A 3-D Seismic Interpretation of the Palaeo-Fluvial Geomorphology of the Offshore Gippsland Basin Utilising Seismic Attributes

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This thesis is submitted in partial fulfilment of the requirements for the Honours Degree of Bachelor of Science (Petroleum Geology & Geophysics)

Australian School of Petroleum,
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October, 2015

Abstract

The stratigraphy of the offshore Gippsland Basin exhibits extensive channelization features which developed during periods of lowstand that lowered base level causing incision and sediment bypass. These features are well documented at shallow depths but deeper in the stratigraphy the extent and geometry are less well defined. Traditional structural traps in the basin are becoming depleted and these features represent possible new targets. Equally their presence where down-cut into sealing lithologies represent a risk to the seal integrity/capacity overlying potential reservoirs concerned with CO2 storage. Seismic attributes, specifically coherence (variance) and sweetness, are co-rendered and mapped on stratal slices of the Gippsland Megasurvey 3D seismic dataset to enhance seismic images and establish the extent and geometry of channelisation in the offshore Gippsland Basin. These findings may help to identify new targets and determine potential for greenhouse gas storage, as well as helping to account for seismic anomalies that have been responsible for the misplacement of drilling targets in the past.

Acknowledgements

My thanks go to my project supervisor, Dr Mark Bunch, for his consultation and the generous allocation of his time throughout the semester. I would also like to thank the Australian School of Petroleum for the use of their facilities during this time; most notably the very capable computers in the lab, but also the eternal supply of caffeinated beverages in the break room which proved invaluable during times of enervation. I would also like to acknowledge the people at Schlumberger for producing a premier E&P processing software package in Petrel 2014, it was quite a steep learning curve but very worthwhile. Acknowledgement also goes to the Victoria DPI for access to their seismic data set, without which this project would not have been possible. Last but not least my gratitude goes to my peers.

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