

**AAPG Annual Meeting
March 10-13, 2002
Houston, Texas**

Robert D. LoPiccolo¹, Roger A. Young¹ (1) eSeis, Inc, Houston, TX

(Non)Amplitudes Are What You Make of Them

The same geophysical techniques, which reduce risk for amplitude-driven or bright spot plays, can also reduce risk where the amplitude variations with offset (AVO) serve to diminish the amplitude of the stacked section. Diminished amplitude as a result of AVO is a characteristic of type 1 and type 2a AVO sands, where the acoustic impedance of the sands is greater than that of the encasing shales.

A technique for rectifying all of the AVO types into one, uniform presentation is illustrated. This technique utilizes a petrophysical approach applied to psuedo-shear and compressional impedances, extracted from pre-stack seismic data, to calculate lithology, porosity, and fluid information. Once the data are cast in this format then, regardless of the AVO type, the presence of an AVO-effect due to the presence of compressible fluids in the formation can be highlighted.

The benefits of this approach are immediately obvious in some Gulf Coast and international examples. Type 1 and 2a AVO sands are commonly found in better-lithified and over-pressured sequences; hydrocarbon indications, which might otherwise be overlooked, become readily apparent. In a post-exploratory evaluation Type 2 sands with low amplitudes, but demonstrable reserves, are easy to include in reserve estimates and development programs.