Facies, Sequences and Flow Units

Audience

Objective: (2-4 day workshop) Through a combination of lecture and actual core data participants will learn to quantify flow units to understand storage, flow capcity, probability distributions of reservoir quality and hydrocarbon saturation vs. height in a column.

Any geologist, geophysicist or engineer seeking increased ability to quantify fluid flow and water saturations (including show information) as a function of position in a column, relative permeabililty and capillarity.

This course is fundamental to all aspects of exploration and production.



Content

Facies recognition in core (2-3 days) Ichnology, sedimentary structures, surfaces Permeability modificaton by burrowing **Correlation and sequence stratigraphy Classifying flow units (1 day)** Winland pore throat radii plots by facies Pittman pseudo-capillary pressure plots Other pseudo-capillary pressure plots **Modified Lorenz Diagrams** Storage capcity vs. flow Cumulative K/PHI plots quantifying flow units **Pitfalls of porosity cutoffs** Controls on saturation, water cut, baffles





Speed zone





15

20

Winland and K/PHI Plots: Clusterings of pore-throats controlling capillarity, SW and fluid flow by facies



- Winland plot by facies suggests a reasonably strong relationship between depositional facies and potential rock-type.
- 5-6 rock types are likely
- Several depositional facies are comprised of more than one rock type. In fluvial systems where grain size can change to reflect shear stress this is to be expected.