

At approximately top Palaeocene level, the Vitrinite Reflectance maturity map (Figure 7) shows the whole eastern portion of the T/18P permit to be mature for hydrocarbon generation. In the Cormorant area, these values exceed 1.0% (Figure 6) therefore sediments between the near base *P.asperopolus* and top Palaeocene are considered mature for hydrocarbon generation.

The Demons Bluff Formation, with a thickness of 240m of shale and siltstone is generally a competent regional top seal to the Eastern View Coal Measures. However at King 1, it is believed that faulting may have breached the seal, hence resulting in the leakage of hydrocarbons out of the structure. Furthermore, the intraformational shale and siltstone of the upper EVCM were ineffective as seals appearing to be semi-pervious and thinly bedded, acting more like waste zones than seals.

4.10 Conclusion and Contributions to Geological Knowledge

The primary objective of King 1 was to evaluate the oil potential of the upper Eastern View Coal Measures (EVCM) at the crest of the large Cormorant anticline, updip from Cormorant 1 where encouraging shows were recorded.

King 1 encountered excellent porosity and permeability in fine to medium and occasionally coarse grained sandstones in the upper EVCM. Associated with this sand development encouraging shows were encountered and a total of four cores were cut. Live oil was recovered from the cored interval, geochemical analysis demonstrates that the oil is biodegraded. A series of pressure tests using the Sequential Formation Tester indicated that the interval was water saturated and the well was plugged and abandoned.

Possible reasons for the failure of King 1 are:

- 1 the breaching of the Demons Bluff Formation regional top seal by faulting.
- 2 poor migration pathways from mature Palaeocene source rocks to upper EVCM reservoirs.