

## Petroleum source potential of Tertiary coals of Western Pinangah, Sabah Malaysia

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The Tanjong Formation which underly the Western Pinangah area is of Upper Miocene age, based on assemblages of both pelagic and calcareous benthonic foraminifera (Collenete, 1965). The majority of foraminiferal samples were collected from the Pinangah River and northern side of the Maliau Basin (Collenete, 1965). An investigation on the coals of the Tanjong Formation in western Pinangah, an area of 45 km<sup>2</sup> in central Sabah, was undertaken to evaluate their petroleum-generating potential. The amount and quality of the organic matter was determined using a SRA (Source Rock Analyzer) run in TPH/TOC (Total Petroleum Hydrocarbon/Total Organic Carbon) mode. The parameters derived from the SRA are equivalent to that produced by Rock-Eval techniques. In total, fourteen coal samples were analyzed. The TOC (Total Organic Carbon) of the coal samples ranges from 51.2 to 72.5 wt%. The Tmax (temperature where the maximum amount of hydrocarbons are artificiall generated during pyrolysis) varies from 418°C to 440°C. This is equivalent to a calculated vitrinite reflectanc equivalent (VRE) of 0.36 to 0.76% VRE, based on the Tmax-VRE relationship described by Jarvie *et al.* (2001). These low values suggest that the coals are thermally immature to early mature for hydrocarbon generation. The HI (Hydrogen Index) of the coals ranges from 203 to 463 mgHC/gTOC. These values are usually associated with petroleum source rocks that could potentially generate a mixture of oil and gas, or mainly oil. When the HI and Tmax data were plotted in a van Krevelen diagram, most of the data points fall close to the Type II and Type III kerogen line. All of the data above indicate that the Western Pinangah coals are of favorable quality and quantity in terms of petroleum generating potential.

### References

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