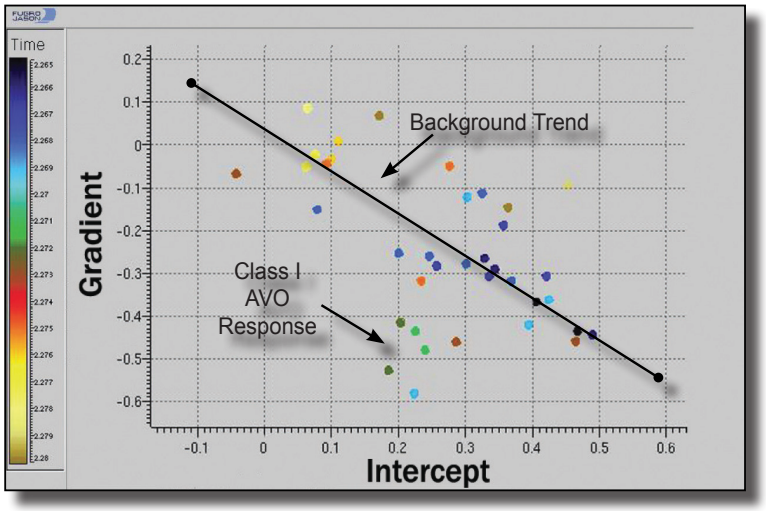
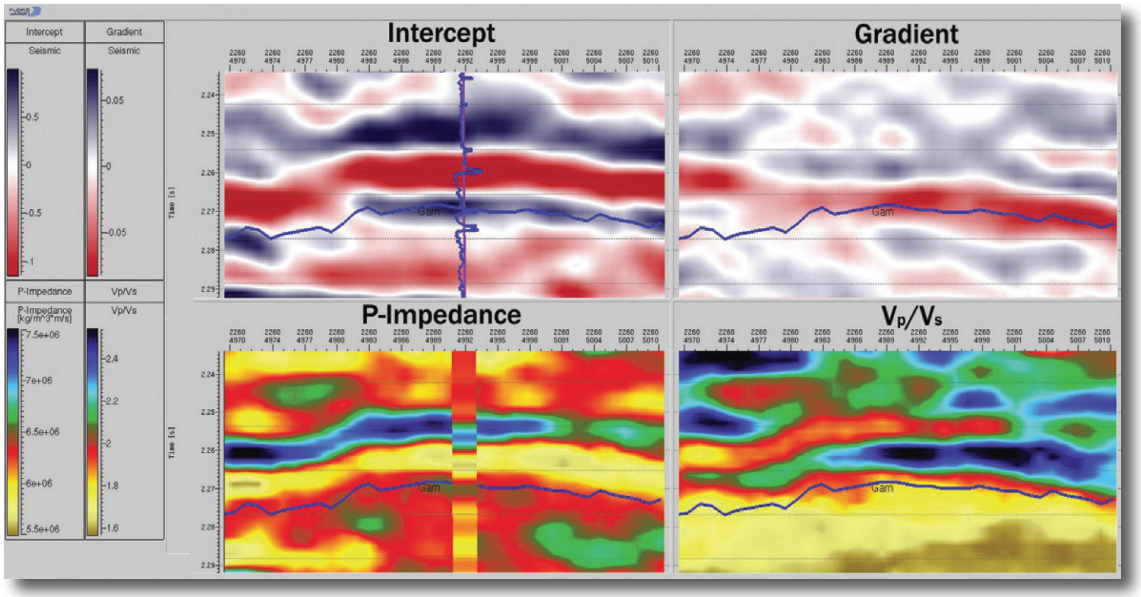
AVO Analysis can be used as a reconnaissance tool to locate AVO anomalies in your data. Once located, they can be further investigated with Jason reservoir characterization tools.

AVO Attribute Extraction



At right is a cross plot of the intercept versus gradient (Shuey 2-term) extracted along a horizon on the section shown below, color coded with time. A number of points diverge from the trend.

In terms of rock properties, this is purely qualitative. However, if a simultaneous inversion is performed to investigate the anomaly, (the bottom two panels of the section view) the reason is clear: the Vp / Vs ratio in the layer above the horizon changes dramatically across the anticline.



AVO ATTRIBUTE EXTRACTION

AVO effects on pre-stack CMP gathers provide basic information on the lithology and fluids in the reservoir rocks in a field.

The Jason AVO Attribute Extraction application can be used as a reconnaissance tool to look for AVO anomalies and determine the project scope and appropriate approach to quantitative reservoir characterization. This is an efficient way to find and characterize prospects within any seismic survey.

PETROPHYSICAL MODELING

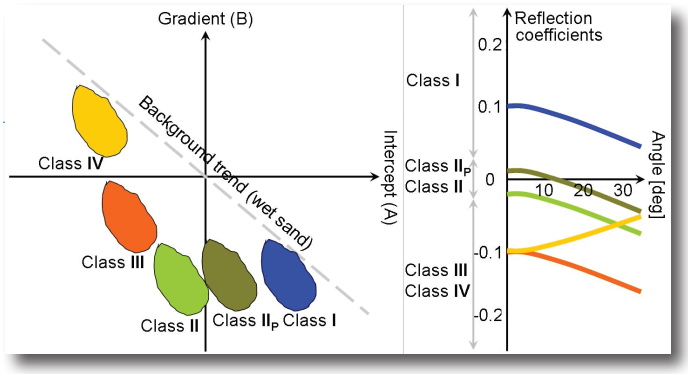
AVO analysis helps in the prediction of reservoir characteristics away from well control points. Reliable estimates of petrophysical parameters (porosity, fluid type, saturation) are needed as input for such studies.

Fugro-Jason also offers the PowerLog® and RPM set of integrated petrophysics / rock physics applications to support the petrophysical modeling needed for robust AVO analyses.

1D FORWARD MODELING

Creating synthetic offset gathers using well logs and petroelastic parameters from RPM indicates what kinds of AVO anomalies may be present in the data.

In Jason, this is done with Well Tie using synthetic wavelets. With the Estimate Wavelets extension to Well Tie, the specific wavelet from the seismic data can be used for even more accurate modeling.



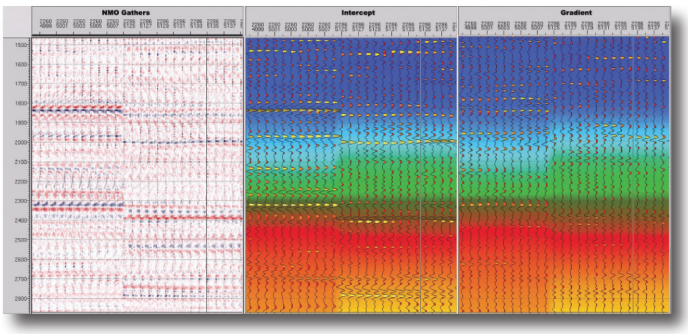
AVO classes; Avseth et al., (2005)

EXTRACTION AND ANALYSIS

Starting with NMO-corrected angle or offset gathers, you can use the AVO Analysis module to make a first-pass scan to detect amplitude anomalies, as well as estimate the contrast of the seismic and elastic properties of the rocks. When starting with offset gathers, a raytracing step is included in the workflow to convert those offsets to angles

Fugro-Jason® offers the following attributes:

- Intercept and gradient (Shuey 2-term)
- Intercept, gradient, and far offset (Shuey 3-term)
- Vp and Vs contrast (Smith and Gidlow)
- Zp and Zs contrast (Fatti, et al.)
- Bulk and Shear – modulus and density contrast



Input NMO gathers and Shuey 2-term intercept and gradient results. Background color is the P-Velocity trend used for angle-offset conversions.

Mute, taper, stabilization, and filter functions are included to ensure robust results. The Interpretation, Data Analysis, and Reservoir Characterization applications are also recommended for horizon picking and editing, cross plotting, and body checking.

RUNS ON

The following operating systems and graphics systems are supported:

- Linux Red Hat Enterprise 4, 5 or 6
- Linux SuSE 11.x, Enterprise (SLES10)
- Windows (32 & 64 bit) – XP SP3, Vista, Windows 7
- Requires NVIDIA Graphics