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.