

3.14 Occurrence of Hydrocarbons

No significant hydrocarbons were encountered within the Torquay Group or Demons Bluff Formation. Methane was first detected after drilling out of the 340mm casing at about 880m. Volumes slowly increased with depth and at 1410m ethane, was first detected. From there through to the 244mm casing point at 1525m the gas maintained a background level of 12 units* with a chromatographic breakdown of C₁96% C₂3% C₃5% **. A maximum of 30 units was detected at 1383m comprising 100% methane.

* 1 unit = 200ppm methane equivalent in air.

** Chromatographic breakdown expressed as percent total volume analysed, C₁% C₂% C₃% C₄% C₅+ % Routine analysis were run to C₅+

Eastern View Coal Measures

Rare minor fluorescence and no significant gas shows characterised the EVCM. All observed gas peaks were from coals or carbonaceous shales.

From the 244mm casing shoe to the first observed occurrence of fluorescence at 2004m gas levels remained low at 2 to 3 units with the composition changing from C₁96% C₂4% to C₁65% C₂30% C₃5%. The only exceptions were gas peaks at 1947m (1951m (L)) and 1977m (1981m (L)) of 12.3 and 20.7 units respectively, both associated with coal seams. From 2004m (2008m (L)) to the top of the dolerite sill at 2204m (2208m (L)) the background gas levels remained low with the only gas peaks associated with the coal beds. The proportion of methane continued to decrease with depth such that the background gas gave a composition of C₁46%, C₂42%, C₃12% in the claystone above the sill.

The only shows recorded were very poor and over the intervals 2004m to 2012m (2008 to 2016m (L)) and 2070m to 2075m (2074m to 2079m (L)) and were associated with tight fine grained sandstone. The fluorescence was spotty dull yellow green with a slow milky cut but was unaccompanied by any gas peak.

From the base of the sill at 2271m (2276m (L)) to TD 2323m the background gas levels ranged from 5 to 10 units with a relatively stable composition of C₁83%, C₂12%, C₃5% Numerous gas peaks were observed, the maximum being 114 units at 2363m (2368m L) (C₁92%, C₂5%, C₃3%), but all were derived from coals.

Trace shows were observed at 2563m (2567m (L)) and 2673m (2676m (L)), but were both confined to thin fine grained tight sandstones.

3.15 Discussion

Flinders 1 was drilled with a minimum of problems which enabled the collection of good quality data in the 216mm (8½") section.

The low background gas levels and near absence of hydrocarbon fluorescence coupled with the consistently high log derived water saturations confirm the absence of hydrocarbons in the drilled section. The low mud weight and fluid loss will have