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

Attention: Mr. Jeffrey A. Ciocco

Docket No. 52-021
MHI Ref: UAP-HF-11091

Subject: **Transmittal of the Updated Tier 2, Chapters 9, 10 and 12 of US-APWR DCD**

Reference:
1) "Request for Additional Information No. 4206 (CP RAI#135), SRP Section: 12.03-12.04 – Radiation Protection Design Features" dated January 29, 2010.
2) Letter Luminant Log # TXNB-10065 from R. Flores (Luminant Generation Company LLC) to U.S. NRC, "Comanche Peak Nuclear Power Plant, Units 3 and 4, Docket Numbers 52-034 and 52-035 Supplemental Information for Response to Request for Additional Information No.4206" dated on September 22, 2010.
3) Letter MHI Ref: UAP-HF-11078 from Y. Ogata (MHI) to U.S. NRC, "Submittal of US-APWR Design Control Document Revision 3 in Support of Mitsubishi Heavy Industries, Ltd.'s Application for Design Certification of the US-APWR Standard Plant Design" dated on March 31, 2011.

Mitsubishi Heavy Industries, Ltd. ("MHI") and Luminant have been working to resolve a Request for Additional Information ("RAI") to Combined License ("COL") Application for Comanche Peak Units 3 and 4. COL RAI #135, question 12.03-12.04-11 (Reference 1) was issued to request providing how COL applicant provided SSCs prevent or mitigate contamination of the environment. Luminant sent NRC the response to CP RAI #135 (Reference 2), but NRC had additional comment, and supplemental response is being prepared. In this activity, MHI concluded that the description in DCD Tier 2 Chapters 9, 10 and 12 would be revised.

With this letter, MHI transmits to the U.S. Nuclear Regulatory Commission ("NRC") Staff the proposed marked-up to be made to the DCD revision 3 (Reference 3). This update will be incorporated into future DCD revision.

Please contact Dr. C. Keith Paulson, Senior Technical Manager, Mitsubishi Nuclear Energy Systems, Inc. if NRC has questions concerning any aspect of this letter. His contact information is provided below.

Sincerely,

Y. Ogata

Yoshiki Ogata,
General Manager- APWR Promoting Department
Mitsubishi Heavy Industries, LTD.

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NRO

Enclosure:

1. Update of Tier 2, Chapter 9 of US-APWR DCD
2. Update of Tier 2, Chapter 10 of US-APWR DCD
3. Update of Tier 2, Chapter 12 of US-APWR DCD

CC: J. A. Ciocco
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Enclosure 1

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Update of Tier 2, Chapter 9 of US-APWR DCD

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The primary makeup water system consists of two PMWTs, each of 140,000 gallon capacity, two 100% capacity primary makeup water pumps, and associated valves, piping, and instrumentation.

All system components meet design code requirements consistent with the component quality group and seismic design classification in provided in Section 3.2.

The DWST, CST, and the PMWTs are non-safety related and non-seismic (Section 3.2.). These tanks have no safety-related function and failure of their structural integrity would not impact the seismic category I SSCs or cause adverse system interaction. A dike is provided for the PMWTs and CST for mitigating the environmental effects of system leakage or storage tank failure.

The CSF system is shown schematically in Figures 9.2.6-1, 9.2.6-2 and 9.2.6-3.

9.2.6.2.1 Demineralized Water Storage Tank

The DWST is the normal source of demineralized water for supplying water CST, the secondary side chemical injection system, condensate polishing system and the emergency feedwater pits. It is also the normal source for supplying deaerated water to primary makeup water tanks and various primary system users, as shown in Figure 9.2.6-1. The DWST also supplies demineralized water to other users, as shown in Figure 9.2.6-2. Makeup to the CST is provided from the DWST.

Design parameters of the DWST are shown in Table 9.2.6-1.

9.2.6.2.2 Demineralized Water Transfer Pumps

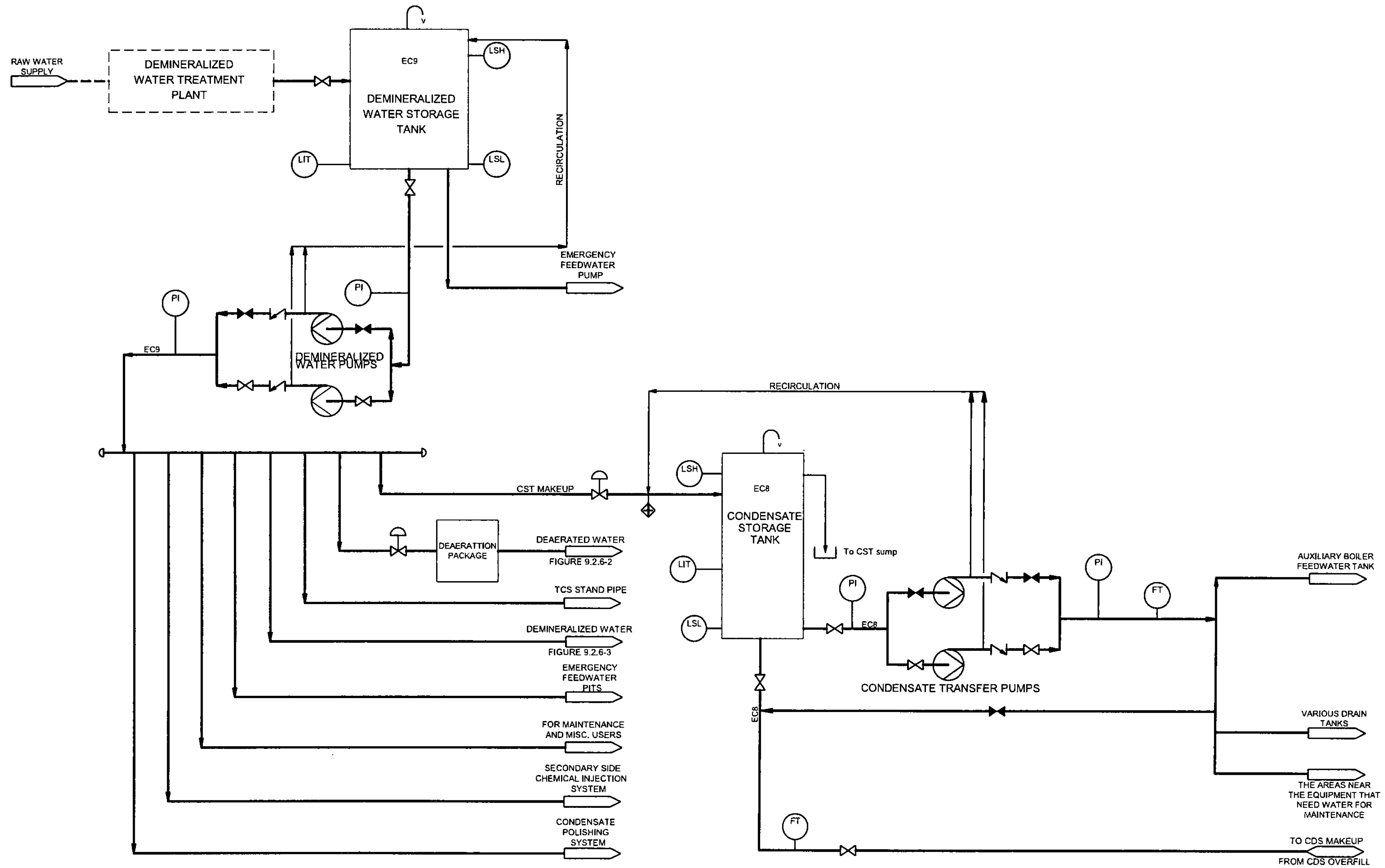
Two 100% capacity demineralized water transfer pumps are provided. The demineralized water transfer pumps take suction from the DWST and discharge into a header that supplies demineralized water to various plant users, as shown in Figure 9.2.6-1. Design parameters of the demineralized water transfer pumps are shown in Table 9.2.6-1

9.2.6.2.3 Deaeration Package

The deaeration package reduces the oxygen concentration of the demineralized water.

9.2.6.2.4 Condensate Storage Tank

The CST is the normal source of water for make up to certain plant systems including the main condenser. The CST is a source of water for supply to various locations such as areas near equipment that need water for maintenance and drain tanks. Makeup to the CST is provided from the DWST. The CST overflow goes to a dike which is provided to control the release of chemicals and radioactive materials. This CST overflow is directed to the Condensate Storage Tank sump inside the dike area. The sump is equipped with a level instrument to detect fluid level and initiates alarms via representative alarm in the MCR for operator actions to stop condensate transfer and to investigate the extent of condition. After analysis for level of contamination, the content inside the dike area can be trucked to WWS for disposal; or to the LWMS for treatment and release. RCOL2_12.03-12.04-11 S02



RCOL2_12.03-12.04-11 S02

Figure 9.2.6-1 Condensate Storage Facilities System Flow Diagram

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- Divert from the blowdown demineralizers to [[WWS]] or the condenser if the blowdown water temperature exceeds the predetermined temperature to protect demineralizers resin.

10.4.8.2 System Description

10.4.8.2.1 General Description

The SGBDS flow diagrams are shown in Figures 10.4.8-1 and 10.4.8-2. Classification of equipment and components in the SGBDS is provided in Section 3.2.

The SGBDS equipment and piping are located in the containment, the reactor building, the auxiliary building and the turbine building (T/B). The piping inside these buildings and transiting between buildings is all routed above ground. RCOL2_12.03-12.04-11 S02

The SGBDS consists of a flash tank, regenerative heat exchangers, non-regenerative coolers, filters, demineralizers, piping, valves and instrumentation. The flash tank, regenerative heat exchangers and non-regenerative coolers are provided to cool the blowdown water with heat recovery, while the filters and demineralizers are provided to purify the blowdown water.

One blowdown line per steam generator is provided. The blowdown from each steam generator flows independently to the flash tank. The blowdown water from the flash tank flows via one common line to regenerative heat exchangers and non regenerative coolers. Blowdown is split into two trains ahead of the heat exchangers. Common discharge from the coolers flows to the filters and demineralizers, where the flow is split into two trains. The purified water from the demineralizers flows to the condenser via a common discharge line.

The blowdown line from each steam generator is provided with two flow paths, a line for purifying blowdown water used during normal plant operation and a line for discharging the blowdown water to the [[WWS]] or the condenser used during startup and abnormal water chemistry conditions.

The US-APWR SG's utilize a "peripheral" blowdown system arrangement. In this arrangement, blowdown holes are drilled from approximately 7 inches below the secondary surface of the tubesheet and intersect with the peripheral groove on the secondary face of the tubesheet. This arrangement is shown as Figure 10.4.8-3 and facilitates effective sludge removal from the tubesheet. The blowdown from each steam generator is depressurized by a throttle valve located downstream of the isolation valves. The throttle valves can be manually adjusted to control the blowdown rate.

The depressurized blowdown water flows to the flash tank, where water and flashing vapor are separated. The vapor is diverted to deaerator and the water is transferred to regenerative and non-regenerative heat exchangers for further cooling. When the pressure in the flash tank is low, the vapor is diverted to condenser. The condensate and feedwater system (CFS) provides the condensate in regenerative heat exchanger(s) to recover thermal energy.

Condensed water from these components is collected in the auxiliary steam drain tank and then, by using the auxiliary steam drain pump, is transferred to the condenser during plant normal operation, or to the auxiliary boiler during the period in which the main steam is not available.

- Boric acid (B/A) evaporator
- B/A batching tank
- Non safety-related HVAC equipment

The ASSS supplies steam for plant system heating when main steam is not available. The auxiliary boiler takes condensate makeup from the auxiliary steam drain tank inside the A/B, or from the condensate storage tank (CST) in the yard. The auxiliary boiler is located in the yard near the plant area. The condensate piping from the ASSS drain tank is a single-walled carbon steel pipe run above ground in pipe chases from A/B to the T/B, and is then connected to double-walled welded carbon steel piping through the T/B wall penetration to the auxiliary boiler. Since this is not a high traffic area, this segment of pipe is run above ground and is slightly sloped so that any leakage is collected in the outer pipe and drained to the auxiliary boiler building. At the auxiliary boiler building end, a leak detection instrument is provided to monitor leak. A drain pipe is provided to direct any drains to the building sump. The steam piping is jacketed with insulation and heat protection. The Auxiliary Boiler is designed with a blowdown connection from the boiler drum to the building sump. The boiler blowdown is drained directly into the sump for transfer into the Turbine Building sump. The T/B sump contents are then pumped to the Waste Holdup Tanks in the LWMS for processing. This design is supplemented by operational programs which includes periodic hydrostatic or pressure testing of pipe segments, instrument calibration, and when required, visual inspection and maintenance of piping, trench and instrument integrity. RCOL2_12.03-12.04-11 S02

A discussion of the radiological aspects of the system leakage is contained in DCD Section 11.1. Design and system features addressing RG 4.21 are captured in Section 12.3.1.3 of the DCD.

Monitoring the leakage from the primary side of the evaporator, the radiation monitor is attached to the downstream of the auxiliary steam drain pump. The high alarm of the monitor isolates the pump discharge line and steam supply line from main steam and trips the pump.

Group II components served by the system are shown below. These components are supplied auxiliary steam from the auxiliary boiler during plant startup, shutdown or regular inspections due to unavailable of the main steam.

- Turbine gland seal
- Deaerator seal
- Deaerator heating

Enclosure 3

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Update of Tier 2, Chapter 12 of US-APWR DCD

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Table 12.3-8 Regulatory Guide 4.21 Design Objectives and Applicable DCD Subsection Information for Minimizing Contamination and Generation of Radioactive Waste (Sheet 15 of 61)

Water Systems **(Note: The "System Features" column consists of excerpts/summary from the DCD)**

Condensate Storage Facility

Objective		System Features	DCD Reference
1	Minimize leaks and spills and provide containment in areas where such events may occur.	The CST overflow is directed to the Condensate Storage Tank sump inside the dike area. The sump is equipped with a level instrument to detect fluid level and initiates alarms via representative alarm in the MCR for operator actions to stop condensate transfer and to investigate the extent of condition. After analysis for level contamination, the content inside the dike area can be trucked to WWS for disposal; or two the LWMS for treatment and release.	9.2.6.2.4
		The transfer piping running between the CST and the hotwell is single-walled welded stainless steel piping in a coated trench with removable but sealed covers. This design is supplemented by periodic hydrostatic or pressure testing of pipe segments, instrument calibration, and when required, visual inspection and maintenance of piping, trench and instrument integrity, in compliance with the guidance of RG 4.21 and industry operating experience.	9.2.6.2.4
2	Provide for adequate leak detection capability to provide prompt detection of leakage for any structure, system, or component which has the potential for leakage.	Piping in a coated trench with removable but sealed covers, this design is supplemented by periodic hydrostatic or pressure testing of pipe segments, instrument calibration, and when required, visual inspection and maintenance of piping, trench and instrument integrity.	9.2.6.2.4

RCOL2_12.03-12.04-34

Table 12.3-8 Regulatory Guide 4.21 Design Objectives and Applicable DCD Subsection Information for Minimizing Contamination and Generation of Radioactive Waste (Sheet 60 of 61)

Auxiliary Steam Supply System **(Note: The "System Features" column consists of excerpts/summary from the DCD)**

Objective		System Features	DCD Reference
1	Minimize leaks and spills and provide containment in areas where such events may occur.	The condensate piping from the ASSS drain tank is a single-walled carbon steel pipe run above ground in pipe chases from the A/B to the T/B, and is then connected to double-walled welded carbon steel piping through the T/B wall penetration to the auxiliary boiler. Since this is not a high traffic area, this segment of pipe is run above ground and is slightly sloped so that any leakage is collected in the outer pipe and drained to the auxiliary boiler building. At the auxiliary boiler building end, a leak detection instrument is provided to monitor leak. A drain pipe is provided to direct any drains to the building sump. The steam piping is jacketed with insulation and heat protection. The Auxiliary Boiler is designed with a blowdown connection from the boiler drum to the building sump. The boiler blowdown is drained directly into the sump for transfer into the Turbine Building sump. The T/B sump contents are them pumped to the Waste Holdup Tanks in the LWMS for processing. This design is supplemented by operational programs which includes periodic hydrostatic or pressure testing of pipe segments, instrument calibration, and when required, visual inspection and maintenance of piping, trench and instrument integrity.	10.4.11.2.1
2	Provide for adequate leak detection capability to provide prompt detection of leakage for any structure, system, or component which has the potential for leakage.	The auxiliary steam drain monitors the leakage of the radioactive materials from the boric acid evaporator to the condensed water of the ASSS.	10.4.11.1.2
		Monitoring the leakage from the primary side of the evaporator, the radiation monitor is attached to the downstream of the auxiliary steam drain pump. The high alarm of the monitor isolates the pump discharge line and steam supply line from main steam and trips the pump.	10.4.11.2.1
		Leakage of radioactive materials from primary side in the B/A evaporator.	10.4.11.2.3

RCOL2_12.03-12.04-72