

# **AVO and Azimuthally Varying AVO in Rocky Mountain Tight Gas Reservoirs: an Interpreters Tool or a Processing and Interpretation Nuisance?**

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## **ABSTRACT**

In the Rocky Mountain basins, AVO has generally been a secondary tool for reservoir analysis and, in fact, historically little AVO effects have been observed in the seismic data. However, with the advent of higher channel acquisition (meaning longer offsets relative to depth) and "wide-azimuth" acquisition this is changing. Many of the reservoirs now being developed using modern seismic data are over-pressured gas and basin-centered gas deposits and the specter of AVO is back. The presence of this AVO in the data is creating serious processing and interpretation problems that increase the risk and reduce the usefulness of the seismic tool. In this presentation, we will show for a reservoir interval both examples of what is classified as Type II AVO (AVO that changes phase with offset) and AVO that changes with the direction of seismic acquisition. This AVO will be related back to fractures and the over-pressured gas / basin-centered gas environments. We will then discuss how this AVO is adversely dealt with in processing and how the AVO affects both the ability to interpret amplitude attributes and to discern the seismic sequence stratigraphy in complex sequence stratigraphic environments. Finally, we will present strategies that the interpreter can employ to create a competitive advantage in an area of significant AVO in the seismic data.