

# **Integrated Multidisciplinary Analysis of the Rankin Trend Gas Reservoirs, Northwest Shelf, Australia**

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An integrated geological study of the Rankin Trend of the North West Shelf, Australia, was completed to underpin the development of giant gas fields. The study applied an improved understanding of the regional stratigraphy in conjunction with interpretation of the regional scale Demeter 3-D seismic survey, focussed on existing fields, undeveloped discoveries, and exploration prospects. The study included a redescription of 1500 metres of core, a new facies based petrological analysis, a revision of the biostratigraphic framework and a seismic stratigraphic analysis.

It also included the integration of reservoir production and hydrodynamic data. Improvements in the stratigraphic framework were supported by a broad range of depositional and facies analogues and a system-wide sequence stratigraphic approach to understanding lateral and vertical stacking patterns of the reservoir succession. The latest visualisation and modelling technology were also employed to more adequately describe genetic reservoir packages.

Specific outcomes include, improved correlation techniques, recognition of palaeosols as key stratigraphic marker horizons and application of appropriate subsurface depositional analogues to field descriptions, resulting in a more consistent regional interpretation framework. This forms the basis for seismic stratigraphic interpretation away from well control.

The regional geological model has enabled the linkage of exploration, development and production understanding across the North West Shelf assets as well as management of geological uncertainties.