Cretaceous Lacustrine Carbonate Reservoirs of the South Atlantic (G045)

Tutor(s)

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Overview

This course provides a description of the highly unusual carbonate reservoirs deposited in the Santos Basin (offshore Brazil) during the rift to sag stages of Atlantic opening, and a discussion of the controversies surrounding their origin. Particular emphasis will be given to the Aptian so-called microbialite reservoirs (Barra Velha Formation and equivalents), reviewing both of the main models for their development and evaluating the seismic and sedimentological models. A practical approach to characterizing these complex rock types will be provided. The course will include an introduction to non-marine carbonate systems in extensional settings, as well as a review of the South Atlantic coquina reservoirs.

Duration and Logistics

Classroom version: A 2-day classroom course. The manual will be provided in digital format and participants will be required to bring a laptop or tablet computer to follow the lectures and exercises.

Virtual version: Four 3-hour interactive online sessions presented over 4 days. A digital manual will be distributed to participants before the course. Some reading is to be completed by participants off-line.

Level and Audience

Advanced. Intended for technical staff and managers who are involved in exploration for or exploitation of carbonates along the margins of the South Atlantic, or are interested in furthering their understanding of carbonate reservoirs in general.

Objectives

You will learn to:

1. Recognize the range of carbonate systems that develop in extensional settings.
2. Describe the highly unusual and prolific Aptian carbonate reservoirs of the Santos Basin.
3. Contrast the models for the formation of these chemogenic rocks and discuss their differences.
4. Evaluate the strikingly different reservoir characteristics that emerge from the two models.

Course Content

Course Details

Themes to be covered are:

- Introducing non-marine carbonate systems in extensional settings
    - the continuum from lacustrine carbonates through to hydrothermal travertines
    - microbial carbonates
- The tectonic settings of the pre-salt lacustrine carbonates
- The Barra Velha and its equivalents
    - facies, cyclicity, porosity formation, clay mineral diagenesis, reservoir rock characterization and rock fabric classification
    - isotopic data and its significance
- Evaluating the seismic evidence for Barra Velha platforms
- Age equivalent Barra Velha facies and microbialites in Brazil (onshore and offshore) and West Africa
- Current models for the coquinas reservoirs of Brazil and West Africa