

Oil generation from terrestrial organic matter rich in exinites other than resinite commences at VR = 0.7% (Connan and Cassou, 1980). The top of this oil generation window occurs at approximately 2800 metres depth in Pelican-5.

Over-mature sediments (VR > 1.4%) occur below approximately 4050 metres depth in Pelican-5.

4.2 Organic Richness

Organic richness is generally excellent in the Eastern View Coal Measures and fair to good in the Cretaceous sediments. Only two samples examined have poor organic richness. These samples are shales from 3710 and 3907 metres depth.

The high organic richness in the Pelican-5 location is attributable to the high proportions of coals in the Eastern View Coal Measures. However, this is not the case in the Cretaceous sediments where the good organic richness is attributable to organic rich shales and carbonaceous shales. Coals in these sediments are likely to have caved from the Eastern View Coal Measures.

4.3 Organic Matter Type and Source Quality

Exinite contents of coals in the samples analysed range from 10-40% and generally lie in the range 15-25%. However, individual coal cuttings fragments may contain up to 50% exinite indicating excellent source quality.

The shales and siltstones from the Eastern View Coal Measures generally have exinite contents ranging from 10-25%. Exinite contents of the Cretaceous shales and siltstones range from 5-80% due largely to the presence of bituminite and lamalginite rich bands.

Vitrinite contents are uniformly high in the sediments from Pelican-5 generally ranging from 20-85% indicating a highly anoxic environment of deposition in both the Cretaceous and Tertiary, and a high source potential for the generation of significant quantities of gaseous hydrocarbons.

Exsudatinite occurs in most of the coals from the Eastern View Coal Measures indicating oil generation from these sediments. Exsudatinite is often associated with resinite in the sample from 2169-2178 m indicating that this exsudatinite may have been generated from the resinite in this coal. Oil in the associated sediments has the same fluorescence as the exsudatinite and hence may also have been sourced from the resinite in these coals.

The abundance of exsudatinite in the Eastern View Coal Measures indicates that the coals have generated significant quantities of liquid hydrocarbons.

Free oil also occurs in a large proportion of the samples examined. The following table gives possible origins of the oil in these samples based on the association of the oil with other exinite macerals present.