Paper P41

Thermal maturity assessment of Tertiary coal-bearing sequence of the West Middle Block of the Pinangah Coal Field, Sabah, Malaysia

Fatin Liyana Alias*, Wan Hasiah Abdullah, Ralph L. Kugler & Mustaffa Kamal Shuib

Department of Geology, Faculty of Science, University of Malaya, 50603 Kuala Lumpur *Email Address: fatinliyana87@yahoo.com

The coal-bearing sandstone and shale sequence of the Early to Middle Miocene Tanjong Formation in the West Middle Block of the Pinangah Coal Field, central Sabah, was evaluated to determine thermal maturity based on vitrinite reflectanc and n-alkane distributions. The Tanjong Formation was described by Collenette (1965) as a thick succession of sandstone, mudstone and siltstone with lenses of conglomerate in the Pensiangan and Upper Kinabatangan Rivers in central of Sabah. The depositional environment of the Tanjong Formation is interpreted as brackish water (Collenette, 1965), based on limited biostratigraphy data. Thirteen coal and four carbonaceous shale outcrops along river banks were described and sampled. Most coals were classifie as bright coals which are characterized by alternating lustrous and dull bands of black coal. Petrographic analyses of the coals were performed under reflecte white light and UV light excitation at 50x objective magnification Coal petrology or microscopy involves the study of maceral or organic components visible in transparent thin sections or polished blocks or fragmented coal particles (Stach, 1975). The coals are dominated by vitrinite with common occurrence of liptinite macerals. Vitrinite reflectance measurements carried out on the coals under oil immersion record values between 0.45 and 0.55%Ro. Based on vitrinite reflectance the coals are ranked as sub-bituminous B-A and high volatile bituminous C, and are considered thermally immature to early mature for petroleum generation, as oil generation typically commence at about 0.60%. The thermal immaturity of the coal samples is supported by the high CPI (carbon preference index) values. This is further confirme by the distinct odd to even predominance (OEP) in the gas chromatograms of saturated hydrocarbon fractions.

References

Collenete, P., 1965. The Geology and Mineral Resources of the Pensiangan and Upper Kinabatangan Area Sabah, Malaysia. Vincent Kiew Fah San, Government Printer.

Stach, E., Mackowsky, M.Th., Teicmuller, R., 1975. Stach's Textbook of Coal Petrology, Gebruder Borntraeger: