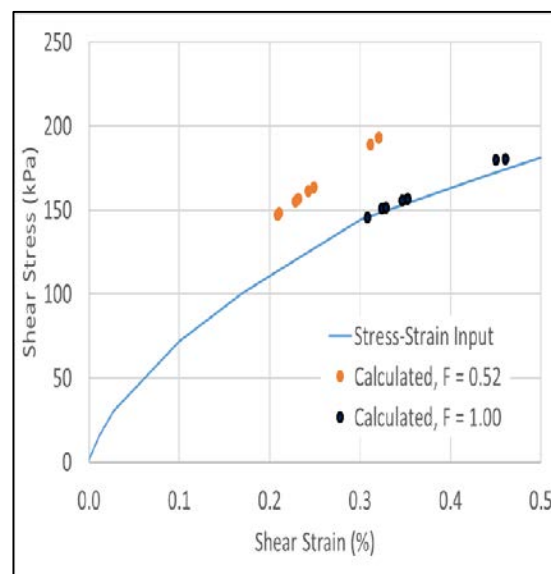
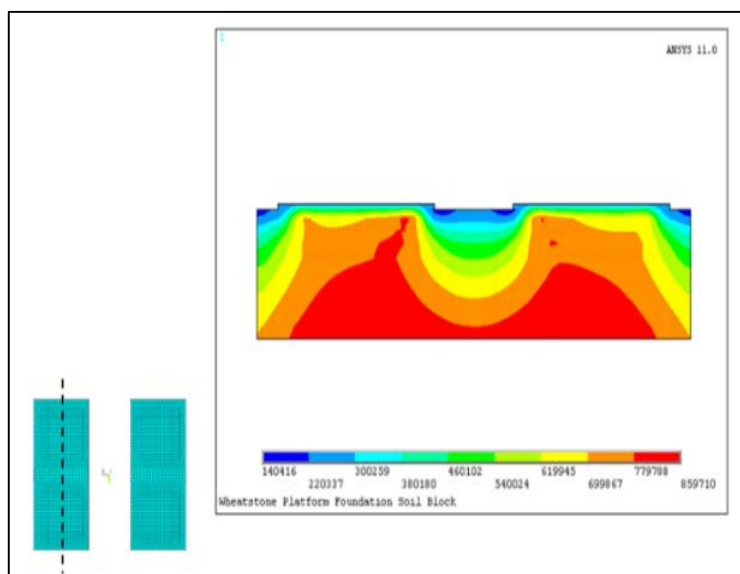
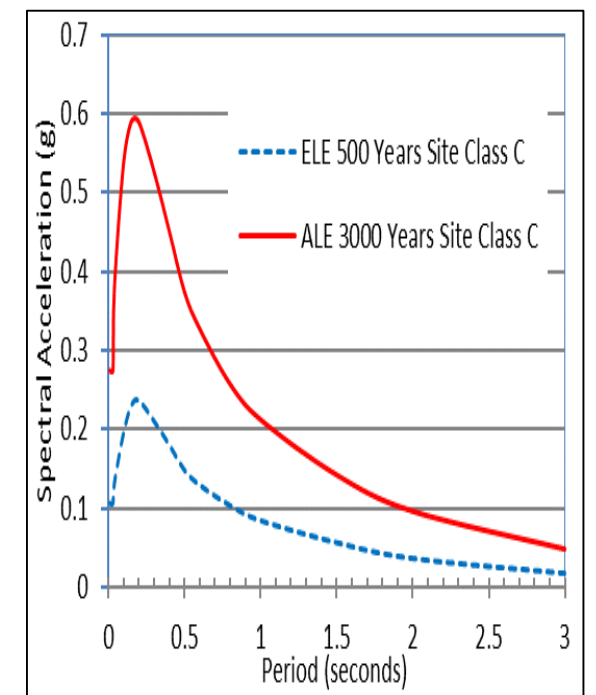
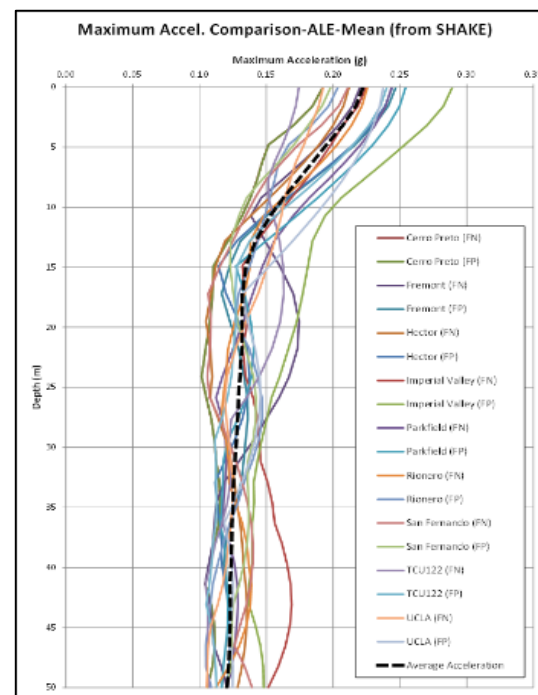
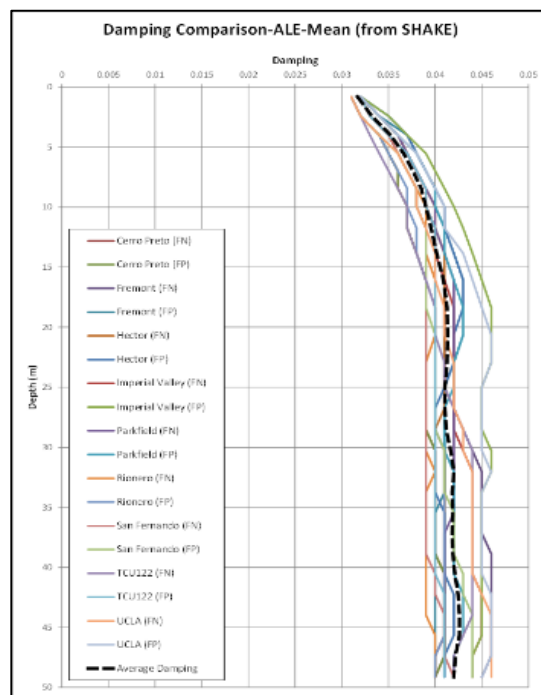
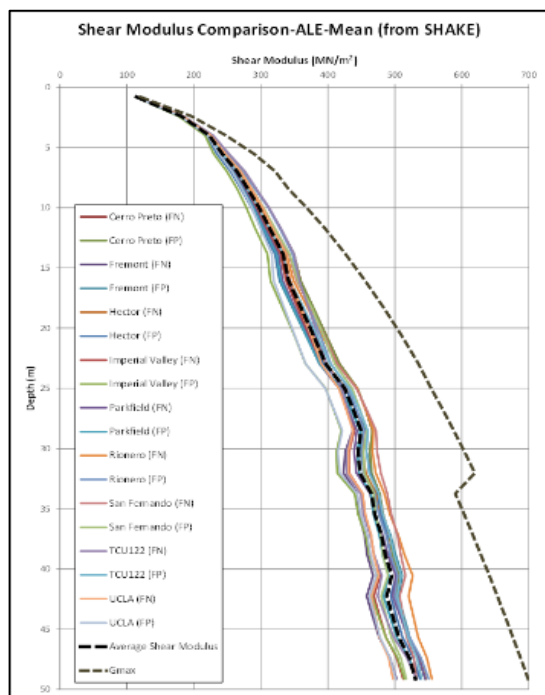
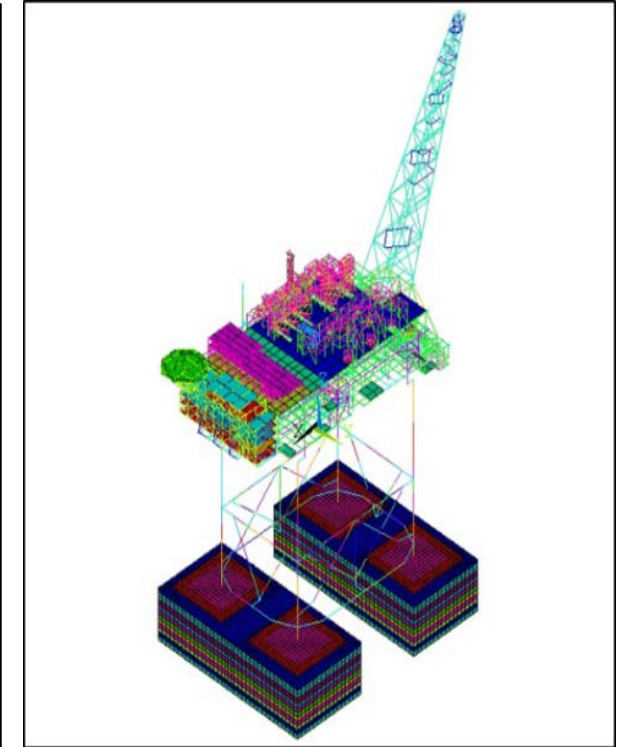
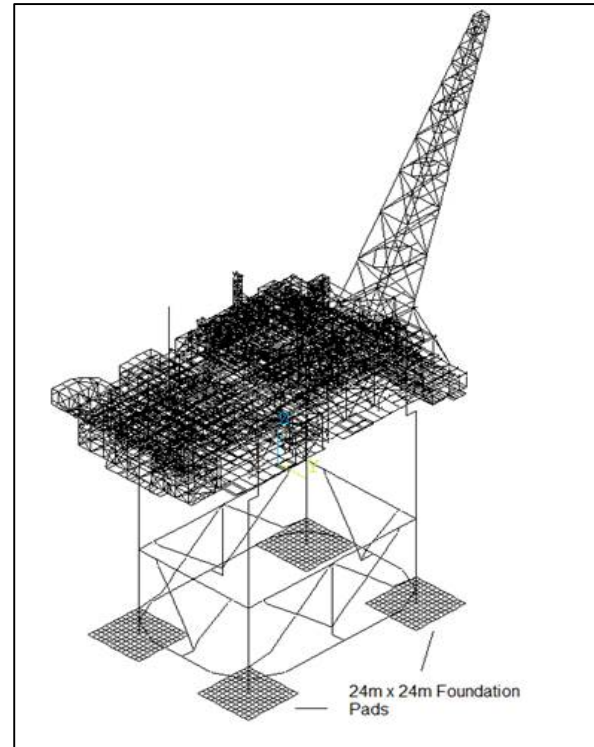
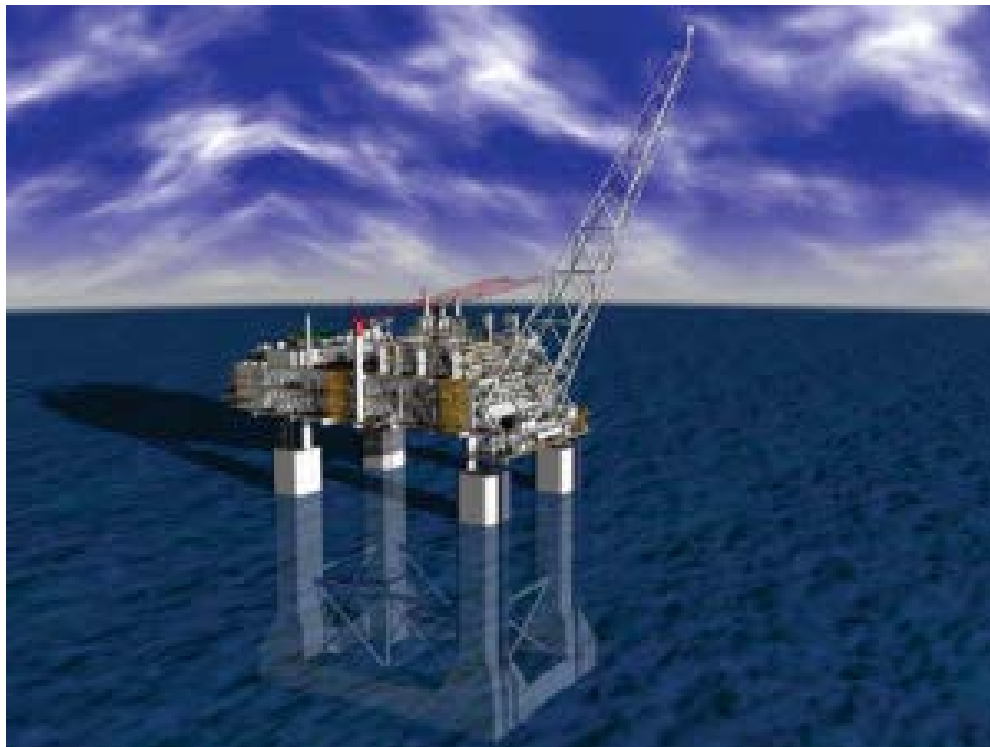


Seismic SSI Analysis of Steel Gravity Structure Considering Nonlinear Foundation



Foundation	Normal Force (MN)	Shear Force (MN)	Overtopping Moment (MN-m)
Pad 1	122	156	1,797
Pad 2	153	158	1,948
Pad 3	149	172	1,926
Pad 4	193	162	2,015

Realistic seismic response analysis of large and heavy offshore gravity-based structures requires proper modeling of the nonlinear behavior of the foundation soils. Seismic SSI analysis of the SGS platform was performed using MTR/SASSI. Primary soil nonlinearity in the free field was accounted for through 1-D site response analysis. To account for soil consolidation under the self-weight of the structure and its secondary nonlinear behavior under an Abnormal Level Event, a portion of soil under the foundation pads was modeled as part of the structure. An iterative scheme employing the equivalent linear method was used to iterate on soil properties in the soil block until the soil shear modulus and damping were compatible with the effective shear strain level in each soil element.