

OTWAY BASIN.

**BEACH.
28-6-84**

PART 2.

P.E.P. 105

OIL and GAS DIVISION

P.E.P. 105

28 JUN 1984

OTWAY BASIN STUDY TYRENDARRA
EMBAYMENT

PART 2 (APPENDICES)

CONFIDENTIAL

By A Tabassi
Beach Petroleum NL
June 1984

BEACH PETROLEUM N.L.

(Incorporated in South Australia)

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PART 2 (Appendices)

By : A. TABASSI .

Beach Petroleum N.L.

February , 1984 .

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TABLE NO. 1

VITRINITE REFLECTANCE AND SOURCE ROCK DATA - CASTERTON FORMATION

<u>Well Name & Number</u>	<u>Depth (M)</u>	<u>R_oMax %</u>	<u>T.O.C. %</u>	<u>Comments</u>
Woolsthorpe No. 2	1855	0.81	0.70	Sparse sporinite orange to dull orange sparse cutinite, orange to dull orange & rare alginite A, yellow. (Sandstone) siltstone> claystone> coal. Coal rare V>I>E, clarite=fusite. D.o.m. common, E>I>V. Exinite and inertinite common, vitrinite sparse. Limestone present. Common shell fragments. Rare foraminifer tests. Common pyrite).
Woolsthorpe No. 2	1943	0.72	1.38	Sparse sporinite and cutinite yellow orange to dull orange. (Claystone) siltstone> sandstone. D.o.m. common, I>E>V. Inertinite common, exinite and vitrinite sparse. Abundant carbonate. Rare shell fragments. Sparse iron oxides).

TABLE NO. 2

VITRINITE REFLECTANCE AND SOURCE ROCK DATA - CRAYFISH FORMATION

<u>Well Name & Number</u>	<u>Depth (M)</u>	<u>R_oMax %</u>	<u>T.O.C. %</u>	<u>Comments</u>
Eumeralla No. 1	2978	< 0.94	-	Sparse sporinite, cutinite and liptodetrinite, orange. (Silty shale with shell fragments. ID common. Some very thin layers which may be vitrinite but are too thin to take a polish.)
Eumeralla No. 1	3014	0.88	-	Very rare bright orange cutinite. (Ss. with shell fragments some thick layers of vitrinite and abundant thin layers of vitrinite. Micrinite present, some vitrinite with dull green brown fluorescence).
Woolsthorpe No. 2	1087	0.48	2.72	Common sporinite, yellow orange to orange, sparse cutinite, yellow to dull orange and sparse suberinite brown. (Claystone) coal) sandstone) shaly coal. Coal abundant, V)E)I, vitrinite) clarite) duroclarite. Shaly coal, V)E)I. D.o.m. common, V)I)E. All macerals common. Sparse shell fragments. Sparse pyrite).
Woolsthorpe No. 2	1471	0.67	1.76	Common sporinite, yellow orange to dull orange, sparse cutinite, orange to dull orange and rare suberinite, brown. (Siltstone) claystone) sandstone) coal) shaly coal. Coal, V)E)I, duroclarite) vitrite. Shaly coal, V)E)I. D.o.m. common, E)I)V. Exinite sparse to common, vitrinite and inertinite sparse. Rare shell fragments and ?oolites. Sparse pyrite

TABLE NO. 3

VITRINITE REFLECTANCE AND SOURCE ROCK DATA - EUMERALLA FORMATION

<u>Well Name & Number</u>	<u>Depth (M)</u>	<u>R_oMax %</u>	<u>T.O.C. %</u>	<u>Comments</u>
Eumeralla No. 1	1036	-	-	Sporinite and liptodetrinite, sparse, yellowish green to dull orange. (Pale silty claystone, sparse pyrite, rare ID).
Eumeralla No. 1	1768	0.44	-	Rare, exinite associated with vitrinite cutinite dull brown, bright yellow orange ?resinite or sporinite. (Ss. rare thin V layers, some SF. V ranges in texture from text- to eu- ulminite some micrinite. Shell fragments present).
Eumeralla No. 1	2064	0.54	-	Abundant cutinite, orange, resinite, green to orange, and sporinite, yellow to orange. (Coal with clarite dominant, massive vitrinite and fusinite. Rare exsudatinitite, dull orange. V 70-80%, E 5-15%, 5-10%).
Eumeralla No. 1	2719	0.67	-	Sporinite and cutinite, yellow to orange, rare in siltstone, absent from sandstone. (V as rare layers in the ss. D.o.m. rare in ss., common in siltstone, chiefly I.)
Green Banks No. 1	610	0.42	0.37	Rare to sparse liptodetrinite, yellow to orange, rare sporinite, cutinite and resinite, yellow and rare dinoflagellates, orange. (Siltstone) claystone with coaly intraclasts of clarite. D.o.m. sparse, E>I>V. Vitrinite and inertinite rare. Exinite sparse. Common iron oxides).
Green Banks No. 1	755.5	0.42	0.77	Common to abundant dinoflagellates, yellow to orange, rare cutinite, yellow and rare alginite A, bright yellow. (Claystone. D.o.m. common, E>V>or=I. Vitrinite and inertinite rare. Exinite common).

TABLE NO. 3 - Continued

<u>Well Name & Number</u>	<u>Depth (M)</u>	<u>R_oMax %</u>	<u>T.O.C. %</u>	<u>Comments</u>
Green Banks No. 1 (Continued)	870	0.38	0.48	Rare sporinite and cutinite and rare to sparse dinoflagellates, yellow to orange. (Claystone with coaly intraclasts of clarite and duroclarite. Sporinite common in coal. D.o.m. sparse, E>I>V. Vitrinite and inertinite rare. Exinite sparse. Sparse iron oxides).
Green Banks No. 1	1000	0.41	0.45	Rare to sparse dinoflagellates, yellow to orange and rare sporinite, orange to dull orange. (Claystone with coaly intraclasts of clarite siltstone sandstone. D.o.m. sparse, I>E>V. Inertinite sparse, exinite rare to sparse, vitrinite rare. Common iron oxides. Rare pyrite).
Green Banks No. 1	1100	0.43	0.44	Rare cutinite and sporinite, yellowish orange to orange and rare liptodetrinite, yellow to orange. (Siltstone. D.o.m. rare, E>I>V. Vitrinite, inertinite and exinite rare. Sparse iron oxides).
Green Banks No. 1	1204.5	0.47	0.98	Sparse dinoflagellates, greenish yellow to orange, rare to sparse cutinite, orange and rare sporinite, orange to dull orange. (Claystone. D.o.m. common, vitrinite rare to common. Inertinite and exinite sparse to common).
Green Banks No. 1	1207	0.45	20.80	Abundant sporinite and cutinite, yellow to dull orange, rare resinite, yellow, rare fluorinite, green and sparse suberinite, brown. (Coal>siltstone>sandstone>claystone. Coal abundant, V>E>I. Duroclarite claro-durite fusite=clarite. D.o.m. common, V>or=E I. Vitrinite and exinite common. Inertinite sparse. Rare pyrite).

TABLE NO. 3 - Continued

<u>Well Name & Number</u>	<u>Depth (M)</u>	<u>R_oMax %</u>	<u>T.O.C. %</u>	<u>Comments</u>
Wangoom No. 6	1040	0.42	0.68	Sparse to common sporinite and sparse liptodetrinite, yellow to orange, sparse cutinite, orange to dull orange rare resinite, green. (Claystone and silty claystone. D.o.m. common to abundant, I>E>V. Exinite and inertinite common, vitrinite rare. Detrital coal, reflectance 0.63%. Common pyrite).
Wangoom No. 6	1077	0.44	0.31	Rare sporinite and resinite, yellow and rare cutinite, orange. (Siltstone> sandstone>coal>claystone. Coal rare, vitrinite. D.o.m. rare, I>E. Inertinite and exinite rare, vitrinite absent. ?Galuconite present. Abundant carbonate. Abundant iron oxides and pyrite/marcasite. Coal may be drilling mud contamination).
Wangoom No. 6	1184	0.50	0.24	Rare sporinite and cutinite, orange. (Sandstone>siltstone>coal>carbonaceous claystone. Coal rare, vitrinite fusite. D.o.m. sparse, I>E>V. Inertinite sparse, exinite and vitrinite rare. Sparse shell fragments. Common iron oxides and carbonate. Abundant pyrite/marcasite)
Woolsthorpe No. 2	395	0.47	4.45	Abundant sporinite and common cutinite yellow orange to dull orange, sparse resinite, yellow and dull orange and abundant common suberinite, brown. (Claystone>sandstone>coal>shaly coal=siltstone. Coal, V>I>E, duroclarite>durite>fusite>clarite=vitrinite. Shaly coal, V>E>I. D.o.m. common I>E>V. Inertinite common, exinite and vitrinite sparse. Micrinite locally abundant. Sparse shell fragments. Slight heat alteration of sample during drying).

TABLE NO. 4

VITRINITE REFLECTANCE AND SOURCE ROCK DATA - BELFAST MUDSTONE MEMBER

<u>Well Name & Number</u>	<u>Depth (M)</u>	<u>R_oMax %</u>	<u>T.O.C. %</u>	<u>Comments</u>
Eumeralla No. 1	952	0.46	-	-
Green Banks No. 1	527	0.28	1.66	Rare to sparse liptodetrinite, orange to dull orange, rare sporinite, yellow to dull orange, rare cutinite, yellow and rare dinoflagellates, greenish yellow. (Siltstone, D.o.m. sparse, I>E>V. Vitrinite rare. Inertinite and exinite sparse).
Voluta No. 1	2459.9	0.62	-	-
	2672.4?	0.50	-	-
	3036.3	0.61	-	-
	3323.9	0.93	-	-
	3654.2	?0.80	-	-
Wangoom No. 6	952	0.44	1.46	Sparse sporinite, yellow and rare cutinite, yellow orange, rare resin, orange. (Siltstone, D.o.m. sparse, E>V>I. Exinite sparse, vitrinite and inertinite rare. Sparse iron oxides. Common pyrite).

TABLE NO. 5

VITRINITE REFLECTANCE AND SOURCE ROCK DATA - PAARATTE FORMATION

<u>Well Name & Number</u>	<u>Depth (M)</u>	<u>\bar{R}_oMax %</u>	<u>T.O.C. %</u>	<u>Comments</u>
Discovery Bay No. 1	1306	0.56	0.97	-
	1400	0.55	1.42	-
	1410	-	0.33	-
	1562	0.56	1.88	-
	1565	0.52	0.71	-
	1687	0.56	2.38	-
	1715	0.52	1.27	-
	1796	0.59	1.99	-
	1908	0.58	1.27	-
	1970	0.55	2.13	-
	2047	0.59	2.97	-
	2060	-	0.57	-
	2175	0.59	0.78	-
	2260	0.62	2.72	-
	2305	0.63	1.39	-
	2418	-	2.04	-
	2475	-	0.71	-
	2505	0.63	2.13	-
	2590	0.66	0.44	-
	2633	0.67	2.56	-
2772	0.66	2.11	-	
2776	0.66	0.82	-	
Green Banks No. 1	454	0.21	0.94	Rare to sparse liptodetrinite, greenish yellow to dull orange, rare dimoflagellates, greenish yellow and rare sporinite, orange to dull orange (Claystone)sandstone. D.o.m. sparse, I>E>V. Vitrinite, inertinite and exinite rare. Common carbonate and pyrite. Abundant ?glauconite).

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TABLE NO. 5 - Continued

<u>Well Name & Number</u>	<u>Depth (M)</u>	<u>R_oMax %</u>	<u>T.O.C. %</u>	<u>Comments</u>
Voluta No. 1	1414.0	20.63	-	-
	1796.2	0.51	-	-
	1971.2	0.55	-	-
	2039.2	0.59	-	-
Wanwin No. 3	1508	0.47	2.23	Sparse sporinite, yellow, common cutinite, yellow to orange and brown, and rare to sparse resinite/fluorinite green to yellowish orange. Rare ?dinoflagellates, yellow orange. (Siltstone) sandstone. Clarite inclusions in siltstone. D.o.m. abundant, I>V>E. Inertinite, abundant, vitrinite and exinite common. Sparse iron oxides. Common pyrite).
Wanwin No. 3	1673	0.53	2.30	Sparse sporinite and cutinite, yellow to orange, rare resinite, yellow and sparse liptodetrinite, yellow to dull orange. (Siltstone) sandstone. D.o.m abundant, I>V>E. Inertinite abundant vitrinite and exinite sparse. Sparse iron oxides. Abundant pyrite.)
Wanwin No. 3	1851	0.54	1.08	Rare sporinite, orange, sparse cutinite, yellow to dull orange, rare resinite, greenish yellow and sparse liptodetrinite, yellow to dull orange (Sandstone) siltstone. D.o.m. abundant, I>V>E. Inertinite abundant vitrinite common, exinite sparse. Common iron oxides. Abundant pyrite.

TABLE NO. 6

VITRINITE REFLECTANCE AND SOURCE ROCK DATA - PEMBER MUDSTONE MEMBER

<u>Well Name & Number</u>	<u>Depth (M)</u>	<u>$\bar{R}o_{Max}$ %</u>	<u>T.O.C. %</u>	<u>Comments</u>
Discovery Bay No. 1	1240	-	1.41	-
Tarragal No. 3	1538	0.46	3.15	Sparse to common dinoflagellates/ acritarchs, yellow to orange, sparse sporinite and cutinite, yellow to dull orange, rare resinite, green to orange. (Siltstone, d.o.m. common to abundant, $V \gg I = E$. Vitrinite and inertinite common, exinite sparse to common. Pyrite common.)
Tarragal No. 3	1646	0.49	2.26	Sparse cutinite, yellow to dull orange rare indoflagellates/acritarchs, yellow to orange, rare resinite, yellow to orange, rare sporinite, orange to dull orange. (Clay rich sandstone, d.o.m. common $V \gg I = E$. Vitrinite sparse to common, inertinite and exinite sparse. Pyrite abundant.)
Tarragal No. 3	1708	0.47	3.66	Sparse cutinite, orange, sparse dinoflagellates/acritarchs, yellow to orange, rare sporinite, orange to dull orange, rare resinite yellow. (Siltstone > sandstone, d.o.m. common $I \gg E > V$. Vitrinite, inertinite and exinite sparse. Pyrite common.)
Tarragal No. 3	1726	0.48	3.46	Cutinite sparse, orange to dull orange, sporinite rare to sparse, orange, resinite rare, green to orange. (Siltstone, d.o.m. abundant $V \gg I \gg E$. Vitrinite abundant, inertinite and exinite sparse. Abundant pyrite.)
Voluta No. 1	909.2	0.34	-	-

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TABLE NO. 6 - Continued

<u>Well Name & Number</u>	<u>Depth (M)</u>	<u>RoMax %</u>	<u>T.O.C. %</u>	<u>Comments</u>
Wanwin No. 3	1065	0.36	0.71	Rare cutinite and liptodetrinite orange. (Sandy siltstone. D.o.m. sparse, V>I>E. Vitrinite sparse. Inertinite and exinite rare. Common pyrite.)
Wanwin No. 3	1170	0.39	2.32	Rare sporinite and cutinite and sparse to common liptodetrinite, yellow to orange, rare resinite orange. (Claystone) silty claystone. Some iron oxide stained claystone. D.o.m. common to abundant, V>E>I. Vitrinite common. Exinite sparse to common. Inertinite rare. Abundant pyrite. Sparse iron oxides.
Wanwin No. 3	1225	0.40	1.67	Rare sporinite and sparse to common liptodetrinite yellow to orange, rare resinite, yellow and sparse cutinite, yellowish orange to orange. (Claystone. D.o.m. common, V>E>I. Vitrinite common. Exinite sparse to common. Inertinite rare. Abundant pyrite.)
Wanwin No. 3	1312	0.44	3.68	Rare cutinite orange, rare sporinite, orange to dull, orange, rare dino-flagellates and rare resinite, yellow and sparse liptodetrinite, yellow to orange. (Claystone. D.o.m. sparse to common, V>E>I. Vitrinite and exinite sparse. Inertinite rare. Sparse carbonate and iron oxides. Abundant pyrite.)
Wanwin No. 3	1377	0.49	1.39	Rare cutinite, yellowish orange and rare to sparse liptodetrinite, greenish yellow to orange. (Claystone and iron oxide nodules. D.o.m. sparse, E>I>V. Vitrinite and inertinite rare. Exinite rare to sparse. Sparse carbonate and pyrite, abundant iron oxide bearing minerals.

TABLE NO. 7

VITRINITE REFLECTANCE AND SOURCE ROCK DATA - DILWYN FORMATION

<u>Well Name & Number</u>	<u>Depth %</u>	<u>R_oMax %</u>	<u>T.O.C. %</u>	<u>Comments</u>
Discovery Bay No. 1	1026	0.51	2.70	-
Discovery Bay No. 1	1150	0.52	2.15	-
Eumeralla No. 1	471	0.36	-	-
Eumeralla No. 1	541	0.42	-	-
Wanwin No. 3	625	0.33	1.69	Rare cutinite, yellow and rare liptodetrinite, yellow to orange. (Siltstone, D.o.m. sparse V>I>E. Vitrinite rare to sparse. Rare clarite and vitrite probably as intraclasts. Inertinite and exinite rare. Sparse iron oxides. Abundant pyrite.)
Wanwin No. 3	860	0.30	2.74	Rare cutinite, orange and sparse liptodetrinite, yellow to orange. (Siltstone, D.o.m. common to abundant, V>I>E. Vitrinite common, inertinite and exinite sparse. Sparse iron oxides. Abundant pyrite.)