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**ORAL PRESENTATION**

# Depositional Architecture, Sequence Stratigraphy and the Quantification of Hydrodynamic Fractionation as a Tool for the Prediction of Reservoir Quality in a Deep Marine System: An Example from the Miocene Moki Formation in the Maari/Manaia Field Area, Southern Taranaki Basin, New Zealand

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The Maari/Manaia depocentre of the Southern Taranaki Basin preserves a well-penetrated 500m thick succession of Middle Miocene deep marine strata that record the filling of the basin, triggered by the first phase of the Tasman Bay convergence. Uniformly fine-grained sandstones of the Moki Formation were derived from metasedimentary and volcanic sources and form the reservoirs for the producing Maari Field as well as for the Manaia Discovery.

A rigorous interpretation of the sequence stratigraphic framework by integration of high-resolution 3D seismic data, core data, petrographic analysis, biostratigraphy and well correlations, that identifies key stratal surfaces and their correlative deposits, revealed the deposition of three sequences grouped into a composite sequence. The three sequences contain bundles of sand-prone sequences deposited during sea level lowstands and overlying thicker claystones deposited during transgressions and sea level highstands. The predictable stacking pattern of those claystones sandwiched between each of the sequences are seismically traceable and correspond to 4th order maximum flooding events grouped into the 3rd order composite sequence of the Moki Formation.

The Moki Formation is believed to be deposited in an overall progradational context within the Maari/Manaia Field Area, changing from distal outer lobe complex position in the lower and older sands into channel lobe transition zone position in the youngest sands. Additionally, it can be documented how reservoir quality changes laterally and longitudinally, due to a systematic axis-to-margin change in the petrographical character of individual reservoir units, attributed to hydrodynamic fractionation of minerals and textures.

## SPEAKER BIOGRAPHY

Alexander Wunderlich is the Geoscience Team Lead for Australasia in OMV New Zealand. Alex holds a MSc in Geology from the TU Bergakademie Freiberg in Germany and the Colorado State University in Fort Collins, USA. He has worked in New Zealand since February 2015, having previously worked for OMV in Madagascar as an Exploration Geologist for the Company's operated and non-operated interests in the Morondava Basin, Eastern, and Western Africa. Prior to joining OMV Alex has worked in technical exploration positions for operating companies in Norway and Germany, focusing on the North Sea, Norwegian Sea, and the Barents Sea.

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