

PMSTPCOL PEmails

From: Tai, Tom
Sent: Tuesday, July 21, 2009 3:41 PM
To: John Price (jeprice@stpegs.com)
Cc: STPCOL; Mookhoek, William
Subject: Draft RAI 3220 - Chapter 3.3.1
Attachments: RAI 3220 03.03.01-xx.doc

John,

Attached for your information is a draft of RAI 3220 for Chapter 3.3.1.

Please let me know if you need a telephone conference to discuss the questions in this RAI. If I do not receive your request by July 28, this will be issued formally by letter.

Regards

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Recipients:

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Request for Additional Information No. 3220 Revision 2

South Texas Project Units 3 and 4
South Texas Project Nuclear Operating Co
Docket No. 52-012 and 52-013
SRP Section: 03.03.01 - Wind Loading
Application Section: 03.03.01

QUESTIONS for Structural Engineering Branch 2 (ESBWR/ABWR Projects) (SEB2)

03.03.01-***

Question 12852

The supplement of Section 3.3.1.1 Design Wind Velocity of the STP 3 and 4 COL FSAR states that: "The 177 km/h for 50 year recurrence interval and 197 km/h for 100 year recurrence interval are based on Reference 3.3-1, which is "fastest mile". Per Reference 3.3-4 Table 1609.3.1, these correspond to a wind velocity (3 second gust) of 203 km/h with a recurrence interval of 50 years and 225 km/h with a recurrence interval of 100 years." Discuss and justify the applicant's rationale for asserting that the above quoted 177 km/h for 50 year recurrence interval and 197 km/h for 100 year recurrence interval pertain to the "fastest mile" basic wind velocities.

Also confirm that the equation used by STP 3 and 4 COLA FSAR in converting wind velocity (fastest mile) to wind velocity (3 second gust) is identical to Equation 16-34 listed in Section 1609.3.1 of the International Building Code (2006). The staff could not exactly verify the 3 second gust wind velocities of 203 km/h and 225 km/h reported in the applicant's supplement and needs additional clarification.

03.03.01-***

Question 12853

With respect to the information presented in Appendix 3H.6.2, discuss the technical basis for adopting a simplified approach, for the conceptual design of the UHS basin and the pump house of each unit, by applying the free-field peak ground motion acceleration of 0.15g in the two horizontal (N-S and E-W) directions and the vertical direction, ignoring the effects of seismic soil structure interaction (SSI). Discuss the basis for using a 10% amplification factor for the cooling towers and an acceleration of 0.165g applied in the three directions. Discuss how the Hydrodynamic effects of the water in the basin were considered. Also provide a detailed discussion describing how the so-called final seismic analysis of the UHS structure will comply with the applicable acceptance criteria of SRP Sections 3.7 and 3.8. Additionally, indicate the updating status of the FSAR in accordance with 10 CFR 50.71(e) which was tentatively scheduled to be submitted by the second quarter of 2009 for staff review.

03.03.01-***

Question 12855

With respect to the site-specific supplement related to COL License Information Item 3.1, the applicant states that, "The site-specific design basis wind does not exceed the design basis wind given in Table 2.0-1 of the reference ABWR DCD." Provide a justification including a comparative velocity data to support the STP assertion that the site-specific design basis wind velocities do not exceed the design basis wind velocities given in Table 2.0-1 of the reference ABWR DCD.

03.03.01-***

Question 12856

With respect to the supplement listed in Section 3.3.3.3, provide more detailed discussion of the approaches and analyses to be used by STP to ensure that SSCs not designed for wind loads are analyzed and checked to ensure that their mode of failure will not affect the ability of safety-related SSCs to perform their intended safety functions. Also, discuss the codes and standards (e.g., ASCE-SEI 7-05) that will be used to ensure realization of an expected SSC performance outcome. The discussion should refer to pertinent SRP acceptance criteria or guidance that were relied upon in performing the analyses.

03.03.01-***

Question 12858

With respect to the site-specific supplement provided in STP 3 and 4 FSAR Section 3.3.3.3 to address COL license information item 3.3, the applicant has committed to design the remainder of SSCs based on an importance factor "I" of 1.11. ASCE 7-05, Chapter 6 Wind Loads, Table 6-1 specifies an importance factor of 1.15 for hurricane prone regions. The factor $I=1.15$ converts wind speed to a 100 year recurrence period, which is consistent with the design of Seismic Category I SSCs. As the proposed factor of 1.11 is not a part of ASCE 7-05, the Applicant is requested to justify the use of the importance factor of 1.11 instead of 1.15. In addition, the Applicant is also requested to specify the remaining parameters of the basic wind equation used to determine the building wind loads.

03.03.01-***

Question 12859

STP Units 3 and 4 COLA FSAR, Tier 2, Section 2.3S.1.3.3 does not explicitly discuss the hurricane wind speeds. The 100 year return period value required per SRP Section 2.3 is presumed to include hurricane wind speed. According to the data described in Section 2.3S.1.3.3 (FSAR), there have been 5 hurricanes of Category 4 and 5 in 155

years in the site region. General Design Criteria 2 of 10CFR 50 Appendix A requires the Applicant to consider the effects of the most severe of the natural phenomena historically reported. Please justify that the basic wind velocity interpolated from ASCE 7-05, Figure 6-1A in fact covers the most severe hurricanes historically reported

03.03.01-***

Question 13159

In COLA FSAR/Tier 2, Revision 2, Sections 2.3S.1.3.1 and 3.3.1, the Applicant has provided the procedures and parameters of wind design. Wind parameters are given for 50 and 100 years Mean Recurrence Intervals (MRI). According to SRP 2.3.1, Section II Acceptance Criteria, SRP Acceptance Criteria 4, the Seismic Category I structures shall be designed to withstand the 100 year return period 3-second gust wind speed. Therefore, the Applicant is requested to confirm that the site-specific Seismic Category I SSCs including the UHS structure will be designed to withstand the 100 year MRI 3-second gust winds.

03.03.01-***

Question 13160

With respect to the supplement provided in Section 3.3.1.2 of the STP 3 and 4 FSAR related to the applied forces and the procedures used to determine the wind loading on the UHS structure, since ASCE/SEI 7-05 (SRP Section 3.3.1 SRP Acceptance Criteria) changed the definition of Exposure D compared to ASCE 7-1990 (Reference 3.3-1 in ABWR DCD), please ensure that the correct exposure coefficient is used for STP site-specific structures including the UHS structure. As exposure D is more representative of STP site conditions, justify if another exposure (not D) is used to determine the wind loads.