DHI / AVO best practices, methodology and applications

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In 1997, ExxonMobil developed a company wide best practice to evaluate and understand the risk for DHI-dependent plays. Within this best practice, a robust controlled amplitude/phase processing stream, rigorous analysis, and a calibrated DHI-rating system using both data quality and observed DHI characteristics were designed. The methodology is not dependant on evaluating just a single DHI attribute; e.g. AVO, but on a multitude of seismic characteristics. The rating system provides a consistent approach for evaluating DHIs and data quality and integrating it with risk analysis. Two case histories from different geologic and business settings illustrate the application of the best practice. The data used in both cases were processed with the prescribed controlled amplitude, controlled phase stream which was a key factor for our analysis.

The first example is from an exploration setting. The example shows how applying best practices can help identify the risks correctly and set expectations prior to drilling the first well in a frontier basin. By using our best practice methodology the main risk identified here was low gas saturation, even though no low gas saturated sands had previously been encountered in the area. Subsequent drilling confirmed this prediction.

The second example is from a development setting. This example illustrates application of an emerging technology, Spectral Decomposition to high-grade an anomaly not observed on traditional seismic data. Identification of the anomaly with the correct DHI attributes enabled us to successfully position and drill a key development well. The well results helped us gain confidence in the reserve estimate for the field and develop an optimized depletion plan.

In summary, for each case history we will present our pre-drill analysis and predictions and share the learnings from the post well drilling results. Also, as an audit of the process, we will show the overall statistics of how the best practices have fared since its implementation.

William (Bill) Fahmy received a B.Sc. in Geophysics from the University of the Pacific in Stockton, California in 1979 and a M.Sc. in Geophysics from the University of Wyoming in 1988. Prior to getting his Masters Degree, Bill spent his early career working for Western Geophysical Company as a Seismic Crew Assistant Manager and Manager. In 1988, he joined Exxon, which later became ExxonMobil. Bill is currently a Geophysical Advisor for ExxonMobil Exploration Company. His primary role includes assisting and advising the Angola/Congo exploration teams on technical needs and issues as well as providing perspectives for upper management on all drill wells, resource assessment, and acreage capture opportunities. Bill is a member of SEG, AAPG, and HGS.

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JANUARY LUNCHEON

DATE:	January 22, 2007
TIME:	11:30 A.M. Lunch
LOCATION:	Telus Convention Centre, Calgary
TICKETS:	Contact CSEG office
TELEPHONE:	262-0015 or Fax: 262-7383

FEBRUARY LUNCHEON

February 12, 2007

"Curvature and Iconic Coherence – attributes adding value to 3D seismic data interpretation"

Satinder Chopra
Arcis Corporation, Calgary