

E-361

### ▲ Who should attend?

Geoscientists and petroleum engineers with already a few years experience.

### ▲ Duration

5 days

### ▲ Dates & Location

October 19-23, 2009  
Rueil-Malmaison (Paris)

French session: F-361

### ▲ Registration

Fees: € 1,950

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### ▲ Course Coordinator

Gérard GLOTIN

Ref. GIS / PVT

# FLUID STUDIES - PVT

## COURSE OBJECTIVES

To give the participants practical and theoretical knowledge of the reservoir fluids behavior in hydrocarbon fields. How to obtain fluid data in pressure, volume and temperature, either by analysis of the samples collected (PVT study), correlations or equation of state (EOS).

At the end of the course, the participants will be able to understand the fluid reservoir behavior, to use the data proposed to feed reservoir simulator, either black oil model, or compositional model.

The course will be illustrated by numerous practical examples, to give the participants a workable experience on how to prepare and to use PVT properties

## COURSE CONTENT

### PURPOSE OF PVT ANALYSIS

1.5 days

Chemical composition of petroleum fluids

- hydrocarbon families
- compositional presentation of reservoir fluids

Thermodynamics of petroleum fluids

- pure component, binary mixture, multi-component systems - phase behavior
- the five different fluids: under saturated oil, saturated oil, dry gas, wet gas, retrograde gas

Basic properties of reservoirs fluids

- definitions for oil
- definitions for gas

### CORRELATIONS OF PHYSICAL PROPERTIES

1.5 days

Empirical relationship between main oil properties:

- bubble point pressure, formation volume factor, density compressibility, viscosity

Empirical relationship of gas properties: compressibility factor, formation volume factor, viscosity, density.

Equation of state

Presentation of equation state, Peng Robinson, Soave Redliech, Kwong, and matching against PVT data

Sampling

- botton hole and surface sampling
- representativity of sampling

### PVT STUDIES

2 days

Oil & gas study based on a practical example quality control, program and result

Water properties

- water analysis
- how to obtain main water properties
- water / hydrocarbon systems - hydrates

Exercises : PVT matching with a PVT package