

[Click to view entire presentation, with authors' notes, in PDF format](#)

Field Development Planning of a Thin Compartmentalised Oil Column: Vincent Field, Offshore Western Australia*

Ole Sundsby¹, Darren Baker¹, Peter Griffiths¹, and Hein Knipscheer¹

Search and Discovery Article #20067 (2009)

Posted May 10, 2009

*Adapted from oral presentation at AAPG International Conference and Exhibition, Cape Town, South Africa, October 26-29, 2008

¹Woodside Energy Ltd, Perth, WA, Australia (ole.sundsby@woodside.com.au)

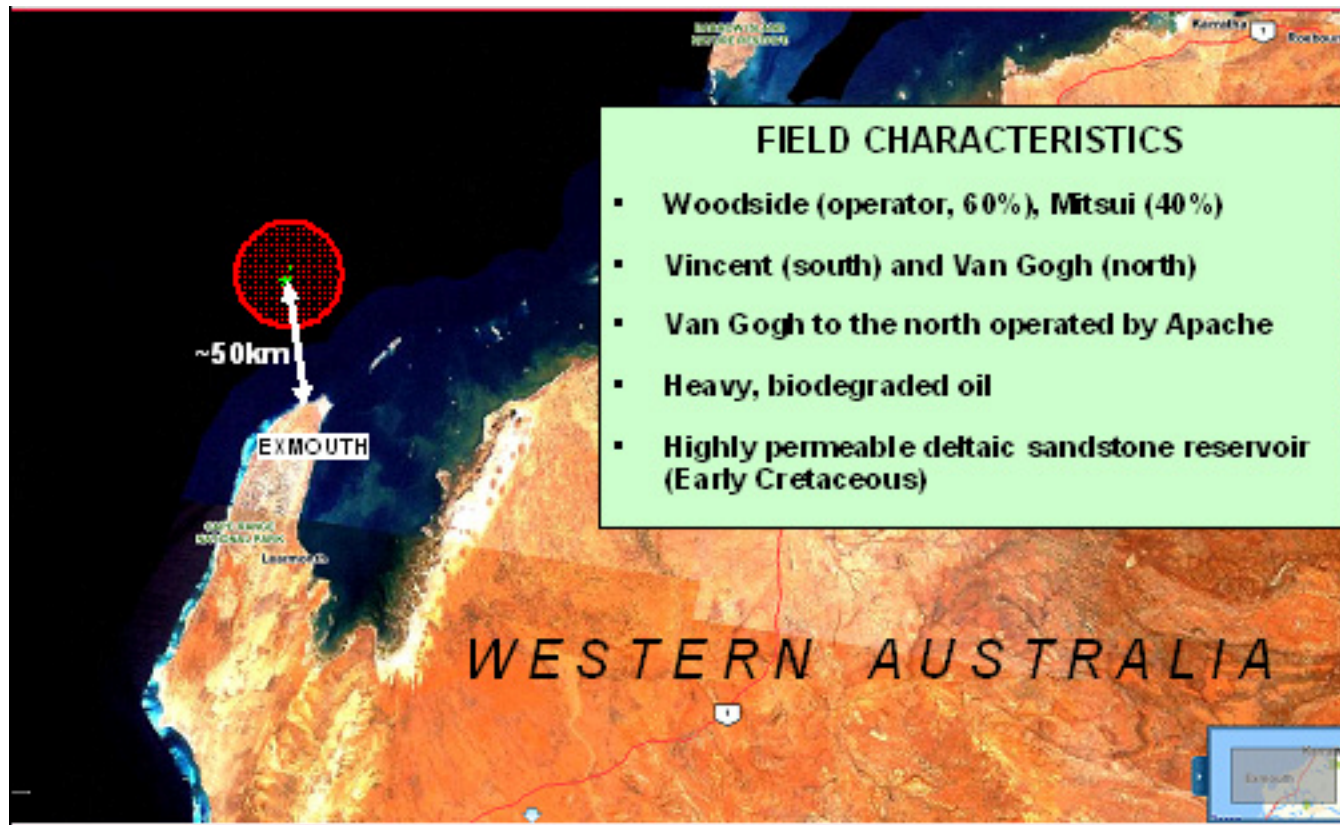
Abstract

Fast-track development of a thin compartmentalised oil column in a deepwater setting requires detailed full field layout planning before key subsurface data is available. Flexibility in layout of subsea infrastructure and wells is required to the benefit of the enhanced definition of the resource while it is being developed. A complicating factor is that the thin viscous oil column requires closely spaced horizontal wells with limited room for flexibility, because a shift of well location(s) impacts all other wells and layout of subsea infrastructure.

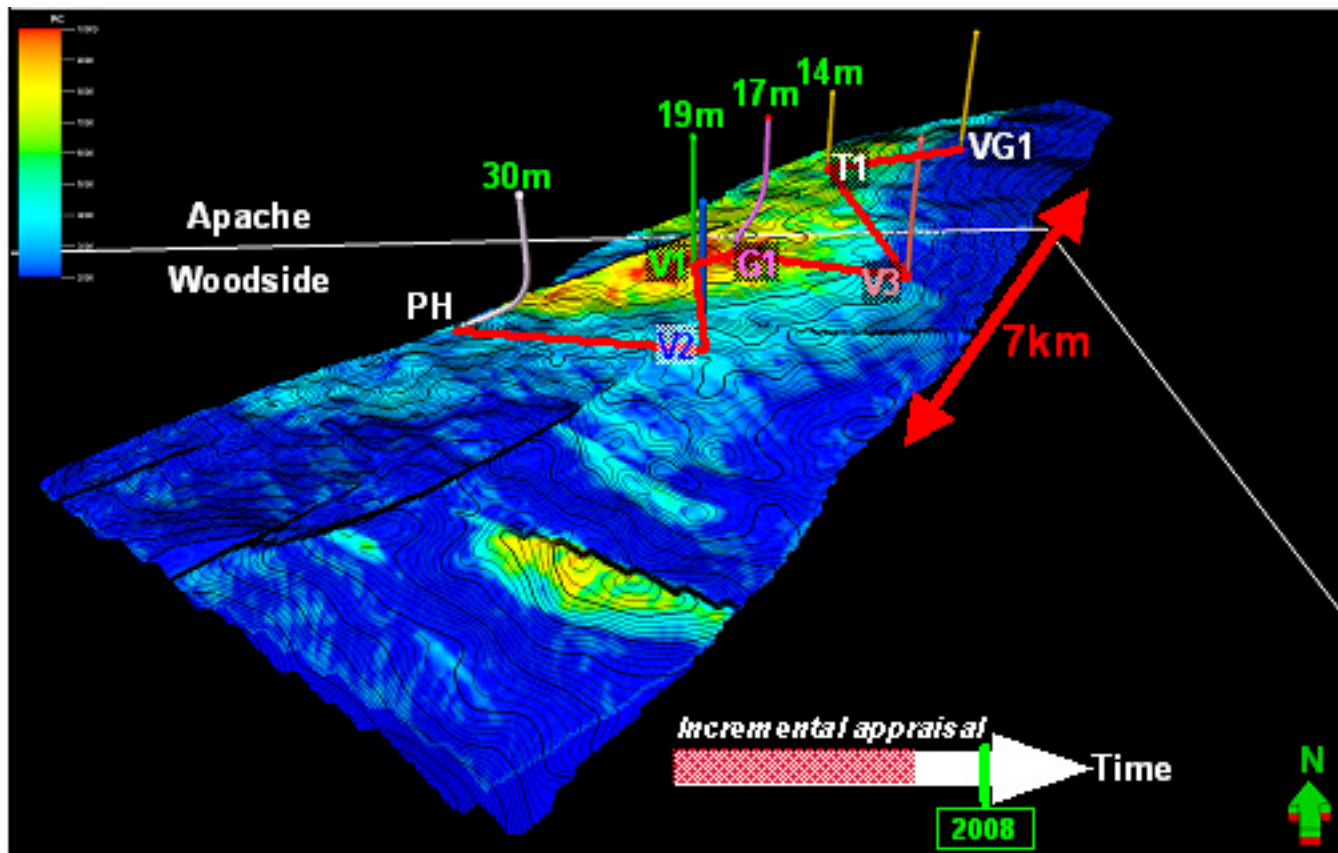
Vincent Field is a relatively small oilfield off the north-western Australian coast in water depths of up to 400m. One discovery and 2 appraisal wells indicated the presence of a compartmentalised, biodegraded oil column with a variable thickness of 12 to 19 meters between a thin gas cap and a large water leg, all in very high quality fluvio-deltaic reservoir rocks. Direct hydrocarbon indicators from excellent quality seismic data were used to define the extent of compartments and potential differences in oil columns. Compartmentalisation is thought to be caused by a combination of stratigraphic seals and faults.

The chosen development is by long multilateral horizontal wells drilled from 2 production manifolds in a phased FPSO development. The locations of the manifolds were fine-tuned using late appraisal data, and the number of drilling slots available is compatible with a later full field development. Tie-in points are provided for possible additional subsea infrastructure. The impact of compartmentalisation is thought to have been mitigated by drilling through potential stratigraphic barriers and sealing faults.

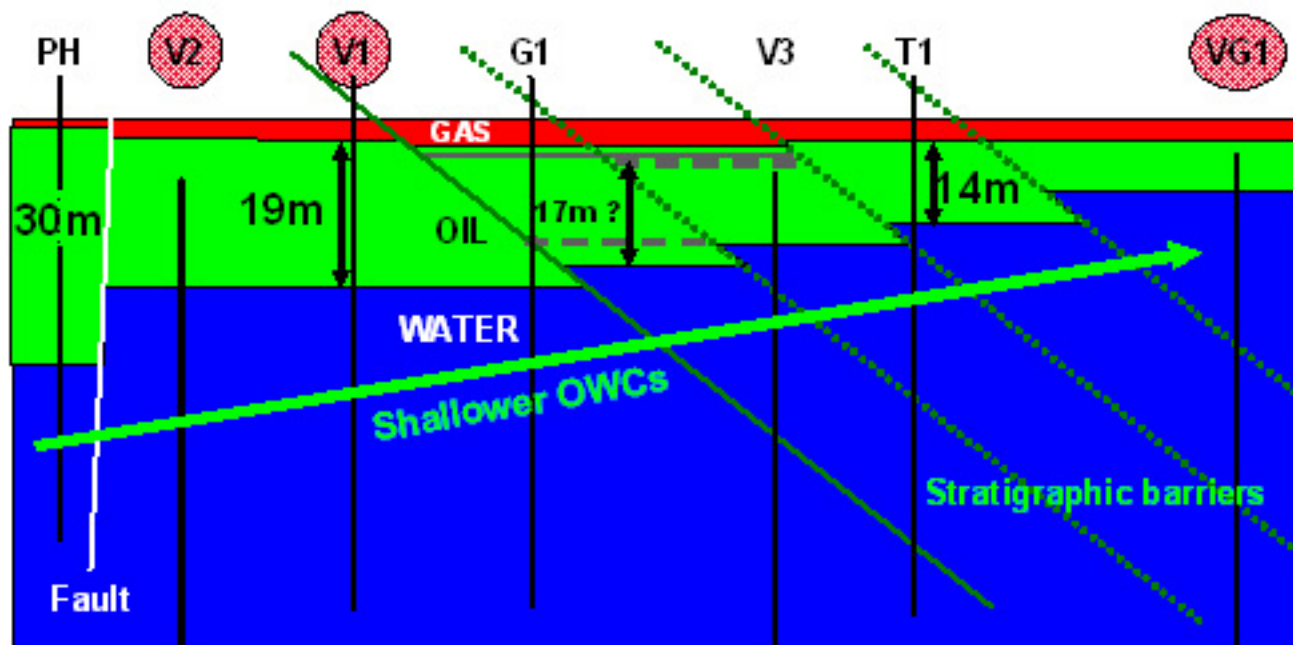
Selected Figures



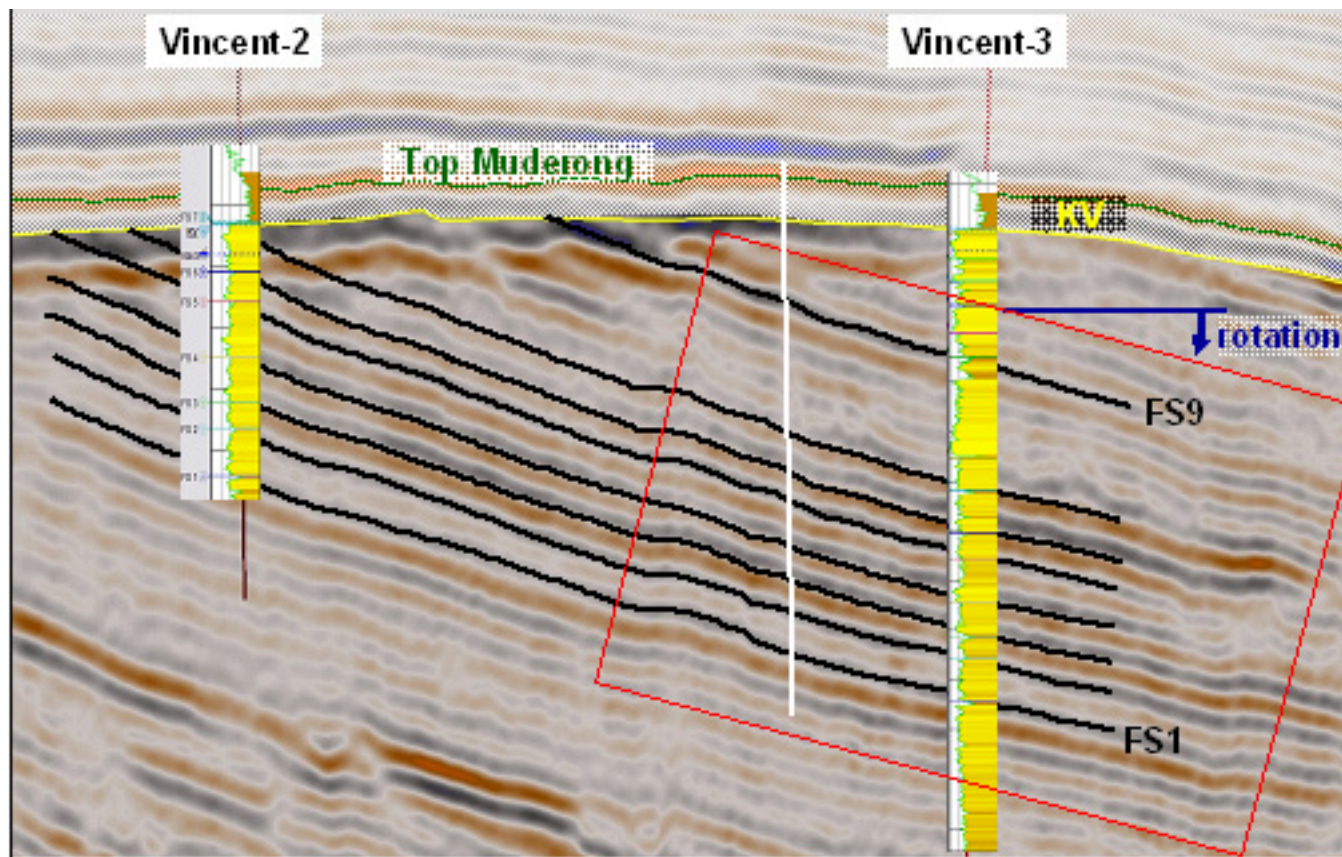
Location map for Vincent Field.



Map of Vincent Field, with heights of oil column and line of cross section.



Cross section showing varying OWC, evidence of compartmentalism of oil accumulation.



Seismic section with well logs of sand-rich section, illustrating compartmentalizing mechanisms.