December 19, 2011

Comanche Peak Nuclear Power Plant, Units 3 & 4
COL Application

Part 2

FSAR Revision 2

Update Tracking Report

Revision 0

Revision History

Revision	Date	Update Description
-	6/28/2011	COLA Revision 2 Transmittal See Luminant Letter no. TXNB-11044 Date 6/28/2011
-	4/13/2011	Updated Chapters: Ch. 9. 10, 12 See Luminant Letter no. TXNB-11020 Date 4/13/2011 Incorporated responses to following RAIs: No. 135 Supplemental 02
-	5/20/2011	Updated Chapters: Ch. 1 See Luminant Letter no. TXNB-11035 Date 5/20/2011 Incorporated responses to following RAIs: No. 206
-	6/23/2011	Updated Chapters: Ch. 9 See Luminant Letter no. TXNB-11043 Date 6/23/2011 Incorporated responses to following RAIs: No. 220
-	7/14/2011	Updated Chapters: Ch. 2 See Luminant Letter no. TXNB-11046 Date 7/14/2011 Incorporated responses to following RAIs: No. 147 Supplemental
-	7/28/2011	Updated Chapters: Ch. 2 See Luminant Letter no. TXNB-11049 Date 7/28/2011 Incorporated responses to following RAIs: No. 223

-	7/28/2011	Updated Chapters: Ch. 9 See Luminant Letter no. TXNB-11050 Date 7/28/2011 Incorporated responses to following RAIs: No. 135 Supplemental 03
-	8/4/2011	Updated Chapters: Ch. 1, 9 See Luminant Letter no. TXNB-11053 Date 8/4/2011 Incorporated responses to following RAIs: No. 16 Supplemental
-	8/9/2011	Updated Chapters: Ch. 8 See Luminant Letter no. TXNB-11055 Date 8/9/2011 Incorporated responses to following RAIs: No. 9 Supplemental S01
-	8/29/2011	Updated Chapters: Ch. 2, 3 See Luminant Letter no. TXNB-11057 Date 8/29/2011 Incorporated responses to following RAIs: No. 22 Supplemental, 145 Supplemental, 147 Supplemental
-	9/16/2011	Updated Chapters: Ch. 8 See Luminant Letter no. TXNB-11060 Date 9/16/2011 Incorporated responses to following RAIs: No. 182 Supplemental 01
-	9/29/2011	Updated Chapters: Ch. 2, 11 See Luminant Letter no. TXNB-11061 Date 9/29/2011 Incorporated responses to following RAIs: No. 224
-	10/10/2011	Updated Chapters: Ch. 1, 6 See Luminant Letter no. TXNB-11063 Date 10/10/2011

		Incorporated responses to following RAIs: No. 231, 229
-	10/16/2011	Updated Chapters: Ch. 5, 9, 12 See Luminant Letter no. TXNB-11058 Date 10/16/2011 Incorporated responses to following RAIs: No. 225
-	10/17/2011	Updated Chapters: Ch. 8 See Luminant Letter no. TXNB-11065 Date 10/17/2011 Incorporated responses to following RAIs: No. 9 Supplemental 02
-	10/21/2011	Updated Chapters: Ch. 2 See Luminant Letter no. TXNB-11066 Date 10/21/2011 Incorporated responses to following RAIs: No. 139 Supplemental
-	10/27/2011	Updated Chapters: Ch. 3 See Luminant Letter no. TXNB-11068 Date 10/27/2011 Incorporated responses to following RAIs: No. 226
-	11/7/2011	Updated Chapters: Ch. 2, 11 See Luminant Letter no. TXNB-11076 Date 11/7/2011 Incorporated responses to following RAIs: No. 224 Supplemental 01
-	11/7/2011	Updated Chapters: Ch. 3, 13 See Luminant Letter no. TXNB-11077 Date 11/7/2011 Incorporated responses to following RAIs: No. 228

-	11/14/2011	Updated Chapters: Ch. 11 See Luminant Letter no. TXNB-11074 Date 11/14/2011 Incorporated responses to following RAIs: No. 39 Supplemental 01
-	11/14/2011	Updated Chapters: Ch. 1 See Luminant Letter no. TXNB-11079 Date 11/14/2011 Incorporated responses to following RAIs: No. 235
-	12/1/2011	Updated Chapters: Ch. 2, 3 See Luminant Letter no. TXNB-11081 Date 12/1/2011 Incorporated responses to following RAIs: No. 223
-	11/14/2011	Updated Chapters: Ch13 See Luminant Letter no. TXNB-11080 Date 11/14/2011 Incorporated responses to following RAIsL No. 198 Supplemental 01
-	12/6/2011	Updated Chapters: Ch. 1 See Luminant Letter no. TXNB-11083 Date 12/6/2011 Incorporated responses to following RAIs: No. 236
-	12/8/2011	Updated Chapters: Ch. 2, 10, 12, 19 See Luminant Letter no. TXNB-11084 Date 12/8/2011 Incorporated responses to following RAIs: No. 232, 237
0	12/19/2011	Updated Chapters: Ch 1, 2, 3, 5, 7, 8, 9, 10, 11, 14, 19

Chapter 1

Chapter 1 Tracking Report Revision List

Change ID No.	Section	FSAR Rev. 2 Page	Reason for change	Change Summary	Rev. of FSAR T/R
RCOL2_01-5	1.1	1.1-1	Response to RAI No. 206 Luminant Letter no.TXNB-11035 Date 5/20/2011	Added the information about possession and rights to proprietary and safeguards information referenced in the US-APWR DCD.	-
RCOL2_09.02.05-4 S01	Table 1.8-201 (Sheet 41 of 68)	1.8-52	Supplemental Response to RAI No. 196 Luminant Letter no.TXNB-11053 Date 8/4/2011	Deleted COL Items COL 9.5(7) and COL 9.5(9). Added “”Deleted from the DCD” in their places.	-
RCOL2_01-6	Table 1.9-201 (Sheet 1 of 12)	1.9-4	Response to RAI No. 231 Luminant Letter no.TXNB-11063 Date 10/10/2011	Added RG 1.26 to Table 1.9-201.	-
RCOL2_01-7	Table 1.8-201 (68[69] of 68)	1.8-79 [1.8-80]	Response to RAI No. 235 Luminant Letter no.TXNB-11079 Date 11/14/2011	Deleted the term “Holder Item” from Table 1.8-201.	-
RCOL2_01-8	Table 1.9-201 (Sheet 7[8] of 12)	1.9-10 [1.9-11]	Supplemental Response to RAI No. 236 Luminant Letter no.TXNB-11083 Date 12/6/2011	Added RG 1.143 to FSAR Table 1.9-201 to reflect full conformance.	-
CTS-01384	Table 1.8-201 (Sheet 3 of 68)	1.8-14	Editorial	Added the cross section reference.	0
DCD_03.03.02-5	Table 1.8-201 (Sheet 4 of 63)	1.8-15	Reflect Response to DCD RAI No.817	Added the sentence to COL item.	0
DCD_03.06.01-9	Table 1.8-201 (Sheet 7 of 68)	1.8-18	Reflect Response to DCD RAI No.795	Added the sentence to COL item.	0

Change ID No.	Section	FSAR Rev. 2 Page	Reason for change	Change Summary	Rev. of FSAR T/R
DCD_03.07.02-88	Table 1.8-201 (Sheet 10 of 68)	1.8-21	Reflect Response to DCD RAI No.810	Changed the COL item for clarification.	0
DCD_03.07.02-102	Table 1.8-201 (Sheet 10 of 68)	1.8-21	Reflect Response to DCD RAI No.810	Reinstated the COL item for clarification.	0
DCD_03.07.02-107	Table 1.8-201 (Sheet 12[13] of 68)	1.8-23 [1.8-24]	Reflect Response to DCD RAI No.810	Changed COL item for clarification.	0
DCD_07.09-23	1.8-201 (Sheet 28 of 68)	1.8-39	Reflect Response to DCD RAI No. 710	Deleted COL 7.9(1).	0
DCD_10.04.06-17	Table 1.8-201 (Sheet 42[43] of 68)	1.8-53 [1.8-54]	Reflect Response to DCD RAI No. 807	Added the new COL Item 10.3(4).	0
DCD_11.04-19	Table 1.8-201 (Sheet 45[46] of 68	1.8-56 [1.8-57]	Reflect Response to DCD RAI No. Amend 518	Corrected reference number in COL 11.2(8).	0
CTS-01363	Table 1.8-201 (Sheet 50[51] of 68)	1.8-61 [1.8-62]	Correction	Changed the resolution category for COL 12.2(1) from 3b to 3a.	0
DCD_06.02.06-45	Table 1.8-201 (Sheet 68[69] of 68)	1.8-79 [1.8-80]	Reflect Response to DCD RAI No. 803	Added new COL item 19.3(7)	0
CTS-01364	1.9.3	1.9-2	Correction	Revised Subsection 1.9.3 to delete the wording referring to the most recent revision of NUREG-0933.	0

Change ID No.	Section	FSAR Rev. 2 Page	Reason for change	Change Summary	Rev. of FSAR T/R
CTS-01365	1.10 Table 1.10-201	1.10-1 Through 1.10-9 [1.10-10]	Conformance to ISG-22	Revised Section 1.10 and Table 1.10-201 to address potential impacts of construction of CPNPP Unit 4 on CPNPP Unit 3 when Unit 3 begins operation	0

*Page numbers for the attached marked-up pages may differ from the revision 2 page numbers due to text additions and deletions. When the page numbers for the attached pages do differ, the page number for the attached page is shown in brackets.

CP COL 1.8(2)

Table 1.8-201 (Sheet 3 of 69)

Resolution of Combined License Items for Chapters 1 - 19

COL Item No.	COL Item	FSAR Location	Resolution Category
COL 2.4(1)	The COL Applicant is to provide sufficient site-specific information to verify that hydrologic events will not affect the safety-basis for the US-APWR.	2.4	3a
COL 2.5(1)	The COL Applicant is to provide sufficient information regarding the seismic and geologic characteristics of the site and the region surrounding the site.	2.0 2.5	3a
COL 3.1(1)	The COL Applicant is to provide a design that allows for the appropriate inspections and layout features of the ESWS.	3.1.4.16.1	3a
COL 3.2(1)	Deleted from the DCD.		
COL 3.2(2)	Deleted from the DCD.		
COL 3.2(3)	Deleted from the DCD.		
COL 3.2(4)	The COL Applicant is to identify the site-specific, safety-related systems and components that are designed to withstand the effects of earthquakes without loss of capability to perform their safety function; and those site-specific, safety-related fluid systems or portions thereof; as well as the applicable industry codes and standards for pressure-retaining components.	3.2.1.2 Table 3.2-201 Table 3.2-202	3a
COL 3.2(5)	The COL Applicant is to identify the equipment class and seismic category of the site-specific, safety-related and non safety-related fluid systems, components (including pressure retaining), and equipment as well as the applicable industry codes and standards.	3.2.2 Table 3.2-201	3a
COL 3.2(6)	The COL Applicant is to apply DCD methods of equipment classification and seismic categorization of risk-significant, non-safety related SSCs based on their safety role assumed in the PRA and treatment by the D-RAP.	3.2.2.5 Table 3.2-201	3a

CTS-01384

CP COL 1.8(2)

Table 1.8-201 (Sheet 4 of 69)

Resolution of Combined License Items for Chapters 1 - 19

COL Item No.	COL Item	FSAR Location	Resolution Category
COL 3.3(1)	The COL Applicant is responsible for verifying the site-specific basic wind speed is enveloped by the determinations in this section.	3.3.1.1	3a
COL 3.3(2)	These requirements also apply to seismic category I structures provided by the COL Applicant. Similarly, it is the responsibility of the COL Applicant to establish the methods for qualification of tornado effects to preclude damage to safety-related SSCs.	3.3.2.2.4	3a
COL 3.3(3)	It is the responsibility of the COL Applicant to assure that site-specific structures and components not designed for tornado loads will not impact either the function or integrity of adjacent safety-related SSCs, or generate missiles having more severe effects than those discussed in Subsection 3.5.1.4.	3.3.2.3	3a
COL 3.3(4)	The COL Applicant is to provide the wind load design method and importance factor for site-specific category I and category II buildings and structures. The COL Applicant shall also verify that the site location does not have features promoting channeling effects or buffeting in the wake of upwind obstructions that invalidate the standard plant wind load design methods described above.	3.3.1.2	3a
COL 3.3(5)	The COL Applicant is to note the vented and unvented requirements of this subsection to the site-specific category I buildings and structures.	3.3.2.2.2	3a
COL 3.4(1)	The COL Applicant is to address the site-specific design of plant grading and drainage.	3.4.1.2	3a
COL 3.4(2)	The COL Applicant is to demonstrate the DBFL bounds their specific site, or is to identify and address applicable site conditions where static flood level exceed the DBFL and/or generate dynamic flooding forces.	3.4.1.4	3a

DCD_03.03.02-5

CP COL 1.8(2)

Table 1.8-201 (Sheet 7 of 69)

Resolution of Combined License Items for Chapters 1 - 19

COL Item No.	COL Item	FSAR Location	Resolution Category
COL 3.6(1)	The COL Applicant is to identify the site-specific systems or components that are safety-related or required for safe shutdown that are located near high-energy or moderate-energy piping systems, and are susceptible to the consequences of these piping failures. The COL Applicant is to provide a list of site-specific high-energy and moderate-energy piping systems, which includes a description of the layout of all piping systems where physical arrangement of the piping systems provides the required protection, the design basis of structures and compartments used to protect nearby essential systems or components, or the arrangements to assure the operability of safety-related features where neither separation nor protective enclosures are practical. Additionally, the COL Applicant is to provide the failure modes and effect analyses that verifies the consequences of failures in site-specific high-energy and moderate-energy piping does not affect the ability to safely shut down the plant. The COL Applicant is to update the as-design pipe hazards analysis report to include the impact of all site specific high and moderate piping systems.	3.6.1.3	3a
COL 3.6(2)	Deleted from the DCD.		
COL 3.6(3)	Deleted from the DCD.		

DCD_03.06.01-9

CP COL 1.8(2)

Table 1.8-201 (Sheet 10 of 69)

Resolution of Combined License Items for Chapters 1 - 19

COL Item No.	COL Item	FSAR Location	Resolution Category	
COL 3.7(7)	The COL Applicant is to determine the allowable static and dynamic bearing capacities based on site conditions, including the properties of fill concrete placed to provide a level surface for the bottom of foundation elevations, and to evaluate the bearing loads to these capacities.	3.7.1.3 Table 3.7-203 Table 3.8-202	3a	
COL 3.7(8)	The COL Applicant is to evaluate the strain-dependent variation of the material dynamic properties for site materials.	3.7.2.4.1	3a	
COL 3.7(9)	The COL Applicant is to assure that the design or location of any site-specific ~~seismic category I~~safety-related SSCs, for example pipe tunnels or duct banks, will not expose those SSCs to possible impact due to the failure or collapse of non-seismic category I structures, or with any other SSCs that could potentially impact, such as heavy haul route loads, transmission towers, non safety-related storage tanks, etc.	3.7.2.8	3a	DCD_03.07.02-88
COL 3.7(10)	It is the responsibility of the COL Applicant to further address structure-to-structure interaction if the specific site conditions can be important for the seismic response of particular US-APWR seismic category I structures, or may result in exceedance of assumed pressure distributions used for the US-APWR standard plant design.	3.7.2.8	3a	
COL 3.7(11)	~~Deleted from the DCD.~~It is the responsibility of the COL Applicant to confirm the masses and frequencies of the PCCV polar crane and fuel handling crane and to determine if coupled site-specific analyses are required.	3.7.2.3.4		DCD_03.07.02-102
COL 3.7(12)	It is the responsibility of the COL Applicant to design seismic category I below- or above-ground liquid-retaining metal tanks such that they are enclosed by a tornado missile protecting concrete vault or wall, in order to confine the emergency gas turbine fuel supply.	3.7.3.9 Appendix 3MM	3a	

CP COL 1.8(2)

Table 1.8-201 (Sheet 13 of 69)

Resolution of Combined License Items for Chapters 1 - 19

COL Item No.	COL Item	FSAR Location	Resolution Category
COL 3.7(25)	The COL Applicant referencing the US-APWR standard design is required to perform a site-specific SSI analysis for the R/B-PCCV-containment internal structure, and PS/B model, utilizing the program ACS SASSI (Reference 3.7-17) which contains time history input incoherence function capability. The SSI analysis using SASSI is required in order to confirm that site-specific effects are enveloped by the standard design. ~~After the SASSI analysis is first performed for a specific unit, subsequent COLAs for other units may be able to forego SASSI analyses if the FIRS and GMRS derived for those subsequent units are much smaller than the US-APWR standard plant CSDRS, and if the subsequent unit can also provide justification through comparison of site-specific geological and seismological characteristics.~~	3.7.2.4.1 Appendix 3NN	3a
COL 3.7(26)	SSI effects are also considered by the COL Applicant in site-specific seismic design of any seismic category I and II structures that are not included in the US-APWR standard plant. Consideration of structure-to-structure interaction is discussed in Subsection 3.7.2.8. The site-specific SSI analysis is performed for buildings and structures including, but not limited to, to the following: · Seismic category I ESWPT · Seismic category I PSFSV · Seismic category I UHSRS	3.7.2.4.1 Appendix 3KK Appendix 3LL Appendix 3MM	3a
COL 3.7(27)	It is the responsibility of the COL Applicant to perform any site-specific seismic analysis for dams that may be required.	3.7.2.13 3.7.3.8	3a

DCD_03.07.02-107

CP COL 1.8(2)

Table 1.8-201 (Sheet 28 of 69)

Resolution of Combined License Items for Chapters 1 - 19

COL Item No.	COL Item	FSAR Location	Resolution Category
COL 6.6(1)	The COL Applicant is responsible for identifying the implementation milestone for ASME Section XI inservice inspection program for ASME Code Section III Class 2 and 3 systems, components (pumps and valves), piping, and supports, consistent with the requirements of 10 CFR 50.55a (g).	6.6	1b
COL 6.6(2)	The COL Applicant is responsible for identifying the implementation milestone for the augmented inservice inspection program.	6.6.8	1b
COL 7.3(1)	Deleted from the DCD.		
COL 7.4(1)	The COL applicant is to provide a description of component controls and indications required for safe shutdown related to the UHS.	7.4.1.6 Table 7.4-201 Table 7.4-202	3a
COL 7.5(1)	The COL applicant is to provide a description of site-specific PAM variables.	7.5.1.1 Table 7.5-201	3a
COL 7.5(2)	The COL applicant is to provide a description of the site-specific EOF.	7.5.1.6.2	3a
COL 7.9(1)	~~The COL Applicant is to provide a description of cyber security provisions.~~Deleted from the DCD.	~~7.9.2.6~~	~~3a~~
COL 8.2(1)	The COL applicant is to address transmission system of the utility power grid and its interconnection to other grids.	8.1.2.1 8.2.1.1 8.2.1.2.3 Table 8.2-201 Table 8.2-202 Figure 8.2-201	3a
COL 8.2(2)	Deleted from the DCD.		

DCD_07.09-23

CP COL 1.8(2)

Table 1.8-201 (Sheet 43 of 69)

Resolution of Combined License Items for Chapters 1 - 19

COL Item No.	COL Item	FSAR Location	Resolution Category
COL 10.2(1)	Inservice Inspection The Combined License Applicant is to establish a turbine maintenance and inspection procedure prior to fuel load.	10.2.3.5	2
COL 10.3(1)	FAC monitoring program The Combined License Applicant will provide a description of the FAC monitoring program for carbon steel portions of the steam and power conversion systems that contain water or wet steam and are susceptible to erosion-corrosion damage. The description will address consistency with Generic Letter 89-08 and NSAC-202L-R2 and will provide a milestone schedule for implementation of the program.	10.3.6.3	2
COL 10.3(2)	Deleted from the DCD.		
COL 10.3(3)	Operating and maintenance procedures for water hammer prevention The Combined License Applicant is to provide operating and maintenance procedures including adequate precautions to prevent water (steam) hammer, relief valve discharge loads and water entrainment effects in accordance with NUREG-0927 and a milestone schedule for implementation of the procedure.	10.3.2.4.3	2
COL 10.3(4)	The COL applicant will provide secondary side water chemistry threshold values and recommended operator actions for chemistry excursions, or provide a commitment to the latest version of the EPRI "PWR Secondary Water Chemistry Guidelines" in effect at the time of COLA submittal.	10.3.5.5	1a

DCD_10.04.06-17

CP COL 1.8(2)

Table 1.8-201 (Sheet 46 of 69)

Resolution of Combined License Items for Chapters 1 - 19

COL Item No.	COL Item	FSAR Location	Resolution Category
COL 11.2(8)	The COL Applicant is to describe mobile/portable LWMS connections that are considered non-radioactive but later may become radioactive through contact or contamination with radioactive systems (i.e., a non-radioactive system becomes contaminated due to leakage, valving errors, or other operating conditions in the radioactive systems), and operational procedures of the mobile/portable LWMS connections. The COL Applicant is to prepare a plan to develop and use operating procedures so that the guidance and information in Inspection and Enforcement (IE) Bulletin 80-10 (Ref. ~~11.4-25~~11.2-29) is followed.	11.2.1.6	3a
COL 11.3(1)	Deleted from the DCD.		
COL 11.3(2)	Deleted from the DCD.		
COL 11.3(3)	The COL applicant is to provide a discussion of the onsite vent stack design parameters and release point height.	11.3.2	3a
COL 11.3(4)	Deleted from the DCD.		
COL 11.3(5)	Deleted from the DCD.		
COL 11.3(6)	The COL applicant is to calculate doses to members of the public following the guidance of RG 1.109(Ref. 11.3-19) and RG 1.111(Ref. 11.3-22), and compare the doses due to the gaseous effluents with the numerical design objectives of 10 CFR 50, Appendix I (Ref. 11.3-3) and compliance with requirements of 10 CFR 20.1302(Ref. 11.3-24), 40 CFR 190(Ref. 11.3-25).	11.3.3.1 Table 11.3-8R Table 11.3-9R Table 11.3-201 Table 11.3-202 Table 11.3-203 Table 11.3-204 Table 11.3-205	3a
COL 11.3(7)	Deleted from the DCD.		3a

DCD_11.04-19

CP COL 1.8(2)

Table 1.8-201 (Sheet 51 of 69)

Resolution of Combined License Items for Chapters 1 - 19

COL Item No.	COL Item	FSAR Location	Resolution Category
COL 12.1(7)	The COL applicant is to describe implementation of requirements for record retention according to 10 CFR50.75(g) and 10 CFR70.25(g) as applicable.	12.1.3 12.3.1.3.2	3a
COL 12.1(8)	The COL Applicant is responsible for the development of the operational procedures, following the guidance of RG 4.21 (Reference 12.1-27), for the operation and handling of all structure, system, and components (SSC) which could be potential sources of contamination within the plant. These procedures will be developed according to the objective of limiting leakage and the spread of contamination within the plant.	12.1.3 12.3.1.3.2	3a
COL 12.2(1)	The COL Applicant is to list any additional contained radiation sources that are not identified in Subsection 12.2.1, including radiation sources used for instrument calibration or radiography.	12.2.1.1.10	~~3b~~3a CTS-01363
COL 12.2(2)	The COL Applicant is to address the radiation protection aspects associated with additional storage space for radwaste and/or additional radwaste facilities for dry active waste.	12.2.1.1.10 12.5	3a
COL 12.2(3)	The COL Applicant is to include the conduct of regular surveillance activities and provisions to maintain the dose rate at 2 meters from the surface of both the RWSAT and PMWTs under 0.25 mrem/h in the Radiation Protection Program.	12.5	3a
COL 12.2(4)	The COL Applicant is to implement a method of ensuring that the radioactivity concentration in both the RWSAT and the PMWTs remain under the specified concentration level described in the DCD.	12.5	3a

CP COL 1.8(2)

Table 1.8-201 (Sheet 69 of 69)

Resolution of Combined License Items for Chapters 1 - 19

COL Item No.	COL Item	FSAR Location	Resolution Category
COL 19.3(6)	The COL applicant develops an accident management program which includes severe accident management procedures that capture important operator actions. Training requirements are also included as part of the accident management program.	19.2.5	2
COL 19.3(7)	The COL Applicant will provide a milestone for completing the equipment survivability assessment of the as-built equipment required to mitigate severe accidents (electrical penetrations, hydrogen igniters and containment pressure (wide range)) to provide reasonable assurance that they will operate in the environmental conditions resulting from hydrogen burns associated with severe accidents for which they are intended and over the time span for which they are needed.	19.2.3.3.7	3a

DCD_06.02.06-45

Note:
The designation of the resolution category indicates the resolution status of each COL item categorized to 1a, 1b, 2, 3a, 3b, 3c, 4, or 5
1. Operational programs
   1a. Applicant item as License Condition for Operational program
   1b. Applicant item as Commitment for Operational program
2. Plant procedures
3. Design information
   3a. Applicant item Design information provided in FSAR
   3b. Applicant item as Commitment for Design information to be provided before COL issuance
   3c. ~~Holder item~~Not used

RCOL2_01-7

4. Detailed schedule information
5. The inspections, tests, analyses, and acceptance criteria (ITAAC)
(See Subsection 1.8.1.2 for further discussion.)

Division 5 of the RGs applies to the Physical Security Plan, and those topics are addressed in the COLA Part 8.

1.9.2 Conformance with Standard Review Plan

CP COL 1.9(1) Add the following paragraph after the last paragraph in DCD Subsection 1.9.2.

Conformance with the SRP in effect in May 2008 for the portions of the CPNPP Units 3 and 4 design and programs not included in the referenced certified design is addressed in Tables 1.9-204 through 1.9-218. The tables show the evaluation of conformance with the standard review plan for this FSAR. When additional evaluation is provided to the DCD status, the status is reported in the column "COLA FSAR Status" and the column "Appears in FSAR Chapter/Section" shows appropriate reference FSAR sections.

1.9.3 Generic Issues

CP COL 1.9(1) Add the following paragraphs after the last paragraph in DCD Subsection 1.9.3.

In the US-APWR DCD~~, the most recent revision of~~ NUREG-0933 (September 2007) was consulted for generic communications, and those issues were addressed in a way that is also appropriate for purposes of this COLA FSAR. ~~The most current revision of NUREG-0933 is still September 2007.~~ Therefore, there is no additional evaluation of generic safety issues in the FSAR. Subsection 1.9.4 provides the review for the recent generic communications (i.e., bulletins and generic letters) issued by the NRC in order to incorporate current operational experience. CTS-01364 CTS-01364

The five TMI related requirements annotated in DCD Table 1.9.3-2 as being completely or partially the COL applicant's responsibility are addressed in Table 1.9-219.

1.9.4 Operational Experience (Generic Communications)

CP COL 1.9(1) Add the following text after the first paragraph in DCD Subsection 1.9.4.

Luminant has reviewed those generic communications issued between March 2007 and March 2008 that are applicable to the portions of the CPNPP Units 3

CP SUP 1.10(1) Add the following new section after DCD Section 1.9.

1.10 HAZARDS POSED BY CONSTRUCTION TO OPERATING UNITS

Consistent with10 CFR 52.79(a)(31), the purpose of this section is to address managerial and administrative controls that will be in place to ensure that the new construction effort (CPNPP Units 3 and 4 together) does not adversely affect existing CPNPP Units 1 and 2. In addition, an assessment of potential impacts of construction of CPNPP Unit 4 on CPNPP Unit 3 when Unit 3 begins operation was also performed. CTS-01365

The overall Comanche Peak site that encompasses all four units is a peninsula that extends into Squaw Creek Reservoir. The locations of the existing CPNPP Units 1 and 2 and the new CPNPP Units 3 and 4 can be seen on the Site Plan, Figure 1.2-1R. The site plan shows that a sufficient distance of approximately 1000 ft. is allowed between the centerlines of the two new units to ensure that they can be constructed safely and without posing a hazard to each other. Also, tower cranes will be located and their movements controlled during construction so that the loads being transported are not hazardous to personnel working in either portion of the construction site, nor will they pose a hazard to the safety-related systems and components being erected and installed. Furthermore, the fenced perimeter of the existing CPNPP Units 1 and 2 plant site is separated from the fenced perimeter of the CPNPP Units 3 and 4 construction sites. The centers of the two sites are separated by approximately 2500 ft. The physical separation and distance between the two areas provide a significant buffer between the new and existing plant sites and a significant level of assurance that the new construction will be relatively isolated from the existing operation. CTS-01365

As the constructor of the new units and operator of the existing units, Luminant has the overall responsibility for coordination between construction activities of the project and site operational activities. Construction activities and significant operations events are included in a project schedule that is reviewed and approved by operations and construction personnel. Managerial and administrative controls are established to address interface issues, such as communication protocol, safety-security interface and periodic reviews of the project schedule or operational issues. CTS-01365

Managerial and administrative controls are considered to provide assurance that the CPNPP Units 1 and 2 systems and components are protected from construction hazards, and that any associated limiting condition for operations (LCOs) specified in the applicable CPNPP Units 1 and 2 Technical Specifications are not exceeded as a result of construction activities. These controls will also provide assurance that CPNPP Unit 3 systems and components are protected from Unit 4 construction hazards and that Unit 3 LCOs are not exceeded as a result of Unit 4 construction activities. The majority of the systems and components that are safety-related are contained and protected within safety-related structures. The managerial and administrative controls established will protect these internal systems and components from postulated construction CTS-01365

hazards by maintaining the integrity and design basis of the safety-related structures and foundations. These controls also prevent or mitigate challenges to systems and components that are not enclosed in safety-related structures, such as disruption of transmission lines or other existing site features that could be exposed to construction hazards more directly. On-site construction activities with potential safety significance to the operating units are also addressed ~~as required~~, in accordance with established safety evaluation procedures in force for CPNPP Units 1 and 2 and Unit 3 when it begins operation. CTS-01365 CTS-01365

Since a fundamental objective of the CPNPP Units 3 and 4 construction effort is to avoid disrupting the operation of CPNPP Units 1 and 2 in any way, the administrative and managerial controls are applied to the protection of all CPNPP Units 1 and 2 features. These controls are also applied to assure that continuing construction activities on CPNPP Unit 4 do not adversely affect CPNPP Unit 3 after it begins operation. Therefore, this hazards evaluation is general in that it does not single out application of the protections to the safety-related systems and components, to the exclusion of systems and components that are nonsafety-related or simply important to continued plant operation. Some of the systems considered during the evaluation included the onsite and offsite power systems, fire protection system (FPS), service water (SW) system, control room emergency heating, ventilation, and air conditioning (HVAC) systems, and seismic monitoring system. Some of the safety-related structures and foundations evaluated include, for example, the containment structure, safeguards building, fuel building, and auxiliary building (A/B), and related systems in those buildings such as the reactor coolant system (RCS), chemical and volume control system (CVCS), containment spray (CS) ~~S~~system, and component cooling water system (CCWS). “Yard” structures and related components include the refueling water storage tank, reactor makeup water storage tanks, condensate storage tanks, and their related piping and components, while existing UHS structures include the intake structure, safe shutdown impoundment dam, and related tunnels and underground piping. CTS-01365 CTS-01365

Table 1.10-201 contains a summary of the analysis that was performed to evaluate hazards posed by construction of CPNPP Units 3 and 4 to existing CPNPP Units 1 and 2~~.~~ as well as the hazards posed on Unit 3 by the continuing construction of Unit 4 after Unit 3 begins operation. The table presents the hazards and impacts that were considered and the controls that either prevent or mitigate the potential consequences. CTS-01365

In the table, the left-hand column is a description of the postulated CPNPP Units 3 and/or 4 construction activities. The middle column describes the types of hazardous consequences posed by the CPNPP Units 3 and/or 4 construction activities to the operating CPNPP Units ~~1 and 2~~(i.e., Units 1, 2 and 3) systems and components, and by association to any related Technical Specification LCOs. The right-hand column describes managerial and administrative controls that would either prevent the consequences from occurring or mitigate the consequences if they occur. CTS-01365

Each of the construction activities is given an alphabetic designator beginning with “A.” The consequences and controls are given numeric designators starting with “1” and are coordinated so that the number assigned to the control corresponds to the number assigned to the consequence. If a control addresses more than one consequence, it is so noted. If multiple controls address a single consequence, they are alpha-numeric (e.g., 1a, 1b, 1c, etc.).

The management and administrative controls provided during construction of CPNPP Units 3 and 4, combined with the large distance separating the new construction from ~~the existing operation~~Units 1 & 2, provide defense-in-depth. Together, they provide assurance that construction activities at CPNPP Units 3 and 4 will not damage safety-related equipment or disturb safe and continued operation at existing CPNPP Units 1 and 2. The same management and administrative controls provide assurance that construction activities on Unit 4 will not impact Unit 3 when it begins operation. CTS-01365 CTS-01365

Table 1.10-201 (Sheet 1 of 7)

~~Hazards Posed by Construction of Units 3 & 4 to Operating Units 1 & 2~~Hazards Posed on Operating Units During Construction of New Units CTS-01365

Unit 3 & 4 Construction Activities	Potentially Hazardous Consequences Posed to Operating Unit ~~1 & 2~~ Systems and Components (Note 1)	Preventive and Mitigative Managerial & Administrative Controls	CTS-01365
A. Site improvement activities such as clearing, grading, excavation, and installation of buried piping and conduit	1. Damage to overhead power lines or transmission towers. 2. Damage to underground features such as electrical conduits, process piping, water supply piping or tunnels, drainage piping, or tunnels. 3. Disruption of site access and egress. 4. Encroachment on ~~existing~~operating unit plant security control perimeter. 5. Adverse effects on ~~existing~~operating unit topography, such as destabilization of earthen slopes, soil erosion and local flooding. 6. Undermining of foundations of transmission towers or existing buildings. 7. Adverse effect on groundwater quality, groundwater level, or on groundwater monitoring equipment. 8. Disruption of utility service to existing site operating facilities.	1a. Safe horizontal standoff and vertical clearance distances are established for work to be conducted in the vicinity of power lines. When large equipment is to be transported beneath power lines, horizontal and vertical distances are verified to ensure clearance requirements are satisfied. 1b. Warning and/or caution signs and barriers are installed along roads to ensure trucks, mobile cranes, and other vehicles are aware of power lines and support towers as they approach them. CTS-01365 2 & 6. Construction activities associated with grading and excavation require location and identification of existing equipment and underground structures that must be protected or removed, prior to start of the work activity. CTS-01365 3. Signs are erected on plant roads to identify construction worker access and egress routes and direct construction deliveries. To the maximum extent possible, roads providing access to the construction site are separated from roads providing access to the ~~existing~~ operating units. CTS-01365 4. Administrative controls are in place to coordinate construction activities with CPNPP Units 1, 2 and ~~2~~3 physical protection personnel and procedures, so that security perimeter required for protection of operating units is not compromised. CTS-01365 5. With regard to construction activities that may alter site drainage characteristics, controls are implemented to assure that the site flooding design basis is maintained for the operating units. This includes measures to ensure that soil erosion does not adversely impact site drainage. 7. Controls are implemented to maintain groundwater elevation within limits, to protect safety-related structures and foundations.	

Table 1.10-201 (Sheet 2 of 7)

~~Hazards Posed by Construction of Units 3 & 4 to Operating Units 1 & 2~~Hazards Posed on Operating Units During Construction of New Units CTS-01365

Unit 3 & 4 Construction Activities	Potentially Hazardous Consequences Posed to Operating Unit ~~1 & 2~~ Systems and Components (Note 1)	Preventive and Mitigative Managerial & Administrative Controls	
		8. Administrative controls are in place to coordinate construction and testing activities with CPNPP Units 1, 2 and ~~2~~3, so that activities affecting utility services are cleared through the operating unit control rooms and do not compromise services needed by the operating units.	CTS-01365
B. Demolition or relocation of existing systems and components	1. Damage to overhead power lines or transmission towers. 2. Damage to underground features such as electrical conduits, process piping, water supply piping or tunnels, drainage piping, or tunnels. 3. Adverse effects on ~~existing~~operating unit topography, such as destabilization of earthen slopes, soil erosion, and local flooding. 4. Encroachment on ~~existing~~operating unit plant security control perimeter. 5. Disruption of utility service to existing site operating facilities.	1a. Safe horizontal standoff and vertical clearance distances are established for work to be conducted in the vicinity of power lines. When large equipment is to be transported beneath power lines, horizontal and vertical distances are verified to ensure clearance requirements are satisfied. 1b. Warning and/or caution signs and barriers are installed along roads to ensure trucks, mobile cranes, and other vehicles are aware of power lines and support towers as they approach them. 2. Administrative controls require that existing systems and components related to the operating units and located within the construction area be identified and protected. If it is not practical to protect such equipment, it is temporarily removed from service, relocated to a safe place, and restored to service. 3. With regard to construction activities that may alter site drainage characteristics, controls are implemented to assure that the site flooding design basis is maintained for the operating units. This includes measures to ensure that soil erosion does not adversely impact site drainage. 4. Administrative controls are in place to coordinate construction activities with CPNPP Units 1, 2 and ~~2~~3 physical protection personnel and procedures, so that security perimeter required for protection of operating units is not compromised.	CTS-01365 CTS-01365 CTS-01365 CTS-01365

Table 1.10-201 (Sheet 3 of 7)

~~Hazards Posed by Construction of Units 3 & 4 to Operating Units 1 & 2~~Hazards Posed on Operating Units During Construction of New Units

Unit 3 & 4 Construction Activities	Potentially Hazardous Consequences Posed to Operating Unit ~~1 & 2~~ Systems and Components (Note 1)	Preventive and Mitigative Managerial & Administrative Controls	
		5. Administrative controls are in place to coordinate construction and testing activities with CPNPP Units 1, 2 and ~~2~~3, so that activities affecting utility services are cleared through the operating unit control rooms and do not compromise services needed by the operating units.	CTS-01365
C. Blasting of rock to establish grade for building foundations.	1. Damage to above ground features such as tanks, buildings, exposed outdoor mechanical, electrical, and instrumentation equipment. 2. Undermining of foundations of transmission towers or existing buildings. 3. Damage to underground features such as electrical conduits, process piping, water supply piping or tunnels, drainage piping, or tunnels. 4. Adverse effects on ~~existing~~operating unit topography, such as destabilization of earthen slopes, soil erosion, and local flooding. 5. Adverse effect on air quality from dust. 6. Disruption of normal traffic flow into and around the site.	1 & 5. Administrative procedures are established and construction methods and controls are implemented to avoid generation of missiles and excessive dust due to blasting. 2, 3, & 4. Administrative procedures are established and construction methods and controls are implemented to avoid excessive ground vibration due to blasting in the vicinity of the ~~existing plant~~operating units. 6. For a number of reasons, blasting activities are coordinated by managerial control so that they occur at times of low activity and traffic in the vicinity of the blast site. Also, extreme precautions are taken to isolate the blast area and traffic is re-routed if necessary, preventing exposure of personnel to potential injury.	CTS-01365 CTS-01365
D. Vertical site exploration such as boring, drilling, and pile driving.	1. Adverse effect on groundwater quality, groundwater level, or groundwater monitoring equipment. 2. Damage to underground features such as electrical conduits, process piping, water supply piping or tunnels, drainage piping, or tunnels.	1a. Controls are implemented to maintain groundwater elevation within limits, to protect safety-related structures and foundations. 1b & 2. Construction activities associated with boring, drilling, and pile driving require location and identification of existing equipment and underground structures that must be protected or removed, prior to the work activity.	

Table 1.10-201 (Sheet 4 of 7)

~~Hazards Posed by Construction of Units 3 & 4 to Operating Units 1 & 2~~Hazards Posed on Operating Units During Construction of New Units

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Unit 3 & 4 Construction Activities	Potentially Hazardous Consequences Posed to Operating Unit ~~1 & 2~~ Systems and Components (Note 1)	Preventive and Mitigative Managerial & Administrative Controls
E. Water-related changes to the site such as dredging and dewatering.	1. Adverse effect on surface water quality such as through increased turbidity, chemical contamination, etc. 2. Adverse effects on ~~existing~~operating unit topography, such as destabilization of earthen slopes, soil erosion, and local flooding.	1. With regard to construction activities that may adversely impact water quality characteristics, controls will be implemented to assure that applicable design basis water chemistry requirements are maintained for the operating units, where the water supply in question has a plant use. Quantities, types and disposal of hazardous/toxic chemicals are limited by environmental, safety and health controls. 2. With regard to construction activities that may alter site drainage characteristics, controls are implemented to assure that the site flooding design basis is maintained for the operating units. This will include measures to ensure that soil erosion does not adversely impact site drainage characteristics that are important for flood control.
F. Vertical lifting, movement, and placement of material and equipment by crane.	1. Damage to overhead power lines or transmission towers. 2. Damage to above ground features such as tanks, buildings, exposed outdoor mechanical, electrical, and instrumentation equipment. 3. Damage to underground features such as electrical conduits, process piping, water supply piping or tunnels, or drainage piping or tunnels.	1a. Safe horizontal standoff and vertical clearance distances are established for work to be conducted in the vicinity of power lines. When large equipment is to be transported beneath power lines, horizontal and vertical distances are verified to ensure clearance requirements are satisfied. 1b. Warning and/or caution signs and barriers are installed along roads to ensure trucks, mobile cranes, and other vehicles are aware of power lines and support towers as they approach them. 2 & 3. General controls and limitations are established for safe movement of heavy equipment and materials around the construction site, by crane or by truck. Conservative standoff distances and load controls prevent direct impacts on existing structures, or excessive ground vibration impacts on existing structure foundations, due to construction crane boom failures and load drops.

Table 1.10-201 (Sheet 5 of 7)

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Unit 3 & 4 Construction Activities	~~Hazards Posed by Construction of Units 3 & 4 to Operating Units 1 & 2~~Hazards Posed on Operating Units During Construction of New Units Potentially Hazardous Consequences Posed to Operating Unit ~~1 & 2~~ Systems and Components (Note 1)	Preventive and Mitigative Managerial & Administrative Controls
G. Movement and placement of material by wheeled conveyance such as train, truck, fork lift, front end loader, etc.	1. Damage to overhead power lines or transmission towers. 2. Damage to above ground features such as tanks, buildings, exposed outdoor mechanical, electrical, and instrumentation equipment. 3. Damage to underground features such as electrical conduits, process piping, water supply piping or tunnels, or drainage piping or tunnels. 4. Disruption of normal traffic or development of emergency condition due to rail car derailment. 5. Adverse effect on air quality from dust and equipment exhausts.	1a. Safe horizontal standoff and vertical clearance distances are established for work to be conducted in the vicinity of power lines. When large equipment is to be transported beneath power lines, horizontal and vertical distances are verified to ensure clearance requirements are satisfied. 1b. Warning and/or caution signs and barriers are installed along roads to ensure trucks, mobile cranes, and other vehicles are aware of power lines and support towers as they approach them. 2. Conservative standoff distances and load controls prevent direct impacts on existing structures, or excessive ground vibration impacts on existing structure foundations, due to construction crane boom failures and load drops. 3. General controls and limitations are established for safe movement of heavy equipment and materials around the construction site, by crane or by truck. Transport of heavy load equipment over existing underground circulating water piping is controlled and prohibited if loads pose a risk of damage to the underground lines. 4a. Safe speed limits and maximum loading weights are established for trains using the on-site rail spur, to prevent derailments. 4b. Administrative controls are in place to respond to site accidents and emergencies, such as emergency medical response, fire brigade and hazardous materials response team. 5. Vehicular dust generation is controlled by routing of traffic, wetting of gravel roads, and paving of surfaces when practicable. Existing air intakes for HVAC systems that are potentially affected by dust and exhausts are subjected to periodic monitoring for replacement of filters.

Table 1.10-201 (Sheet 6 of 7)

~~Hazards Posed by Construction of Units 3 & 4 to Operating Units 1 & 2~~Hazards Posed on Operating Units During Construction of New Units CTS-01365

Unit 3 & 4 Construction Activities	Potentially Hazardous Consequences Posed to Operating Unit ~~1 & 2~~ Systems and Components (Note 1)	Preventive and Mitigative Managerial & Administrative Controls CTS-01365
H. High volume of light vehicular traffic such as by car or pickup truck.	1. Damage to overhead power lines or transmission towers. 2. Adverse effect on air quality from dust and equipment exhausts. 3. Disruption of normal traffic and/or development of an emergency condition due to vehicle accidents on access roads or within site.	1. Warning and/or caution signs and barriers are installed along roads to ensure trucks, mobile cranes, and other vehicles are aware of power lines and support towers as they approach them. 2. Vehicular dust generation is controlled by routing of traffic, wetting of gravel roads, and paving of surfaces when practicable. Existing air intakes for HVAC systems that are potentially affected by dust and exhausts are subjected to periodic monitoring for replacement of filters. 3a. Administrative controls, such as emergency medical response, fire brigade and hazardous materials response team, are in place to respond to site accidents and emergencies. 3b. Signs are erected on plant roads to identify construction worker access and egress routes and direct construction deliveries. To the maximum extent possible, roads providing access to the construction site are separated from roads providing access to the ~~existing~~ operating units. CTS-01365 3c. Safe speed limits for vehicles using site roads are established and posted.
I. Manual construction activities such as fabrication and installation performed by craft workers.	1. Direct impact on ~~existing plant~~operating unit outdoor features due to windblown debris or missiles (i.e., as a result of materials not being properly stored and secured). 2. Encroachment on ~~existing plant~~operating unit security control perimeter (i.e., for manual work tasks conducted at or near the site boundary).	1. Administrative controls relating to severe weather conditions such as high winds and high wind warnings address the movement and storage of materials and equipment under these conditions. Plant procedures that may call for special restrictions of activity during severe weather conditions are also followed. CTS-01365 2. Administrative controls are in place to coordinate construction activities with CPNPP Units 1, 2 and ~~2~~3 physical protection personnel and procedures, so that security perimeter required for protection of operating units is not compromised. CTS-01365

Table 1.10-201 (Sheet 7 of 7)

~~Hazards Posed by Construction of Units 3 & 4 to Operating Units 1 & 2~~Hazards Posed on Operating Units During Construction of New Units

Unit 3 & 4 Construction Activities	Potentially Hazardous Consequences Posed to Operating Unit ~~1 & 2~~ Systems and Components (Note 1)	Preventive and Mitigative Managerial & Administrative Controls
J. Indoor and outdoor storage of construction materials and equipment.	1. Development of emergency condition due to release of flammable gas or hazardous/toxic chemical from outdoor tank storage or from warehouse storage.	1a. Quantities and types of flammable gases and hazardous/toxic chemicals are limited by environmental, safety, and health controls, as are the safe transportation and storage of these materials.
	2. Damage to ~~existing~~operating plant features caused by windblown materials stored in laydown areas.	1b. Administrative controls, such as emergency medical response, fire brigade, and hazardous materials response team, are in place to respond to site accidents and emergencies. 2. Administrative controls relating to severe weather conditions such as high winds and high wind warnings address the movement and storage of materials and equipment under these conditions. Plant procedures that may call for special restrictions of activity during severe weather conditions are also followed.
K. Tying-in of construction site to utility functions such as power, water and communications.	1. Disruption of utility service to ~~existing~~ site operating facilities.	1. Administrative controls are in place to coordinate construction and testing activities with CPNPP Units 1, 2 and ~~2~~3, so that activities affecting utility services are cleared through the operating unit control rooms and do not compromise services needed by the operating units.
L. Testing of individual components, systems, and integrated systems.	1. Disruption of utility service to ~~existing~~ site operating facilities.	1. Administrative controls are in place to coordinate construction and testing activities with CPNPP Units 1, 2 and ~~2~~3, so that activities affecting utility services are cleared through the operating unit control rooms and do not compromise services needed by the operating units.

Note 1: The same hazards are posed on Unit 3 when Unit 4 is still under construction after Unit 3 begins operation. The same management and administrative controls will be in place to protect Unit 3 at that time.

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Chapter 2

Chapter 2 Tracking Report Revision List

Change ID No.	Section	FSAR Rev. 2 Page	Reason for change	Change Summary	Rev. of FSAR T/R
RCOL2_2.4. 12-09 S01	2.4.12.4	2.4-81	Supplemental Response to RAI No 147 Luminant letter TXNB-11046 Date 7/14/2011	Added paragraph to clarify that a seismic event will not result in seismically induced rise on groundwater.	-
RCOL2_2.4. 12-09 S01	2.4.16	2.4-112	Supplemental Response to RAI No 147 Luminant letter TXNB-11046 Date 7/14/2011	Added reference regarding earthquakes and groundwater.	-
RCOL2_02.05.04-25	2.5.4.5.4	2.5-194	Response to RAI No 223 Luminant letter TXNB-11049 Date 7/28/2011	Section 2.5.4.5.4, 3rd paragraph, 2nd sentence, remove”major” because it is not appropriate to seismic category I and II buildings and structures. Same sentence, replace “structure” with “structures”	-
RCOL2_02.05.04-25	2.5.4.5.4.1.1 2.5.4.5.4.1.2 2.5.4.5.4.2	2.5-196 2.5-197 2.5-198	Response to RAI No 223 Luminant letter TXNB-11049 Date 7/28/2011	Inserted reference numbers following citation of standards	-
RCOL2_02.05.04-25	2.5.7	2.4-259	Response to RAI No 223 Luminant letter TXNB-11049 Date 7/28/2011	Added references 2.5-480 through 2.5-484	-

Change ID No.	Section	FSAR Rev. 2 Page	Reason for change	Change Summary	Rev. of FSAR T/R
ROCL2_02.05.04-11 S01	2.5.4.5.4.1.2	2.5-197	Response to RAI No 22 Luminant letter TXNB- 11057 Date 8/29/2011	Removed discussion of maximum groundwater elevation and underground drains. Added discussion of protection of Category I buildings.	-
ROCL2_02.05.04-11 S01	2.5.4.6.2	2.5-202	Supplemental Response to RAI No 22 Luminant letter TXNB- 11057 Date 8/29/2011	Added sentence regarding maximum confined groundwater level.	-
ROCL2_02.05.04-11 S01	2.5.4.6.4	2.5-202 2.5-203	Supplemental Response to RAI No 22 Luminant letter TXNB- 11057 Date 8/29/2011	Clarified discussion on hydrostatic pressure.	-
ROCL2_02.05.04-11 S01	2.5.4.8	2.5-207	Supplemental Response to RAI No 22 Luminant letter TXNB- 11057 Date 8/29/2011	Removed bullet points and discussion regarding liquefaction.	-
RCOL2_02.04.13-5,6,7 S01	2.4.13.1	2.4-95	Supplemental Response to RAI No 145 Luminant letter TXNB- 11057 Date 8/29/2011	Deleted statement on contaminant transport retention.	-

Change ID No.	Section	FSAR Rev. 2 Page	Reason for change	Change Summary	Rev. of FSAR T/R
RCOL2_02.04.13-5,6,7 S01	2.4.13.2	2.4-95 through 2.4-96	Supplemental Response to RAI No 145 Luminant letter TXNB- 11057 Date 8/29/2011	Revised subsection to include discussion on vertical release pathway.	-
RCOL2_02.04.13-5,6,7 S01	2.4.13.3	2.4-97	Supplemental Response to RAI No 145 Luminant letter TXNB- 11057 Date 8/29/2011	Added discussion on location of rainwater infiltration effects, stormwater overflows, and hydrostatic loading,	-
RCOL2_02.04.13-5,6,7 S01	2.4.13.4	2.4-98 through 2.4-99	Supplemental Response to RAI No 145 Luminant letter TXNB- 11057 Date 8/29/2011	Revised subsection to “Vertical Release Pathway” and revised discussion accordingly.	-
RCOL2_02.04.13-5,6,7 S01	2.4.13.4.1	2.4-99 through 2.4-100	Supplemental Response to RAI No 145 Luminant letter TXNB- 11057 Date 8/29/2011	Created new subsection “Vertical Release Pathway Elimination” and revised subsection accordingly	-
RCOL2_02.04.13-5,6,7 S01	2.4.13.4..2	2.4-100 though 2.4-110	Supplemental Response to RAI No 145 Luminant letter TXNB- 11057 Date 8/29/2011	Inserted new subsection “hypothetical vertical release”	-

Change ID No.	Section	FSAR Rev. 2 Page	Reason for change	Change Summary	Rev. of FSAR T/R
RCOL2_02.04.13-5,6,7 S01	2.4.13.5	2.4-111	Supplemental Response to RAI No 145 Luminant letter TXNB- 11057 Date 8/29/2011	Added “entire 80% of the BAT,” “Pathway #1” and “Pathway #2” throughout the discussion.	-
RCOL2_02.04.13-5,6,7 S01	2.4.13.5	2.4-112	Supplemental Response to RAI No 145 Luminant letter TXNB- 11057 Date 8/29/2011	Added bullet on source term chemical composition and assumptions.	-
RCOL2_02.04.13-5,6,7 S01	2.4.13.5	2.4-113 2.4-114	Supplemental Response to RAI No 145 Luminant letter TXNB- 11057 Date 8/29/2011	Added bullets and discussion to dilution discussion and explanation.	-
RCOL2_02.04.13-5,6,7 S01	2.4.13.5.3	2.4-118	Supplemental Response to RAI No 145 Luminant letter TXNB- 11057 Date 8/29/2011	Added discussion on SCR elevation changes throughout the subsection.	-
RCOL2_02.04.13-5,6,7 S01	2.4.13.5.3	2.4-119 2.4-120	Supplemental Response to RAI No 145 Luminant letter TXNB- 11057 Date 8/29/2011	Added explanation of conservative assumptions of source term and infiltration rates.	-
RCOL2_02.04.13-5,6,7 S01	2.4.13.5.4	2.4-120	Supplemental Response to RAI No 145 Luminant letter TXNB- 11057 Date 8/29/2011	Removed statement on 25% dilution assumption and added statement of motive force for infiltration.	-

Change ID No.	Section	FSAR Rev. 2 Page	Reason for change	Change Summary	Rev. of FSAR T/R
RCOL2_02.04.13-5,6,7 S01	2.4.13.5.7	2.4-123	Supplemental Response to RAI No 145 Luminant letter TXNB- 11057 Date 8/29/2011	Added “elevation” to bullet.	-
RCOL2_02.04.13-5,6,7 S01	2.4.13.5.7	2.4-124	Supplemental Response to RAI No 145 Luminant letter TXNB- 11057 Date 8/29/2011	Edited bullet to include discussion of SCR elevation changes.	-
RCOL2_02.04.13-5,6,7 S01	References	2.4-136	Supplemental Response to RAI No 145 Luminant letter TXNB- 11057 Date 8/29/2011	Added reference 2.4-299.	-
RCOL2_02.04.13-5,6,7 S01	Table 2.4.13-210	2.4-259	Supplemental Response to RAI No 145 Luminant letter TXNB- 11057 Date 8/29/2011	Added new table of vertical migration source term concentration	-
RCOL2_02.04.13-5,6,7 S01	Table 2.4.13-211	2.4-260	Supplemental Response to RAI No 145 Luminant letter TXNB- 11057 Date 8/29/2011	Added new table on source term concentration of vertical then horizontal decay.	-
RCOL2_02.04.13-5,6,7 S01	Table 2.4.13-212	2.4-261	Supplemental Response to RAI No 145 Luminant letter TXNB- 11057 Date 8/29/2011	Added new table of Twins Mountains Formation Groundwater Elevation	-

Change ID No.	Section	FSAR Rev. 2 Page	Reason for change	Change Summary	Rev. of FSAR T/R
CTS-01351	2.4.13.1	2.4-92	Editorial changes identified in Supplemental Response to RAI No 145 Luminant letter TXNB- 11057 Date 8/29/2011	Added space, deleted period.	-
CTS-01351	2.4.13.3	2.4-98	Editorial changes identified in Supplemental Response to RAI No 145 Luminant letter TXNB- 11057 Date 8/29/2011	Removed ‘to’	-
CTS-01351	2.4.12.4.1	2.4-99	Editorial changes identified in Supplemental Response to RAI No 145 Luminant letter TXNB- 11057 Date 8/29/2011	Added the words ‘and,’ ‘downgradient.’ And ‘CPNPP’	-
CTS-01351	2.4.12.4.1	2.4-100	Editorial changes identified in Supplemental Response to RAI No 145 Luminant letter TXNB- 11057 Date 8/29/2011	Added space.	-
CTS-01351	2.4.13.5.3	2.4-119	Editorial changes identified in Supplemental Response to RAI No 145 Luminant letter	Changed sentence to read “ The BAT DCD general arrangement drawing is shown	-

Change ID No.	Section	FSAR Rev. 2 Page	Reason for change	Change Summary	Rev. of FSAR T/R
			TXNB- 11057 Date 8/29/2011	in Figure 1.2-29)"	
RCOL2_02.04.12-8 S01	2.4.12.2.4	2.4-75	Supplemental Response to RAI No 147 Luminant letter TXNB- 11057 Date 8/29/2011	Added discussion to explain perched and permanent groundwater. Deleted paragraph on groundwater location.	-
RCOL2_02.04.12-8 S01	2.4.12.2.5.2	2.4-77	Supplemental Response to RAI No 147 Luminant letter TXNB- 11057 Date 8/29/2011	Added discussion on slug tests, hydraulic conductivity of wells, and groundwater communication with SCR.	-
RCOL2_02.04.12-8 S01	2.4.12.3	2.4-77 through 2.4-80	Supplemental Response to RAI No 147 Luminant letter TXNB- 11057 Date 8/29/2011	Entire discussion on subsurface pathways was revised	-
RCOL2_02.04.12-8 S01	2.4.12.3.1	2.4-80 through 2.4-84	Supplemental Response to RAI No 147 Luminant letter TXNB- 11057 Date 8/29/2011	Entire section on Groundwater Pathways was revised.	-
RCOL2_02.04.12-8 S01	2.4.12.3.1.1	2.4-85 through 2.4-88	Supplemental Response to RAI No 147 Luminant letter TXNB- 11057 Date 8/29/2011	Section on Groundwater Travel Times was added.	-

Change ID No.	Section	FSAR Rev. 2 Page	Reason for change	Change Summary	Rev. of FSAR T/R
RCOL2_02.04.12-8 S01	2.4.12.3.2	2.4-88	Supplemental Response to RAI No 147 Luminant letter TXNB- 11057 Date 8/29/2011	Edited Twin Mountain Formation to Twin Mountains Formation	-
RCOL2_02.04.12-8 S01	2.4.12.5	2.4-89 through 91	Supplemental Response to RAI No 147 Luminant letter TXNB- 11057 Date 8/29/2011	Revised section on site characteristics for subsurface hydrostatic loading to include upward recharge discussion.	-
RCOL2_02.04.12-8 S01	Table 2.4.12-211	2.4-241	Supplemental Response to RAI No 147 Luminant letter TXNB- 11057 Date 8/29/2011	Revised Table to include Path 3.	-
RCOL2_02.04.12-8 S01	Figure 2.4.12-212	-	Supplemental Response to RAI No 147 Luminant letter TXNB- 11057 Date 8/29/2011	Revised groundwater flow path figure.	-
RCOL2_02.04.12-8 S01	Figure 2.4.12-213	-	Supplemental Response to RAI No 147 Luminant letter TXNB- 11057 Date 8/29/2011	Revised post construction release flow path# 1 figure to account for correct groundwater elevation and include retaining walls.	-

Change ID No.	Section	FSAR Rev. 2 Page	Reason for change	Change Summary	Rev. of FSAR T/R
RCOL2_02.04.12-8 S01	Figure 2.4.12-214	-	Supplemental Response to RAI No 147 Luminant letter TXNB- 11057 Date 8/29/2011	Revised post construction release flow to account for correct groundwater elevation and retaining walls path# 2 figure.	-
RCOL2_02.04.12-8 S01	Figure 2.4.12-215	-	Supplemental Response to RAI No 147 Luminant letter TXNB- 11057 Date 8/29/2011	Added new figure on vertical pathway (path #3).	-
RCOL2_02.04.12-8 S01	Figure 2.4.12-216	-	Supplemental Response to RAI No 147 Luminant letter TXNB- 11057 Date 8/29/2011	Added new figure on conceptual groundwater model	-
RCOL2_02.04.12-8 S01	Figure 2.4.13-201	-	Supplemental Response to RAI No 147 Luminant letter TXNB- 11057 Date 8/29/2011	Revised figure to incorporate changes of grading and drainage.	-
CTS-01353	Acronyms	2-lix 2-lx	Supplemental Response to RAI No 147 Luminant letter TXNB- 11057 Date 8/29/2011	Added CSW and ESW to acronym list.	-

Change ID No.	Section	FSAR Rev. 2 Page	Reason for change	Change Summary	Rev. of FSAR T/R
RCOL2_11.02-18	2.4.13.1	2.4-93	Response to RAI No 224 Luminant letter TXNB- 11061 Date 9/29/2011	Editorial change to re-locate discussion of evaporation pond impact on tank failure analysis from Subsection 11.2.3.4 to Subsection 2.4.13.1	-
RCOL2_02. 4.02-2 S01	Table 2.0-1R (sheet 8 of 13)	2.0-9	Supplemental Response to RAI No 139 Luminant letter TXNB-11066 Date 10/21/2011	Changed maximum flood level for CPNPP to 820.98 ft msl	-
RCOL2_02. 4.02-2 S01	2.4.2.3	2.4-20 through 2.4-28	Supplemental Response to RAI No 139 Luminant letter TXNB-11066 Date 10/21/2011	Revised section on effects of Local Intense Precipitation to reflect findings from the response.	-
RCOL2_02. 4.02-2 S01	Table 2.4.2-207	2.4-167 2.4-168	Supplemental Response to RAI No 139 Luminant letter TXNB-11066 Date 10/21/2011	Revised title, area, and peak runoff values of table. Added drainage sub basin and peak runoff. Delete Total Tc, PMP Intensity, Runoff Coefficient.	-

Change ID No.	Section	FSAR Rev. 2 Page	Reason for change	Change Summary	Rev. of FSAR T/R
RCOL2_02. 4.02-2 S01	Table 2.4.2-208	2.4-169 2.4-170	Supplemental Response to RAI No 139 Luminant letter TXNB-11066 Date 10/21/2011	Revised title and deleted categories on the table. Added "Feature," "Max Water Surface Elevation," and "Adjacent Unit" category.	-
RCOL2_02. 4.02-2 S01	Table 2.4.2-209	2.4-171	Supplemental Response to RAI No 139 Luminant letter TXNB-11066 Date 10/21/2011	Added New Table: "Summary of Results Identifying Super critical velocities and hydraulic jumps"	-
RCOL2_02. 4.02-2 S01	Figure 2.4.2-202	-	Supplemental Response to RAI No 139 Luminant letter TXNB-11066 Date 10/21/2011	Revised Site Grading and Drainage Plan	-
RCOL2_02. 4.02-2 S01	Figure 2.4.2-206	-	Supplemental Response to RAI No 139 Luminant letter TXNB-11066 Date 10/21/2011	Added new figure "Local Site Analysis HEC-RAS Channels"	-
RCOL2_02. 4.02-2 S01	Figure 2.4.2-207	-	Supplemental Response to RAI No 139 Luminant letter TXNB-11066 Date 10/21/2011	Added new figure "CPNPP Units 3 and 4- Supercritical Flow and Hydraulic Jump Locations"	-

Change ID No.	Section	FSAR Rev. 2 Page	Reason for change	Change Summary	Rev. of FSAR T/R
RCOL2_02. 4.02-2 S01	2.4.16	2.4-140	Supplemental Response to RAI No 139 Luminant letter TXNB-11066 Date 10/21/2011	Added reference 2.4-300 and 24-301	-
RCOL2_11.02-18 S01	2.4.13.1	2.4-83	Supplemental Response to RAI No.224 Luminant Letter no. TXNB-11076 Date 11/7/2011	Removed redundant information about evaporation pond in Chapter 2 that exists in Chapter 11.	-
RCOL2_02.05.04-26	Acronyms and Abbreviations	2-lxvii [2-lxvill]	Response to RAI No 233 Luminant letter no . TXNB-11081 Date 12/1/2011	Added VBS-Vehicle Barrier System to the acronym list.	-
RCOL2_02.05.04-26	2.5.4.5.4.1.2	2.5-197	Response to RAI No 233 Luminant letter no . TXNB-11081 Date 12/1/2011	Removed the use of “perched” and removed “the low groundwater elevation”	-
RCOL2_02.05.04-26	2.5.4.10.4	2.5-198	Response to RAI No 233 Luminant letter no . TXNB-11081 Date 12/1/2011	Edited sentence to read: “Typical examples of a lateral active and at rest earth pressures for select granular backfill are summarized on Figures 2.5.4-242 and 2.5.4-2143.	-

Change ID No.	Section	FSAR Rev. 2 Page	Reason for change	Change Summary	Rev. of FSAR T/R
RCOL2_02.05.04-26	2.5.4.10.4	2.5-199	Response to RAI No 233 Luminant letter no . TXNB-11081 Date 12/1/2011	Added “Detailed methodology and calculations for lateral earth pressures are provided in Chapter 3” to the end of subsection of 2.5.4.10.4	-
RCOL2_02.05.04-26	2.5.5.2.1	2.5-225 2.5-226 [2.5-227]	Response to RAI No 233 Luminant letter no . TXNB-11081 Date 12/1/2011	Clarified that there are five representative post-construction cross sections (D-D’, E-E’, F-F’, G-G’, and H-H’ and described each of the five cross sections	-
RCOL2_02.05.04-26	2.5.5.2.1	2.5-226 [2.5-227]	Response to RAI No 233 Luminant letter no . TXNB-11081 Date 12/1/2011	Added clarification of retaining wall and engineered buttress.	-
RCOL2_02.05.04-26	2.5.5.2.3	2.5-229 [2.5-230]	Response to RAI No 233 Luminant letter no . TXNB-11081 Date 12/1/2011	Added discussion of maximum potential groundwater level (813.5 ft)	-

Change ID No.	Section	FSAR Rev. 2 Page	Reason for change	Change Summary	Rev. of FSAR T/R
RCOL2_02.05.04-26	2.5.5.2.6	2.5-230 [2.5-232]	Response to RAI No 233 Luminant letter no . TXNB-11081 Date 12/1/2011	Deleted “on top of the fill slopes”	-
RCOL2_02.05.04-26	2.5.5.2.7	2.5-231 [2.5-232]	Response to RAI No 233 Luminant letter no . TXNB-11081 Date 12/1/2011	Revised section to correctly list cross sections and figures.	-
RCOL2_02.05.04-26	2.5.5.2.7	2.5-233	Response to RAI No 233 Luminant letter no . TXNB-11081 Date 12/1/2011	Edited safety range, changed ‘slope’ to ‘cross sections’ and added discussion of undocumented fill.	-
RCOL2_02.05.04-26	Table 2.5.5-201	2.5-440	Response to RAI No 233 Luminant letter no . TXNB-11081 Date 12/1/2011	Revised slope heights, maximum slope inclination, minimum distance to slope crest/toe, deleted “Northeast of Unit 3” and deleted “North” from “Northwest of Unit 4”	-
RCOL2_02.05.04-26	Table 2.5.5-203	2.4-442	Response to RAI No 233 Luminant letter no . TXNB-11081 Date 12/1/2011	Revised table to reflect 5 cross sections.	-

Change ID No.	Section	FSAR Rev. 2 Page	Reason for change	Change Summary	Rev. of FSAR T/R
RCOL2_02.05.04-26	Figure 2.5.4-242	-	Response to RAI No 233 Luminant letter no . TXNB-11081 Date 12/1/2011	Figure was revised to include groundwater table (GWT) and provide static , seismic, hydrostatic, and hydrodynamic lateral pressures due to GWT.	-
RCOL2_02.05.04-26	Figure 2.5.4-243	-	Response to RAI No 233 Luminant letter no . TXNB-11081 Date 12/1/2011	Figure was revised to include groundwater table (GWT) and provide static , seismic, hydrostatic, and hydrodynamic lateral pressures due to GWT.	-
RCOL2_02.05.04-26	Figure 2.5.5-201	-	Response to RAI No 233 Luminant letter no . TXNB-11081 Date 12/1/2011	Revised figure to include 5 cross sections (D through H).	-
RCOL2_02.05.04-26	Figure 2.5.5-204	-	Response to RAI No 233 Luminant letter no . TXNB-11081 Date 12/1/2011	Revised figure to indicate retaining walls	-
RCOL2_02.05.04-26	Figure 2.5.5-205	-	Response to RAI No 233 Luminant letter no .TXNB-11081 Date 12/1/2011	Revised figure to indicate retaining wall and GWT	-

Change ID No.	Section	FSAR Rev. 2 Page	Reason for change	Change Summary	Rev. of FSAR T/R
RCOL2_02.05.04-26	Figure 2.5.5-206	-	Response to RAI No 233 Luminant letter no .TXNB-11081 Date 12/1/2011	Revised to account for change in compacted fill and GWT.	-
RCOL2_02.05.04-26	Figure 2.5.5-207	-	Response to RAI No 233 Luminant letter no .TXNB-11081 Date 12/1/2011	Changed figure to cross section F-F' and revised figure to account for change in GWT , undocumented fill and include VBS.	-
RCOL2_02.05.04-26	Figure 2.5.5-208	-	Response to RAI No 233 Luminant letter no .TXNB-11081 Date 12/1/2011	Revised figure to cross section G-G', included VBS, change in GWT.	-
RCOL2_02.05.04-26	Figure 2.5.5-209	-	Response to RAI No 233 Luminant letter no .TXNB-11081 Date 12/1/2011	Revised figure to Post-Construction Cross Section H-H'	-
RCOL2_02.05.04-26	Figure 2.5.5-210	-	Response to RAI No 233 Luminant letter no .TXNB-11081 Date 12/1/2011	Revised figure to Cross Section D-D'	-
RCOL2_02.05.04-26	Figure 2.5.5-211	-	Response to RAI No 233 Luminant letter no .TXNB-11081 Date 12/1/2011	Revised figure to cross section E-E'	-

Change ID No.	Section	FSAR Rev. 2 Page	Reason for change	Change Summary	Rev. of FSAR T/R
RCOL2_02.05.04-26	Figure 2.5.5-212	-	Response to RAI No 233 Luminant letter no .TXNB-11081 Date 12/1/2011	Revised figure to include VBS and change in GWT.	-
RCOL2_02.05.04-26	Figure 2.5.5-213	-	Response to RAI No 233 Luminant letter no .TXNB-11081 Date 12/1/2011	Revised figure to Static Stability Analysis Cross Section G-G'	-
RCOL2_02.05.04-26	Figure 2.5.5-214	-	Response to RAI No 233 Luminant letter no .TXNB-11081 Date 12/1/2011	Revised figure to Static Stability Analysis Cross Section H-H'	-
RCOL2_02.05.04-26	Figure 2.5.5-215	-	Response to RAI No 233 Luminant letter no .TXNB-11081 Date 12/1/2011	Revised figure to cross section D-D'	-
RCOL2_02.05.04-26	Figure 2.5.5-216	-	Response to RAI No 233 Luminant letter no .TXNB-11081 Date 12/1/2011	Revised figure to cross section E-E'	-
RCOL2_02.05.04-26	Figure 2.5.5-217	-	Response to RAI No 233 Luminant letter no .TXNB-11081 Date 12/1/2011	Revised figure to Seismic Stability Analysis Cross Section F-F'	-
RCOL2_02.05.04-26	Figure 2.5.5-218	-	Response to RAI No 233 Luminant letter no .TXNB-11081 Date 12/1/2011	Revised figure to Seismic Stability Analysis Cross Section G-G'	-

Change ID No.	Section	FSAR Rev. 2 Page	Reason for change	Change Summary	Rev. of FSAR T/R
RCOL2_02.05.04-26	Figure 2.5.5-219	-	Response to RAI No 233 Luminant letter no .TXNB-11081 Date 12/1/2011	Revised figure to Seismic Stability Analysis Cross Section H-H'	-
RCOL2_19-17	2.4.2.2	2.4-20	Response to RAI No 232 Luminant letter no .TXNB-11084 Date 12/8/2011	Corrected typographical error, changed 810.87 ft msl to 810.64 ft msl.	-
MAP-02-401	Table 2.0-1R (Sheet 8 of 13)	2.0-9	Consistency with DCD Revision	Changed seismic category "I/II" to seismic category "I and II".	0
CTS-01356	2.2.3.1.3.2.2	2.2-18	Correction	Changed "RG 1.75" to "RG 1.78"	0
CTS-01176	2.3.6	2.3-52	Editorial	The word "resolved" was changed to "addressed"	0
CTS-01181	Table 2.3-337 (sheet 2 of 2)	2.3-243	Editorial	Corrected spelling of "LPXZ" to "LPZ"	0
CTS-01354	2.4.13.4.2 (new section)	2.4-89 [2.4-106 through 2.4-108]	Consistency within FSAR Ch. 2	Made all subscripts (except for elevation of the reactor building base mat) lower case: vertical groundwater flow, hydraulic conductivity, etc.	0

Change ID No.	Section	FSAR Rev. 2 Page	Reason for change	Change Summary	Rev. of FSAR T/R
CTS-01354	2.4.13.4.2 (new section)	2.4-89 [2.4-109]	Editorial	Changed ft3 to ft^3	0
CTS-01354	2.4.13.4.2 (new section)	2.4-89 [2.4-112]	Editorial	Changed VBATV2 to V_{BATv2}	0
CTS-01177	2.4.14	2.4-102 [2.4-130]	Editorial	The t and s in “technical specifications” were capitalized	0
CTS-01354	Table 2.4.12-211	2.4-216 [2.4-248]	Consistency within FSAR Ch. 2	Made subscripts for hydraulic gradient lower case.	0

*Page numbers for the attached marked-up pages may differ from the revision 2 page numbers due to text additions and deletions. When the page numbers for the attached pages do differ, the page number for the attached page is shown in brackets.

Table 2.0-1R (Sheet 8 of 13)
Key Site Parameters

Steam line break releases(8) 0-8 hrs 8-24 hrs 1-4 days 4-30 days	 1.9×10^{-2} s/m^3 1.1×10^{-2} s/m^3 7.1×10^{-3} s/m^3 4.7×10^{-3} s/m^3	See steam line break releases to Main Control Room intake (above)(13)
Fuel handling area releases(7) 0-8 hrs 8-24 hrs 1-4 days 4-30 days	 1.1×10^{-3} s/m^3 6.7×10^{-4} s/m^3 4.3×10^{-4} s/m^3 2.8×10^{-4} s/m^3	See fuel handling area releases to Main Control Room intake (above)(13)

Hydrologic Engineering

Parameter Description	Parameter Value	
	DCD	**CPNPP 3 and 4**
Maximum flood (or tsunami) level	1 ft below plant grade	793.66 ft msl for SCR ~~820.90~~820.98 ft msl for a Local Intense Precipitation at units 3 and 4 site.
Maximum rainfall rate (hourly)	19.4 in/hr for seismic category I~~/~~ and II structures	19.0 in/hr
Maximum rainfall rate (short-term)	6.3 in/5 min for seismic category I~~/~~ and II structures	6.2 in/5 min
Maximum groundwater level	1 ft below plant grade	1 ft below plant grade

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MAP-02-401

CP COL 2.1(1)
CP COL 2.2(1)

that warranted a detailed main control room habitability analysis is based on the methodology of Regulatory Guide 1.78.

2.2.3.1.3.2 Source Evaluation

The following subsections provide descriptions of the release sources.

2.2.3.1.3.2.1 Mobile Sources

Of the three mobile sources (road, railroad, and waterway), only roadways are within 5 mi of the site; neither railroads nor waterways need be considered further based on the distance criteria prescribed in Regulatory Guide 1.78.

Roadway FM 56 poses the largest potential mobile risk to the CPNPP Units 3 and 4 main control rooms due to postulated hazardous chemical releases. FM 56 serves as the bounding case because it is closest to the site (1.4 mi to the nearest MCR inlet) among the three roadways within 5 mi, and any registered hazardous material is permitted to travel this roadway. Based on a postulated chlorine release, the quantity of hazardous material that may transverse FM 56 is greater than the acceptable quantity as identified in Regulatory Guide 1.78. The frequency of a hazardous chemical release on roads was also examined. Results show the total frequency for a road-based hazardous material release is higher than the 1.0E-6 screening frequency of Regulatory Guide 1.78. Therefore, a more detailed main control room habitability analysis is necessary for roadway transportation. Table 2.2-214 summarizes the chemical, quantity, and distance to the nearest CPNPP Units 3 and 4 MCR inlet to be considered for the main control room habitability analysis in Section 6.4.

2.2.3.1.3.2.2 Stationary Sources

The fixed facilities that could not be initially screened out based on the chemicals stored at the facility are: Wolf Hollow I, LP; Cleburne Propane; DeCordova SES; and Glen Rose WWTP.

The hazardous chemicals housed at Glen Rose WWTP and Cleburne Propane are not sufficiently large to warrant a detailed habitability analysis based on the methodology in Regulatory Guide 1.78. DeCordova SES houses 15,294 lb of sodium hydroxide and 45,981 lb of sulfuric acid these quantities were evaluated based upon a distance of 3.7 mi from the nearest MCR inlet. This is conservative as the actual distance to DeCordova is 9.35 miles, which could have eliminated DeCordova from consideration in accordance with RG 1.7~~5~~8. Wolf Hollow I, LP houses sodium hydroxide and sulfuric acid in sufficient quantities to warrant a more detailed main control room habitability analysis. Those quantities are 19,118 lb and 57,477 lb, respectively, at 3.9 mi from the nearest MCR inlet. CTS-01356

Sunoco Pipeline, LP operates a pipeline which carries crude oil. This pipeline was the only pipeline that was not initially screened out based on the toxicity of the substance being transported. Crude oil may contain significant amounts of

This COL item is ~~resolved~~addressed in Subsection 2.3.5 *and associated tables.* | CTS-01176

2.3.7 References

CP SUP 2.3(1) Add the following references after the last reference in DCD Subsection 2.3.7.

2.3-201 Texas Water Development Board, 2007 State Water Plan, Chapter 5, “Climate of Texas”, s.v. "," http://www.twdb.state.tx.us/publications/reports/State_Water_Plan/2007/2007StateWaterPlan/2007StateWaterPlan.htm) (accessed January 6, 2008 7:06 PM). (NOTE: "s.v." stands for sub verbo, "under the word.")

2.3-202 Texas State Historical Association, Handbook of Texas Online, s.v. "," http://www.tsha.utexas.edu/handbook/online/articles/WW/yzw1.html (accessed December 15, 2006).

2.3-203 Climatic Atlas of Texas, LP-192, Texas Department of Water Resources, December 1983.

2.3-204 National Climatic Data Center (NCDC), U.S. Climate Normals, s.v. "," http://cdo.ncdc.noaa.gov/cgi-bin/climatenormals/climatenormals.pl?direc, accessed January 7, 2008 5:31 PM.

2.3-205 Comanche Peak Steam Electric Station. Texas Utilities Generation Company (TXU), 2007, “Final Safety Analysis Report (FSAR)”, Amendment 101, Comanche Peak Steam Electric Station, Glen Rose, Texas (February 1, 2007).

2.3-206 NOAA Technical Memorandum NWS SR-206, “Atlantic Tropical storms and Hurricanes Affecting the United States: 1899 – 1999”, Donovan Landreneau, 1999.

2.3-207 NOAA Technical Memorandum NWS SR-206 (Updated Through 2002), “Atlantic Tropical Storms and Hurricanes Affecting the United States: 1899 – 2002”, Donovan Landreneau, 2002.

2.3-208 Thom, H. C. S., “Tornado Probabilities,” Monthly Weather Review, October-December, 1963.

2.3-209 US Census, s.v. ì,î http://quickfacts.census.gov/qfd/states/48/48425.html (accessed February 4, 2008).

Table 2.3-337 (Sheet 2 of 2)
Relative Concentration at CPNPP

	χ/Q VALUES (sec/m^3) Site Values Compared to DCD Values				
	0 – 2 Hrs	0 – 8 Hrs	8 – 24 Hrs	27 – 96 Hrs	96 – 720 Hrs
EAB (600m, ENE)	3.7×10^{-4}				
LPZ (3219 m, NNE)		2.29×10^{-5}	1.49×10^{-5}	6.34×10^{-6}	2.01×10^{-6}
US-APWR DCD χ/Q Values					
EAB	5.0×10^{-4}				
LP~~X~~Z		2.1×10^{-4}	1.3×10^{-4}	6.9×10^{-5}	2.8×10^{-5}

CTS-01181

a) 0.5% χ/Q values represent the maximum for all sector-dependent values.

b) As identified in the PAVAN manual, the direction independent χ/Q envelope values (i.e. the 5% "SITE LIMIT" values) are considered approximations and require confirmation.

Formation, it continues to flow up-gradient for 62.75 years or down-gradient for 217.55 years before exiting the CPNPP property boundary where a potential unrestricted water supply well could be placed. The shorter duration of flow time of 62.75 years up-gradient is conservatively chosen for the hypothetical scenario.

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- A straight line flow path through the Glen Rose limestone is considered most conservative as the actual groundwater pathway is much more tortuous. Also; transport times would be much longer and hydraulic conductivities much lower.

- No dilution by Glen Rose formation groundwater is credited and only 200,000 gallons or 7.571 E08 ml out of the entire Twin Mountain Formation aquifer (millions of gallons) is credited for diluting the source term contamination in the groundwater.

The vertical migration through the Glen Rose Formation was assessed using the Darcy equation for groundwater flow velocity:

$V_v = (K_v \times I_v) / \eta$ Equation 1

CTS-01354

Where:

V_v = vertical groundwater flow velocity, ft/day

K_v = vertical hydraulic conductivity, ft/day

I_v = vertical hydraulic gradient, unitless

η = effective porosity (ft/ft), unitless

The vertical hydraulic gradient is calculated by:

$I_v = (E_h - E_l) / (E_B - E_l)$ Equation 2

Where:

E_h = highest groundwater elevation (perched aquifer), ft above msl

E_B = elevation of the reactor building base mat, ft above msl

E_l = lowest groundwater elevation (top of Twin Mountain Formation), ft above msl

Vertical groundwater travel time through the Glen Rose Formation is calculated by:

$T_v = (L_v / V_v) / 365.25$ Equation 3

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Where:

T_v = vertical groundwater travel time, years

L_v = vertical distance, (E_B - E_l), ft

Input parameters to determine time through Glen Rose Formation:

- The average effective porosity (η) of the Glen Rose limestone is estimated at 11.9% (Subsection 2.4.12.2.5.1).
- Vertical distance is from the top of the A/B base mat elevation (E_B = 785 ft msl; Subsection 2.4.13.1) to the contact elevation of the Glen Rose/Twin Mountains Formations (E_l = 592 ft msl; Subsection 2.4.12.1.2).
- Highest groundwater elevation (E_h) (perched aquifer) is 820 ft msl.
- K_v of the Glen Rose limestone is conservatively assumed to be the lowest hydraulic conductivity where Darcy's equation (advection) is valid for groundwater transport (1 E-06 cm/sec).

Using the input parameters, the vertical hydraulic gradient (I_v) is calculated to be 1.18. The vertical groundwater velocity (V_v) through the Glen Rose Formation limestone is 0.028 ft/day. At this groundwater velocity, it takes approximately 18.78 years to reach the Twin Mountain Formation upper cap. The groundwater travel time to Twin Mountain Formation is extremely conservative as it assumes a straight-line path; actual pathways will be long and tortuous and would add to the time duration.

Travel times through the Twin Mountains aquifer either up-gradient or down-gradient is calculated considering the following information:

Groundwater elevation data was obtained from six nearby USGS wells completed in the Twin Mountain Formation aquifer with recorded water levels in 2010, including the CPNPP water supply well (USGS well 3240604). Reported groundwater elevations for the five identified wells and the CPNPP water supply well are shown in Table 2.4.13-212 (TWDB, 2011a and TWDB, 2011b).

These water levels were plotted to produce a potentiometric surface map of the Twin Mountain Formation in the vicinity of the CPNPP. Groundwater hydraulic gradients were calculated based on the distance between USGS wells 3242403 (702.58 ft msl) and 3243805 (394.40 ft msl). These two well locations bound the CPNPP site and are in the approximate gradient direction of groundwater flow within the Twin Mountain Formation.

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Average hydraulic conductivity (K_h) of the Twin Mountain Formation was reported as 9 ft/day (Reference 2.4-299). Porosity of the sandstone samples retrieved during the 2007 CPNPP pre-COL application investigation was reported as ranging between 19 to 37% with an average value of 27% (Subsection 2.5.4.2.3.1.3).

Using Darcy's equation and the input parameters below for groundwater flow in a granular media, the groundwater velocity was calculated to be 0.17 ft/day:

1. Well 3242403 - 702.58 ft msl
2. Well 3243805 - 394.40 ft msl
3. Distance Between Wells - 59460 ft
4. Hydraulic Gradient - 0.0052 unitless
5. Hydraulic Conductivity - 9.00 ft/day
6. Porosity - 0.27 unitless

Groundwater Travel Time in the Twin Mountains Formation

Nearest Property Boundary

The distance to the nearest property line from the CPNPP is approximately 0.75 miles (3960 ft) southwest (FSAR Figure 2.1-205). This would be the location of the closest point where unrestricted water well could be drilled in the vicinity of the CPNPP. Using an average of 365.25 days per year (including leap years) a travel time of approximately 62.75 years is obtained for a release at the Glen Rose/Twin Mountain Formation contact below the CPNPP to reach the nearest potential location of an uncontrolled groundwater user.

Although this is the nearest property boundary to the CPNPP Units 3 and 4, this location is in a hydraulically up-gradient position to a release at the site and any release from the site would actually travel down-gradient for greater distances to reach an uncontrolled location; therefore, this is considered a conservative analysis.

Nearest Down-Gradient Property Boundary

The nearest down-gradient property boundary location is near the SCR dam, located approximately 2.6 miles (13,728 feet) from Units 3 and 4. Performing an analysis similar to that used for the closest property boundary, a travel time of approximately 217.55 years is obtained for a release at the Glen Rose/Twin Mountain Formation contact below the CPNPP to reach the nearest potential down-gradient location of an unrestricted groundwater user.

RCOL2_02.04.13-05, 06, 07 S01

Groundwater Volume within the Transport Pathway

Nearest Property Boundary

Based upon a 105.6 gallon release of source term contamination from the total 52,800 gallon release, which is assessed for the bounding case, a 5 ft x 5 ft contamination slug from the Glen Rose Formation is assumed to enter the Twin Mountain Formation (at either the CPNPP Unit 3 or 4 location) and travel to the nearest potential location of an unrestricted groundwater user (southwest property boundary, 3960 ft) where the groundwater volume within this pathway maintains this dimension along the pathway length. Maintaining this slug dimension along the Twin Mountain aquifer is considered conservative inasmuch as the source term would actually readily disperse, mix and dilute further in the aquifer. This volume is based on a Twin Mountain Formation average porosity of 27%.

- Cross sectional area = 5 ft x 5 ft = 25 ft^2
- Total volume of the transport pathway = 25 ft^2 x 3960 ft = 99,000 ft^3
- Groundwater volume (pore space) within the transport pathway = 99,000 ft^3 x 0.27 = 26,730 ft^3
- Converting to gallons = 26,730 ft^3 x 7.48 gal/ft^3 = 199,940.4 gallons

CTS-01354

Nearest Down-Gradient Property Boundary

An assumed 5 ft x 5 ft slug enters the Twin Mountain Formation at either the CPNPP Unit 3 or 4 location, and travels to the nearest potential down-gradient (east-southeast) location of an unrestricted groundwater user (SCR Dam, 13,728 ft) where the groundwater volume within this pathway maintains this dimension along the pathway length. This volume is based on a Twin Mountain Formation average porosity of 27%.

- Cross sectional area = 5 ft x 5 ft = 25 ft^2
- Total volume of the transport pathway = 25 ft^2 x 13,728 ft = 343,200 ft^3
- Groundwater volume (pore space) within the transport pathway = 343,200 ft^3 x 0.27 = 92,664 ft^3
- Converting to gallons = 92,664 ft^3 x 7.48 gal/ft^3 = 693,136.7 gallons

Concentration of BAT After Travel Time Through Glen Rose Formation Limestone

The radioisotopes from DCD Table 11.2-17 BAT concentrations, whose isotopic concentrations less than 1.0 x 10^{-3} in fraction of concentration limits are excluded

V_{BATv1} = 15.1 gal

RCOL2_02.04.13-05, 06, 07 S01

Determination of Path #2 Vertical Groundwater Volume

For the percentage of the vertical to horizontal hydraulic conductivities for a Path #2 BAT release, Equation 4 is modified as follows to determine $\%K_{v2}$:

$\%K_{v2} = (K_v/K_{h2}) \times 100\%$

Where:

$\%K_{v2}$ = path #2 vertical percentage of hydraulic conductivity

K_v = vertical hydraulic conductivity (ft/day)

K_{h2} = path #2 horizontal hydraulic conductivity (ft/day)

$K_{h2} = 5.0 \times 10^{-4}$ cm/s = ((5.0x10-4 cm/s) x (86,400 s/day))/30.48 cm/ft) = 1.42 ft/day

$K_v = 1.0 \times 10^{-6}$ cm/s = ((1.0x10-6 cm/s) x (86,400 s/day))/30.48 cm/ft) = 2.83×10^{-3} ft/day

$\%K_{v2} = (K_v/K_{h2}) \times 100\% = (2.83 \times 10^{-3}$ ft/day)/(1.42 ft/day) x 100% = 0.20%

For the fraction of a Path #2 BAT released volume which travels vertically, Equation 5 is modified as follows to determine V_{BATv2}:

CTS-01354

$V_{BATv2} = V_{BAT2} \times \%K_{v2}$

Where:

V_{BATv2} = vertical volume of the BAT release for Path #2, gal

V_{BAT2} = total Unit 2 BAT release volume, gal

$\%K_{v2}$ = vertical percentage of hydraulic conductivity

V_{BAT2} = 52,800 gal

$\%K_{v2}$ = 0.20% = 0.002

$V_{BATv2} = V_{BAT2} \times \%K_{v2}$ = 52,800 gal x 0.002

2.4.14 Technical Specifications and Emergency Operation Requirements

CP COL 2.4(1) Add the following after the paragraph in DCD Subsection 2.4.14.

The grade elevation of CPNPP Units 3 and 4 is above the probable maximum flood (PMF) elevation; therefore, due to plant grade elevation and the unique "always in place" four tank design of the UHS there are no requirements for emergency protective measures designed to minimize the impact of adverse hydrology-related events on safety-related facilities, and none are incorporated into the ~~t~~Technical ~~s~~Specifications or emergency procedures. CTS-01177

Comanche Peak Nuclear Power Plant, Units 3 & 4
COL Application
Part 2, FSAR
Table 2.4.12-211
Groundwater Velocities and Travel Times

RCOL2_02.04.12-8 S01 CTS-01354

	Path 1	Path 2	Path 3
Release Elevation ($E_{~~h~~h}$)(ft msl)	820.00	820.00	820.00
Discharge Elevation ($E_{~~l~~l}$)(ft msl)	770.00	770.00	592.00
Distance to SCR (L)(ft)	600	350	193
Hydraulic Gradient ($E_{~~h~~h}$-$E_{~~l~~l}$)/L	0.0833	0.1429	1.18
Velocity (V) (ft/day)	4.13	1.01	0.028
Travel Time (T) (days)	145	346	6858
(years)	0.40	0.95	18.78

Path 1 is from Unit 3 east to SCR; Path 2 is from Unit 4 north to SCR; Path 3 is from the top of the A/B leveling concrete to the Twin Mountains Formation.
Equation for Velocity: ~~v~~V = (K_h ($E_{~~h~~h}$-$E_{~~l~~l}$)/L)/η Equation for Travel Time: T = L/V

Path 1 fill $K_{~~h~~h}$ is 3.50 x 10^{-3} cm/sec (9.92 ft/day) from RW-1 recovery test.
Path 2 fill $K_{~~h~~h}$ is 5.00 x 10^{-4} cm/sec (1.42 ft/day) from MW-1219a slug test.
Path 3 K_v is assumed to be 1.00 x 10^{-6} cm/sec (2.83 x 10^{-3} ft/day).

Conversions: 1 day = 86,400 seconds; 1 foot = 30.48 centimeters; 1 year = 365.25 days.

Assumptions:

1. Engineered fill is conservatively assumed as having negligible transport time and fully saturated to 820 ft msl.
2. ~~Engineered fill is assumed to be fully saturated to level of the perimeter trench drains.~~Maximum Elevation (E_h)
   a. Paths 1 and 2: the maximum groundwater elevation is assumed to be 820 ft msl, above the elevation of the trench drain, transposed to the edge of the existing fill at the pathway release point (E_h @ 820 ft msl).
   b. Path 3: the maximum groundwater elevation is assumed to be 820 ft msl, above the elevation of trench drain (E_h @ 820 ft msl).
3. ~~Release elevation is assumed to be the elevation of trench drain transposed to the edge of the existing fill at the pathway release point (E_h at 820 ft msl).~~
Discharge Elevation (E_l)
   ~~4~~a. Paths 1 and 2: the ~~D~~discharge elevation is assumed to be the elevation of the SCR minimum operating pool ($E_{~~l~~l}$ at 770 ft msl).
   b. Path 3: the discharge elevation is assumed to be the elevation of the Glen Rose/Twin Mountains Formation contact beneath Units 3 and 4 (E_l @ 592 ft msl).
4. Pathway Distance (L)
   ~~5~~a. Paths 1 and 2: the ~~P~~pathway distance is assumed to be the shortest distance from the pathway release point (nearest engineered/existing fill interface) to the shoreline of SCR.
   b. Path 3: the pathway distance is assumed to be the vertical distance from top of the A/B leveling concrete to the elevation of the Glen Rose/Twin Mountains Formation contact beneath Units 3 and 4 (785 ft msl - 592 ft msl= 193 ft msl).
5. porosity (η)
   ~~6~~a. Existing fill (large rubble, sand, and gravel) is assumed to have 20% effective porosity (η=0.20).
   b. The Glen Rose limestone is assumed to have 11.9% effective porosity (η=0.119).

Chapter 3

Chapter 3 Tracking Report Revision List

Change ID No.	Section	FSAR Rev. 2 Page	Reason for change	Change Summary	Rev. of FSAR T/R
ROCL2_02.05.04-11 S01	3.4.1.2	3.4-1 3.4.-2	Supplemental Response to RAI No 22 Luminant letter TXNB- 11057 Date 8/29/2011	Added discussion on waterproofing and material used and deleted discussion on drain.	-
RCOL2_03.07.02-24	3KK.2	3KK-2	Response to RAI No. 226 Luminant Letter no.TXNB-11068 Date 10/27/2011	Clarification	-
RCOL2_03.07.02-24	Table 3kk-6	3kk-16	Response to RAI No. 226 Luminant Letter no.TXNB-11068 Date 10/27/2011	Clarification	-
RCOL2_03.07.02-24	3LL.2	3LL-2	Response to RAI No. 226 Luminant Letter no.TXNB-11068 Date 10/27/2011	Clarification	-
RCOL2_03.07.02-24	Table 3LL-9	3LL-16	Response to RAI No. 226 Luminant Letter no.TXNB-11068 Date 10/27/2011	Clarification	-
RCOL2_03.07.02-24	Table 3LL-10	3LL-17	Response to RAI No. 226 Luminant Letter no.TXNB-11068 Date 10/27/2011	Clarification	-
RCOL2_03.07.02-24	Table 3LL-11	3LL-18	Response to RAI No. 226 Luminant Letter no.TXNB-11068 Date 10/27/2011	Clarification	-
RCOL2_03.07.02-24	Table 3LL-12	3LL-19	Response to RAI No. 226 Luminant Letter no.TXNB-11068 Date 10/27/2011	Clarification	-

Change ID No.	Section	FSAR Rev. 2 Page	Reason for change	Change Summary	Rev. of FSAR T/R
RCOL2_03.07.02-24	3MM.2	3MM-3	Response to RAI No. 226 Luminant Letter no.TXNB-11068 Date 10/27/2011	Clarification	-
RCOL2_03.07.02-24	Table 3MM-3	3MM-10	Response to RAI No. 226 Luminant Letter no.TXNB-11068 Date 10/27/2011	Clarification	-
RCOL2_03.07.02-24	Table 3MM-7	3MM-14	Response to RAI No. 226 Luminant Letter no.TXNB-11068 Date 10/27/2011	Clarification	-
RCOL2_03.07.02-24	3NN.1	3NN-1	Response to RAI No. 226 Luminant Letter no.TXNB-11068 Date 10/27/2011	Clarification	-
RCOL2_03.07.02-24	3NN.6	3NN-9	Response to RAI No. 226 Luminant Letter no.TXNB-11068 Date 10/27/2011	Clarification	-
RCOL2_03.09.06-14	3.9.6.4 3.9.9	3.9-2 3.9-3 3.9-9	Response to RAI No. 228 Luminant Letter no.TXNB-11077 Date 11/7/2011	Deleted COL item 3.9(6).	-
RCOL2_03.09.06-15	3.9.6 3.9.9	3.9-2 3.9-3	Response to RAI No. 228 Luminant Letter no.TXNB-11077 Date 11/7/2011	Updated the COL item 3.9(8).	-
RCOL2_03.09.06-17	Table 3.9-203	3.9-6 through 3.9-11	Response to RAI No. 228 Luminant Letter no.TXNB-11077 Date 11/7/2011	Updated the IST requirement Table for clarification.	-
RCOL2_02.05.04-26	3.4.1.2	3.4-1	Response to RAI No 233 Luminant letter no .TXNB-11081 Date 12/1/2011	Deleted the following sentence: " The lowest point of the structure foundation is above the groundwater elevation identified in Section 2.4, and therefore no	-

Change ID No.	Section	FSAR Rev. 2 Page	Reason for change	Change Summary	Rev. of FSAR T/R
				permanent dewatering system is required."	
CTS-01384	3.2.3 Table 3.2-202	3.2-2 3.2-6 3.2-7	Editorial	Added the reference of Table 3.2-202 and LMA.	0
DCD_03.03.02-5	3.3.1.2	3.3-2	Reflect Response to DCD RAI No.817	Added clarification sentences.	0
DCD_03.07.02-102	3.7.2.3.4 (New section) 3.7.5	3.7-7 [3.7-8] 3.7-14 [3.7-15]	Reflect Response to DCD RAI No.810	Reinstated COL 3.7(11).	0
DCD_003.07.02-88	3.7.2.8	3.7-11	Reflect Response to DCD RAI No.800	Clarification	0

*Page numbers for the attached marked-up pages may differ from the revision 2 page numbers due to text additions and deletions. When the page numbers for the attached pages do differ, the page number for the attached page is shown in brackets.

3.2.3 Combined License Information

Replace the content of DCD Subsection 3.2.3 with the following.

3.2(1) *Deleted from the DCD.*

3.2(2) *Deleted from the DCD.*

3.2(3) *Deleted from the DCD.*

STD COL 3.2(4) ***3.2(4)*** *Site-specific safety-related systems and components designed to withstand earthquakes*

This COL item is addressed in Subsection 3.2.1.2 and Tables 3.2-201 and 3.2-202. CTS-01384

STD COL 3.2(5) ***3.2(5)*** *Equipment class and seismic category*

This COL item is addressed in Subsection 3.2.2 and Table 3.2-201.

STD COL 3.2(6)
CP COL 3.2(6) ***3.2(6)*** *Equipment class and seismic category of risk-significant, non-safety related SSCs*

This COL item is addressed in Subsection 3.2.2.5 and Table 3.2-201.

CP COL 3.2(4)

Table 3.2-202 (Sheet 1 of 2)
Codes and Standards Applicable to Site-Specific Mechanical and Fluid Systems, Components, and Equipment(5)

CTS-01384

Safety-Related Piping, Valves, Pumps(1)
ASME
Section II, 2001 Edition with 2003 Addendum
Section III, 2001 Edition with 2003 Addendum
Section V, 2001 Edition with 2003 Addendum
Section IX, 2001 Edition with 2003 Addendum
Section XI, 2001 Edition with 2003 Addendum
Non-Safety-Related Piping, Valves, and Pumps(2)
ASME
B31.1-2004 “Power Piping”
Heating, Ventilation, and Air Conditioning Equipment(3)
ASME
AG-1-2003 “Code on Nuclear Air and Gas Treatment”
Air Movement and Control Association
200-1995 “Air Systems”
201-2002 “Fans and Systems”
Underwriters Laboratory
1278-2000 “Safety Movable and Wall- or Ceiling-Hung Electric Room Heaters”
1996-2009 “Safety Electric Duct Heaters”
2021-1997 “Safety Fixed and Location-Dedicated Electric Room Heaters”

CP COL 3.2(4)

Table 3.2-202 (Sheet 2 of 2)
Codes and Standards Applicable to Site-Specific Mechanical and Fluid Systems, Components, and Equipment(5)

CTS-01384

Class 1E Components(4)
Institute of Electrical and Electronic Engineers (IEEE)
323-1974 “Standard for Qualifying Class 1E Equipment for Nuclear Power Generating Stations”
323-2003 “Standard for Qualifying Class 1E Equipment for Nuclear Power Generating Stations”
344-1987 as modified by NRC RG 1.100, Rev. 2 dated June 1988 , “Seismic Qualification of Electrical and Active Mechanical Equipment and Functional Qualification of Active Mechanical Equipment for Nuclear Power Plants”
384-1992 “Standard Criteria for Independence of Class 1E Equipment and Circuits”
603-1998 “Standard Criteria for Safety Systems for Nuclear Power Generating Stations”

Notes:

1. These codes and standards are applied to the UHS and ESW safety-related SSCs identified in Table 3.2-201.
2. These codes and standards are applied to the SG blowdown system identified in Table 3.2-201.
3. These codes and standards are applied to the heating, ventilation, and air conditioning equipment identified in Table 3.2-201.
4. These codes and standards are applied to all Class 1E equipment identified in Table 3.2-201.
5. This table identifies the current revision of documents. Later editions that are current as of procurement or manufacture may be used.

complex is comprised of relatively low-rise, nearly rectangular structures that do not include any unusual or irregular geometric shapes and are constructed of reinforced concrete walls, floors, and roofs. Therefore, based on the configuration and properties of the UHSRS complex, method 2 of ASCE/SEI 7-05 is an appropriate method of wind load design.

- The exposed portions of the ESWPT (seismic category I) and power source fuel storage vaults (PSFSVs) (seismic category I) are analyzed using method 1 of ASCE/SEI 7-05 (Reference 3.3-1) and an importance factor of 1.15.

CPNPP Units 3 and 4 do not have site-specific seismic category II buildings and structures. FSAR Figures 2.5.1-215 and 2.5.5-204 show that the site location does not have features promoting channeling effects or buffeting in the wake of upwind obstructions that warrant special design consideration. Therefore the wind design methods used for standard plant buildings are valid for the site. DCD_03.03.02-5

3.3.2.2.2 Tornado Atmospheric Forces

CP COL 3.3(5) Replace the last paragraph in DCD Subsection 3.3.2.2.2 with the following.

Site-specific seismic category I structures are the UHSRS, ESWPT, and the PSFSVs.

The UHSRS, including the pump houses and transfer pump rooms, are configured with large openings and/or vents. The UHS basins and cooling tower enclosures are designed as vented with respect to tornado atmospheric differential pressure loading. Venting of the pump houses and transfer pump rooms is anticipated during a tornado event, however, for the purpose of structural design, the external walls, internal walls, and slabs of the pump houses and transfer pumps rooms are conservatively designed as unvented and the full tornado atmospheric differential pressure loading is applied. Since the full pressure differential for the structural elements is considered, a depressurization model is not used for the structural design.

The ESWPT and PSFSV structures are designed as unvented because they do not have openings that permit depressurization during a tornado.

3.3.2.2.4 Combined Tornado Effects

CP COL 3.3(2) Replace the first and second sentences of the last paragraph in DCD Subsection 3.3.2.2.4 with the following.

3.7.2.1 Seismic Analysis Methods

CP COL 3.7(29) Replace the second sentence of the first paragraph in DCD Subsection 3.7.2.1 with the following.

Table 3.7.2-1R presents a summary of dynamic analysis and combination techniques including types of models and computer programs used, seismic analysis methods, and method of combination for the three directional components for the seismic analysis of the US-APWR standard and site-specific seismic category I buildings and structures.

3.7.2.3.1 General Discussion of Analytical Models

CP COL 3.7(3) Replace the sixth paragraph (including bullets) in DCD Subsection 3.7.2.3.1 with the following.

Analytical models used for the seismic analyses of buildings and structures are developed on a site-specific basis as follows:

- PSFSVs (seismic category I). A three-dimensional site-specific SASSI (Reference 3.7-17) finite element (FE) model is used for seismic analysis. The PSFSV analytical model is discussed in Appendix 3MM.
- ESWPT (seismic category I). Three-dimensional site-specific SASSI (Reference 3.7-17) FE models are used for seismic analysis. The ESWPT analytical models are discussed in Appendix 3LL.
- UHSRS (seismic category I). Three-dimensional site-specific SASSI (Reference 3.7-17) FE models are used for seismic analysis. The UHSRS analytical model is discussed in Appendix 3KK.

3.7.2.3.4 Subsystem Coupling Requirements

DCD_03.07.02-102

CP COL 3.7(11) Replace the last two sentences of the last paragraph in DCD Subsection 3.7.2.3.4 with the following.

The polar crane and fuel handling crane manufacturers are selected and site-specific design of these cranes are performed prior to construction. The

site-specific seismic analysis and design of the cranes consider their masses and frequencies, and are coupled with the building analyses as required by ASME NOG-1 (Reference 3.7-22) and SRP 3.7.2 (Reference 3.7-16). DCD_03.07.02-102

3.7.2.4.1 Requirements for Site-Specific SSI Analysis of US-APWR Standard Plant

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CP COL 3.7(25) Replace the first and second paragraph in DCD Subsection 3.7.2.4.1 with the following.

The site-specific SSI analysis for the R/B-PCCV-containment internal structure is performed utilizing the program ACS-SASSI Version 2.2 (Reference 3.7-17). The analysis confirms that site-specific effects are enveloped by the standard design. The site-specific SSI analysis of the R/B-PCCV-containment internal structure is addressed in Appendix 3NN.

CP COL 3.7(26) Replace the third paragraph in DCD Subsection 3.7.2.4.1 with the following.

The site-specific SSI analyses of the UHSRS, ESWPT, and PSFSVs are performed using the computer program ACS-SASSI (Reference 3.7-17). The SASSI analyses for these structures are performed using the same methodology as the site-specific SASSI analysis of the R/B-PCCV-containment internal structure. The SASSI analyses and results for the UHSRS, ESWPT, and PSFSVs are addressed in further detail in Appendices 3KK, 3LL, and 3MM, respectively.

The SSI analyses of the A/B and T/B are performed based on lumped parameter SSI analyses which consider a range of subgrade conditions that envelope the site-specific subgrade conditions, including site-specific effects due to soil layering and location of the water table. The SSI damping values used do not exceed the values specified by ASCE 4-98 (Reference 3.7-9).

CP COL 3.7(8) Replace the sixth, seventh, and eighth paragraphs with the following.

The SSI analysis uses stiffness and damping properties of the subgrade materials that are compatible with the strains generated by the site-specific design earthquake.

All standard plant and site-specific seismic category I and II buildings and major structures are founded directly on a limestone stratum approximately 65 ft. thick, with a layer of fill concrete (not backfill) installed underneath the entire basemat where required to fill the volume between the basemat bottom and the top of limestone. The dynamic properties of the rock subgrade at CPNPP Units 3 and 4

Structure-to-structure interactions, which could potentially influence the measured seismic response levels, will not occur because the R/B and PS/B are both founded on the same very stiff limestone layer and are separated by expansion joints which prevent seismic interaction.

Site-specific conditions at CPNPP Units 3 and 4 do not result in exceedance of the assumed pressure distributions used for the US-APWR standard plant design.

STD COL 3.7(9) Replace the seventh paragraph in DCD Subsection 3.7.2.8 with the following.

The site-specific Category I SSCs are the UHSRS, the ESWPT, and the PSFSV. The layout design of the site-specific ~~seismic Category I~~safety-related SSCs ensures that there are no adjacent non-seismic Category I structures which may adversely affect these structures, to protect them from structural failure of non-seismic Category I structures. DCD_03.07.02-88

3.7.2.13 Methods for Seismic Analysis of Dams

CP COL 3.7(27) Replace the paragraph in DCD Subsection 3.7.2.13 with the following.

Neither the US-APWR standard plant design nor the CPNPP Units 3 and 4 plant design include the use of dams.

3.7.3.8 Methods for Seismic Analysis of Category I Concrete Dams

CP COL 3.7(27) Replace the paragraph in DCD Subsection 3.7.3.8 with the following.

Neither the US-APWR standard plant design nor the CPNPP Units 3 and 4 plant design include the use of dams.

3.7.3.9 Methods for Seismic Analysis of Aboveground Tanks

CP COL 3.7(12) Replace the first paragraph in DCD Subsection 3.7.3.9 with the following.

The seismic category I fuel oil storage tanks are metal tanks which are enclosed by tornado missile protecting concrete vaults (that is, the seismic category I PSFSVs). Since the PSFSVs are below-grade structures, the fuel oil storage tanks are not above-ground tanks. However, the tanks and their mountings are seismically analyzed consistent with the discussion of hydrodynamic loads for above-ground tanks given further below. The tanks' seismic analysis is based on the ISRS which are derived from site-specific SSI analysis of the PSFSVs as documented in Appendix 3MM, using the corresponding site-specific FIRS. Flexibility of the tank shell and tank shell damping effects are considered in

This COL item is addressed in Subsection 3.7.2.8.

CP COL 3.7(10) ***3.7(10)*** *Structure-to-structure interaction*

This COL item is addressed in Subsection 3.7.2.8.

CP COL 3.7(11) ***3.7(11)*** ~~***Deleted from the DCD.***~~ *Subsystem Coupling Requirements*

DCD_03.07.02-102

This COL item is addressed in Subsection 3.7.2.3.4.

CP COL 3.7(12) ***3.7(12)*** *Liquid-retaining metal tanks*

This COL item is addressed in Subsection 3.7.3.9 and Appendix 3MM.

CP COL 3.7(13) ***3.7(13)*** *Value of OBE to define criteria for shutdown*

This COL item is addressed in Subsection 3.7.1.1.

CP COL 3.7(14) ***3.7(14)*** *Seismic instrumentation at multiple-unit site*

This COL item is addressed in Subsection 3.7.4.3.

3.7(15) *Deleted from the DCD.*

CP COL 3.7(16) ***3.7(16)*** *Free-field seismic instrumentation*

The COL item is addressed in Subsections 3.7.4.1, 3.7.4.2 and 3.7.4.4.

3.7(17) *Deleted from the DCD.*

3.7(18) *Deleted from the DCD.*

CP COL 3.7(19) ***3.7(19)*** *Site-specific details of seismic instrumentation program*

This COL item is addressed in Subsection 3.7.4.6.

CP COL 3.7(20) ***3.7(20)*** *Standard plant for site-specific conditions*

This COL item is addressed in Subsection 3.7 and Appendix 3NN.

CP COL 3.7(21) ***3.7(21)*** *Seismic design of non-standard plant SSCs*

This COL item is addressed in Subsection 3.7.

CP COL 3.7(22) ***3.7(22)*** *High seismic areas*

This COL item is addressed in Subsection 3.7.1.1

CP COL 3.7(23) ***3.7(23)*** *Broadened ISRS and lateral soil pressure*

This COL item is addressed in Subsection 3.7.2.4.1 and Appendix 3NN

Chapter 4

Chapter 4 Tracking Report Revision List

Change ID No.	Section	FSAR Rev. 2 Page	Reason for change	Change Summary	Rev. of FSAR T/R

*Page numbers for the attached marked-up pages may differ from the revision 2 page numbers due to text additions and deletions. When the page numbers for the attached pages do differ, the page number for the attached page is shown in brackets.

Chapter 5

Chapter 5 Tracking Report Revision List

Change ID No.	Section	FSAR Rev. 2 Page	Reason for change	Change Summary	Rev. of FSAR T/R
RCOL2_12.03-12.04-12	5.2.3.2.1	5.2-1 5.2-2	Response to RAI No. 225 Luminant Letter no.TXNB-11058 Date 9/16/2011	Added a description about target concentration of soluble zinc at the end of the eighth paragraph in Subsection 5.2.3.2.1.	-
CTS-01382	5.2.1.1	5.2-1	Editorial	Replaced “The licensee uses ASME Code editions and addenda that is” with “The licensee uses ASME Code editions and addenda that are”	0
CTS-01383	5.3.4	5.3-4	Editorial	Deleted “COL” from in front of the COL numbers to be consistent with Section 5.2.6.	0

*Page numbers for the attached marked-up pages may differ from the revision 2 page numbers due to text additions and deletions. When the page numbers for the attached pages do differ, the page number for the attached page is shown in brackets.

5.2 INTEGRITY OF REACTOR COOLANT PRESSURE BOUNDARY

This section of the referenced DCD is incorporated by reference with the following departures and/or supplements.

5.2.1.1 Compliance with 10 CFR 50, Section 50.55a

STD COL 5.2(11) Replace the third sentence of the second paragraph in DCD Subsection 5.2.1.1 with the following.

The licensee uses ASME Code editions and addenda that ~~is~~are the same as those specified in the US-APWR DCD Table 5.2.1-1 and DCD Subsection 3.9.10, Reference 3.9-13. | CTS-01382

5.2.1.2 Compliance with Applicable Code Cases

Replace the third paragraph in DCD Subsection 5.2.1.2 with the following.

STD COL 5.2(1)
STD COL 5.2(2)
STD COL 5.2(3) The licensee uses no Code Cases listed in Regulatory Guide (RG) 1.84 beyond those listed in the referenced DCD. The use of Code Cases including those listed in RG 1.147 is identified in the inservice inspection (ISI) program (Subsection 5.2.4 and Section 6.6). The use of Code Cases including those listed in RG 1.192 is identified in the inservice testing (IST) program (Subsection 3.9.6 and 5.2.4).

5.2.3.2.1 Chemistry with Reactor Coolant

STD COL 5.2(12) Replace the second sentence of the third paragraph with the following.

The reactor coolant chemistry control program is based on the latest effective version of the EPRI Water Chemistry Guidelines.

CP SUP 5.2(1) Add the following at the end of the eighth paragraph. | RCOL2_12.03-12.04-12

5.3.4 Combined License Information

Replace the content of DCD Subsection 5.3.4 with the following.

STD COL 5.3(1) ~~COL~~ ***5.3(1)*** *Pressure-Temperature Limit Curves* CTS-01383

This COL item is addressed in Subsections 5.3.2.1 and 5.3.2.2.

STD COL 5.3(2) ~~COL~~ ***5.3(2)*** *Reactor Vessel Material Surveillance Program* CTS-01383

This COL item is addressed in Subsection 5.3.1.6.

STD COL 5.3(3) ~~COL~~ ***5.3(3)*** *Surveillance Capsule Orientation and Lead Factors* CTS-01383

This COL item is addressed in Subsection 5.3.1.6.1.

STD COL 5.3(4) ~~COL~~ ***5.3(4)*** *Reactor Vessel Material Properties Verification* CTS-01383

The material property verification portion of this COL item is addressed in DCD Subsection 5.3.1.1. Other portions of this COL item are addressed in Subsections 5.3.2.3 and 5.3.2.4.

STD COL 5.3(5) ~~COL~~ ***5.3(5)*** *Preservice and Inservice Inspection* CTS-01383

This COL item is addressed in Subsection 5.3.3.7.

Chapter 6

Chapter 6 Tracking Report Revision List

Change ID No.	Section	FSAR Rev. 2 Page	Reason for change	Change Summary	Rev. of FSAR T/R

*Page numbers for the attached marked-up pages may differ from the revision 2 page numbers due to text additions and deletions. When the page numbers for the attached pages do differ, the page number for the attached page is shown in brackets.

Chapter 7

Chapter 7 Tracking Report Revision List

Change ID No.	Section	FSAR Rev. 2 Page	Reason for change	Change Summary	Rev. of FSAR T/R
CTS-01365	Table 7.4-201	7.4-2	Editorial Correction	Changed “ESWP” to “ESW Pump.”	0
DCD_07.09-23	7.9	7.9-1	Reflect Response to DCD RAI No. 710	Changed “the following departures and/or supplements” to “no departures or supplements” in Section 7.9, and deleted Subsections 7.9.2.6 and 7.9.4	0

*Page numbers for the attached marked-up pages may differ from the revision 2 page numbers due to text additions and deletions. When the page numbers for the attached pages do differ, the page number for the attached page is shown in brackets.

CP COL 7.4(1)

Table 7.4-201

Site-Specific Component Controls for Shutdown

Systems	Components	Normal Shutdown	Safe Shutdown
UHSS	UHS Cooling Tower Fans	Yes	Yes
	UHS Transfer Pump	No	Yes
	UHS Transfer Pump Discharge Valve	No	Yes
	UHS Transfer Line Basin Inlet Valve	No	Yes
	UHS Basin Makeup Control Valve	Yes	No
ESWS	UHS Basin Blowdown Control Valve	Yes	Yes
	ESW~~P~~ Pump Discharge Strainer Backwash Isolation Valve to ESWS blowdown main header	Yes	Yes
	ESWS Blowdown Main Header Isolation Valve to CWS blowdown main header	Yes	Yes
HVAC	ESW Pump Room Exhaust Fan	Yes	Yes
	UHS Transfer Pump Room Exhaust Fan	No	Yes
	ESW Pump Room Unit Heater	Yes	Yes
	UHS Transfer Pump Room Unit Heater	No	Yes

CTS_01365

7.9 DATA COMMUNICATION SYSTEMS

This section of the referenced DCD is incorporated by reference with ~~the following departures and/or supplements.~~no departures or supplements. DCD_07.09-23

STD COL 7.9(1) ~~**7.9.2.6 Cyber Security**~~

~~Replace the second paragraph in DCD Subsection 7.9.2.6 with the following.~~

~~The Cyber Security Plan is submitted to the NRC as described in Section 13.6.~~

~~**7.9.4 Combined License Information**~~

~~Replace the content of DCD Subsection 7.9.4 with the following.~~

STD COL 7.9(1) ~~***7.9(1) Description of cyber security provisions.***~~

~~*This Combined License (COL) item is addressed in Subsection 7.9.2.6.*~~

Chapter 8

Chapter 8 Tracking Report Revision List

Change ID No.	Section	FSAR Rev. 2 Page	Reason for change	Change Summary	Rev. of FSAR T/R
RCOL2_08.01-2 S01	8.1.2.1	8.1-1	Supplemental Response to RAI No 9 01 Luminant letter TXNB- 11055 Date 8/9/2011	Added The Following at the end of the second paragraph of the subsection: "The switching station equipment shared between Unit 3 and 4 has the capacity and is configured such that sharing will not significantly impair the ability to provide offsite power in response to an accident in one unit and an orderly shutdown and cooldown of the remaining unit."	-
RCOL2_08.02-30 S01	8.2.2.2	8.2-12	Supplemental Response to RAI No 182 Luminant letter TXNB- 11060 Date 9/16/2011	Added the following to the end of the 7th paragraph of subsection 8.2.2.2: The grid stability analysis justifies the assumption used in Chapter 15 to power RCPs through the UATs for at least three seconds after a turbine generator trip.	-
RCOL2_08.01-2 S02	8.1.2.1	8.1-1	Supplemental Response to RAI No 9 02 Luminant letter TXNB- 11065 Date 10/17/2011	Revised the text added in S01 to RAI 9 (above). Added the following to the end of the text. "and that adequate offsite power capacity exists to support both units during this scenario."	-

Change ID No.	Section	FSAR Rev. 2 Page	Reason for change	Change Summary	Rev. of FSAR T/R
CTS-01367	8.1.5.3.5	8.1-2	Deleted Subsection	Subsection no longer needed	0
CTS-01369	Figure 8.1-1R	8.1-3	Corrected figure	Replaced Figure 8.1-16 to 1) Deleted the second GLBS shown in the upper Left of Figure 8.1-1R. 2) Corrected the legend for the Battery symbol from “P21 MCC” to “Battery”	0
CTS-01368	8.2.3 8.3.4	8.2-13 8.3-4	Editorial	Deleted, the Following text:“of the FSAR and 8.3.3 of the DCD.” Changed STD to CP in LMN	0

*Page numbers for the attached marked-up pages may differ from the revision 2 page numbers due to text additions and deletions. When the page numbers for the attached pages do differ, the page number for the attached page is shown in brackets.

CTS-01367

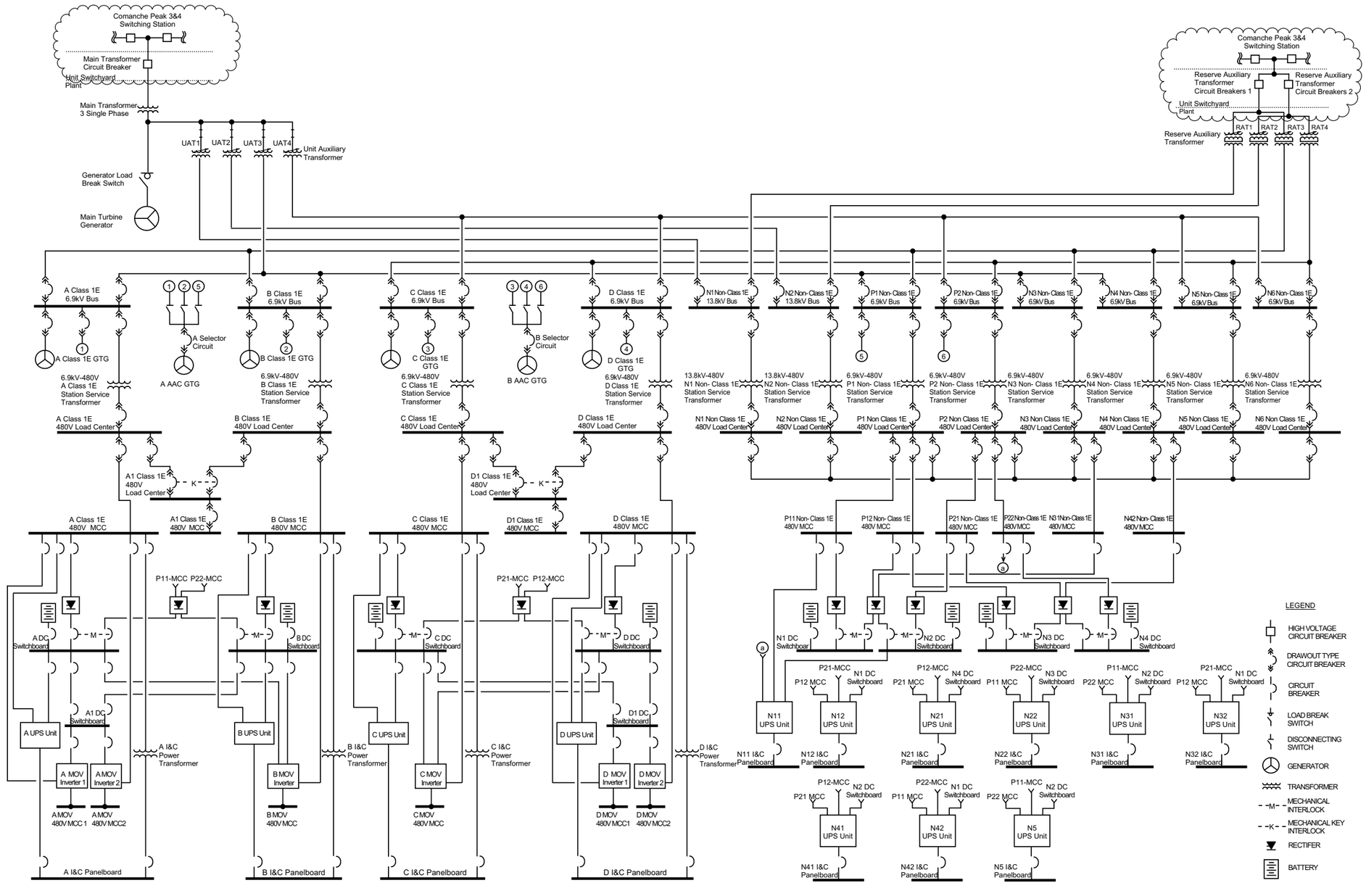
~~**8.1.5.3.5 Institute of Electrical and Electronics Engineers Standards**~~

CP COL 8.2(3)

~~Add the following bulleted text after the thirty-sixth bulleted text in DCD Subsection 8.1.5.3.5.~~

- ~~IEEE Std 605-1998, IEEE Guide for Design of Substation Rigid-Bus Structures~~

CTS-01369



CP COL 8.2(3)

Figure 8.1-1R Simplified One Line Diagram Electric Power System

STD COL 8.2(11) Replace the last sentence of the fourth paragraph in DCD Subsection 8.2.3 with the following.

A transmission system reliability analysis is provided in Subsection 8.2.2.2.

~~STD~~ CP COL 8.3(12) Condition monitoring of underground or inaccessible cables within the scope of the maintenance rule (10 CFR50.65) is incorporated into the maintenance rule program. The cable condition monitoring program incorporates lessons learned from industry operating experience, address regulatory guidance, and utilizes information from detailed design and procurement documents to determine the appropriate inspections, tests, and cable monitoring criteria within the scope of the maintenance rule described in Subsection 17.6.2. The program takes into consideration Generic Letter 2007-01. CTS-01368

8.2.4 Combined License Information

Replace the content of DCD Subsection 8.2.4 with the following.

CP COL 8.2(1) ***8.2(1)*** *Utility power grid and transmission line*

This Combined License (COL) Item is addressed in Subsections 8.1.2.1, 8.2.1.1, 8.2.1.2.3, Table 8.2-201, Table 8.2-202, and Figure 8.2-201.

8.2(2) *Deleted from the DCD.*

CP COL 8.2(3) ***8.2(3)*** *Switchyard description*

This COL Item is addressed in Subsections 8.1.1, 8.1.5.3.5, 8.2.1.2.1.1, 8.2.1.2.1.2, 8.2.1.2.2, Figure 8.1-1R, Figure 8.2-202, Figure 8.2-203, Figure 8.2-204, Figure 8.2-205, Figure 8.2-206, Figure 8.2-207, Figure 8.2-208, Figure 8.3.1-1R and Figure 8.3.1-2R.

CP COL 8.2(4) ***8.2(4)*** *Normal preferred power*

This COL Item is addressed in Subsection 8.2.1.2, Figure 8.2-202, Figure 8.2-203, Figure 8.2-207 and Figure 8.2-208.

CP COL 8.2(5) ***8.2(5)*** *Alternate preferred power*

This COL Item is addressed in Subsection 8.2.1.2, Figure 8.2-202, Figure 8.2-204, Figure 8.2-207 and Figure 8.2-208.

8.2(6) *Deleted from the DCD.*

CP COL 8.2(7) ***8.2(7)*** *Protective relaying*

This COL Item is addressed in Subsections 8.3.2.1.1, 8.3.2.1.2 and 8.3.2.3.2.

8.3(9) *Deleted from the DCD.*

STD COL 8.3(10) ***8.3(10)*** *Equipment Protection and Coordination Studies*

This COL Item is addressed in Subsection 8.3.1.3.4.

CP COL 8.3(11) ***8.3(11)*** *Insulation Coordination (Surge and Lightning Protection)*

This COL Item is addressed in Subsection 8.3.1.3.5.

~~STD~~CP COL 8.3(12) ***8.3(12)*** *Cable monitoring program* CTS-01368

This COL item is addressed in Subsection 8.2.3~~ of the FSAR and 8.3.3 of the DCD.~~

Chapter 9

Chapter 9 Tracking Report Revision List

Change ID No.	Section	FSAR Rev. 2 Page	Reason for change	Change Summary	Rev. of FSAR T/R
RCOL2_12.03-12.04-11 S02	9.2.6.2.4 (New section)	9.2-17 9.2-18	Response to RAI No. 135 S02 Luminant Letter no.TXNB-11020 Date 4/13/2011	Added new Subsection 9.2.6.2.4.	-
RCOL2_14.03.07-34	Figure 9.4-203	9.4-21	Response to RAI No. 220 Luminant Letter no.TXNB-11043 Date 6/23/2011	Figure 9.4-203 has been revised to add a note that the non-safety related instrumentation attached to the room heaters and exhaust fans is classified as seismic category II.	-
RCOL2_12.03-12.04-11 S03	9A.3.114	9A-17	Response to RAI No. 135 S03 Luminant Letter no.TXNB-11050 Date 7/28/2011	Added ", other than the auxiliary boiler building," after ninth word in the first sentence in the paragraph of "Radioactive Release to Environment Evaluation" in Subsection 9A.3.114.	-
RCOL2_09.05.02-4 S01	9.5.2.2.5.2 9.5.2.3 9.5.9	9.5-20 9.5-21 9.5-22 9.5-23	Supplemental Response to RAI No. 196 Luminant Letter no. TXNB-11053 Date 8/4/2011	Deleted 2nd through 5th paragraph on Subsection 9.5.2.2.5.2. Deleted entire Subsection 9.5.2.3. Deleted COL Items COL 9.5(7) and COL 9.5(9) on Section 9.5.9. Added "Deleted from the DCD" in their places.	-
RCOL2_12.03-12.04-12	9.3.4.2.3.3	9.3-2	Response to RAI No. 225 Luminant Letter no.TXNB-11058 Date 9/16/2011	Added a new Subsection 9.3.4.2.3.3 about zinc injection system.	-
DCD_09.02.01-40	9.2.1.2.1	9.2-1	Reflect Response to DCD RAI No. 585	Deleted replacement of Figure 9.2.1-1R which is now IBR.	0
CTS-01370	9.2.1.2.1	9.2-1	Correction	Revised to clarify discussion of water hammer minimization and ESWP NPSH in 9.2.1.2.1	0

Change ID No.	Section	FSAR Rev. 2 Page	Reason for change	Change Summary	Rev. of FSAR T/R
DCD_09.02.01-49	9.2.1.2.1	9.2-2	Reflect Response to DCD RAI No. 585	Added description regarding the isolation valve in the backwash line to the CWS blowdown main header precluding water hammer at pump restart.	0
DCD_09.02.01-36	9.2.1.2.1	9.2-2	Reflect Response to DCD RAI No. 585	Revised paragraph and COL number to discuss piping layout to assure water pressure above saturation.	0
CTS-01371	9.2.1.2.2.1	9.2-3	Correction	Revised for clarity regarding ESW pump shut off head and to make STD.	0
DCD_09.02.01-38	9.2.1.2.2.1	9.2-3	Reflect Response to DCD RAI No. 585	Revised to indicate testing procedures in DCD Subsection 14.2.12.1.113	0
DCD_09.02.01-32	9.2.1.2.2.1	9.2-3	Reflect Response to DCD RAI No. 585	Delete discussion of ESWP motor cooling as DCD now indicates air cooling.	0
CTS-01372	9.2.1.2.2.2	9.2-3	Clarification	Revised for clarity regarding isolation valves located downstream of the strainer backwash	0
CTS-01373	9.2.1.2.2.2	9.2-3 9.2-4	Clarification	Revised for editorial clarity regarding strainer backwash lines	0
DCD_09.02.01-43	9.2.1.2.3.1	9.2-4	Reflect Response to DCD RAI No. 585	Revise title of Subsection 9.2.1.2.3.1 from Normal Operation to Power Operation.	0
DCD_09.02.01-40	9.2.1.2.3.1	9.2-4	Reflect Response to DCD RAI No. 585	Revised action statement to reflect correct replaced sentence.	0
CTS-01374	9.2.1.2.3.1	9.2-4 [9.2-5]	Editorial	Revised for editorial clarity regarding IST implementation milestones.	0
DCD_09.02.01-40	9.2.1.3	9.2-4 [9.2-5]	Reflect Response to DCD RAI No. 585	Revised action statement to reflect correct replaced paragraph.	0

Change ID No.	Section	FSAR Rev. 2 Page	Reason for change	Change Summary	Rev. of FSAR T/R
DCD_09.02.01-32	9.2.1.3	9.2-5 [9.2-6]	Reflect Response to DCD RAI No. 585	Revised paragraphs to address countermeasures to prevent freezing of ESW, including discussion of R/B temperature maintained through ventilation.	0
DCD_09.02.01-33	9.2.1.3	9.2-5 [9.2-6]	Reflect Response to DCD RAI No. 585	Revised paragraphs to indicate isolation of ESW to the CWS blowdown main header and isolation of water supply line to the FSS.	0
DCD_09.02.01-36	9.2.10	9.2-22 [9.2-23]	Reflect Response to DCD RAI No. 585	Deleted reference of Subsection 9.2.1.2.1 from 9.2(7).	0
DCD_09.02.01-40	9.2.10	9.2-22 [9.2-23]	Reflect Response to DCD RAI No. 585	Delete reference Figure 9.2.1-1R from 9.2(7).	0
DCD_09.02.01-52	Table 9.2.1-1R	9.2-26 [9.2-27]	Reflect Response to DCD RAI No. 585	Added note to table to indicate electrical power for ESWP outlet strainer to include discharge valve, rotating brush motor and other associated components.	0
CTS-01376	Table 9.2.1-2R	9.2-27 9.2-28 9.2-29 9.2-30 [9.2-31 9.2-32 9.2-33]	Correction	Revised table to correctly refer to ESWS blowdown main header, include correct tag numbers, correct modes, and include ESWS Blowdown Control valve.	0
CTS-01377	Table 9.2.5-4R	9.2-33 9.2-34 9.2-35 [9.2-36 9.2-37 9.2-38]	Correction	Revise table to correct tag numbers and delete UHS Basin Blowdown Control valve.	0
DCD_09.02.01-40	Figure 9.2.1-1R	9.2-36 9.2-37 [9.2-39 9.2-40]	Reflect Response to DCD RAI No. 585	Deleted Figure 9.2.1-1R, updated DCD Figure 9.2.1-1 is now IBR.	0
CTS-01378	9.4.3.2.2	9.4-1	Correction	Removed text reference to Figure 9.4-201 and Table 9.4.3-1.	0

Change ID No.	Section	FSAR Rev. 2 Page	Reason for change	Change Summary	Rev. of FSAR T/R
CTS-01379	9.4.5.2.2	9.4-3	Correction	Removed text reference to Figure 9.4-202 and Table 9.4.5-1.	0
CTS-01380	9.4.5.2.6	9.4-4	Correction	Renumbered Figure 9.4-203 to Figure 9.4-201	0
DCD_09.02.02-72	9.4.7	9.4-8	DCD 09.02.02-72	Clarified COL Applicant requirement for 9.4(4) for heating and cooling coils in air handling units	0
CTS-01378	9.4.7	9.4-8	Correction	Removed Figure 9.4-201 from 9.4(4).	0
CTS-01379	9.4.7	9.4-8	Correction	Removed Figure 9.4-202 from 9.4(4).	o
CTS-01380	9.4.7	9.4-8	Correction	Renumbered Figure 9.4-203 to Figure 9.4-201	0
CTS-01378	Table 9.4-201	9.4-9	Clarification	Added Non-Class 1E Electrical Room AHU heating coil capacity as non-heating	0
CTS-01378	Figure 9.4-201	9.4-18	Correction	Removed Figure 9.4-201. DCD figure is now IBR.	0
CTS-01379	Figure 9.4-202	9.4-19	Correction	Removed Figure 9.4-202. DCD figure is now IBR.	0
CTS-01380	Figure 9.4-203	9.4-20	Correction	Renumbered Figure 9.4-203 to Figure 9.4-201	0

*Page numbers for the attached marked-up pages may differ from the revision 2 page numbers due to text additions and deletions. When the page numbers for the attached pages do differ, the page number for the attached page is shown in brackets.

9.2 WATER SYSTEMS

This section of the referenced DCD is incorporated by reference with the following departures and/or supplements.

9.2.1.2.1 General Description

~~STD COL 9.2(7)~~ ~~Replace the first sentence of the first paragraph in DCD Subsection 9.2.1.2.1 with the following.~~ DCD_09.02.01-40

~~Figure 9.2.1-1R shows the piping and instrumentation diagrams (P&IDs) of the essential service water system (ESWS).~~

STD COL 9.2(31) Replace the first and second sentences of the fifth paragraph in DCD Subsection 9.2.1.2.1 with the following:

The piping layout of the UHS maintains the ESWS/UHS system pressure downstream of the pump discharge check valve above their saturation pressure at 140° F design temperature by ensuring that no piping high points are above the cooling tower spray header.

STD COL 9.2(25) Replace the seventh paragraph in DCD Subsection 9.2.1.2.1 with the following:

~~Proper filling and~~Filling and operating venting procedures are ~~followed~~ implemented to minimize the occurrence of water hammer and mitigate its effects. These are included in the Operating and Maintenance Procedures mentioned in Subsection 13.5.2.1. CTS-01370

The system is analyzed for water hammer impact and the system piping is designed to withstand potential water hammer forces in accordance with NUREG-0927. CTS-01370

STD COL 9.2(6) Replace the fifth to seventh sentences of the eighth paragraph in DCD Subsection 9.2.1.2.1 with the following:

The ~~design of the~~ UHS ~~cooling tower to deliver~~delivers the design water flow rate to the ESWS and does not exceed the maximum design temperature of 95 ° F under all operating conditions ~~to assure sufficient cooling capacity~~. Design of the basin provides adequate submergence ~~of~~for the pumps ~~to assure the~~and ensures adequate NPSH for the pumps. The ESWP is designed to operate with the lowest CTS-01370

expected water level (after 30 days of accident mitigation). The basins have sufficient water inventory to assure adequate cooling and NPSH for 30 days without makeup. This is discussed further in Subsection 9.2.5.2.

STD COL 9.2(8)
STD COL 9.2(25)

Replace the ninth and tenth paragraphs in DCD Subsection 9.2.1.2.1 with the following. DCD_09.02.01-49

Chemicals are added to the basin to control corrosion, scaling, and biological growth. The water chemistry is managed through a Chemistry Control Program such as following a standard Langelier Saturation Index. The chemical injection system is described in Subsection 10.4.5.2.2.8.

Blowdown is used to maintain acceptable water chemistry composition. This is accomplished by tapping each essential service water pump (ESWP) discharge header. Additional description about blowdown is discussed in Subsection 9.2.5.2.

The isolation valve in the backwash line to the CWS blowdown main header (EWS-AOV-577) is interlocked to close upon receipt of an undervoltage signal, ECCS actuation signal, ESW pump stop signal, or low UHS basin level signal. This action isolates the UHS basin blowdown line to the CWS blowdown main header to preclude system inventory drain down, which could result in water hammer at pump restart. DCD_09.02.01-49

STD COL 9.2(~~7~~31)

Replace the eleventh paragraph in DCD Subsection 9.2.1.2.1 with the following.

~~The non-safety related portion of the ESWS begins at the discharge side of the strainer and CCW heat exchangers vent and drain valves. The positions of these valves are controlled by the Operating and Maintenance Procedures mentioned in Subsection 13.5.2.1 in order to maintain water tight conditions and prevent inadvertent draining of the ESW.~~Layout of the ESW and UHS piping and equipment, and system operating procedures, ensure that the water pressure remains above saturation conditions for all operating modes. DCD_09.02.01-36

STD COL 9.2(26)

Replace the twelfth paragraph in DCD 9.2.1.2.1 with the following:

Maintenance and test procedures (see Operating and Maintenance Procedures in Subsection 13.5.2.1) are followed to monitor and flush debris accumulated in the system.

9.2.1.2.2 Component Description

STD COL 9.2(6)

Replace the sentence in DCD Subsection 9.2.1.2.2 with the following.

Table 9.2.1-1R shows the design parameters of the major components in the system.

9.2.1.2.2.1 ESWPs

CP COL 9.2(6) Replace the second to fourth sentences of the third paragraph in DCD Subsection 9.2.1.2.2.1 with the following:

Total dynamic head (TDH) of the ESWP is 220 feet. Total calculated system head losses including static lift are approximately 190 feet. This provides ample margin. Available net positive suction head (NPSH) with the lowest expected water level (after 30 days of accident mitigation) in the basin is approximately 40 feet. Available NPSH is based on the lowest expected water level in the ESWP intake basin of approximately 12 feet and as 95 degrees F water temperature.

~~CP~~STD COL 9.2(6) Replace the fifth sentence of the third paragraph in DCD Subsection 9.2.1.2.2.1 with the following: CTS-01371

The ~~system pressure during shut off head operation of the~~ ESW pump ~~including the static head of the system~~design will assure that the pressure in the ESWS and UHS systems, with the pump operating at shut off head, is below the ESWS design pressure of 150 psig. CTS-01371

STD COL 9.2(6) Replace the ~~sixth to~~ eighth sentence~~s~~ of the third paragraph in DCD Subsection 9.2.1.2.2.1 with the following. DCD_09.02.01-38

The lowest expected water level, which is the same as that ~~of~~ being used for pump available NPSH evaluation, provides ~~sufficient~~adequate submergence at the pump suction to preclude ~~the~~ vortex ~~occurrence~~formation, which is tested according to the procedures indicated in DCD Subsection 14.2.12.1.113. DCD_09.02.01-38

~~STD COL 9.2(6) Replace the last paragraph in DCD Subsection 9.2.1.2.2.1 with the following:~~ DCD_09.02.01-32

~~The ESW pump motor cooling is achieved by air cooling with sufficient temperature by the UHS ESW pump house ventilation system as described in DCD Subsection 9.4.5.1.1.6.~~

9.2.1.2.2.2 Strainers

STD COL 9.2(33) Replace the ~~first to~~ fifth sentence~~s~~ of the ~~third~~first paragraph in DCD Subsection 9.2.1.2.2.2 with the following: CTS-01372

The strainer backwash ~~line is~~lines are installed ~~with isolation valves towards the CWS blowdown main header and UHS basin~~downstream of the strainer backwash and discharge to the CWS blowdown main header and UHS basin. CTS-01372

STD COL 9.2(33) Replace the ~~sixth~~last paragraph in DCD Subsection 9.2.1.2.2.2 with the following: CTS-01373

The blowdown line to the CWS blowdown main header from each strainer is used during normal power operation. The normally open Class 1E dc powered isolation valve in the backwash line to the CWS blowdown main header is interlocked to close at a low UHS basin water level signal, ~~LOOP signal and~~ESW pump stop signal, undervoltage signal, or ECCS actuation signal to keep UHS basin inventory required for cooling the unit for a minimum of 30 days without makeup water. Also, in the absence of the above signals, the isolation valve in the backwash line to the CWS is interlocked to close only ~~during~~when the ESW pump ~~stoppage~~is stopped to preclude the system inventory drain down which ~~leads~~can lead to water hammer at pump restart. Table 9.2.1-2R shows the redundancy for the above functions. CTS-01373 CTS-01373

The strainer backwash ~~line~~drains back to the UHS basin ~~is used during abnormal or accident condition which the strainer backwash should not be released out of the system to maintain the basin inventory for 30 days cooling without makeup~~an accident mode or abnormal conditions. This is to maintain the basin inventory when normal makeup water is not available. The normally closed Class 1E dc powered motor operated isolation valve in the backwash line to the basin is interlocked to open at ~~LOOP~~undervoltage signal ~~and~~or ECCS actuation signal to provide lineup to the basin. Also, in the absence of the above signals, the isolation valve in the backwash line to the basin is interlocked to close ~~only during~~when ESW pump ~~stoppage~~is stopped to preclude the system inventory drain down which ~~leads~~can lead to water hammer at pump restart. Table 9.2.1-2R shows the redundancy for above functions. CTS-01373

An automatic vent valve is also installed to sweep out air introduced into the piping system by the vacuum breakers that are installed to prevent water hammer. The drainage is discharged as a floor drain of the UHSRS. CTS-01373

9.2.1.2.2.5 Piping

CP COL 9.2(7) Replace the fourth sentence with the following.

The lining of inner surface for piping, fittings and flanges of ESWS is polyethylene.

9.2.1.2.3.1 ~~Normal~~Power Operation DCD_09.02.01-43

STD COL 9.2(32) Replace the ~~last~~thirteenth sentence of the ~~fifth~~seventh paragraph in DCD Subsection 9.2.1.2.3.1 with the following: DCD_09.02.01-40

Level switches are installed in the vertical piping before the cooling tower spray header to annunciate if system inventory reduction occurs. The detail of the detector is described in Subsection 9.2.5.5.

STD COL 9.2(7) Replace the ~~fifth~~sixth sentence of the sixth paragraph in DCD Subsection 9.2.1.2.3.1 with the following: CTS-01374

The IST program with detailed criteria, including valve leak rates committed to in the implementation ~~M~~milestones, is identified in Table 13.4-201~~ of FSAR Section 13.4~~. CTS-01374

9.2.1.3 Safety Evaluation

STD COL 9.2(1) Replace the ~~eleventh~~fifteenth paragraph in DCD Subsection 9.2.1.3 with the following. DCD_09.02.01-40

Design of the basin provides adequate submergence of the pumps to assure the NPSH for the pumps. The basin is divided into two levels. One is approximately 12 feet lower than the other, and directly above it is installed the ESWP. The ESWP is designed to operate with the lowest expected water level (after 30 days of accident mitigation). The basins have sufficient water inventory to assure adequate cooling and NPSH for 30 days without makeup. This is discussed further in Subsection 9.2.5.2.

Recovery procedures contained in the Operating and Maintenance Procedures (see Subsection 13.5.2.1) are implemented if the UHS approaches low water level.

CP COL 9.2(2) Replace the ~~twelfth~~sixteenth paragraph in DCD Subsection 9.2.1.3 with the following. DCD_09.02.01-32

Based on ~~T~~the lowest anticipated ambient temperature, the following countermeasures are provided to prevent ~~anticipated at the site does not result in the freezing of~~ the ESW from freezing in the basins or ~~the~~ piping ~~for the following reasons~~: DCD_09.02.01-32

- The basins are located below grade and thus ground temperature prevents water from freezing.
- In the operating trains, water is continuously circulated which helps to prevent freezing. Ultimate heat sink (UHS) transfer pumps can be used to circulate water from the idle basins. Plant procedures are developed to

operate the pumps in this mode based on the basin water and ambient temperatures.

- UHS ESW pump house ventilation system maintains pre determined minimum temperature in the pump house areas. This is further described in Subsection 9.4.

- Temperature in the reactor building is maintained through ventilation and therefore heat tracing is not required. DCD_09.02.01-32

- ~~Any e~~Exposed ~~essential~~safety-related ESW piping that may be filled with water while the pump is not operating is heat traced. The safety-related heat tracing is activated when the thermostat senses a pre-set low ambient temperature.

For the thermal overpressure protection of the component cooling water heat exchanger ESW side, the valves located at the component cooling water heat exchanger ESW side inlet and outlet lines are administratively locked open valves. These locked open valves assure protection from the thermal overpressurization due to the erroneous valve operation coincident with the heat input from the component cooling water (CCW) side to ESW side. During backflush operation of the heat exchanger, essential service water flows from the discharge side of the heat exchanger and then exits from the inlet side to the discharge header. Cooling operation is continued and there is no overpressurization.

CP COL 9.2(7)
CP COL 9.2(29)

Replace the ~~thirteenth~~seventeenth paragraph in DCD Subsection 9.2.1.3 with the following: DCD_09.02.01-33

The non-safety-related ~~portion of the ESWS~~portions connected to the CWS blowdown header are automatically isolated by the ~~begins at the discharge side of the strainer and CCW heat exchangers vent and drain valves~~ESWS Blowdown Main Header Isolation Valve to the CWS blowdown main header, which closes with ECCS actuation signal, undervoltage signal, ESW pump stop signal, or low UHS basin level signal. The supply line to the fire protection water supply system (FSS) is isolated by normally closed manual valves. The positions of these valves are controlled by the Operating and Maintenance Procedures mentioned in Subsection 13.5.2.1 in order to maintain water-tight conditions and prevent inadvertent draining of the ESW. DCD_09.02.01-33

The blowdown header to the CWS blowdown header, to which the strainer blowdown line for normal power operation use and the UHS basin blowdown line for maintaining acceptable water chemistry are connected, has an isolation valve powered from a Class 1E DC bus. The blowdown header isolation valve is interlocked to close at LOOP signal and ECCS actuation signal to isolate non-safety-related portions. The blowdown header isolation valve is a redundant valve to the UHS basin blowdown isolation valves and the strainer backwash line isolation valves towards the CWS blowdown main header to maintain the UHS

9.2.7.2.1 Essential Chilled Water System

STD COL 9.2(27) Replace the last paragraph in DCD Subsection 9.2.7.2.1 with the following.

The operating and maintenance procedures regarding water hammer are included in system operating procedures in Subsection 13.5.2.1. A milestone schedule for implementation of the procedures is also included in Subsection 13.5.2.1.

9.2.10 Combined License Information

Replace the content of DCD Subsection 9.2.10 with the following.

CP COL9.2(1)
STD COL 9.2(1) ***9.2(1)*** *The evaluation of ESWP at the lowest probable water level of the UHS and the recovery procedures when UHS approaches low water level*

This COL item is addressed in Subsection 9.2.1.3, 9.2.5.2.1, 13.5.2.1.

CP COL 9.2(2) ***9.2(2)*** *The protection against adverse environmental, operating and accident condition that can occur such as freezing, low temperature operation, and thermal over pressurization*

This COL item is addressed in Subsection 9.2.1.3.

CP COL 9.2(3) ***9.2(3)*** *Source and location of the UHS*

This COL item is addressed in Subsection 9.2.5.2, 9.2.5.2.1, 9.2.5.2.2, 9.2.5.2.3.

CP COL 9.2(4) ***9.2(4)*** *The location and design of the ESW intake structure*

This COL item is addressed in Subsection 9.2.5.2, 9.2.5.2.1, 9.2.5.2.2, 9.2.5.2.3.

CP COL 9.2(5) ***9.2(5)*** *The location and the design of the discharge structure*

This COL item is addressed in Subsection 9.2.5.2, 9.2.5.2.1, 9.2.5.2.2, 9.2.5.2.3.

CP COL 9.2(6)
STD COL 9.2(6) ***9.2(6)*** *The ESWP design details – required total dynamic head with adequate margin, NPSH available, and the mode of cooling the pump motor.*
The ESWS design pressure exceeds the sum of the shut-off head of the selected ESW pumps and static head at any location within the system Vortex formation prevention.

This COL item is addressed in Subsection 9.2.1.2.1, 9.2.1.2.2, 9.2.1.2.2.1, Table 9.2.1-1R, Table 9.2.1-2R and 9.4.5.1.1.6.

CP COL 9.2(7)
STD COL 9.2(7) ***9.2(7)*** *The design of ESWS related with the site specific UHS*

This COL item is addressed in Subsections ~~9.2.1.2.1,~~ 9.2.1.2.2.5, 9.2.1.2.3.1, 9.2.1.3 and ~~Figure 9.2.1-1R,~~ 13.4, Table 13.4-201.

DCD_09.02.01-36
DCD_09.02.01-40

Table 9.2.1-1R

Essential Service Water System Component Design Data

Essential Service Water Pump	
Quantity	4
Type	Vertical, centrifugal, mixed flow
Design flow rate	13,000 gpm
STD COL 9.2(6) Design Head	220 feet
Design pressure	150 psig
Design temperature	140 ° F
Materials	Stainless steel
Equipment Class	3
Electric Power Supply Class	Class 1E power source
Essential Service Water Pump Outlet Strainer	
Quantity	8
Design flow rate	13,000 gpm
Design pressure	150 psig
Design temperature	140 °F
Maximum allowed differential pressure	7 psi at a 13,000 gpm
Strainer mesh size	3 mm
Equipment Class	3
Electric Power Supply Class (Note)	Class 1E power source
Essential Service Water Pump Discharge Valve	
Quantity	4
Design flow rate	13,000 gpm
Design pressure	150 psig
Design temperature	140 °F
Equipment Class	3
Electric Power Supply Class	Class 1E power source

DCD_09.02.01-52

(Note) Including discharge valve, rotating brush motor and other associated components

DCD_09.02.01-52

STD COL 9.2(6)

Table 9.2.1-2R (Sheet 1 of 6)

Essential Service Water System Failure Modes and Effects Analysis

Description of Component	Safety Function	Plant Operating Mode	Failure Mode(s)	Method of ~~f~~Failure Detection	Failure Effect on System Safety Function Capability	General Remarks	
ESWP (MPP-001A, B, C, D)	Supplies ESW to CCW HX and Essential Chiller Unit	A, Startup, normal shutdown, normal operation, refueling	A1, Fails to start upon command	A1, Pump status light indication in MCR	A1, None Remaining three 50% capacity pumps are available. Minimum two pumps are required for safety function.	One train unavailable due to maintenance does not affect the safety functions because only a minimum of two pumps are required.	
			A2, Trips for any reason	A2, Pump status light indication in MCR	A2, None Same as A1.		
		B, Accident, safe shutdown, cooldown – loss of offsite power	B1, Fails to start upon command	B1, Pump status light indication in MCR	B1, None Same as A1.		
			B2, Trips for any reason.	B2, Pump status light indication in MCR	B2, None Same as A1.		
ESWP Discharge Valve (MOV-503A, B, C, D), fail as is, motor operated valve	Opens to provide flow path	A, Startup, normal shutdown, normal operation, refueling	A, Fails in closed position	A, Position indication in MCR	A, None Remaining three 50% capacity pumps are available. Minimum two pumps are required for safety function.	One train unavailable due to maintenance does not affect the safety functions because only a minimum of two pumps are required.	CTS-01376
		B, Accident, safe shutdown, cooldown – loss of offsite power	B, Fails in closed position	B, Position indication in MCR	B, None Same as A.		

CTS-01376

Table 9.2.1-2R (Sheet 2 of 6)

Essential Service Water System Failure Modes and Effects Analysis

Description of Component	Safety Function	Plant Operating Mode	Failure Mode(s)	Method of ~~f~~Failure Detection	Failure Effect on System Safety Function Capability	General Remarks	
ESWP Discharge Strainer (SST-001A, B, C, D and SST-002A, B, C, D)	Starts and opens to provide flow path to backwash flow before strainer clogging to maintain ESW supply to CCW HX	A, ~~Accident, Safe shutdown, cooldown – loss of offsite power~~Startup, normal shutdown, normal operation, refueling, cooldown	A, Fails to start and fails to open on remote manual demand	A, Position indication in MCR	A, None Remaining three 50% capacity trains are available. Minimum of two trains are required for safety function.	One train unavailable due to maintenance does not affect the safety functions because only a minimum of two pumps are required.	CTS-01376
		B, Accident, Safe shutdown, cooldown – loss of offsite power	B, Fails to start and fails to open on remote manual demand	B, Position indication in MCR	B, None Same as A		CTS-01376
	Stops and isolates backwash flow to prevent drain down which leads water hammer at pump start	A, Startup, normal shutdown, normal operation refueling, cooldown	A, Fails to closed position at pump stop signal	A, Position indication in MCR	A, None Backwash flow can be isolated by closing ESWP Discharge Strainer Backwash Isolation Valve to CWS blowdown main header (EWS-AOV-559A, B, C, D) at pump stop signal.		
		B, Accident, safe shutdown, cooldown – loss of offsite power	B, Fails to closed position at pump stop signal	B, Position indication in MCR	A, None Backwash flow can be isolated by closing ESWP Discharge Strainer Backwash Isolation Valve to UHS basin (EWS-MOV-573A, B, C, D), (EWS-MOV-574A, B, C, D) at pump stop signal.		

Table 9.2.1-2R (Sheet 3 of 6)

Essential Service Water System Failure Modes and Effects Analysis

Description of Component	Safety Function	Plant Operating Mode	Failure Mode(s)	Method of ~~f~~Failure Detection	Failure Effect on System Safety Function Capability	General Remarks	
ESWP Discharge Strainer Backwash Isolation Valve to ~~C~~CESWS blowdown main header (EWS-AOV-559A, B, C, D)	Isolates the backwash line to the ~~C~~CESWS blowdown main header to keep UHS basin inventory required for cooling the unit for a minimum of 30 days without makeup water	A, Accident, safe shutdown – loss of offsite power	A, Fails to close on demand	A, Position indication in MCR	A, None Backwash line to ~~the C~~CESWS blowdown main header can be isolated by closing ESWS Blowdown Main Header Isolation Valve to ~~the~~ CWS blowdown main header (EWS AOV-~~560~~577).		CTS-01376 CTS-01376 CTS-01376
	Isolates the backwash line to ~~the C~~CESWS blowdown main header to preclude the system inventory drain down which leads to water hammer at pump restart	A, Startup, normal shutdown, normal operation, refueling, cooldown	A, Fails to close on demand	A, Position indication in MCR	A, None Backwash line to ~~the C~~CESWS blowdown main header can be isolated by closing isolation valve coming with the ESWP Discharge Strainer (SST-001A, B, C, D and SST-002A, B, C, D).		CTS-01376
		B, Accident, safe shutdown – loss of offsite power	B, Fails to close on demand	B, Position indication in MCR	B, None Same as A.		

Table 9.2.1-2R (Sheet 4 of 6)

Essential Service Water System Failure Modes and Effects Analysis

Description of Component	Safety Function	Plant Operating Mode	Failure Mode(s)	Method of ~~f~~Failure Detection	Failure Effect on System Safety Function Capability	General Remarks	
ESWP Discharge Strainer Backwash Isolation Valve to UHS basin (EWS-MOV-573A, B, C, D) (EWS-MOV-574A, B, C, D)	Opens to provide backwash flow path to ~~the UHS basin without releasing water to out of the system to keep UHS basin inventory required for cooling the unit for a minimum of 30 days without makeup water~~backwash flow before strainer starts to clog to maintain ESW supply to CCW HX	A, ~~Accident, safe shutdown – loss of offsite power~~Startup, normal shutdown, normal operation, refueling, cooldown	A, Fails to open on demand	A, Position indication in MCR	A, None Remaining three 50% capacity trains are available. Minimum of two trains are required for safety function.	One train unavailable due to maintenance does not affect the safety functions because only a minimum of two pumps are required.	CTS-01376
		B, Accident, safe shutdown – loss of offsite power	B, Fails to open on remote manual demand	B, Position indication in MCR	B, None Same as A		CTS-01376
	Isolates ~~the~~ backwash flow ~~path to the UHS basin to preclude the system inventory~~to prevent drain down which leads to water hammer at pump restart	A, Accident, safe shutdown – loss of offsite power	A, Fails to close on demand	A, Position indication in MCR	A, None Backwash ~~line to the UHS basin~~flow can be isolated by closing ~~isolation valve coming with the~~ ESWP Discharge Strainer ~~(SST-001A, B, C, D and SST-002A, B, C, D)~~Backwash Isolation Valve at pump stop signal.		CTS-01376
					B, None Same as A		CTS-01376

Table 9.2.1-2R (Sheet 5 of 6)

Essential Service Water System Failure Modes and Effects Analysis

Description of Component	Safety Function	Plant Operating Mode	Failure Mode(s)	Method of ~~f~~Failure Detection	Failure Effect on System Safety Function Capability	General Remarks	
ESWS Blowdown Control Valve (EWS-HCV-010, 011, 012, 013), fail close air operated valve	Closes to isolate blowdown	All	Fails to close upon command	Position indication in MCR	None. Blowdown can be isolated by closing the manual valves (VLV-541A,B,C,D, VLV-543A,B,C,D) Effect of uncontrolled blowdown for 30 minutes on basin inventory is insignificant.		CTS-01376
ESWS Blowdown Main Header Isolation Valve to ~~the~~ CWS blowdown main header (EWS AOV-~~560~~577)	Isolates the backwash line to ~~the~~ CWS blowdown main header to keep UHS basin inventory required for cooling the unit for a minimum of 30 days without makeup water	A, Accident, safe shutdown – loss of offsite power	A, Fails to close on demand	A, Position indication in MCR	A, None Backwash line to ~~the~~ CWS blowdown main header can be isolated by closing ESWP Discharge Strainer Backwash Isolation Valve to ~~CWS~~ blowdown main header (EWS-AOV-~~559~~576A, B, C, D).		CTS-01376 CTS-01376 CTS-01376
	Isolates the UHS basin blowdown line to ~~the~~ CWS blowdown main header to keep UHS basin inventory required for cooling the unit for a minimum of 30 days without makeup water	A, Accident, safe shutdown – loss of offsite power	A, Fails to close on demand	A, Position indication in MCR	A, None The UHS basin blowdown line to ~~the~~ CWS blowdown main header can be isolated by closing UHS Basin Blowdown Control Valve (EWS-HCV-010, 011, 012, 013).		CTS-01376

Table 9.2.1-2R (Sheet 6 of 6)

Essential Service Water System Failure Modes and Effects Analysis

Description of Component	Safety Function	Plant Operating Mode	Failure Mode(s)	Method of ~~f~~Failure Detection	Failure Effect on System Safety Function Capability	General Remarks	
	Isolates the UHS basin blowdown line to ~~the~~ CWS blowdown main header to preclude the system inventory drain down which leads to water hammer at pump restart	A, Startup, normal shutdown, normal operation, refueling, cooldown	A, Fails to close on demand	A, Position indication in MCR	A, None The UHS basin blowdown line to ~~the~~ CWS blowdown main header can be isolated by closing UHS Basin Blowdown Control Valve (EWS-HCV-010, 011, 012, 013).		CTS-01376
		B, Accident, safe shutdown – loss of offsite power	B, Fails to close on demand	B, Position indication in MCR	B, None Same as A.		

CP COL 9.2(22)

Table 9.2.5-4R (Sheet 1 of 3)

Ultimate Heat Sink 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 Cooling Tower Fan (UHS-~~OEQ~~MFN-001A, B, C, D and UHS-MFN-002A, B, C, D)	Circulates ambient air through cooling tower to cool ESW	All	Fails to start upon command	Fan status indication light in MCR	None, Remaining three 50 percent capacity cooling towers are available. Minimum two towers are required for safe shutdown.	One Train out due to maintenance does not affect safety function, because minimum of two cooling towers are required. CTS-01377
			Trips for any reason	Fan status indication light in MCR	None, Same as the failure mode “Fails to start upon command”.	
UHS Transfer Pump (UHS-MPP-001A, B, C, D)	Transfers 33-1/3 percent of required 30 days cooling water from inoperable basin to two (2) operating basins	Accident, Safe shutdown, Cooldown – loss of offsite power	Fails to start upon command	Pump status light indication in MCR	None, Even if the single failure is assumed to the transfer pomp, the cooling tower located at the same basin as the inoperable transfer pump can use own basin water. It is not necessary to transfer this basin water to other basin.	
UHS Transfer Pump Discharge Valve (MOV-503A, B, C, D), fail as is, motor operated valve	Opens to provide flow path	Accident, Safe shutdown, Cooldown – loss of offsite power	Fails to open upon command	Position indication in MCR	None, Even if the single failure is assumed to the valve, the cooling tower located at the same basin as the inoperable valve can use own basin water. It is not necessary to transfer this basin water to other basin.	

Table 9.2.5-4R (Sheet 2 of 3)

Ultimate Heat Sink 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 Line Basin Inlet valve (MOV-506A, B, C, D), fail as is, motor operated valve	Opens to provide flow path	Accident, Safe shutdown, Cooldown – loss of offsite power	Fails to open upon command	Position indication in MCR	None, This failure effect is bounded by the failure effect of UHS Cooling Tower Fan.	
~~UHS Basin Blowdown Control Valve (EWS-HCV-010, 011, 012, 013), fail close air operated valve~~	~~Isolates the UHS basin blowdown line to the CWS blowdown main header to keep UHS basin inventory required for cooling the unit for a minimum of 30 days without makeup water~~	~~Accident, Safe shutdown, Cooldown – loss of offsite power~~	~~Fails to close upon command~~	~~Position indication in MCR~~	~~None~~ ~~The UHS basin blowdown line to the CWS blowdown main header can be isolated by closing ESWS Blowdown Main Header Isolation Valve to the CWS blowdown main header (EWS-AOV-560).~~	CTS-01377
	~~Isolates the UHS basin blowdown line to the CWS blowdown main header to preclude the system inventory drain down which leads to water hammer at pump restart~~	~~Startup, normal shutdown, normal operation, refueling, cooldown~~	~~Fails to close on demand~~	~~Position indication in MCR~~	~~None~~ ~~The UHS basin blowdown line to the CWS blowdown main header can be isolated by closing ESWS Blowdown Main Header Isolation Valve to the CWS blowdown main header (EWS-AOV-560).~~	

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Table 9.2.5-4R (Sheet 3 of 3)

Ultimate Heat Sink 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
		~~Accident, Safe shutdown, Cooldown – loss of offsite power~~	~~Fails to close on demand~~	~~Position indication in MCR~~	~~None~~ ~~The UHS basin blowdown line to the CWS blowdown main header can be isolated by closing ESWS Blowdown Main Header Isolation Valve to the CWS blowdown main header (EWS-AOV-560).~~	CTS-01377

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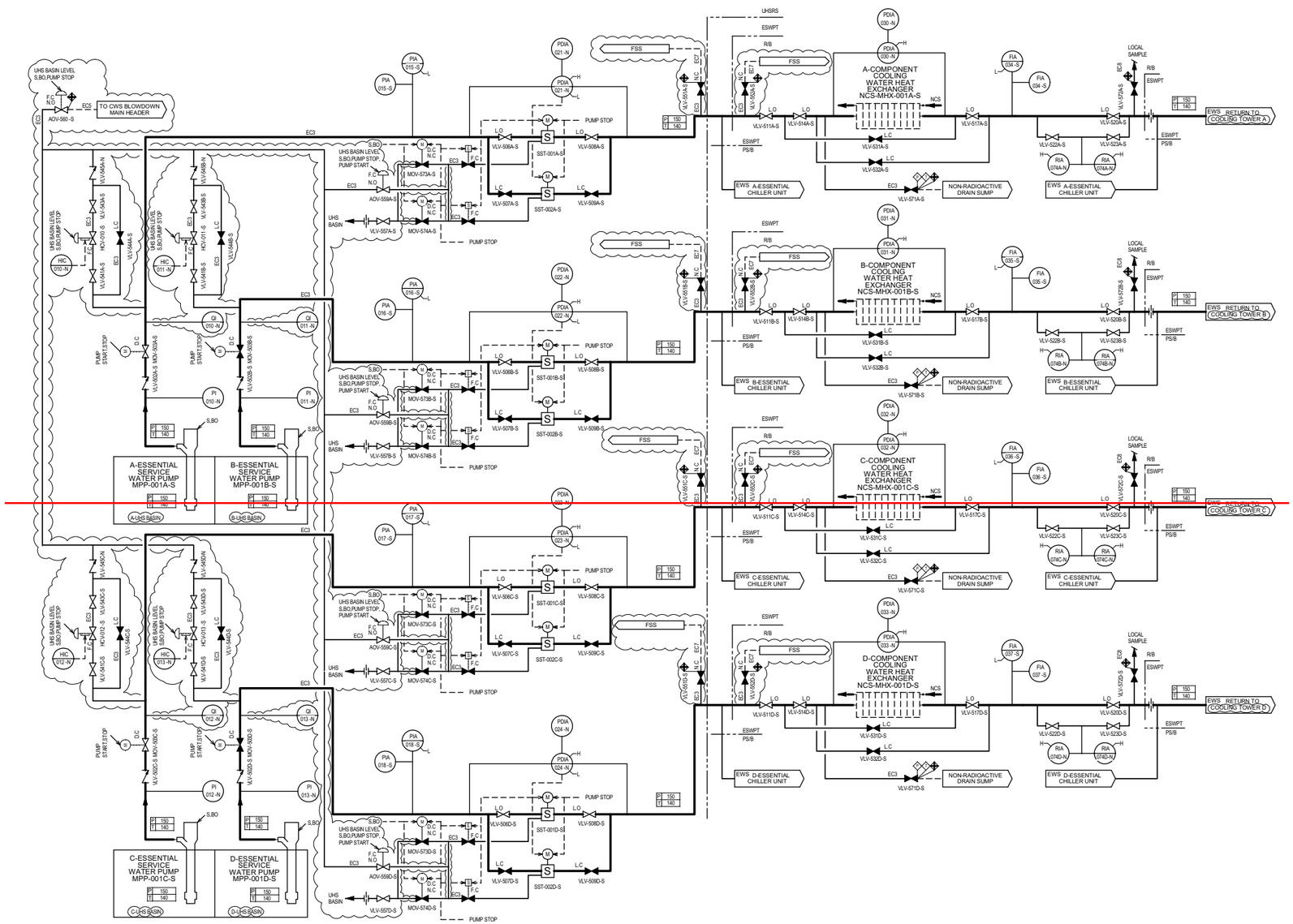
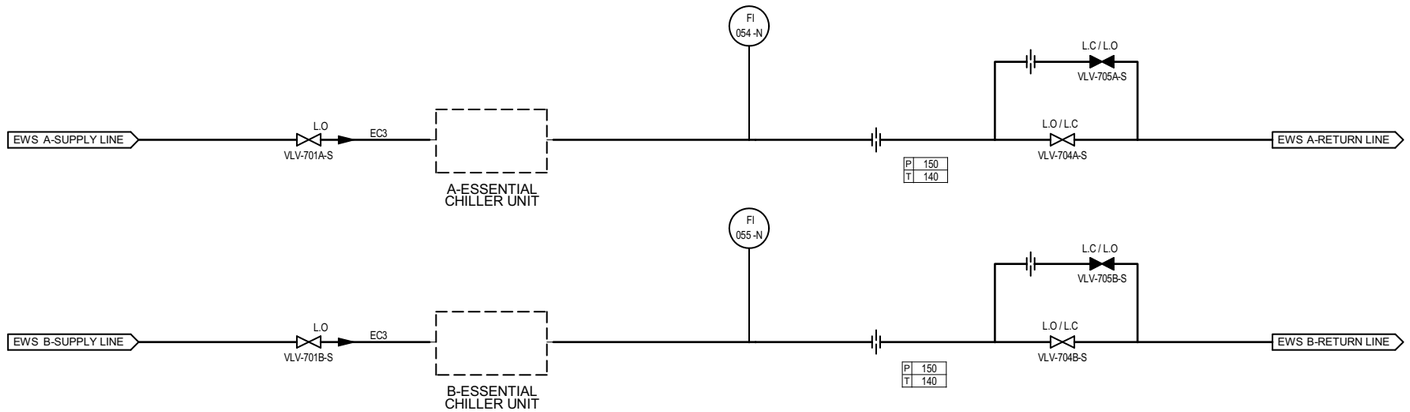
01-40



CP COL 9.2(7)

Figure 9.2.1-1R Essential Service Water System Piping and Instrumentation Diagram (Sheet 1 of 2)

DCD_09.02.01-40



~~CP-COL 9.2(7)~~

~~Figure 9.2.1-1R Essential Service Water System Piping and Instrumentation Diagram (Sheet 2 of 2)~~

9.4 AIR CONDITIONING, HEATING, COOLING, AND VENTILATION SYSTEMS

This section of the referenced DCD is incorporated by reference with the following departures and/or supplements.

9.4.1.2 System Description

CP COL 9.4(4) Replace the second sentence of the first paragraph in DCD Subsection 9.4.1.2 with the following.

The capacity of heating coils that are affected by site specific conditions is shown in Table 9.4-201. The site specific design basis for the heating coils is described in DCD Subsections 9.4.1.1 and 9.4.1.2 with the following site specific information. While the temperatures ranges for the Main Control Room is provided in DCD Table 9.4-1 and the design data for the air handling units is provided in DCD Table 9.4.1-1, the outside air temperature for CPNPP used to calculate the heater capacity is -5°F. The outside air is blended with the return air from the Main Control Room.

9.4.3.2.1 Auxiliary Building HVAC System

STD COL 9.4(4) Replace the second sentence of the first paragraph in DCD Subsection 9.4.3.2.1 with the following.

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

9.4.3.2.2 Non-Class 1E Electrical Room HVAC System

STD COL 9.4(4) Replace the ~~first and the~~ second sentence of the first paragraph in DCD Subsection 9.4.3.2.2 with the following. CTS-01378

~~The non-Class 1E electrical room HVAC system is shown in Figure 9.4-201 and equipment design data is presented in Table 9.4.3-1.~~ The capacity of cooling and heating coils that are affected by site specific conditions is shown in Table 9.4-201. CTS-01378

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^{o}F – 120^{o}F to support the operation of the instrumentation and control equipment and components in the individual UHS ESW pump houses during a design basis accident and LOOP. The ventilation system is designed based on the outside ambient design temperature conditions (-5^{o}F – 115^{o}F) using 100-year return period temperature values.

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 ~~first and the~~ second sentence of the first paragraph in DCD Subsection 9.4.5.2.2 with the following. CTS-01379

~~The Class 1E electrical room HVAC system is shown in Figure 9.4-202 and system equipment design data is presented in Table 9.4.5-1.~~ The capacity of heating coils that are affected by site specific conditions is shown in Table 9.4-201. CTS-01379

9.4.5.2.3 Safeguard Component Area HVAC System

CP COL 9.4(4) Replace the third sentence of the second paragraph in DCD Subsection 9.4.5.2.3 with the following.

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

9.4.5.2.4 Emergency Feedwater Pump Area HVAC System

STD COL 9.4(4) Replace the fourth sentence of the second paragraph in DCD Subsection 9.4.5.2.4 with the following.

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

9.4.5.2.5 Safety Related Component Area HVAC System

CP COL 9.4(4) Replace the third sentence of the second paragraph in DCD Subsection 9.4.5.2.5 with the following.

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

CP COL 9.4(6) Add the following new subsection after DCD Subsection 9.4.5.2.5.

9.4.5.2.6 UHS ESW Pump House Ventilation System

Each of the four independent UHS structures consists of a UHS ESW pump house and a water basin with a cooling tower above it. The UHS ESW pump house contains two separate rooms: the ESW pump room and the UHS transfer pump room. Each pump room has an independent ventilation system and each pump room is in a different fire area separated by three-hour fire barriers.

The ESW pump room ventilation has an exhaust fan for cooling and two unit heaters for heating. The UHS transfer pump room has an exhaust fan and one 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.

The UHS ESW pump house ventilation systems are shown in Figure 9.4-203~~1~~1 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. CTS-01380

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

9.4.6.2.4.2 Containment High Volume Purge System

STD COL 9.4(4) Replace the second sentence of the first paragraph in DCD Subsection 9.4.6.2.4.2 with the following.

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

9.4.7 Combined License Information

Replace the content of DCD Subsection 9.4.7 with the following.

9.4(1) *Deleted from the DCD.*

9.4(2) *Deleted from the DCD.*

9.4(3) *Deleted from the DCD.*

CP COL 9.4(4)
STD COL 9.4(4)

9.4(4) *Capacity of heating coils in safety-related HVAC system and capacity of cooling and heating coils in non-safety related HVAC system air handling units that are affected by site specific conditions*
This COL item is addressed in Subsections 9.4.1.2, 9.4.3.2.1, 9.4.3.2.2, 9.4.3.2.3, 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~~, Figure 9.4-201, Figure 9.4-202~~.

DCD_09.02.02-72

CTS-01378
CTS-01379

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 and Figure 9.4-20~~3~~1.

CTS-01380

CP COL 9.4(4)

Table 9.4-201 (Sheet 1 of 2)

Equipment Design Data

Main Control Room Air Handling Unit	
Heating Coil Capacity	40 kW
Auxiliary Building Air Handling Unit	
Cooling Coil Capacity	9,200,000 Btu/hr
Heating Coil Capacity	4,750,000 Btu/hr (Steam)
Non-Class 1E Electrical Room Air Handling Unit	
Cooling Coil Capacity	1,330,000 Btu/hr
Heating Coil Capacity	Non-heating
Main Steam / Feedwater Piping Area Air Handling Unit	
Cooling Coil Capacity	450,000 Btu/hr
Heating Coil Capacity	9 kW
Technical Support Center Air Handling Unit	
Cooling Coil Capacity	550,000 Btu/hr
Heating Coil Capacity	30 kW
Class 1E Electrical Room Air Handling Unit	
Heating Coil Capacity	45 kW - Train A, B 65 kW - Train C, D
Class 1E I&C Room In-duct Heater Capacity	18 kW - Train A, D 16.3 kW - Train B, C
MCR/Class 1E Electrical HVAC Equipment Room In-duct Heater Capacity	2.2 kW - Train B, C
Remote Shutdown Console Room In-duct Heater Capacity	10.9 kW
Class 1E Battery Room In-duct Heater Capacity	3.2 kW
Safeguard Component Area Air Handling Unit	
Heating Coil Capacity	27 kW
Emergency Feedwater Pump (M/D) Area Air Handling Unit	
Heating Coil Capacity	2 kW

CTS-01378

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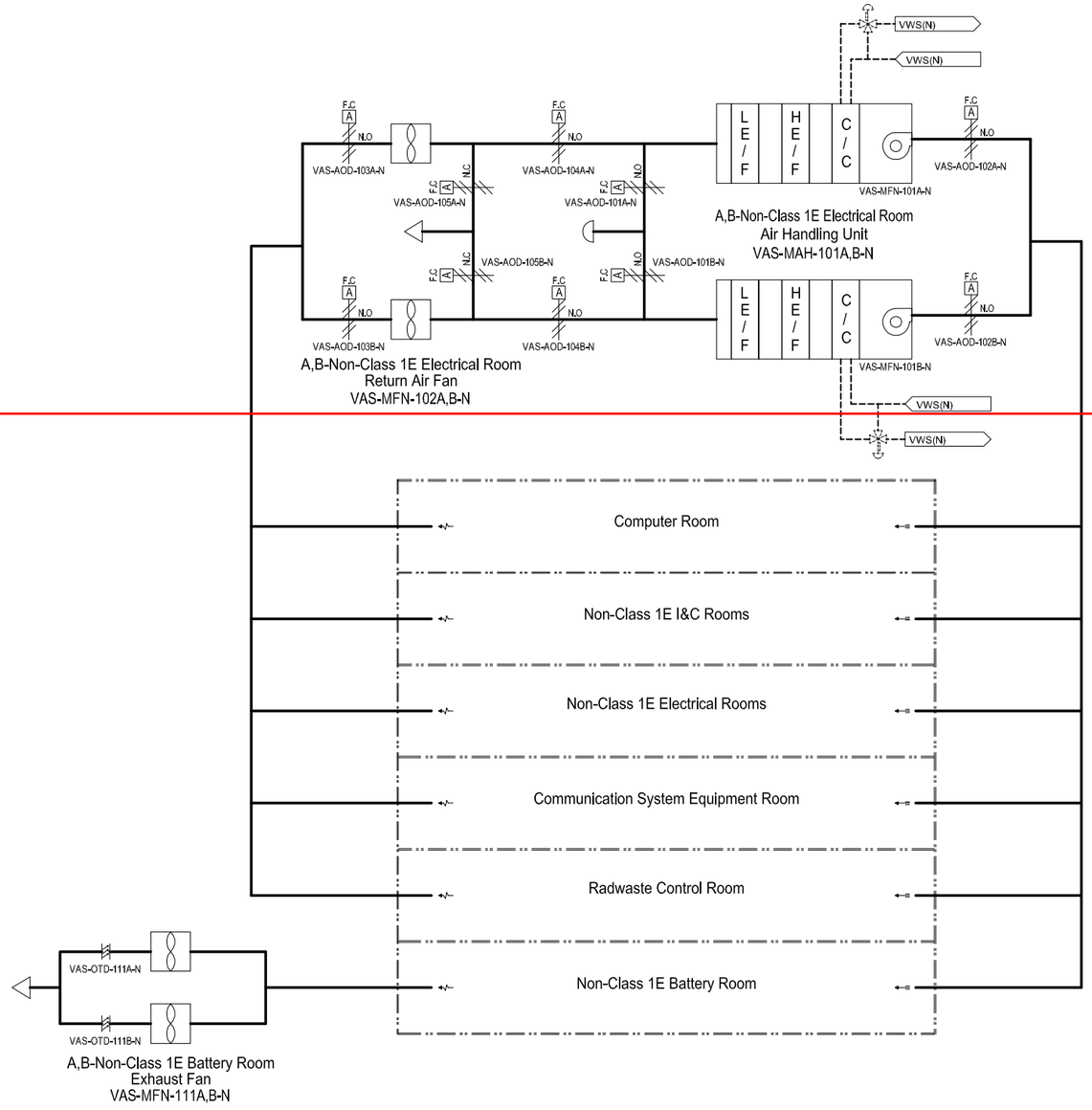
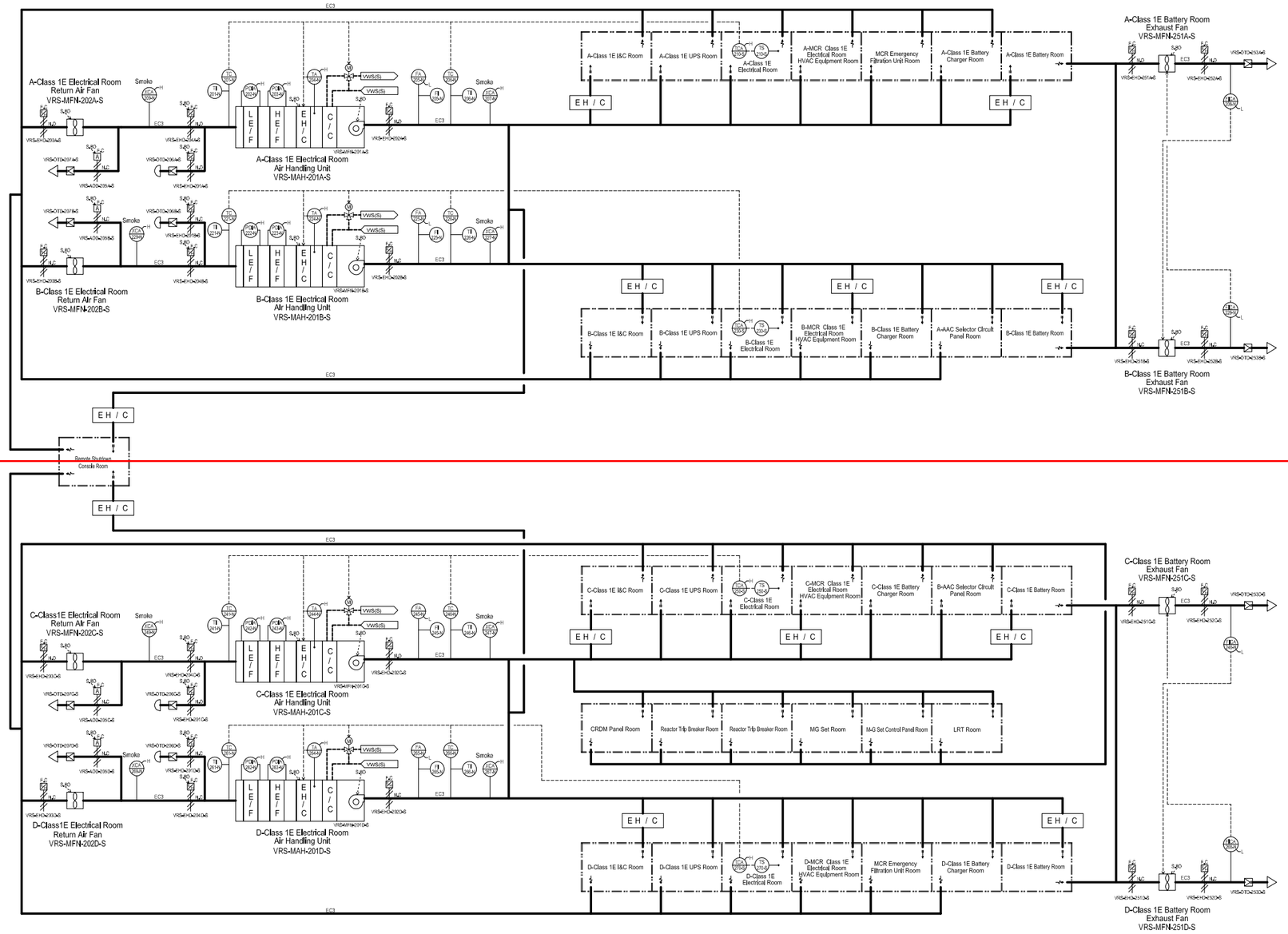


STD COL 9.4(4)

~~Figure 9.4-201 Non-Class 1E Electrical Room HVAC System Flow Diagram~~

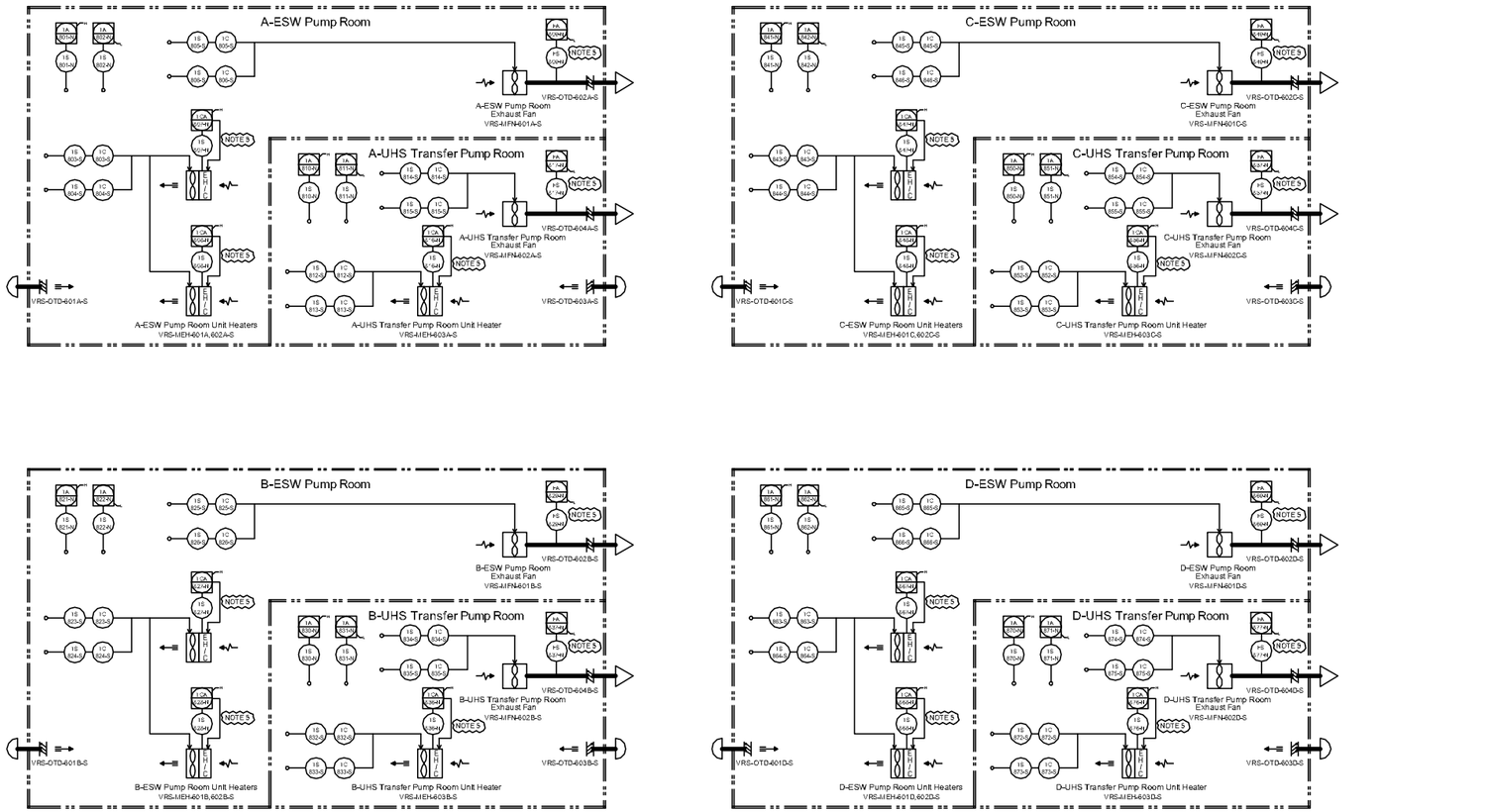
CTS-01379



STD COL 9.4(4)

Figure 9.4-202 Class 1E Electrical Room HVAC System Flow Diagram

RCOL2_14.0
3.07-34



NOTE
1. ALL FANS, DAMPERS AND HEATERS IN THIS SHEET ARE DESIGNATED IN ACCORDANCE WITH SEISMIC CATEGORY I.
2. BACKDRAFT DAMPERS ARE MOUNTED IN THE WALL OPENING.
3. THERE IS NO DUCTWORK IN THE VENTILATION SYSTEMS.
4. EXHAUST FANS ARE WALL-MOUNTED.
5. THE ANNOTATED INSTRUMENTATION IS SEISMIC CATEGORY II.

REMARK
PLANT DESIGNATION OF EQUIPMENT AND VALVE NUMBERS ARE OMITTED IN THIS DRAWING.
~~STD~~ VRS - ### - +++

STD COL 9.2(6)

Figure 9.4-20~~3~~1 UHS ESW Pump House Ventilation Systems Flow Diagram

CTS-01380

Chapter 10

Chapter 10 Tracking Report Revision List

Change ID No.	Section	FSAR Rev. 2 Page	Reason for change	Change Summary	Rev. of FSAR T/R
RCOL2_12.03-12.04-11 S02	10.4.8.2.1	10.4-8 10.4-9	Response to RAI No. 135 S02 Luminant Letter no.TXNB-11020 Date 4/13/2011	Added a new paragraph regarding the design consideration for the prevention of environmental contamination before the last paragraph in Subsection 10.4.8.2.1.	-
RCOL2_10.04.08-3	10.4.8.2.1	10.4-7	Response to RAI No. 237 Luminant Letter no. TXNB-11084 Date 12/8/2011	Piping design was changed from single-walled stainless steel pipe with insulation to double-walled pipe consisting of a stainless steel inner pipe and a carbon steel outer pipe with coating.	-
DCD_10.04.06-17	ACRONYMS AND ABBREVIATIONS	10-v	Reflect Response to DCD RAI No. 807	“EPRI, Electric Power Research Institute” was added as an acronym.	0
DCD_10.04.06-17	10.3.5.5 (new Subsection)	10.3-1	Reflect Response to DCD RAI No. 807	Subsection 10.3.5.5 was newly added to resolve CP COL 10.3(4).	0
CTS-01362	10.3.6.3.1 10.3.6.3.1.1	10.3-1 10.3-2	Response to ACRS Questions	Wording of “high energy” was deleted.	0
DCD_10.04.06-17	10.3.7	10.3-4	Reflect Response to DCD RAI No. 807	New Combined License Information was added as CP COL 10.3(4)	0
CTS-01360	Table 10.4.5-1R (Sheet 1 of 3)	10.4-12	Editorial	Table number was recovered.	0

ACRONYMS AND ABBREVIATIONS

ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWWA	American Water Works Association
BD	blowdown
CCW	component cooling water
COL	Combined License
CPNPP	Comanche Peak Nuclear Power Plant
CST	Condensate Storage Tank
CTW	cooling tower
CWS	circulating water system
DCD	Design Control Document
EPRI	Electric Power Research Institute
FAC	flow accelerated corrosion
HDPE	High Density Polyethylene
LWMS	liquid waste management system
MSR	maximum steaming rate
NDE	nondestructive examination
QA	quality assurance
SG	steam generator
SGBDS	steam generator blowdown system
T/B	turbine building
TCEQ	Texas Commission on Environmental Quality
TCS	turbine component cooling water system
T/G	Turbine Generator
TPDES	Texas Pollutant Discharge Elimination System

DCD_10.04.06-17

10.3 MAIN STEAM SUPPLY SYSTEM

This section of the referenced DCD is incorporated by reference with the following departures and/or supplements.

10.3.2.4.3 Water (Steam) Hammer Prevention

STD COL 10.3(3) Replace the first sentence of third paragraph in DCD Subsection 10.3.2.4.3 with the following.

The operating and maintenance procedures regarding water hammer are included in system operating procedures in Subsection 13.5.2.1. A milestone schedule for implementation of the procedures is also included in Subsection 13.5.2.1.

10.3.5.5 Action Levels for Abnormal Conditions

DCD_10.04.06-17

CP COL 10.3(4) Replace the second paragraph in DCD Subsection 10.3.5.5 with the following.

Secondary side water chemistry program is based on the latest effective version of the EPRI PWR Secondary Water Chemistry Guidelines.

10.3.6.3 Flow-Accelerated Corrosion (FAC)

STD COL 10.3(1) Replace the last paragraph in DCD Subsection 10.3.6.3 with the following.

10.3.6.3.1 Flow-Accelerated Corrosion (FAC) Monitoring Program

Erosion-corrosion in piping systems is a flow-induced material degradation process. It can affect metallic materials whose corrosion resistance is based on the formation of oxide (protective) surface film. Wear-off destruction of the oxide film by turbulent flow water or steam causes corrosion of the unprotected metal.

The FAC monitoring program analyzes, inspects, monitors, and trends FAC degradation of carbon steel piping and piping components in ~~high energy~~ systems that carry water or wet steam and are susceptible to erosion-corrosion damage. In addition, the FAC monitoring program addresses the concerns of Generic Letter

CTS-01362

89-08 and consistent with the guidelines of NSAC-202L-R2. The FAC monitoring program will be established prior to fuel load.

The thrust of the FAC monitoring program is to:

- Conduct appropriate analysis and perform preservice inspection.
- Determine the extent of pipe wall thinning, if any, and repair/replace components as necessary.
- Perform follow-up inspections to confirm or quantify pipe wall thinning and take long-term corrective actions (such as adjust water chemistry, operating parameters or others).

10.3.6.3.1.1 Analysis

An industry-sponsored program is used to predict the wear rate for piping and components in ~~high energy~~ carbon steel piping systems which are susceptible to FAC. Each susceptible component is tracked in a database and is inspected in the order of susceptibility. For each piping component, the analytical method predicts the FAC wear rate, trends the estimated inspection interval, repairs, and/or replacement. Carbon steel piping American Society of Mechanical Engineers (ASME) III and B31.1 and pipe components that are used in single-phase and two-phase ~~high energy~~ flow systems are the most susceptible to FAC damage and receive the most critical analysis. CTS-01362 CTS-01362

10.3.6.3.1.2 Inspections

Inspections that involve wall thickness measurements are used to identify wall thickness margins for thinning and to evaluate the FAC trending data, and provide the refinement of the predictions. Components are inspected for wear using ultrasonic examination method with grid location, radiographic examination method, or visual observation. Preservice wall thickness measurement or baseline data are collected prior to individual system turnover to operation. The first inspection after preservice inspection is used as a baseline trend for future inspections. Each subsequent inspection determines the FAC wear rate for the piping and piping components and the need for inspection frequency adjustment for those components.

10.3.6.3.1.3 Training

The FAC monitoring program is administered by trained and experienced personnel. Task-specific training is provided for plant personnel that implement the monitoring program. The specific nondestructive examination (NDE) is carried out by qualified personnel. Inspection data are analyzed by engineers and/or other experienced personnel to determine the overall effect on the piping and piping components.

- Expanding the inspection locations as necessary

10.3.6.3.1.5 Industry Experience

Industry experience provides valuable supplement to the plant analysis and management program. The FAC monitoring program is updated from time to time to include industry experience by identifying susceptible components or piping features.

10.3.6.3.1.6 Long-Term Strategy

The long-term strategy is to improve the inspection program and to reduce susceptibility of piping components to FAC. An effective long-term monitoring program description is included in the FAC Monitoring Program.

10.3.6.3.1.7 Plant Chemistry

The responsibility for system chemistry is under the purview of the plant chemistry section. The plant chemistry section specifies chemical addition in accordance with plant procedures.

10.3.7 Combined License Information

Replace the content of the DCD Subsection 10.3.7 with the following.

STD COL 10.3(1) ***10.3(1)*** *FAC monitoring program*
This COL item is addressed in Subsection 10.3.6.3

10.3(2) *Deleted from the DCD.*

STD COL 10.3(3) ***10.3(3)*** *Operating and maintenance procedures for water (steam) hammer prevention*

This COL item is addressed in Subsection 10.3.2.4.3.

CP COL 10.3(4) ***10.3(4)*** *Secondary side water chemistry*

This COL item is addressed in Subsection 10.3.5.5.

DCD_10.04.06-17

CTS-01360

Table 10.4.5-1R (Sheet 1 of 3)

~~3~~Design Parameters for Major Components of Circulating Water System

	Ambient design temperature	-
	Design wet bulb temperature, (°F) (5% Exceedance)	76 (78 including 2 °F recirculation)
	Circulating water pumps	-
CP COL 10.4(1)	Number of pumps (per unit)	8
	Flowrate (gpm)	164,715
	Mechanical draft cooling towers	-
CP COL 10.4(1)	Number of towers (per unit)	2
	Number of cells in each cooling tower	30
	Design inlet temperature (°F)	103.7
	Design outlet temperature (°F)	88.5
	Design temperature rise (°F)	15.2
	CTW design approach temperature (°F)	10.5
	Design flowrate (gpm)	1,290,720 plus 27,000 (for Non essential service water)

*Page numbers for the attached marked-up pages may differ from the revision 2 page numbers due to text additions and deletions. When the page numbers for the attached pages do differ, the page number for the attached page is shown in brackets.

Chapter 11

Chapter 11 Tracking Report Revision List

Change ID No.	Section	FSAR Rev. 2 Page	Reason for change	Change Summary	Rev. of FSAR T/R
RCOL2_11.02-18	11.2.3.1 11.2.3.2 11.2.3.4 Figure 11.2-201	11.2-5 through 11.2-17 11.2-34	Response to RAI No. 224 Luminant Letter no. TXNB-11061 Date 9/29/2011	Editorial changes throughout to re-organize existing content for clarity. Technical changes are limited to: Deleted discussion that multiple effluent samples around perimeter will be taken prior to discharge (Subsection 11.2.3.1) Added discussion that pump suction and discharge includes a recirculation option to ensure mixing and will be sampled at discharge of pump before release (Subsection 11.2.3.4 and Figure 11.2-201)	-
RCOL2_11.02-18 S01	11.2.2	11.2-3	Supplemental Response to RAI No. 224 Luminant Letter no.TXNB-11076 Date 11/7/2011	Editorial correction.	-
RCOL2_11.02-18 S01	11.2.2	11.2-4	Supplemental Response to RAI No. 224 Luminant Letter no.TXNB-11076 Date 11/7/2011	Editorial correction.	-
RCOL2_11.02-18 S01	11.2.3.2	11.2-8	Supplemental Response to RAI No. 224 Luminant Letter no.TXNB-11076 Date 11/7/2011	Editorial correction.	-

Change ID No.	Section	FSAR Rev. 2 Page	Reason for change	Change Summary	Rev. of FSAR T/R
RCOL2_11.02-18 S01	11.2.3.4	11.2-8	Supplemental Response to RAI No. 224 Luminant Letter no.TXNB-11076 Date 11/7/2011	Clarified holdup tank is in fact the boric acid tank.	-
RCOL2_11.02-18 S01	11.2.3.4	11.2-12	Supplemental Response to RAI No. 224 Luminant Letter no.TXNB-11076 Date 11/7/2011	Added system description of evaporation pond discharge recirculation line.	-
RCOL2_11.02-18 S01	11.2.3.4	11.2-13	Supplemental Response to RAI No. 224 Luminant Letter no.TXNB-11076 Date 11/7/2011	Clarified system description of evaporation pond discharge.	-
RCOL2_11.02-18 S01	Figure 11.2-201 (sheet 9 of 10)	11.2-34	Supplemental Response to RAI No. 224 Luminant Letter no.TXNB-11076 Date 11/7/2011	Added sampling point to Evaporation pond discharge recirculation line.	-
RCOL2_11.04-4 S01	11.4.2.3	11.4-3 [11.4-3 11.4-4]	Supplemental Response to RAI No. 39 S01 Luminant Letter no.TXNB-11074 Date 11/14/2011	Updated description of regulatory guidance and design requirements for the Interim Radwaste Storage Facility to address Open Item 11.04-1.	-
CTS-01385	11.2.1.6	11.2-2	Correction	Corrected to lead sentence for consistency.	0

*Page numbers for the attached marked-up pages may differ from the revision 2 page numbers due to text additions and deletions. When the page numbers for the attached pages do differ, the page number for the attached page is shown in brackets.

Of the augments considered, the lowest total annual cost (TAC) was a 90 gpm cartridge filter with a TAC of $14,910 in 1975 dollars. Using the $1,000 per person-rem criterion prescribed by Appendix I to 10 CFR Part 50 the dose reduction would have to be 14.91 person-rem whole body (or thyroid) to be cost beneficial. Because the site specific population dose estimate is well below this value (i.e., 2.36 person-rem/yr and 2.07 person-rem/yr, Total Body and Thyroid respectively) there are no cost-beneficial liquid radwaste augments and no further cost-benefit analysis is needed to demonstrate compliance with 10 CFR 50, Appendix I Section II.D.

11.2.1.6 Mobile or Temporary Equipment

STD COL 11.2(1)
STD COL 12.3(7)

Replace the last sentence in the first paragraph in DCD Subsection 11.2.1.6 with the following. CTS-01385

Process piping connections have connectors different from the utility connectors to prevent cross-connection and contamination. The use of mobile or temporary equipment will require applicable regulatory requirements and guidance such as 10 CFR 50.34a, 10 CFR 20.1406 and RG 1.143 to be addressed. As such the purchase or lease contracts for any temporary and mobile equipment will specify the applicable criteria.

The space allocated for the temporary and mobile equipment is located in the Auxiliary Building to minimize the impact to the environment in the event of an accident or spillage of radioactive materials. Shield walls are provided on three sides with one side open for access during installation, operation, inspection, and maintenance. The shield walls also serve to minimize spread of contamination to the entire area. A shield door is provided with truck bay access door from the common walkway inside the A/B. At the door opening a curb with sloped sided is constructed to prevent spreading of any liquid spillage into the truck bay area. The connection for the spent resin is provided on the process piping panel and the transfer line is built into the pipe chase for shielding purposes. The location of the mobile unit facilitates short transfer distance. Drainage collection is provided for liquid leakage and is routed to the waste holdup tanks, which are located on a floor below, for reprocessing. Provisions are included to mitigate contamination of the facility. Demineralized water piping is provided for decontaminating the facility. The floor in the area for the mobile system is sloped away from the truck bay door and the stairwell. The floor is sloped toward the plant west wall, where contamination from leaks from the mobile systems can enter the floor drain for processing by the LWMS. A level detector is provided within the drain collection header.

STD COL 11.2(8)
STD COL 12.3(7)

Replace the second paragraph of DCD Subsection 11.2.1.6 with the following.

Chapter 12

Chapter 12 Tracking Report Revision List

Change ID No.	Section	FSAR Rev. 2 Page	Reason for change	Change Summary	Rev. of FSAR T/R
RCOL2_12.03-12.04-11 S02	Table 12.3-201 (Sheet 2 of 5)	12.3-6	Response to RAI No. 135 S02 Luminant Letter no.TXNB-11020 Date 4/13/2011	Added a new paragraph regarding the design considering the prevention of environmental contamination after the last paragraph in the column of “System Features” related to objectives 1 and 2 of “Steam Generator Blowdown System”.	-
RCOL2_12.03-12.04-12	12.3.1.1.1.2	12.3-1	Response to RAI No. 225 Luminant Letter no.TXNB-11058 Date 9/16/2011	Added a description about soluble zinc depleted of Zn-64 as a general design criterion.	-
RCOL2_10.04.08-3	Table 12.3-201 (Sheet 1 of 5) Figure 12.3-201	12.3-5 [12.3-7] 12.3-11 [12.3-13]	Response to RAI No. 237 Luminant Letter no.TXNB-11084 Date 12/8/2011	Piping design was changed from single-walled stainless steel pipe with insulation to double-walled pipe consisting of a stainless steel inner pipe and a carbon steel outer pipe with coating.	-

*Page numbers for the attached marked-up pages may differ from the revision 2 page numbers due to text additions and deletions. When the page numbers for the attached pages do differ, the page number for the attached page is shown in brackets.

Chapter 13

Chapter 13 Tracking Report Revision List

Change ID No.	Section	FSAR Rev. 2 Page	Reason for change	Change Summary	Rev. of FSAR T/R
RCOL2_03.09.06-20	Table 13.4-201(Sheet 2, 11 of 11)	13.4-3 13.4-12	Response to RAI No. 228 Luminant Letter no.TXNB-11077 Date 11/7/2011	Updated IST implementation milestone	-
RCOL2_198_2S01	Table 13.4-201 (Sheet 6 of 11)	13.4-7	Supplemental Response to RAI No. 198 Luminant Letter no. TXNB-11080 Date 11/14/2011	Revised Table 13.4-201 to identify a Radioactive Source Control RP Supervisor is assigned prior to initial receipt of by-product, source, or SNM (excluding Exempt Quantities as described in 10 CFR 30.18).	-

*Page numbers for the attached marked-up pages may differ from the revision 2 page numbers due to text additions and deletions. When the page numbers for the attached pages do differ, the page number for the attached page is shown in brackets.

Chapter 14

Chapter 14 Tracking Report Revision List

Change ID No.	Section	FSAR Rev. 2 Page	Reason for change	Change Summary	Rev. of FSAR T/R
CTS-01381	14.3.4.7	14.3-1	Consistency with changes to R-COLA Part 10.	Deleted sentence, "There are only two site specific systems…" because additional systems have been added to Part 10.	0

*Page numbers for the attached marked-up pages may differ from the revision 2 page numbers due to text additions and deletions. When the page numbers for the attached pages do differ, the page number for the attached page is shown in brackets.

14.3 INSPECTIONS, TESTS, ANALYSES, AND ACCEPTANCE CRITERIA

This section of the referenced DCD is incorporated by reference with the following departures and/or supplements.

14.3.4.6 ITAAC for Electrical Systems

STD COL 14.3(1) Add the following paragraph after the last paragraph in DCD Subsection 14.3.4.6.

The ITAAC for the site-specific interfaces in the electrical systems are developed to correspond to Section 3.2 of Tier 1 of the referenced DCD. The site-specific interfaces are with the offsite power system. The ITAAC for the interface requirement with the offsite power system are provided in Part 10 of the Combined License Application (COLA).

14.3.4.7 ITAAC for Plant Systems

STD COL 14.3(1) Replace the last paragraph in DCD Subsection 14.3.4.7 with the following.

The selection criteria and methodology provided in Section 14.3 of the referenced DCD are utilized as the site-specific selection criteria and methodology for ITAAC for site-specific systems. In general, the ITAAC for site-specific systems are developed to correspond to the interface requirements in Tier 1 of the referenced DCD. For those site-specific systems that do not have a safety function sufficiently significant to meet the selection criteria for ITAAC, the system is identified with the designation “No entry for this system”. ITAAC for the site-specific portion of the plant systems are provided in Part 10 of the Combined License Application (COLA). ~~There are only two site-specific systems, the UHS system and ESWS (portions outside the scope of the certified design) including the site-specific structures, and the UHS ESWS pump house ventilation system, which are addressed in Part 10 of the COLA.~~ CTS-01381

Chapter 15

Chapter 15 Tracking Report Revision List

Change ID No.	Section	FSAR Rev. 2 Page	Reason for change	Change Summary	Rev. of FSAR T/R

*Page numbers for the attached marked-up pages may differ from the revision 2 page numbers due to text additions and deletions. When the page numbers for the attached pages do differ, the page number for the attached page is shown in brackets.

Chapter 16

Chapter 16 Tracking Report Revision List

Change ID No.	Section	FSAR Rev. 2 Page	Reason for change	Change Summary	Rev. of FSAR T/R

*Page numbers for the attached marked-up pages may differ from the revision 2 page numbers due to text additions and deletions. When the page numbers for the attached pages do differ, the page number for the attached page is shown in brackets.

Chapter 17

Chapter 17 Tracking Report Revision List

Change ID No.	Section	FSAR Rev. 2 Page	Reason for change	Change Summary	Rev. of FSAR T/R

*Page numbers for the attached marked-up pages may differ from the revision 2 page numbers due to text additions and deletions. When the page numbers for the attached pages do differ, the page number for the attached page is shown in brackets.

Chapter 18

Chapter 18 Tracking Report Revision List

Change ID No.	Section	FSAR Rev. 2 Page	Reason for change	Change Summary	Rev. of FSAR T/R

*Page numbers for the attached marked-up pages may differ from the revision 2 page numbers due to text additions and deletions. When the page numbers for the attached pages do differ, the page number for the attached page is shown in brackets.

Chapter 19

Chapter 19 Tracking Report Revision List

Change ID No.	Section	FSAR Rev. 2 Page	Reason for change	Change Summary	Rev. of FSAR T/R
RCOL2_19-17	19.1.5 Table 19.1-205 (Sheet 1 through 13[14],15 [16] through 26 [27, 28], 28 through 30 [30 through 33] 32 through 35 [36, 37] Table 19.1-206 (Sheet 2 of 2) (new sheet)	19.1-9 [19.1-10] 19.1-48 through 19.1-60 [19.1-61] 19.1-62 through 19.1-73 [19.1-74, 19.1-75] 19.1-75 through 19.1-77[19.1-78, 79, 80] 19.1-79 19.1-80 [19.1-82 through 19.1-84] 19.1-81 [19.1-86]	Supplemental Response to RAI No. 232 Luminant Letter no.TXNB-11084 Date 12/8/2011	Clarified the bases and the screening criterion applied for screening external events. Minor errata and editorial corrections. Added assumptions identified in External Events Screening Table 19.1-205 to the list of Site Specific Assumptions.	-
RCOL2_19-18	19.1.4.1.2 19.1.5 19.1.7.1 Table 19.1-205 (sheet 1 of 33)	19.1-3 19.1-4 19.1-11 [19.1-12] 19.1-48		Chapter 19.1 clarifications for event screening, assumptions, and term TNT equivalency.	

DCD_08.03.01-38	Table 19.1-119R (Sheet 15 of 46)	19.1-19	Response to DCD RAI No.394 amended MHI Letter No. UAP-HF-11404 Date 11/22/2011	5th item of "14. Onsite Electric Power System" was revised.	0
DCD_11.02.06-45	19.2.3.3.7 (New Subsection)	19.2-1	Reflect Response to DCD RAI No. 803	Added COLA section 19.2.3.3.7 to address new COL item 19.3(7)	0
DCD_11.02.06-45	19.3.3.	19.3-1	Reflect Response to DCD RAI No. 803	Added new COL item 19.3(7)	0

*Page numbers for the attached marked-up pages may differ from the revision 2 page numbers due to text additions and deletions. When the page numbers for the attached pages do differ, the page number for the attached page is shown in brackets.

CP COL 19.3(6)

Table 19.1-119R Key Insights and Assumptions (Sheet 15 of 46)

Key Insights and Assumptions	Dispositions
14. Onsite Electric Power System	
- The onsite Class 1E electric power systems comprise four independent and redundant trains, each with its own power supply, buses, transformers, and associated controls.	8.3.1.1 8.3.1.1.2.1 8.3.1.1.3
- One independent Class 1E GTG is provided for each Class 1E train.	8.3.1.1.2.1
- Non-Class 1E 6.9kV permanent buses P1 and P2 are also connected to the non-Class 1E A-AAC GTG and B-AAC GTG, respectively. The loads which are not safety-related but require operation during LOOP are connected to these buses.	8.3.1.1.1
- In the event of SBO, power to one Class 1E 6.9kV bus can be restored manually from the AAC GTG.	8.3.1.1.1 8.3.1.1.2.2 8.3.1.1.2.3 19.2.5 13.5.2 8.3.1.1.1 8.4.1.3
- Common cause failure between class 1E GTG and non-class 1E GTG ~~supply~~ is minimized by design characteristics. The AAC power source engine and generator are designed by a different manufacturer than the Class 1E EPS engine and generator, and have ~~Different rating GTGs with~~ diverse starting systems, independent and separate auxiliary and support systems are provided to minimize common cause failure.	8.4.1.3
- The non-safety GTG can be started manually when connecting to the class 1E bus in the event of SBO.	8.4.1.3
- Power to the shutdown buses can be restored from the AAC sources within 60 minutes	8.4.1.3
- Power to the shutdown buses can be restored from the AAC sources within 60 minutes	8.3.1.1.3 8.3.1.1.3.10
- The GTG does not need cooling water system. Cooling of GTG is achieved by air ventilation system	9.5.5 9.5.8
- GTG combustion air intake and exhaust system for each of the four GTGs supply combustion air of reliable quality to the gas turbine and exhausts combustion products from the gas turbine to the atmosphere. The air intake also provides ventilation/cooling air to the GTG assembly.	

DCD_08.03.01-38

19.2 SEVERE ACCIDENT EVALUATION

This section of the referenced DCD is incorporated by reference with the following departures and/or supplements.

19.2.3.3.7 Equipment Survivability

DCD_11.02.06-45

STD COL 19.3(7) Replace the second-to-last paragraph in DCD Subsection 19.2.3.3.7 with the following.

An equipment survivability assessment will be performed prior to fuel load of the as-built equipment required to maintain safe shutdown and containment structural integrity to provide reasonable assurance that they will operate in the environmental conditions resulting from hydrogen burns associated with severe accidents for which they are intended and over the time span for which they are needed. This assessment is required only for equipment used for severe accident mitigation that has not been tested at severe accident conditions. The ability of the as-built equipment to perform during severe accident hydrogen burns will be assessed using the Environment Enveloping method or the Test Based Thermal Analysis method discussed in EPRI NP-4354 (Reference 19.2-11).

19.2.5 Accident Management

STD COL 19.3(6) Add the following text after the last paragraph in DCD Subsection 19.2.5.

An accident management program will be developed, in which severe accident management procedures that capture important operator actions described in the severe accident management framework are included. The accident management program will incorporate the instructions provided in NEI 91-04 Revision 1 (Reference 19.2-201). Development of emergency operating procedures is addressed in Subsection 13.5.2.1. Training requirements will also be developed as part of the accident management program addressed in DCD Section 18.9, and training for operators will be completed prior to first fuel load.

19.2.6.1 Introduction

STD COL 19.3(4) Replace the content of DCD Subsection 19.2.6.1 with the following.

19.3 OPEN, CONFIRMATORY, AND COL ACTION ITEMS IDENTIFIED AS UNRESOLVED

This section of the referenced DCD is incorporated by reference with the following departures and/or supplements.

19.3.3 Resolution of COL Action Items

Replace the content of DCD Subsection 19.3.3 with the following.

CP COL 19.3(1) ***19.3(1)*** *Update of PRA and SA evaluation for input to RMTS and peer review*

This COL item is addressed in Subsection 19.1.7.6.

19.3(2) *Deleted from the DCD.*

19.3(3) *Deleted from the DCD.*

CP COL 19.3(4)
STD COL 19.3(4) ***19.3(4)*** *Update of PRA and SA evaluation based on site-specific information*

This COL item is addressed in Subsections 19.1.1.2.1, 19.1.4.1.2, 19.1.4.2.2, 19.1.5, 19.1.5.2.2, 19.1.5.3.2, 19.1.6.2, 19.1.7.1, 19.2.6.1, 19.2.6.1.1, 19.2.6.2, 19.2.6.4, 19.2.6.5 and 19.2.6.6, Tables 19.1-201, 19.1-202, 19.1-203, 19.1-204, 19.1-205, 19.1-206 and 19.2-9R, and Figures 19.1-201 and 19.1-2R.

CP COL 19.3(5)
STD COL 19.3(5) ***19.3(5)*** ~~*Deleted from the DCD.*~~*SSC fragilities* RCOL2_19-8 S01

This COL item is addressed in Subsections 19.1.5.1.1, 19.1.5.1.2 and Table 19.1-206.

STD COL 19.3(6)
CP COL 19.3(6) ***19.3(6)*** *Accident management program*

This COL item is addressed in Subsections 19.2.5 and Table 19.1-119R.

STD COL 19.3(7) ***19.3(7)*** *Equipment survivability assessment* DCD_11.02.06-45

This COL item is addressed in Subsection 19.2.3.3.7.