Ground Motions from M6 South Napa Earthquake of 24 August 2014

August 27, 2014
Acceleration Histories at Station 68206 — Soil Site  
(12 miles from Epicenter)

$PGA_1 = 0.517 \text{ g}$  
3 Cycles  

$PGA_2 = 0.979 \text{ g}$  
1.4 Cycles  

$PGA_v = 0.316 \text{ g}$  
2.3 Cycles  

Time, $t$ (s)
Recorded and Design Response Spectra

![Graph showing recorded and design response spectra. The graph plots peak pseudo-velocity (PPV) versus natural period (T) for different acceleration levels. Key points include PGA = 0.621 g, PD = 0.731 in, and PPV = 9.37 in/s.]
Acceleration Histories at Station 68259 — Rock (?) Site (12 miles from Epicenter)

- PGA₁ = 0.178 g
- PGA₂ = 0.424 g
- PGAᵥ = 0.172 g

4.7 Cycles

2 Cycles

2.6 Cycles
Recorded and Design Response Spectra
Acceleration-Deformation Plots of Response Spectra
Preliminary Conclusions

- Although acceleration demands were high in some places, the deformation and cyclic demands were quite low.
- As a result, the motions were damaging only to stiff and brittle systems.
- The design event is roughly $M_{6.7}$ at 8 miles.
- Recorded motions were below the building-code design values.
- Significant property losses (> 1 billion dollars) occurred even below the prevailing design ground motions.