

Characterizing Hydraulic Fracture Zones Using Perforation Shots

Research Themes

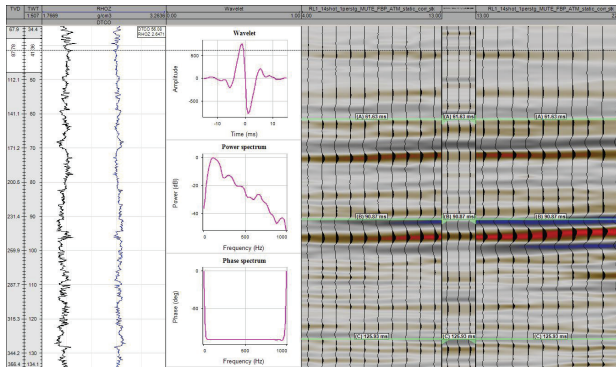
- Use of perforation shots to evaluate the P wave velocity variation at overburden layers as pore pressure varies within the reservoir before and after the hydraulic fracturing jobs
- Use of perforation shots to image the overburden layers near to reservoir

Recent Accomplishments

- Developed new method to calculate the origin time of perforation shots independently of an initial velocity model
- Anisotropic ray tracing using the perforation shots indicates a decreasing P velocity at overburden as a consequence of initial depleted pore pressure state within the reservoir and contrasting with a increasing P velocity after the hydraulic fracturing job in the shale formation
- New higher resolution image obtained from perforation shots with a higher dominant frequency image compared to seismic data acquired at the surface which was used for mapping thin layers in the overburden region close to the shale formation

Issues

- Uncertainty in the perforation shot origin time calculation
- Calculation of origin time of perforation shot dependent of initial model



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