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ANDING UTARA FRACTURED BASEMENT MODELING AN INTEGRATED WORKFLOW FROM SEISMIC-3D STATIC-FRACTURE MODEL

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The Anding Utara Field located in PM 12 Block in production sub-block of Malong-Anding-Sotong within the Angsi-Duyong sub-basin of the South Malay Basin, offshore Peninsular Malaysia in area of water depth approximately 74 m with 4 wells drilled (Figure 1.0). The productive reservoir in Anding Utara Field is a fractured Jurassic Metamorphic Basement High within a pull-apart basin formed by extensional faulting during basin development. It is about 12 km long and 7 km wide.

Correlation indicated that Anding Utara Jurassic Metamorphic Basement underlain by very thick Oligocene shale as a cap rock (Figure 2.0). The 3D fractured modeling was created using by collaborating well log, well tests, seismic attributes and outcrops analogs. The shared knowledge and flexible workflows have been conducted to get the best-fit model, manageable data and easier-way to be re-run.

Dual Porosity and permeability modeling was generated for fracture and matrix properties (Figure 3.0). The fracture properties are divided into 2 major fracture sets; Distance to fault fracture set as representative for tectonic mechanic and bed contained fracture set as representative for stratigraphic mechanic (Figure 4.0). The matrix properties are developed in weathered basement. The matrix becomes the major oil storage, while the open fracture becomes the oil flow conduit.

References

Small Field Development Project Department. PCSB. December 2005. Basement Fracture Three Days Field Trip East Cost, Peninsular Malaysia. Technical Report. Unpublished.

Mazlan B Haji Madon, Peter Abolins, Mohammad Jamaal B Hoesni & Mansor B Ahmad., 1999. Malay Basin. The Petroleum Geology and Resources of Malaysia. Petroliam Nasional Berhad, 173-212.

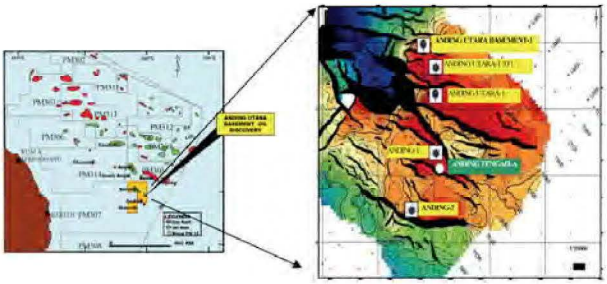

Figure 1: Location Map for Anding Utara.

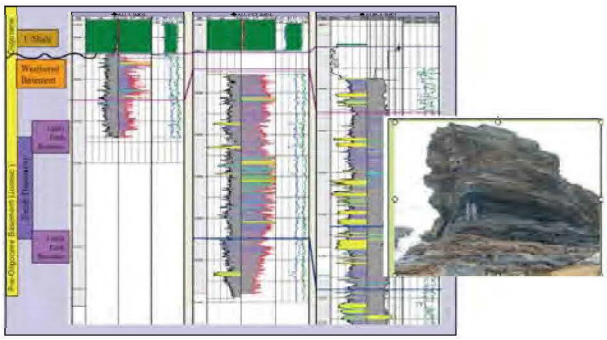

Figure 2: Stratigraphy correlation between Anding Utara-1, AUST-1 and AUB-1 and basement outcrop.

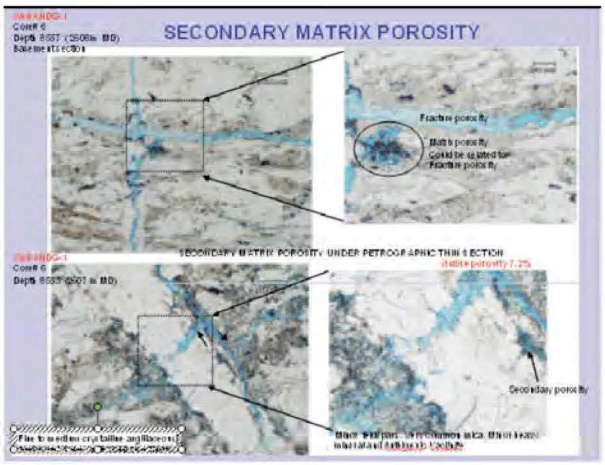

Figure 3: Secondary matrix porosity under thin section.

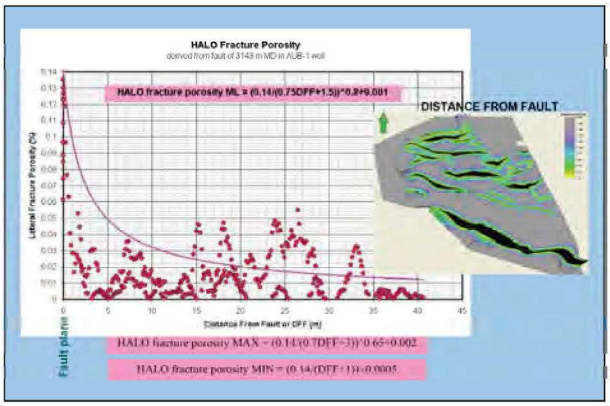

Figure 4: Fault (Halo) fracture porosity model for 3 cases (Max, ML and Min).