

The presence of coal complicates the assessment of *source richness*. Potential hydrocarbon yields (oil and gas) are very high for the Eocene and Paleocene ( $S_1+S_2 > 6-366$  kg hydrocarbons/tonne : Tables 4, 5). However, much (if not most) of this genetic potential is likely to be for gas and condensate. [Note: Rock-Eval pyrolysis is a bulk-flow technique which is incapable of discriminating between  $C_1-C_4$  (gas) and  $C_{5+}$  (oil, condensate) compounds in the kerogen pyrolysate, i.e. the  $S_2$  peak].

*Cuttings* from the Cretaceous are contaminated by up-hole cavings. Apart from one carbonaceous claystone at 3846 metres depth ( $S_1+S_2 = 24$  kg hydrocarbons/tonne), *sidewall core* data (Table 5) indicate poor source richness for the Cretaceous section ( $S_1+S_2 < 2$  kg hydrocarbons/tonne).

Cuttings and SWC samples from the following intervals display the best source richness for hydrocarbons:

<u>Age</u>	<u>Depth</u> m	<u><math>S_1+S_2</math></u> kg h'c/tonne	<u>PC</u> %	<u>TOC</u> %
Eocene	*1999	192	16.0	60.7
	*2039	204	17.0	65.0
	*2223	200	16.7	69.6
	*2298.5	245	20.4	68.8
	2332	22	21.5	4.45
	*2365	26	2.13	8.00
	2583	31	2.55	8.45
	2790	22	1.99	39.4
	*2794	366	30.5	79.2
	*2970.5	259	21.6	72.4
	Paleocene	3132	59	4.92
3168		34	2.84	9.00
3204		171	14.2	47.0
3240		64	5.36	21.0
3258		74	6.20	22.7
3276		78	6.51	18.4
3294		45	3.78	13.4
3312		23	1.90	7.15
3366		80	6.64	23.1
3384		40	3.35	8.35
	3420	64	5.29	17.4

\*SWC sample; remainder cuttings.

#### 4.3 Source Quality and Kerogen Type

##### Eocene

Although coal is the dominant carbonaceous lithofacies, hydrogen index values extend over a wide range (HI = 30-430 mg  $S_2$ /g 10C : Tables 4,5) at maturation levels of VR = 0.5-0.85%.