PETROLEUM GEOSTATISTICS

E-266

COURSE OBJECTIVES

To provide a basic and practical approach to the industrial methodology of reservoir characterization, in particular using geostatistical tools and methods. Each step in the workflow of reservoir geological model construction using geostatistics is explained and illustrated using case studies:

- geological model: layering, well gridding, statistics, proportion curves...
- reservoir geometry: basic concepts and methods of geostatistics (variogram, estimation, kriging, cokriging, external drift),
- properties simulations: facies (pixel, object methods); petrophysical properties (gaussian methods…),
- integration of additional information: geology, seismic and dynamic constraints,
- volumetrics, uncertainties, up-scaling, presentation of industrial softwares.

Practical examples and laboratory exercises will be performed using dedicated software as Isatis©.

COURSE CONTENT

THE FUNDAMENTALS — 1 day

Basic statistics for data analysis
Introductions to geostatistics
Quantification of spatial variability: the variogram

THE KRIGING AND ITS VARIATIONS — 1 day

Introduction to kriging
Data integration; cokriging, collocated cokriging, external drift kriging
Applications to time to depth conversion and property mapping
Dealing with non-stationary cases (trends)

THE GEOSTATISTICAL SIMULATIONS — 1.5 days

Why simulations: limitations of kriging
Simulation methods for continuous parameters (as Phi and K)
Simulation methods for categorical variables (lithology)
Applications

GEOSTATISTICS IN INTEGRATED RESERVOIR STUDIES — 0.5 day

Geostatistics as an integration tool
Heterogeneities, scales, upscaling
Integration of seismic derived data in 3D static models
Applications

RISK MANAGEMENT - UNCERTAINTY QUANTIFICATION — 0.5 day

Confidence intervals - iterative methods
Beyond the Monte-carlo approach - simulation optimization
Risk assessment optimization
Applications

FINAL DISCUSSION BASED ON A MODELING EXAMPLE AND CONCLUSION — 0.5 day

▲ Who should attend?

Geoscientists involved in data interpretation and management. Recommended for geologists, geophysics and reservoir engineers working in Exploration and Production.

▲ Duration

5 days

▲ Sessions in English

November 15-19, 2010
Rueil-Malmaison (Paris)

▲ Registration

Fees: **€ 2,080**

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▲ Course Coordinator

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Ref. **RES / GEOSTAT**

IFP Training