

- The M2 has a GWC at 3,213 mss and a column of 24.5m
- The M3 most probably contains gas, with a GWC at 3,138 mss and a column of 18m

3. Gas Composition

The lower part of the U3 was tested, flowing at 18.6 MMCFD and 1,022 bcpd. Condensate ratio is 60-75 bbls/MMSCF

The Gas gradient from RFT pressure data is 0.358 psi/m (0.109 psi/ft), which is consistent with the measured molecular weight of 27.

4. Net Pay, Porosity and Water Saturation

Net permeable sand was estimated from logs (as per Gummy) with no $\phi + S_w$ cut offs.

Average $\phi + S_w$ were taken from Shell's log analysis contained in the Manta-1 Well Completion Report (enclosure 8). Shell later re-analysed the petrophysics for the U3 sand in September, 1998, with similar results (slightly higher S_w).

8.3m of core was recovered from the bottom part of the U3 sandstone and routine, but no special core analysis was carried out. Overburden corrected porosity and permeability ranged from 8.3 to 15.4% and 4 to 165 md and averaged 11.7% and 40 md respectively.

Overburden corrected porosity agrees quite well with the log analysis. S_w derived from Kipper 2 capillary pressure curves (Figure 6), using permeabilities estimated from Manta core ϕ vs k relationship (Figure 7) and the height above Free water level, agree reasonably well with the log analysis.

5. Gas in Place

Reservoir parameters are summarised in Table 6 and hydrocarbons in place in Table 7.

The U3 is the most important unit and reservoir parameters are noted in more detail here.

Top in Manta	3,233.5 mss (2,208 msec, $V = 2,929$ m/s)
Base	3,303 mss
Gross	69.8m
Net	54.5m
N/G Manta-1	0.78
Av. N/G Manta U3 Pool ⁽¹⁾	Assume 0.65 due to lower N/G at top.
Av ϕ	0.13
Av S_g	0.55
Exp. Factor	237 (Res. Temp 123°C, Pressure 4,740 psi, $z = 0.96$)
Average permeability	50 - 100 md
Area at GWC	15.1 km ²
GRV entire Structure ⁽²⁾	503.5 x 10 ⁶ m ³
OGIP entire structure as mapped	= 196 bcf