PMComanchePeakPEm Resource

From: Monarque, Stephen
Sent: Wednesday, July 28, 2010 8:44 AM
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Cc: ComanchePeakCOL Resource; Reyes, Ruth
Subject: Comanche Peak RCOL Chapter 6, Section 6.4 - RAI Number 172
Attachments: RAI 4678 (RAI 172).docx

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 is needed.

The response to this RAI is due within **35** calendar days of July 28, 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
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From: Monarque, Stephen

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Request for Additional Information (RAI) No. 4678, COLA Revision 1

RAI Number 172

7/28/2010

Comanche Peak Units 3 and 4
Luminant Generation Company, LLC.
Docket No. 52-034 and 52-035
SRP Section: 06.04 - Control Room Habitability System
Application Section: FSAR sections 6.4 and 13.5.2.1

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

06.04-8

This is a follow-up to RAI 3451 (RAI No 77) Question No. 06.04-6.

Part I

The NRC staff requested that in responding to Question No. 06.04-6 and revising the FSAR, that the applicant establishes a consistency with the following regulatory positions:

Regulatory Position C.5 "Emergency Planning" of Regulatory Guide 1.78;
Regulatory Position 2.5 "Hazardous Chemicals" of Regulatory Guide 1.196;
Regulatory Position 2.2.1 "Comparison of System Design, Configuration, and Operation with the Licensing Bases" of Regulatory Guide 1.196; and
Regulatory Position 2.7.1 Periodic Evaluations and Maintenance of Regulatory Guide 1.196.

In its response, the applicant stated:

> "…The FSAR 6.4 commitment to RG 1.196 and RG 1.78 includes commitments to all applicable regulatory positions contained therein, including regulatory positions 2.5, 2.2.1, 2.7.1 of RG 1.196 and C.5 of RG 1.78 and any periodic survey recommendations.
>
> As such, these positions will be addressed by Operating and Emergency Operating Procedures, as appropriate, per COLA FSAR 13.5.2.1."

The level of detail provided is not sufficient to make a safety finding. For example, the reference to RG 1.196 is not invoked in any other part of the US-APWR DCD, Revision 2. A short description is needed in the COLA FSAR explaining how the procedures and training will address the noted regulatory positions. The staff requests that the COL applicant amend the FSAR to provide a short description of how the training and procedure will address these regulatory positions.

Part II

The staff closed RAI 3451 (RAI No. 77) Question No. 06.04-6 with the following request for additional information: "*Please include a discussion any arrangements that will be in place for notification of the control room when a release has occurred."*

The applicant did not respond to this part of the staff's request for additional information in its RAI response. The staff again requests that the COL applicant provide this information.

06.04-9

1. Credit being taken for the chemical hazard calculation to support the statement as described in Sec. 6.4.4.2 of COLA Part 2. FSAR

Do any of the calculations credit design features, such as an elevated control room intake, to keep the chemical concentration in the control room below the IDLH (Immediately Dangerous to Life and Health) levels? If so, provide a description in the FSAR of design features credited in the design basis analysis.

2. Justification of HABIT input data – solar radiation and air and ground temperatures

Justify the data used in HABIT analysis, specifically, the solar radiation that will represent the site, while air and ground temperatures, to be consistent with the temperature as shown in the site characteristics table (FSAR Table 2.0-1R).

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3. Demonstration of conservatism for the selection of Pasquill stability class and wind speed in the HABIT analysis

FSAR Sec. 6.4.4.2 states that the meteorological condition assumed for the analysis is conservatively set at G stability and 2.5 m/s wind speed. Provide HABIT run results to demonstrate that the selected data set is conservative.

4. Demonstration of peak chemical concentration in main control room obtained from HABIT run for all chemical release hazards under analysis.

FSAR Sec. 6.4.6 concludes that no instrumentation to detect and alarm is required. This conclusion is based on the HABIT run that no hazardous chemical concentrations will exceed the IDLH. To demonstrate that the IDLH has not been exceeded, it is important to verify that the HABIT calculation has not terminated before the peak concentration has occurred. Please verify that the HABIT calculations show the concentration has peaked and is decreasing (or has leveled-off) before the calculation has terminated. Provide the numeric output of the portion of HABIT run that demonstrates the peak chemical concentration in main control room has been calculated.

06.04-10

New follow-up RAI

This is a follow-up RAI to RAI 3451 (RAI Number 77) Question No. 06.04-4 and consists of three Parts:

Part I

The EXTRAN inputs cite a MCR height of 14.3 meters (i.e. 46.9 feet). The staff's review of US-APWR DCD Revision 2 Figure 6.4-5 and Figure 6.4-6 indicates that the Main Control Room fresh air intakes are at an elevation of between 50'2" and 65'0". The staff requests additional information that explains this apparent mismatch of EXTRAN input from information contained in the DCD. Either the DCD should be amended or the information used in the EXTRAN analysis should be amended to correct this perceived mismatch.

Part II

The staff notes that the applicant used an EXTRAN input parameter of 25ºC for the Storage and Air Temperature. The regulatory position of 3.3 "Atmospheric Dispersion" from Regulatory Guide 1.78 Revision 1 reads that

> "Irrespective of the dispersion model or the analysis tool used, the value of the atmospheric dilution factor between the release point and the control room that is used in the analysis should be that value that is exceeded only 5% of the time."

The staff's review of Revision 1 of the applicant's COLA FSAR Chapter 2 does not support the applicant's decision to use 25ºC (77ºF) as the value for the Storage and Air Temperature. Please verify that 25 C is the 5% exceedance value.

Part III

The staff notes that the applicant's answer to RAI 3451 (RAI No. 77) Question No. 06.04-4 includes two different flow rates into the control room envelope (CRE).

Intake Flow rate: 1,800 cfm (0.8495 m^3/second)
Additional Infiltration Rate: 120 cfm (0.05663 m^3/second).

The staff notes that the 120 cfm flow rate value corresponds to a pressurized CRE in response to radiological control event. Explain why this in-leakage value would correct or be conservative for use in a toxic gas accident response and justify the values selected. If you are crediting of assuming some sort of operator action, please explain what would direct the operators to take such action.

06.04-11

This is a follow-up RAI to RAI No. 3968 (RAI No. 25) Question 06.04-7 and consists of two Parts:

Part I

The staff found that the applicant's response to Question 06.04-7 includes an analysis of the CRE asphyxiation hazard (i.e. toxic gas) from the refrigerant charge only. However, the potential for toxic chemicals in the refrigerant oil was not addressed. The staff requests that the COL applicant amend its response to reflect this threat to the CRE habitability from the aspect of a toxic gas hazard to the Control Room operators.

Part II

The staff notes that the applicant's response implies that the US-APWR DCD design will include; (1) a dedicated ventilation purge exhaust system to remove a massive freon/refrigerant oil dump directly to the room from the housed chiller; and (2) pressure relief device to safely relieve pressure buildup due to a fire or other abnormal conditions and the relief discharge is piped outside the system. The applicant implies that both the non-essential chillers in the Auxiliary Building and the essential chillers in the Power Source Building will have these dedicated systems. However in US-APWR DCD RAI No. 338-2325 Question No. 06.04-6, the DCD applicant, MHI, only commits to add these plant design enhancements for the non-essential chillers of the Auxiliary Building. As such, the COL applicant's response is in error with this implication. The staff requests that the COL applicant provide an amended response to correct this error and address the staff's concerns about public health and safety from a massive refrigerant release laced with refrigerant oil.

The staff notes that Revision 2 of the US-APWR DCD failed to include the committed to changes of DCD RAI No. 338-2325 Question No. 06.04-6.