RAS 5449 72-22-ISFSI – Applicant Exhibit 225B – Rec'd 6/8/02

PSF EXHIBIT 225B

SIMULATION OF 8 CASKS ON PSF PAD SUBJECT TO 2K-YEAR RETURN PERIOD GROUND MOTION – CASK-TO-PAD CONTACT STIFFNESS – APPROXIMATELY = 40,000 KIPS/INCH; CONTACT DAMPING = 40% OF CRITICAL

As one of the simulations examined for the sensitivity analysis in "Additional Cask Analysis for the PSFS", Holtec Report HI-2022878, an analysis with contact stiffness of 40,087,024 lb./inch and damping of 40% of critical using the design basis event (2k seismic input motion) for eight casks on the pad with lower bound soil springs was performed (identified as Case 12 of [3] in Subsection 8.3 of HI-2022878). A comparison of the results obtained from VisualNastran using different cask-to-pad contact stiffness and damping values is performed. The results of the analysis are summarized below:

Net Displacement at Top of Cask #1 From Starting Location(inch)	Peak-to-Peak Excursion of Top of Cask #1	Maximum Angle of Rotation (degrees) (Based on Excursion from Starting Location)
3.2	4.7	0.792

The figure below shows a screen capture of the VN results. The calculations to determine the contact stiffness follow the figure.

Template = SECY-028

SECY-02

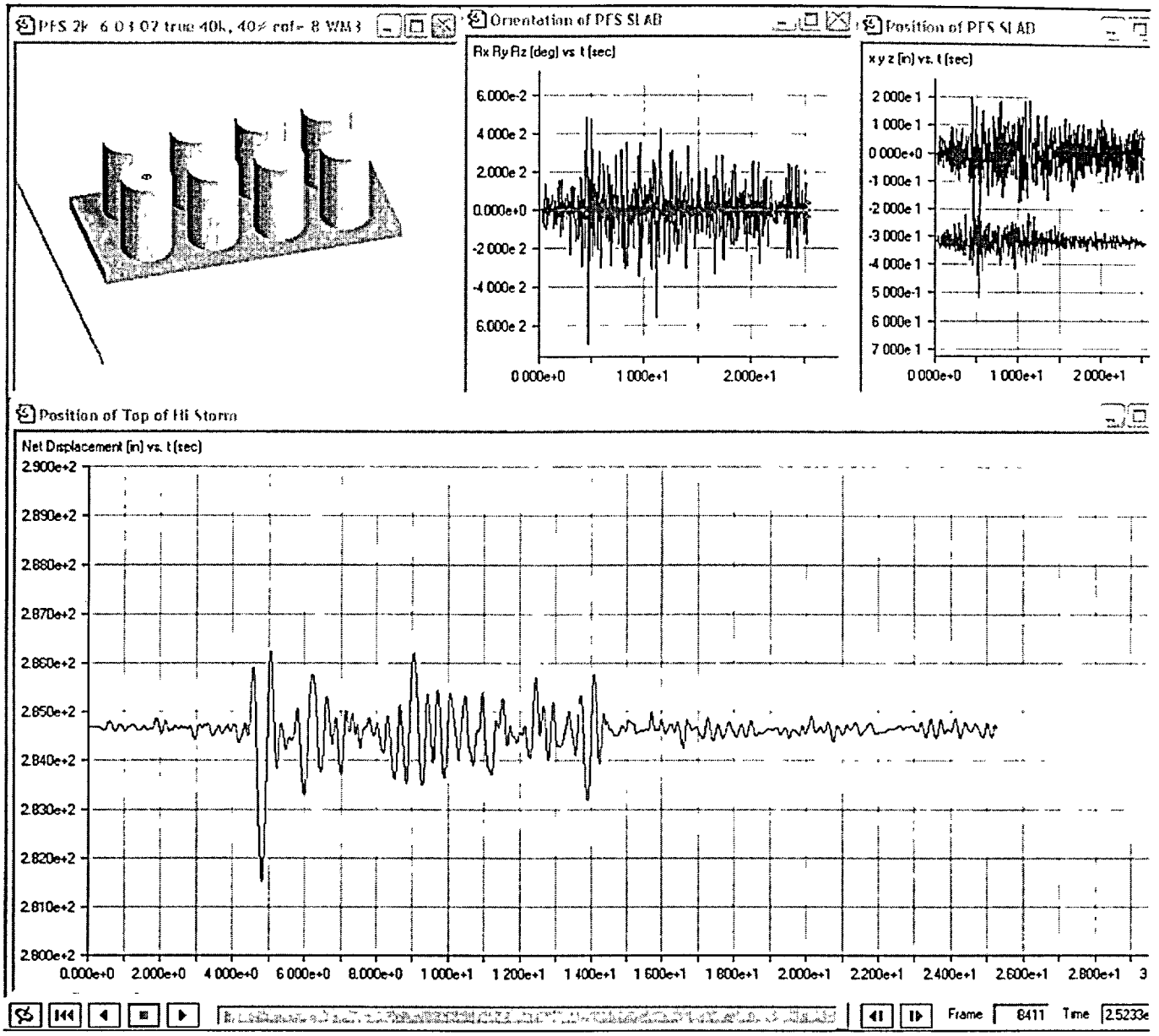

FIGURE 225B-1 – Results for Case with 2k seismic event, Lower Bound Soil Springs, Cask-to Pad Contact Parameters: Stiffness based on 33 Hz Frequency, Damping based on Coefficient of Restitution of 0.25 (40% of Critical Damping)

Input Value for Case 12 Analysis with 2k event, 40,000 kips/inch stiffness, 40% critical damping		
Item	Value	Reference (unless noted reference is to report HI-2022854)
Cask mass (lbm)	360,000	p.12,Figure 8
Cask height (inch)	231.5	HI-STORM FSAR
Cask radius (inch)	66.25	HI-STORM FSAR
Pad length/width/thickness (ft)	67/30/3	Appendix C, p. C-1
Pad mass (lbm)	934700	Figure 8
Cask contact stiffness per facet (lbf/inch)	2,505,439	Calculations Included
Cask Contact damping per facet (lbf *sec/inch)	9666.74	Calculations Included
Cask-Pad Coefficient of Friction	0.8	
Number of facets	16	Appendix A, p.A-1
Cask Locations (confirming runs)	Per array considered	Appendix A, p. A-4
Soil Spring and Damper Data		
Kx(lbf/in)	9,512,000	Appendix D
Cx (lbm/sec)	9.249×10^{7}	"
Ky(lbf/in)	9,037,000	"
Cy (lbm/sec)	8.789×10^{7}	"
Kz(lbf/in)	12,040,000	"
Cz (lbm/sec)	1.727×10^{8}	"
Kxx(lbf-in/deg)	2.423×10^{10}	"
Cxx (lbf in sec/deg)	3.812×10^{8}	"
Kyy(lbf-in/deg)	8.137×10^{9}	"
Cyy (lbf in sec/deg)	8.427×10^{7}	"
Kzz(lbf in/deg)	2.226×10^{10}	"
Czz (lbf in sec/deg)	1.556×10^{8}	"
Seismic Input (2k)	3 input files	Geomatrix

NUCLEAR REGULATORY COMMISSION

Docket No. _____ Official Exh. No. 225B

In the matter of _____

Staff _____	IDENTIFIED ✓
Applicant ✓	RECEIVED _____
Intervenor _____	REJECTED _____
Other _____	WITHDRAWN _____
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