GEOLOGY POSTER 2

SHALLOW SEISMIC: AN ANALOG STUDY OF FLUVIAL DEPOSITIONAL SYSTEMS IN THE MALAY BASIN

W M Khairul Anuar b W Sulaiman*[1], M Rapi b M Som[1] & Faisal A. Alqahtani[2]

[1]PETRONAS Research Sdn. Bhd., Kawasan Institusi Bangi, 43000 Kajang, Selangor, Malaysia
*wanmohdkhairul@petronas.com.my
[2]Department of Earth Science & Engineering, Imperial College, London, SW7 2BP, UK

Lowering and rising of sea levels during the late Pleistocene have greatly influenced the type of topography in the Malay Basin, which are subsequently affect the development of fluvial systems within the region. Availability of shallow, near-subsea three-dimensional (3D) seismic data in the Malay Basin could be utilized to provide analog study of fluvial system of deeper seismic sections. Further understanding of fluvial parameters (length, width, sinuosity, and radius curvature) and their relationship would determine the controlling factors on fluvial patterns.

This study involves 18,000sq km of 3D seismic data and 1600 km length of two-dimensional (2D) seismic lines within the southern half of the Malay Basin. Analysis of high-resolution data (from seabed to 500ms TWT) through combination of seismic attributes and time-slice provides exceptional imaging of channel features and its evolution.

Results indicate that channels tend to be wider, shallower and have an almost straight to low sinuosity at the base of sequences. Channel size would decrease upward within individual sequences, and having deeper incise with higher sinuosity. Channels also tend to cut deeper and have smaller width in high sinuosity and shallower and wider in straight channel.Similar findingswere found by previous works within the region south of the Malay Basin (e.g. Natuna Basin) (Gibling, 2006; Darmadi et al., 2007).This suggests that similar processes affected both areas

Seismic cross sections exhibit different frequency within boreholes in study area to suggest possible lithology variation. However, boreholeslog descriptions indicate that the fills are all mud/shale, irrespective of their location (i.e. point bar, outside channel and inside channel). Therefore, it is possible that different frequency response in seismic could be due to higher density contrast of marine shale compared with lower density contrast non-marine shale.

The wide variation in channel styles and size in the study area is interpreted to be controlled mainly by the sea-level fluctuations (Voris, 2000). However, climate changes may have a significant impact on the channel pattern and sizes by affecting the discharge and the types of sediment load.

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