

Characterising Pay Sand in Basin Floor Channel Complexes using Cognitive Interpretation workflows – a Case Study from Deep Water Sabah

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Abstract

Sand body delineation remains a challenge in proximal basin floor channel complexes due to the geomorphological complexity. Using Cognitive Interpretation (CI) workflows in combination with Quantitative Interpretation (QI) techniques allowed an interpretation of the pay sand distribution with a higher confidence and reduced uncertainty. Conventional reservoir mapping in the basin floor settings is a challenge due to the uncertainty of the reservoir horizon interpretations. The use of a Cognitive Interpretation workflow, which is independent of the accuracy of the horizons, produced a higher confidence and more objective result on the characterisation of reservoir intervals. This workflow was applied to the Sabah deep-water project, and the results were used to decide the optimum well location.

The workflow produced predicted pay sand volumes that honour the geomorphology of proximal basin floor channel complexes and are independent to the input horizons. The results of this analysis have allowed geologists and geophysicists to select the optimum well location for the next drilling campaign. Selection of optimum well locations was based on the penetration of well into the predicted pay sand body, that fits with the stratigraphic and structural trap. The combined Cognitive Interpretation & Quantitative Interpretation approach successfully demonstrated that a high confidence quantitative analysis and interpretation in a proximal basin floor channel complex can be achieved through data integration in 3D space, without manually interpreting the data.