

CONFERENCE ABSTRACTS

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Structural evolution and interpretation of the 'I' field, northwest Malay Basin: Miocene age

SITI SORHANA SYAZWANI MOKHTAR^{1,2,*}, BENJAMIN SAUTTER²,
MOHAMED M ABDO ALY ELSADAANY^{1,2}, TSARA KAMILAH RIDWAN^{1,2}, ROSITA HAMIDI^{1,2}

¹ Centre of Excellent in Subsurface Seismic Imaging (CSI), Universiti Teknologi PETRONAS, 32610, Seri Iskandar, Perak, Malaysia

² Department of Geoscience, Universiti Teknologi PETRONAS, 32610, Seri Iskandar, Perak, Malaysia

* Corresponding author email address: siti_18003357@utp.edu.my

Abstract: The Malay Basin is a structural oddity in Sundaland, with extremely thick Cenozoic sequences in the relatively stable centre. The earliest rift in the Malay Basin began in the Paleogene, caused by an episode of transtension along the Axial Malay Fault Line, a NW-SE trending shear zone. A significant inversion occurred during the Middle Miocene, resulting in the reactivation of the Malay Basin axial shear zone and the creation of large-scale E-W trending folds. This regional N-S compression came from the south, most likely due to the indentation of the Australian Plate in Sundaland's southern margin. Using attribute map computation and a complex seismic trace analysis tool, we concentrate on the Late Miocene structural understanding and evolution of the north-western part of the Malay Basin in this research. To detect structural irregularities, post-stack seismic data was used to calculate the cosine of phase, variance, dip, azimuth, curvature, and discontinuity attributes. We display a network of normal faults active in the Late Miocene to Pliocene-recent, characterised by steep planes crosscutting the top of a prominent anticline, by computing and interpreting volume attribute, 3d time-slice, and surface attribute. Two major fault systems affected the sedimentation in this region. A set of E-W faults is intersected by a set of N-S faults. The faults predate the anticline and show that extensional deformation occurred

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in the Late Miocene to Pliocene. This extension may be tectonic in origin or propelled by sedimentary loads on top of various post-inversion morphologies.

Keywords: Structural evolution, Miocene polyphase, geometric attribute, NW Malay Basin