PMComanchePeakPEm Resource

From: Otto, Ngola
Sent: Wednesday, April 27, 2011 5:18 PM
To: Woodlan, Don
Cc: Monarque, Stephen; LaVera, Ronald; ComanchePeakCOL Resource
Subject: Comanche Peak RAI 4206 Response
Attachments: NRC feedback to Comanche Peak RAI 4206 Response.doc

Don,

I have attached the staff's feedback based on the review of RAI 4206.

Thank you

Ngola Otto
Project Manager, US-APWR Projects Branch
Division of New Reactor Licensing
Office of New Reactors
(301) 415-6695

Hearing Identifier: ComanchePeak_COL_Public
Email Number: 1333

Mail Envelope Properties (6566BAEC3DB131438196538652 4904EC02CEB5DEC9)

Subject: Comanche Peak RAI 4206 Response
Sent Date: 4/27/2011 5:18:02 PM
Received Date: 4/27/2011 5:18:03 PM
From: Otto, Ngola

Created By: Ngola.Otto@nrc.gov

Recipients:
"Monarque, Stephen" <Stephen.Monarque@nrc.gov>
Tracking Status: None
"LaVera, Ronald" <Ronald.LaVera@nrc.gov>
Tracking Status: None
"ComanchePeakCOL Resource" <ComanchePeakCOL.Resource@nrc.gov>
Tracking Status: None
"Woodlan, Don" <Donald.Woodlan@luminant.com>
Tracking Status: None

Post Office: HQCLSTR02.nrc.gov

Files	**Size**	**Date & Time**
MESSAGE	256	4/27/2011 5:18:03 PM
NRC feedback to Comanche Peak RAI 4206 Response.doc	39930	

Options
Priority: Standard
Return Notification: No
Reply Requested: No
Sensitivity: Normal
Expiration Date:
Recipients Received:

CST Overflow Dike Liner

The supplemental response to **RAI 4206 Question 12.03-12.04-11** dated April 13th 2011, stated that the CST was surrounded by a dike, and that the overflow from the CST was into the diked area. However, there was no discussion about the 40 CFR 265 Subpart K—Surface Impoundments – requirements. Based on a response to a similar issue (with a waste pond), the following information was provided.

> The evaporation pond is equipped with a leak detection system. In the event a leak is developed, a signal is sent to the Main Control Room and the Radwaste Control Room for operator actions, which may include removing the contents from the pond to facilitate inspection and repair as required. The pond liner is inspected regularly to determine liner integrity with respect to the liners and their seams. In the event of punctures and/or rupture and repair is required, the pond contents are removed, and the pond is rinsed before repair is performed.
>
> The evaporation pond is designed and constructed in accordance with the following standards (others may be applicable as the design is finalized):
>
> - Texas Commission of Environmental Quality (TCEQ)
> - TCEQ 330, Municipal Solid Waste TCEQ 217.203, Design Criteria for Natural Treatment Facilities
> - American Society for Testing and Materials (ASTM)
> - ASTM D3020, Specification for Polyethylene and Ethylene Copolymer Plastic Sheeting for Pond, Canal and Reservoir Lining
> - ASTM D5514-06, Standard Test Method of Large Scale Hydrostatic Puncture Testing of Geo-synthetics
> - ASTM D7002-03, Standard Practice for Leak Location on Exposed Geo-membranes Using the Water Puddle System
>
> The evaporation pond is designed and constructed to contain treated effluent that is contaminated with radioactive nuclides. The pond opens to the environment to allow the tritiated water to naturally evaporate. The evaporation pond is constructed with two layers of High Density Polyethylene material suitable for this service. The High Density Polyethylene is a minimum of 60 mils thickness. A drainable mesh mat, with a minimum thickness of 30 mils, is provided in between the two layers of High Density Polyethylene to allow movement of the liquid due to leakage of the content from the top layer of High Density Polyethylene.
> The evaporation pond is constructed with a total depth of six feet, with four feet below grade and two feet freeboard. A berm is constructed to prevent surface water from entering the pond during rainy seasons.
> The evaporation pond is constructed with a layer of clay with permeability less than 1E-7 centimeter per second to support the pond. The overall construction meets or exceeds the requirements for waste water pond stipulated by TCEQ.
> Some TCEQ requirements are as follows:
>
> - In situ clay soils or placed and compacted meeting:
>   1. more than 30% passing a Number 200 mesh sieve
>   2. liquid limit greater than 30%
>   3. plasticity index greater than 15
>   4. a minimum thickness of two feet
>   5. Permeability equal to or less than $1x10^{-7}$centimeter per second

- Soil compaction will be 95% standard proctor density at optimum moisture content
- The pond is protected from inundation by a ten-year 2 hour rainfall event

Does Luminant intend to provide similar information for the dike surrounding the CST?

Section 9A.3.114 Auxiliary Boiler Description

US-APWR FSAR Tier 2 Revision 2, Table 11.1-9 "Realistic Source Terms" states that a typical activity of tritium in the secondary side water and steam is 0.001µCi/g. As noted in Table 11.1-4 "Parameters Used to Calculate Secondary Coolant Activity" which is based on 150 gallons per day of primary to secondary leakage. Also, information from currently operating plants shows that in the absence of primary to secondary leakage, tritium activity is still present in secondary side water and steam at concentrations determined by the rate of hydrogen perfusion through the SG U-Tubes, the amount of secondary side reuse and the secondary side make up rate. This information shows that 2,000 to 100,000 pico Curies/liter of tritium will be present in the secondary side steam/condensate fluid. As the US-APWR design employs full reuse of SG blowdown water and anticipated secondary side make up rates are expected to be low, the secondary side tritium concentration is likely to be higher than in many of the current generation of PWR plants. Experience from currently operating plants, shows that leakage from these types of systems will represent an operational concern, for plants subject to the requirements of 10 CFR 20.1406. Based on the realistic source term information provided in the DCD, the Condensate and Feedwater System, Main Steam Supply System (MSS), Steam Generator Blowdown System (SGBDS) and Auxiliary Steam Supply System (ASSS) are examples of systems that are expected to contain low but detectable concentrations of radioactive material.

US-APWR FSAR Tier 2 Revision 2, Figure 10.4.11 "Auxiliary Steam Supply System Piping and Instrumentation Diagram" shows the makeup water supply to the ASSS as the Condensate Storage Tank, which as discussed is expected to contain radioactive material in the form of tritium, and possibly, low concentrations of fission and activation product.

However, CPNPP FSAR Revision 1 section 9A.3.114 "Miscellaneous Plant Support Structures", identifies the auxiliary boiler building as one of the miscellaneous plant support structures. The paragraph labeled "Radioactive Release to Environment Evaluation", states "The miscellaneous CPNPP Units 3 and 4 support structures are non-radiological areas with no piping system containing radioactive material and no other radioactive material located within the areas."

Consistent with the requirements of 10 CFR 20.1406, the guidance contained in RG 4.21, and the system description and radioactivity concentration values described in the US-APWR DCD Tier 2 chapters 10 and 11; FSAR Revision 1 section 9A.3.114 would have to be revised to accurately describe the radiological contents of the auxiliary boiler building.