
Effects of High Frequency on Piping

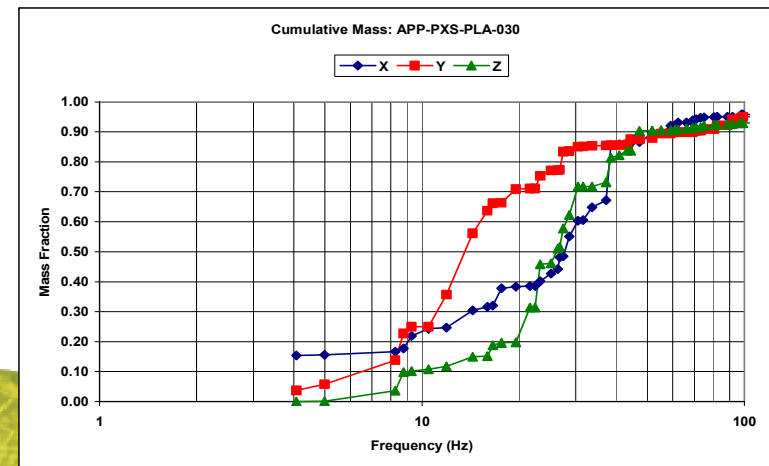
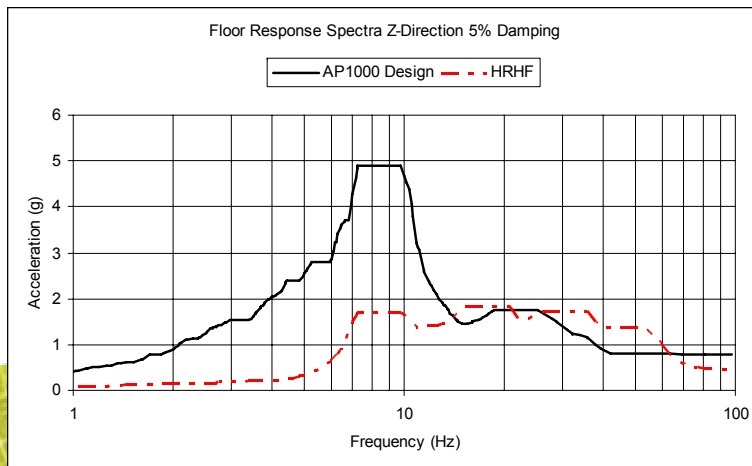
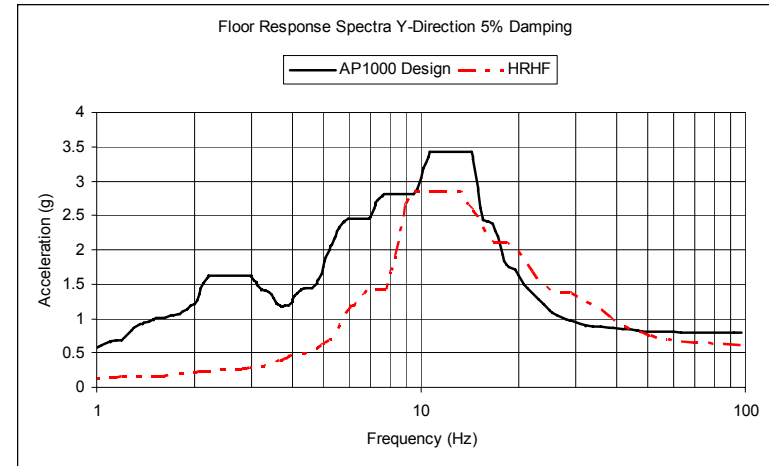
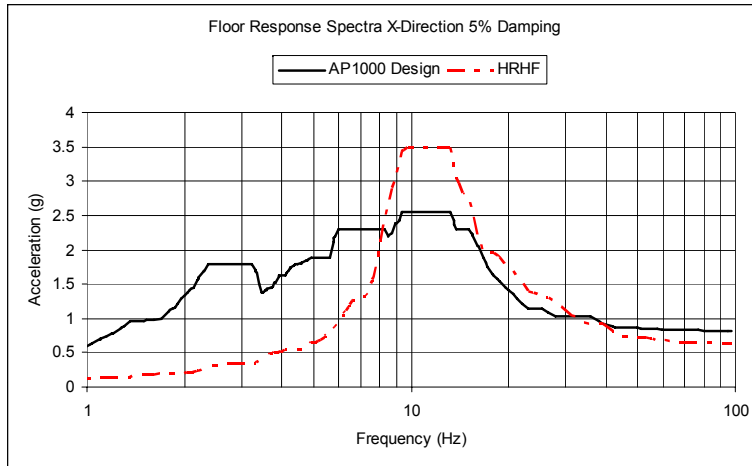
Approach

- Analyze two piping systems; one inside containment and one outside containment.
- Analyze piping systems that are susceptible to high frequency
- Compare the effects HRHF GMRS against the AP1000 CSDRS

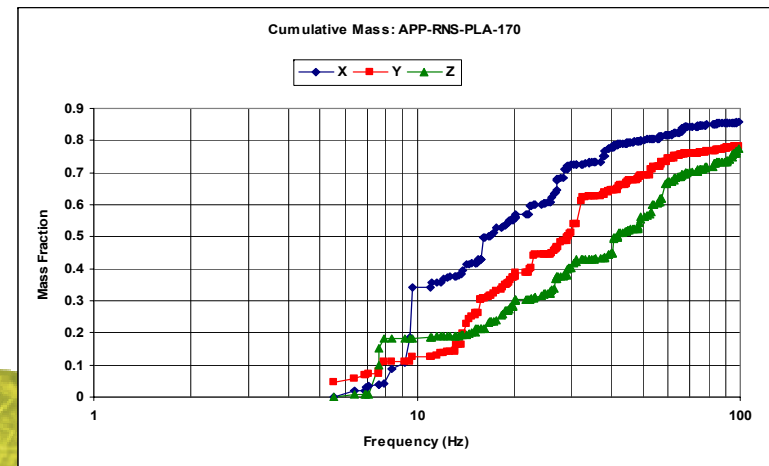
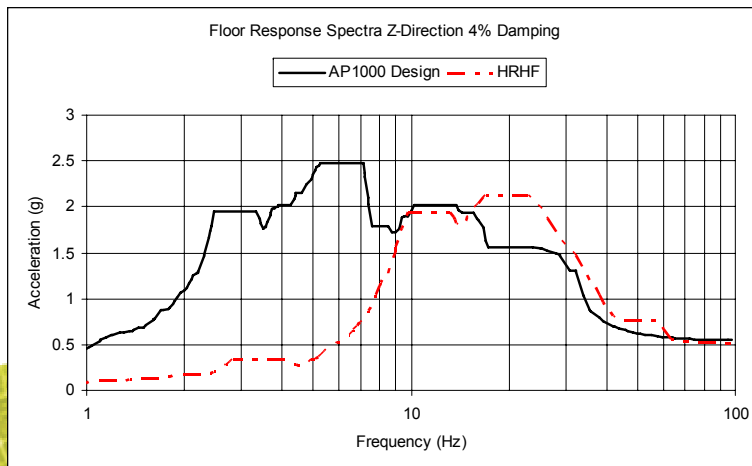
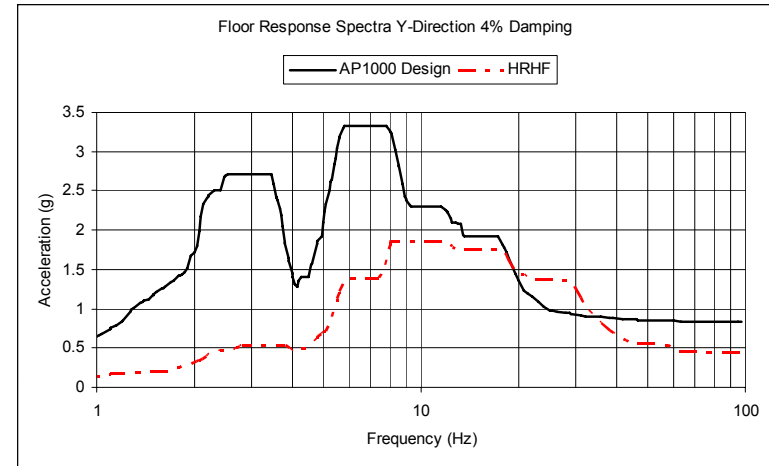
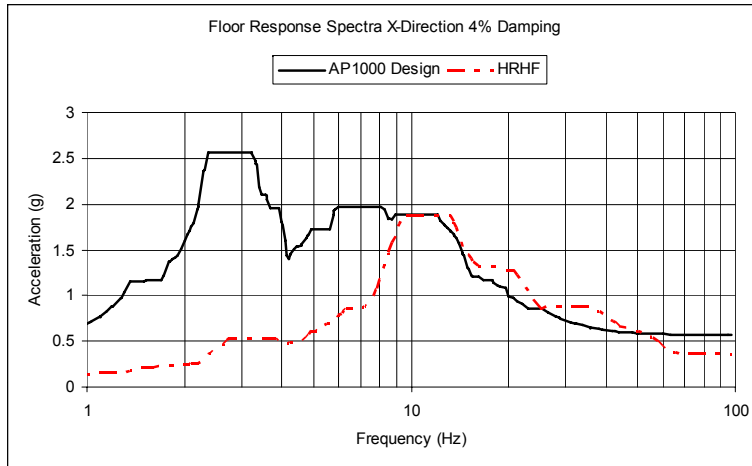
Piping System Selection

- Piping Systems on the Nuclear Island were reviewed for:
 - Piping with mass participation in high frequency modes.
 - Piping at elevations where response spectra has exceedances of the AP1000 CSDRS by the HRHF GMRS.
- Packages that meet both of the above criteria were screened further:
 - Packages must have mass participation in the regions where there are exceedances of the AP1000 CSDRS by the HRHF GMRS
 - Packages with higher degrees of participation and exceedance were chosen.

Piping Inside Containment: APP-PXS-PLA-030



Piping Inside Containment: APP-RNS-PLA-170



Analysis Method

- Comparisons were made with exactly the same input files.
- The both HRHF GMRS analyses followed the same analysis methodology as normal piping analysis would with the AP1000 CSDRS.

TR115 Conclusions

- HRHF GMRS does not cause overstresses.
- Stresses in critical areas (where stress ratios approach 1.0 with the AP1000 CSDRS) are significantly lower with the HRHF GMRS.