GEOPHYSICS PAPER 14

SEQUENCE STRATIGRAPHIC STUDY PAVES THE WAY TO THE DISCOVERY OF KINABALU A-1 WELL

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Kinabalu field is located in Sub-Block 6S-23 offshore Sabah, about 61 km to the northeast of Labuan (Figure-1). The field is subdivided into Kinabalu East (East Fault Block), Kinabalu Deep and Kinabalu Ultra Deep (West Fault Block). The Kinabalu field was discovered in 1990 and started production in 1993 (Kinabalu Field Development Plan, 2008).

In late 2008 a regional sequence stratigraphic study of Kinabalu and surrounding areas was carried out to establish correlation of Kinabalu field within the Sabah regional Stratigraphic Framework with emphasis on understanding the stratigraphic location of the reservoir sections. In addition, the study was also aimed to identify upside potential for hydrocarbon exploration for the area. This is the first kind of this study since discovered in 1990 (Othman et al., 2008).

Kinabalu A prospect is located on the upthrown side of Kinabalu East fault (Figure 2). The presence of Kinabalu A prospect was previously reported by the previous operator, but there was no further investigation made to evaluate the potentiality of this prospect (SHELL unpublished report, 2000). The present sequence stratigraphic study has managed to identify and verified the presence of Kinabalu A prospect in the Stage IV C at the 10A reservoir level and deeper section. In the area, where a petroleum system is proven by many discoveries, this potential subtle trap offered an attractive target. Further investigation with detailed structural mapping, resource assessment and seismic attributes studies indicated positive results on the presence of commercial hydrocarbon at Kinabalu A accumulations.

As a follow up to the above studies and findings, Kinabalu A-1 well (KNA-1) was spud on 15 December 2009. The well was drilled to a total depth (TD) of 15, 423 ft MD/10, 023 ft TVD. The well has successfully penetrated hydrocarbon at 10A and 11A reservoir levels and declared as discovery. The KNA-1 well has been suspended for future development. This paper will discuss the workflow used for regional sequence stratigraphic study, which includes the integration of seismic stratigraphy, well log analysis, seismic attributes studies, core analysis and 2D geological modeling leading to the successful discovery of Kinabalu A-1 well.

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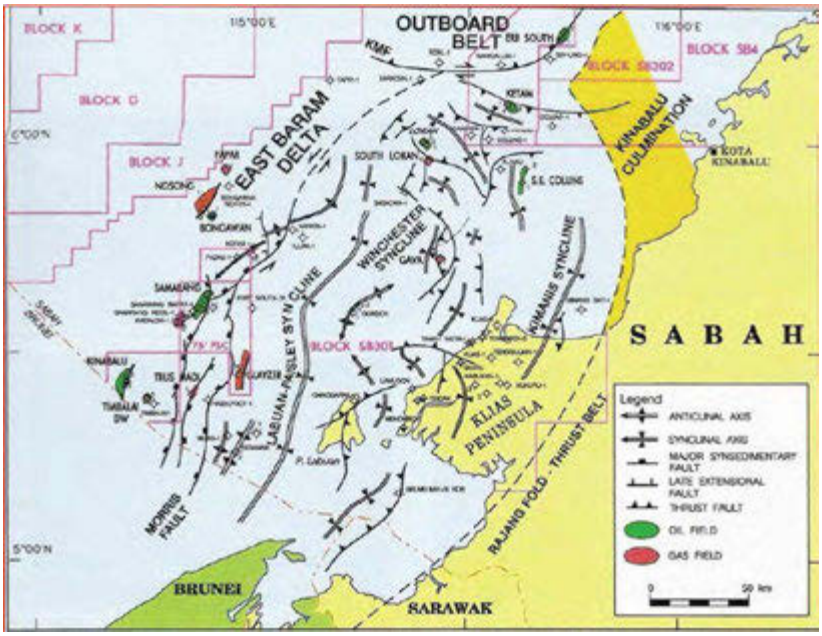

Figure 1: Offshore Sabah map.

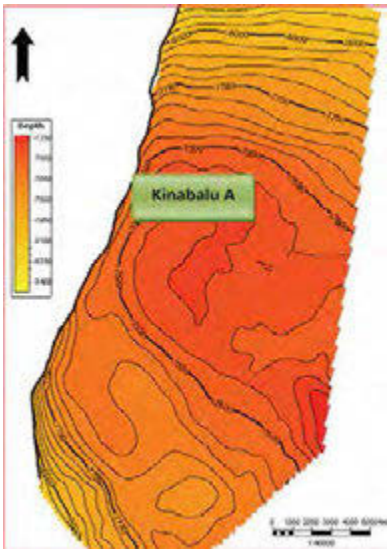

Figure 2: Kinabalu A location at the Top 10A reservoir.

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