

PART I - HYDROCARBON SOURCE ROCK EVALUATION STUDY, YOLLA-1

SUMMARY

Organic geochemical analyses performed on cuttings and sidewall cores from 1680 m to 3340 m in the Yolla-1 well drilled in the Bass Basin offshore Tasmania have indicated the following:

- The sediments may be divided into the following maturity intervals:

Interval (m)	Maturity	Generation Capability
1760 - 1967	Marginal	Pre-oil
2165 - 2971	Moderate	Early oil generative
Below 3000±	Mature	Oil generative

- At 2584 to 2651 m an intrusive rock has altered the organic matter in the adjacent rocks, which presently have mature vitrinite reflectances and Tmax temperatures. However, apparently the time involved in this heating has been short, since the hydrocarbon extracted from the sediments still retains low maturity characteristics. Mature reflectances are also present in the sediments at 3007-3016 m, which are positioned above the extrusive at 3031 m. Although these surface igneous rocks would have cooled shortly after solidification, they still probably served as good conductors of heat after burial and subsidence, especially during the recent igneous intrusive activity. As a result, the sediments adjacent to these rocks would have increased maturities.
- The late Eocene rocks from 1680-1832 m were marginally mature, and would have potentially moderate to good oil and gas generating capability at higher maturity. Minor amounts of light migrated liquid hydrocarbon are present in the sequence.
- The middle Eocene sediments from 1832-2210 m have marginally to moderately mature, very good to excellent gas source properties, with secondary oil generating potential at optimum maturity. This sequence contains reservoired oil at 1830-1835m.
- The early Eocene section from 2210-2584 m, above the intrusion at 2584-2651 m, has moderately mature, very good to excellent gas source character, with secondary oil generating potential at optimum maturity. This sequence contains migrated hydrocarbon at 2517-2526 m. Below the intrusion, the early Eocene section has poor hydrocarbon source rock properties.
- The late Paleocene sediments have a moderately mature, poor oil and gas source character, but contain a reservoired light liquid hydrocarbon at 2809-2824.5 m.
- The early Paleocene sediments from 2885 m to 3000± m have a moderately mature, poor hydrocarbon source character. Below 3000± m the unit is interpreted to have mature, good to excellent oil and gas source rock characteristics. These sediments may contain reservoir hydrocarbon which is similar, based on GC-MS data, to the oil recovered from 1830-1835 m.