

# WELL TEST ANALYSIS (MODULE IV)

Reservoir Engineering

E- 365

## OBJECTIVES

To provide participants with the knowledge necessary to efficiently design and analyze well tests.

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

- recommend a well test design
- know the various models applicable to well test interpretation
- perform well test interpretation with the help of a software package

### ▲ Who should attend?

Reservoir engineers with some practical knowledge of well testing operations and basic interpretation theory

## COURSE CONTENT

### INTRODUCTION TO WELL TESTING 0,5 day

Purpose of well testing

Well and reservoir performance and the need for testing

Practical well test operations: Types of tests, well testing equipment, safety and environmental issues

Definitions & typical regimes: wellbore storage, radial flow regime, skin effect, fractured well, well in partial penetration

Fractured reservoirs, limited reservoirs and closed reservoirs

Productivity index, radius of investigation

### ▲ Duration

**5 days**

### BASIC EQUATIONS AND METHODS 1 day

Darcy's law, the diffusivity equation

The time superposition, multirate testing

The space superposition, boundary effect

Pressure curves analysis - Pressure derivative

Exercise

### ▲ Dates & Location

**November 03 to 07, 2008**

Rueil-Malmaison (Paris)

### WELLBORE CONDITIONS 1 day

Well with wellbore storage and skin

Infinite and finite conductivity vertical fracture

Well in partial penetration

Horizontal well

The different skin factors, geometrical skin and well deliverability

### BOUNDARY MODELS 1 day

One sealing fault

Two parallel sealing faults

Two intersecting sealing faults

Closed system, reservoir limit testing and depletion effects

Constant pressure boundary

### ▲ Tuition Fees

€ 1,910

### TEST DESIGN - PRACTICAL SESSION 1.25 days

Rate history definition.

Time and pressure error. Pressure gauge drift & noise

Changing wellbore storage

Phase segregation.

Interpretation procedure

From the initial diagnosis to the final consistency check of the results

Reporting and presentation of results, examples of test response.

### ▲ Course Coordinator

**Gérard GLOTIN**

Ref. **GIS / WELLTEST**

### GAS WELLS THEORETICAL REVIEW AND APPLICATIONS 0.25 day

*Most exercises are solved with the help of a well-test software package*

