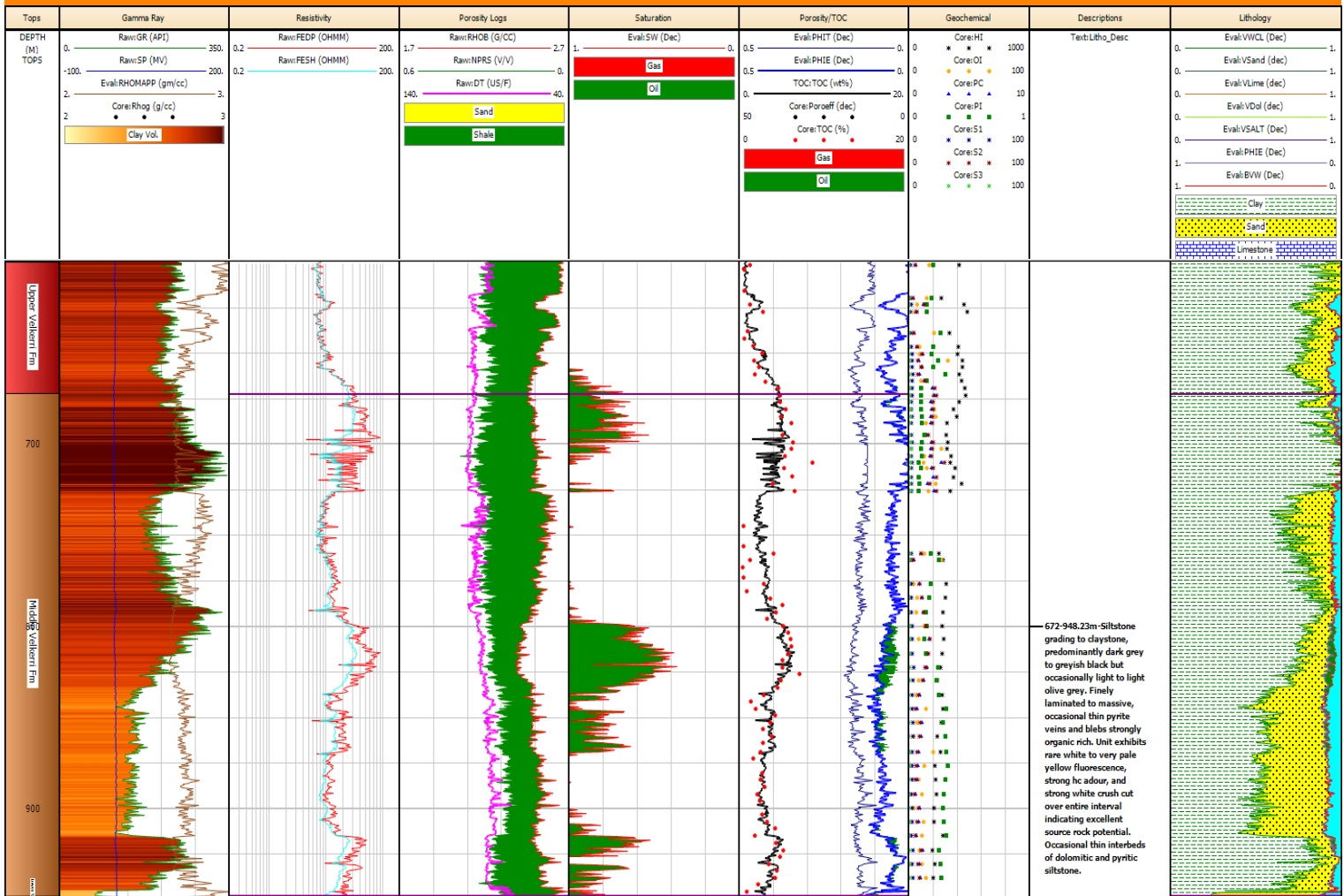




# PETROPHYSICS

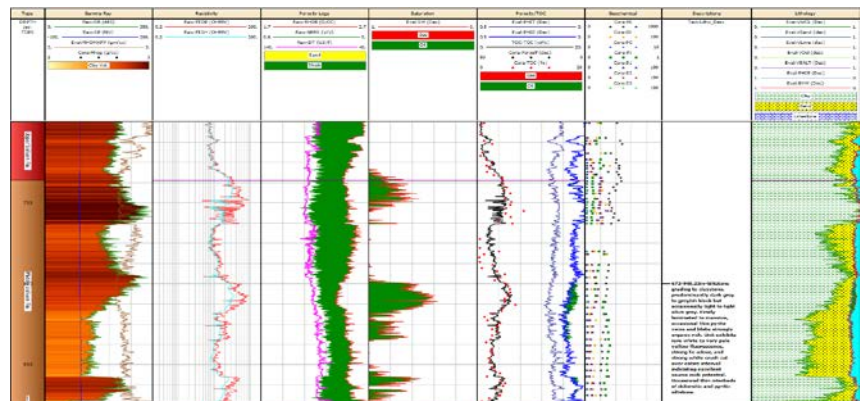




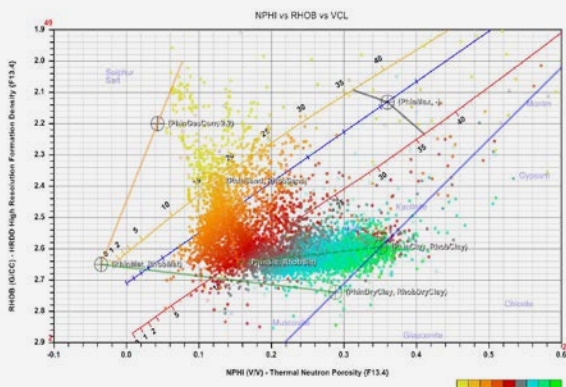
# DUG OFFERS SPECIALISED PETROPHYSICAL SERVICES FOR THE EVALUATION OF LITHOLOGY, RESERVOIR PROPERTIES AND FLUID CONTENT

Our interpretation techniques are designed to integrate all relevant information including wireline and non-wireline logs, lithological descriptions, core analysis, petrographical studies and well test information. This ensures that an appropriate interpretational model is implemented for your particular area.

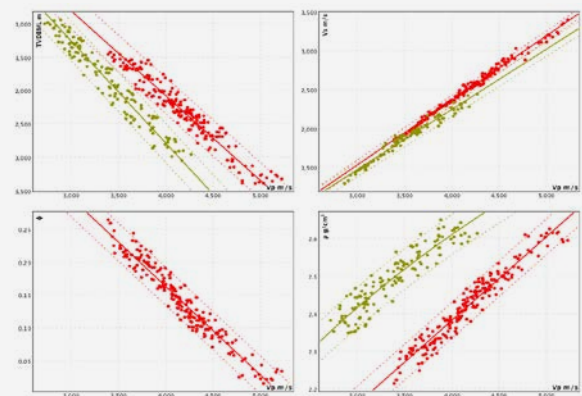
Our petrophysical approach often incorporates multiple wells in an area, which are evaluated in conjunction with each other. This enables us to evaluate the changes in rock properties in both lateral and vertical directions. As well as standard petrophysical work, such as well log editing, synthesis and interpretation, DownUnder GeoSolutions has developed workflows which feed directly into our quantitative interpretation (QI) service work, bringing together multiple disciplines in an integrated approach. The outputs of a petrophysical interpretation can be used to generate synthetic elastic logs for the purpose of well to seismic ties and related QI work. This is relevant for filling gaps where recording is absent, synthesising entire logs which do not exist and extending logs to cover a greater depth range.



01. Composite log plot illustrating a petrophysical interpretation over a potential oil shale.



02. Crossplot illustrating the effect of gas on the neutron and density logs in a clean sandstone reservoir.



03. Depth-dependent end-member rock property trends, with uncertainty, for two lithologies (sand in red and shale in green).

## PETROPHYSICAL WORKFLOW

The petrophysical interpretation workflow includes the following:

### DATA COLLECTION

- > Collation and organisation of relevant formation
- > Evaluation information
- > Input and merge all available data

### PRE-INTERPRETATION

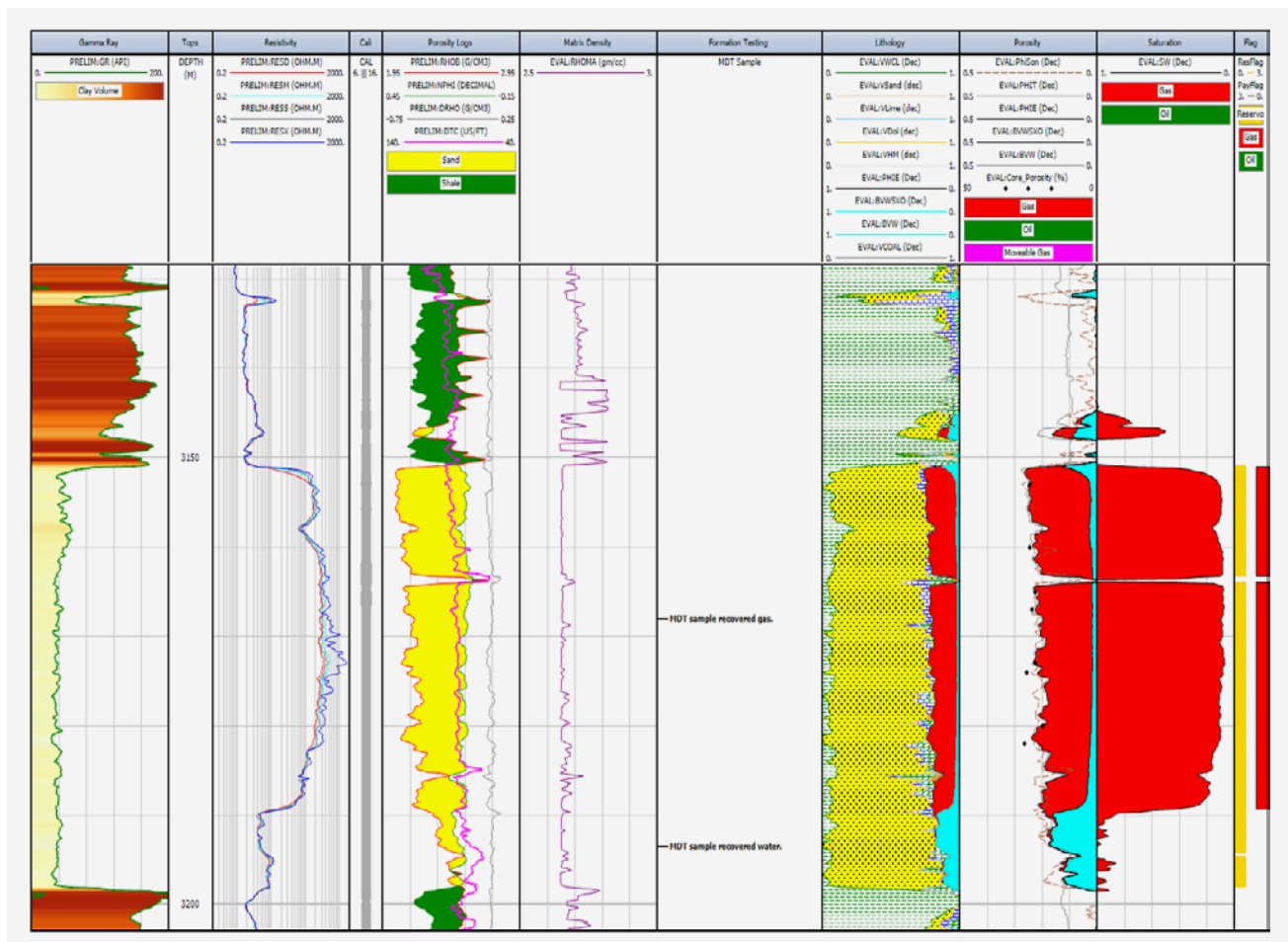
- > Quality check, curve editing including, but not restricted to: merging, depth imaging, despiking and smoothing
- > Perform environmental corrections
- > Generation of synthetic curves (in particular shear velocity), where data is missing, using a variety of methods, dependent on available data
- > Determination of a realistic interpretation model by utilising a variety of crossplotting techniques and researching the available data

### INTERPRETATION

- > Determination of lithology, porosity and fluid saturations, for input into reservoir modelling
- > Calibration of the interpretation to any available core/test data
- > Generation of synthetic logs (as required)
- > Multi-well interpretations

### REPORTING

- > Results are documented in a report, which includes a discussion of the results and a summary of reservoir properties
- > Generated curves are supplied in las format
- > A composite plot of the interpretation can be supplied in PDF format



04. Composite log plot illustrating petrophysical interpretation over a gas-bearing sand interval.



DownUnderGeoSolutions