

The Search for Stratigraphic Traps: A Case Study in X field, Malay Basin

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In petroleum industry, decision makers tend to shy away from drilling the high risk stratigraphic traps. But, as more straight forward conventional traps were drilled out, it is necessary to outline a series of pragmatic approaches to explore the potential stratigraphic traps in Malay Basin. X field, with structure is a NW-SE low-relief compressional anticline is found to have abundant channelized systems at Early Miocene Group I. The early production of X Field is predominantly from anticlinal closure at the northern part. Less exploration work has been executed on the flattish, low-relief southern area (Figure 1). However, the later production indicates it partly comes from I-35 channelized sands. Thus, it is deemed worthy to evaluate the prospectivity of these low-relief channel systems in greater details, despite the challenges face in detection and quantification. Integrated approach comprising of seismic attributes, seismic facies and wireline log analysis are employed to visualize the potential channel traps and the outcomes are indeed convincing. Variance coupled with sweetness horizon slices had successfully delineated the edges and sweetness of the channel stratigraphically. At interval I-35L, the channel complexes tend to be massive with extensive sand bodies compared to straight, low sinuosity meandering channel system in I-68 (Figure 2 & 3). Strong reflection amplitude anomalies (bright) and fining upward log signature also acts to support the presence of channelized sand packages in Group I. Plus,

the decreasing dominance of sand packages from north to south had proven the origin of sediments from north. These clastic sediments could be trapped in the diverted river system and formed potential stratigraphic traps in X field. Nevertheless, the successful implication of these integrated approaches in accessing the stratigraphic traps would be beneficial for nearby fields in Malay Basin and henceforth open up a new play to boost the dwindling oil reserve.

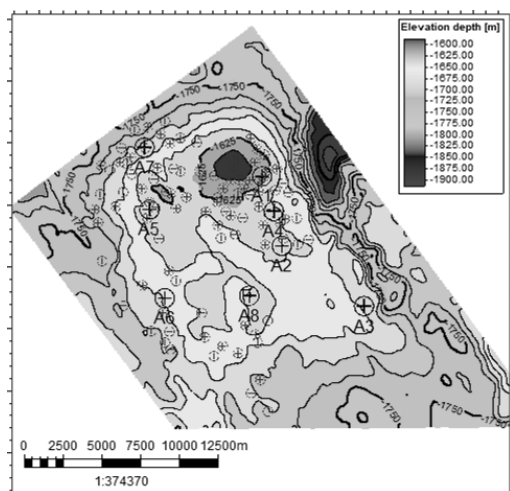


Figure 1: Top depth map of I-35L showing the early production was coming mostly from anticline at northern part rather than low-relief southern area.

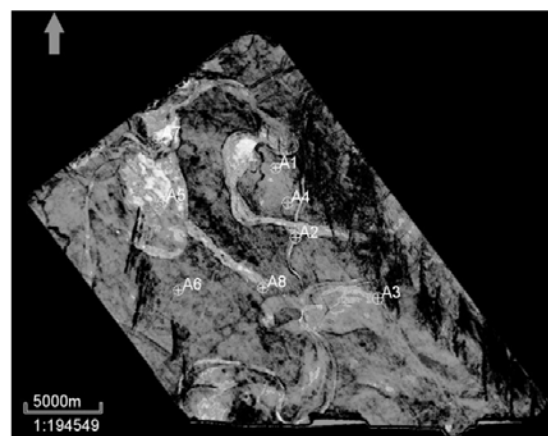


Figure 2: Application of multi-attributes (variance & sweetness) in horizon slice of I-35L featuring massive and high sinuosity channel complexes. White color indicates strong amplitude and sweetness response with possible channel sand bodies.

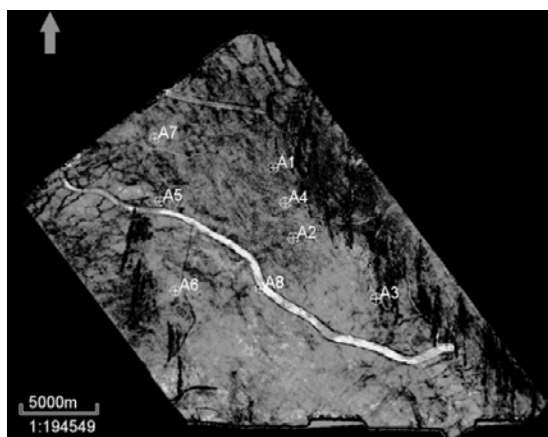


Figure 3: Application of multi-attributes (variance & sweetness) in horizon slices of I-68 featuring a contrasting straight, low sinuosity, smaller scale meandering channel system. White color indicates the potential "sweet spot".