

# Integrated Rock Typing and Lithofacies Prediction for Reservoir Flow Unit Delineation

## An Emerson E&P Software Geoscience Service

Rock typing and the assessment of lithofacies are important steps in the reservoir modeling process. The process faces a number of challenges; for example, heterogeneous rock types with similar log responses limit the ability to identify and classify lithofacies. It is also a challenge to make classifications that are consistent with lithology, sedimentology and reservoir characterization, and that allow each discipline to have results at a scale that is suitable for their geoscience discipline. The introduction of Mercury Injection Capillary Pressure (MICP) curves is a proven aid in the process of identifying rock types.

The Emerson E&P Software integrated workflow uses MICP curves, along with other available information, to create an integrated lithofacies prediction model. The workflow begins with performing corrections to laboratory MICP (Pc/Sw) curves for closure, stress and clay bound water. The availability of additional training information varies according to customer needs. For example, the model may be based on a suite of basic wireline logs; conventional petrophysical evaluations; more advanced tools, such as sonic or electrical image logs, sonic waveforms and nuclear magnetic resonance; and core data with supervising rock types. Reference wells with their training data are used to create the lithofacies model, which is subsequently propagated out into a limitless number of application wells. The workflow concludes with upscaling the lithofacies to the reservoir model at the desired scale.

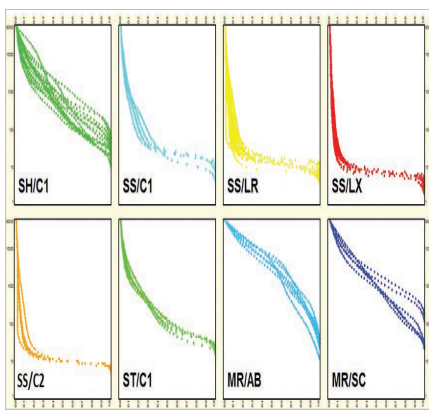
Given a limited suite of wireline logs, Pc/Sw, and supervising rock types, the result is field-wide prediction of lithofacies and reservoir classifications.

### Emerson Rock Typing and Prediction of Lithofacies Solutions

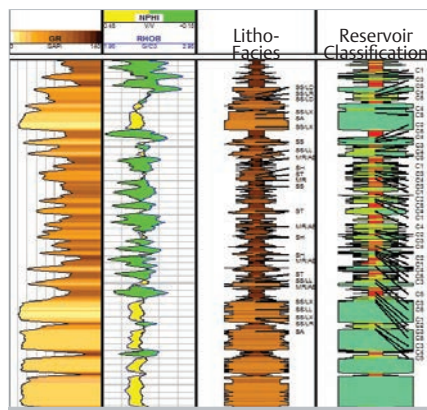
- Integrated approach to lithofacies prediction using Mercury Injection Capillary Pressure (MICP) Curves
- Lithofacies model is propagated out into a limitless number of application wells
- Field-wide prediction of lithofacies and reservoir classifications from wireline logs, Pc/Sw, and supervising rock types

### Emerson Rock Typing and Prediction of Lithofacies Advantages

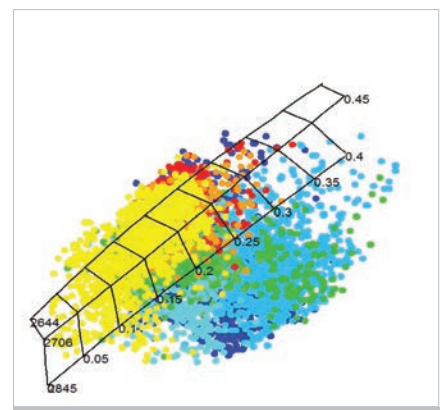
The Emerson E&P Software Geoscience Services team, composed of highly trained and experienced geoscience consultants, is able to provide independent assessments and recommendations. The team employs adaptive use of available information, ranging from limited to very rich, in a broad range of project sizes and scope, from pilot studies to multi-well field-wide projects. Our industry-leading lithofacies modeling software is seamlessly integrated into the 3D reservoir model.



▲ Capillary pressure (Pc/Sw) curves per supervising rock types



▲ Propagating lithofacies and reservoir classifications into multiple wells



▲ Example of lithofacies in neutron-density log space



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