

Source Rock Potential of Lower Coastal Plain Coals and Coaly Sediments of Northwest Borneo

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Geochemical characterisation of oil and gas from offshore NW Borneo fields carried out by petroleum explorationists indicate that land plant organic matter is the source of most of the hydrocarbon accumulations encountered. In this investigation, coals and carbonaceous sediments from northwest Borneo were analysed by means of organic petrological and organic geochemical methods. The paper discusses the overall oil-generative potential of the Oligocene to Miocene coals and coaly sediments from this region.

The oil-prone nature of these coals and coaly sediments is most evident from petrographic features, such as the extensive development of an exsudatinite microfracturing network. This exsudatinite network is generally associated with hydrogen-rich macerals, particularly bituminite and suberinite. Suberinite is recognised here as the precursor to bituminite and liptodetrinite. Much of the organic material is considered to be of mangrove origin. They are considered to be the most oil-prone kerogen of the samples studied and are likely to be the main source of the terrestrially-derived hydrocarbons that occur offshore northwest Borneo. Other geochemical data in support of the oil-prone nature of these sediments are moderate to high HI values, Py-GC pyrograms with abundant n-alkane/alkene doublets, and biomarker distributions that correlate with the oils offshore northwest Borneo. These include high abundance of oleanane and bicadinanes, and higher concentration of C29 steranes relative to C27 steranes.