

FractVel and FractAL Seismic Fractured Reservoir Characteristic

By Dave Gray

Many plays rely on the presence of natural fractures to enhance or create permeability in the reservoir. Fractures cause significant, measureable changes in 3D seismic data. These changes appear as variations in seismic amplitudes and velocities with shot-receiver azimuth and are known as seismic azimuthal anisotropy.

The technology to measure seismic azimuthal anisotropy is now well developed and ready to be used to pinpoint higher producing areas of natural fractures in fractured unconventional gas reservoirs such as tight gas, gas shales and coalbed methane.

Seismic azimuthal anisotropy measurements have achieved a technical success rate for identifying fractures upwards of 80% in unconventional gas plays. This can significantly impact drilling success in areas where success rates are low. These measurements also show the fracture strike and so, by identifying where the gas is coming from, they can be used to avoid drilling into depleted pools.