

Facies-Based Formation Evaluation

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ABSTRACT

This presentation describes 'an integrated workflow' which uses many types of data to produce a more accurate Hydrocarbon-in-place. Key to this workflow is the role of teamwork in enabling all disciplines in the reservoir characterization team. This ability to integrate data effectively between disciplines is the key to efficiency, reduced cycle time and reduced reservoir risk.

Formation evaluation is a fundamental part of the reservoir evaluation process. In addition to providing half of the parameters used in in-place hydrocarbon determination, formation evaluation provides the key link from geoscience to engineering. This role is becoming more pronounced as new integrated 'shared earth model' packages are facilitating change in the way we characterize reservoirs.

Whatever their background, Geologist, Geophysicist or Technologist, the role of the Formation Evaluation practitioner is to integrate all data – not just logs, with the goal of reducing risk or uncertainty in the in-place hydrocarbon calculation. The essential step is to integrate geological and sedimentological data into the workflow. This talk details a workflow which includes these data as the fundamental input. Key to this workflow is the prediction of a core based 'facies' curve which can be quickly applied using wireline log data using a set of simple rules – completely independent of software or automated prediction techniques.

Once created, this electrofacies or petrofacies curve is used throughout the whole reservoir characterization process as a discriminator – from hydrocarbon-in-place parameters to permeability prediction for input to reservoir simulation. This presentation demonstrates the value of this 'facies-based' approach in reducing uncertainty in the fundamental petrophysical parameters supplied to other disciplines in a reservoir team.