Image improvements of poor quality legacy seismic data – a case study from the onshore Otway Basin, SA.

Abstract

Since the early 1970s many 2D and 3D seismic datasets have been acquired across Australia in a major effort that has seen billions of dollars invested by corporate explorers and governments. Yet original data still exist that have either never been reprocessed, or have only received general ongoing reprocessing attention. Modern exploration is increasingly focusing on new targets such as stratigraphic plays, CSG and shale gas/unconventional. Such objectives are unlikely to have featured in prior reprocessing. It is clear that acquiring new seismic data provides better control over the acquisition parameters, but this is not without challenges due to increasing environmental constraints and longer timelines. The time to 'start of interpretation' with new data can be a year or so, versus perhaps a few weeks or months with reprocessing. Additionally, the cost of acquisition far outweighs the cost of reprocessing, typically by a factor of 50:1 before planning and administrative costs. Our experience has consistently revealed that vintage data contain more information than expected. The approach requires specific methods and lots of careful attention to detail. Reprocessing can also focus on different areas, for example shales, shallow (CSG), or azimuthal to support unconventional exploration.

In this talk we present one such example from the onshore Otway in SA, where the original processed 3D dataset was of such poor quality that it could not be meaningfully interpreted. Following detailed reprocessing, the dataset improved in quality, altered the previous fault interpretation and highlighted possible new leads. Had it been available earlier the outcome of a recent well might have been different.

An alternative title for this talk could be: "Giving up on old data - Not so fast!" because reprocessing of legacy data for specific objectives takes more care and time, but often it can provide a surprising amount of new information.

About the Speaker

Peter Strauss is a Geoscientist with 30 years experience. As partner at AusGeos he helps clients with all aspects of seismic data from acquisition to prospect generation. He is also responsible for the complete processing of our clients' seismic data. Peter's career spans across South Africa and Australia where he has worked the entire spectrum of geophysical activity from marine bird-dog to AVO interpretation, and from new venture basin analysis to PSDM processing. Peter spent 12 years with Santos working on numerous onshore and offshore WA and SA projects and currently focuses on extracting new information from 10 and 20 year old vintage seismic data.