PALEOFACIES MAPPING OF BALINGIAN PROVINCE USING 3D MEGAMERGED SEISMIC DATA

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The Basin Assessment Group of PREX, PMU embarked on merging of eighteen 3D datasets in the Balingian Province, part of the Sarawak Basin in late 2005. The 3D datasets used are of various vintages from 1984 to 2004 covering an area approximately 11000 sq km over 27000 sq km of Balingian province. This 3D mega merged data was utilised in the interpretation and mapping project in 2008 to establish an updated regional correlation and paleofacies and identify new hydrocarbon play, leads and prospects. This mega merged data allowed visualization of the regional depositional facies in three dimensions.

Previous paleofacies mapping of the Balingian Province was based mainly on drilled locations with well logs and biofacies. It does provide a broad paleofacies maps of the Balingian Province, especially for Cycle I and Cycle II megasequences.

With the advent of new 3D megamerged seismic data, paleofacies mapping can then be carried out with better coverage and detail based on seismic facies analysis calibrated to the numerous wells drilled in the area and updated biofacies. Furthermore, sequence stratigraphic cross-sections can be generated in any directions. Facies change can be observed easily based on the change in seismic facies and compared with the well correlation panels.

In this paper, various seismic facies representing coastal plain, coastal to shallow marine and carbonate facies are described. Five paleofacies maps have been created-Cycle I, II, III, IV and V to depict the five main megasequences in the Balingian Province. The change in depositional direction from west to east in Cycle I, and Cycle II times to generally south to north in Cycle III, IV and V times is due to a major uplift at end of Cycle II. Some differences are obvious when compared with the previous paleofacies maps and they are highlighted in this paper.

Furthermore, a new west to east chronostratigraphic chart is also created to depict the changes in depositional environment more accurately including showing the areas of uplift and erosion and carbonate deposition. More importantly, new plays and leads are also identified especially the Cycle III pinnacle reefs which are yet to be tested in the Balingian Province.