Luminant

Rafael Flores
Senior Vice President &
Chief Nuclear Officer
rafael.flores@luminant.com

Luminant Power
P O Box 1002
6322 North FM 56
Glen Rose, TX 76043

T 254.897.5590
F 254.897.6652
C 817.559.0403

CP-201300250
Log # TXNB-13006

Ref. # 10 CFR 52

March 4, 2013

U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555
ATTN: David B. Matthews, Director
Division of New Reactor Licensing

SUBJECT: COMANCHE PEAK NUCLEAR POWER PLANT, UNITS 3 AND 4
DOCKET NUMBERS 52-034 AND 52-035
SUPPLEMENTAL RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION 56 (2583), 90 (3113), AND 243 (6124) (SECTIONS 9.4.5, 14.3.3, AND 16)

Dear Sir:

Luminant Generation Company LLC (Luminant) submits herein supplemental information for the responses to Request for Additional Information (RAI) 56 (2583), 90 (3113), and 243 (6124) for the Combined License Application for Comanche Peak Nuclear Power Plant Units 3 and 4. The supplemental information addresses inspections, tests, analyses, and acceptance criteria; surveillance frequencies; and essential service water system internal flooding.

Should you have any questions regarding the supplemental information, please contact Don Woodlan (254-897-6887, Donald.Woodlan@luminant.com) or me.

There are no commitments in this letter.

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

Executed on March 4, 2013.

Sincerely,

Luminant Generation Company LLC

Donald R. Woodlan for

Rafael Flores

Attachments: 1. Supplemental Response to Request for Additional Information 56 (2583)
2. Supplemental Response to Request for Additional Information 90 (3113)
3. Supplemental Response to Request for Additional Information 243 (6124)

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NRO

Electronic distribution w/attachments:

Rafael.Flores@luminant.com
jeffry.simmons@luminant.com
William.Moore@luminant.com
Stephanie.Moore@energyfutureholdings.com
Ken.Peters@luminant.com
Robert.Bird@luminant.com
Allan.Koenig@luminant.com
Timothy.Clouser@luminant.com
Ronald.Carver@luminant.com
David.Volkening@luminant.com
Daniel.Wilder@luminant.com
Eric.Evans@luminant.com
Robert.Reible@luminant.com
donald.woodlan@luminant.com
John.Conly@luminant.com
Janice.Caldwell@luminant.com
David.Beshear@txu.com
Ashley.Monts@luminant.com
Fred.Madden@luminant.com
Dennis.Buschbaum@luminant.com
Debra.Gilliam@luminant.com
NuBuild Licensing files
sfrantz@morganlewis.com
jrund@morganlewis.com
tmatthews@morganlewis.com
regina.borsh@dom.com
jane.d.macek@dom.com
Barry.bryant@dom.com
tomo_imamura@mhi.co.jp
yoshinori_fujiwara@mhi.co.jp
kano_saito@mhi.co.jp
Luminant Records Management (.pdf files only)
shigemitsu_suzuki@mhi.co.jp
yoshiki_ogata@mnes-us.com
masanori_onozuka@mnes-us.com
tatsuya_hashimoto@mnes-us.com
joseph_tapia@mnes-us.com
michael_melton@mnes-us.com
michael_tschiltz@mnes-us.com
atsushi_kumaki@mnes-us.com
yukako_hill@mnes-us.com
nicholas_kellenberger@mnes-us.com
ryan_sprengel@mnes-us.com
seiki_yamabe@mnes-us.com
molly_spalding@mnes-us.com
rjb@nei.org
kra@nei.org
michael.takacs@nrc.gov
cp34update@certrec.com
David.Matthews@nrc.gov
Balwant.Singal@nrc.gov
Hossein.Hamzehee@nrc.gov
Stephen.Monarque@nrc.gov
jeff.ciocco@nrc.gov
john.kramer@nrc.gov
Brian.Tindell@nrc.gov
Elmo.Collins@nrc.gov
Frank.Akstulewicz@nrc.gov
ComanchePeakCOL.Resource@nrc.gov

Attachment 1

Supplemental Response to Request for Additional Information 56 (2583)

SUPPLEMENTAL RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

Comanche Peak, Units 3 and 4

Luminant Generation Company LLC

Docket Nos. 52-034 and 52-035

RAI NO.: 56 (2583)

SRP SECTION: 14.03.03- Piping Systems and Components - Inspections, Tests, Analyses, and Acceptance Criteria

QUESTIONS for Engineering Mechanics Branch 2 (ESBWR/ABWR Projects) (EMB2)

DATE OF RAI ISSUE: 9/14/2009

QUESTION NO.: 14.03.03-1

The regulatory basis for this question is discussed in NUREG-0800, Standard Review Plan (SRP), Section 14.3.3, which establishes the criteria the NRC staff uses to review combined license (COL) applications.

In the Comanche Peak Nuclear Power Plant, Units 3 and 4 (CPNPP) COL Application Part 10, 'Inspections, Tests, Analyses and Acceptance Criteria and Proposed License Conditions,' Table A.1-1, 'Ultimate Heat Sink System and Essential Service Water System,' Item 2a, the column titled 'Design Commitment' states that ASME Code Section III components are designed and constructed in accordance with the requirements of American Society of Mechanical Engineers (ASME) Code Section III. In the Inspections, Tests, and Analyses (ITA) and Acceptance Criteria (AC) sections, the "as-built" components were discussed. Please provide separate ITAAC for the two remaining activities, Fabrication & Installation and As-built Reconciliation, as follows:

(1) Fabrication and Installation:

(a) For components designated as ASME Code Section III, certified data report(s) can be used to provide assurance that these components are fabricated, installed, and inspected in accordance with ASME Code Section III requirements. Provide an ITAAC demonstrating that an inspection of the components will be conducted.

(b) Provide an AC for this ITAAC that states "Certified ASME Code Data Report(s) (including N-5 Data Reports, where applicable) and inspection reports exist and conclude that the components are fabricated, installed, and inspected in accordance with the requirements of ASME Code Section III."

(2) As-built Reconciliation

(a) In accordance with guidance in SRP 14.3.3, provide as-built ITAAC demonstrating that the components shall be reconciled with the design requirements.

(b) Provide an ITA, as part of this ITAAC, to ensure that a reconciliation analysis of the components using as-designed and as-built information and ASME Code certified Design Report will be performed

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SUPPLEMENTAL INFORMATION:

Luminant made changes in COLA Part 10 Table A.1-1 to delete "design" from the ASME component ITAAC in its original response to this question (ML093010366). Additional changes were made to this table in a July 16, 2012, supplemental response that added ITAAC addressing the design of piping systems and components (ML12199A291). This supplemental response makes additional changes to COLA Part 10 Section A.1.1 and Table A.1-1 to correct typographical errors and to separate the ITAAC for pressure testing and functional capability of ASME Code Section III, Class 3 piping systems and components (previously item 21) into two separate ITAAC, one for piping systems (revised item 21) and one for components (new item 22).

Impact on R-COLA

See attached marked up COLA Part 10 Revision 3 pages 12, 19 and 20.

Impact on S-COLA

This response is standard.

Impact on DCD

None.

18. The UHSS is capable of performing its safety functions under design basis event conditions and coincident single failure with or without offsite power available.

19. The UHS cooling tower fans, identified in Table A.1-2, can withstand design basis tornado and hurricane effects, including differential pressure effects and overspeed, without loss of safety function. RCOL2_14.0 3.07-38 RCOL2_03.0 3.02-9

20. The UHS cooling tower spray nozzles and orifices are sized to prevent clogging due to debris.

21. The ASME Code Section III~~I~~, Class 3 piping systems ~~and components~~, for the UHSS and ESWS (portions outside the certified design), identified in FSAR Table 3.2-201 are designed to retain their pressure integrity and functional capability under internal design and operating pressures and design basis loads. RCOL2_14.0 3.03-1 S01 RCOL2_14.0 3.03-1 S02

22. The ASME Code Section III, Class 3 components, for the UHSS and ESWS (portions outside the certified design), identified in FSAR Table 3.2-201 are designed to retain their pressure integrity and functional capability under internal design and operating pressures and design basis loads.

A.1.2 Inspections, Tests, Analysis, and Acceptance Criteria

Table A.1-1 describes ITAAC for the UHSS and ESWS portions outside the scope of the certified design.

Appendix A.1

Table A.1-1 (Sheet 7 of 8)

Ultimate Heat Sink System and Essential Service Water System (Portions Outside the Scope of the Certified Design) Inspections, Tests, Analyses, and Acceptance Criteria

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria	
17. The sum of the ESW pump shutoff head and static head is such that the ESWS design pressure is not exceeded.	17. Inspection, test and analysis of the as-built ESWS will be performed.	17. A report exists and concludes that the sum of the as-built ESW pump shutoff head and static head is such that the ESWS design pressure is not exceeded.	
18. The UHSS is capable of performing its safety functions under design basis event conditions and coincident single failure with or without offsite power available.	18. Inspection and analysis of the as-built UHSS will be performed.	18. A report exists and concludes that the as-built UHSS is capable of performing its safety functions under design basis event conditions and coincident single failure with or without offsite power available.	
19. The UHS cooling tower fans, identified in Table A.1-2, can withstand design basis tornado and hurricane effects, including differential pressure effects and overspeed, without loss of safety function.	19.i Type tests, analyses, or a combination of type tests and analyses will be performed to demonstrate that the UHS cooling tower fans, identified in Table A.1-2, can withstand the design basis tornado and hurricane effects, including differential pressure effects and overspeed, without loss of safety function.	19.i A report exists and concludes that the UHS cooling tower fans, identified in Table A.1-2, can withstand the design basis tornado and hurricane effects, including differential pressure effects and overspeed, without loss of safety function.	RCOL2_14 .03.07-38 RCOL2_03 .03.02-9
	19.ii Inspections and analyses will be performed to verify that the as-built UHS cooling tower fans identified in Table A.1-2 are bounded by the tested or analyzed conditions.	19.ii A report exists and concludes that the as-built UHS cooling tower fans identified in Table A.1-2 are bounded by the tested or analyzed conditions.	
20. The UHS cooling tower spray nozzles and orifices are sized to prevent clogging due to debris.	20. Inspections of the as-built UHS cooling tower spray nozzles and orifices will be performed.	20. Each as-built UHS cooling tower spray nozzles and orifices have an orifice size greater than 3mm.	
21. The ASME Code Section III~~I~~, Class 3 piping systems ~~and components~~, for the UHSS and ESWS (portions outside the certified design), identified in FSAR Table 3.2-201 are designed to retain their pressure integrity and functional capability under internal design and operating pressures and design basis loads.	21. An inspection of the stress report(s) for the ASME Code Section III, Class 3 piping systems ~~and components~~, for the UHSS and ESWS (portions outside the certified design) will be performed.	21. The stress report(s) exist and conclude that the design of the ASME Code Section III, Class 3 piping systems ~~and components~~, for the UHSS and ESWS (portions outside the certified design), identified in FSAR Table 3.2-201 comply~~y~~ies with the requirements of ASME Code Section III.	RCOL2_14 .03.03-1 S01 RCOL2_14 .03.03-1 S02

Appendix A.1

Table A.1-1 (Sheet 8 of 8)

Ultimate Heat Sink System and Essential Service Water System (Portions Outside the Scope of the Certified Design) Inspections, Tests, Analyses, and Acceptance Criteria

Design Commitment	Inspections, Tests, Analyses	Acceptance Criteria
22. The ASME Code Section III, Class 3 components, for the UHSS and ESWS (portions outside the certified design), identified in FSAR Table 3.2-201 are designed to retain their pressure integrity and functional capability under internal design and operating pressures and design basis loads.	22. An inspection of the stress report(s) for the ASME Code Section III, Class 3 components, for the UHSS and ESWS (portions outside the certified design) will be performed.	22. The stress report(s) exist and conclude that the design of the ASME Code Section III, Class 3 components, for the UHSS and ESWS (portions outside the certified design), identified in FSAR Table 3.2-201 complies with the requirements of ASME Code Section III.

RCOL2_14.03.03-1 S02

Attachment 2

Supplemental Response to Request for Additional Information 90 (3113)

SUPPLEMENTAL RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

Comanche Peak, Units 3 and 4

Luminant Generation Company LLC

Docket Nos. 52-034 and 52-035

RAI NO.: 90 (3113)

SRP SECTION: 16 - Technical Specifications

QUESTIONS for Technical Specification Branch (CTSB)

DATE OF RAI ISSUE: 9/29/2009

QUESTION NO.: 16-10

NUREG-0800, Standard Review Plan, Chapter 16, "Technical Specifications," establishes criteria that the NRC staff intends to use to evaluate whether an applicant meets the NRC's regulations.

TS 5.5.19, Surveillance Frequency Control Program (SFCP).

Provide the list of Frequencies of those Surveillance Requirements for which the Frequency is controlled by the program.

The plant-specific technical specifications (PTS) are stand alone entity with the issuance of a COL. This list of Frequencies is needed by the COL holder to fully develop and implement the SFCP prior to the plant initial fuel loading. Further, Frequencies for SRs specified in TS 3.7.9 for the plant Ultimate Heat Sink were not provided as part of the MHI APWR generic technical specifications (GTS) scope.

This information is needed to ensure completeness of TS 5.5.19 requirements.

SUPPLEMENTAL INFORMATION:

This supplemental information responds to Open Item 16-1 from the NRC safety evaluation with open items.

The surveillance frequencies for Comanche Peak Units 3 and 4 (CPNPP 3 and 4) plant facilities will be controlled by the Surveillance Frequency Control Program (SFCP) to be developed per the Technical Specifications administrative controls and Luminant's risk-informed Technical Specifications methodology prior to initial fuel loading.

The surveillance requirements have been identified in COLA Part 4 and the deterministic values for the frequencies for the standard plant are in Chapter 16 of the US-APWR Design Control Document (DCD). The initial surveillance frequencies for CPNPP 3 and 4 Technical Specifications incorporated by reference from the generic US-APWR Technical Specifications will be the deterministic frequencies listed in the US-APWR DCD for the respective surveillances.

The ultimate heat sink (UHS) is a site-specific system and is not included in the US-APWR generic Technical Specifications. The surveillance requirements and the deterministic values of the surveillance frequencies for TS 3.7.9 have been included in FSAR Subsection 16.1.1.2. These will be the initial surveillance frequencies, which may be changed in accordance with the SFCP once the program is implemented and sufficient operating experience is achieved.

Impact on R-COLA

See attached marked-up FSAR Revision 3 page 16.1-2 and new Table 16-201 and marked-up COLA Part 4 Revision 3 pages 5.5-17 and 5.5-18.

Impact on S-COLA

None; this response is site-specific.

Impact on DCD

None.

The administrative controls section of the Technical Specifications specifies the requirements for SFCP and the CPNPP will establish this program to control Surveillance Frequencies and make future changes to the Surveillance Requirement Frequencies.

CP COL 16.1(2) Replace the eighth paragraph in DCD Subsection 16.1.1.2 (6) with the following.

The establishment of the SFCP is a requirement of the Technical Specifications and shall be completed, and reviewed and approved by NRC prior to the initial fuel loading.

RCOL2_16-10 S01

The initial Surveillance Frequencies for standard plant Technical Specification Surveillances incorporated by reference into the COLA will be the deterministic Frequencies listed in the generic US-APWR DCD for the respective Surveillance.

The Ultimate Heat Sink is a site-specific system and is not included in the US-APWR generic technical specifications. The Surveillance Requirements, including the initial deterministic values of the Surveillance Frequencies for TS 3.7.9, Ultimate Heat Sink, are provided in Table 16-201. These Surveillance Frequencies will be the initial Frequencies.

The initial Surveillance Frequencies may be changed in accordance with the SFCP once the program is implemented and sufficient operating experience is achieved.

Table 16-201 Initial Surveillance Frequencies for Ultimate Heat Sink

RCOL2_16-10 S01
RCOL2_16-10 S01

SURVEILLANCE		FREQUENCY
SR 3.7.9.1	Verify each required UHS basin water inventory is ≥ 2,800,000 gallons.	24 hours
SR 3.7.9.2	Verify water temperature of UHS is ≤ 93°F.	24 hours
SR 3.7.9.3	Operate each cooling tower fan for ≥ 15 minutes.	31 days
SR 3.7.9.4	Verify each cooling tower fan starts automatically on an actual or simulated actuation signal.	24 months
SR 3.7.9.5	Verify each UHS transfer pump starts on manual actuation.	24 months
SR 3.7.9.6	Verify each UHS manual, power-operated, and automatic valve in the flow path servicing safety related equipment, that is not locked, sealed, or otherwise secured in position, is in the correct position.	31 days
SR 3.7.9.7	Verify each UHS automatic valve and each control valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	24 months

5.5 Programs and Manuals

5.5.17 Battery Monitoring and Maintenance Program

This Program provides for battery restoration and maintenance, based on the recommendations of IEEE Standard 450-1995, "IEEE Recommended Practice for Maintenance, Testing, and Replacement of Vented Lead-Acid Batteries for Stationary Applications," or of the battery manufacturer including the following:

a. Actions to restore battery cells with float voltage < 2.13 V, and

b. Actions to equalize and test battery cells that had been discovered with electrolyte level below the minimum established design limit.

5.5.18 Configuration Risk Management Program (CRMP)

This program provides controls for Completion Times. The program shall ensure that the assessment of configuration-specific risk to support the extension of Completion Times, and reassessment of configuration changes, and implementation of compensatory measures and actions at the appropriate risk thresholds are performed sufficient to assure the associated Limiting Conditions for Operation are met.

a. When entering into this specification, the following actions shall be taken in accordance with NEI 06-09 (as used in this specification, NEI 06-09 refers to Revision 0 as modified and supplemented by "Comanche Peak Nuclear Power Units 3 and 4 Technical Specifications Methodology for Risk-Managed Technical Specifications and Surveillance Frequency Control Program," Revision ~~[x]~~2). RCOL2_16-10 S01

1. Within the completion time of the referencing specification determine that the plant configuration is acceptable beyond the completion time,

AND

2. Calculate the Risk-Informed Completion Time (RICT),

AND

3. Restore required subsystems or components to operable status within the RICT or 30 days, whichever is less.

OR

Take the ACTIONs required in the referencing specification for the required action and associated completion time not met.

b. The RICT shall be recalculated whenever plant configuration change occurs, in accordance with NEI 06-09.

5.5 Programs and Manuals

5.5.18 Configuration Risk Management Program (CRMP) (continued)

c. This program shall satisfy all the requirements specified in NEI 06-09 including, but not limited to, the following:

1. Station procedure of the CRMP process with specifying the station functional organizations and personnel responsible for each action of CRMP implementation,

2. Training of responsible personnel,

3. PRA model to meet the technical adequacy requirements of NEI 06-09,

4. Appropriate CRM tool.

5.5.19 Surveillance Frequency Control Program

This program provides controls for Surveillance Frequencies. The program shall ensure that Surveillance Requirements specified in the Technical Specifications are performed at intervals sufficient to assure the associated Limiting Conditions for Operation are met.

a. The Surveillance Frequency Control Program shall contain a list of Frequencies of those Surveillance Requirements for which the Frequency is controlled by the program.

b. Changes to the Frequencies listed in the Surveillance Frequency Control Program shall be made in accordance with NEI 04-10 (as used in this specification, NEI 04-10 refers to Revision 1 as modified and supplemented by "Comanche Peak Nuclear Power Units 3 and 4 Technical Specifications Methodology for Risk-Managed Technical Specifications and Surveillance Frequency Control Program," Revision ~~[x]~~2). | RCOL2_16-10 S01

c. The provisions of Surveillance Requirements 3.0.2 and 3.0.3 are applicable to the Frequencies established in the Surveillance Frequency Control Program.

Attachment 3

Supplemental Response to Request for Additional Information 243 (6124)

SUPPLEMENTAL RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

Comanche Peak, Units 3 and 4

Luminant Generation Company LLC

Docket Nos. 52-034 and 52-035

RAI NO.: 243 (6124)

SRP SECTION: 09.04.05 - Engineered Safety Feature Ventilation System

QUESTIONS for Containment and Ventilation Branch 1 (AP1000/EPR Projects) (SPCV)

DATE OF RAI ISSUE: 12/14/2011

QUESTION NO.: 09.04.05-23

This is a follow-up RAI to RAI Letter Number 123 (3232), Question No. 09.04.05-5 and RAI No. 5585, Question No. 09.04.05-17.

In the response to Question 09.04.05-5 the applicant wrote "*The access door is set at a sill height of 6" and is required to be structurally designed for the static head of flood waters that may accumulate above the sill height before being drained away by the floor drains.*" The applicant committed to describe the flooding event evaluation in a new FSAR Subsection 3.4.1.5.3 and to show the details of the floor drain and sill design in FSAR Figure 3.8-209 or related FSAR Section 3.8 figures in a future FSAR Update Tracking Report.

In the response to Question 09.04.05-17, the applicant indicated that "CPNPP Units 3 and 4 had been evaluated for internal flood protection for site-specific structures. The evaluation concluded that postulated internal flooding due to events including MELB and fire suppression activities cannot adversely affect safe plant operations or the ability of the plant to achieve and maintain a safe shutdown condition. Floor drains are provided in the ESW pump rooms and UHS transfer pump rooms to allow internal flood waters to drain to the basin below. The applicant committed to amend FSAR 3.4.1.3, subsection 9.4.5.3.6, Figure 3.8-208 and Figure 3.8-209 with the relevant facts from the evaluation. The staff has verified that Revision 2 of the COLA FSAR contains these changes.

In the latter response, the staff notes that there was neither a discussion of the structural design of the access door nor of the door sill height between the ESW pump room and the UHS transfer pump room. Nor was there a discussion in the response, of the internal flood protection evaluation findings with respect to the required floor drain sizing and the maximum internal flood water height, that prevent these other design details from being a factor in the evaluation's conclusions. The staff believes that the minimum floor drain sizing to prevent cross divisional flooding should be captured in FSAR 3.4.1.3, subsection 9.4.5.3.6, Figure 3.8-208 and Figure 3.8-209.

As such, the staff requests to review the applicant's technical evaluation of the internal flood analysis. The applicant's evaluation can be made available to the staff either: through a formal audit, the electronic reading room, or by submittal to the staff as a Technical Report.

SUPPLEMENTAL INFORMATION:

On January 23, 2013, the NRC provided three comments on Luminant's responses to RAI 243 (6124) Question 09.04.05-23 (ML12243A456) and RAI 254 (6403) Question 14.03.07-38 (ML12269A462). This supplemental information addresses those comments:

1) *The applicant's RAI response reads in part "'For defense-in-depth, a non-safety related liquid detection system has been installed in the ESW pump room that alarms in the Main Control Room and Remote Shutdown Console Room. This is a further precaution to preserve the UHS water inventory and to minimize the amount of water lost from a MELB in either pump room." However, there was no FSAR amendment provided by the applicant that captures this design change.*

   R-COLA FSAR Subsection 9.3.3 has been revised to provide information consistent with the response to Question 09.04.05-23.

2) *The drain pipe that extends from the floor and to (and into) the basin, for each transfer pump room and each ESW pump room, is part of the resolution and is being credited with fire protection (i.e. retardant) attributes. However, the resolution does not indicate the seismic class (Category I or Category II) or safety class (SR or NSR) of this drain pipe.*

   The floor drain pipes provide a path from the pump rooms to drain water that may arise from maintenance activities, but they are not credited for flooding mitigation. The drain pipes are non-safety related because they are not credited for protecting a safety function. However, the drain pipes are designed as Seismic Category II to prevent potential damage to the safety-related pumps in the basin.

3) *Piping rooms (i.e. ESW Piping Rooms and UHS Transfer Piping Room) with an area heater for each room were added to the ESW Pump Houses under RAI 254-6403 Question 14.03.07-38. The UHS ESW pump house ventilation system will maintain these piping rooms along with the housed pump rooms at between 40 °F – 120 °F during all plant conditions. The applicant has yet to provide an amendment to DCD Table 9.4-1 "Area Design Temperature and Relative Humidity" to include the design basis information for the ESW Pump houses.*

   The area design temperature for the UHS ESW pump house and piping rooms is currently shown in FSAR Subsection 9.4.5.1.1.6. However, to be consistent with DCD Table 9.4-1, the area design temperature and relative humidity for the UHS ESW pump house ventilation system has been added to the FSAR as new Table 9.4-202 and specific design temperature information has been deleted from the text.

   In addition, some editorial corrections have been made to Table 9.4-204, which had been previously updated in response to Question 14.03.07-38.

Impact on R-COLA

See attached marked-up FSAR Revision 3 pages 9.3-2, 9.3-3, 9.4-3, 9.4-5, 9.4-7, 9.4-9, 9.4-12, 9.4-13, 9.4-14, 9.4-15, 9.4-16, 9.4-17, 9.4-18, 9.4-19, 9.4-20, and 9.4-21.

Impact on S-COLA

None; this response is site-specific.

Impact on DCD

None.

The carbon dioxide gas is supplied from the carbon dioxide gas cylinders located close to the equipment if practical or in the compressed gas farm. The carbon dioxide gas cylinders in the gas farm supply carbon dioxide gas to both units.

Miscellaneous Gases

Other gases for the oxygen gas analyzer and the automatic gas analyzers are supplied from gas cylinders located close to the analyzers.

Figure 9.3.1-201 shows the Hydrogen and Nitrogen Gas Supply Configuration.

9.3.1.2.2.3 Compressed Gas System

STD COL 9.3(1) Replace the content of DCD Subsection 9.3.1.2.2.3 with the following.

The compressed gas system consists of gas sources as described in Subsection 9.3.1.2.1.3 and the distribution headers, distribution piping, and the associated valves and instrumentation.

9.3.2.2.5 Steam Generator Blowdown Sampling System

CP CDI Replace the phrase "waste water system" in the third paragraph of DCD Subsection 9.3.2.2.5 with "existing waste water management Pond C."

9.3.3 Equipment and Floor Drainage Systems

CP CDI Throughout DCD Subsection 9.3.3, replace "waste water system (WWS)" with "existing waste water management Pond C."

9.3.3.2.3 System Operation

RCOL2_09.04.05-23 S02

CP SUP 9.3(2) Add the following new paragraphs after the end of DCD Subsection 9.3.3.2.3.

A floor drain system is provided in the ESW pump rooms and UHS transfer pump rooms to drain water. The system is a simple passive design consisting of multiple floor drain openings in each room. Each floor drain has a single piece of straight pipe through which water flows down into the basin located directly under the floor. The pipe extends below the lower water level of the basin. There is no common drain line to be clogged and a low probability for more than one floor drain to be clogged at a time. This pipe arrangement also precludes fire

transferring between the two pump rooms through the basin area. The drain pipes are designed as Seismic Category II to prevent potential damage to the safety related pumps in the basins.

For defense-in-depth, a non-safety related liquid detection system has been installed in the ESW pump room that alarms in the Main Control Room and Remote Shutdown Console Room. This is a further precaution to preserve the UHS water inventory and to minimize the amount of water lost from a moderate-energy line break in either pump room.

RCOL2_09.04.05-23 S02

CP SUP 9.3(1) Add the following after Subsection 9.3.4.2.3.2.

9.3.4.2.3.3 Zinc Injection System

A soluble zinc (Zn) compound depleted of Zn-64 is injected into the reactor coolant to reduce radiation fields within the primary system. The zinc injection system consists of a tank, pumps, piping, a check valve, and a manual isolation valve. The system injects into the common charging pump suction line between the seal water heat exchanger and the discharge from the volume control tank. The system maintains a target Zn concentration of 5 ppb with a limiting value of 10 ppb.

9.3.6 Combined License Information

Replace the content of DCD Subsection 9.3.6 with the following.

CP COL 9.3(1)
STD COL 9.3(1)

9.3(1) *Compressed Gas System*

This COL item is addressed in Subsection 9.3.1.2.1.3, 9.3.1.2.2.3 and Figure 9.3.1-201.

9.3(2) *Deleted from the DCD.*

9.3(3) *Deleted from the DCD.*

9.3(4) *Deleted from the DCD.*

9.3(5) *Deleted from the DCD.*

9.3(6) *Deleted from the DCD.*

9.3(7) *Deleted from the DCD.*

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are included in system operating procedures in Subsection 13.5.2.1. A milestone schedule for implementation of procedures is also included in Subsection 13.5.2.1.

9.4.5 Engineered Safety Feature Ventilation System

CP COL 9.4(6) Delete the last paragraph and insert the following text to the end of the list of ESF ventilation systems in first paragraph of DCD Subsection 9.4.5.

- UHS ESW Pump House Ventilation System

CP COL 9.4(6) Add the following new subsection after DCD Subsection 9.4.5.1.1.5.

9.4.5.1.1.6 UHS ESW Pump House Ventilation System

The UHS ESW pump house ventilation system provides and maintains the proper environmental conditions within the required temperature range ~~of 40°F – 120°F~~ to support the operation of the instrumentation and control equipment and components in the individual UHS ESW pump houses including the pump rooms and the piping rooms during normal operations, a design basis accident and LOOP. The ventilation system is designed based on the outside ambient design temperature conditions (-5°F – 115°F) using 100-year return period temperature values. The area design temperature and relative humidity are shown in Table 9.4-202.

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The ESWP is installed at a location in the pump house where cooling air is adequately being circulated for cooling the ESWP motor.

9.4.5.2.2 Class 1E Electrical Room HVAC System

STD COL 9.4(4) Replace the second sentence of the first paragraph in DCD Subsection 9.4.5.2.2 with the following.

The capacity of heating coils that are affected by site specific conditions is shown in Table 9.4-201.

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unit heater. The ventilation systems are classified as safety-related equipment class 3, seismic Category I and are capable of performing their safety function under all associated design basis accidents coincident with a LOOP. | RCOL2_14.03.07-38 S01

The UHS ESW pump house ventilation systems are shown in Figure 9.4-201 and the UHS ESW pump house layout arrangement is shown in Figure 1.2-206. The UHS ESW pump house ventilation equipment design data is presented in Table 9.4-~~202~~203. | RCOL2_09.04.05-23 S02

The UHS ESW pump houses do not contain quantities of airborne radioactive contamination and are not provided with filtering or radiation monitoring capability. The pump house room ventilation systems exhaust directly to atmosphere.

The ESW pump room ventilation system is powered by the same Class 1E power train that supplies the associated ESW pump in the same room. The UHS transfer pump and UHS transfer pump room ventilation system in the same UHS ESW pump house are supplied by a Class 1E power train different from the one supplying the ESW pump. This is to ensure that the UHS transfer pump is available to transfer UHS basin water to another UHS basin if the ESW pump were to fail. Each Class 1E power train in the UHS ESW pump house is located in a different fire area separated by a three-hour fire barrier.

The UHS ESW pump house ventilation systems contain no ductwork. In each pump room, a backdraft damper is mounted in the seismic Category I wall opening and the fan is mounted on the seismic Category I outside wall. A backdraft damper is also installed in each fresh air intake wall opening. The backdraft dampers are safety-related equipment class 3 and seismic Category I. The safety function of the backdraft (gravity) damper is to open in the direction of air flow and close by counterbalance when no air flow is present.

The UHS ESW pump house fresh air intakes are positioned as high as physically possible above ground level to minimize dust entrainment. The height of the UHS ESW pump house is 16 feet above grade and the intake air is not filtered. The electrical and instrument enclosures within the UHS ESW pump house are NEMA type 12 (dust tight and drip tight – for indoor use) and if there are louvered vents on the enclosures they are provided with filters to minimize the intake of dust, dirt, and grit. The UHS ESW pump house is designed to satisfy the requirements in compliance with GDC 17. Also, based on the location of the UHS ESW pump houses' fresh air intakes, there is no source of hazardous contaminant that could enter through the outside air openings. The UHS ESW pump houses do not harbor any potential sources of explosive gas or fuel-vapor mixtures on a continuous basis.

The ESW pump room exhaust fan and the UHS transfer pump room exhaust fan provide 100% of the ventilation required for their associated rooms during normal and emergency plant operations. The ventilation system is thermostatically controlled by area temperature controllers to cycle the exhaust fans off and on to maintain design temperatures during the summer and winter. These exhaust fans,

independent UHS ESW pump houses. All ventilation system components are classified as equipment class 3, seismic category I.

- The ESW pump room ventilation system and the UHS transfer pump room ventilation system are capable of performing their safety function under all associated design basis accidents coincident with LOOP.
- The ESW pump room exhaust fans and UHS transfer pump room exhaust fans are capable of performing required safety functions under all postulated internal flooding events as described in Subsection 3.4.1.3.
- The wall separating the ESW pump room from the transfer pump room is a solid wall with all penetrations sealed with an approved 3-hour fire rated seal and a water tight seal. RCOL2_09.0 4.05-23 S01
- As shown in Table 9.4-~~203~~204, failure of a single active component in one of the UHS ESW pump house ventilation system does not result in a loss of the system's safety function. RCOL2_09.0 4.05-23 S02
- The UHS ESW pump house ventilation system components are protected from tornado/hurricane-generated missiles by their location inside a seismic category I structure. RCOL2_03.0 3.02-9
- Backdraft dampers are capable of withstanding the affects of tornado wind and atmospheric differential pressure loading or hurricane wind effects. RCOL2_03.0 3.02-9
- The UHS ESW pump house air intakes and air outlets are protected from tornado missiles and hurricane missiles as described in Subsection 3.8.4.1.3.2. RCOL2_03.0 3.02-9

STD COL 9.4(6) Add the following new subsection after DCD Subsection 9.4.5.4.5.

9.4.5.4.6 UHS ESW Pump House Ventilation System

In addition to the general requirements in Subsection 9.4.5.4, the backdraft dampers are factory tested to demonstrate their capability to withstand the tornado and hurricane wind effects and atmospheric differential pressure loading. RCOL2_03.0 3.02-9

The general requirements in Subsection 9.4.5.4 apply.

STD COL 9.4(6) Add the following new subsection after DCD Subsection 9.4.5.5.5.

9.4.5.5.6 UHS ESW Pump House Ventilation System

The following instrumentation serving the UHS ESW pump houses includes:

- Alarm on low airflow for ESW pump room or UHS transfer pump room.

9.4.3.2.4, 9.4.5.2.2, 9.4.5.2.3, 9.4.5.2.4, 9.4.5.2.5, 9.4.6.2.4.1, 9.4.6.2.4.2 and Table 9.4-201.

9.4(5) *Deleted from the DCD.*

CP COL 9.4(6)
STD COL 9.4(6)

9.4(6) *Information of UHS ESW pump house ventilation system*
This COL item is addressed in Subsections 9.4.5, 9.4.5.1.1.6, 9.4.5.2.6, 9.4.5.3.6, 9.4.5.4.6, 9.4.5.5.6, Table 9.4-202, Table 9.4-203, Table 9.4-204 and Figure 9.4-201.

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STD COL 9.4(7)

9.4(7) *Frequency of performance of periodic auxiliary building HVAC system ventilation flow balancing.*

This COL item is addressed in Subsection 9.4.3.4.1.

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Table 9.4-202
Area Design Temperature and Relative Humidity

Area	Service System[Note1]		Normal Condition				Abnormal Condition			
			Temperature °F		Relative Humidity %		Temperature °F		Relative Humidity %	
	Normal	Abnormal	Min	Max	Min	Max	Min	Max	Min	Max
UHS ESW Pump House	UHS ESW Ventilation System		40	120	-	-	40	120	-	-
ESW Piping Room	UHS ESW Ventilation System		40	120	-	-	40	120	-	-
Transfer Piping Room	UHS ESW Ventilation System		40	120	-	-	40	120	-	-

Notes

Note1: Design outside air temperature conditions are as follows:

(a) -5°F (minimum) - 115°F (Maximum) (100-year return period temperature).

CP COL 9.4(6)

Table 9.4-203

UHS ESW Pump House Ventilation System Equipment Design Data

ESW Pump Room Exhaust Fan		
Number of Fans	4	
Equipment Class	3	
Seismic Category	I	
Airflow Capacity	~~57,000~~53,000 cfm	RCOL2_09.04.05-23 S01 RCOL2_14.03.07-38 S03
Fan Type	Propeller	
UHS Transfer Pump Room Exhaust Fan		
Number of Fans	4	
Equipment Class	3	
Seismic Category	I	
Airflow Capacity	~~4,000~~7,000 cfm	RCOL2_09.04.05-23 S01 RCOL2_14.03.07-38 S03
Fan Type	Propeller	
ESW Pump Room Unit Heater		
Number of Units	8 (2 per pump room)	
Equipment Class	3	
Seismic Category	I	
Capacity	~~24~~26 kW	RCOL2_09.04.05-23 S01 RCOL2_14.03.07-38 S03
UHS Transfer Pump Room Unit Heater		
Number of Units	4	
Equipment Class	3	
Seismic Category	I	
Capacity	~~3.5~~18 kW	RCOL2_09.04.05-23 S01 RCOL2_14.03.07-38 S03
ESW Piping Room Unit Heater		
Number of Units	4	RCOL2_14.03.07-38 S01
Equipment Class	3	
Seismic Category	I	
Capacity	10kW - train A, D 5kW - train B, C	RCOL2_14.03.07-38 S03
UHS Transfer Piping Room Unit Heater		
Number of Units	4	
Equipment Class	3	
Seismic Category	I	
Capacity	5kW	

STD COL 9.4(6)

Table 9.4-204 (Sheet 1 of 8)
UHS ESW Pump House Ventilation System Failure Modes and Effects Analysis

Description of Component	Safety Function	Plant Operating Mode	Failure Mode(s)	Method of Failure Detection	Failure Effect on System Safety Function Capability	General Remarks
ESW Pump Room Exhaust Fans (VRS-MFN-601A, B, C, D)	Draws outside air through ESW Pump Room to provide cooling	All	Fails to start on t'sat ~~commant~~command	Low air flow alarm in MCR	None, Remaining three ESW pump houses are available	One Train out due to maintenance does not affect safety function, because a minimum of two ESW pumps and two transfer pumps are required.
			Fails to stop on t'sat command	Room low temperature alarm in MCR	None, Remaining three ESW pump houses are available	
			Trips for any reason	Low air flow alarm in MCR	None, Remaining three ESW pump houses are available	
ESW Pump Room Air Intake Gravity Type Backdraft Dampers (VRS-OTD-601A, B, C, D)	Opens to provide air flow path	All	Fails to open	Low air flow alarm in MCR	None, Remaining three ESW pump houses are available	
			Fails to close	Room low temperature alarm in MCR	None, Remaining three ESW pump houses are available	

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Table 9.4-204 (Sheet 2 of 8)
UHS ESW Pump House Ventilation System Failure Modes and Effects Analysis

Description of Component	Safety Function	Plant Operating Mode	Failure Mode(s)	Method of Failure Detection	Failure Effect on System Safety Function Capability	General Remarks
ESW Pump Room Air Discharge Gravity Type Backdraft Dampers (VRS-OTD-602A, B, C, D)	Opens to provide air flow path	All	Fails to open	Low air flow alarm in MCR	None, Remaining three ESW pump houses are available	
			Fails to close	Room low temperature alarm in MCR	None, Remaining three ESW pump houses are available	
ESW Pump Room Unit Heaters (VRS-MEH-601A, B, C, D)	Provides heating to ESW Pump Room	All	Fails to energize on t'sat command	Room low temperature alarm in MCR	None, Remaining three ESW pump houses are available	
			Fails to deenergize on t'sat command	Room high temperature alarm in MCR	None, Remaining three ESW pump houses are available	
			Trips for any reason	Room low temperature alarm in MCR	None, Remaining three ESW pump houses are available	
			Unit heater fan fails	High heating element temperature alarm in MCR	None, Remaining three ESW pump houses are available	

Table 9.4-204 (Sheet 3 of 8)
UHS ESW Pump House Ventilation System Failure Modes and Effects Analysis

Description of Component	Safety Function	Plant Operating Mode	Failure Mode(s)	Method of Failure Detection	Failure Effect on System Safety Function Capability	General Remarks
ESW Pump Room Unit Heaters (VRS-MEH-602A, B, C, D)	Provides heating to ESW Pump Room	All	Fails to energize on t'sat command	Room low temperature alarm in MCR	None, Remaining three ESW pump houses are available	
			Fails to deenergize on t'sat command	Room high temperature alarm in MCR	None, Remaining three ESW pump houses are available	
			Trips for any reason	Room low temperature alarm in MCR	None, Remaining three ESW pump houses are available	
			Unit heater fan fails	High heating element temperature alarm in MCR		

Table 9.4-204 (Sheet 4 of 8)
UHS ESW Pump House Ventilation System Failure Modes and Effects Analysis

Description of Component	Safety Function	Plant Operating Mode	Failure Mode(s)	Method of Failure Detection	Failure Effect on System Safety Function Capability	General Remarks
ESW Piping Room Unit Heaters (VRS-MEH-604A,B,C,D)	Provides heating to ESW piping room	All	Fails to energize on t'sat command	Status indication in MCR	None. Remaining three ESW system are available	RCOL2_14.03.07-38 S01
			Fails to deenergize on t'sat command	Status indication in MCR	None. Remaining three ESW system are available	
			Trips for any reason	Status indication in MCR	None. Remaining three ESW system are available	
			Unit heater fan fails	High heating element temperature alarm in MCR	None. Remaining three ESW system are available	

Table 9.4-204 (Sheet 5 of 8)
UHS ESW Pump House Ventilation System Failure Modes and Effects Analysis

Description of Component	Safety Function	Plant Operating Mode	Failure Mode(s)	Method of Failure Detection	Failure Effect on System Safety Function Capability	General Remarks
UHS Transfer Piping Room Unit Heaters (VRS-MEH-605A,B,C,D)	Provides heating to UHS transfer piping room	All	Fails to energize on t'sat command	Status indication in MCR	None. Remaining three UHS transfer system are available	RCOL2_14.03.07-38 S01
			Fails to deenergize on t'sat command	Status indication in MCR	None. Remaining three UHS transfer system are available	
			Trips for any reason	Status indication in MCR	None. Remaining three UHS transfer system are available	
			Unit heater fan fails	High heating element temperature alarm in MCR	None. Remaining three UHS transfer system are available	

Table 9.4-204 (Sheet 6 of 8)
UHS ESW Pump House Ventilation System Failure Modes and Effects Analysis

Description of Component	Safety Function	Plant Operating Mode	Failure Mode(s)	Method of Failure Detection	Failure Effect on System Safety Function Capability	General Remarks
UHS Transfer Pump Room Exhaust Fans (VRS-MFN-602A, B, C, D)	Draws outside air through Transfer Pump Room to provide cooling	All	Fails to start on t'sat commant	Low air flow alarm in MCR	None, Remaining three ESW pump houses are available	
			Fails to stop on t'sat command	Room low temperature alarm in MCR	None, Remaining three ESW pump houses are available	
			Trips for any reason	Low air flow alarm in MCR	None, Remaining three ESW pump houses are available	
UHS Transfer Pump Room Air Intake Gravity Type Backdraft Dampers (VRS-OTD-603A, B, C, D)	Opens to provide air flow path	All	Fails to open	Low air flow alarm in MCR	None, Remaining three ESW pump houses are available	
			Fails to close	Room low temperature alarm in MCR	None, Remaining three ESW pump houses are available	

Table 9.4-204 (Sheet 7 of 8)
UHS ESW Pump House Ventilation System Failure Modes and Effects Analysis

Description of Component	Safety Function	Plant Operating Mode	Failure Mode(s)	Method of Failure Detection	Failure Effect on System Safety Function Capability	General Remarks	
UHS Transfer Pump Room Air Discharge Gravity Type Backdraft Dampers (VRS-OTD-604A, B, C, D)	Opens to provide air flow path	All	Fails to open	Low air flow alarm in MCR	None, Remaining three ESW pump houses are available		RCOL2_09.04.05-23 S02
			Fails to close	Room low temperature alarm in MCR	None, Remaining three ESW pump houses are available		
			Trips for any reason	Low air flow alarm in MCR	None, Remaining three ESW pump houses are available		
UHS Transfer Pump Room Unit Heaters (VRS-MEH-603A, B, C, D)	Provides heating to Transfer Pump Room	All	Fails to energize on t'sat command	Room low temperature alarm in MCR	None, Remaining three ESW pump houses are available		RCOL2_09.04.05-23 S02
			Fails to deenergize on t'sat command	Room high temperature alarm in MCR	None, Remaining three ESW pump houses are available		
			Trips for any reason	Room low temperature alarm in MCR	None, Remaining three ESW pump houses are available		
			Unit heater fan fails	High heating element temperature alarm in MCR	None, Remaining three ESW pump houses are available		

Table 9.4-204 (Sheet 8 of 8)
UHS ESW Pump House Ventilation System Failure Modes and Effects Analysis

Description of Component	Safety Function	Plant Operating Mode	Failure Mode(s)	Method of Failure Detection	Failure Effect on System Safety Function Capability	General Remarks
ESW Pump Room Temperature Switch VRS-TS-803,804,805,806 VRS-TS-823,824,825,826 VRS-TS-843,844,845,846 VRS-TS-863,864,865,866	Provides input signal to temperature controller for the starting and stopping of the unit heaters and exhaust fan	All	Fails to send input signal to temperature controller for the unit heaters and exhaust fan	Room low temperature alarm in MCR Room high temperature alarm in MCR Low airflow alarm in MCR	None, Remaining three ESW pump houses are available	
UHS Transfer Pump Room Temperature Switch VRS-TS-812,813,814,815 VRS-TS-832,833,834,835 VRS-TS-852,853,854,855 VRS-TS-872,873,874,875	Provides input signal to temperature controller for the starting and stopping of the unit heaters and exhaust fan	All	Fails to send input signal to temperature controller for the unit heaters and exhaust fan	Room low temperature alarm in MCR Room high temperature alarm in MCR Low airflow alarm in MCR	None, Remaining three ESW pump houses are available	