

*Training offer*

# **Petroleum Geology Fundamentals**



# ***Petroleum Geology Fundamentals***

## ***Classroom and field trip***

This course is designed to provide industry professionals an understanding of the Geology concepts and processes relevant to Petroleum Exploration and Production. It is useful for people who communicate or work with geologists on a regular basis, but do not have a geological background themselves, such as engineers, petrophysicists, geophysicists and project managers.

Available as in-house or public venue course from 2019 onwards. 2 to 5 days.

### **Objectives**

- Understand the geological cycle and the basics of sedimentary geology.
- Recognise the key elements and processes of a petroleum system.
- Comprehend concepts of basin analysis, regional geology and exploration techniques.
- Understand how seismic and well information and outcrop geology can be used for exploration.
- Be able to conceptually define a prospect and calculate volumes and risk.
- Appreciate how petroleum geology allows a discovery to be appraised and then developed.



*Classroom lectures and exercises*



*Field exercises*

# Training methodology

This course is based on classroom lectures and presentations, including case studies and practical exercises. An optional (but highly recommended) field component allows participants to have hands-on approach to geological concepts and petroleum systems elements and processes. World-class outcrops of the Lusitanian Basin (Western Portugal) are used as examples and different scales of observation are discussed – outcrop, borehole and seismic.

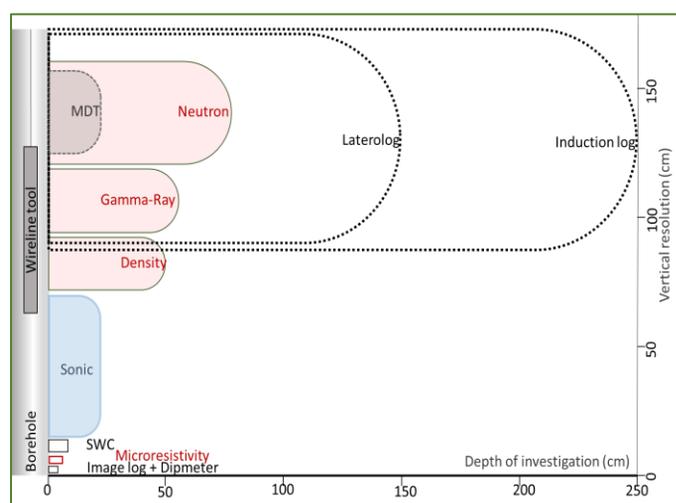
## Who Should Attend?

Industry professionals that deal with Petroleum Geology regularly and want to know more, including:

- Young geoscientists with limited Exploration and Production Industry experience
- Petroleum Engineers (Reservoir, Drilling, facilities, etc)
- Geophysicists with limited exposure/background to Petroleum Geology
- Petrophysicists with limited exposure/background to Petroleum Geology
- Technical Support Professionals
- Economics, Legal and Finance and Human Resources Professionals
- Management and Administrative Professionals



*Channelized deepwater sandstone reservoir*



*Depth of investigation of wireline tools, to overlay on outcrops*

# Course contents

## ***Introduction to Petroleum Geology and Sedimentary Basins (classroom)***

- Introduction to Geology
- Sedimentary basins
- Basin Analysis and Regional Geology
- Different Basin Types
- The Fundamental Elements of the Petroleum System

## ***Exploration methods (classroom)***

- Indications of a Working Petroleum System, Oil Seeps, Outcrop Geology
- Seismic Techniques and the Use of Seismic in Geological Mapping
- Exploration Wells and the Acquisition of Downhole Data
- Sedimentology and Biostratigraphy
- Other Exploration Techniques, Gravity, Aeromagnetic, CSEM
- Play Trend Mapping and the Definition of an Area of Interest

## ***Petroleum System elements and processes (classroom or field)***

- Hydrocarbon Source Rocks, Generation and Migration
- Conventional Hydrocarbon Reservoirs Clastic and Carbonate
- Unconventional Hydrocarbon Reservoirs
- Hydrocarbon Seal and Seal Capacity
- Hydrocarbon Plays and Play based Exploration
- Structural and Stratigraphical Traps, examples
- Outcrop Mapping and the Early Petroleum Industry

## ***From Area of Interest to Drillable Prospect (classroom or field)***

- The Use of Analogues in Exploration Geology
- Lead/prospect Definition
- Geological and technological factors of a lead/prospect
- Geological Risking and volumetrics

## ***From Discovery through to Development (classroom)***

- The Maturation Process to Drillable Prospect Status
- Volumetric Assessment from a Discovery Well
- Definition of Hydrocarbon Phase and Contacts (Gas – Oil and Oil – Water)
- Defining Key Geological Uncertainties and the Need for Field Assessment
- The Financial Investment Decision (FID) for field development
- Field Development Onshore and Offshore, Basic Well Design and Well Types



*Oil seep in coarse sandstone reservoir*

# About Chronosurveys

Chronosurveys brings together the best of the Oil & Gas Industry and Academia. We are a group of consultants based in Portugal with experience in Oil & Gas and specialist researchers in Academia that provide integrated services in Stratigraphy, Source Rock evaluation and other Petroleum Geology disciplines. Our services include:

- Biostratigraphy
  - Palynology
  - Nannofossils
  - Micropaleontology (forams)
  - Conodonts
  - Other disciplines (SSF, metamorphic terranes, etc)
  - Review of vintage reports
- Source rock evaluation
  - Organic geochemistry (TOC, RockEval)
  - Thermal maturity (vitrinite reflectance, spore colour, fluorescence)
  - Visual kerogen typing
- Seismic interpretation and prospect generation
  - Data room evaluations
  - Regional prospectivity
  - Volumetrics and risking
- Stratigraphy and reservoir geology
  - Well correlation
  - Petrographic descriptions
  - XRD
- Multiclient regional prospectivity reports
  - Dynamic GIS project (and webGIS version)
  - Petroleum system evaluation with plays, GDE and CRS maps, well data, seismic and cross-sections, outcrop data, source rock and reservoir parameters
- Training
  - In house and offsite training courses (biostratigraphy, seismic interpretation, petroleum geology)
  - Field trips in Portugal
  - Geo-Historical tours of Lisbon

We are available to discuss further details in a Zoom/Teams meeting or by email: [info@chronosurveys.com](mailto:info@chronosurveys.com)