Enclosure 1 contains Proprietary Information Withhold from Public Disclosure in accordance with 10 CFR 2.390

Luminant

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CP-2023-00261
TXX-23040
June 1, 2023

ATTN: Document Control Desk
U. S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Ref 10 CFR 50.90
10 CFR 2.390

Subject: Comanche Peak Nuclear Power Plant (CPNPP)
Docket Nos. 50-445 and 50-446
Response to Request for Information for Application to Revise Technical Specifications to Apply the Westinghouse Full Spectrum Loss of Coolant Accident Evaluation Model.
LAR 22-002. (EPID: L-2022-LLA-0171)

References:
1. Letter, S.K. Sewell to NRC, "Application to Revise Technical Specifications to Apply the Westinghouse Full Spectrum Loss of Coolant Accident Evaluation Model. LAR 22-002," November 21, 2022. CP-202200355, TXX-22078, ML22325A324

2. Email, D. Galvin to J. Hicks, "Comanche Peak – Request for Additional Information – License Amendment Request to Apply the Westinghouse Full Spectrum Loss of Coolant Accident Evaluation Model. (EPID: L-2022-LLA-0171)," April 11, 2023. ML23103A468

Dear Sir or Madam:

Vistra Operations Company LLC ("Vistra OpCo") requested approval of a license amendment, per Reference 1, to apply the Westinghouse Full Spectrum Loss of Coolant Accident Evaluation Model. In Reference 2, the NRC staff sent a Request for Information (RAI) to complete its review. Vistra OpCo's response to this RAI is provided in Enclosure 1 to this letter. Enclosure 2 provides a non-proprietary version of Enclosure 1. Enclosure 3 provides the Westinghouse Electric Company LLC ("Westinghouse") Application for Withholding Proprietary Information from Public Disclosure and accompanying Affidavit. As Enclosure 1 contains information proprietary to Westinghouse, it is respectfully requested that information which is proprietary to Westinghouse be withheld from public disclosure in accordance with 10 CFR 2.390.

This communication contains no new commitments regarding CPNPP Units 1 and 2.

Should you have any questions, please contact N. Boehmisch at (254) 897-5064 or nicholas.boehmisch@luminant.com.

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

Executed on June 1, 2023.

Sincerely,

Jay Lloyd (Jun 1, 2023 16:12 CDT)

Jay J. Lloyd

Enclosure 1: Response to RAIs – Proprietary NF-TB-23-041, Revision 1
Enclosure 2: Response to RAI – Non-Proprietary
Enclosure 3: Affidavit CAW-23-020

c (email) - Robert Lewis, Region IV [Robert.Lewis@nrc.gov]
Dennis Galvin, NRR [Dennis.Galvin@nrc.gov]
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Enclosure 2:

Responses to RAIs - Non Proprietary

The Nuclear Regulatory Commission (NRC) has provided the following introduction and regulatory basis:

INTRODUCTION

By letter dated November 21, 2022 (Agencywide Document Access and Management System (ADAMS) Accession No. ML22325A324), Vistra Operations Company LLC ("Vistra OpCo," the licensee) submitted a license amendment request (LAR) to the U.S. Nuclear Regulatory Commission (NRC) for Comanche Peak, Units 1 and 2 (Comanche Peak). The proposed amendment would revise the Comanche Peak Technical Specification (TS) to reflect the adoption of topical report (TR) WCAP-16996-P-A, Revision 1, "Realistic LOCA [loss-of-coolant-accident] Evaluation Methodology Applied to the Full Spectrum of Break Sizes (Full Spectrum LOCA Methodology), (FSLOCA)" (ADAMS Accession No. ML16343A238). The proposed amendments revise TS 2.1.1.2 reactor core safety limit (SL), to reflect the peak fuel centerline melt temperature specified in TR WCAP-17642-P-A, Revision 1, "Westinghouse Performance Analysis and Design Model (PAD5)" (ADAMS Accession No. ML17335A334), and revise the TS 4.2.1 reactor core fuel assemblies design feature by removing the discussion of Zircalloy fuel rods and ZIRLO lead test assemblies for Comanche Peak Unit 1 and Unit 2. The amendment also proposes to delete references 11 through 14 in the TS 5.6.5.b list of analytical methods and to add a new approved analytical method (ADAMS Accession No. ML16343A238).

After reviewing the LAR (ADAMS Accession No. ML22325A324), the staff requests responses to the requests for additional information (RAIs) given below.

REGULATORY BASIS

The regulations in 10 CFR 50.46(b) require the following criteria to be met during LOCA events:

(1) *Peak cladding temperature*. The calculated maximum fuel element cladding temperature shall not exceed 2200° F.

(2) *Maximum cladding oxidation*. The calculated total oxidation of the cladding shall nowhere exceed 0.17 times the total cladding thickness before oxidation.

(3) *Maximum hydrogen generation*. The calculated total amount of hydrogen generated from the chemical reaction of the cladding with water or steam shall not exceed 0.01 times the hypothetical amount that would be generated if all of the metal in the cladding cylinders surrounding the fuel, excluding the cladding surrounding the plenum volume, were to react.

(4) *Coolable geometry*. Calculated changes in core geometry shall be such that the core remains amenable to cooling.

Regarding errors in evaluation models, 10 CFR 50.46(a)(3)(i) states:

> Each applicant for or holder of an operating license or construction permit issued under this part, applicant for a standard design certification under Part 52 of this chapter (including an applicant after the Commission has adopted a final design certification regulation), or an applicant for or holder of a standard design approval, a combined license or a manufacturing license issued under Part 52 of this chapter, shall estimate the effect of any change to or error in an acceptable evaluation model or in the application of such a model to determine if the change or error is significant. For this purpose, a significant change or error is one which results in a calculated peak fuel cladding temperature different by more than 50 °F from the temperature calculated for the limiting transient using the last acceptable model, or is a cumulation of changes and errors such that the sum of the absolute magnitudes of the respective temperature changes is greater than 50 °F.

10 CFR 50.46(a)(3)(ii) states in part

> For each change to or error discovered in an acceptable evaluation model or in the application of such a model that affects the temperature calculation, the applicant or holder of a construction permit, operating license, combined license, or manufacturing license shall report the nature of the change or error and its estimated effect on the limiting ECCS [emergency core cooling system] analysis to the Commission at least annually as specified in § 50.4 or § 52.3 of this chapter, as applicable. If the change or error is significant, the applicant or licensee shall provide this report within 30 days and include with the report a proposed schedule for providing a reanalysis or taking other action as may be needed to show compliance with § 50.46 requirements.

The following pages contain the specific requests for additional information (RAIs) and responses.

RAI 1

LAR Attachment 4 indicates that it was prepared in 2019. Further, in LAR, Attachment 4, Limitation and Condition Number 2, under "Compliance," the licensee indicates that the analyses reflects changes to the FSLOCA methodology as described in LTR-NRC-18-30 (ADAMS Accession No. ML19288A174) but does not incorporate changes to address errors described in LTR-NRC-19-6 (ADAMS Accession No. ML19042A378), which reports "two errors were discovered in the WCOBRA/TRAC-TF2 code that can occur under certain conditions" in the ECCS evaluation models. The letter LTR-NRC-19-6 report that "these errors were found to have negligible impact on analysis results with the FSLOCA EM". In addition, the LTR-NRC-19-6 report (and similar Westinghouse annual submittals) states:

> It is noted that plant-specific peak cladding temperature (PCT) variations are not addressed in this letter.

i. Confirm that the applicable changes and errors described in LTR-NRC-18-30 are reflected in the Comanche Peak analyses and the results are quantitively obtained using the revised code.

ii. For each change to or error discovered in the FSLOCA model not reflected in the analyses supporting LAR Attachment 4, including those described in Westinghouse LTR-NRC-23-5, dated March 10, 2023 (ADAMS Accession No. ML23072A071), which reports two errors discovered in the WCOBRA/TRAC-TF2 code, quantitatively describe its plant-specific effect on the results, errors and uncertainties.

Response

i. The Comanche Peak Units 1 and 2 analyses with the **FULL SPECTRUM™** Loss-of-Coolant Accident (**FSLOCA™**) Evaluation Model (EM) utilized a version of the WCOBRA/TRAC-TF2 code which incorporated the changes and error corrections described in LTR-NRC-18-30 (ADAMS Accession No. ML19288A174). It is confirmed that the analyses were performed with the updated code which removed the errors applicable to the FSLOCA EM, as reported in LTR-NRC-18-30.

ii. During the time that elapsed between the plant-specific application of the FSLOCA EM to Comanche Peak Units 1 and 2 and the submittal of the LAR to the NRC, some changes to or errors have been discovered in the FSLOCA EM. Each of these changes has been separately reported, via LTR-NRC-19-6, LTR-NRC-20-5 (ADAMS Accession No. ML20086F461), LTR-NRC-21-5 (ADAMS Accession No. ML21063A564), LTR-NRC-22-8 (ADAMS Accession Nos. ML22054A120 and ML22054A121), and LTR-NRC-23-5, pursuant to 10 CFR 50.46. Plant-specific PCT variations are not addressed in these letters, but are treated, as appropriate, on a plant-specific basis in accordance with the applicable sections of 10 CFR 50. All changes or errors have been assessed to have a negligible effect on the PCT, except for one, which is explicitly addressed in LAR, Attachment 6. Precedents for including non-zero PCT assessments in the LAR include ADAMS Accession No. ML20063L282, ADAMS Accession No. ML19266A657, and ADAMS Accession No. ML20244A336.

Changes to or errors discovered in the FSLOCA EM which were assessed to have a negligible effect on the analysis results and are not reflected in the Comanche Peak Units 1 and 2 analyses are discussed below.

- Radiation Heat Transfer to Liquid

  Under certain conditions, the radiation heat transfer to liquid could be incorrectly calculated by the WCOBRA/TRAC-TF2 code. This error can impact the radiation heat transfer from wall-to-fluid when: 1) the heat transfer regime is dispersed flow film boiling (DFFB), and 2) the wall temperature is less than or equal to the liquid temperature. However, the radiation heat transfer to liquid is generally only a small portion of the overall heat transfer.

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  Based on engineering judgment supported by sensitivity calculations exercising the heat transfer package, this error has minimal impact on the Comanche Peak Units 1 and 2 FSLOCA EM analyses, leading to an estimated PCT impact of 0°F.

- Vapor Temperature Resetting

  The error in vapor temperature resetting is a combination of two closely related errors for the WCOBRA/TRAC-TF2 code. The first part is the use of an incorrect saturation temperature to reset the vapor temperature under certain conditions. The second part of this error is that the vapor temperature resetting logic results in an inconsistency between the conduction solution and the hydraulic solution such that energy is not conserved between the two solutions. Sensitivity

calculations were performed to determine the impact of these errors on both SBLOCA and LBLOCA transient behavior. The sensitivity calculations were performed for integral effects tests and separate effects tests that are used to demonstrate the applicability of the WCOBRA/TRAC-TF2 code for use in demonstrating ECCS compliance.

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Based on engineering judgment supported by sensitivity calculations showing that these errors had minimal impact on LOCA transient calculations and that the conclusions from integral effects test and separate effects test simulations are unchanged, these errors have minimal impact on the Comanche Peak Unit 1 and Unit 2 FSLOCA EM analyses, leading to an estimated PCT impact of 0°F.

- LUCIFER Kinetics and Decay Heat Model

  The kinetics and decay heat models in the WCOBRA/TRAC-TF2 code are described in Section 9 of WCAP-16996-P-A, Revision 1. The nuclear physics data supporting the code models was generated using the ARK depletion program. Since the approval of the FSLOCA EM, the kinetics and decay heat model in the WCOBRA/TRAC-TF2 code was updated to support the analysis of higher burnup fuel. The updated nuclear physics data is based on the NRC-approved PARAGON code (WCAP-16045-P-A (ADAMS Accession No. ML19179A285)). While the primary purpose of this update is for the analysis of higher burnup fuel, under the existing burnup limits imposed via Limitation and Condition (L&C) #5 on the FSLOCA EM, the change will be implemented on current licensing basis analysis calculations on a forward-fit basis. [

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  The Comanche Peak Unit 1 and Unit 2 FSLOCA EM analyses were executed with an NRC-approved LUCIFER model under the approved EM. Therefore, this forward-fit change does not impact the results of the Comanche Peak Unit 1 and Unit 2 FSLOCA EM analyses.

- Error in Hoop Stress Used in Cladding Rupture Model

  Two different hoop stress variables are calculated in WCOBRA/TRAC-TF2. The first (CHOOPS) is calculated using Equation 8-40 of WCAP-16996-P-A, Revision 1 and is used in the cladding elastic deformation model. The second (CHOOPB) is calculated using Equation 8-51 of WCAP-16996-P-A, Revision 1 and is used in the cladding creep deformation and cladding rupture models. For two instances within the cladding rupture logic, the CHOOPS hoop stress is used whereas the CHOOPB hoop stress should be used. [

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  In summary, it is concluded that the error in the hoop stress used in the cladding rupture model has a negligible impact on the calculated results for the Comanche Peak Unit 1 and Unit 2 FSLOCA EM analyses, leading to an estimated PCT impact of 0°F.

- Non-Conservation of Energy in the Generalized Energy Deposition Model

  The Generalized Energy Deposition Model (GEDM) used within WCOBRA/TRAC-TF2 is described in Section 9.6.2 of WCAP-16996-P-A Revision 1. Non-conservation of the deposited energy was discovered to exist, whereby a very small fraction of the redistributed energy was not being included in the core balance rods. The energy deposited to the hot rod and hot assembly was confirmed to be conserved and correct.

  Hand calculations were performed for various fuel types, which showed that the non-conservation of energy is less than 0.1%, resulting in a minimal amount of energy missing from the core balance (i.e., average channel) rods. In addition, the energy deposited to the hot rod and hot assembly rod is conserved and will remain unchanged when the error is corrected. As such, the minimal increase in energy deposited to the core average rod will have a negligible impact on the overall thermal-hydraulic LOCA response and results. Therefore, this non-conservation has minimal impact on the Comanche Peak Unit 1 and Unit 2 FSLOCA EM analyses, leading to an estimated PCT impact of 0°F.

RAI 2

In LAR, Attachment 4, Section 1.3, the description of the small break LOCA (Region I) analysis does not provide the range of break areas/sizes that were analyzed. LAR, Attachment 4, Section 1.3.2 identifies the break sizes and LAR, Attachment 4, Tables 8A and 8B, represent the time sequence of events for the PCTs results given in LAR, Attachment 4, Tables 7A and 7B. However, corresponding break sizes and sequence of events are not provided for maximum local oxidations (MLOs), core-wide oxidations (CWOs) results given in LAR, Attachment 4, Tables 7A and 7B. Identify the range of range of break areas/sizes that were analyzed and the break areas/sizes for which MLOs and CWOs, and the time sequence of events for the Region I results given in LAR, Attachment 1, Tables 7A and 7B.

Response

As noted in LAR, Attachment 4, Section 1.3.2, the Comanche Peak Unit 1 and Unit 2 Region I analyses were performed in accordance with the NRC-approved methodology, with exceptions identified under Limitation and Condition Number 2 in LAR, Attachment 4, Section 1.2.3. Information required to address Limitations and Conditions 9 and 10 of the NRC's Safety Evaluation Report (SER) for WCAP-16996-P-A, Revision 1 was docketed in LTR-NRC-18-50 (ADAMS Accession No. 18198A041) in support of application of the FSLOCA EM to Westinghouse 4-loop plants. It was confirmed in Section 5.0 of LTR-NRC-18-50 that the FSLOCA EM analysis approach demonstrated for a Westinghouse 3-loop PWR as described in Section 31.2 of WCAP-16996-P-A, Revision 1 is applicable to Westinghouse 4-loop PWRs. [

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It is further noted in LAR, Attachment 4, Section 1.3.2 that the transient that produced the analysis PCT result is a cold leg break with a break diameter of 3.7-inches for Unit 1 and 3.6-inches for Unit 2. As such, the Region I analysis results and the time sequence of events in LAR, Attachment 4, Tables 7A and 8A for Unit 1 are from a transient simulation that modeled a break diameter of 3.7-inches, and the Region I analysis results and the time sequence of events in LAR, Attachment 4, Tables 7B and 8B for Unit 2 are from a transient simulation that modeled a break diameter of 3.6-inches.

Tables 11A and 11B provide the time sequence of events for the MLO results in LAR, Attachment 4, Tables 7A and 7B, for Unit 1 and Unit 2, respectively. As discussed in the previous paragraph, the time sequence of events in Table 11A for Unit 1 are from a transient simulation that modeled a break diameter of 3.7-inches, and the time sequence of events in Table 11B for Unit 2 are from a transient simulation that modeled a break diameter of 3.6-inches. The CWO result in LAR, Attachment 4, Tables 7A and 7B is 0.00% for both Unit 1 and Unit 2. This result applies to all runs in the Region I analyses, so the time sequence of events is not provided for a specific run with this CWO result.

Table 11A. Comanche Peak Unit 1 Sequence of Events for Region I Analysis MLO Case

Event	Time after Break (sec)
Start of Transient	0.0
Reactor Trip Signal	12.3
Safety Injection Signal	23.8
Safety Injection Begins	70.8
Loop Seal Clearing Occurs	530
Top of Core Uncovered	772
Accumulator Injection Begins	1,010
PCT Occurs	1,016
Top of Core Recovered	1,044

Table 11B. Comanche Peak Unit 2 Sequence of Events for Region I Analysis MLO Case

Event	Time after Break (sec)
Start of Transient	0.0
Reactor Trip Signal	16.4
Safety Injection Signal	28.1
Safety Injection Begins	75.1
Loop Seal Clearing Occurs	574
Top of Core Uncovered	886
Accumulator Injection Begins	968
PCT Occurs	970
Top of Core Recovered	974

RAI 3

In LAR, Attachment 4, Section 1.4, the description of the large break LOCA (Region II) analysis does not provide the break spectrum scenarios that were analyzed. LAR, Attachment 4, Tables 9A and 9B, represent the time sequence of events for the PCTs results given in LAR, Attachment 4, Tables 7A and 7B. However, the corresponding break sizes are not provided for the PCTs results, and the corresponding break sizes and sequence of events are not provided for MLOs, and CWOs results given in LAR, Attachment 4, Tables 7A and 7B. Provide the scatter plots of the PCT vs break size, transient equivalent cladding reacted vs PCT, core wide oxidation vs PCT, and the time sequence of events for the Region II results given in LAR, attachment 1, Tables 7A and 7B.

Response

The break sizes for the Comanche Peak Unit 1 and Unit 2 Region II analysis results in LAR, Attachment 4, Tables 7A and 7B are provided in Table 12.

Table 12. Comanche Peak Units 1 and 2 Break Sizes for the Region II Analysis with FSLOCA EM

	Case	LOOP Configuration		OPA Configuration	
		Break Type	Effective Break Area	Break Type	Effective Break Area
Comanche Peak Unit 1	PCT	DEG	2.2057	DEG	2.2057
	MLO	DEG	1.5837	DEG	1.5837
	CWO	DEG	2.2249	DEG	2.9772
Comanche Peak Unit 2	PCT	DEG	2.4596	DEG	2.4596
	MLO	Split	2.4995	Split	2.4995
	CWO	DEG	2.5610	DEG	2.9823

LAR, Attachment 4, Tables 9A and 9B provide the time sequence of events for the loss-of-offsite power (LOOP) PCT results in LAR, Attachment 4, Tables 7A and 7B, for Unit 1 and Unit 2, respectively. The following tables provide the time sequence of events for the other results in LAR, Attachment 4, Tables 7A and 7B (LOOP MLO and CWO; offsite power available (OPA) PCT, MLO, and CWO).

Table 13A. Comanche Peak Unit 1 Sequence of Events for Region II Analysis MLO Case Assuming LOOP

Event	Time after Break (sec)
Start of Transient	0.0
PCT Occurs	3.9
Safety Injection Signal	5.4
Accumulator Injection Begins	15
End of Blowdown	29
Accumulator Empty	52
Safety Injection Begins	52
All Rods Quenched	174
Note that the “Fuel Rod Burst Occurs” event is not shown in the table since rod burst is not predicted to occur.	

Table 14A. Comanche Peak Unit 1 Sequence of Events for Region II Analysis MLO Case Assuming OPA

Event	Time after Break (sec)
Start of Transient	0.0
PCT Occurs	3.9
Safety Injection Signal	5.4
Accumulator Injection Begins	15
End of Blowdown	27
Safety Injection Begins	42
Accumulator Empty	54
All Rods Quenched	171
Note that the “Fuel Rod Burst Occurs” event is not shown in the table since rod burst is not predicted to occur.	

Table 15A. Comanche Peak Unit 1 Sequence of Events for Region II Analysis CWO Case Assuming LOOP

Event	Time after Break (sec)
Start of Transient	0.0
Safety Injection Signal	5.2
Accumulator Injection Begins	11
End of Blowdown	22
Accumulator Empty	48
Safety Injection Begins	52
Fuel Rod Burst Occurs	58
PCT Occurs	96
All Rods Quenched	190

Table 16A. Comanche Peak Unit 1 Sequence of Events for Region II Analysis CWO Case Assuming OPA

Event	Time after Break (sec)
Start of Transient	0.0
Safety Injection Signal	5.9
Accumulator Injection Begins	11
End of Blowdown	20
Safety Injection Begins	43
Accumulator Empty	43
PCT Occurs	93
All Rods Quenched	204
Note that the “Fuel Rod Burst Occurs” event is not shown in the table since rod burst is not predicted to occur.	

Table 13B. Comanche Peak Unit 2 Sequence of Events for Region II Analysis MLO Case Assuming LOOP

Event	Time after Break (sec)
Start of Transient	0.0
Safety Injection Signal	5.7
PCT Occurs	9.5
Accumulator Injection Begins	12
End of Blowdown	22
Accumulator Empty	47
Safety Injection Begins	53
All Rods Quenched	153
Note that the "Fuel Rod Burst Occurs" event is not shown in the table since rod burst is not predicted to occur.	

Table 14B. Comanche Peak Unit 2 Sequence of Events for Region II Analysis MLO Case Assuming OPA

Event	Time after Break (sec)
Start of Transient	0.0
Safety Injection Signal	5.7
PCT Occurs	9.5
Accumulator Injection Begins	12
End of Blowdown	21
Safety Injection Begins	43
Accumulator Empty	47
All Rods Quenched	161
Note that the "Fuel Rod Burst Occurs" event is not shown in the table since rod burst is not predicted to occur.	

Table 15B. Comanche Peak Unit 2 Sequence of Events for Region II Analysis CWO Case Assuming LOOP

Event	Time after Break (sec)
Start of Transient	0.0
Safety Injection Signal	5.3
Accumulator Injection Begins	10
End of Blowdown	22
Accumulator Empty	43
Safety Injection Begins	52
Fuel Rod Burst Occurs	79
PCT Occurs	118
All Rods Quenched	230

Table 16B. Comanche Peak Unit 2 Sequence of Events for Region II Analysis CWO Case Assuming OPA

Event	Time after Break (sec)
Start of Transient	0.0
PCT Occurs	5.6
Safety Injection Signal	5.6
Accumulator Injection Begins	9.0
End of Blowdown	13
Safety Injection Begins	43
Accumulator Empty	46
All Rods Quenched	203

Note that the “Fuel Rod Burst Occurs” event is not shown in the table since rod burst is not predicted to occur.

Table 17A. Comanche Peak Unit 1 Sequence of Events for Region II Analysis PCT Case Assuming OPA

Event	Time after Break (sec)
Start of Transient	0.0
Fuel Rod Burst Occurs	3.1
PCT Occurs	4.4
Safety Injection Signal	5.0
Accumulator Injection Begins	12
End of Blowdown	24
Safety Injection Begins	42
Accumulator Empty	48
All Rods Quenched	195

Table 17B. Comanche Peak Unit 2 Sequence of Events for Region II Analysis PCT Case Assuming OPA

Event	Time after Break (sec)
Start of Transient	0.0
Safety Injection Signal	5.6
Fuel Rod Burst Occurs	7.9
Accumulator Injection Begins	9.0
End of Blowdown	20
Safety Injection Begins	43
Accumulator Empty	47
PCT Occurs	80
All Rods Quenched	185

The PCT versus effective break area is provided for the LOOP and OPA configurations for the Unit 1 and Unit 2 uncertainty analyses in Figures 29A and 32A and Figures 29B and 32B, respectively, and reflect the combined effect of the break size and break flow model uncertainties. The transient maximum local oxidation (or transient equivalent cladding reacted (ECR)) versus PCT is provided for the LOOP and OPA configurations for the Unit 1 and Unit 2 uncertainty analyses in Figures 30A and 33A and Figures 30B and 33B, respectively. A strong trend of increasing MLO with increasing PCT occurs due to the temperature dependence of the oxidation kinetics. The core-wide oxidation versus PCT is provided for the LOOP and OPA configurations for the Unit 1 and Unit 2 uncertainty analyses in Figures 31A and 34A and Figures 31B and 34B, respectively. A strong trend of increasing CWO with increasing PCT occurs due to the temperature dependence of the oxidation kinetics.

The uncertainty analysis methodology used in the FSLOCA EM is described in Section 30 of WCAP-16996-P-A, Revision 1. A Monte Carlo sampling of all uncertainty contributors leads to the generation of a sample of simulated results from which upper tolerance limits are derived for the analysis figures of merit (PCT, MLO, CWO). [

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Figure 29A: [ ]a,c

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Figure 30A: [ ]a,c

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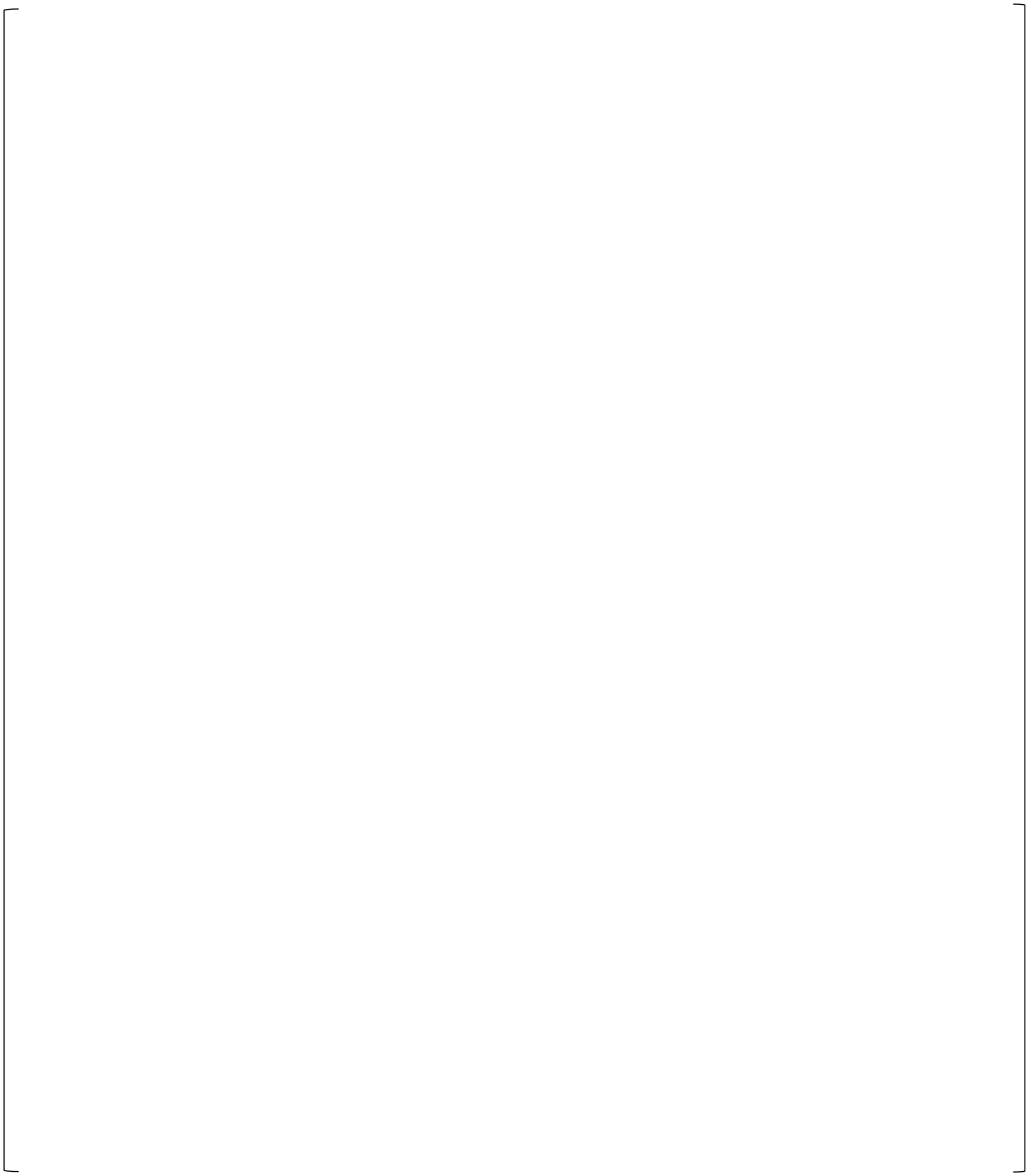

Figure 31A: [ ]a,c

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Figure 32A: [

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Figure 33A: [ ]^a,c

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Figure 34A: [ ]a,c

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Figure 29B: [ ]a,c

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Figure 30B: [ ]a,c

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Figure 31B: [ ]a,c

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Figure 32B: [

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Figure 33B: [ ]a,c

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Figure 34B: [ ]a,c

RAI 4

LAR, Attachment 4, Section 1.5, addresses compliance with 10 CFR 50.46. Regarding compliance with 10 CFR 50.46(b)(4), the last sentence of third paragraph, states:

> Inboard grid deformation due to combined LOCA and seismic loads is not calculated to occur for Comanche Peak.

The LAR does not provide any summary of the calculations or the results or other technical basis to support this statement. Provide a summary of the calculations and the results or other technical basis to support the statement.

Response

The FSLOCA EM analysis does not affect the existing calculations that support the analysis of record related to combined LOCA and seismic loads, and the conclusion is retained from prior calculations and is credited in the current LOCA design basis analyses. That is, the previous calculations on grid deformation due to combined LOCA and seismic loads remain valid. As described in Section 4.2.2.2.4 of the Final Safety Analysis Report (FSAR) regarding the combined LOCA and seismic loads, “A coolable geometry is, therefore, assured of the IFM grid elevation, as well as at the structural grid elevation.”

Enclosure 3

Affidavit CAW-23-020

Commonwealth of Pennsylvania:
County of Butler:

(1) I, Zachary Harper, Senior Manager, Licensing Engineering, have been specifically delegated and authorized to apply for withholding and execute this Affidavit on behalf of Westinghouse Electric Company LLC (Westinghouse).

(2) I am requesting the proprietary portions of NF-TB-23-041, Revision 1 be withheld from public disclosure under 10 CFR 2.390.

(3) I have personal knowledge of the criteria and procedures utilized by Westinghouse in designating information as a trade secret, privileged, or as confidential commercial or financial information.

(4) Pursuant to 10 CFR 2.390, the following is furnished for consideration by the Commission in determining whether the information sought to be withheld from public disclosure should be withheld.

(i) The information sought to be withheld from public disclosure is owned and has been held in confidence by Westinghouse and is not customarily disclosed to the public.

(ii) The information sought to be withheld is being transmitted to the Commission in confidence and, to Westinghouse's knowledge, is not available in public sources.

(iii) Westinghouse notes that a showing of substantial harm is no longer an applicable criterion for analyzing whether a document should be withheld from public disclosure. Nevertheless, public disclosure of this proprietary information is likely to cause substantial harm to the competitive position of Westinghouse because it would enhance the ability of competitors to provide similar technical evaluation justifications and licensing defense services for commercial power reactors without commensurate expenses. Also, public disclosure of the information would enable others to use the information to meet NRC requirements for licensing documentation without purchasing the right to use the information.

(5) Westinghouse has policies in place to identify proprietary information. Under that system, information is held in confidence if it falls in one or more of several types, the release of which might result in the loss of an existing or potential competitive advantage, as follows:

(a) The information reveals the distinguishing aspects of a process (or component, structure, tool, method, etc.) where prevention of its use by any of Westinghouse's competitors without license from Westinghouse constitutes a competitive economic advantage over other companies.

(b) It consists of supporting data, including test data, relative to a process (or component, structure, tool, method, etc.), the application of which data secures a competitive economic advantage (e.g., by optimization or improved marketability).

(c) Its use by a competitor would reduce his expenditure of resources or improve his competitive position in the design, manufacture, shipment, installation, assurance of quality, or licensing a similar product.

(d) It reveals cost or price information, production capacities, budget levels, or commercial strategies of Westinghouse, its customers or suppliers.

(e) It reveals aspects of past, present, or future Westinghouse or customer funded development plans and programs of potential commercial value to Westinghouse.

(f) It contains patentable ideas, for which patent protection may be desirable.

(6) The attached documents are bracketed and marked to indicate the bases for withholding. The justification for withholding is indicated in both versions by means of lower-case letters (a) through (f) located as a superscript immediately following the brackets enclosing each item of information being identified as proprietary or in the margin opposite such information. These lower-case letters refer to the types of information Westinghouse customarily holds in confidence identified in Sections (5)(a) through (f) of this Affidavit.

I declare that the averments of fact set forth in this Affidavit are true and correct to the best of my knowledge, information, and belief. I declare under penalty of perjury that the foregoing is true and correct.

Executed on: 5/31/2023

Signed electronically by
Zachary Harper