

Advanced Course :: High-Resolution Sequence Stratigraphy

Impact on production performance of natural resources, storage of C, H and contaminants.

This is a methodological and hands-on course based on seismic data, wells, cores and outcrops. The exercises aim to elaborate chronostratigraphic frameworks that highlight the reservoirs vertical and lateral compartmentalisation and heterogeneities and the impacts on production performance. This approach used by the oil industry is also applied to optimise the production of other natural resources, storage of C and H, and injection of contaminants..

COURSE TYPE: LIVE STREAMING (05 DAYS, 20 HOURS)

GROUP 01: 05 - 09/MAY (PORTUGUESE)

GROUP 02: 16 - 20/JUN (ENGLISH)

GROUP 03: 06 - 10/OCT (PORTUGUESE)

GROUP 04: 03 - 07/NOV (ENGLISH)

COST: € 1500 :: + VAT



Why is high-resolution sequence stratigraphy so important?

The petroleum industry uses a wide range of advanced software for geophysical processing and interpretation, 3D geological models, Fluid Flow Simulation and historical production adjustment. However, if not combined with adjusted stratigraphic interpretations, this tool alone is not enough to protect the business. One of the most critical factors that impact the quality of the characterization of reservoirs is their compartmentalisation.

Often, poorly represented or neglected geological features can compromise the economic attractiveness of an asset because they generate production expectations with low predictability or are incapable of reproducing historical production.

This is effectively handled through sequence stratigraphy. In this way, the chronostratigraphic framework contributes to calculating the volume of hydrocarbons, controlling the connectivity and compartmentalisation of reservoirs, and distributing depositional facies and their petrophysical properties in 3D volumes, for example. This same approach is used to produce other natural resources, storage of C and H, and injection of contaminants..

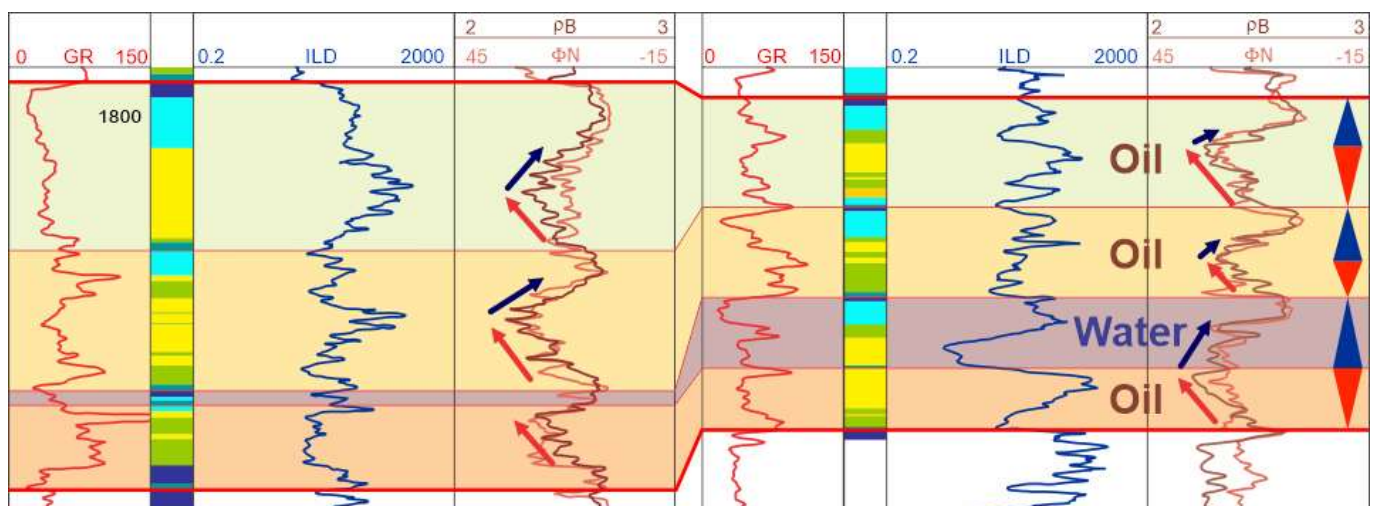


Multi-layered and laterally disconnected reservoirs, Chapada Diamantina, Brazil.

Objectives

At the end of the course, participants are expected to:

1. Identify diagnostic features for stratigraphic refinement;
2. Propose high-resolution chronostratigraphic frameworks applicable to the exploration and production of hydrocarbons and other natural resources, the storage of C and H, and injection of contaminants;
3. Understand the impact of high-resolution stratigraphy:
 - on 3D geological models and the distribution of facies associations and their properties (i.e. reservoir characterization);
 - the adjustment of the 3D geological and fluid flow models;
 - and the match of the simulated production curve with the observed historical data.
4. Understand the impact of this approach on fluid injection and production performance of petroleum and other natural resources, storage of C and H, and injection of contaminants.



Reservoir zonation based on high-resolution sequence stratigraphy

Content

It is a hands-on course based on seismic, wells, cores and outcrops data. Participants are encouraged to practice the sequence stratigraphy methodology through exercises based on identifying stacking patterns and high-resolution stratigraphic surfaces.

The exercises focus on proposing a high-resolution chronostratigraphic framework that highlights the reservoir compartmentalisation (lateral and vertical connectivity and heterogeneities) and the impact on production performance.

1. Review:

- Low-resolution sequence stratigraphy workflow;
- Accommodation and displacements of depositional systems: definition of accommodation, base level, fluvial graded profile, transgression, normal and forced regression;
- Stratigraphic surfaces: subaerial unconformity, correlative conformity, basal surface of forced regression, regressive surface of marine erosion, maximum regression surface, wave and tidal ravinement surfaces, maximum flooding surface;
- Stratigraphic sequences: Depositional, Genetic and TR sequence;
- Systems tracts: highstand, falling stage, lowstand, and transgressive.

2. Stratigraphic refinement and identification of high-resolution sequences: workflow for high-resolution sequence stratigraphy; criteria for identifying high-frequency sequences; high-resolution chronostratigraphic framework and reservoir zonation.

3. Chronostratigraphic correlation: connectivity and compartmentalisation of reservoirs; distribution of facies associations and their petrophysical properties in 3D geological models (i.e. reservoir characterization); impacts on the production of petroleum and other natural resources..

Who should attend

Geologists, geophysicists, and engineers working in the exploration and production of petroleum and other natural resources, storage of C and H, and injection of contaminants.

Instructor

- A.J.C. Magalhães, PhD