

Passive Seismic Imaging

Passive Seismic Transmission Tomography (PSTT) is a seismic imaging method that uses naturally occurring “Micro-Seismic Events” to map the subsurface. Scott McGurk of Plains Exploration will discuss passive seismic programs, their implementation, application, analysis and expected results. Passive seismic will be compared to regular 3-D programs.

The LA basin is well suited for high resolution PSTT as more than 6000 events of appropriate magnitude occur each year. In urban settings, PSTT is implemented by placing approximately 20, 3-component seismometers in shallow holes around the field. Continuous records of seismic data from are recorded over an 8 to 12 month period. Identification and location of events is carried out simultaneously with recording. Data is inverted to produce 3-D compressional (P) and shear (S) velocity cubes of the target field area.

The cost/benefit justification of 3D seismic applies to Passive Seismic. Deeper pool tests drilled with this coverage will have a much higher success rate. Coverage will provide risk-reducing information content. For example: new interpretation could prevent drilling of unsuccessful step-out wells (\$1 MM savings per well). Additionally, PSTT may be the only viable seismic option for certain areas.

