Inspection of the PGC traces (Figs. 14-20) reveals kerogen pyrolysates of remarkably similar composition, notwithstanding the range of hydrogen index values represented (HI = 196-444). The Cretaceous kerogen (2728 metres depth) is obviously gas-prone (Fig. 20), being the most aromatic (toluene/n-C7:1 = 3.8; m + p-xylene/n-C8:1 = 2.5) and having the highest "gas/oil ratio" (C1-C4/C5+ = 1.58) (Table 7). Samples from 1924-33 metres (Eocene) and 2284-93 metres (Paleocene) have the lowest "gas/oil ratios" (C1-C4/C5+ less than 1 : table 7) but even these kerogens are, at best, potential sources of only gas-condensate.

Residual Oil Analysis

Of the six samples selected for residual oil analysis (Table 6), only two gave EOM/total hydrocarbon GC traces that resemble those of an oil or condensate (viz. 2032-43 metres, Eocene, and 2284-93 metres, Paleocene : Figs. 11 and 12). The migrated hydrocarbons which stain both these intervals are characterised by high pristane/phytane and pristane/n-heptadecane ratios (pr/ph = 4; pr/n-C17 more than 1). The latter feature suggests relative immaturity. Immature condensate (MPI-derived source VR = 0.7%) recovered from the Eocene in Pelican-5 (RFT 3, 2788.2 metres) has a similarly high pristane/n-heptadecane ratio.

The remaining extracts represent indigenous immature source-rock bitumen (Figs. 8-10, 13).

CONCLUSIONS

1. Non-marine sediments of the Eastern View Coal Measures above 2000 metres depth in Koorkah-1 are thermally immature (VR less than 0.5%).

2. Intrusion of a 34 metre thick dolerite sill into the basal part of the Eocene section has produced a zone of elevated maturity which is clearly evident on the vitrinite reflectance profile for Koorkah-1 between 1900 and 2400 metres depth.

3. The rank thresholds for the onset of hydrocarbon generation from resinite-poor terrestrial organic matter are located within the Cretaceous sequence as follows:

Threshold	VR %	Depth m
Top of gas window	0.60	2730
Top of oil window	0.70	2950

Optimum maturity for oil generation is approached only at T.D. in this well (VR = 0.95% at 3148 metres).