

APPENDIX N

**Calculation of Source Potential Index
and Undiscovered Potential Resource for Permian of the
Tasmania Basin**

TASMANIA BASIN GENERATIVE CAPACITY-
Calculation of Source Potential Index (SPI)

See Hunt J.M., (1996) *Petroleum Geochemistry and Geology*, Freeman New York, for details.

This is calculated using rock eval and thickness data.

$SPI = \text{thickness}(S1 + S2) \times \text{density} \text{ divided by } 1000.$

Maturity data also have to be considered in the final calculations.

Dr Reid calculates:

Tasmanite Oil Shale and *Tasmanites*-rich horizons = 3.78 barrels per square metre.
(Woody Island/Quamby Fms = 6.05 barrels per square metre)
Woody Island /Quamby Fms after maturity corrections= 4.114 bbls per sq metre.

Top Bundella Mudstone etc = 0.189 bbls per sq metre
Liffey Gp coals and carbonaceous shales (basinwide av.) = 1.136 bbls per sq metre

For comparison Tasmania Mines Department calculations (see Bacon et al 2000 p.48 and p.51) are:

Woody Island Fm = 7 bbls per sq metre
Tasmanite = 2.5 bbls per sq metre

Thus Dr Reid's figures are very similar to those calculated by Bacon et al (2000). The exact subsurface extent of these source units is unknown but if we assume the following areas, based on the best available information, then a possible generative potential is obtained.

Tasmanites-rich horizons 8000 square km
Woody Island /Quamby Fms 10,000 sq km
Liffey Gp carbonaceous sediments 10,000 sq km
Top Bundella 10,000

Tasmanite, 10000 x million x 3.78 = 37,800,000,000 bbls
Woody Is 15,000 x million x 4.114 = 61,710,000,000 bbls
Liffey Gp = 15,000 x million x 1.136 = 17,040,000,000 bbls
Top Bundella = 15,000 x million x 0.189 = 2835,000,000 bbls

Total = 119,385,000,000 bbls

In most petroliferous basins somewhere between 90-98% of the generative potential has been lost (Hunt 1996). Therefore a mid-case scenario is that 5% may be retained. For the Tasmania Basin this would mean an undiscovered potential resource of 5,969,000,000 bbls or close to **6 billion BOE**.