). Note that this value is not considered a representative plant specific estimate, but is appropriate to be applied in the context of a bounding ILRT risk analysis.

Inclusion of this seismic CDF value will impact the external events summary reported in Table 7-2 resulting in a revised estimate of total internal and external events CDF of 3.47E-5 (Unit 1/Unit 2). The related changes in LERF values and their impacts are provided in the response to part c below.

<u>LUMINANT POWER RESPONSE TO NRC REQUEST APLA RAI-1c</u>

EPRI document TR-1009325 provides guidance for estimating the change in LERF from extending the Type A test interval using external event CDF values to determine the external event LERF contribution. These CDF values were specifically used to determine the Class 3b frequency increases based for external events. The factors for determining the increase in the non-detection probability of a leak described in Attachment 6, Section 5.3 of the CPNPP IRLT submittal were applied to the Class 3b base value frequencies to determine the 3b frequencies for the once per fifteen year test for each unit (with and without including the effects from steel liner corrosion).

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Using the above approach results for estimating the increase in LERF-Class 3b values, the total LERF from both internal and external events from the three per ten year test to the once per fifteen year test is 2.59E-06/yr for Unit 1 and Unit 2 with and without considering corrosion effects. This value of total LERF remains less than the acceptance criteria of 1.00E-05/yr and therefore supports the acceptability of the ILRT extension application.

The following table provides the changes in LERF for each Unit with and without the effects of steel liner corrosion.

Comanche Peak Estimated Total LERF/year Including External Events Results								
	LERF (No Corrossion) - Unit 1		LERF (With Corrossion) - Unit 1		LERF (No Corrossion) - Unit 2		LERF (With Corrossion) - Unit 2	
	1 per 15 year test	3 per 10 year test	1 per 15 year test	3 per 10 year test	1 per 15 year test	3 per 10 year test	1 per 15 year test	3 per 10 year test
Fire	1.56E-06	1.37E-06	1.56E-06	1.37E-06	1.56E-06	1.37E-06	1.56E-06	1.37E-06
Wind	2.74E-07	2.42E-07	2.74E-07	2.42E-07	2.74E-07	2.42E-07	2.74E-07	2.42E-07
Seismic	4.45E-07	3.93E-07	4.46E-07	3.93E-07	4.45E-07	3.93E-07	4.46E-07	3.93E-07
Internals	3.15E-07	2.67E-07	3.15E-07	2.67E-07	3.15E-07	2.67E-07	3.15E-07	2.67E-07
Total LERF	2.59E-06	2.27E-06	2.59E-06	2.27E-06	2.59E-06	2.27E-06	2.59E-06	2.27E-06
Delta LERF	3.22E-07		3.23E-07		3.22E-07		3.23E-07	

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NRC REQUEST APLA RAI-2

EPRI TR-1009325, Revision 2-A states, in part:

> [t]he most relevant plant-specific information should be used to develop population dose information. The order of preference shall be plant-specific best estimate, Severe Accident Mitigation Alternative (SAMA) for license renewal, and scaling of a reference plant population dose.

Consistent with the guidelines in EPRI TR-1009325, Revision 2-A, the population dose 2 estimate in the LAR was obtained by scaling the reference plant population dose to account for differences in reactor power level, population density, and allowable containment leak rate (La). A rated thermal power of 3458 Megawatt thermal (MWt) was used in these population dose estimates in the LAR. Based on Amendment No. 146 to Comanche Peak Nuclear Power Plant, Units 1 and 2 (CPNPP), dated June 27, 2008 (ADAMS Accession Number ML081510157), the licensed thermal power for CPNPP is 3612 MWt. Please justify or update the population dose estimates for the ILRT extension application.

LUMINANT POWER RESPONSE TO NRC REQUEST APLA RAI-2

The revised population dose estimates (Tables 6-11 and 6-12) based on the 3612 MWt thermal power are provided below. With this correction, the change in Type A test frequency to once per fifteen years, measured as an increase to the total integrated plant risk for those accident sequences influenced by Type A testing, is 1.05E-02 person-rem/yr for Unit 1 and 1.05E-02 person-rem/yr for Unit 2. The total population dose is thus increased to 6.80 person-rem/yr for Unit 1 and 6.82 person-rem/yr for Unit 2.

EPRI Report No. 1009325, Revision 2-A states that a very small population dose is defined as an increase of ≤1.0 person-rem per year or ≤1 % of the total population dose, whichever is less restrictive for the risk impact assessment of the extended ILRT intervals. This is consistent with the NRC Final Safety Evaluation for NEI 94-01 and EPRI Report No. 1009325 (Reference 25). Therefore, based on the updated values, CPNPP remains below both criteria for meeting the definition of a very small population dose.

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NRC REQUEST EMCB RAI-1

Section 9.2.3.2 of NEI 94-01, Revision 3-A, "Industry Guidelines for Implementing Performance- Based Option of 10 CFR [*Title 10 of the Code of Federal Regulations*] Part 50, Appendix J," (ADAMS Accession No. ML12221A202) and Condition 2 in Section 4.1 of the NRC safety evaluation for topical report NEI 94-01, Revision 2 (ADAMS Accession No. ML081140105) require supplemental general visual inspections of accessible interior and exterior surfaces of the containment for structural deterioration that may affect the containment leak-tight integrity. These inspections must be conducted prior to each Type A test and during at least three other outages before the next Type A test if the interval for the Type A test has been extended to 15 years. In Section 3.1.4 of the LAR, the licensee states, under the subheading "ASME Section XI, Subsection IWL" (on page 10 of 44), the following, in part:

> If the interval for the Type A test has been extended to 15 years a minimum of two complete inspections of the containment exterior concrete will be performed during the interval between ILRT performances. This requirement when coupled with the following commitment provided in SER [safety evaluation report] Section 3.2 will require the performance of <u>three containment exterior concrete inspections</u> if the interval for the Type A test has been extended to 15 years.
>
> Prior to performing an ILRT, the licensee will schedule its IWE and IWL examinations in a way that it be counted as a pre-ILRT examination.

Based on the above statement, it appears that the licensee intends to perform a total of three IWL containment exterior concrete visual examinations (one pre-ILRT and two during the 15 year interval between ILRTs), instead of four visual examinations as required by NEI 94-01. Please clarify the intent of the licensee concerning meeting the general visual examination requirements for concrete containment structure set forth in NEI 94-01, Revision 3-A, and Condition 2 in Section 4.1 of the NRC safety evaluation for topical report NEI 94-01, Revision 2. In case the licensee is proposing to take an exception to NEI 94-01, Revision 3-A, please provide a justification for the deviation.

In addition, based on the information provided in the LAR, the last Unit 1 and Unit 2 Type A tests were performed on April 14, 2007, and October 9, 2012, respectively. Please provide a schedule for a typical 15 year interval (between the last Type A test and the proposed next Type A test), in a tabular format, of the in service inspections of CPNPP, Units 1 and 2 containments that were, and will be performed, and explain how it meets the requirements in Section 9.2.3.2 of NEI 94 01, Revision 3-A, and Condition 2 in Section 4.1 of the NRC safety evaluation for topical report NEI 94-01, Revision 2.

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LUMINANT POWER RESPONSE TO NRC REQUEST EMCB RAI-1

Comanche Peak has been granted an exemption from the requirements of Section 9.2.3.2 of NEI 94 01, Revision 3-A, and Condition 2 in Section 4.1 of the NRC safety evaluation for topical report NEI 94-01, Revision 2. Provisions are contained in both Appendix J and NEI 94-01 for deviations from the regulations and are stated in part below:

Deviations from the requirements of 10 CFR 50 Appendix J are provided for in the following sections of both 10 CFR 50 Appendix J, and NEI 94-01, R-0,. R-2A and R-3A, and are shown below:

> 10 CFR 50 Appendix J Option B Section V.B.3
>
> "The regulatory guide or other implementation document used by a licensee or applicant for an operating license under this part or a combined license under part 52 of this chapter to develop a performance-based leakage-testing program must be included, by general reference, in the plant technical specifications. The submittal for technical specification revisions must contain justification, including supporting analyses, if the licensee chooses to deviate from methods approved by the Commission and endorsed in a regulatory guide."
>
> NEI 94-01, Revision 2-A and 3-A, Section 1.1
>
> "Generally, a FSAR describes plant testing requirements, including containment testing. In some cases, FSAR testing requirements differ from those of Appendix J. In many cases, Technical Specifications were approved that incorporated exemptions to provisions of Appendix J. Additionally, some licensees have requested and received exemptions after their Technical Specifications were issued. The alternate performance-based testing requirements contained in Option B of Appendix J will not invalidate such exemptions."

On December 13, 2007, Comanche Peak was granted and received Technical Specification Amendment No. 141 (ML073120252) which added the following exceptions to TS 5.5.16:

> The proposed change requests to revise TS 5.5.16 by adding the following exceptions to RG 1.163, "Performance-Based Containment Leak-Test Program":
>
> 1. The visual examination of containment concrete surfaces intended to fulfill the requirements of 10 CFR 50, Appendix J, Option B testing, will be performed in accordance with the requirements and frequency specified by ASME Code, Section XI, Subsection IWL, except where relief has been authorized by the NRC.
>
> 2. The visual examination of the steel liner plate inside containment intended to fulfill the requirements of 10 CFR 50, Appendix J, Option B testing, will be performed in with the requirements and frequency specified by ASME Code, Section XI, Subsection IWE, except where relief has been authorized by the NRC.

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Section 3.2 of the Safety Evaluation Report associated with TS Amendment 141 documented the evaluation of the above TS Amendment and found it to be acceptable as stated in the following excerpt from the associated SER:

> Based on our review of the licensee's submittal dated December 19, 2006, the staff finds that visual examinations of the accessible exterior and interior surfaces of the containment system *that are performed pursuant to the requirements and frequency prescribed in* ASME Code, Section XI, Subsections IWE and IWL, are sufficient to meet the intent of the visual inspections required by RG 1.163, without requiring additional visual examinations pursuant to RG 1.163. The intent of early uncovering of evidence of structural deterioration will continue to be met by the more rigorous requirements of the Subsections IWE and IWL visual examinations. Therefore, the staff concludes that the revision to TS 5.5.16, as proposed by the licensee, is acceptable because the proposed visual examinations will provide an acceptable level of quality and safety.
>
> Therefore, the staff concludes that the revision to TS 5.5.16, as proposed by the licensee, is acceptable because the proposed visual examinations will provide an acceptable level of quality and safety. *As a result, the proposed modification will allow* TS *5.5.16 to maintain conformity* with 10 CFR 50.36(c)(3). Moreover, the proposed revision to TS 5.5.16 conforms with the provisions of 10 CFR 50.55a(g)(4) by updating the TS to be consistent with the requirements for components classified as Code Class CC.

Section 3.2 of the Safety Evaluation Report associated with TS Amendment 141 also addressed the "one fewer visual examination of the concrete surfaces" as stated in the following excerpt from the associated SER:

> The staff agrees that the combination of the Code requirements for rigor of the visual examinations plus the required third-party review will more than offset the fact that one fewer visual examination of the concrete surfaces will be performed during a 10-year interval.

With the extension of the ILRT interval to 15 years, the examination schedule of the IWL inspection program will still result in just one fewer examination of the concrete surfaces over the extended interval of 15 years starting in the second extended interval.

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CPNPP Unit 1 IWE / IWL Examination Schedule		
IWE 2nd Interval Period 2	9/10/2006 to 9/9/2009	IWE / IWL Examinations
	1RF12/Spring 2007 1RF13/Fall 2008	IWE 2007 CSI Visual Inspection 2007 (1) Unit 1 ILRT Performed 4/14/2007 IWE 2008
IWE 2nd Interval Period 3	9/10/2009 to 9/9/2012	
	1RF14/Spring 2010 1RF15/Fall 2011	IWL Fall 2009 – Spring 2011 IWE 2010 IWE 2011
IWE 3rd Interval Period 1	9/10/2012 to 9/9/2015	
	1RF16/Spring 2013 1RF17/Fall 2014	IWE 2013 IWE 2014 IWL Spring 2014
IWE 3rd Interval Period 2	9/10/2015 to 9/9/2018	
	Planned Outages 1RF18/ Spring 2016 1RF19/Fall 2017	IWE 2016 IWE 2017
IWE 3rd Interval Period 3	9/10/2018 to 9/9/2021	
	Planned Outages 1RF20/ Spring 2019 1RF21/Fall 2020	IWE 2019 IWL Spring 2018 – Spring 2020 IWE 2020
IWE 4th Interval Period 1	9/10/2021 to 9/9/2024	
	Planned Outages 1RF22/Spring 2022 1RF23/Fall 2023	IWL Spring 2021 – Spring 2022 (2) IWE 100% inspection 1RF22 (2) Unit 1 ILRT to be performed by 4/14/2022

(1) Containment Structural Integrity (CSI) Visual Inspection of the containment concrete and liner performed in accordance with STA-743 "Containment Leakage Rate Testing Program" (TS 5.5.16) to verify no apparent changes in appearance or other abnormal degradation.

(2) IWE / IWL examination performed prior to Unit 1 or 2 ILRT in accordance with TS Amendment 141, SER section 3.2 as follows: "Prior to performing an ILRT, the licensee will schedule its IWE and IWL examinations in a way that it be counted as a pre-ILRT examination."

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CPNPP Unit 2 IWE / IWL Examination Schedule		
IWE 2nd Interval Period 3	9/10/2009 to 9/9/2012	IWE / IWL Examinations
	2RF12/Spring 2011 2RF13/Fall 2012	IWL Fall 2009 – Spring 2011 IWE 2011 IWE 2012 CSI Visual Inspection 2012 (1) Unit 2 ILRT Performed 10/9/12
IWE 3rd Interval Period 1	9/10/2012 to 9/9/2015	
	2RF14/ Spring 2014	IWE 2014 IWL Spring 2014
IWE 3rd Interval Period 2	9/10/2015 to 9/9/2018	
	Planned Outages 2RF15/ Fall 2015 2RF16/ Spring 2017	IWE 2015 IWE 2017
IWE 3rd Interval Period 3	9/10/2018 to 9/9/2021	
	Planned Outages 2RF17/Fall 2018 2RF18/ Spring 2020	IWL Spring 2018 – Spring 2020 IWE 2018 IWE 2020
IWE 4th Interval Period 1	9/10/2021 to 9/9/2024	
	Planned Outages 2RF19/Fall 2021 2RF20/Spring 2023	IWL Spring 2021 – Spring 2022 (3) IWE 2021 IWE 2023
IWE 4th Interval Period 2	9/10/2024 to 9/9/2028	
	Planned Outages 2RF21/Fall 2024 2RF22/Spring 2026 2RF23/Fall 2027	IWL Spring 2027 – Fall 2027 (2) IWE 100% inspection 2RF23 (2) Unit 2 ILRT to be performed by 10/9/2027

(1) Containment Structural Integrity (CSI) Visual Inspection of the containment concrete and liner performed in accordance with STA-743 "Containment Leakage Rate Testing Program" (TS 5.5.16) to verify no apparent changes in appearance or other abnormal degradation.
(2) IWE / IWL examination performed prior to Unit 1 or 2 ILRT in accordance with TS Amendment 141, SER section 3.2 as follows: "Prior to performing an ILRT, the licensee will schedule its IWE and IWL examinations in a way that it be counted as a pre-ILRT examination."
(3) This schedule change due to the shift forward of the 3rd 5th year IWL examination for both Unit 1 and 2 from a scheduled date of March 2024 to March 2022 to coincide with the performance of the Unit 1, 2022 ILRT.

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As shown in the two tables above, there will be 4 IWL examinations performed during the first extended ILRT interval for each unit. This is due to the shift forward of the 3rd 5th year IWL examination for both Unit 1 and 2 from a scheduled date of March 2024 to March 2022 to coincide with the performance of the Unit 1, 2022 ILRT. Following this shift, there will only be three IWL examinations performed during each extended ILRT interval with the third inspection occurring prior to the next scheduled ILRT.

NRC REQUEST EMCB RAI-2

In Section 4.1.2.2 of the LAR, the licensee states that moisture barriers and liner leak chase channel test piping are subject to a General Visual Inspection of 100% of the surfaces during each CISI period. Please provide information regarding findings, if any, from past visual inspections that may indicate degradation of these items and any corrective actions taken to disposition the findings.

LUMINANT POWER RESPONSE TO NRC REQUEST EMCB RAI-2

Moisture Barriers including seismic barrier material attached to containment liner and the plug-to-coupling pipe surface of the liner leak chase channel test piping is subject to a General Visual Inspection of 100% of the surfaces each CISI Inspection Period.

There is no history of unacceptable inspections of the plug-to-coupling pipe surface of the liner leak chase channel test piping. The last inspection of each of the plug-to-coupling pipe surface was performed during the IWE 3rd Interval First Period Inspections. Unit 1 was inspected during 1RF16 and 1RF17, and Unit 2 was inspected during 2RF14.

The moisture barrier was also inspected during the outages listed above with the following results:

During the 1RF16 inspection an approximately 1-inch liner indication was noted at the moisture barrier surface (Area 16 Approximately 203°). Indication was inspected and determined to be acceptable. Indication was photographed for documentation purposes.

During the 2RF14 inspection an area of intermittent local surface damage of the moisture barrier seal was noted. Indication was inspected and determined to be acceptable. Indication was photographed for documentation purposes.

NRC REQUEST EMCB RAI-3

In Section 4.1.2 of the LAR, the licensee discusses examination of inaccessible areas of containment and evaluation of the acceptability of inaccessible areas. Please provide information about instances during implementation of the CPNPP CISI program in accordance with American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI, Subsections IWE/IWL, where conditions existed in accessible areas that indicated the presence of or resulted in degradation to inaccessible areas. For each inaccessible area identified, please provide (1) a description of the type and estimated extent of degradation and the conditions that led to the degradation; (2) an evaluation of each area and the result of the evaluation; and (3) a description of corrective actions taken, as required by 10 CFR 55a(b)(2)(viii)(E) or 10 CFR 50.55a(b)(2)(ix)(A).

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LUMINANT POWER RESPONSE TO NRC REQUEST EMCB RAI-3

As stated in Section 4.1.2 of the LAR, there have been no instances requiring the evaluation of the acceptability of inaccessible areas at CPNPP.

NRC REQUEST EMCB RAI-4

In Section 3.2.3 of the LAR, the licensee states that a fuel transfer tube penetration is provided for fuel transfer between the refueling canal in the containment structure and the spent fuel pools in the Fuel Building, bellows expansion joints are provided to permit differential movements, and that a test connection is provided so that the space between the transfer tube and the sleeve with connecting bellows can be pressurized to Pa [calculated peak containment internal pressure related to design basis accident] in order to measure the leakage rate of the bellows or attachment welds. For any bellows used on penetrations through containment pressure retaining boundaries at CPNPP, Units 1 and 2, please provide information on their inspection, testing and operating experience with regard to detection of bellows leakage.

LUMINANT POWER RESPONSE TO NRC REQUEST EMCB RAI-4

Fuel Transfer Tube Bellows
There have been no recorded instances of identified degradation of the fuel transfer tube bellows. The bellows, one inside containment and one outside containment, are subject to Type B testing in accordance with the Containment Leakage Rate Testing Program. The administrative limit for the fuel transfer tube bellows assembly is 100 sccm.

The Appendix J Option B program results for the fuel transfer tube bellows are shown in the table below:

Fuel Transfer Tube Bellows Type B Test Results					
Unit 1			Unit 2		
1SF-0055	01/12/2012	60.00 sccm	2SF-0053	02/09/2011	55.00 sccm
1SF-0055	08/09/2002	38.60 sccm	2SF-0053	09/07/2001	2.91 sccm
1SF-0055	02/02/2001	55.00 sccm	2SF-0053	04/16/1999	80.20 sccm
1SF-0055	04/18/1998	32.10 sccm	2SF-0053	10/26/1997	2.00 sccm
1SF-0055	10/07/1996	20.00 sccm	2SF-0053	03/30/1996	2.00 sccm
1SF-0055	03/31/1995	20.00 sccm	2SF-0053	10/09/1994	25.40 sccm
1SF-0055	11/24/1993	20.00 sccm	2SF-0053	02/11/1993	20.00 sccm

In accordance with the Appendix J Program, the Unit 1 and 2 fuel transfer tube bellows assemblies have been placed on a 120 month Type B test interval based on performance history.

The variation in the measured leakage rates of the bellows assemblies is caused by the following:

> The lowest calibrated reading on the leakage rate monitor used for Type B testing is 2 sccm or 20 sccm based on the range of the device.
>
> The fuel transfer tube penetration is large and is exposed to two separate environments, inside the fuel handling building and the containment, simultaneously.

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To assist with the performance of the test, to provide some consistency between tests, and to reduce the time required to perform the test; the following conservative testing methodology is utilized when testing the fuel transfer tube bellows:

> IF a stable leak rate has NOT been achieved, but has been trending downward for more than 5 minutes AND is below the Administrative Limit [100 sccm], THEN it is conservative to record a leak rate value without waiting for a final stabilized leak rate.

Containment Recirculation Sump Penetrations

The Containment recirculation sump penetrations consist of sleeves embedded in the Containment mat with the process pipe seal welded to the sleeve by a seal ring inside the Containment. The sleeve is welded to the Containment liner. Each isolation valve outside the Containment is enclosed within a valve isolation tank, which is sealed to the sleeve by a 24-inch guard pipe and to the process pipe downstream of the isolation valve by a bellows expansion joint.

The guard pipe and valve isolation tank are not considered part of the barrier between Containment and external environment and are not tested at Containment design conditions. The reason for this is that these moderate energy lines are designed to meet the requirements of Branch Technical Position MEB 3-1 (SRP 3.6.2) with stress levels less than 0.4 (1.2Sh + Sa). The penetrations are designed and fabricated per ASME Section III CL2 and MC (Article NE1000) Summer '76.

All Other Mechanical Penetrations

All other mechanical penetrations do not incorporate any expansion joints or resilient seals. They consist of either a pipe embedded in the Containment wall concrete and welded to the Containment liner or a sleeve embedded and welded to the liner with the process pipe passing through the sleeve and sealed by a flued head welded to the sleeve.

NRC REQUEST EMCB RAI-5

In Section 4.1.5 of the LAR, the licensee states that (1) the percentage of the total number of Unit 1 Type B tested components that are on 120-month extended performance-based test intervals is 55%; (2) the percentage of the total number of Unit 1 Type C tested components that are on 60-month extended performance-based test intervals is 28%; (3) the percentage of the total number of Unit 2 Type B tested components that are on 120-month extended performance-based test intervals is 5%; and (4) the percentage of the total number of Unit 2 Type C tested components that are on 60-month extended performance-based test intervals is 29%.

Please provide reason(s) for the low percentages of the total number of Type B and Type C tested components that are on the maximum test intervals (120 months for Type B and 60 months for Type C), particularly for Type B tested components at Unit 2 (5%), and discuss implications that this may have in supporting the proposed extension of the containment ILRT and Type C test frequencies for CCNPP, Units 1 and 2.

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LUMINANT POWER RESPONSE TO NRC REQUEST EMCB RAI-5

The performance evaluations required by NEI 94-01 Revision 0, Sections 10.2.1.2, Extended Test Intervals (Except Containment Airlocks) and Section 11.0, BASIS FOR PERFORMANCE AND RISK-BASED TESTING FREQUENCIES FOR TYPE A, TYPE B, AND TYPE C TESTS, have not been completed for the Unit 1 and 2 Type B and C penetrations that would have otherwise been placed on extended intervals.

There are no implications as evidenced by the existing Type B and C margin to 0.6% La, which was presented in Section 4.1.5 of the LAR and is being restated below.

> The As-Found minimum pathway leak rate average for CPNPP Unit 1 shows an average of 5.74% of 0.6 La with a high of 7.36% or 0.044 La.
>
> The As-Left maximum pathway leak rate average for CPNPP Unit 1 shows an average of 15.07% of 0.6 La with a high of 19.62% or 0.118 La.
>
> The As-Found minimum pathway leak rate average for CPNPP Unit 2 shows an average of 5.22% of 0.6 La with a high of 7.17% or 0.043 La.
>
> The As-Left maximum pathway leak rate average for CPNPP Unit 2 shows an average of 12.40% of 0.6 La with a high of 15.85% or 0.095 La.

Also as identified in Section 4.1.5 of the LAR there was a total of 6 administrative limit failures between the two units over the last two refueling outages for each unit. This is also an indicator showing that the overall Type B and C performance supports the proposed extension of the ILRT and Type C test frequencies.

NRC REQUEST EMCB RAI-6

In Section 4.1.2 of the LAR, the licensee stated that the Containment Inservice Inspection (CISI) Program Plan details the requirements for the examination and testing of Class MC and Class CC components at CPNPP Units 1 and 2 and that the CISI Program Plan is developed in accordance with the 2007 Edition with the 2008 Addenda of the ASME Code Section XI, Subsections IWE and IWL, as conditioned by 10 CFR 50.55a.

Please discuss highlights of the significant findings from the ASME Code, Section XI, Subsection IWE and IWL examinations performed since the last Type A test on the containment pressure-retaining structures and components, in accordance with the CPNPP CISI program, and actions taken to disposition them. In the response, please provide information that would demonstrate proper and effective implementation of the CPNPP CISI program in monitoring and managing degradation to ensure that containment structural and leak-tight integrity has been, and will continue to be, maintained throughout the service life of the plant. The response should include relevant highlights of examinations performed on the containment penetrations (with seals, gaskets, and bolted connections), the containment steel liner, moisture barrier, and the reinforced concrete containment structure.

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LUMINANT POWER RESPONSE TO NRC REQUEST EMCB RAI-6

Results of IWL Program Inspections since the last ILRT of Unit 1 (2007) and Unit 2 (2012).

- 2009 IWL examinations of Unit 1 was performed satisfactorily with no recordable or significant indications.
- 2014 IWL examinations of Unit 1 and Unit 2 were performed satisfactorily with no recordable or significant indications.

Results of IWE Program Inspections since the last ILRT of Unit 1 (2007).

- 2008 IWE examination of the Unit 1 Equipment Hatch identified 2 pins, 1 at approximately 3 o'clock and other at approximately 4 o'clock position missing bottom cotter pins. Equipment Hatch was re-inspected following replacement of missing cotter pins and found to be acceptable.
- 2010 IWE examination of the Unit 1 Emergency Airlock identified a loose nut on 1BS-0202 Equalizing Valve 4 bolt flange. CR-2010-004111 was issued to address the issue. EVAL-CR-2010-004111 addressed the rework of the loose nut for 1BS-0202. The bolted connection was re-examined and found to be acceptable.
- 2013 IWE examination of Unit 1 was performed satisfactorily with no recordable or significant indications. The next inspection will be performed in the fall of 2015.
- 2014 IWE examination of Unit 1 was performed satisfactorily with no recordable or significant indications. The next inspection will be performed in the spring of 2016.

Results of IWE Program Inspections since the last ILRT of Unit 2 (2012).

- 2014 IWE examination of Unit 2 was performed satisfactorily with no recordable or significant indications. The next inspection will be performed in the fall of 2015.

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NRC REQUEST SCVB RAI-1

In Attachment 1 to the submittal dated January 28, 2015 (Reference 1) Section 3.3 "Integrated Leakage Rate Testing History", Table 3.3-1 "Unit 1 Type A ILRT History" and Table 3.3-2 "Unit 2 Type A ILRT History" provides the details of the historical ILRT "As-found Leakage Rate" and "As-Left Leakage Rate" values.

> CPNPP, Units 1 and 2 TS 5.5.16 "Containment Leakage Rate Testing Program" reads in part:
>
> b. The peak calculated containment internal pressure for the design basis loss of coolant accident, P_a, is 48.3 psig.
>
> c. The maximum allowable containment leakage rate, L_a, at P_a, shall be 0.10% of containment air weight per day.
>
> d. Leakage rate acceptance criteria are:
>
> 1. Containment leakage rate acceptance criteria is $\leq 1.0\ L_a$. During the first unit startup following testing in accordance with this program, the leakage rate acceptance criteria are $< 0.60\ L_a$ for the Type B and Type C tests and $\leq 0.75\ L_a$ for Type A tests;

All historical ILRT values contained in Table 3.3-1 and Table 3.3-2 for CPNPP, Units 1 and 2 are below the Limits of TS 5.5.16.c and of TS 5.5.16.d.1.

Section 9.2.3 of NEI TR 94-01, Revision 2 (Reference 6) states that:

> Type A testing shall be performed during a period of reactor shutdown at a frequency of at least once per 15 years based on acceptable performance history. Acceptable performance history is defined as successful completion of two consecutive periodic Type A tests where the calculated performance leakage rate was less than 1.0 L_a [the maximum allowable Type A test leakage rate at P_a, where P_a equals the calculated peak containment internal pressure related to the design-basis loss-of- coolant accident]. A preoperational Type A test may be used as one of the two Type A tests that must be successfully completed to extend the test interval, provided that an engineering analysis is performed to document why a preoperational Type A test can be treated as a periodic test. Elapsed time between the first and last tests in a series of consecutive satisfactory tests used to determine performance shall be at least 24 months.

The staff notes that the last sentence of Section 9.2.3 "Extended Test Intervals" of NEI 94-01 Revision 2-A (Reference 3) reads "In the event where previous Type A tests were performed at reduced pressure (as described in 10 CFR 50, Appendix J, Option A), at least one of the two consecutive periodic Type A tests shall be performed at peak accident pressure (P_a)."

Based on these NEI 94-01 excerpts, the staff needs additional information to confirm that at least one of the actual ILRT test pressures employed during the two most recent CPNPP, Units 1 and 2 Type A tests bound the P_a (i.e. 48.3 psig) value of CPNPP, Units 1 and 2 TS 5.5.16.b (per the guidance of ANS 56.8-1994 – Reference 4).

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LUMINANT POWER RESPONSE TO NRC REQUEST SCVB RAI-1

The following tables are from Attachment 1 Section 3.3 and have been updated with the corresponding test pressure, test duration and analysis technique for each reported ILRT.

Table 3.3-1 Unit 1 Type A ILRT History

Test Date	As-Found Leakage Rate (Containment air weight %/day)	As Left Leakage Rate (Containment air weight %/day)	Test Pressure (psig)	Atmospheric Pressure (psia)	ILRT Test Duration (hours)	Data Analysis Techniques
07/04/1989 (Pre-Operation)	0.023	0.025	49.00 (63.42 psia)	14.42	24	Mass Point Leakage Per ANSI/ ANS 56 .8-1981
12/07/1993	0.05638	0.0557	48.66 (63.36 psia)	14.6959	24	Mass Point Leakage Per ANSI/ ANS 56 .8-1987
04/14/2007	0.063019	0.0630	48.862 (63.242 psia)	14.38	9.15	Mass Point Leakage Per ANSI/ ANS 56 .8-1994

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Table 3.3-2 Unit 2 Type A ILRT History

Test Date	As-Found Leakage Rate (Containment air weight %/day)	As Left Leakage Rate (Containment air weight %/day)	Test Pressure (psig)	Atmospheric Pressure (psia)	ILRT Test Duration (hours)	Data Analysis Techniques
09/10/1992 (Pre-Operation)	0.052	0.047	48.8256 (62.8056 psia)	13.98	28	Mass Point Leakage Per ANSI/ ANS 56 .8-1981
12/01/1997	0.0317	0.0321	49.203 (63.47 psia)	14.2666	8	Mass Point Leakage Per ANSI/ ANS 56 .8-1994
10/09/2012	0.0595	0.0594	48.49 (62.83 psia)	14.34	9	Mass Point Leakage Per ANSI/ ANS 56 .8-1994

The ILRT procedures used for the performance of the Unit 1, 1993 and 2007 ILRTs, and the Unit 2, 1997 and 2012 ILRTs, were updated to contain a signed verification step affirming that at no time had the ILRT test pressure fallen below 0.96 Pa. All four tests were signed in the affirmative.

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NRC REQUEST SCVB RAI-2

In Attachment 1 to the submittal dated January 28, 2015 (Reference 1), Table 4.1.6-1 "NEI 94-01 Revision 2-A Limitations and Conditions", the first "Limitation/Condition" reads:

> For calculating the Type A leakage rate, the licensee should use the definition in the NEI TR 94-01, Rev 2, in lieu of that in American National Standards Institute (ANSI)/American Nuclear Society (ANS)-56.8-2002. (Refer to SE Section 3.1.1.1).

CPNPP response stated:

> CPNPP will utilize the definition in NEI 94-01 Revision 3-A, Section 5.0. This definition has remained unchanged from Revision 2-A to Revision 3-A of NEI 94-01.

The NRC staff notes that the identical definition of "performance leakage rate" as defined in NEI 94-01, Revision 3-A first appeared in Section 5.0 of NEI 94-01, Revision 2 dated August 31, 2007 (Reference 6).

Table 3.3-1 "Unit 1 Type A ILRT History" and Table 3.3-2 "Unit 2 Type A ILRT History" provide the details of the historical ILRT Containment "As-found Leakage Rate" and "As-Left Leakage Rate" values. With respect to the information contained in Tables 3.3-1 and 3.3-2, the NRC staff requests the following information:

1. Please clarify if either the Unit 1 IRLT of April 14, 2007 or Unit 2 ILRT of October 9, 2012 use the definition of "performance leakage rate" as defined in Section 5.0 of NEI 94-01, Revision 2 dated August 31, 2007 (Reference 6) in the plant ILRT procedures?

2. From the Unit 1 Table 3.3-1 of ILRT results, it can be seen that the "Leakage Rate" increased by 13.1% [0.063019 "As found"/ 0.0557 "As Left"] between the time the ILRT of 12/07/93 was performed and when the ILRT of 4/14/12 was performed. Please describe the phenomenon to which this increase in containment leakage rate was attributed to?

3. From the Unit 2 Table 3.3-2 of ILRT results, it can be seen that the "Leakage Rate" increased by 85.4% [0.0595 "As found" / 0.0321 "As Left"] between the time the ILRT of 12/01/97 was performed and when the ILRT of 10/9/12 was performed. Please describe the phenomenon to which this increase in containment leakage rate was attributed to?

LUMINANT POWER RESPONSE TO NRC REQUEST SCVB RAI-2 Item 1

The Unit 1 ILRT of April 14, 2007 and Unit 2 ILRT of October 9, 2012 both utilized acceptance criteria that is equivalent to the acceptance criteria as described in NEI 94-01 Revision 2.

Reference Unit 1 PROCEDURE NO. PPT-Sl-7014 REVISION NO. 1 EFFECTIVE DATE: 3/23/07 Attachment 10.10.

Reference Unit 2 PROCEDURE NO. PPT-S2-7014 REVISION NO. 1 EFFECTIVE DATE: 10/04/2012 12:00 Attachment 10.10.

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It should be noted that CPNPP is not required to meet the requirements of NEI 94-01 Revision 2-A at this time. In accordance with Technical Specifications, CPNPP is only required to meet the requirements as stated in RG 1.163, which references NEI 94-01 Revision 0 and ANSI/ANS 56.8-1994. Section 5.0 of NEI 94-01 Revision 0 references ANSI/ANS 56.8-1994. Reference LAR Attachment 1 Section 2.0 a.

LUMINANT POWER RESPONSE TO NRC REQUEST SCVB RAI-2 Items 2 and 3

During the performance of the two ILRTs in question, there was not a single, identifiable event, phenomena or component leakage that could be attributed to the change in question.

The ILRT leak rates reported consist of both the actual containment leak rate and the measurement uncertainty. The bulk of the measurement uncertainty is due to both spatial and temporal variations in containment air temperature. When comparing leak rates between tests it cannot be positively known if changes in leak rates are attributed to changes in the actual leak rate or differences in temperature stability between the tests. At the time of each test the overall containment leak rate was less than the regulatory limit of 0.75 La. ILRT leak rate values were never intended nor are they required to be trended as per the guidance of 10CFR50 Appendix J. Furthermore, extrapolations of the leak rate are not valid.

NRC REQUEST SCVB RAI-3

In Attachment 1 to the submittal dated January 28, 2015 (Reference 1), Table 4.1.6-1 "NEI 94-01 Revision 2-A Limitations and Conditions", the fourth "Limitation/Condition" reads:

> "The licensee addresses any tests and inspections performed following major modifications to the containment structure, as applicable. (Refer to SE Section 3.1.4)."

CPNPP Response states:

> CPNPP Unit 1 steam generator replacements have been completed. Unit 2 replacements are not anticipated.
>
> There are no planned modifications for CPNPP Units I and 2 that will require a Type A test prior to the next Units 1 and 2 Type A test proposed under this LAR.
>
> There is no anticipated addition or removal of plant hardware within the containment building which could affect its leak-tightness.

SE Section 3.1.4 (Reference 5) reads:

Section 9.2.4 of NEI TR 94-01, Revision 2 (Reference 6), states that:

> *Repairs and modifications that affect the containment leakage integrity require LLRT or short duration structural tests as appropriate to provide assurance of containment integrity following the modification or repair. This testing shall be performed prior to returning the containment to operation.*

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Article IWE-5000 of the American Society of Mechanical Engineers (ASME) Code, Section XI, Subsection IWE (up to the 2001 Edition and the 2003 Addenda), would require a Type A test after major repair or modifications to the containment. In general, the NRC staff considers the cutting of a large hole in the containment for replacement of steam generators or reactor vessel heads, replacement of large penetrations, as major repair or modifications to the containment structure. At the request of a number of licensees, the NRC staff has agreed to a relief request from the IWE requirements for performing the Type A test and has accepted a combination of actions consisting of ensuring that: (1) the modified containment meets the pre-service Non-Destructive Evaluation test requirements (i.e., as required by the construction code), (2) the locally welded areas are examined for essentially zero leakage using a soap bubble, or an equivalent, test, and (3) the entire containment is subjected to the peak calculated containment design basis accident pressure for a minimum of 10 minutes (steel containment) and 1 hour (concrete containment), and (4) the outside surfaces of concrete containments are visually examined as required by the ASME Code, Section XI, Subsection IWL, during the peak pressure, and that the outside and inside surfaces of the steel surfaces are examined as required by the ASME Code, Section XI, Subsection IWE, immediately after the test. This is defined as a short duration structural test of the containment. For minor modifications (e.g., replacement or addition of a small penetration), or modification of attachments to the pressure retaining boundary (i.e., repair/replacement of steel containment stiffeners), leakage integrity of the affected pressure retaining areas should be verified by a LLRT.

The NRC staff notes that the above "CPNPP Response" is brief and is based mostly on the potential for future Containment modifications. The staff notes that both CPNPP, Units 1 and 2 containments have been in service for approximately 25 years.

Please provide additional historical information (i.e. a synopsis) about any modifications to the CPNPP, Units 1 and 2 containments and about the subsequent post modification testing. The synopsis should demonstrate compliance with guidance of SE Section 3.1.4.

LUMINANT POWER RESPONSE TO NRC REQUEST SCVB RAI-3

There has been a single historical event associated with the containment structures at CPNPP. That being the Steam Generator and Reactor Vessel Head Replacement Project in Unit 1 during the 2007 1RF12 refueling outage. The equipment hatch was not of sufficient size to permit the removal and replacement of the Steam Generators (SGs) or the Reactor Vessel Head (RVH). To accomplish the removal and replacement of the SGs and the RVH, a Containment Alternate Access (CAA) was created in the Containment Building.

The CAA was a penetration through the reinforced concrete cylindrical wall and steel liner of the Unit 1 Containment Building. The wall was restored (by closing the CAA) after the Old Steam Generators and Old Reactor Vessel Head were removed, and the Replacement Steam Generators and Replacement Reactor Vessel Head were transported inside the Containment Building.

Containment Alternate Access Description
The temporary CAA provided access to the operating floor at Elevation 905'-7". The opening centerline was located on the south face of the Unit-1 Containment at azimuth 223°. The opening ranged in size from approximately 20' high by 20' wide in the steel liner plate to an approximate size of 28'-7" high by 30'-2" wide at the outside face of the concrete (i.e., the opening in the liner plate is smaller than the opening in the concrete). The opening dimensions for the concrete is larger because extra concrete must be removed around the perimeter to expose sufficient lengths of reinforcing bars to facilitate restoration

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of the bars using Cadweld splices. The liner opening extended from approximately from Elevation 907'-1" to Elevation 927'- 1". Given that the approximate finished ground grade is Elevation 810', the bottom of the temporary CAA was roughly 94 feet above the finished ground grade. The concrete within the extent of the temporary CAA was removed by means of hydrodemolition. This process was selected over the conventional chipping method to reduce the risk of damage to reinforcing bars, and to minimize the overall time required to create and restore the access opening in the Containment.

Steel Liner Plate Opening
The 3/8-inch thick steel liner plate was cut to create the SGRP CAA using mechanical and/or flame cutting methods as appropriate. The steel liner plate alignment dogs were designed to be utilized around the perimeter of the cut. The primary function of the alignment dogs is to assist in positioning/controlling the door sheet during the cutting process and in preparation for restoration welding. Alignment dogs also functioned to hold the liner door sheet in place in support of Containment Isolation requirements during refueling operations as required in accordance with Technical Specification 3.9.4.

Restoration of Containment Steel Liner Plate
The cut liner plate section (door sheet) was re-positioned within the CAA and handled in a controlled and sequenced manner. The attachments used to lift and handle the door sheet would serve no function after the liner plate was restored and were abandoned in place. Abandoned liner plate attachments were documented on drawing on SK-F 13-05-000658-01.

As with local attachments, any abandoned material will not adversely affect the functionality of the steel liner plate after SGRP activities were completed. Since all abandoned material used for permanent attachments were procured and installed as Safety Related and the liner plate functionality was not adversely affected, it was acceptable to abandon these attachments in place. Additionally, all abandoned attachments were seismically adequate to remain as permanent attachments to the liner plate. Allowing these attachments to remain on the restored liner reduced the risk of damage to the liner during removal operations.

The cut steel liner plate was welded back to its original configuration using full penetration welds. All liner plate repairs were made to satisfy the requirements of ASME BPVC Section XI, 1998 Edition, 1999 and 2000 Addenda as delineated in TXU Procedure EPG-731, ASME XI Repair/Replacement Activities. Nondestructive Examination (NOE) were performed on the completed full penetration weld. A surface examination (100% PT or MT) was performed, as well as spot radiographic examination. Additionally, a vacuum box test was performed on the liner plate seam welds as described in Section CC-5521 of the ASME/ACI 359 code.

Restoration of Shear Studs (As Required)
Nelson studs of 5/8" diameter, located at approximately 12" center-to-center both in the vertical and horizontal directions (diamond pattern), were installed during the original construction on the outside face (concrete side) of the steel liner plate. The Nelson studs were inspected for damage due to activities associated with creating and restoring the CAA. Nelson studs were installed adjacent to damaged studs as required. Missing studs were replaced with Nelson studs installed at the original design location as required.

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Restoration of Containment Reinforcing Steel
All exposed reinforcing steel was visually inspected in accordance with ASME-ACI Section XI. Reinforcing steel cut during the creation of the opening was re-installed using Cadweld® splices or welding as required. Any reinforcing steel that was damaged during the creation of the opening was repaired or replaced.

Restoration of Containment Concrete
ASME-ACI 359 will remain the Code of Record for the restored structure. The reinforced concrete containment structure, was designed by ultimate strength methods as described by UFSAR Section 3.8.1.5.2. The basic loads and load combinations are presented in UFSAR, Section 3.8.1.3.

The minimum compressive strength of the replacement concrete was 4000 psi at 5 days. The concrete used in the original construction for the Containment Building was 4000 psi at 28 days as noted in UFSAR 3.8.1.6.1 therefore, the replacement concrete was equal to or better than the existing concrete.

Post Modification Testing
After the replacement concrete had attained design strength and prior to ascending to Plant Mode 4 the restored SGRP CAA was qualified by pressure testing.

The scheduled required periodic Type A Integrated Leak Rate Test (ILRT) was performed on 4/14/2007 in accordance with 10 CFR 50, Appendix J on the Unit 1 containment structure. The scheduled Type A pressure test was performed at a test pressure of 48.862 psig in accordance with applicable TXU procedures. A new baseline inspection of the exterior surfaces of the affected concrete containment areas was performed prior to the Type A. Another visual inspection of the affected concrete areas was performed after the Type A test.

NRC REQUEST SCVB RAI-4

Excerpts from Section 4.1.5 (Reference 1, Attachment 1, Page 24 of 44) read:

> The percentage of the total number of Unit 1 Type B tested components that are on 120-month extended performance-based test intervals is 55%.
>
> The percentage of the total number of Unit 2 Type B tested components that are on 120-month extended performance-based test intervals is 5%.

Please describe to what phenomenon is the marked difference in the percentages attributable to?

LUMINANT POWER RESPONSE TO NRC REQUEST SCVB RAI-4

The performance evaluations required by NEI 94-01 Revision 0, Sections 10.2.1.2, Extended Test Intervals (Except Containment Airlocks) and Section 11.0, BASIS FOR PERFORMANCE AND RISK-BASED TESTING FREQUENCIES FOR TYPE A, TYPE B, AND TYPE C TESTS, have not been completed for the Unit 2 Type B penetrations that would have otherwise been placed on extended intervals of 120 months.