

## PMSTPCOL PEmails

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**From:** Wunder, George  
**Sent:** Tuesday, February 14, 2012 3:43 PM  
**To:** STPCOL  
**Subject:** FW: Section 3.7 & 3.8 Actions - Updated February 14, 2012  
**Attachments:** 3.7 & 3.8 Punch List 021412.pdf

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**From:** Price, John E [<mailto:jeprice@STPEGS.COM>]  
**Sent:** Tuesday, February 14, 2012 3:19 PM  
**To:** Tai, Tom  
**Cc:** Thomas, Brian; Wunder, George; Chakrabarti, Samir; Chakravorty, Manas; 'Mansour Tabatabaie'; Head, Scott; Mookhoek, William; Chappell, Coley  
**Subject:** Section 3.7 & 3.8 Actions - Updated February 14, 2012

Tom,

The attached document, *3.7 & 3.8 Punch List 021412*, provides scope and status for all known actions required for FSAR Sections 3.7 and 3.8. This document will be used on our weekly telephone conference. The next call is scheduled for Wednesday, February 15, 2012.

We have updated the Punch List to reflect the status of the new items. We have indicated which items have been closed with no NINA action required, those that will be resolved via COLA mark-up, and those that we need to discuss on Wednesday (highlighted in yellow).

Please do not hesitate to contact me with any questions or clarifications. Regards,

*John E. Price*

*Licensing Engineer - STP Units 3 & 4*

*972.754.8221 (cell)*

**Hearing Identifier:** SouthTexas34Public\_EX  
**Email Number:** 3268

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**Subject:** FW: Section 3.7 & 3.8 Actions - Updated February 14, 2012  
**Sent Date:** 2/14/2012 3:43:24 PM  
**Received Date:** 2/14/2012 3:42:58 PM  
**From:** Wunder, George

**Created By:** George.Wunder@nrc.gov

**Recipients:**  
"STPCOL" <STP.COL@nrc.gov>  
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| <b>Files</b>                    | <b>Size</b> | <b>Date &amp; Time</b> |
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| MESSAGE                         | 1071        | 2/14/2012 3:42:58 PM   |
| 3.7 & 3.8 Punch List 021412.pdf |             | 107811                 |

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Punch List for South Texas Project Units 3 & 4  
Sections 3.7 & 3.8

| Punch List Item | AI No. | C/I | Action Item Description  | Responsible Engineer | RAI   | Letter to NRC | NRC Review                                  | NINA Action |  | NRC Action |  | Action Closed |  | Closed after Phone Call |  |
|-----------------|--------|-----|--|----------------------|---|---------------|---|-------------|--|------------|--|---------------|--|-------------------------|--|
|                 |        |     |  |                      |   |               |   |             |  |            |  |               |  |                         |  |
| 1               |        |     | Mesh sensitivity<br>Reviewed during March Audit  |                      | 03.07.02-25, R1<br>03.07.02-29, R1<br>03.07.02-22 | 3/15/11       | May Audit<br>3.7 - D.                       |             |  |            |  |               |  |                         |  |
| 2               |        |     | Provide ITAAC to close 10CFR21 issue related to dynamic analysis of the Turbine Building   |                      | 03.07.02-28                                       | 3/15/11       | May Audit<br>3.7 - D.                       |             |  |            |  |               |  |                         |  |
| 3               | N/A    |     | Provide ITAAC to close 10CFR21 issue related to dynamic analysis of the Turbine Building   |                      | 03.07.02-31                                       | 3/28/11       | May Audit<br>3.7 - D.                       |             |  |            |  |               |  |                         |  |
| 4               |        |     | Site Specific Seismic Analyses of Radwaste Building<br><ul style="list-style-type: none"> <li>• Amplified input motion considering the effect of nearby Reactor Building</li> <li>• Fixed base seismic analysis for determination of seismic SSE forces for II/I design</li> </ul> Not Audited by NRC<br>NRC Complete Audit              |                      | N/A   | N/A           | May Audit<br>3.8 - C. 13.1<br>3.8 - C. 13.2 |             |  |            |  |               |  |                         |  |
| 5               | 3.7-1  |     | NRC would like to have an ITAAC for II/I design in addition to the current discussions in COLA, RAI 03.07.02-20  |                      | 03.07.02-20 S1                                    | 4/13/11       | May Audit<br>3.7 - D.                       |             |  |            |  |               |  |                         |  |
| 6               | 3.7-3  |     | Check RSW Piping Tunnel SSI analysis description to see if it fully describes how the motion at various points of tunnel were addressed and/or amplified   |                      | 03.07.01-27 S3                                    | 5/17/11       | May Audit<br>3.7 - D.                       |             |  |            |  |               |  |                         |  |
| 7               | 3.7-4  |     | Check DGFOF VAULT SSI analysis description to see if it fully describes how the motion at various points of vault were addressed/amplified   |                      | 03.07.01-27 S3                                    | 5/17/11       | May Audit<br>3.7 - D.                       |             |  |            |  |               |  |                         |  |
| 8               |        | 9   | Provide additional description in COLA, as needed. See Item 3.7-22<br>In DGFOFV calculation for SSI analysis, U7-CALC-DSN-6001, Rev. B, the refined model spectra values are 14.6% higher at 3.8 Hz. than those in the base model. The applicant is requested to provide justification for reconciling this difference.                  |                      | 03.07.01-27 S1 R1                                 | 3/7/11        | May Audit<br>3.7 - D.                       |             |  |            |  |               |  |                         |  |
| 9               | 3.7-5  |     | Clarification Issue 9. No further action, answered on a previous RAI<br>Check DGFOF TUNNEL SSI analysis description to see if it fully describes how the motion at various points of tunnel were addressed and/or amplified.   |                      | 03.07.01-27 S3                                    | 5/17/11       | May Audit<br>3.7 - D.                       |             |  |            |  |               |  |                         |  |
| 10              | 3.7-6  | 2   | Provide additional description in COLA, as needed. See Item 3.7-22<br>Identify soil cases used for all SSSI analysis, and provide basis.   |                      | 03.07.01-27 S3                                    | 5/17/11       | May Audit<br>3.7 - F. f.                    |             |  |            |  |               |  |                         |  |
| 11              | 3.7-8  | 2   | As a minimum for All SSSI anlysis upperbound and upperbound backfill should be considered. Review COLA markup for consistency with soil cases analyzed.<br>Why for SSSI of RSW Tunnel was UB in situ used vs UB backfill soil  |                      | 03.07.01-27 S3                                    | 5/17/11       | May Audit<br>3.7 - F. f.                    |             |  |            |  |               |  |                         |  |
| 12              | 3.7-36 | 2   | As a minimum for All SSSI anlysis upperbound and upperbound backfill should be considered. Review COLA markup for consistency with soil cases analyzed.<br>Confirm that as a minimum for All SSSI anlysis upperbound in-situ and upperbound backfill should be considered. Provide additional information in RAI response as appropriate |                      | 03.07.01-27 S3                                    | 5/17/11       | May Audit<br>3.7 - F. f.                    |             |  |            |  |               |  |                         |  |

Punch List for South Texas Project Units 3 & 4  
Sections 3.7 & 3.8

| Punch List Item | AI No. | C/I | Action Item Description   | Responsible Engineer   | RAI                              | NINA Action        |                         | NRC Action    |                          |
|-----------------|--------|-----|---|------------------------|----------------------------------|--------------------|-------------------------|---------------|--------------------------|
|                 |        |     |   |                        |                                  | Action Closed      | Closed after Phone Call | Action Closed | Closed after Phone Call  |
| 13              | 3.7-7  | 1   | Revise Appendix 3A and 3H.6 to reconcile ground water elevation with Chapter 2<br>Demonstrate that soil springs values due to groundwater elevation reconciliation do not affect foundation design<br>Demonstrate that calculated gap values are not affected by due to groundwater elevation reconciliation for settlement analysis                                    | S&L<br>Javad Moslemian | 03.07.01-27 S3                   | 5/17/11            |                         |               | May Audit<br>3.7 - F. g. |
| 14              | 3.7-10 | 3   | Clearly describing in the FSAR how seismic demand for non-seismic II/I structures for stability evaluation is determined<br>Clarify SSSI soil pressures in COLA figures to indicate that they represent envelope of all soil cases analyzed   | S&L<br>Javad Moslemian | 03.07.02-13 S3<br>03.07.01-27 S3 | 7/28/11<br>5/17/11 |                         |               | May Audit<br>3.7 - D.    |
| 16              | 3.7-11 |     | Include in FSAR the following information for the time histories developed for 0.3g, 1.60 Reg. Guide spectrum:<br>1) Development method by reference to DCD;<br>2) Plots of three acceleration time histories;<br>3) Comparison of 5% response spectra<br>Frequency/acceleration evaluation for UHS columns with and without hydrodynamic mass                          |                        | 03.07.01-2 S2                    | 4/13/11            |                         |               | May Audit<br>3.7 - D.    |
| 17              | 3.7-15 |     | Determine column accelerations for column mass and hydrodynamic mass based on column frequency and spectra at top and bottom of the columns and revise RAI 03.08.04-30 supplement 1 to report new information<br>Effect of structural mesh refinement on maximum acceleration for design  | S&L<br>Javad Moslemian | 03.08.04-30 S4                   | 6/30/11            |                         |               |                          |
| 18              | 3.7-18 |     | In the manual calculation for design of PH Roof slab, increase the vertical seismic load for PH Roof based on examination of structural mesh sensitivity results<br>Effect of structural mesh refinement on maximum acceleration for design   | S&L<br>Javad Moslemian | 03.08.04-30 S4                   | 6/30/11            |                         |               |                          |
| 19              | 3.7-2  |     | Determine if FSAR (Appendix 3C) revision is required for the use of computer programs used by Westinghouse<br>Will provide information in COLA  |                        | 03.07.01-2 S2                    | 4/13/11            |                         |               | May Audit<br>3.7 - D.    |
| 20              |        | 7   | Justify comparison of SAP2000 to ANSYS  |                        | 03.07.02-29 S1                   | 5/10/11            |                         |               | May Audit<br>3.7 - E.    |
| 21              | 3.7-28 | 6   | SASSI Validation - Run aspect ratio problem with reduced shear wave velocity in vertical direction and get transfer function at the center of the slab<br>S&L to revise the SASSI2000 test problem for two way slab action to match that by SGH.<br>Add a cautionary note to SASSI2000 release memo for users to examine transfer functions for any sign of instability |                        | 03.07.02-29 S1                   | 5/10/11            |                         |               | May Audit<br>3.7 - E.    |
| 22              | 3.7-19 |     | Provide a figure in COLA showing 0.3g Reg. Guide 1.60 spectra envelopes amplified motions for all three storage vaults  |                        | 03.07.01-27 S3                   | 5/17/11            |                         |               | May Audit<br>3.7 - D.    |
| 23              | 3.7-22 |     | Include amplified site-specific spectra for RSW Piping Tunnel, DGFOSV, and DGFO Tunnel in FSAR  |                        | 03.07.01-27 S3                   | 5/17/11            |                         |               | May Audit<br>3.7 - D.    |
| 24              | 3.7-26 |     | Confirm that DGFO tank rigidity requirement is included in the procurement specification  |                        | N/A                              | N/A                |                         |               | May Audit<br>3.7 - F. h. |

**Punch List for South Texas Project Units 3 & 4  
Sections 3.7 & 3.8**

| Punch List Item | AI No. | C/I | Action Item Description  | NINA Action            |                   | NRC Action    |   | Action Closed        |     | Closed after Phone Call |            |
|-----------------|--------|-----|--|------------------------|-------------------|---------------|---|----------------------|-----|-------------------------|------------|
|                 |        |     |  | Responsible Engineer   | RAI               | Letter to NRC | NRC Review                                  | Responsible Engineer | RAI | Letter to NRC           | NRC Review |
| 25              | 3.7-27 |     | Consolidate all 03.07.01-27 responses. Also include the spectra comparisons for what was done in the audit for cracked concrete cases. With reader's guide provided, there is no need to consolidate 3.7.1-27. Spectra comparisons will be provided.   |                        | 03.07.01-27 S3    | 5/17/11       | May Audit<br>3.7 - D.                       |                      |     |                         |            |
| 26              | 3.7-28 | 6   | SASSI Validation - Run aspect ratio problem with reduced shear wave velocity in vertical direction and get transfer function at the center of the slab<br>For Es use the SSSI pressure diagram as the driving force in the stability evaluation and using passive on the resisting side for FOS Vault, RSW Piping Tunnel, FOS Tunnel   | S&L<br>Javad Moslemian | 03.07.02-29 S1    | 5/10/11       | May Audit<br>3.7 - E.                       |                      |     |                         |            |
| 27              | 3.7-33 | 8   | Provide requested information in RAI response  | S&L<br>Javad Moslemian | 03.07.02-13 S4    | 11/23/11      |   |                      |     |                         |            |
| 28              | 3.7-35 | 8   | Confirm for FOS Vault that 'E' is more than the inertial force for amplified site-specific SSI analysis in the stability evaluation  | S&L<br>Javad Moslemian | 03.07.02-13 S4    | 11/23/11      |   |                      |     |                         |            |
| 29              |        |     | Provide requested information in RAI response<br>Perform sensitivity analysis related to Poisson's Ratio   | NRC                    | N/A               | N/A           | May Audit<br>3.7                            |                      |     |                         |            |
| 30              |        | 13  | Clarification Issue 13<br>For the Radwaste Building, provide additional information and/or justification for the following:<br>1. Design and Analysis (3H.3.5.1 & 2)<br>2. I/I Analysis and design (3H.3.5.3)<br>3. Load Combination for Shear (Steel) (3H.3.4.3.4.2)<br>4. Ultimate soil bearing capacity (3H.3.4.2.1)<br>5. Tornado Parameters (3H.3.B & 3H.3.4.3.3.1)<br>6. Flood Design (3H.3.4.2.3) |                        | N/A               | N/A           | May Audit<br>3.8 - C. 13.<br>Punch List 92  |                      |     |                         |            |
| 31              |        |     | Reviewed during March Audit  |                        | 03.08.04-18       | 3/15/11       | May Audit<br>3.8 - C. 13.2<br>Punch List 92 |                      |     |                         |            |
| 32              |        |     | Reviewed during March Audit  |                        | 03.08.04-18 R1 S2 | 3/15/11       | May Audit<br>3.8 - C. 13.4<br>Punch List 92 |                      |     |                         |            |
| 33              |        |     | Design of DGFOT including design considerations for seismic wave propagation<br>• Design inputs<br>• Structural analysis model<br>• Design of walls, floors, foundations, and other structural components<br>• Stability evaluation<br>Not Audited by NRC in March Audit   |                        | 03.08.04-30 S1    | 3/15/11       | May Audit<br>3.8 - H.                       |                      |     |                         |            |

Punch List for South Texas Project Units 3 & 4  
Sections 3.7 & 3.8

| Punch List Item | AI No. | C/I | Action Item Description   | NINA Action          |                              |               | NRC Action                              |  | Action Closed | Closed after Phone Call |
|-----------------|--------|-----|---|----------------------|------------------------------|---------------|---|--|---------------|-------------------------|
|                 |        |     |   | Responsible Engineer | RAI                          | Letter to NRC | NRC Review                              |  |               |                         |
| 34              |        |     | Design of UHS/RSW Pumphouse<br><ul style="list-style-type: none"> <li>• Design inputs</li> <li>• Structural analysis model</li> <li>• Design of walls, floors, foundations, and other structural components</li> <li>• Stability evaluation</li> </ul>  |                      | 03.08.04-30 S1               | 3/15/11       | May Audit 3.8 - A.                      |  |               |                         |
| 35              |        |     | Not Audited by NRC in March Audit<br>During the audit held on October 18 through 22, 2010, the staff noted that the applicant did not include foundation bearing pressure calculations for wind and tornado loadings for UHS/PH<br>The applicant agreed to include the bearing pressure evaluations for wind and tornado in its calculations (CALC-EORA-020, "Dynamic Bearing Capacity Analysis for the UHS Basin and RSW Pump House under Wind and Tornado Loading", Revision 0) for the UHS/PH accordingly.<br>Clarification Issue 14 | MACTEC<br>Rob Smith  | CALC-EORA-020,<br>Revision 0 | 3/12/11       | May Audit 3.8 - A.                      |  |               |                         |
| 36              |        | 14  | For all Site-Specific Category I Structures, provide additional information and/or justification for extreme wind and tornado loading (3H.6.4.3.2)<br><b>RAI 03.08.01-9</b>   |                      | N/A                          | N/A           | May Audit 3.8 - C. 14.<br>Punch List 74 |  |               |                         |
| 37              | 3.8-1  |     | +/- 25% of the gap: How does this compare to long term settlement values? Clarify if 25% movement envelopes long term settlement.<br>The 25% movement envelopes the expected long term settlement at the RB/CB interface, below flood level<br>Revise response to RAI 03.04.02-6 & 03.08.01-9 to require the testing to be the maximum of +/- 25% or long term settlement.  |                      | 03.08.01-9 S1                | 4/13/11       | May Audit 3.8 - E.                      |  |               |                         |
| 38              | 3.8-2  |     | For Section 3H.6-7 in RAI 03.08.04-17, Supplement 1, provide clarification for last line of the first paragraph.<br>(Clarify that <i>envelop of SSSI pressure and ASCE 4-98 is used.</i> )<br>Revise response to RAI 03.08.04-17 Supplement 1 to clarify that the envelop is used.  |                      | 03.08.04-17 S1               | 4/26/11       | May Audit 3.8 - E.                      |  |               |                         |
| 39              | 3.8-3  | 11  | RAI 03.08.04-28<br>Bullet 4: Show the basis for reductions in the dynamic resistance coefficients (Part C of question).<br>Explain in revised response to RAI 03.08.04-28 how values were determined (from MACTEC calculation)<br>Clarification Issue 11<br>Applicant is requested to provide a comparison between the strain ranges assumed in the above reference and the strain values expected beneath the foundation of Cat I buildings of Units 3&4.  |                      | 03.08.04-28 S1               | 4/26/11       | May Audit 3.8 - E.                      |  |               |                         |

Punch List for South Texas Project Units 3 & 4  
Sections 3.7 & 3.8

| Punch List Item | AI No. | C/I    | Action Item Description  | NINA Action          |  |               | NRC Action  |                    | Action Closed |  | Closed after Phone Call |
|-----------------|--------|--------|--|----------------------|--|---------------|---|--------------------|---------------|--|-------------------------|
|                 |        |        |  | Responsible Engineer | RAI  | Letter to NRC | NRC Review  |                    |               |  |                         |
| 40              | 3.8-5  |        | <b>RAI 03.08.04-32</b><br>NRC to compare response to other applicant responses.  |                      | N/A  | N/A           |   | Per 6/1/11 Telecon |               |  |                         |
| 41              | 3.8-6  |        | <b>RAI 03.08.01-7, Rev. 2</b><br>Review response - should the pressure loading be based on a flood height of 8' vs. 7'?<br>The pressure loading should be based on a height of 8', but this does not change the result.<br>Revise response to RAI 03.08.01-7 and related responses to clarify this.  |                      | <b>03.08.01-7 S1</b>                           | 4/13/11       | May Audit<br>3.8 - E.                                     |                    |               |  |                         |
| 42              | 3.8-7  |        | Docket the design parameters table (Agenda Item A)   |                      | N/A  | 4/18/11       | May Audit<br>3.8 - B. 1.<br>Punch List 75                 |                    |               |  |                         |
| 43              | 3.8-8  | 4<br>5 | Concrete and concrete to waterproofing friction coefficient of 0.6 is based on static, but soil coefficient of 0.47 is based on dynamic.<br>Revise RAI 03.08.04-28 or 03.08.04-19 to show revised required static coefficient of friction of concrete and membrane increased to $\geq 0.75$<br>Clarification Issue 4<br>Designate whether the friction coefficients reported in Table 3H.6-14 are static or dynamic coefficient of friction values. (Revise response to RAI 3.7.2-13 S1) |                      | <b>03.08.04-19 S1</b><br><b>03.07.02-13 S2</b> | 4/26/11       | May Audit<br>3.8 - B. 2.<br>3.8 - C. 4.                   |                    |               |  |                         |
| 44              |        | 16     | Clarification Issue 5 (No action required)<br>Clarification Issue 16<br>Provide additional information and/or justification for specified minimum static coefficient of friction at the various interfaces, specifically at the waterproofing membrane. Also, the requirement of intentionally roughening the concrete surface should be included in the FSAR.<br>Refer to Action Item 3.8-29  |                      |  | N/A           | May Audit<br>3.8 - C. 16.<br>Punch List 77                |                    |               |  |                         |
| 45              | 3.8-9  |        | S&L to evaluate method of reconciliation for soil pressure from equivalent pressure method for bearing pressure evaluation and soil pressure from finite element analysis.<br>Formally provide the proposed reconciliation method in response to RAI 3.8.4-35.   |                      | <b>03.08.04-35</b>                             | 4/11/11       | May Audit<br>3.8 - B. 3.                                  |                    |               |  |                         |
| 46              | 3.8-9  |        | S&L to perform the reconciliation evaluation<br>Formally provide the proposed reconciliation method in response to RAI 3.8.4-35.<br>Refer to Action Item 3.8-38  |                      |  | N/A           | May Audit<br>3.8 - B. 3.<br>3.8 - C. 15.<br>Punch List 93 |                    |               |  |                         |

**Punch List for South Texas Project Units 3 & 4  
Sections 3.7 & 3.8**

| Punch List Item | AI No. | C/I | Action Item Description   | NINA Action            |     | NRC Action           |  | Action Closed | Closed after Phone Call  |
|-----------------|--------|-----|---|------------------------|-----|----------------------|--|---------------|--|
|                 |        |     |   | Responsible Engineer   | RAI | Responsible Engineer | RAI                                      |               |  |
| 47              |        | 15  | Clarification Issue 15<br>Provide additional information and/or justification for foundation bearing pressures reconciliation.  |                        |     |                      |  |               |  |
| 48              | 3.8-11 |     | Review the wind loading used for design and stability calculations for the vault.<br>NRC to review the justification for the importance factor for wind pressure calculation provided in response to RAI 03.08.04-30 Supplement 1   |                        | N/A |                      | N/A                                      | N/A           | May Audit<br>3.8 - B. 3.<br>3.8 - C. 15.<br>Punch List 93      |
| 49              | 3.8-12 |     | Discuss with John Price delivery of the Reviewer's Guide to NRC   |                        | N/A |                      | N/A                                      | 4/8/11        | May Audit<br>3.8 - E.<br>Punch List 74                         |
| 50              |        | 17  | Clarification Issue 17<br>Miscellaneous Questions from Audit and Reviewers Guide  |                        |     |                      |  | N/A           | May Audit<br>3.8 - C. 17.<br>Punch List 75, 78, 79,<br>80 & 81 |
| 51              | 3.8-15 |     | DGFOSV design calculation: Confirm the tornado wind load used in design, pg. 26<br>Revise design parameters table (See Item 3.8-7).   |                        | N/A |                      | N/A                                      | N/A           | May Audit<br>3.8 - E.  |
| 52              | 3.8-16 |     | DGFOSV design calculation: Verify acceleration values on pg. 113 with Attachment B (stability).<br>B is the correct revision; reference in stability calculation will be revised in the calculation. (PIP 2011-0365)  |                        | N/A |                      | N/A                                      | N/A           | May Audit<br>3.8 - E.  |
| 53              |        | 10  | As both, the SASSI and the SAP models, should be based on the same geometry and total weight and are subject to the same absolute accelerations, it is not apparent why an additional, relatively large amplification would be needed in vertical direction to obtain comparable total base seismic loads. Therefore, the applicant is requested to provide a justification regarding the different behavior of both structural models. |                        |     |                      | 03.08.04-30 S2                           | 5/17/11       | May Audit<br>3.8 - C. 10.                                      |
| 54              | 3.8-20 |     | Use of newer version of ACI-349 & ASME Section III, Division 2 Codes, Respond to RAI 03.08.04-36  |                        |     |                      | 03.08.04-36                              | 4/11/11       | May Audit<br>3.8 - E.  |
| 55              | 3.8-21 |     | Beam shear discussion<br>Commitment to incorporate NRC feedback will be provided in an RAI Response   |                        |     |                      | 03.08.04-34                              | 4/11/11       | May Audit<br>3.8 - E.  |
| 56              | 3.8-21 |     | Beam shear discussion<br>Calculations will be revised and FSAR tables will be updated as a Confirmatory Action<br>COLA updates reflecting the results of the hydrodynamic mass effect on the columns will be included in this response (Punch List No. 17)  | S&L<br>Javad Moslemian |     |                      | 03.08.04-34 S1<br>(All but RWB & DGFOSV) | 9/12/11       |  |
| 57              | 3.8-22 |     | Attach Supplement to the release memo for SAFE (regarding shear)  |                        | N/A |                      | N/A                                      | N/A           | May Audit<br>3.8 - B. 6.                                       |



Punch List for South Texas Project Units 3 & 4  
Sections 3.7 & 3.8

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|-----------------|--------|-----|--|----------------------|-----|---------------|------------|--|---------------|--|-------------------------|
|                 |        |     |  | Responsible Engineer | RAI | Letter to NRC | NRC Review |  |               |  |                         |
| 58              |        |     | Audit Report 3.8 K. Computer Software Validation and Verification, PCACOLUMN, Version 4.10<br><br>ACI 349-97 used in STP 3&4 design is not covered by this V&V, however it was assured that results from PCAColumn are evaluated in the calcs against the special code requirements in ACI 349-97. The staff needs to review in further detail how this assurance is implemented. This will be included in the next audit. |                      | N/A | N/A           |            |  |               | May Audit 3.8  |                         |
| 59              | 3.8-23 |     | Verify that 0.21 g used in the basic design of RSW Tunnel envelopes the seismic accelerations<br><br>Provided SGH calculation showing where the enveloping accelerations came from   |                      | N/A | N/A           |            |  |               | May Audit 3.8 - B. 7.<br>3.8 - C. 12.<br><br>Punch List 82 |                         |
| 60              | 3.8-24 |     | RSW Tunnel: Confirm that soil pressures consider additional wave propagation effect<br><br>Calculation will be revised   |                      | N/A | N/A           |            |  |               | May Audit 3.8 - B. 7.<br>3.8 - C. 12.<br><br>Punch List 82 |                         |
| 61              |        | 12  | Applicant is requested to explain the apparent discrepancy with the 3,000 ft/sec shear wave velocity denoted in the COLA and a value of 6,600 ft/sec used for the wave propagation effect in the calculations calculation.   |                      | N/A | N/A           |            |  |               | May Audit 3.8 - B. 7.<br>3.8 - C. 12.<br><br>Punch List 82 |                         |
| 62              |        |     | Calculation will be clarified or revised<br>Not Used   |                      |     |               |            |  | N/A           | N/A  |                         |
| 63              |        |     | Audit report 3.8 I 8. Calculation no. U7-RSW-S-CALC-DESN-6001, Revision D, "Basic Structural Design of Reactor Service Water (RSW) Tunnel".<br><br>The staff noted that several areas of design of the tunnel were not complete at time of the audit, e.g., global tornado missile impact evaluation for the access region of the tunnel, tunnel walls in the corner region, access covers, etc.                           |                      | N/A | N/A           |            |  |               | May Audit 3.8<br><br>Punch List 102                        |                         |
| 64              | 3.8-25 |     | Revise Control Building Annex stability calculation to eliminate statement regarding design being applicable to DCD Standard Plant<br><br>Calculation will be revised  |                      | N/A | N/A           |            |  |               | May Audit 3.8 - B. 8.                                      |                         |
| 65              |        | 18  | Comments on Response to RAI 03.07.02-22<br>On the COLA Markup, Section 3H.6.6.2.1 UHS basin, UHS Cooling Tower Enclosure, and RSW Pump House, provide an explanation of the pressure distribution for the calculated seismic soil pressures on the RSW Pump House North Wall shown in Figure 3H.6-219 from 2D SSSI.  |                      |     |               |            |  |               | May Audit 3.7 - F  |                         |
| 66              |        | 19  | Comments on Response to RAI 03.07.02-24, Supplement 1, Revision 1<br>On the COLA Markup, Section 3H.6.5.3 Seismic Analysis of RSW Piping Tunnel, in the 4th bullet on the following page (Page 11 of 27), please clarify for which soil case the cracked concrete and soil separation analysis was performed. This information is not provided in the COLA markup.<br><br>Refer to Action Item 3.7-48                      |                      |     |               |            |  |               | May Audit 3.8<br><br>Punch List 98                         |                         |
| 67              |        | 20  | Comments on Response to RAI 03.07.01-27, Supplement 1, Revision 1<br>On the COLA Markup, Section 3H.6.7 Diesel Generator Fuel Oil Storage Vault (DGFOV), provide further clarifications why two different input motions are developed and used in separate SSI analyses of DGFOV   |                      |     |               |            |  |               | May Audit 3.7 - F  |                         |

Punch List for South Texas Project Units 3 & 4  
Sections 3.7 & 3.8

| Punch List Item | AI No. | C/I          | Action Item Description   | Responsible Engineer   | NINA Action |                      | NRC Action |     | Action Closed |  | Closed after Phone Call |
|-----------------|--------|--------------|---|------------------------|-------------|----------------------|------------|-----|---------------|--|-------------------------|
|                 |        |              |   |                        | RAI         | Letter to NRC        | NRC Review |     |               |  |                         |
| 68              |        | 21           | Comments on Response to RAI 03.07.02-29, Supplement 1 Post Audit Clarification Issue #6 submitted as part of the response to RAI 03.07.02-29, Supplement 1. Because the shape of the response, transfer functions are strongly dependent on the $\alpha_0$ value (e.g. as shown in Fig. 03.07.02-29 S1.6 provided with this response), the applicant is requested to extend the results of the above test problems in terms of the foundation response transfer functions (including both compliance and scattering functions) calculated using the subtraction method to $\alpha_0$ values up to at least 8. | S&L<br>Javad Moslemian |             | Update Release Memo  | 6/30/11    |     |               |  |                         |
|                 |        |              | Issue a revision to the SASSI Release Memo.   |                        |             |                      |            |     |               |  |                         |
| 69              |        | 22           | DNFSB Issues Related to the SASSI Subtraction Method<br>The Defense Nuclear Facilities Safety Board (DNFSB) issued a letter on April 8th, 2011 requesting the Department of Energy (DOE) to address technical and software quality assurance issues related to potentially erroneous seismic analyses performed using the SASSI Subtraction method. SASSI subtraction method has been used for STP application for embedded structures. As such, the applicant is requested to review these concerns and assess the potential impact on STP's seismic analysis.   |                        |             |                      |            | N/A |               | May Audit<br>3.8<br>Punch List 71 & 72 |                         |
| 70              |        |              | Refer to Action Items 3.7-37 & 3.7-38   |                        |             | N/A                  |            |     |               |  |                         |
| 71              | 3.7-37 | 22           | Audit Report 3.8 D2 5. "The accelerations are taken from the SSI analysis of the vault. A reference is given in the report from where the accelerations were taken. As this information was not verified during the audit, the staff plans to verify the source and the acceleration values during the next audit."   | S&L<br>Javad Moslemian |             | 03.07.01-29          | 6/20/11    |     |               |  |                         |
| 72              | 3.7-38 | 22           | Provide in an RAI response a plan to resolve the issues related to subtraction method in SASSI, as described in the DOE letter. (Clarification Issue 22)  | S&L<br>Javad Moslemian |             | 03.07.01-29 S1 Draft | 9/1/11     |     |               |  |                         |
| 73              | 3.7-39 |              | Subsequent to Action Item 3.7-37, revise the results presented in COLA as necessary. (Clarification Issue 22)   | S&L<br>Javad Moslemian |             | 03.07.02-13 S3       | 7/28/11    |     |               |  |                         |
| 74              | 3.8-26 | 14           | Revise RWB stability calculation considering amplified motion at ground surface and revise COLA as necessary.   | S&L<br>P. K. Agrawal   |             | 03.08.04-30 S3       | 6/20/11    |     |               |  |                         |
| 75              | 3.8-27 | 13.6<br>17.6 | Update the design parameters table with damping values for Radwaste Building Design, and include the table in Section 3.8 of COLA. (Clarification Issues 13.6 and 17.6)   | S&L<br>P. K. Agrawal   |             | 03.08.04-30 S3       | 6/20/11    |     |               |  |                         |
| 76              | 3.8-28 |              | Examine amplified input motion used for Service Building stability evaluation.  | S&L<br>Javad Moslemian |             |                      |            | N/A |               | May Audit<br>3.8<br>Punch List 75      |                         |
|                 |        |              | Refer to Action Item 3.8-27   |                        |             |                      |            |     |               |  |                         |
| 77              | 3.8-29 | 16           | Clarify response to RAI 03.08.04-19 to state that the static coefficient of friction at the interface of mudmat and soil will not exceed 0.75. Also include the requirement for roughening the concrete surfaces in the COLA. (Clarification Issue 16)  | S&L<br>P. K. Agrawal   |             | 03.08.04-19 S2       | 6/20/11    |     |               |  |                         |
| 78              | 3.8-30 | 17.3         | Provide more legible Figures 3H.6-138 and 139 in COLA. (Clarification Issue 17.3)   | S&L<br>P. K. Agrawal   |             | 03.08.04-30 S3       | 6/20/11    |     |               |  |                         |
| 79              | 3.8-31 | 17.4         | Add in the FSAR that the Large Equipment Access Building (LEAB) foundation will be designed such that the surcharge on the DGFOV located directly east of the LEAB will be negligible. (Clarification Issue 17.4)   | S&L<br>P. K. Agrawal   |             | 03.07.01-27 S4       | 7/11/11    |     |               |  |                         |

**Punch List for South Texas Project Units 3 & 4  
Sections 3.7 & 3.8**

| Punch List Item | AI No. | C/I  | Action Item Description   | NINA Action                                       |                      | NRC Action    |                  | Action Closed      | Closed after Phone Call |
|-----------------|--------|------|---|---|----------------------|---------------|------------------|--------------------|-------------------------|
|                 |        |      |   | Responsible Engineer                              | RAI                  | Letter to NRC | NRC Review       |                    |                         |
| 80              | 3.8-32 | 17.1 | The COLA will be revised to refer to Figures 3H.6-212 through 3H.6-217 for RSW Piping Tunnel design. (Clarification Issue 17.1)   | S&L<br>Javad Moslemian                            | 03.07.01-27 S4       | 7/11/11       |                  |                    |                         |
| 81              | 3.8-33 | 17.5 | Clarify title for Figure 3H.6-137 to specify that it is applicable to Category I site-specific structures. (Clarification Issue 17.5)   | S&L<br>Javad Moslemian                            | 03.07.02-13 S3       | 7/28/11       |                  |                    |                         |
| 82              | 3.8-34 | 12   | Revise the wave propagation calculations for the tunnels using the following:<br>1) an apparent wave velocity of 3000 ft/s<br>2) maximum ground velocity based on site-specific SSE maximum ground acceleration of 0.13g<br>3) a triangular pressure distribution limited by the maximum passive pressure<br>Revise COLA to reflect these changes also.<br>(Clarification Issue 12, AI 3.8-23 and 3.8-24)   | S&L<br>Javad Moslemian                            | 03.08.04-30 S5       | 7/15/11       |                  |                    |                         |
| 83              | 3.8-35 | 3    | Provide in COLA the discussion of stability evaluation for each structure including a discussion of the input motion. (Clarification Issues 3 and 8)  | S&L<br>Javad Moslemian                            | 03.07.02-13 S4       | 11/23/11      |                  |                    |                         |
| 84              | 3.8-36 | 8    | Verify equivalent static loading for RSW Piping Tunnel and Fuel Oil Tunnel exceed that from SSI   | S&L<br>Javad Moslemian                            | 03.07.02-13 S4       | 11/23/11      |                  |                    |                         |
| 85              | 3.7-40 |      | Provide response to questions on lateral pressure diagrams  | S&L<br>Javad Moslemian                            | N/A                  | N/A           | May Audit<br>3.7 | Punch List 87 & 89 |                         |
| 86              | 3.7-41 |      | Refer to Action Items 3.7-42 & 3.7-44   | S&L<br>Javad Moslemian                            | N/A                  | N/A           | May Audit<br>3.7 | Punch List 87 & 89 |                         |
| 87              | 3.7-42 |      | Discuss the effects of groundwater change on UHS responses  | S&L<br>Javad Moslemian                            | N/A                  | N/A           |                  |                    |                         |
| 88              | 3.7-43 |      | Refer to Action Item 3.7-46   | S&L<br>Javad Moslemian                            | N/A                  | N/A           |                  |                    |                         |
| 89              | 3.7-44 |      | Revise Figure 3H.6-219 to remove 2D 'Alone' soil pressure profile. Also revise the figure to provide seismic pressure profile used for design in lieu of static + dynamic. Also check other figures for the same issues.  | S&L<br>Javad Moslemian                            | 03.07.01-27 S4       | 7/11/11       |                  |                    |                         |
| 90              | 3.7-45 |      | Add the factor of safety for floatation in Table 3H.6-14  | S&L<br>Javad Moslemian                            | 03.07.02-13 S3       | 7/28/11       |                  |                    |                         |
| 91              | 3.7-46 |      | Verify that SGH's validation for SASSI included verification for soil pressures and provide validation for NRC review<br>Turbine Building Seismic Calculation, Fluor calculation number U3-TB-S-CALC-DESN-2100 Rev B, should be revised for the following:<br>1) Assumption 1 on sheet 9 of 288 should be clarified to clearly describe how mass and stiffness were derived from different Turbine Building models<br>2) On sheet 8 of 288, correct Reference 3 document number from U3-TB-S-CALC-DESN-2001 to U7-TB-S-CALC-DESN-2001<br>3) Revise Section 5.15 to clearly describe how the seismic demand was determined.<br>For example, clarify the statement in the last paragraph of sheet 250 "after running the RSA static analysis is then run with the RSA results to determine the base shear". Also describe how the RISA analysis was done in 3 directions and how the 3 directional responses were combined.<br>For groundwater resolution, in addition to the RAI response provided, perform the following:<br>1) Use 28 ft groundwater level in the analysis being performed for DOE letter (AI 3.7-37)<br>2) Revise the COLA markup provided in the previous RAI response 03.07.01-27 S3<br>3) Revise the SSI calculations to add a clarification for groundwater level | S&L<br>Javad Moslemian<br><br>TANE<br>Jim Fiscaro | 03.07.02-13 S3       | 7/28/11       |                  |                    |                         |
| 91              | 3.7-46 |      | For groundwater resolution, in addition to the RAI response provided, perform the following:<br>1) Use 28 ft groundwater level in the analysis being performed for DOE letter (AI 3.7-37)<br>2) Revise the COLA markup provided in the previous RAI response 03.07.01-27 S3<br>3) Revise the SSI calculations to add a clarification for groundwater level  | S&L<br>Javad Moslemian                            | 03.07.01-29 S1 Draft | 9/1/11        |                  |                    |                         |

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| Punch List Item | AI No. | C/I | Action Item Description  | NINA Action            |   | NRC Action           |   | Action Closed |            | Closed after Phone Call  |
|-----------------|--------|-----|--|------------------------|---|----------------------|---|---------------|------------|--------------------------|
|                 |        |     |  | Responsible Engineer   | RAI   | Responsible Engineer | RAI   | Letter to NRC | NRC Review |                          |
| 92              | 3.8-37 |     | For Radwaste Building, revise the COLA for the following:<br>- Add clarification in Section 3H.3.5.1, 2 and 3 for seismic analysis models (stick model for stability, FEM model for design and II/I) [Clarification Issue 13.1]<br>- Delete vertical accelerations from Table 3H.3-1 [Clarification Issue 13.1]<br>- Revise Section 3H.3.4.3.4.2 to include N690 provision for shear allowable [Clarification Issue 13.3]<br>- Revise Section 3H.3.4.2.1 to state that bearing pressure capacity is determined using methodology described in COLA Section 2.5S.4 [Clarification Issue 13.4]       | S&L<br>Javad Moslemian | 03.08.04-18 S3                                      |                      | 03.08.04-18 S3                                      | 7/28/11       |            |                          |
| 93              | 3.8-38 |     | Revise response to RAI 03.08.04-35 to explain design in lieu of further analysis for equivalent bearing pressure.<br>Provide questions on Turbine Building and Service Building stability calculations by about 10 a.m. on 5/26  | S&L<br>Javad Moslemian | 03.08.04-35 R1                                      |                      | 03.08.04-35 R1                                      | 6/30/11       |            |                          |
| 94              | 3.8-39 |     | Refer to Action Item 3.7-45  | NRC<br>Chakrabarti     | N/A   |                      | N/A   | N/A           |            | May Audit<br>3.8         |
| 95              | 3.8-40 |     | Discuss additional information to be included in COLA for III evaluations of non-seismic Category I structures with OGC  | NRC<br>Tom Tai         | N/A   |                      | N/A   | N/A           |            | Punch List 90<br>7/22/11 |
| 96              | 3.8-41 |     | Revise UHS design calculation to use N690-1994 Supplement 2  | S&L<br>Javad Moslemian | U7-UHS-S-CALC-DESN-6002<br>U7-YARD-S-CALC-DESN-6001 |                      | U7-UHS-S-CALC-DESN-6002<br>U7-YARD-S-CALC-DESN-6001 | 6/30/11       |            |                          |
| 97              | 3.7-47 |     | For Service Building stability calculation (U3-SB-S-CALC-DESN-2100 Rev. B), expand Section 5.14 to fully describe how the seismic analysis was performed and specifically address the following:<br>1) How the stick model mass and stiffness were calculated or provide a copy of Ref. No. 23, U3-SB-CALC-DESN-2001 Rev. 0, "Calculation of Service Building Mass and Stiffness Model" for review.<br>2) RSA details:<br>- 1. modal combination method<br>- 2. combination of 3 directional responses<br>Attachment 01 sheets 4 and 5<br>- 1. What are modes 5 and 6 with frequency > 3.0x108 Hz? | TANE<br>Jim Fiscaro    | 03.07.02-13 S3                                      |                      | 03.07.02-13 S3                                      | 7/28/11       |            |                          |
| 98              | 3.7-48 |     | Write Condition Report to document response and track calculation revision. See Action Item 3.8-40.  | S&L<br>Javad Moslemian | 03.08.04-30 S3                                      |                      | 03.08.04-30 S3                                      | 6/20/11       |            |                          |
| 99              | 3.7-49 |     | Clarify COLA Section 3H.6.5.3 to specify that UB Backfill soil case was used for cracked and separated cases (Clarification Issue 19)<br>Revise calculation U7-UHS-C-CALC-DESN-6007 to delete Table 3 (Reference March 2011 audit report)  | S&L<br>Javad Moslemian | U7-UHS-C-CALC-DESN-6007                             |                      | U7-UHS-C-CALC-DESN-6007                             | 9/1/11        |            |                          |
| 100             |        |     | Not Used   |                        |   |                      |   | N/A           |            | N/A                      |
| 101             | 3.8-42 |     | Revise the Control Building Annex stability evaluation to use ASCE 7-05 instead of ASCE 7-88.<br>Check for two cases, (1) with live load for both the stabilizing force and the driving force and (2) with no live load for either the stabilizing force or the driving force  | S&L<br>Javad Moslemian | 03.07.02-13 S3                                      |                      | 03.07.02-13 S3                                      | 7/28/11       |            |                          |

**Punch List for South Texas Project Units 3 & 4  
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|-----------------|--------|-----|--|------------------------|--|---------------|------------|----------------------|---------------|---------------|------------------------------|
|                 |        |     |  | Responsible Engineer   | RAI                                      | Letter to NRC | NRC Review | Responsible Engineer | RAI           | Letter to NRC | NRC Review                   |
| 102             | 3.8-43 |     | Audit Report Section 3.8 I 8. Calculation no. U7-RSW-S-CALC-DESN-6001, Revision D, "Basic Structural Design of Reactor Service Water (RSW) Tunnel".<br>The staff noted that several areas of design of the tunnel were not complete at time of the audit, e.g., global tornado missile impact evaluation for the access region of the tunnel, tunnel walls in the corner region, access covers, etc.<br><br>Include the closure in the May audit report  | NRC<br>Chakrabarti     | N/A                                      | N/A           |            |                      |               |               |                              |
| 103             |        |     | Evaluate DNFSB Issues Related to the SASSI Subtraction Method with the model used to perform sensitivity analysis related to Poisson's Ratio (Punch List Item 29)  | NRC                    | N/A                                      | N/A           |            |                      |               |               | Discussed at September Audit |
| 104             |        |     | Provide legible prints of Table 3H.8-1 contained in the June 16 response in Letter U7-C-NINA-NRC-110081  | S&L<br>P. K. Agrawal   | N/A                                      | N/A           |            |                      | 6/29/11       |               |                              |
| 105             |        |     | Provide a plan for providing information that will allow the Staff to make a determination that I/I for the AFIPH is adequately addressed in the FSAR. Will be addressed under RAI 03.07.02-32 (Punch List Item 109)   | S&L<br>P. K. Agrawal   | N/A                                      | N/A           |            |                      | 7/22/11       |               |                              |
| 106             |        |     | Provide applicant with an update on what actions, if any, are required as a result of hurricane wind load consideration in Chapters 2 and 3 - no action required by NINA   | NRC<br>Chakrabarti     | N/A                                      | N/A           |            |                      | N/A           |               | 7/27/2011                    |
| 107             |        | 23  | Staff has a concern that ACI 349-97 Appendix B Steel Embedments, referenced in Response to RAI 03.08.04-33 (page 3 of 7), is not endorsed by NRC.<br><br>Applicant will provide clarification.   | S&L<br>P. K. Agrawal   | 03.08.04-33 S1                           |               |            |                      | 7/28/11       |               |                              |
| 108             |        |     | Clarification Issue #23<br>Staff requests additional description of foundations in FSAR 3.8.5.<br>Applicant will provide a brief description of the foundations, foundation analysis, and differential settlement determination, including consideration of construction sequence.   | S&L<br>Javad Moslemian | 03.07.02-13 S3                           |               |            |                      | 7/28/11       |               |                              |
| 109             |        |     | Develop a response and ITAAC to address I/I issues associated with 3.7.2.8 in response to an upcoming RAI<br><br>Refer to Punch List Item 95   | S&L<br>P. K. Agrawal   | 03.07.02-32                              |               |            |                      | 9/1/11        |               |                              |
| 110             |        |     | From the July 12, 2011 submittal in NINA letter 110099 (RAI 03.08.04-30):<br>(a) Table 3H.6-6, "Results of RSW Piping Tunnel Design", discuss the small differences between Required vs. Provided Reinforcement (0.7 versus 0.79 or 0.97 versus 1.00) or non-existent (1.56 for both).<br>(b) Check see if Note 3 in Table 3H.6-6 is clear as written.<br>(c) Determine if there is a sketch defining the reinforcing zones in the RSWPT<br>(d) In Figure 3H.6-247, is the passive pressure shown applicable to the entire RSWPT design? | S&L<br>Javad Moslemian | 03.08.04-30 S6<br>(All but RWB & DGFOSV) |               |            |                      | 9/12/11       |               |                              |
| 111             |        |     | Provide the required material for verification of the response to Punch List Item 18   | S&L<br>Javad Moslemian | N/A                                      |               |            |                      | 8/12/11       |               |                              |
| 112             | 3.7-50 |     | Identify RAI responses that justify exceedances seen in soil pressure plots  | S&L<br>Javad Moslemian | 03.07.01-29 S1, R1                       |               |            |                      | 11/23/11      |               |                              |
| 113             | 3.7-51 |     | Identify RAI response that discusses seismic gap joint material  | S&L<br>Javad Moslemian | N/A                                      |               |            |                      | 8/16/11       |               |                              |
| 114             | 3.7-52 | 22  | In RAI response, provide explanation of "modified subtraction model" -- state that all surface nodes are included  | S&L<br>Javad Moslemian | 03.07.01-29 S1 Draft                     |               |            |                      | 9/1/11        |               |                              |

**Punch List for South Texas Project Units 3 & 4  
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|-----------------|--------|-----|--|------------------------|--|----------------------|-----|---------------|------------|-------------------------|---|
|                 |        |     |  | Responsible Engineer   | RAI                                      | Responsible Engineer | RAI | Letter to NRC | NRC Review |                         |   |
| 115             | 3.7-53 | 22  | In RAI response, when describing soil cases for Section 6 SSSI analysis, justify considering only UB Backfill and LB In-situ soil cases  | S&L<br>Javad Moslemian | 03.07.01-29 S1 Draft                     |                      |     | 9/1/11        |            |                         |   |
| 116             | 3.7-54 | 22  | In RAI response, provide reasoning as to why for the section east of Section 7 where no SSSI analysis is performed, the DGFOSV is adequate.  | S&L<br>Javad Moslemian | 03.07.01-29 S1 Draft                     |                      |     | 9/1/11        |            |                         |   |
| 117             | 3.7-55 | 22  | In RAI responses, where "engineering judgement" is used, provide supporting technical justification  | S&L<br>Javad Moslemian | 03.07.01-29 S1 Draft                     |                      |     | 9/1/11        |            |                         |   |
| 118             |        | 22  | Provide results for Punch List Items 72, 114, 115, 117, 123, and 124 (Refer to RAI 03.07.01-29 S1 Draft)   | S&L<br>Javad Moslemian | 03.07.01-29 S1                           |                      |     | 11/14/11      |            |                         |   |
| 119             | 3.8-21 |     | Beam shear discussion<br>Calculations will be revised and FSAR tables will be updated as a Confirmatory Action Follow up to Punch List Item 56   | S&L<br>Javad Moslemian | 03.08.04-34 S2<br>(RWB & DGFOSV)         |                      |     | 11/14/11      |            |                         |   |
| 120             | 3.7-57 | 8   | Follow up to Punch List Items 27, 28, 83 & 84 related to stability evaluations   | S&L<br>Javad Moslemian | 03.07.02-13 S4                           |                      |     | 11/23/11      |            |                         |   |
| 121             |        | 22  | Provide results for Punch List Items 91 & 116 related to groundwater elevation and DOE letter resolution<br>Include results in COLA Mark-up  | S&L<br>Javad Moslemian | 03.07.01-29 S1                           |                      |     | 11/14/11      |            |                         |   |
| 122             |        | 22  | Provide SSI soil pressures for the RSW Tunnel  | S&L<br>Javad Moslemian | 03.08.04-30 S6<br>(All but RWB & DGFOSV) |                      |     | 9/12/11       |            |                         |   |
| 123             |        | 22  | Show why soil pressures obtained from MSM SSI analysis for the UHS/RSW Pumphouse and DGFOSV are conservatively bounded by the actual design pressures.   | S&L<br>Javad Moslemian | 03.07.01-29 S1 Draft                     |                      |     | 9/1/11        |            |                         |   |
| 124             |        | 22  | During the South Texas Project, Units 3&4, Audit of FSAR Section 3.7, RAI 03.07.01-29, SASSI Issues Raised by the DNFSB Letter to DOE, NINA presented Table 6.2 – Comparison of Direct and Modified Subtraction Method Beam Forces in the Y-Direction. NINA is requested to clarify Table 6.2. | S&L<br>Javad Moslemian | 03.07.01-29 S1 Draft                     |                      |     | 9/1/11        |            |                         |   |
| 125             |        | 24  | Describe where in the FSAR the basis for the Cassification IIb for the RWB is justified.   | S&L<br>P. K. Agrawal   | 03.08.04-37                              |                      |     | 9/12/11       |            |                         | Issues remain under discussion between NINA and NRC - Refer to Punch List Items 158 & 159 |
| 126             |        |     | Describe the Radwaste Tunnel in the FSAR in sufficient detail for Staff to conclude its potential effect on adjacent structures or describe where the information may be found in existing documentation   | S&L<br>P. K. Agrawal   | Audit Discussion                         |                      |     | N/A           |            |                         | Was discussed during audit; no related RAI.   |
| 127             |        | 25  | Issues identified by NRC that need further consideration to resolve DOE SASSI issues   | S&L<br>Javad Moslemian | 03.07.01-30                              |                      |     | 11/23/11      |            |                         |   |
| 128             |        |     | Correct a typo in FSAR Table 3.2-1 on Page 3.2-5 under Component P8, by revising the parenthetical text from U16 to U20.   | S&L<br>P. K. Agrawal   | 09.02.05-1 R1                            |                      |     | 9/15/11       |            |                         |   |
| 129             |        |     | Provide clarification regarding how the design of non-Category I structures is based on IBC-2006 result in "the margin of safety of the structure is equivalent to that of the Category I structures" for III.   | S&L<br>Javad Moslemian | 03.07.02-32 R1                           |                      |     | 12/19/11      |            |                         | Draft revision for ITAAC was discussed with NRC. NRC provided feedback on 11/02.          |
| 130             |        |     | Discuss Containment ISI in FSAR  | S&L<br>R. W. Hooks     | 03.08.01-11                              |                      |     | 11/17/11      |            |                         |   |



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| Punch List Item | AI No.           | C/I | Action Item Description  | NINA Action            |                    | NRC Action           |     | Action Closed |            | Closed after Phone Call                     |
|-----------------|------------------|-----|--|------------------------|--------------------|----------------------|-----|---------------|------------|---|
|                 |                  |     |  | Responsible Engineer   | RAI                | Responsible Engineer | RAI | Letter to NRC | NRC Review |   |
| 131             | 3.7-58           |     | RAI 03.08.04-30 S5, clarify why the wave propagation for DGFOST is based on site-specific SSE. Design parameters table will be updated per Action Item 3.7-58.   | S&L<br>Javad Moslemian | 03.08.04-30 S7     |                      |     | 11/14/11      |            |   |
| 132             |                  |     | RAI 03.08.04-30 S6<br>The noted 11% margin for RSW piping tunnels is not applicable to shear, please provide justification<br>For RSW piping tunnels it is stated that passive pressure controls the design, please clarify.   | S&L<br>Javad Moslemian | Audit Discussion   |                      |     | N/A           |            | Was discussed during audit; no related RAI. |
| 133             |                  |     | RAI 03.08.04-34 S1, Figure 3H.7-10a referenced in the response does not exist.   | S&L<br>Javad Moslemian | Audit Discussion   |                      |     | N/A           |            | Was discussed during audit; no related RAI. |
| 134             | 3.7-58           |     | COLA Rev. 6.<br>Figures 3H.7-31 and 3H.7-32 are not legible. Table 3H.9-1, the Table heading is noted as Table 3H.8-1. COLA Rev 6 figures 3H.7-31 and 32 will be replaced.<br>Design parameters table will be updated per Action Item 3.7-58.  | S&L<br>Javad Moslemian | 03.08.04-30 S7     |                      |     | 11/14/11      |            |   |
| 135             |                  |     | RAI 03.08.04-18 S3, clarify why all accelerations for the RWB were deleted.  | S&L<br>Javad Moslemian | Audit Discussion   |                      |     | N/A           |            | Was discussed during audit; no related RAI. |
| 136             | 3.7-56<br>3.7-57 |     | Clarify if there is any SSI analysis for Service Building (RAI 03.07.02-13 Supplement 3) and also clarify response for Turbine Building and Service Building<br>In response to RAI 03.07.02-13 S4 describe in the FSAR the source for E' and Es and discuss the comparison of E' and Es versus what is obtained from SSI or SSSI and add a statement that the conclusions are conservative   | S&L<br>Javad Moslemian | 03.07.02-13 S3 R1  |                      |     | 11/23/11      |            |   |
| 137             | 3.7-59           |     | For stability evaluations address all exceedances based on amplified motion  | S&L<br>Javad Moslemian | 03.07.01-29 S1, R1 |                      |     | 11/23/11      |            |   |
| 138             | 3.7-60           |     | For RSW Piping Tunnel, scaling of spectra for all dampings should be calculated at same frequency intervals used for UHS based on the ratio of new amplified motion over the old amplified motion  | S&L<br>Javad Moslemian | 03.07.01-29 S1, R1 |                      |     | 11/23/11      |            |   |
| 139             | 3.7-61           |     | Also address amplified motion for Fuel Oil Storage Vault adjacent to Ultimate Heat Sink for UB soil case using MSM method for both full and empty basin  | S&L<br>Javad Moslemian | 03.07.01-29 S1, R1 |                      |     | 11/23/11      |            |   |
| 140             | 3.7-62           |     | Include flow chart for DOE issue in the response to RAI 03.07.01-29 S1   | S&L<br>Javad Moslemian | 03.07.01-29 S1     |                      |     | 11/14/11      |            |   |
| 141             | 3.7-63           |     | In RAI response 03.07.01-30, also discuss the pressure exerted by the compressible material on the Pump House wall and also why no additional SSSI section is needed for the Fuel Oil Storage Vault adjacent to the RSW Tunnel   | S&L<br>Javad Moslemian | 03.07.01-29 S1, R1 |                      |     | 11/23/11      |            |   |
| 142             | 3.7-64           |     | When addressing amplified motion, clearly describe why Control Building Annex is not affected by DOE issue   | S&L<br>Javad Moslemian | 03.07.01-29 S1, R1 |                      |     | 11/23/11      |            |   |
| 143             |                  |     | 1. Demonstrate that the amplified seismic input (i.e., amplified input spectra due to presence of the nearby heavy structures), if generated by using the Subtraction Method (SM) for DGFOF, RSWPT, DGFOV, and any other structures as applicable would be conservative as compared to those obtained using the Modified Subtraction Method (MSM) or the Direct Method (DM). Alternatively, the applicant may use amplified spectra derived from the use of MSM or the DM. | S&L<br>Javad Moslemian | 03.07.01-30        |                      |     | 11/23/11      |            |   |

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|-----------------|--------|-----|--|------------------------|-------------|----------------------|-------------|---------------|------------|-------------------------|--|
|                 |        |     |  | Responsible Engineer   | RAI         | Responsible Engineer | RAI         | Letter to NRC | NRC Review |                         |  |
| 144             |        |     | 2. While SSI soil pressures obtained using both the SM and the MSM were in general comparable (See Figure 4.13 of July 27 & 28 audit presentation, SASSI issues Raised by the DNFSB Letter to DOE), the results, presented at July 27, audit, did not fully demonstrate acceptability of the soil pressure distribution obtained from either the MSM or SM in comparison to results obtained from the DM. STP's project specific confirmation of the MSM method (using CB SSI analysis) or the SSSI analysis performed for one model (consisting of RWB, RSW Tunnel, and RB) did not include any comparison of the transfer functions of the soil pressure parameter at the interaction nodes at the exterior walls and the interacting adjacent building walls. The applicant is requested to further demonstrate that the soil pressure distribution obtained from the SM or MSM method is acceptable and is conservative for use in seismic design.   | S&L<br>Javad Moslemian | 03.07.01-30 |                      | 03.07.01-30 | 11/23/11      |            |                         |  |
| 145             |        |     | 3. For SSSI analysis (for soil pressure determination considering interaction of adjacent building), only one model (consisting of RWB, RSW Tunnel, and RB) was evaluated using the DM, SM, and MSM. STP has completed the analysis only for the lower bound soil case (UB case using backfill will also be performed). Preliminary results indicate that absolute soil pressure profile obtained from SM and MSM in some instances (particularly for exterior walls) did not compare well with those obtained from the DM. However, maximum total wall force (obtained from the TH analysis) due to soil pressure in general is within 5% for all three methods (Table 5.1 of July 27 & 28 audit presentation, SASSI issues Raised by the DNFSB Letter to DOE). Based on this analysis, STP preliminarily concluded that the total soil pressure on the embedded wall obtained from SM is acceptable. However, the applicant is requested to further clarify the entries (including how they were computed) as presented in Table 5.1 provided by STP at July 27 Audit. | S&L<br>Javad Moslemian | 03.07.01-30 |                      | 03.07.01-30 | 11/23/11      |            |                         |  |
| 146             |        |     | 4. The applicant is requested to reassess the seismic demand for stability evaluation of any applicable Category I and III structures in light of the DNFSB issue and confirm acceptability of the factors of safety against stability during an SSE.  | S&L<br>Javad Moslemian | 03.07.01-30 |                      | 03.07.01-30 | 11/23/11      |            |                         |  |
| 147             |        |     | 5. The applicant is requested to review all the Punch List items and any applicable RAI responses to determine if any of the responses previously provided should be revised as a result of the assessment performed for addressing DNFSB issues.<br>6. The issue of zero SSSI pressure on portions of the RSWPH North wall (Figure 3H.6-219, letter U7-C-NINA-NRC-110096) was further discussed with STP at July 27, 2011 meeting. It was indicated that there is a gap at these locations between the RSWPT south wall and the RSWPH north wall filled by the compressible material. However, for better clarity and understanding of the analysis model, STP is requested to provide an engineering sketch showing typical sections between the RSWPT and RSWPH including the tunnel entries to the RSWPH.  | S&L<br>Javad Moslemian | 03.07.01-30 |                      | 03.07.01-30 | 11/23/11      |            |                         |  |



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|-----------------|--------|-----|--|------------------------|-------------------------------|----------------------|-----|--|------------|-------------------------|--|
|                 |        |     |  | Responsible Engineer   | RAI                           | Responsible Engineer | RAI | Letter to NRC                                  | NRC Review |                         |  |
| 148             |        |     | In addition it was noted that Section 7 of Figure 1 (see seismic soil pressure handout of July 27 & 28, 2011 meeting) was cut through RSWPH north wall, inter space between the tunnel entries to the RSWPH north wall, RSW tunnel cross section, and other buildings. However Figure 3H.6-211 (see letter U7-C-NINA-NRC-110042 - 2D SSSI model of RSWPH, RSWPT, DGFOVs, and RB) indicates that the actual SSSI model section has been cut through the tunnel entries to the RSWPH instead of the inter space between the tunnel entries as depicted in Section 7. While the SSSI model analyzed appears to be consistent with the soil pressure shown in Figure 3H.6-219, the resulting SSSI pressure may not conservatively represent the interaction pressure that could develop on the RSWPH North wall and RSWPT south wall through interaction of soil in the space enclosed by the tunnel entries, RSWPH North wall, and RSWPT south wall. The applicant is requested to address this issue and demonstrate that SSSI interaction pressure used for design is still conservative. | S&L<br>Javad Moslemian | 03.07.01-30                   |                      |     | 11/23/11                                       |            |                         |  |
| 149             |        | 26  | 4. Acceptance of section cut forces obtained from SASSI soil structure interaction (SSI) analysis for structural design (RSW piping tunnel, diesel generator fuel oil tunnel, diesel generator fuel oil storage vault, and UHS/RSW pump house).<br>5. Refinement of SSI models to extract section cut forces for structural evaluation and design.<br>Respond to RAI 02.03.01-24:  | S&L<br>Javad Moslemian | 03.07.01-29 S2                |                      |     | 12/19/11                                       |            |                         |  |
| 150             |        |     | a. Consistent with the requirements of ... identify hurricane wind speed and missile spectra for the STP site. RG 1.221 describes a method that the staff considers acceptable in selecting site-specific hurricane wind speed and hurricane-generated missiles.<br>b. Pursuant to the requirements of ..., confirm that the ABWR standard plant and STP site-specific SSCs important to safety are designed to protect against the combined effects of hurricane winds and missiles defined in question a above.<br>c. Please revise the appropriate FSAR sections to appropriately reflect the results of questions a and b above.   | S&L<br>P. K. Agrawal   | 02.03.01-24<br>Draft Response |                      |     | 12/30/11                                       |            |                         |  |
| 151             |        |     | Draft response prior to Public Meeting on 05JAN2012<br>Respond to RAI 02.03.01-24:<br>Refer to Punch List Item 150   | S&L<br>P. K. Agrawal   | 02.03.01-24                   |                      |     | 1/12/12  |            |                         |  |
| 152             |        |     | Chapter 2 Response<br>Respond to RAI 02.03.01-24:<br>Refer to Punch List Item 150  | S&L<br>P. K. Agrawal   | 02.03.01-24, S1               |                      |     | TBD  |            |                         |  |
| 153             |        |     | Chapter 3 Response will be issued following the February 27, 2012 Audit.<br>Further clarify COLA Tables and Figures in COLA, e.g., Figure Titles   | S&L<br>Javad Moslemian |                               |                      |     | Provide Draft COLA Markup - Week of 02/20/2012 |            |                         |  |

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|-----------------|--------|-----|---|------------------------|-----|--|------------|-------------------------------|---------------|-------------------------|
|                 |        |     |   | Responsible Engineer   | RAI | Letter to NRC  | NRC Review |                               |               |                         |
| 154             |        |     | Review Soil Pressure Plots in Sections 3A and 3H for consistency  | S&L<br>Javad Moslemian |     | Provided verbal response on 01/25/2012                     |            |                               |               |                         |
| 155             |        |     | Address adequacy of Control Building Walls to withstand pressure exerted by filler material at seismic joints between RB and CB   | S&L<br>Javad Moslemian |     | Provided verbal response on 02/01/2012                     |            |                               |               |                         |
| 156             |        |     | Revise COLA Table 3.4-1 to add information for DGFSOV   | S&L<br>Javad Moslemian |     | Provided with response to RAI 03.07.02-32 R1 on 12/19/2011 |            |                               |               |                         |
| 157             |        |     | Add "ii" in the notes column for item Y2 in COLA Table 3.2-1 (Water tight doors)  | S&L<br>P. K. Agrawal   |     | Provide Draft COLA Markup - Week of 02/20/2012             |            |                               |               |                         |
| 158             |        | 24  | Refer to Punch List Item 125. Regarding the basis for the Classification IIb for the RWB, a revised calculation for unmitigated dose is required for review by NRC.   | S&L<br>P. K. Agrawal   |     | 1/30/12  |            | Provide results of NRC Review |               |                         |
| 159             |        | 24  | Upon resolution of any comments on the calculation discussed in Punch List Item 158, the revised RAI response will be submitted.  | S&L<br>P. K. Agrawal   |     | TBD  |            |                               |               |                         |
| 160             |        |     | 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).  | S&L<br>Javad Moslemian |     | Provide Draft COLA Markup - Week of 02/20/2012             |            |                               |               |                         |
| 161             |        |     | 3.7-2. 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.  | S&L<br>Javad Moslemian |     | Provide Draft COLA Markup - Week of 02/20/2012             |            |                               |               |                         |
| 162             |        |     | 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. | S&L<br>Javad Moslemian |     | Provide Draft COLA Markup - Week of 02/20/2012             |            |                               |               |                         |
| 163             |        |     | 3C-1. Page 3C-1, Paragraph 3C.1: Other structures e.g., DGFOV and DGFOT should be included in addition to UHC/RSW Tunnel  | S&L<br>Javad Moslemian |     | Provide Draft COLA Markup - Week of 02/20/2012             |            |                               |               |                         |
| 164             |        |     | 3H-1. Page 3H-4, First Line: Delete "it" in this sentence.  | S&L<br>Javad Moslemian |     | Provide Draft COLA Markup - Week of 02/20/2012             |            |                               |               |                         |
| 165             |        |     | 3H-2. Page 3H-7, Fourth Bullet from the Bottom: Would the criteria for II/I evaluation include Hurricane?   | S&L<br>Javad Moslemian |     | No further action  |            |                               |               |                         |
| 166             |        |     | 3H-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  | S&L<br>Javad Moslemian |     | Provide Draft COLA Markup - Week of 02/20/2012             |            |                               |               |                         |
| 167             |        |     | 3H-4. Page 3H-8, Second Sentence: Delete "a" (editorial).   | S&L<br>Javad Moslemian |     | Provide Draft COLA Markup - Week of 02/20/2012             |            |                               |               |                         |
| 168             |        |     | 3H-5. Page 3H-9, Paragraph 3H.3.4.1: May need to include Hurricane RG   | S&L<br>Javad Moslemian |     | No further action  |            |                               |               |                         |
| 169             |        |     | 3H-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.          | S&L<br>Javad Moslemian |     | Discuss on 02/15/2012                                      |            |                               |               |                         |

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|-----------------|--------|-----|---|------------------------|-----|--|------------|--|---------------|--|-------------------------|
|                 |        |     |   | Responsible Engineer   | RAI | Letter to NRC                                  | NRC Review |  |               |  |                         |
| 170             |        |     | 3H-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.   | S&L<br>Javad Moslemian |     | Discuss on 02/15/2012                          |            |  |               |  |                         |
| 171             |        |     | 3H-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?   | S&L<br>Javad Moslemian |     | Provide Draft COLA Markup - Week of 02/20/2012 |            |  |               |  |                         |
| 172             |        |     | 3H-9. Page 3H-19, Paragraph 3H.6.2: Would the Table 3H.9-1 include identification of Hurricane load?  | S&L<br>Javad Moslemian |     | Provide Draft COLA Markup - Week of 02/20/2012 |            |  |               |  |                         |
| 173             |        |     | 3H-10. Page 3H-34, Item b: This paragraph references Figure 3H.6-3 which does not exist.  | S&L<br>Javad Moslemian |     | Provide Draft COLA Markup - Week of 02/20/2012 |            |  |               |  |                         |
| 174             |        |     | 3H-11. Page 3H-36, Paragraph 3H.6.5.1.3: This section does not include all site-specific Category I structures.   | S&L<br>Javad Moslemian |     | Provide Draft COLA Markup - Week of 02/20/2012 |            |  |               |  |                         |
| 175             |        |     | 3H-12. Page 3H-45, Paragraph 3H.6.5.2.12: Editorial. Revise the sentence.   | S&L<br>Javad Moslemian |     | Provide Draft COLA Markup - Week of 02/20/2012 |            |  |               |  |                         |
| 176             |        |     | 3H-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.   | S&L<br>Javad Moslemian |     | Provide Draft COLA Markup - Week of 02/20/2012 |            |  |               |  |                         |
| 177             |        |     | 3H-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.          | S&L<br>Javad Moslemian |     | Provide Draft COLA Markup - Week of 02/20/2012 |            |  |               |  |                         |
| 178             |        |     | 3H-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.  | S&L<br>Javad Moslemian |     | Provide Draft COLA Markup - Week of 02/20/2012 |            |  |               |  |                         |
| 179             |        |     | 3H-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  | S&L<br>Javad Moslemian |     | Provide Draft COLA Markup - Week of 02/20/2012 |            |  |               |  |                         |
| 180             |        |     | 3H-17. Page 3H-58, Paragraph 3H.6.7: Concerning establishing the input motion for DGFOSV SSI analysis, there is no discussion as to how DNFSB issue was addressed.  | S&L<br>Javad Moslemian |     | Provide Draft COLA Markup - Week of 02/20/2012 |            |  |               |  |                         |
| 181             |        |     | 3H-18. Page 3H-68, Paragraph 3H.7.3: Figure reference 3H.6-221 may not be the correct reference.  | S&L<br>Javad Moslemian |     | Discuss on 02/15/2012                          |            |  |               |  |                         |
| 182             |        |     | 3H-19. Page 3H-79, First Paragraph: FSAR needs to discuss why amplified input is still OK in view of DNFSB issue.   | S&L<br>Javad Moslemian |     | Provide Draft COLA Markup - Week of 02/20/2012 |            |  |               |  |                         |
| 183             |        |     | 3H-20. Page 3H-80, Second Paragraph: why only +30% and also not -30%?   | S&L<br>Javad Moslemian |     | Discuss on 02/15/2012                          |            |  |               |  |                         |
| 184             |        |     | 3H-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 DGFOSV.   | S&L<br>Javad Moslemian |     | Provide Draft COLA Markup - Week of 02/20/2012 |            |  |               |  |                         |
| 185             |        |     | 3H-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? | S&L<br>Javad Moslemian |     | Provide Draft COLA Markup - Week of 02/20/2012 |            |  |               |  |                         |

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|                 |        |     |   | Responsible Engineer   | RAI | Letter to NRC   | NRC Review |  |               |  |                         |
| 186             |        |     | 3H-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.  | S&L<br>Javad Moslemian |     | Provide Draft COLA Markup - Week of 02/20/2012                          |            |  |               |  |                         |
| 187             |        |     | 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.  | S&L<br>Javad Moslemian |     | Provide information and clarification during Audit - Week of 02/27/2012 |            |  |               |  |                         |
| 188             |        |     | PLI 153 did not appear to capture the issue.<br>Other Comments 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.  | S&L<br>Javad Moslemian |     | No further action   |            |  |               |  |                         |
| 189             |        |     | Other Comments 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. | S&L<br>Javad Moslemian |     | Provide information and clarification during Audit - Week of 02/27/2012 |            |  |               |  |                         |
| 190             |        |     | Other Comments 4. The driving lateral pressure diagrams for the RSWT and DGFOV were not found in the FSAR.  | S&L<br>Javad Moslemian |     |   |            |  |               |  |                         |
| 191             |        |     | Other Comments 5. Any exceedances of design lateral pressures by the SSSI 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.  | S&L<br>Javad Moslemian |     | Provide Draft COLA Markup - Week of 02/20/2012                          |            |  |               |  |                         |

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|-----------------|--------|-----|--|------------------------|-----|--|------------|--|---------------|--|-------------------------|
|                 |        |     |  | Responsible Engineer   | RAI | Letter to NRC  | NRC Review |  |               |  |                         |
| 192             |        |     | <p>Other Comments 6. Stability Evaluation:<br/>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 Es. Please clarify the various components of driving and resisting pressures used (e.g., soil dynamic surcharge pressure).</p> <p>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.</p> <p>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 cancellation of the seismic soil pressure term. This will lead to underestimation of the required resisting soil pressure.</p> | S&L<br>Javad Moslemian |     | Discuss on<br>02/15/2012                             |            |  |               |  |                         |
| 193             |        |     | <p>Other Comments 7. DGFOT Stability Evaluation<br/>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.</p>   | S&L<br>Javad Moslemian |     | Discuss on<br>02/15/2012                             |            |  |               |  |                         |
| 194             |        |     | <p>Other Comments 8. Alkali Silica Reaction<br/>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.</p>   | S&L<br>Bob Hooks       |     | Provide Draft COLA<br>Markup - Week of<br>02/20/2012 |            |  |               |  |                         |
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