

Full Waveform Inversion as a ‘Game Changer’ – Woodside’s Myanmar Experience

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ABSTRACT

Full waveform inversion (FWI) is arguably one of the most exciting new developments in the seismic industry today and offers a potentially ‘game-changing’ advantage through its ability to rapidly deliver detailed velocity models from raw data. Research into FWI, once the domain of the academic community, is now at the forefront for many oil and gas, and seismic companies and the technology is becoming routinely utilised in a range of exploration, development and production settings. There is currently a significant effort being made by the research community to include reflection data in the FWI solution in order to remove the depth limitation in the velocity updates. While it is still early days it is considered that a more generalised FWI algorithm is not far away. FWI is also computationally intensive and expensive particularly in the higher frequency spectrum. However, computer power is becoming more affordable and more advanced every year. A cost-effective alternative to a proprietary cluster is cloud computing which allows on-demand access to a large number of CPU’s without the requirement for maintenance and upgrades. In the last few years FWI has quickly established itself as an integral part of Woodside’s Exploration and Production geoscience workflows. This case study briefly describes the recent applications of the technology by Woodside in Myanmar block AD-7 in the Rakhine Basin.