PMComanchePeakPEm Resource

From: Monarque, Stephen
Sent: Friday, February 26, 2010 8:55 AM
To: John.Conly@luminant.com; Donald.Woodlan@luminant.com; cp34-rai-luminant@mnes-us.com; Diane Yeager; Eric.Evans@luminant.com; joseph tapia; Kazuya Hayashi; Matthew.Weeks@luminant.com; MNES RAI mailbox; Russ Bywater
Cc: ComanchePeakCOL Resource; Magee, Michael
Subject: Comanche Peak RCOL Chapter 2.4.13 - RAI Number 145
Attachments: RAI 4315 (RAI 145).doc

The NRC staff has identified that additional information is needed to continue its review of the combined license application. The NRC staff's request for additional information (RAI) is contained in the attachment. Luminant is requested to inform the NRC staff if a conference call or public meeting is needed.

The response to this RAI is due within 35 calendar days of February 26, 2010.

Note: If changes are needed to the safety analysis report, the NRC staff requests that the RAI response include the proposed changes.

thanks,

Stephen Monarque
U. S. Nuclear Regulatory Commission
NRO/DNRL/NMIP
301-415-1544

Hearing Identifier: ComanchePeak_COL_Public
Email Number: 836

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From: Monarque, Stephen

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Request for Additional Information (RAI) No. 4315 COL Revision 1

RAI Number 145

2/26/2010

Comanche Peak Units 3 and 4
Luminant Generation Company, LLC.
Docket No. 52-034 and 52-035
SRP Section: 02.04.13 - Accidental Releases of Radioactive Liquid Effluents in Ground and Surface Waters
Application Section: FSAR Section 2.4.13

QUESTIONS for Hydrologic Engineering Branch (RHEB)

02.04.13-5

NUREG-0800, Standard Review Plan (SRP), Chapter 2.4.13, 'Accidental Releases of Radioactive Liquid Effluents in Ground and Surface Waters,' establishes criteria that the NRC staff intends to use to evaluate whether an Applicant meets the NRC's regulations.

By letter dated October 5, 2009, the NRC staff issued RAI ID 3673 (RAI No. 116) Question Number 14273 (02.04.13-1), in which the NRC staff asked “Provide a description of the development of alternate conceptual models of the site and the process used in the selection of the most conservative and plausible pathway taking into consideration changes that will occur to site hydrology as a result of site alterations during construction.”

The applicant responded in document CP-200901565-Log No TXNB-09068-(ML093230229) executed on November 16, 2009. The NRC staff has reviewed the response, as well as portions of Updated Tracking Report No. 4 referenced in the response, and has determined that additional information is needed in order to complete its review.

Similar to the applicant’s response to RAI 3672 (RAI No. 114), this response does not adequately illustrate and discuss construction alterations, and the impact to the groundwater and surface water systems (e.g., groundwater levels and flowpaths). The NRC staff notes that SRP 2.4.13 states that alternative conceptual models should be developed and analyzed based on geologic and hydrologic characteristics of the site.

In order to make its safety determinations based on consideration of conservative parameters and scenarios for the transport of accidentally released radioactive liquid effluents, the NRC staff requests that the applicant provide conceptual models and selections for bounding sets of pathways that produce the most adverse contaminant concentrations to receptors in the analysis. Specifically the vertical migration pathway to the Twin Mountains Formation should be evaluated and calculations conducted to estimate potential concentrations at wells within the Twin Mountains Formation.

This is supplemental RAI 2.4.13-00-S.

02.04.13-6

NUREG-0800, Standard Review Plan (SRP), Chapter 2.4.13, 'Accidental Releases of Radioactive Liquid Effluents in Ground and Surface Waters,' establishes criteria that the NRC staff intends to use to evaluate whether an Applicant meets the NRC's regulations.

By letter dated October 5, 2009, the NRC staff issued RAI ID 3673 (RAI No. 116) Question Number 14274 (02.04.13-2), in which the NRC staff asked “In order to demonstrate compliance with the requirements of providing adequate protection to water users, discuss the potential for preferential flowpaths and vertical migration and provide conservative evaluations and discussion of the potential for flow to offsite wells (displayed on Figure 2.4.-205). Also provide data and discuss the applicability of using the calculations performed as part of the FSAR for Units 1 and 2 as the basis to eliminate conceptual models of vertical groundwater flow through the Glen Rose to offsite wells in the Twin Mountains Formation from Units 3 and 4.”

The applicant responded in document CP-200901565-Log No TXNB-09068-(ML093230229) executed on November 16, 2009. The NRC staff has reviewed the applicant's response and has determined that additional information is needed in order to complete its review.

The NRC staff notes that offsite groundwater wells located within the Twin Mountains Formation could be potential receptors of groundwater flowing from the site. The applicant’s response to this RAI seeks to eliminate the vertical pathway to the Twin Mountains Formation based on analyses performed as part of the Comanche Peak Nuclear Power Plant, Unit 1 and 2 evaluations and included in the Units 1 and 2 FSAR. However, these calculations showed that flow to wells within the Twin Mountains Formation was possible within approximately 400 years and that the resultant concentration of 137-Cs was above the 10 CFR Part 20 Appendix B Effluent Concentration Limits (ECL), despite the 400 year travel time. In addition, vertical migration calculations conducted for Units 1 and 2 do not appear to incorporate conservative, site specific conditions encountered at Units 3 and 4. Through review of information published by the U.S. Geological Survey (USGS) and the Texas Water Development Board (TWDB), the NRC staff has determined that since the construction of Units 1 and 2, water levels within the Twin Mountains Formation have fallen below the top of the Twin Mountains Formation in the area of the site, creating a downward gradient and the potential for a downward flow. As a result of these findings, the staff believes that site specific porosity measurements, distances between the bottom of the tanks and Twin Mountains Formation, vertical gradients and tank source terms are different for Units 3 and 4 than for Units 1 and 2.

In order to make its safety determination based on consideration of conservative parameters and alternate scenarios for the transport of accidentally released radioactive liquid effluents, the NRC staff requests that the applicant perform an analysis to determine the impact of vertical migration of an accidental effluent release from Units 3 and 4 to the nearest offsite groundwater receptor within the Twin Mountains Formation. Conservative estimates or measurements of groundwater levels, hydraulic conductivity, effective porosity, flow directions and other hydraulic parameters for the Twin Mountains Formation should be presented and appropriately incorporated into this vertical transport analysis. The applicant is also requested to confirm that receptor concentrations resulting from this analysis comply with Effluent Concentration Limits.

This is supplemental RAI 2.4.13-01-S.

02.04.13-7

NUREG-0800, Standard Review Plan (SRP), Chapter 2.4.13, 'Accidental Releases of Radioactive Liquid Effluents in Ground and Surface Waters,' establishes criteria that the NRC staff intends to use to evaluate whether an Applicant meets the NRC's regulations.

By letter dated October 5, 2009, the NRC staff issued RAI ID 3673 (RAI No. 116) Question Number 14276 (02.04.13-4), in which the NRC staff asked "Provide a discussion of the assumptions and input parameters, including a table of the assumed undiluted concentration of radionuclides in the tanks at time zero, used with the RATAF code to perform the accidental liquid radioactive effluent release analysis for Comanche peak Nuclear Power Plant, Units 3 and 4 and demonstrate the conservative nature of site-specific parameters in the model input. Please specifically discuss the conservatism of the dilution factor representing the volume of Squaw Creek Reservoir used in the RATAF analysis and the assumed travel time of 365 days."

The applicant responded in document CP-200901565-Log No TXNB-09068-(ML093230229) executed on November 16, 2009. The NRC staff has reviewed the response and has determined that additional information is needed in order to complete its review.

The applicant's response states that this is a DCD related issue and therefore the requested information was not provided to the NRC staff. In a phone call with the US-APWR DCD Applicant on January 20th, 2010, the US-APWR DCD applicant agreed to calculate initial tank concentrations based on 1 percent failed fuel and revise US-APWR DCD Table 11.2-17 to include these concentrations for each tank identified in the table. As such, the COL Applicant is requested to confirm that these revised values were used in the effluent release calculations to calculate concentrations at all receptors identified in the FSAR.

The NRC staff disagrees with the applicant's use of 100 percent instantaneous dilution in the Squaw Creek Reservoir for the horizontal migration scenario since the method does not demonstrate the required level of conservatism. The NRC staff also requests that the applicant present and discuss in the COL application the conservative nature of the value used as the site specific dilution factor.

Using the applicant's parameters and assumptions provided in Table 2.4.12-211 the travel time from the release tank to the Reservoir was estimated by staff to be 189 days for Scenario 2 Pathway 4a. This is more than 10 times faster than the applicant's estimate and much less than the 365 days assumed in the US-APWR DCD generic calculation that the applicant's evaluation references and is dependent upon.

In order to make its safety determination based on consideration of conservative parameters, the NRC staff requests the following information.

1) Provide revised initial concentrations in the tank used in the accidental effluent release analysis and confirm that the tank has highest concentration and volume as required.

2) Explain the conservative nature of the value used as the site specific dilution factor and use conservative site specific estimates of travel times to potential receptors as well as conservative methods to apply the estimates of dilution, where applicable, in the calculation of contaminant concentrations at receptor locations. Sound justifications for the assumptions used in the evaluations should be provided.

3) Provide estimates of contaminant flux into the reservoir from lateral groundwater discharge. This flux information should be used in conjunction with surface water evaluations to determine the concentration and potential exposure through surface water at offsite locations downstream of the Squaw Creek Reservoir Dam.

This is supplemental RAI 2.4.13-03-S.