

## PMSTPCOL PEmails

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**From:** Tai, Tom  
**Sent:** Wednesday, February 08, 2012 2:22 PM  
**To:** Price, John E  
**Cc:** STPCOL  
**Subject:** RE: STP Review Guide Comments R2.docx  
**Attachments:** STP Review Guide Comments R3.docx

Please use this.

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**From:** Tai, Tom  
**Sent:** Monday, February 06, 2012 10:25 AM  
**To:** 'Price, John E'  
**Cc:** STPCOL  
**Subject:** RE: STP Review Guide Comments R2.docx

John,

Attached is the latest summary list of comments/questions. The only change is the addition of the last item that Samir asked several weeks ago: review of the recent Information Notice 11-20.

Please replace the previous version with this.

Regards

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**From:** Tai, Tom  
**Sent:** Friday, February 03, 2012 11:07 AM  
**To:** 'Price, John E'  
**Cc:** STPCOL  
**Subject:** STP Review Guide Comments R2.docx

John,

Attached for your use is a summary list of the comments/questions we have on the reviewer's guide (advanced copy of Rev 7). Please share with S&L and we can discuss during upcoming Wednesday calls for either concurrence/acceptance, or clarification, or plan to resolve during the February 27 audit.

Regards

Tom Tai  
(301) 415-8484

**Hearing Identifier:** SouthTexas34Public\_EX  
**Email Number:** 3272

**Mail Envelope Properties** (0A64B42AAA8FD4418CE1EB5240A6FED160DF182F7D)

**Subject:** RE: STP Review Guide Comments R2.docx  
**Sent Date:** 2/8/2012 2:21:42 PM  
**Received Date:** 2/8/2012 2:21:46 PM  
**From:** Tai, Tom

**Created By:** Tom.Tai@nrc.gov

**Recipients:**  
"STPCOL" <STP.COL@nrc.gov>  
Tracking Status: None  
"Price, John E" <jeprice@STPEGS.COM>  
Tracking Status: None

**Post Office:** HQCLSTR02.nrc.gov

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MESSAGE	1096	2/8/2012 2:21:46 PM
STP Review Guide Comments R3.docx		34615

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

### Comments on 3.7

1. Page 3.7-3, Paragraph 3.7.2.8, Third Bullet: Seismic input motions for all II/I structural design should be included in the FSAR by reference to Figures including the Service Building (SB).
2. Page 3.7-4, Bulleted Items: Seismic input motions for all II/I stability evaluation should be included in the FSAR by reference to Figures including SB and TB.

### Comments on 3A

1. Page 3A-8, Paragraph 3A.21: Provide some discussion of why the confirmatory SSSI analyses performed for inter building soil pressure using SM is adequate (i.e., why Fig. 3A-301 & 302 acceptable). 3H.10 should specifically address this issue for standard plant structures.

### Comments on 3C

1. Page 3C-1, Paragraph 3C.1: Other structures e.g., DGFOSV and DGFOT should be included in addition to UHC/RSW Tunnel

### Comments on 3H

1. Page 3H-4, First Line: Delete "it" in this sentence.
2. Page 3H-7, Fourth Bullet from the Bottom: Would the criteria for II/I evaluation include Hurricane?
3. Page 3H-7, Second Bullet from the Bottom: Is the resulting SSE response spectra (which includes the effect of nearby structures) defined at the foundation level or the free surface? Conflict with 3H.3.5.3
4. Page 3H-8, Second Sentence: Delete "a" (editorial).
5. Page 3H-9, Paragraph 3H.3.4.1: May need to include Hurricane RG
6. Page 3H-10, Paragraph 3H.3.4.3: What is the pour temperature and normal operating temperature band? How are they factored in the design? How are changes in ambient temperature considered for design of other structures? UHS specifies range of ambient temperature.
7. Table 3H.3-2: We need to have some explanation of first vertical mode frequency of 2.60 Hz being so different from other modes.
8. Page 3H-17, Paragraph 3H.5.3: The heading of this paragraph indicates it includes "Seismic Category I Tunnels." Specify which Category I tunnels?
9. Page 3H-19, Paragraph 3H.6.2: Would the Table 3H.9-1 include identification of Hurricane load?
10. Page 3H-34, Item b: This paragraph references Figure 3H.6-3 which does not exist.
11. Page 3H-36, Paragraph 3H.6.5.1.3: This section does not include all site-specific Category I structures.
12. Page 3H-45, Paragraph 3H.6.5.2.12: Editorial. Revise the sentence.

13. Page 3H-49, Eleventh Bullet from the top: From the Figures, seismic demand at some locations appears to exceed design value. These increases need to be addressed in the FSAR.
14. Page 3H-51, Second Paragraph: This paragraph discusses the method for obtaining envelope of the seismic acceleration for structural design. We need a summary discussion of addressing the DNFSB issue relative to margin analysis here or referencing to appropriate sections where margin analysis was discussed.
15. Page 3H-52, Fourth Bullet from the bottom: Surcharge pressure is indicated as 300 psf. This is not consistent with a surcharge pressure defined later as 500 psf on Page 3H-54.
16. Page 3H-56, Paragraph 3H.6.6.3.2: Need discuss how DNFSB issue was addressed for beam and column design in the FSAR
17. Page 3H-58, Paragraph 3H.6.7: Concerning establishing the input motion for DGFOVS SSI analysis, there is no discussion as to how DNFSB issue was addressed.
18. Page 3H-68, Paragraph 3H.7.3: Figure reference 3H.6-221 may not be the correct reference.
19. Page 3H-79, First Paragraph: FSAR needs to discuss why amplified input is still OK in view of DNFSB issue.
20. Page 3H-80, Second Paragraph: why only +30% and also not -30%?
21. Page 3H-84, Paragraph 3H.10: FSAR should have basis of why use of amplified input spectra (based on SM) is still acceptable in view of DNFSB issue for DGFOT and DGFOVS.
22. Paragraph 3H.10 Page 3H-85: Under the four bullets in discussion of "SSI Soil Pressure used in Structural Design" provide the reference Figure numbers where these information is provided. In addition for RSW Piping Tunnel, clarify if the SSI soil pressure is based on amplified input which accounted for DNFSB issue?
23. Page 3H-85, Last Three Bullets from the bottom: Need to conclude in the FSAR that because DM or MSM acceleration was used for these buildings no further evaluation is necessary.

#### Other Comments

1. The FSAR does not have plans and sections of the various structures with dimensions of major elements. Also, many of the Figures are not properly labeled to uniquely identify them. Also, it is difficult to identify from the FSAR the locations of many reinforcement zones included in the FSAR. All FSAR Figures need to be reviewed to ensure they are properly labeled. PLI 153 did not appear to capture the issue.
2. FSAR Fig.3H.1-4 and 3A-301 appear to refer to the lateral seismic soil pressure comparison for RB North wall. They appear to look different.
3. Section 3H.6.4.3.1.4 Lateral Soil Pressure (H): Not clear why seismic soil pressure Figures are referred here. Also refer to Section 3H.6.4.3.3.3, Lateral Soil Pressures Including the Effects of SSE (H'). These two sections refer to different Figures for design UHS/RSW Pump

House. The FSAR should clearly describe the various lateral soil pressure diagrams for all structures with explanations, as necessary, of how the soil pressures are developed and used.

4. The driving lateral pressure diagrams for the RSWT and DGFOVS were not found in the FSAR.

5. Any exceedances of design lateral pressures by the SSSI pressures should be addressed. For example, lateral pressures for RSW piping tunnel resulting from the SSI analysis "Soil Separated Case" show a pronounced peak between 22ft and 24ft depth that exceeds the design pressure of the East and West walls by a factor of two (Figs. 3H.6-212 and 213). Figs. 3H.6-213 through 217 do not have the design pressures shown. It is not clear how the design pressures compare with these pressures.

6. Stability Evaluation:

The FSAR does not describe how stability evaluations for the various category I structures were performed. Fig 3H.6-137 shows the various components considered in the evaluations, and refers to Section 2.5S.4.10.5 for computation of  $E_s$ . Please clarify the various components of driving and resisting pressures used (e.g., soil dynamic surcharge pressure).

Stability evaluation (Section 3H.6.6.5) for each structure should describe how the three direction seismic forces were considered in the evaluation, and if not considered, the reason for it.

Response RAI 03.07.02-13, Supplement 4 attempted to conclude that the seismic sliding force and overturning moments from SSI are less than the seismic sliding forces and overturning moments used in the stability analysis. However, from review of the response, it appears that the seismic demand calculated by integrating the nodal forces at the entire boundary as shown in Fig. 03.07.02-13 S4.1 will cancel out the dynamic soil pressures on two sides of the structure leaving only the seismic demand due to inertia of the structure. It is not clear how this demonstrates that the seismic sliding forces and overturning moments used in stability evaluation are greater than those from the SSI analysis. Any magnitude of driving lateral pressure from the SSI analysis will have a corresponding resisting pressure on the other side, and integrating them will result in cancelation of the seismic soil pressure term. This will lead to underestimation of the required resisting soil pressure.

7. DGFOT Stability Evaluation

FSAR Table 3H.7-2, Note (3) states that calculated safety factors consider full passive pressure. Development of full passive pressure may induce significant displacement of the tunnel locally. Such displacement may potentially induce bending along the length of tunnel. Please confirm if this was considered in design. Though not as significant, RSW Tunnel also should consider this.

8. Alkali Silica Reaction

The concrete design code of reference for STP is ACI-349-97. ACI code provisions, Section 3.3.4.1, require that tests for full conformance with the appropriate specification, including tests for potential reactivity, shall be performed prior to usage in construction. Although ACI-349-97 references ASTM C 289-81 for testing potential reactivity of aggregates (chemical). ASTM C289-81 does not reference the updated standards, namely C1260 and C1293. The COL applicants (and or licensees) have been informed through IN 2011-20 to consider conducting the appropriate additional tests for detecting late- or slow-expanding aggregates. Therefore, it appears that STP FSAR should address the issue.