



South Texas Project Electric Generating Station P.O. Box 289 Wadsworth, Texas 77483

July 21, 2010  
U7-C-STP-NRC-100161

U. S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
One White Flint North  
11555 Rockville Pike  
Rockville, MD 20852-2738

South Texas Project  
Units 3 and 4  
Docket Nos. 52-012 and 52-013  
Supplemental Response to Request for Additional Information

Reference: Letter, Scott Head to Document Control Desk, "Supplemental Response to Request for Additional Information," dated April 14, 2010, U7-C-STP-NRC-100083 (ML101090143)

Attached is a revised supplemental response to an NRC staff question included in Request for Additional Information (RAI) letter number 302 related to Combined License Application (COLA) Part 2, Tier 2, Section 3.7. The attachment revises the supplemental response provided in the referenced letter to RAI question 03.07.01-24.

No COLA changes are required as a result of this response.

There are no commitments in this letter.

If you have any questions regarding this response, please contact me at (361) 972-7136, or Bill Mookhoek at (361) 972-7274.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on 7/21/10

Scott Head  
Manager, Regulatory Affairs  
South Texas Project Units 3 & 4

ccc

Attachment: RAI 03.07.01-24, Supplement 1, Revision 1

DO91  
NRW

STI 32703108

cc: w/o attachment except\*  
(paper copy)

Director, Office of New Reactors  
U. S. Nuclear Regulatory Commission  
One White Flint North  
11555 Rockville Pike  
Rockville, MD 20852-2738

Regional Administrator, Region IV  
U. S. Nuclear Regulatory Commission  
611 Ryan Plaza Drive, Suite 400  
Arlington, Texas 76011-8064

Kathy C. Perkins, RN, MBA  
Assistant Commissioner  
Division for Regulatory Services  
P. O. Box 149347  
Austin, Texas 78714-9347

Alice Hamilton Rogers, P.E.  
Inspections Unit Manager  
Texas Department of Health Services  
P. O. Box 149347  
Austin, Texas 78714-9347

C. M. Canady  
City of Austin  
Electric Utility Department  
721 Barton Springs Road  
Austin, TX 78704

\*Steven P. Frantz, Esquire  
A. H. Gutterman, Esquire  
Morgan, Lewis & Bockius LLP  
1111 Pennsylvania Ave. NW  
Washington D.C. 20004

\*Tom Tai  
Two White Flint North  
11545 Rockville Pike  
Rockville, MD 20852

(electronic copy)

\*George F. Wunder  
\*Tom Tai  
\*Tekia Govan  
Loren R. Plisco  
U. S. Nuclear Regulatory Commission

Steve Winn  
Joseph Kiwak  
Eli Smith  
Nuclear Innovation North America

Jon C. Wood, Esquire  
Cox Smith Matthews

Richard Peña  
Kevin Pollo  
L. D. Blaylock  
CPS Energy

**RAI 03.07.01-24****QUESTION:****(Follow-up Question to RAI 03.07.01-14)**

1. In the response to RAI 03.07.01-14, Item 1, the applicant cited DCD Appendix 3A in concluding that “... ***the potential effect of structure-to-structure interaction was relatively small.***” However, DCD Section 3A.9.7, “Effect of Adjacent Buildings” also concluded that seismic soil pressure in between the RB and CB increased due to structure-to-structure interaction (SSSI) effect. As such the applicant is requested to discuss how the potential effects of increase in the seismic soil pressure in between the Category 1 structures and the retaining wall due to the SSSI effect has been addressed and bounded by the certified design.

2. In the response to RAI 03.07.01-14, Item 2, the applicant stated in the second bullet that “***In comparison to the Reactor, Control and Turbine Buildings, the retaining wall is a light structure and a lighter structure will have less influence on the seismic behavior of the heavy adjacent structures.***” While the inertia of the RC retaining wall is not expected to affect the seismic response of the adjacent seismic Category I structures, the stiff retaining wall can act as a barrier to reflect the seismic waves due to kinematic interaction with surrounding soil and could affect the seismic input to the adjacent structures. As such, the applicant is requested to provide a quantitative assessment of the effect of RC retaining wall on the SSI analysis of adjacent Reactor and Control Buildings.

**REVISED SUPPLEMENTAL RESPONSE:**

The original supplemental response to this RAI was submitted with STPNOC Letter No. U7-C-STP-NRC-100083, dated April 14, 2010. This revised supplemental response is being submitted because of a discrepancy identified in the Reactor Building model used for the soil-structure interaction analysis from which the results for the previously submitted supplemental response were obtained. This revised supplemental response completely supersedes the original supplemental response.

In order to address the above two questions, a soil-structure interaction (SSI) analysis of the Reactor Building (R/B) and Control Building (C/B), with and without the crane wall, was performed for the site-specific conditions, including site-specific safe shutdown earthquake (SSE) and soil properties. These analyses were performed using two-dimensional (2D) models of the R/B and C/B. The SSI analyses were performed using the SASSI2000 program. Summaries of the SSI analyses results for the mean soil case are presented below. Similar results are obtained for lower and upper bound soil cases.

#### Summary of Results for R/B:

- Table 03.07.01-24a compares the maximum forces and moments, at key locations of the R/B, with and without the crane wall. As can be seen, the crane wall has a negligible effect on the resulting maximum forces and moments.
- Figures 03.07.01-24a through 03.07.01-24d provide comparisons of response spectra at several locations with and without the crane wall. As can be seen, the crane wall has a negligible effect on the resulting spectra.
- Figure 03.07.01-24e provides the comparison of the resulting seismic soil pressures from the SSI analyses with and without the crane wall. As expected, these seismic lateral soil pressures are significantly bounded by the design seismic soil pressure per DCD Tier 2, Figure 3H.1-11 and pressure obtained from the alternate modified Ostadan method described in COLA Part 2, Tier 2, Section 2.5S.4.10.5.2.

#### Summary of Results for C/B:

- Table 03.07.01-24b compares the maximum force and moment at grade of the C/B with and without the crane wall. As can be seen, the crane wall has a negligible effect on the resulting maximum force and moment.
- Figures 03.07.01-24f and 03.07.01-24g provide comparisons of response spectra at top of basemat and top of C/B with and without the crane wall. As can be seen, the crane wall has a negligible effect on the resulting spectra.
- Figure 03.07.01-24h provides the comparison of the resulting seismic soil pressures from the SSI analyses with and without the crane wall. As expected, these seismic lateral soil pressures are significantly bounded by the design seismic soil pressure per DCD Tier 2, Figure 3H.2-14 and pressure obtained from the alternate modified Ostadan method described in COLA Part 2, Tier 2, Section 2.5S.4.10.5.2.

No COLA change is required for this response.

**Table 03.07.01-24a**  
**Reactor Building Force Comparison**

<b>Effect Of Crane Wall on Maximum Forces, Mean Soil</b>				
Beam Element	Location	Response Type	Model in SSI Analysis	
			2-D Reactor Building (alone)	2-D Reactor Building + Crane Wall
28	Shroud Support	Shear	101	98
		Moment	1,993	1,948
69	RPV Skirt	Shear	373	373
		Moment	6,500	6,420
78	RSW Base	Shear	299	313
		Moment	4,464	4,689
86	Pedestal Base	Shear	1,939	1,943
		Moment	118,771	119,905
89	RCCV at Grade	Shear	5,847	5,985
		Moment	319,708	329,289
99	R/B at Grade	Shear	12,941	13,117
		Moment	874,650	898,702

Units: Shear in kip; Moment in kip-ft

**Table 03.07.01-24b**  
**Control Building Force Comparison**

<b>Effect of Crane Wall on Maximum Forces, Mean Soil</b>				
Beam Element	Location	Response Type	Model in SSI Analysis	
			2-D Control Building (alone)	2-D Control Building + Crane Wall
6	C/B at Grade	Shear (kip)	3,068	3,124
		Moment (kip-ft)	111,181	110,472

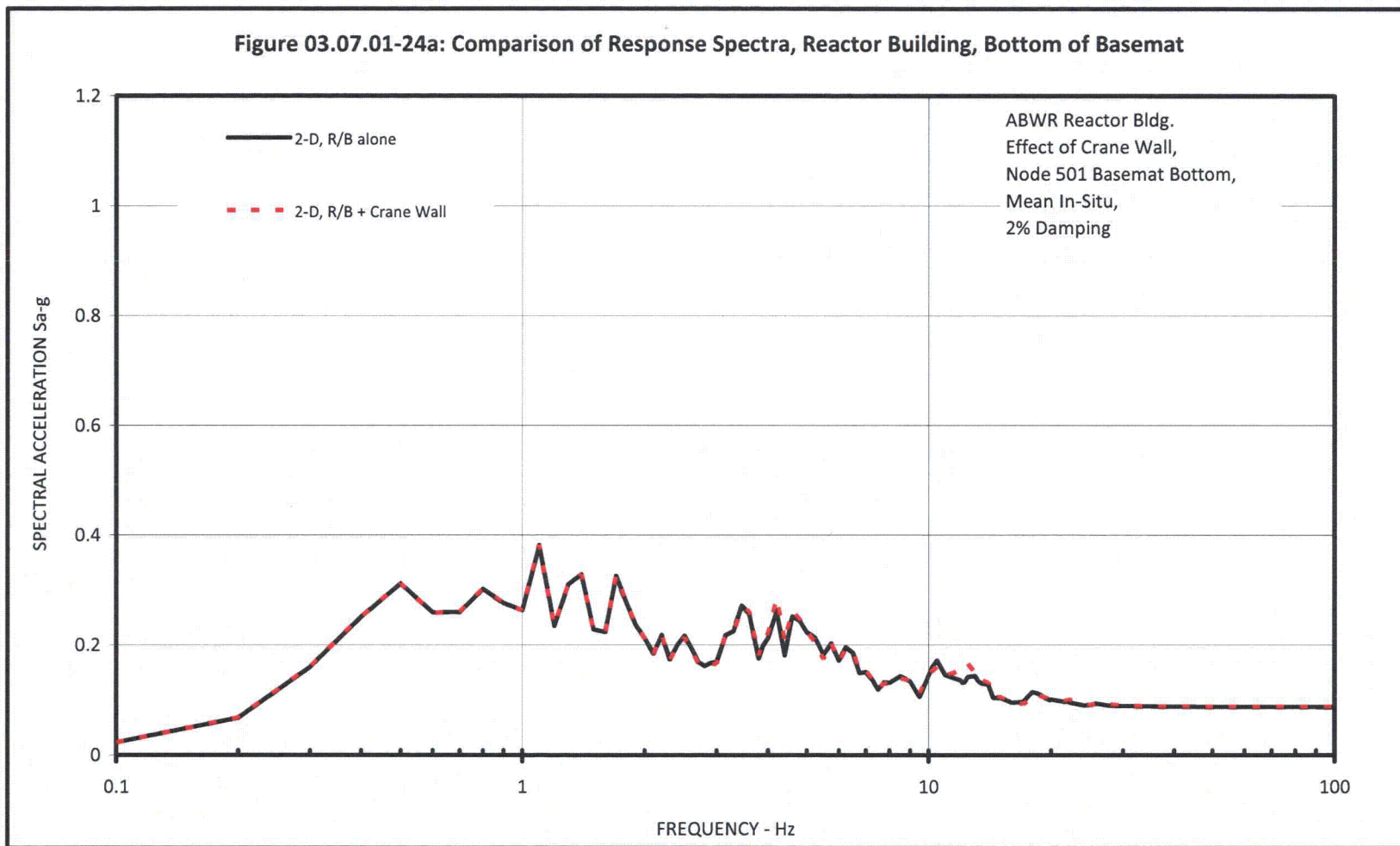
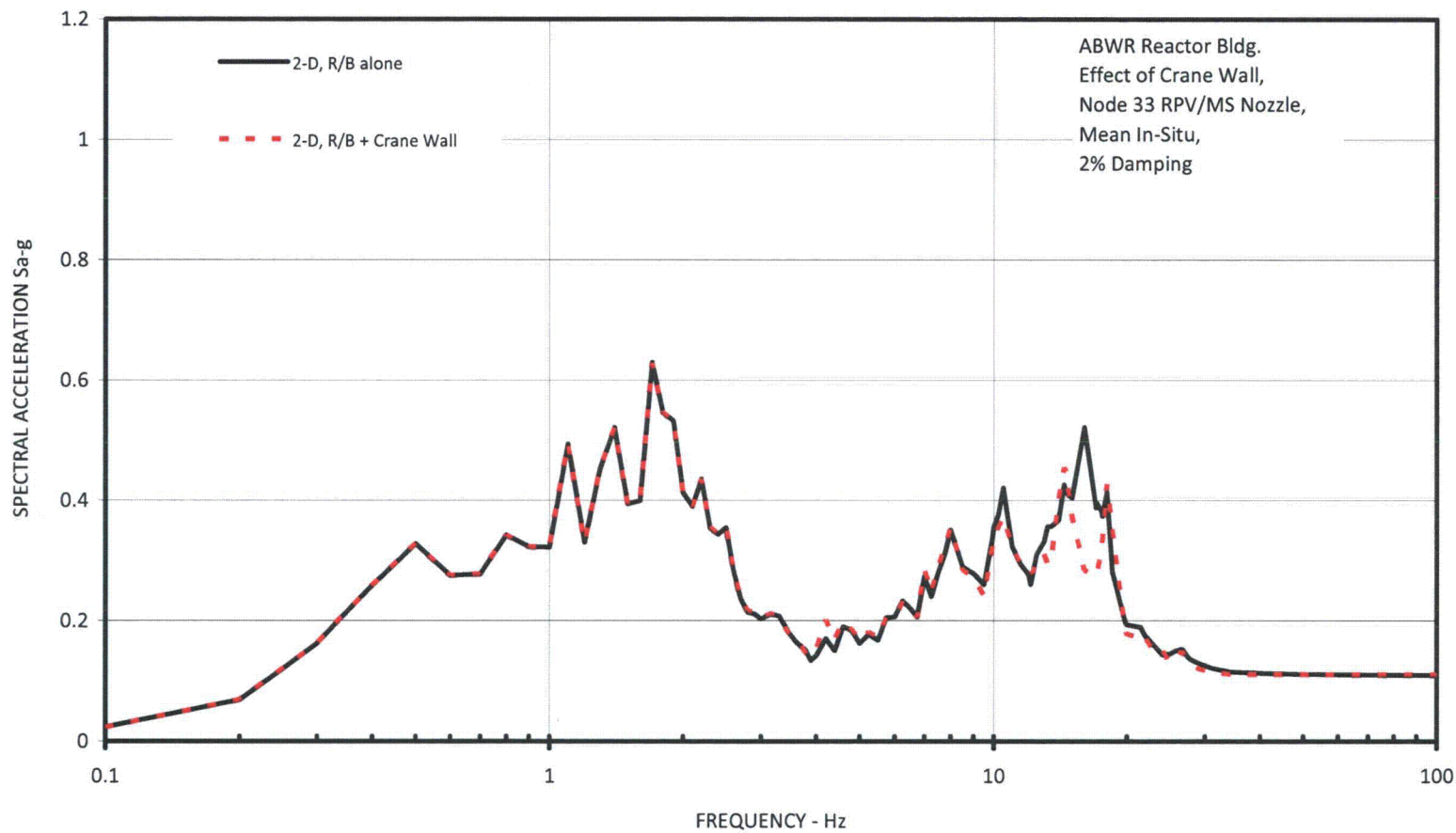


Figure 03.07.01-24b: Comparison of Response Spectra, Reactor Building, RPV/MS Nozzle





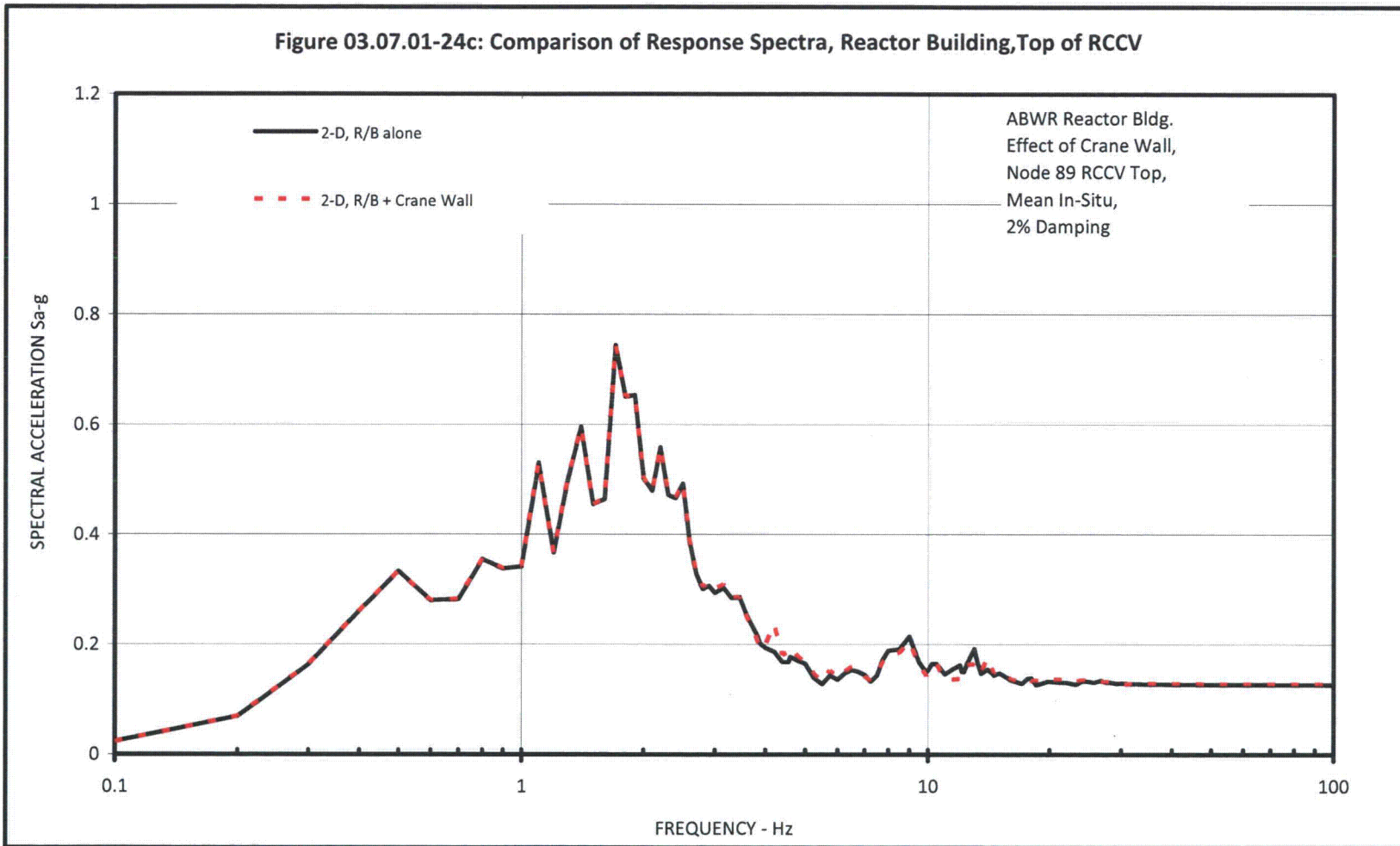


Figure 03.07.01-24d: Comparison of Response Spectra, Top of Reactor Building

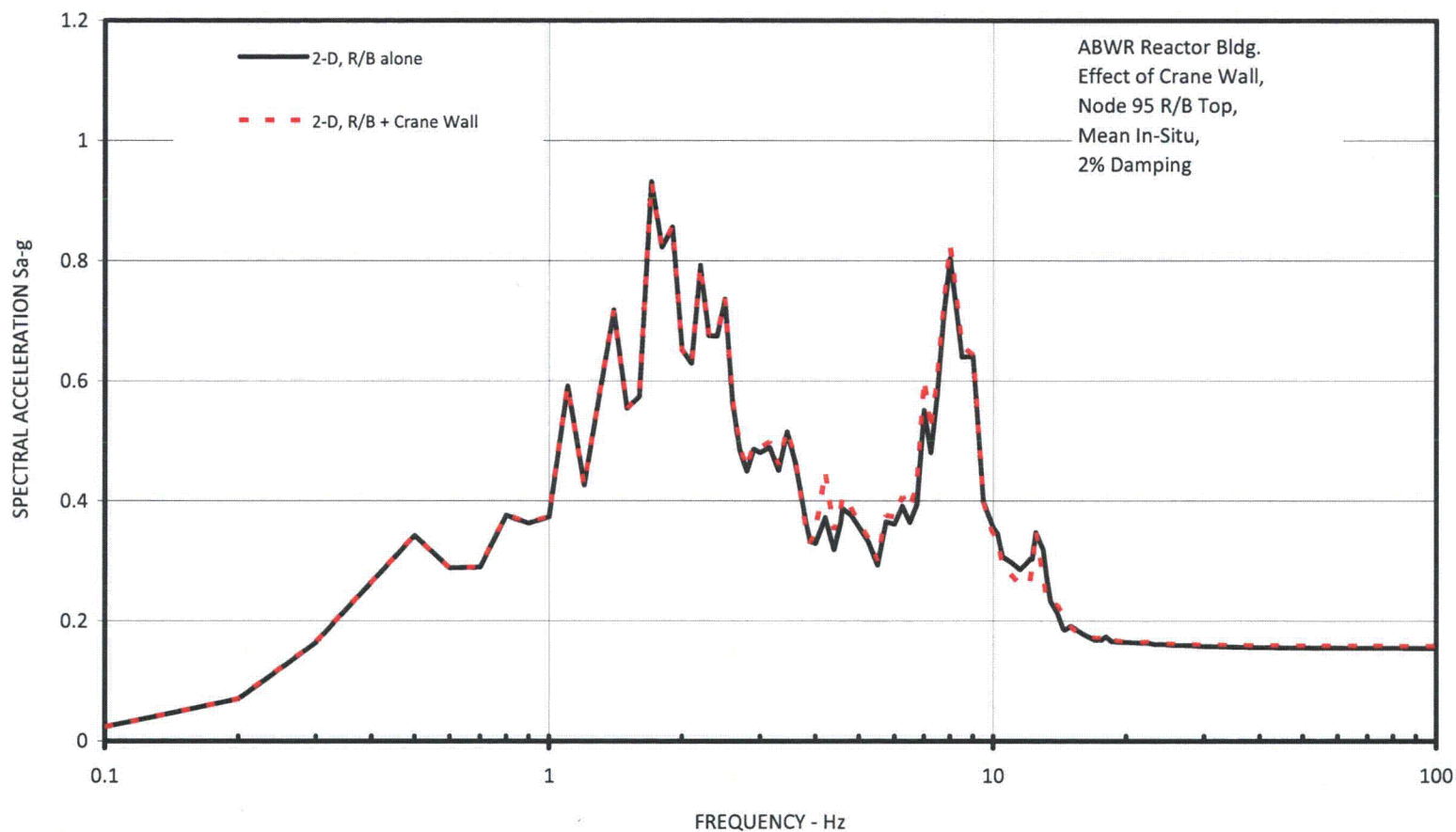
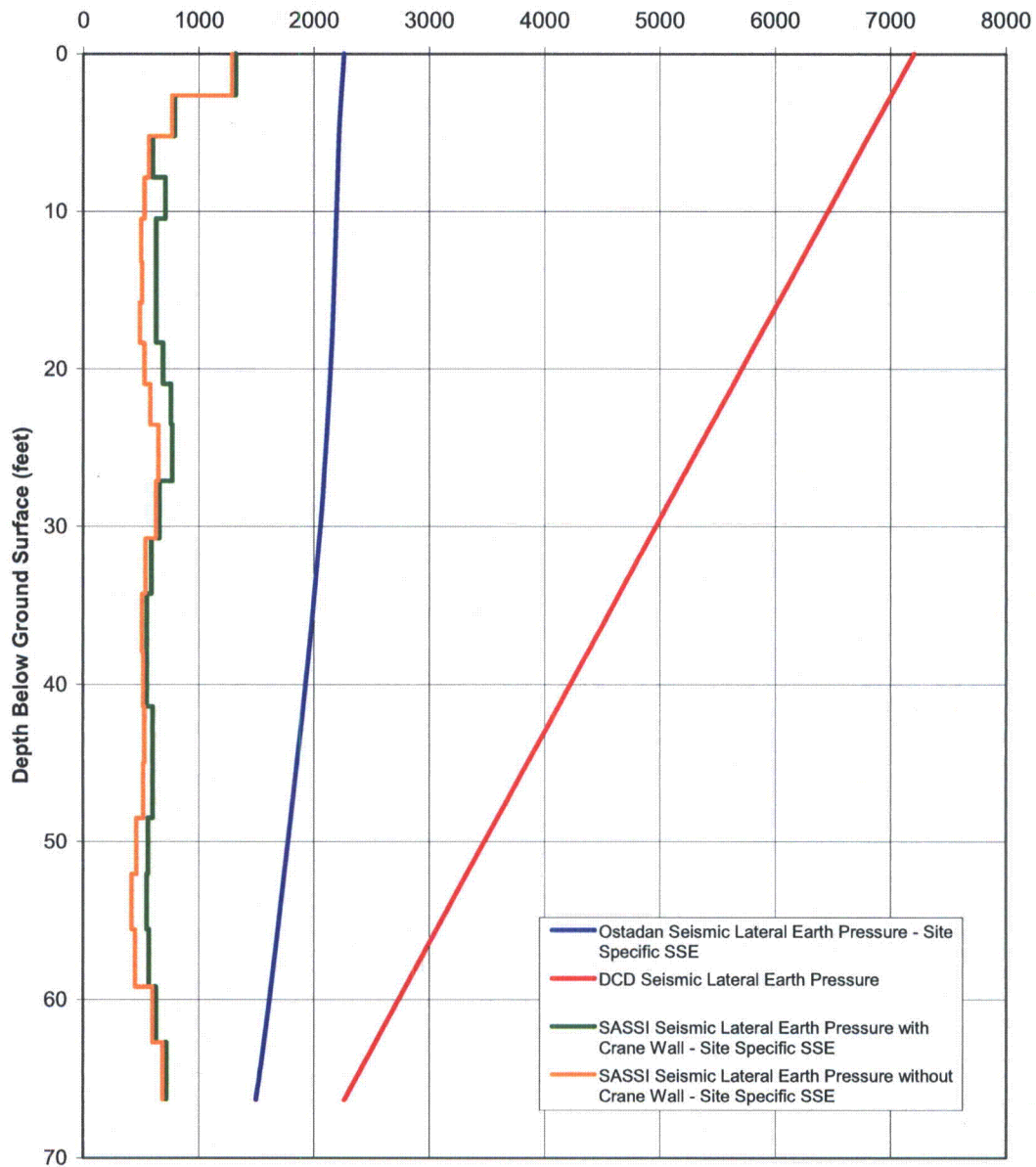
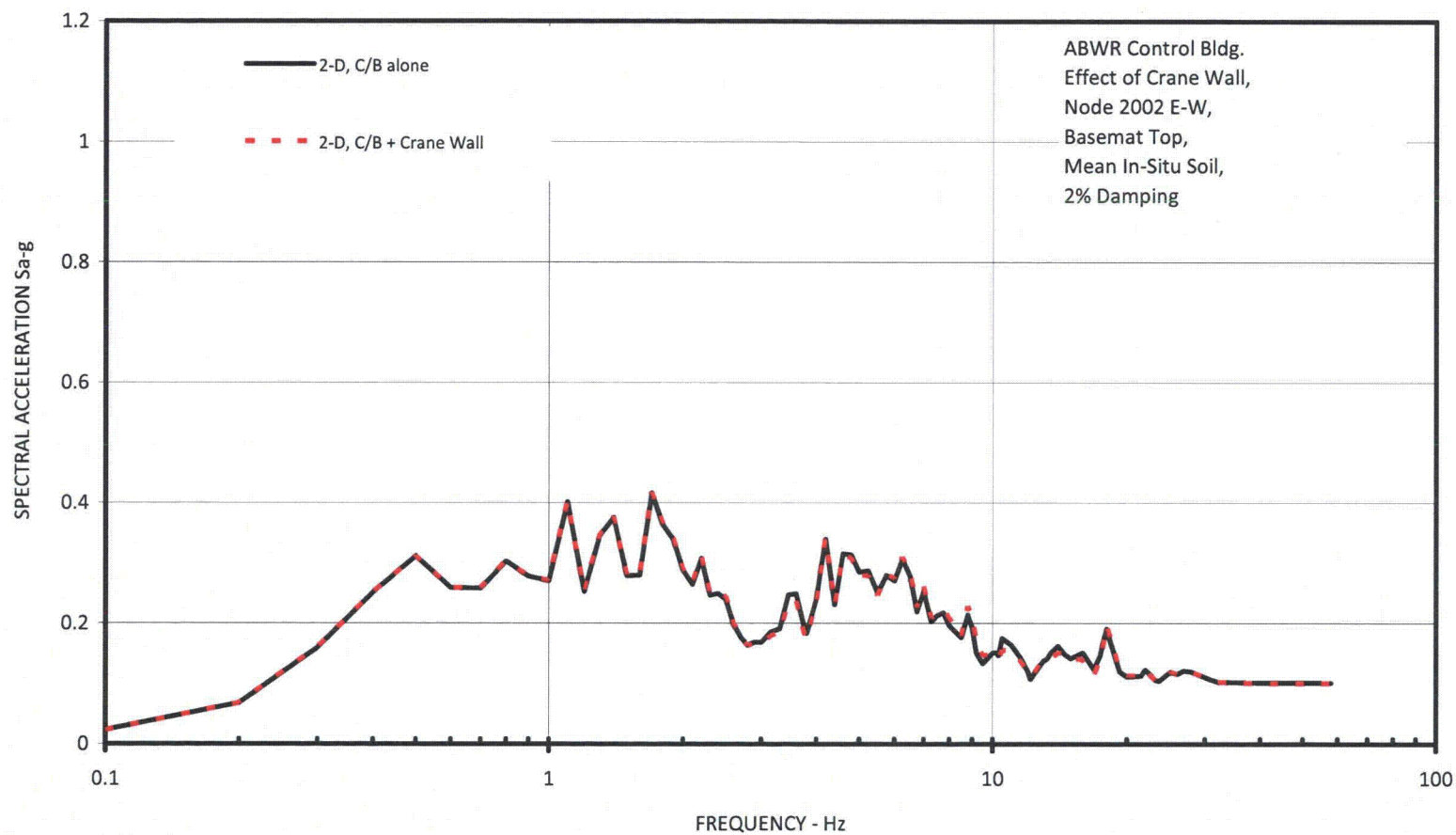


Figure 03.07.01-24e  
Reactor Building Site Specific  
At-Rest Seismic Lateral Earth Pressure (psf)  
Multiple Methods Displayed



**Figure 03.07.01-24f: Comparison of Response Spectra, Control Building, Top of Basemat**

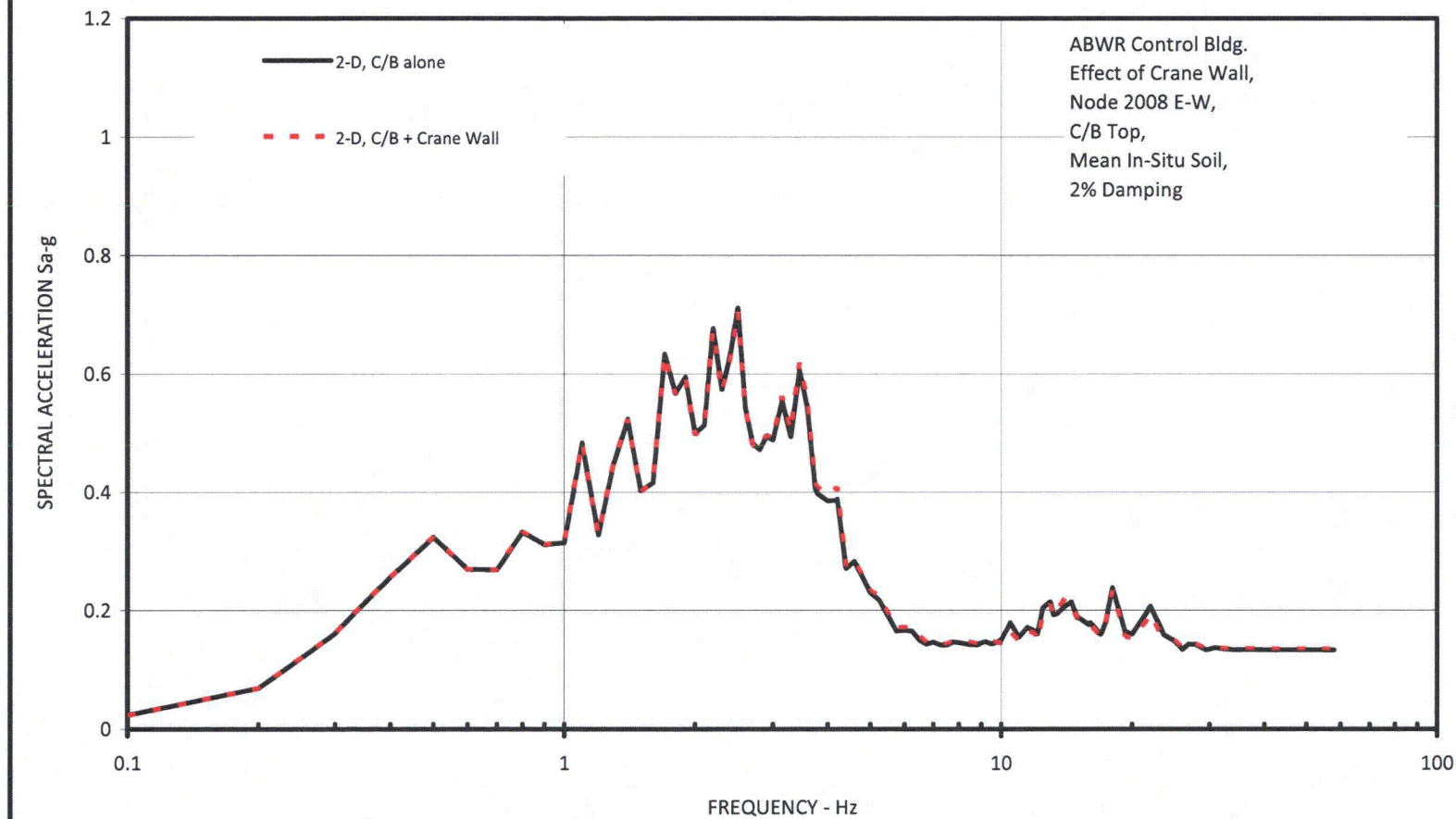
**Figure 03.07.01-24g: Comparison of Response Spectra, Top of Control Building**

Figure 03.07.01-24h  
Control Building Site Specific  
At-Rest Seismic Lateral Earth Pressure (psf)  
Multiple Methods Displayed

