

**Seismic Action item Tracking List
North Anna Unit 3 Seismic Audit 2**

AI Number from Source	AI/Question Description	Impacted Report	Follow-up Action	Status	Comments
091015S028B	NRC Action #7, Slide 28: FSAR Tables 3A.15-201 through 3A.15-206 should be updated as appropriate to reflect the additional SSI/SSSI analyses performed.	FSAR 3A.15	Revise FSAR Tables 3A.15-201 through 3A.15-206 to add the additional analyses of FWSC cracked model for BE case and SSI and SSSI analyses performed for the FWSC concrete fill soil separation study.	Confirmatory	Included in 12/2015 FSAR markups; NA3-15-037 (12/16/2015).
091015S029A	Since the FWSC-CB SSSI effects are impacting the responses, the staff questioned whether there are any other neighboring buildings that could contribute to the SSSI effects of the CB and FWSC in the x-direction (perpendicular to the two buildings). As such, please justify why the potential effect of SSSI on other Category I structures (RB/FB) considering the structures aligned in another direction (e.g., RB/FB-TB) will not be important.	COLA Part 10	Revise ITAAC for Seismic Category II Structures (Turbine Building, Service Building, and Ancillary Diesel Building) and Radwaste Building to be specific regarding adjacent Seismic Category I structures.	Confirmatory	Included in 12/2015 COLA Part 10 markups; NA3-15-037 (12/16/2015).

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091015S032A	Staff requested the Figures showing the NEI check was met by comparing PBSRS with the envelope of surface response spectra obtained from final SSI input time-histories at the surface of the LB, BE, and UB soil columns.	FSAR 3.7.1	<p>Revise FSAR Sections 3.7.1.1.5.1.1 and 3.7.1.1.5.1.2, and Figures 3.7.1-295 through 3.7.1-306 as follows:</p> <ul style="list-style-type: none"> • Take out the smoothed curves in the NEI check figures and replace with figures showing raw ARS. • Provide corresponding discussion in the FSAR text justifying specific dips in in RB/FB and CB ARS. For CB ARS, refer to the sensitivity study performed to justify dip at ~14Hz is inconsequential. • Formally document the sensitivity study but it is not necessary to reference the documents in the FSAR or submit the documents to the NRC as they can remain auditable documents. 	Confirmatory	Included in 12/2015 FSAR markups; NA3-15-037 (12/16/2015).
091015S040B	NRC Action #12, Slides 40 and 60: Staff will review V&V of ACS SASSI for application to North Anna 3 sensitivity analysis. Same as 091015S060B.	FSAR Section 3.7.2 or 3A	Revise FSAR to incorporate conclusions from the RB/FB SSI report, Appendix I.	Confirmatory	Included in 12/2015 FSAR markups; NA3-15-037 (12/16/2015).

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091015S042B	NRC Action #13, Slide 43: Dominion will revise the FWSC seismic analysis report to include results from two additional sensitivity analyses on FWSC. The report should also reflect additional SSI/SSSI analysis being performed for soil separation.	FWSC Seismic Analysis Report	Revise the FWSC seismic analysis report (WG3-U63-ERD-S-0001) to refer to FWSC concrete block separation study calculations additional SSI/SSSI analysis being performed for soil separation.	Confirmatory	[Included in 12/2015 FSAR markups; NA3-15-037 (12/16/2015). [FSAR Appendix 3A.] Report WG3-U63-ERD-S-0001 Rev. 2 submitted to NRC 12/16/2016 (NA3-15-033). Report SER-DMN-034 posted in Electronic Reading Room for NRC Audit.
091015S065B	NRC Action #15, Slide 65: Dominion is revising CB and FWSC seismic analysis reports to clarify the method of determining the potential uplift and contact ratio of the foundation mat. The staff will review this issue during Audit-1.	FWSC Seismic Analysis Report, FSAR Section 3.7.2 or 3A	Revise the FWSC SSI report to correct the following errors: -Section 5.5, Item 1: Change to "The FWSC structure and model..." -Section 5.5, Item 7: Change to "(the FWSC seismic weight...)" Revise the FSAR to present a summary of the methodology to calculate foundation uplift as presented in the RB/FB, CB and FWSC Seismic Analysis Reports (including any alternative methods for uplift calculation).	Confirmatory	Report WG3-U63-ERD-S-0001, Rev. 2, submitted to NRC 12/16/2015 (NA3-15-033). Included in 12/2015 FSAR markups; NA3-15-037 (12/16/2015).

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091015S067A	<p>According to the guidance in SRP Acceptance Criteria 3.7.2.II.4, uplift for non-symmetric structures may be more affected by the phasing between the three directions of input motions. The RB/FB building is not a symmetric building. The procedure discussed in Section 5.6, "Base Reactions and Contact Pressures," does not explicitly indicate whether and how the phasing of the input motions is considered in the uplift analysis. Therefore, technical justification should be provided if the effect of different phasing of the input motions is not considered in the calculation of the foundation uplift. If the non-symmetric conditions need to be addressed, then the effect of in-phase and out-of-phase input motions can be considered in the SSI analyses by using plus and minus 1.0 times the magnitude of the input motions. This is especially important as the calculated contact ratio is 84 percent, not much higher than the 80 percent criterion.</p>	<p>RB/FB Seismic Analysis Report, CB Seismic Analysis Report, FSAR Section 3.7.2 or 3A</p>	<p>Revise the RB/FB and CB SSI reports to include the results and methodology used for alternative rigid foundation uplift calculations. Add a summary statement to the FSAR.</p>	<p>Confirmatory</p>	<p>Report WG3-U71-ERD-S-0001, Rev. 3 (RB/FB), submitted to NRC 11/30/2015 (NA3-15-032).</p> <p>Report WG3-U73-ERD-S-0001, Rev. 2 (CB), submitted to NRC 12/16/2015 (NA3-15-033).</p> <p>Included in 12/2015 FSAR markups; NA3-15-037 (12/16/2015).</p>

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091015S067B	<p>NRC Action #16, Slide 67: Dominion is performing uplift calculation for RB/FB to address effect of excitation direction and the RB/FB seismic analysis report will be revised. Staff will review this issue during Audit-1.</p> <p>Item 1 equation in Section 5.6 of RB/FB report S(z) is correct and will not be revised because calculations were performed considering two different directions of the vertical earthquake not the absolute value (please refer to results in Table 5.6-1). Since the RB/FB is not symmetrical, the approach used for the RB/FB differs from the one used for the symmetrical CB and FWSC.</p>	RB/FB Seismic Analysis Report, CB Seismic Analysis Report, FSAR Section 3.7.2 or 3A	Revise the RB/FB and CB SSI reports to include the results and methodology used for alternative rigid foundation uplift calculations. Add a summary statement to the FSAR.	Confirmatory	<p>Report WG3-U71-ERD-S-0001, Rev. 3 (RB/FB), submitted to NRC 11/30/2015 (NA3-15-032).</p> <p>Report WG3-U73-ERD-S-0001, Rev. 2 (CB), submitted to NRC 12/16/2015 (NA3-15-033).</p> <p>Included in 12/2015 FSAR markups; NA3-15-037 (12/16/2015).</p>
091015S107A	Discussion of NEI Check for the CB in FSAR markup on page 3-25 did not include the basis of acceptability (as provided in the response to RAI 03.07.02-11) of defining the CB control motion at the CB basemat instead of the bottom of the concrete fill below the CB basemat. This basis should be included in the FSAR Section 3.7.1.	FSAR 3.7.1, FSAR Section 3.7.2 or 3A	Revise FSAR Section 3.7.1 to describe comparison presented in response to RAI 03.07.02-11 that demonstrates why SSI analysis at CB basemat Elevation 241 ft is acceptable.	Confirmatory	Included in 12/2015 FSAR markups; NA3-15-037 (12/16/2015).
091015S108A	In FSAR 3.7.1.1.6 markup on page 38 of 623, the site-dependent SSE at-grade response spectra is defined as envelope of the PBSRS for the	FSAR 3.7.1	Revise FSAR Sections 3.7.1, 3.7.1.1 and 3.7.1.1.6, associated Tables 3.7.1-216 and 3.7.1-217, and associated Figures 3.7.1-265,	Confirmatory	Included in 12/2015 FSAR and COLA markups; NA3-15-037 (12/16/2015).

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	<p>RB/FB, CB, and the RG 1.60 spectra normalized to 0.1g PGA. The reference site-dependent OBE at-grade response spectra for OBE exceedance check is then defined as one-third of the site-dependent SSE at-grade response spectra. Per the 10 CFR Part 50, Appendix S, no explicit analysis for the OBE is needed if the OBE is defined as one-third of the SSE.</p> <p>The staff further reviewed this issue. For the site-dependent at grade SSE described in FSAR markup Section 3.7.1.1.6 to be acceptable for establishing the reference OBE without an explicit OBE analysis, the individual PBSRS calculated for each of the Category I structures (RB/FB, CB, and FWSC) should envelope the site-dependent SSE at-grade response spectra. Therefore, defining the site-dependent SSE at-grade response spectra as envelope of the PBSRS calculated for the RB/FB and CB, and the RG 1.60 spectra normalized to 0.1g PGA may be less conservative for the purpose of defining the site-dependent at-grade OBE level earthquake for plant shutdown. As such, the applicant is requested to provide further justification.</p>		<p>3.7.1-266 and 3.7.1-267 to incorporate clarifier "manifestation" where Site-Dependent SSE at Grade is described.</p>		

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091015S116B	NRC 8/31 Question 4 regarding July 2015 letter and markups [Basis for Damping Values in FSAR Table 3A.13.2-201]. NRC Action #20, Slide 116: NRC will review damping values comparing with those values with DCD model during the audit. The basis should be included in the FSAR.	FSAR 3A.13	Revise FSAR Section 3A.13.2 as follows: "Table 3A.13.2-201 provides the damping values used for the site-specific SSI analyses. The damping values are based on RG 1.61, DCD Table 3.7-1, and the DCD model."	Confirmatory	Included in 12/2015 FSAR markups; NA3-15-037 (12/16/2015).

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091015S117D	Question 5 regarding July 2015 letter and markups [Approach and criteria for enhancing site-specific seismic demand]: were evaluations performed for the SSSI effects on soil bearing pressure, lateral pressure, and stability.	FWSC Stability Analysis Report, RB/FB Stability Analysis Report, CB-Stability Analysis Report, FSAR 3.8, FSAR 3.7	<p>As described below: revise the RB/FB, CB and FWSC technical reports on stability to be consistent with the results of the updated SSI/SSSI reports justifying the consideration of licensing basis demands for stability, and soil bearing and lateral pressure calculations. Revise FSAR sections 3.7 and 3.8 accordingly. CB Stability report Section 3 to be revised as follows (use this as example for RB/FB and FWSC stability reports, as required):</p> <p>“As shown in Appendix B of Reference 2-i, the seismic response analyses of the models representing full (uncracked concrete) stiffness properties of the CB reinforced concrete structure provide conservative seismic load demands for the NA3 rock site with high frequency design motion and bound the effects of concrete cracking as described in Appendix B of Reference 2-i and SSSI as described in Reference 2-k.” Make sure that design basis in FSAR Section 2.5.4 and 3.7- 3.8 regarding soil bearing pressures are consistent.</p>	Confirmatory	<p>Stability reports WG3-U63-ERD-S-0002 Rev. 1 (FWSC), WG3-U71-ERD-S-0003 Rev. 1 (RB/FB), and WG3-U73-ERD-S-0003 Rev. 2 (CB), were provided to the NRC 10/30/2015 (NA3-15-030)</p> <p>Included in 12/2015 FSAR markups; NA3-15-037 (12/16/2015).</p>

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091015S123A	<p>The last sentence on Page 31 second paragraph of the CB/FWSC SSSI report (WG3-U73-ERD-S-0002, rev.3) states that the SSSI effects on the FWS roof out-of-plane loads are enveloped by the corresponding load used for standard design. However, this statement does not appear to be consistent with the Table 6.4-1 entries. In Table 6.4-1, the equivalent standard design acceleration is shown as 1.74g while the flexible mode SSSI and NA3 Site-specific equivalent SSSI accelerations of the roof are shown as 3.98g and 2.30g, respectively. Please address this issue.</p>	<p>FSAR Section 3.7.2 or 3A</p>	<p>Revise FSAR to describe changes similar to those described in the bullets below.</p> <ul style="list-style-type: none"> • Last sentence in Section 6.4 of CB-FWSC SSSI report was revised to correctly state that SSSI effects amplify the seismic load demand on FWS roof and that this site-specific demand is larger than the corresponding load considered in the standard design • As shown in Table 6.2-1 of FWSC Seismic Analysis report, results of FWSC-CB SSSI analyses defined enveloping out-of-plane demand on FWS roof used for site-specific evaluation of FWSC structures 	<p>Confirmatory</p>	<p>FSAR 07/2015 Markups: Tables 3A.18.1.3-203 and 3A.18.1.3-204 Site-Specific Enveloping Maximum Accelerations of FWSC SDOF Oscillators.</p> <p>Section 3A.18 revisions included in 12/2015 FSAR markups; NA3-15-037 (12/16/2015).</p>

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091015S125	<p>In the CB and RB/FB SSSI report (WG3-U73-ERD-S-0005), the report (on Page 21 of 76) identified that the vertical ISRS response considering the SSSI effect could exceed by 5 percent at a frequency of 25 Hz and by 25 percent at 50 Hz. The report also stated that these exceedances can be neglected because they are either bounded by the standard design or occur at high frequencies where they could be offset if the effect of incoherency of the ground motion is considered. The staff agrees with the basis that potential exceedances would be addressed when bounded by the standard design. However, the staff needs additional technical justification for using the effect of incoherence in offsetting the SSSI effect. In addition this justification should be included in the FSAR. Alternatively, the applicant can incorporate these exceedances in the site-specific design basis ISRS as appropriate.</p>	<p>FSAR Section 3.7.2 or 3A, FSAR 3A.17</p>	<p>Revise the FSAR (CCR package NA3-15-7012) for already revised CB-RB/FB SSSI Report and the CB Seismic Analysis Report that address exceedances. Incoherency will not be used as justification.</p> <p>Revise FSAR 3A.17.11, to note that ISRS exceedances due to RB/FB SSSI effects are included in CB site-specific ISRS.</p> <p>Similar to above (091015S124B).</p> <p>Refer to issue 092815A1003.</p>	<p>Confirmatory</p>	<p>Included in 12/2015 FSAR markups; NA3-15-037 (12/16/2015).</p>

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091015S126	The access tunnel between the RB/FB and CB has been modeled for the SSSI analysis between the CB and RB/FB. Page 14 of 76 of the CB-RB/FB SSSI report (WG3-U73-ERD-S-0005) describes that there are seismic gaps between the access tunnel and the adjacent buildings. FSAR Section 3.7.2.8 markup does not identify the seismic gap requirement between the access tunnel and the adjacent Category I buildings. It also appears that the detailed site-specific design of the access tunnel is not complete. Per DCD Revision 10, Page 3.7-28, this tunnel is classified as seismic Category II. However, no site-specific ITAAC has been provided for this tunnel. As such, the NRC inquired as to how the design commitments for this tunnel are to be tracked.	COLA Part 10	Add ITAAC to COLA for design of SC II Access Tunnel.	Confirmatory	Included in 12/2015 COLA Part 10 markups; NA3-15-037 (12/16/2015).
0910GEN02	NRC will include spent fuel pool rack review in the audit plan for Audit-1. Review of analysis from beginning to end for the racks, including the design changes. SER-DMN-019, Rev.0	North Anna 3 Fuel Rack Seismic Analysis	Dominion agreed to the following actions related to the fuel storage racks, PCCS condenser, and fuel stored in racks site-specific seismic analyses. The NRC will confirm these actions through the electronic reading room or in Audit 2: -Describe in the fuel rack NA3 report, or in a referenced report, the demonstration of the adequacy of the acceleration time histories. [updated 11/16/15]	Closed	Included in 12/2015 FSAR markups; NA3-15-037 (12/16/2015). Report Status 01/04/2016: •002N8467, Rev. 2 (Fuel Racks) and 002N8530, Rev. 2 (PCCS Condenser) submitted to NRC

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	<p>RB/FB Seismic Analyses Bounding Results and In-Structure Response Spectra</p> <p>DCD Report: NEDO-33373-A Revision 5</p>		<p>-Obtain plots of the response spectra of the acceleration time histories for comparison to the response spectra determined for NA3 fuel rack seismic analysis report (plots can be included in supporting documents – i.e., ENSA document – and not in the NA3 fuel rack report).</p> <p>-Complete and document the NA3 seismic analysis report for the fuel stored in the racks and demonstrate structural adequacy.</p> <p>-Update the NA3 seismic analysis technical reports for fuel racks and PCCS condenser.</p> <p>[[Revise FSAR for the fuel racks and PCCS condenser summarizing the evaluations performed and include the correct report revision numbers. Moved this action to AI 022616002]]</p>		<p>via e-mail 12/14/2015 (also submitted in letter dated 1/14/2016)</p> <p>•003N0526, Rev. 0 (spent fuel stored in fuel racks) submitted to NRC (letter date 1/14/2016; NA3-16-001)</p> <p>NRC to check spectral matching supporting document in audit 2</p>
092815A1002	<p>Revise COLA Part 10 as necessary to include the 220' elevation for the FWSC SSI Input Response Spectra in the definition of the SSE. Other parts of the COLA (e.g., Part 7) also will be reviewed to determine if other changes need to be made.</p>	<p>COLA Part 10, COLA Part 7</p>	<p>Revise COLA Part 10 as necessary to include the 220' elevation for the FWSC SSI Input Response Spectra in the definition of the SSE. Other parts of the COLA (e.g., Part 7) also will be reviewed to determine if other changes need to be made.</p>	<p>Confirmatory</p>	<p>Included in 12/2015 COLA Parts 7 and 10 markups; NA3-15-037 (12/16/2015).</p>

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092815A1003	09/29/2015: Revise FSAR to describe the methodology used to address exceedances in sensitivity studies, including acceptance criteria. These sensitivity studies refer to stiffness variations, SSSI analyses, and soil separation. Also describe use of scaling if SSSI analyses of FWSC-CB and CB-RB/FB yield results that exceed ISRS from FWSC and CB SSI analyses, and describe use of scaling if SSSI analyses of FWSC-CB yield results that exceed load demands from FWSC SSI analyses.	FWSC Seismic Analysis Report, FSAR Section 3.7.2 or 3A	Revise the FSAR as described in the issue description. Revise the FWSC seismic analysis report (WG3-U63-ERD-S-0001) to further clarify the approach for enhancing ISRS for effects of cracking (Appendix B, Section B.5). As required, revise other technical reports to reflect the methodology in the issue description. Note: The following issues were closed to this issue: 091015S075A, 091015S117A, 091015S117B, 091015S117C, 091015S124A, 091015S124B, and 091015S125.	Confirmatory	Included in 12/2015 FSAR markups; NA3-15-037 (12/16/2015). Revised FWSC, CB, and RB/FB Seismic Analysis Reports submitted to NRC: •WG3-U63-ERD-S-0001, Revision 2 (FWSC) and WG3-U73-ERD-S-0001, Rev. 2 (CB); NA3-15-033 (12/16/2015) •WG3-U71-ERD-S-0001, Rev. 3 (RB/FB); NA3-15-032 (11/30/2015)
092815A1004	Technical Report SER-DMN-034: Shear capacity of concrete fill under FWSC: NRC requested technical basis for using ACI-207.1R-18 versus ACI-318.	SER-DMN-034 (Effects of Soil Separation of FWSC)	Revise SER-DMN-034 to provide a further explanation regarding the code governing the design and construction of concrete fill (has to be done as part of audit 2). Change the SER-DMN-034 report title to add "and effects of separation between concrete fill and surrounding soil." 10/29/15 – add report SER-DMN-034 to the reading room for NRC	Confirmatory	Report posted in reading room. (2/2/2016) NRC is mostly closed, except for RGS ITAAC RAI (3/21/16) Addressed by RGS; SER Section 2.5.4.

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			<p>review once the revision is completed.</p> <p>(1/20/16 call) Submit a response to RAI 2.5.4-26 regarding FWSC concrete fill.</p>		
092815A1005	<p>Technical Report SER-DMN-034: Soil Separation: NRC requested additional explanation and basis to describe exceedances in FWSC responses due to separation between the concrete fill and the surrounding soil. NRC also asked how these will be documented.</p>	<p>FWSC Seismic Analysis Report, SER-DMN-034 (Effects of Soil Separation of FWSC)</p> <p>WG3-U63-ERD-S-0001r3</p> <p>FSAR 3G.10</p> <p>FSAR Table 3G.10-204</p>	<p>Revise SER-DMN-034 to state that the exceedances due to concrete fill soil separation will be addressed (including ISRS and other seismic demands). Provide the criteria and approach for enhancing the ISRS to bound exceedances due to soil separation following the approach described in Appendix B of FWSC SSI report (WG3-U63-ERD-S-0001). Also include the conclusions of the FWSC soil separation study and provide reference to SER-DMN-034 in WG3-U63-ERD-S-0001.</p> <p>10/29/15 – add report SER-DMN-034 to the reading room for NRC review once the revision is completed.</p> <p>3/3/16 - FSAR 3A.17.14.5 will be revised to include discussion on how separation between concrete fill and surrounding soil can affect load demands on FWSC shear keys at NA3 site.</p>	Confirmatory	<p>SER-DMN-034 posted in reading room. [Audit 2 item.]</p> <p>Discussed at March 3 public meeting.</p> <p>WG3-U63-ERD-S-0001r3 delivered to NRC on 3/11/16</p> <p>Draft FSAR changes provided to NRC on 3/11/16.</p> <p>NRC will close in Audit 2.</p> <p>Discuss shear key item with NRC on 3/23/16.</p>

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			FSAR 3G.10 and Table 3G.10-204 will be revised to present: <ul style="list-style-type: none"> • Description of updated evaluation of FWSC structures • Reinforcement added to FWSC basemat and FWSC shear keys • Effects of soil separation incorporated into structural evaluations. 		
092815A1007	For Report SER-DMN-032: Expand the scope of document to state that all SSSI and sensitivity effects are captured. The NRC will review this in Audit 2.	SER-DMN-032 (NA3 Seismic SSI Analyses Results for CB and FWSC Structural Evaluation)	Revise SER-DMN-032 to expand the scope of document to state that all SSSI and sensitivity effects are captured. The NRC will review this in Audit 2.	Closed	SER-DMN-032, Revision 3 delivered to electronic reading room on 3/11/16 [Audit 2]
1202150001	Revised site-specific stick models which include the additional oscillators under cracked condition should be included in the FSAR for the RB/FB, CB, and FWSC. [NRC call on 12/2/15]	FSAR 3A	Revise FSAR Section 3A.17.9 to describe and include figures that show the additional SDOF oscillators used in the seismic analysis stick models for sensitivity studies to adequately capture the out-of-plane vibration of flexible walls and slabs in the RB/FB, CB, and FWSC up to 50 Hz under cracked concrete conditions. The properties of additional oscillators and figures that show these stick models are in report SER-DMN-014.	Confirmatory	Draft FSAR changes provided to NRC on 3/11/16 Audit 2 item
1202150002	NRC requested that the FSAR be updated to include comparisons of the DCD demands with the NA3 site-specific demands, which represent	SER-DMN-019, Rv1:	a. The FSAR will be updated per the roadmap provided to the NRC via e-mail 01/04/2016 and	Confirmatory	SER-DMN-032, Revision 3, and SER-DMN-019, Revision 1

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	<p>the envelope of the base cases and the sensitivity analyses and will be used in the NA3 site-specific design evaluation. The comparisons should clearly identify the exceedances. The level of details and the format of the presentation should be consistent with those for the DCD demands. [NRC call on 12/2/15]</p>	<p>SER-DMN-032 Rev. 3</p> <p>FSAR 3A.18.1</p> <p>Figures will be added to FSAR 3A.17</p> <p>FSAR 3A.18.2, 3.8, 3G</p>	<p>discussed in teleconference 01/06/2016.</p> <p>b. Discussed in presentation made at the March 3 public meeting. Changes to reports and FSAR as described in presentation during March 3 public meeting (slides 18 - 63).</p> <p>c. Revise bounding load curves so that they start at zero load demand on the X-axis.</p> <p>d. Revise FSAR 3.8 and 3G to reference 3A.18.</p>		<p>delivered to electronic reading room on 3/11/16</p> <p>Draft FSAR changes provided to NRC on 3/11/16</p> <p>Audit 2 item</p>
010616001	<p>To consider ISRS exceedances in the FSAR markup, the 10 percent criterion is applied to the concrete cracking analyses, SSSI analyses, and soil separation analyses. The technical explanation for the case of concrete cracking is acceptable. The technical explanation for soil separation for FWSC is also acceptable. However, the FSAR markup does not provide a technical justification on why the SSSI effect on CB can use the 10 percent criterion. The staff thinks that the SSSI cases are more realistic than the SSI case and any exceedance from the SSSI analyses should be considered. In fact, the SSSI effect on FWSC is considered in full</p>	<p>WG3-U73-ERD-S-0002</p> <p>WG3-U73-ERD-S-0005</p> <p>FSAR 3A</p>	<p>Revise the criteria in CB-FWSC and CB-RB/FB SSSI reports and bounding reports to specify that any exceedance of ISRS up to 50Hz is to be considered as significant by site-specific design.</p> <p>Revise FSAR 3A.17.11 (and any related section) to remove the discussion on applying a 10 percent criterion for considering exceedances due to SSSI effects.</p>	Confirmatory	<p>Reports transmitted to NRC on 3/11/16</p> <p>Draft FSAR changes provided to NRC on 3/11/16</p>

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	(and governs). [NRC email from M. Eudy 01/06/16]				
010616002	References should be updated to use the current revisions. For example, the FWSC stability report still refers to Rev. 0 of the SER-DMN-034 (not the current Rev. 2). [NRC email from M. Eudy 01/06/16]	Determine which reports are impacted.	Reconcile the list of references in the seismic demand (Phase 1) reports and determine if any report revisions are necessary.	Closed	Reports revised and available for NRC review.
010616003	In the FSAR markup and WG3-U73-ERD-S-0001R2 (CB SSI analysis), the short duration of 0.015 s should be replaced with a better estimate of 0.02 s because there are 4 points outside of the 80 percent contact ratio domain. It is also recommended to include the 73 percent contact ratio in the FSAR for the additional SSI analysis using rigid beams to properly consider the interior wall stiffness. This contact ratio value combined with the short duration gives the staff more confidence in the validity of the linear SSI calculation. [NRC email from M. Eudy 01/06/16]	FSAR 3A	Revise the CB SSI analysis in the FSAR Section 3A.17.13.5 to correct the duration of uplift from 0.015 sec to 0.02 sec; and include a description of the results of the additional uplift evaluation (the 73 percent contact ratio) and justifications.	Confirmatory	Draft FSAR changes provided to NRC on 3/11/16
010616005	In the second paragraph on page 352 of the FSAR markup, ACS SASSI is described as used for the SSSI analyses. The staff has the impression that ACS SASSI is only used for the sensitivity study of RB/FB to consider concrete cracking;	FSAR 3A	Revise FSAR Section 3A.17.11 to remove "and ACS SASSI" from the list of computer programs used for the site-specific SSSI analyses.	Confirmatory	Draft FSAR changes provided to NRC on 3/11/16

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	therefore, please confirm the accuracy of that statement. [NRC email from M. Eudy 01/06/16]				
010616006	As part of Action Item 091015S124A, the SSSI of the RB/FB has significant effect on the lateral pressures on the CB west wall facing the RB/FB, and report stated that the only significant exceedance that can be observed at the bottom level of the basement has no effects on the CB below-grade wall design. The staff could not find a description of the basis in the FSAR markup for the SSSI effect of RB/FB on the CB lateral pressures. [NRC email from M. Eudy 01/06/16]	FSAR 3A	Revise FSAR Section 3A.17.11 to include information provided in the CB-RB/FB report that indicates there are no SSSI effects on the CB below-grade wall design.	Confirmatory	Draft FSAR changes provided to NRC on 3/11/16
01151600A	FSAR Section 3.8.1 does not identify any departures, whereas, Sections 3.8.2, 3.8.3, 3.8.4, and 3.8.5 identify NAPS DEP 3.7-1. This departure relates to the NA3 site-specific ground response spectra for seismic structural loads and floor response spectra.	FSAR Section 3.8	Revise the FSAR Section 3.8.1 to add introductory text that recognizes the site-specific analyses and reports in Appendix 3G; and note NAPS DEP 3.7.1 as an LMA. Other related FSAR changes to Section 3.8 will be made per item 01151600C.	Confirmatory Audit 2	Discussed on telecon 2/3/2016 Draft FSAR changes provided to NRC on 3/11/16
01151600C	In FSAR Section 3.8.4, corresponding to NAPS DEP 3.7-1, the statement is made that "Unit 3 site-specific structural evaluations for the RB/FB, CB, and FWSC are described in Sections 3G.7 through 3G.10." This statement is important and needed because it ties DCD 3.8.4 to the	FSAR 3.8	FSAR Section 3.8 (including subsections 3.8.1 – 3.8.5) will be changed to include references to the new site-specific sections in Appendix 3G in instances where the DCD Section 3.8 refers to Appendix 3G	Confirmatory Audit 2	Discussed on telecon 2/3/2016 Draft FSAR changes provided to NRC on 3/11/16

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	detailed description in Appendix 3G. Explain why the other FSAR sections do not also include this statement.		Also, add NAPS DEP 3.7.1 as an LMA.		
01151600D	<p>In FSAR Section 3.8.4, a new paragraph is added regarding the structural acceptance criteria. It states:</p> <p>“The structural acceptance criteria for the site-specific structural evaluations of the RB, CB, FB, and FWSC, which are described in Sections 3G.7 through 3G.10, are the same as the acceptance criteria for the standard design provided in this section, with the exception that the Unit 3 structural evaluations of the non-containment RB and FB structures may use the acceptance criteria of either: 1) the ASME BPVC, Section II, Division 2, Subsection CC, “Code for Concrete Containments,” or 2) the ACI 349-01, rather than apply the more limiting of these two criteria as described in DCD Sections 3.8.4.5.1 and 3.8.4.5.3. This is an acceptable alternative to the standard design approach because the RB and FB are not part of the containment pressure boundary and applying the more limiting ASME BPVC criteria is not required.”</p> <p>Justification would be needed for this change because, the reason the more limiting criterion was placed in the</p>	<p>RB/FB, CB and FWSC structural reports, as necessary: WG3-T11-DRD-S-0001r1</p> <p>WG3-U97-ERD-S-0001r1</p> <p>WG3-U71-ERD-S-0004r1</p> <p>WG3-U73-ERD-S-0004r2</p> <p>COLA Part 7</p> <p>COLA FSAR 3.8.4.5</p>	<p>NA3 FSAR reinforced concrete section analyses will be performed consistent with the DCD methodology using SSDP-2D for all Seismic Category I structures</p> <p>NA3 structural evaluations will apply the acceptance criteria consistent with the DCD: - For overstress conditions identified now and through detailed design, an alternate stress check using a P-M diagram will be performed to show the member meets the more limiting of the 2004 ASME and the ACI 349-01 criteria [limit to RB/FB]</p> <p>- Structural evaluation reports will include the P-M diagram for these alternate stress checks, demonstrating that the acceptance criteria are met [limit to RB/FB]</p> <p>(a) Technical reports will be revised, as necessary (Fuel Building Structural Design Report) [limit to RB/FB]</p> <p>(b) COLA revisions will be determined:</p>	Confirmatory Audit 2	<p>Discussed on telecon 2/3/2016</p> <p>Revised reports delivered to NRC staff on 3/11/16</p> <p>Draft FSAR changes provided to NRC on 3/11/16</p>

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	<p>DCD is that the containment is integrally connected to the RB (unlike other containments) and thus, the RB provides support and interacts with the containment. During design certification, the applicant specified this criterion to address this issue. While the revised criterion seems reasonable for structural members sufficiently distant from the RB / containment interface (e.g., FB where an overstressed condition was identified), justification would be needed to completely revise the criterion as defined above.</p>		<p>–Part 7, Departures Report, will be revised to include the proposed approach –FSAR Section 3.8.4.5 will be revised to clarify the approach for demonstrating that the standard design acceptance criteria are met –FSAR will be reviewed to determine if any other sections need to be revised - FSAR markups will be provided to NRC</p> <p>(c) Response to RAI 03.07.02-17 will be revised</p>		
020116001	<p>The RCCV report (WG3-T11-DRD-S-0001) indicates that the method using “thermal ratios” evaluated by 3D nonlinear analyses applied in the standard design is not used for NA3. The effects of concrete cracking due to the thermal load are considered by reducing the thermal stress in SSDP-2D.</p> <p>1. Is this change in the method of calculating thermal stresses considered a departure from the method used in the standard design?</p> <ul style="list-style-type: none"> • The applicant is requested to explain why this change is acceptable and does not result in the less conservative results. • During Audit 2, the staff requests that Dominion provide a detailed 	<p>WG3-T11-DRD-S-001 COLA Part 7</p>	<p>To better clarify the basis and justification for using the SSDP-2D method in the NA3 RCCV structural evaluation, Technical Report WG3-T11-DRD-S-001 will be revised.</p> <p>COLA Part 7 departure discussion will be revised to clarify why the SSDP-2D method was used. [discussed on 2/17/16 teleconference with NRC]</p>	<p>Confirmatory Audit 2</p>	<p>WG3-T11-DRD-S-0001r1 delivered to NRC on 3/11/16</p> <p>Draft FSAR changes provided to NRC on 3/11/16</p>

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	<p>presentation of the DCD method and the NA 3 method for site-specific evaluation of the thermal effect in combination with other applicable loads.</p> <p>2. Also, are the design thermal loads considered same as the DCD thermal loads? [NRC email from M. Eudy 02/01/16]</p>				
020116002	<p>The local models were developed for GDCS pool stress analysis (Figs 4.17 through 19 of WG3-T12-ERD-S-0001 - Internal structure design report) and seismic loads are evaluated using spectral analysis.</p> <p>1. Are these models the same as the DCD model?</p> <p>2. Please describe the spectral analysis method and explain any differences between the DCD and site-specific model in this regard. Is this method discussed in the FSAR?</p> <p>3. Is the lateral seismic pressure load on the pool walls due to vertical compression of the pool water due to vertical component of the earthquake included in the evaluation?</p> <p>[NRC email from M. Eudy 02/01/16]</p>	None	Item discussed on 2/17/16 teleconference with NRC. No additional action necessary. NRC staff will review during Audit 2.	Closed Audit 2	

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020116003	<p>1. On Page 5 of 002N8530 Revision 2, please clarify the sentence “all spectra for the fuel racks are taken at 3 percent damping consistent with Reference 1,” since the report is related to PCCS.</p> <p>2. Page 4 of this report indicates that the analysis is performed using the first 10 modes of the model up to 45.3 Hz. However, the input appears to have some energy content beyond this cut-off frequency. Please justify.</p> <p>[NRC email from M. Eudy 02/01/16]</p>	<p>002N8530</p> <p>FSAR 3G</p>	<p>Item discussed on 2/17/16 teleconference with NRC. The reference to the “fuel racks” in the PCCS report is a typo. Report 002N8530 will be revised to correct the typo. FSAR reference to this report will be revised to indicate the new revision (the report is incorporated by reference into the FSAR).</p> <p>Calculations, which will be available for audit, explain in more detail the basis for the cut-off frequency of the first 10 modes of the model up to 45.3 Hz.</p>	<p>Confirmatory</p> <p>Audit 2</p>	
020116004	<p>1. Per DE-ES-0089R0 (Drywell Head Report) Table 2-2, the design stress for flange bolt is 198 MPa vs the allowable limit of 198 MPa. While the allowable stress limit is not exceeded, it appears that there is very little design margin for any uncertainties in the calculation.</p> <p>2. Please identify the conservatisms in the analysis that provide assurance that the design bolt stress will not exceed the allowable limit.</p> <p>– Note that DCD Figure 3G.1-51 shows the standard plant bolt stress as 166 MPa. However, the site-specific bolt stress is 198 MPa.</p>	<p>FSAR</p> <p>Figure 3G.1-51</p>	<p>Item discussed during 2/17/16 teleconference with NRC. Discussed in a presentation at the March 3 public meeting. Consider if a change to the FSAR is needed to explain or clarify the information on Figure 3G.1-51 regarding pre-load value for the drywell head flange bolts.</p> <p>Discussed at 3/16/16 public teleconference with NRC. Markup to be included in next updated FSAR.</p>	<p>Confirmatory</p> <p>Audit 2</p>	

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	<p>– The FSAR should reflect this change.</p> <p>[NRC email from M. Eudy 02/01/16]</p>				
020116005	<p>The staff requests that Dominion provide during Audit 2 a brief presentation on how the site-specific seismic demand (shear force, overturning moments, torsional loads, vertical acceleration) obtained from the lumped mass model was specified in the static NASTRAN model. [NRC email from M. Eudy 02/01/16]</p>	<p>FSAR 3G.7, 3G.8, 3G.9, 3G.10</p>	<p>Item discussed during 2/17/16 teleconference with NRC and in a presentation made at the March 3 public meeting;</p> <p>Clarify FSAR 3G.10.5.2 (also 3G.7, 3G.8, 3G.9) regarding 6 degrees of freedom by stating moment loads at each floor elevation are considered to address effects of floor rocking on wall axial forces.</p> <p>Dominion to provide information describing the magnitude of shear forces applied at each nodal location, in particular the loads applied to RCCV and pedestal.[discussion item]</p> <p>Comparison of NASTRAN results with bounding shear, bending and torsion diagrams from LMSM were presented during March 3 meeting that demonstrate NASTRAN loads are applied correctly and are consistent with LMSM load demand distribution.</p>	<p>Confirmatory Audit 2</p>	

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020916001	<p>ITAACs (COLA Tier 1 Sections 2.4.20, 2.4.21, and 2.4.22) for category I underground tunnels, category II Access tunnel, and the Radwaste tunnel indicate that these buried Category I and II structures are designed and constructed to accommodate the dynamic, static, and thermal load conditions associated with various loads and load combinations identified in the FSAR Tier 2, Section 3.7.3.13. Note that DCD Tier 2, Section 3.7.3 13 seventh bullet appears to describe the various loads that are considered for the design.</p> <p>However, it does not include any potential environmental loads such as tornadoes, missiles, external floods, etc. The applicant is requested to explain how these loads, as applicable, to the underground Category I and II structures will be considered in the design. [NRC email from M. Eudy 02/09/16]</p> <p>The heading of ITAAC Table 2.4.22-1 should be "ITAAC for Radwaste Tunnel"</p> <p>For the FWSC, Part 10, Tier I Section 1.1.1 markup was revised to define additional site-specific SSI input response spectra at elevation 220 ft. However, the corresponding Note 4 of</p>	COLA Part 10	<p>Discussed in presentation at the March 3 public meeting.</p> <p>The NRC asked that Dominion verify if the tunnel ITAAC should reference Section 3.7.1 as well as the current reference to Section 2.5.2 to ensure that the FIRS is consistent with the method used for the SC I structures. Dominion will add Section 3.7.1 to the ITAAC reference statements for the development of FIRS for the tunnels.</p> <p>ITAAC Table 2.4.22-1 and Note 4 of ITAAC Table 5.1-1 will be revised.</p>	Confirmatory Audit 2	Draft FSAR changes provided to NRC on 3/11/16

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	<p>Table 5.1-1 (see Page 872 of the FSAR mark-up) does not reflect this change. Dominion should revise Note 4 to reflect this change.</p> <p>[last two items added via email from M. Eudy 02/18/16]</p>				
020916002	<p>Section 9.1.2.4 of DCD indicates that the spent fuel pool and buffer pool are reinforced concrete structures with a stainless steel liner. The storage racks and pool liners are designed to meet Seismic Category I requirements. Pool liner and anchorage are designed to the same loads and load combinations as the pool concrete structure in accordance with Table 3.815, except that load factors for all cases are equal to 1.0, and the acceptance criteria follow ASME Section III, Division 2, CC3700.</p> <p>However, the FSAR markup (Section 3.8 or 9.0) does not include a site-specific assessment of the fuel/buffer pool liners and the associated anchorages due to site-specific seismic demand including the local effect of the reactions of the storage racks on the pool liners. The applicant is requested to address this issue. [NRC email from M. Eudy 02/09/16]</p>	None	<p>Discussed in a presentation at the March 3 public meeting.</p> <p>The fuel pool liners and embedments are designated Seismic Category I, and the verification is included in ITAAC Table 2.16.5-2 #12 and Table 2.16.7-2 #8, using the definition of SSE for NA3.</p> <p>No further action is required.</p>	<p>Closed</p> <p>Audit 2</p>	

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020916003	<p>Report 002N8467 indicates that NA3 bounding response spectra (RS) at Node 2 (of SER-DMN-019, Revision 0) was used as input for site-specific assessment of the SFP rack in the FB. The staff needs confirmation and additional information with regard to the following items:</p> <ul style="list-style-type: none"> • Confirm that RS at Node 2 conservatively represents the spectra at the base of the SFP in the FB not at the center of RB/FB base mat (i.e., it includes the effect of basemat rocking and torsional effect). • Confirm that input RS is an envelope that considers the effect of stiffness variation and SSSI effect. • Confirm that the synthesized time histories used for transient analyses envelop the RS and they are statistically independent as recommended in SRP 3.7.1. • Confirm that friction factor used for FSR in the FB for the nonlinear analysis is consistent with the DCD values. • The report indicates that Table 1 summarizes forces for the FSR obtained from the SSE time history analysis. Please provide a comparison of the forces provided in Table 1 of SERDMN019, 	None	<p>Discussed in a presentation at the March 3 public meeting (slides 129 – 146).</p> <p>(Related to AI 020916005)</p> <p><u>Information presented on 3/23/16</u></p> <ul style="list-style-type: none"> • Regarding first bullet: The Node 2 ISRS used for site-specific evaluations are developed following the methodology described in Section 5.3 of the RB/FB SSI report WG3-U71-ERD-S-0001 that ensures the spectra envelopes the effects of basemat rocking and torsion at all locations within the floor elevation -11.5 m. • Regarding second bullet: The site-specific evaluations are performed using the ISRS presented in Section 5 of RB/FB bounding report SER-DMN-019. These ISRS are enhanced to bound effects of structural stiffness variations as described in Section 5 of SER-DMN-019 and Appendix B of WG3-U71-ERD-S-0001. 	<p>Closed</p> <p>Audit 2</p>	<p>Discuss first two bullets with NRC on 3/23/16.</p>

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	<p>Revision 0 based on the site-specific response spectrum approach and time history approach and explain any significant differences.</p> <ul style="list-style-type: none"> Clarify whether the stress summary comparison provided in Tables 2 and 3 is based on the RS or time history approach? <p>[NRC email from M. Eudy 02/09/16]</p>				
020916004	<p>Report 002N8467 indicates that both RSA and transient dynamic analyses (using synthetic time histories) were used for site-specific assessment of the FSRs. Concerning these RSA and transient analyses, the applicant is requested to provide a presentation discussing the two methods of dynamic analyses and how the results of these analyses are used in the site-specific assessment of the FSRs. Are the site-specific methods the same as the DCD approach?</p> <p>[NRC email from M. Eudy 02/09/16]</p>	None	<p>Discussed in a presentation at the March 3 public meeting (slides 119 through 128).</p> <p>No further action.</p>	Closed Audit 2	
020916005	<p>Report 002N8467 in Page 20 indicates that the time histories for evaluation of deep pit FSR were generated from the response spectra for the new FSR in the buffer pool. The report also stated that this is conservative because the new FSR are located above the buffer pool. As such, the staff requests that the applicant provide a figure which</p>	002N8467 003N0526	<p>Discussed in a presentation made at the March 3 public meeting (slides 141 through 145).</p> <p>Discuss during Audit 2.</p> <p>[3/21/16] For 002N8467 (done) and 003N0526, revise to:</p>	Closed Audit 2	

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	<p>presents comparisons of response spectra at these two locations to ensure that the spectra at the location of the new FSR envelopes the spectra at the deep pit location.</p> <p>[NRC email from M. Eudy 02/09/16]</p>		<ul style="list-style-type: none"> • Provide justification for not using envelop of two spectra to generate time histories • Justify for FM (002N8467 only) <p>Evaluate other cases where synthetic time histories are used to evaluate structures. Also address cases where response spectra at all supports to a structure to a structure were not enveloped (e.g., GDCS pool structure).</p>		
022616001	<p>DCD Table 3G.1-43 and the FSAR Table 3G.7-218 include pool stress summary of the GDCS Pool wall plate among others for the DCD and site-specific seismic loads, respectively. Please explain why the calculated stresses for the site-specific condition remain unchanged from the DCD condition.</p> <p>[via email M. Eudy 2/26/16]</p>	TBD	Discussed in a presentation made at the March 3 public meeting. No further action.	Closed Audit 2	
022616002	<p>There appear to have some inconsistencies in some corresponding entries between Table B-2b of NEDE-33572P, Revision 3 and Tables 1 and 2 of 002N8530, Revision 2. For example, in Table 1 (002N8530) for the upper header Pm stress category in service level C-1, the allowable stress is listed as 291.4 MPa whereas the corresponding allowable stress in Table B-2b (NEDE-33572P) is listed as 137.9 MPa. Please address this issue and</p>	002N8530 FSAR	<p>Discussed in a presentation made at the March 3 public meeting.</p> <p>Revise 002N8530 to address inconsistencies in values in different tables.</p> <ul style="list-style-type: none"> - Table B-2b; add note to explain material inconsistency - Table 4 entries for Note 3 calculated from Table C7 - Resolve question on ENSA statement regarding modifying 	Confirmatory Audit 2	<p>PCCS condenser ITAAC DCD Table 2.15.4-2, item 2a2 addresses as-built design (ASME Section III)</p> <p>GEH to revise reference (3) calculations supporting 002N8530 report to</p>

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	<p>as appropriate check all other table entries for consistency with NEDE-33572P Tables. Should revise the report as appropriate.</p> <p>[via email M. Eudy 2/26/16]</p>		<p>response spectra to create time histories.</p> <p>Revise FSAR for the fuel racks and PCCS condenser summarizing the evaluations performed and include the correct report revision numbers (moved from AI 0910GEN02).</p>		<p>address issues with PCCS condenser bolt loads.</p>
022616003	<p>Report 002N8530, Revision 2 should have a reference to the applicable design report or similar documents that provides the basis of the key findings (summarized in 002N8530, Revision 2) from the site-specific reanalysis of the PCCS.</p> <p>[via email M. Eudy 2/26/16]</p>	002N8530	<p>Discussed in a presentation made at the March 3 public meeting.</p> <p>A reference will be added to the report (002N8530) to refer to the design basis calculation that was performed on the PCCS.</p>	<p>Closed</p> <p>Audit 2</p>	
022616004	<p>DCD Section 3.8.1.4.1.3 discusses concrete cracking considerations for the RCCV. However, for evaluation of RCCV for site-specific seismic load, this method was not used as discussed in FSAR 3G.7.5.2. As such why NAPS DEP 3.7-1 was not posted against the FSAR Section 3.8.1.4.1.3? A similar issue is noted in the DCD Section 3.8.3.4 where it is stated that "The effects of concrete cracking of the containment structure on the accidental thermal stresses in the containment internal structures are accounted for in the form of thermal ratios as described in Subsection 3.8.1.4.1.3."</p> <p>[via email M. Eudy 2/26/16]</p>	FSAR Section 3.8	<p>Discussed in a presentation made at the March 3 public meeting.</p> <p>Being addressed through AI 01151600A and 01151600C.</p>	<p>Closed</p> <p>Audit 2</p>	

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022616005	<p>The applicant identified departure NAPS DEP 3.7-1 in FSAR 3.8.3.5.1 regarding the structural acceptance criteria for the diaphragm floor. The departure states: “The structural acceptance criteria for the site-specific structural evaluation of the diaphragm floor are in accordance with ANSI/AISC N690, unless it is shown that the structural evaluation results over-estimate the stresses or that the diaphragm floor is otherwise acceptable.” The staff could not locate a further evaluation of this departure regarding the structural acceptance criteria in FSAR Section 3.8, Appendix 3G, nor in Part 7 – Departures. Please provide further details of evaluation of this departure regarding the acceptance criteria and include this evaluation in the appropriate location(s) of the FSAR.</p> <p>[via email M. Eudy 2/26/16]</p>	<p>FSAR 3.8.3.5.1 3G.7.5.4.2.1</p>	<p>Discussed in a presentation made at the March 3 public meeting.</p> <p>Revise the words “unless it is shown that the structural evaluation results over-estimate the stresses or that the diaphragm floor is otherwise acceptable” in FSAR Subsection 3.8.3.5.1 to accurately reflect the departure.</p> <p>Check 3G.7.5.4.2.1 for similar issue.</p>	<p>Confirmatory</p> <p>Audit 2</p>	
022616006	<p>SER-DMN-032-Revision 2 (CB/FWSC Bounding Report), Tables 3.2-1 to 3.2-6 present FWSC “concrete cracking amplification factors” that are calculated as the ratio of the enveloped result of SSI analyses of the FWSC cracked concrete model over those of the uncracked concrete model. The tables cover amplification factors for most seismic load demands but not for the shear key demand. Please provide a table that</p>	<p>SER-DMN-32 FSAR 3A.17.9.3</p> <p>FWSC Seismic Analysis Report WG3-U63- ERD-S- 0001</p>	<p>Discussed in a presentation made at the March 3 public meeting.</p> <p>A statement has been added in Revision 2 of Bounding Report (SER-DMN-032) and FSAR 3A.17.9.3 markups stating that design basis analysis of UC_{SSE} models bound concrete cracking effects on FWSC shear keys lateral load demands.</p>	<p>Confirmatory</p> <p>Audit 2</p>	

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	<p>shows the enveloped lateral force demands for the FWSC shear keys from the SSI analyses of the cracked and uncracked concrete models, respectively, and their ratios (concrete cracking amplification factors).</p> <p>[via email M. Eudy 2/26/16]</p>		<p>The NRC indicated that it will review this further in Audit 2.</p> <p>Dominion to provide a comparisons of driving forces at bottom of FWSC basemat to demonstrate the load demands due to concrete crack on shear keys are enveloped by uncracked condition , i.e. the cracking amplification factor for shear keys is =1.</p> <p>This issue was discussed at the 3/16/16 public teleconference with NRC.</p> <p>Comparisons of maximum horizontal and vertical driving forces obtained from CR_{SSE} and UC_{SSE} models confirm conclusions in Appendix B of FWSC Seismic Analysis Report WG3-U63-ERD-S-0001 that sliding analyses of UC_{SSE} model provide lateral force demands on shear keys that bound concrete cracking effects.</p> <p>Table to be inserted into Appendix B of FWSC Seismic Analysis Report WG3-U63-ERD-S-0001.</p> <p>Revise 3A.17.9.3 to remove text “on the top of basement” on Page 3-339.</p>		

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North Anna Unit 3 Seismic Audit 2**

AI Number from Source	AI/Question Description	Impacted Report	Follow-up Action	Status	Comments
022616007A	<p>FSAR Section 3G (mid-section, page 570 of 903) states that “Unit 3 site-specific subgrade conditions are used in the evaluations, as described in the sections below.” However, in the subsequent sections, the applicant describes that “soft site” subgrade conditions used in the DCD are also used in NA3 site-specific structural evaluations.</p> <p>(a) Please clarify these conflicting statements.</p> <p>[via email M. Eudy 2/26/16]</p>	FSAR 3G	<p>Discussed in a presentation made at the March 3 public meeting.</p> <p>FSAR Appendix 3G will be revised to eliminate the conflict identified in the question.</p>	Confirmatory Audit 2	
022616007B	<p>FSAR Section 3G (mid-section, page 570 of 903) states that “Unit 3 site-specific subgrade conditions are used in the evaluations, as described in the sections below.” However, in the subsequent sections, the applicant describes that “soft site” subgrade conditions used in the DCD are also used in NA3 site-specific structural evaluations.</p> <p>(b) Please provide a justification that “soft soil” subgrade condition applied at the NA3 rock site provides conservatism with respect to forces and deformations induced in the Category I structures.</p> <p>[via email M. Eudy 2/26/16]</p>	New stand-alone report	<p>Discussed in a presentation made at the March 3 public meeting.</p> <p>Dominion will review the exception noted in DCD Section 3.8.5.4 for impact on NA3.</p> <p>Dominion will demonstrate that use of soft springs for NA3 evaluations is conservative based on the response of DCD RAI 3.8-13 and results from NA3 analyses results.</p> <p>Dominion to add conclusions in a technical report; maybe a standalone report.</p> <p>This item was discussed at 3/16/16 public teleconference with NRC.</p>	Confirmatory Audit 2	New report to be posted in Electronic Reading Room for NRC review.

**Seismic Action item Tracking List
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			<p>Dominion to discuss the following with NRC during audit :</p> <ol style="list-style-type: none"> 1. Include uplift 2. explain how soft soil affects containment wall to basemat junction 3. Provide summary discussion in FSAR 		
030316001	<p>Add a discussion in the FSAR regarding the performance of site-specific stress evaluations for NA3 selected elements (SER DMN-036).</p> <p>[from 3/3/16/ meeting]</p>	FSAR 3.8 or 3G	<p>Discussed in a presentation made at the March 3 public meeting.</p> <p>Dominion will revise FSAR (3.8 or 3G) to include a discussion regarding the site-specific stress evaluations for NA3 selected elements.</p>	Confirmatory	Draft FSAR changes provided to NRC on 3/11/16
032216001	<p>CB structural report :</p> <ul style="list-style-type: none"> - F and H load columns missing from Table 6.3-3 - Clarification needed in text regarding application of ASME Section III, Division 2 criteria. - Address the 8 percent SSSI exceedance in vertical direction. - Rain and snow loads appear to be missing from Table 6.2-3. 	WG3-U73-ERD-S-0004	<p>Revise 0004 report Table 6.3-3 to add footnote to explain F and H loads.</p> <p>Clarify 0004 report Section 6.1 in the discussion regarding the application of ASME Section III, Division 2.</p> <p>Review report 0004 Section 5.6 regarding the discussion of 8 percent exceedance in vertical direction. Add justification as necessary.</p> <p>Revise 0004 report Table 6.2-3 to add footnote regarding snow and rain loads.</p>	Closed	

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032216002	Explain what and how lateral soil pressures including passive pressures were applied in the NASTRAN model. Refer to Figures 3G.8-203 through -210.	FSAR 3G.8.5.2 3G.7.5	<p>Revise FSAR Section 3G.8.5.2 to add a discussion regarding the application of passive soil pressure loads on the walls in the NASTRAN model.</p> <p>Revise FSAR 3G.8.5.2 to remove conflicting statements regarding static pressure.</p> <p>Add a table to FSAR Section 3G.8.5.2 of bounding soil pressure/lateral loads.</p> <p>Review FSAR Section 3G.7.5.2 for similar issues noted above.</p>	Confirmatory	
032216003	Update Table 3A.18.1.2-201 regarding accidental torsional.	FSAR	Update FSAR to add information regarding accidental torsional (similar to RB content)	Confirmatory	
032216004	Revise RAI 3.7.2-17, part a) to update the discussion regarding the stress evaluations of the RPV.	RAI 3.7.2-17	Revise RAI 3.7.2-17, part a) to update the discussion regarding the stress evaluations of the RPV.	Confirmatory	
032216005	<p>Conflicting information was identified between DBR-0014696 and FSAR 3G.7.5.4.2.1:</p> <p>- Out of plane acceleration 2.86g should be 2.38g</p>	FSAR 3G.7.5	<p>Review DBR-0014696 and FSAR 3G.7.5.4.2.1 for inconsistencies:</p> <p>- Out of plane acceleration 2.86g should be 2.38g</p>	Confirmatory	
032316001	Revise FSAR 3A.17.11, fifth paragraph, add sentence that the effects of SSSI are enveloped.	FSAR 3A	Revise FSAR 3A.17.11, fifth paragraph, add sentence that the effects of SSSI are enveloped.	Confirmatory	

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AI Number from Source	AI/Question Description	Impacted Report	Follow-up Action	Status	Comments
032316002	FSAR 3A.18.2, add statement that ISRS peaks are broadened.	FSAR 3A	FSAR 3A.18.2, add statement that ISRS peaks are broadened.	Confirmatory	
032316003	FSAR 3G.10, add statement regarding rebar that was added to basemat.	FSAR 3G	FSAR 3G.10, add statement regarding rebar that was added to basemat.	Confirmatory	