W 613

SEACOMBE SOUTH NO. 1

COMPLETION REPORT

by

Woodside Oil N.L.

February 1971

SEACOMBE SOUTH NO. 1 WELL

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SEACOMBE SOUTH NO. 1 WELL

CONTENTS

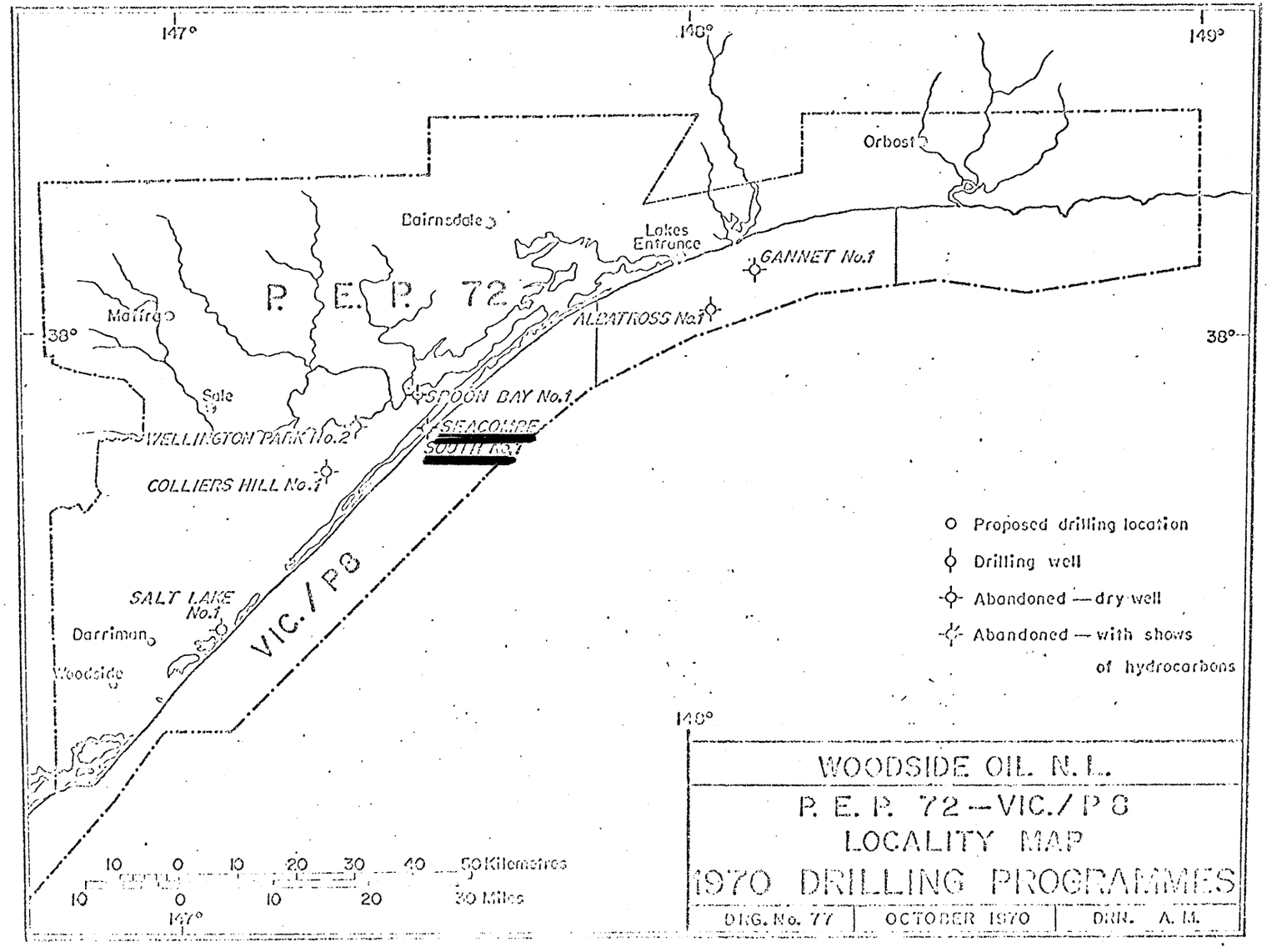
147°
148°
149°
38°
Orbost
Bairnsdale
Lakes Entrance
GANNET No.1
P. E. P. 72
ALBATROSS No.1
Maffra
Sale
SPOON BAY No.1
SEACOMBE
SOUTH No.1
WELLINGTON PARK No.2
COLLIERS HILL No.1
SALT LAKE No.1
Darriman
Woodside
VIC./P8
Proposed drilling location
Drilling well
Abandoned — dry well
Abandoned — with shows of hydrocarbons
10 0 10 20 30 40 50 Kilometres
10 0 10 20 30 Miles
WOODSIDE OIL N.L.
P. E. P. 72 — VIC./P 8
LOCALITY MAP
1970 DRILLING PROGRAMMES
DRG. No. 77
OCTOBER 1970
DRN. A. M.

FIGURE 1

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SUMMARY

Seacombe South No. 1 well was spudded on 2nd. November 1970 and reached a total depth of 3,890 feet on 11th. November 1970.

The well encountered the following sequence:-

	Well Depth
Post-Gippsland Limestone Sediments	0' - 1080'
Gippsland Limestone	1080' - 3310'
Lakes Entrance Formation	3310' - 3545'
Latrobe Valley Coal Measures	3545' - 3890' (T.D.)

The presence of a sandstone unit as a channel infill within the Gippsland Limestone originally postulated at the Seacombe South location was not present.

A gas show which was encountered in the top sands of the Latrobe Valley Coal Measures was tested over the interval 3535' - 3690'. The test recovered slightly gas cut water, mud and fine sand.

During the drilling, two conventional cores were cut, and sidewall cores were obtained to assist in the lithological interpretation and evaluation of the cuttings and logs.

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1. GENERAL DATA

(A)	Well name and number:	Seacombe South No. 1
(B)	Location (see Appendix 1):	Lat. 38° 08' 29.30" S Long. 147° 29' 06.70" E Datum: Australian Geodetic Datum Parish: Seacombe
(C)	Names of Tenement Holders:	Woodside Oil N.L. (Operator) Australian Oil and Gas Corp. Ltd. Continental Oil Co. of Aust. Ltd. B.O.C. of Australia Ltd. Planet Exploration Co. Pty. Ltd.
(D)	Petroleum Tenement:	Petroleum Exploration Permit 72 issued by the State of Victoria
(E)	Total Depth:	3890 feet
(F)	Date drilling began:	2nd. November 1970
(G)	Date reached T.D.:	11th. November 1970
(H)	Testing (D.S.T.):	2 days
(I)	Date well plugged:	14th. November 1970
(J)	Date rig released:	15th. November 1970
(K)	Drilling time to T.D.:	9 days
(L)	Rig up and down:	3 days
(M)	Elevation:	Ground Level: - 6.07 feet Kelly Bushing: 6.26 feet Rotary Table: 5.78 feet Datum: Williamstown
(N)	Status:	Plugged and abandoned

2. DRILLING DATA

(A) Contractor: Woodside Oil N.L.'s drilling rig and equipment were operated by Richter Bawden Drilling Pty. Ltd.'s drilling crew.

(B) Drilling Plant:

Make:	Brewster
Type:	N4
Rated capacity with $3\frac{1}{2}$" drill pipe:	7500'
Rated capacity with $4\frac{1}{2}$" drill pipe:	6000'
Motors:	G.M. 6/71

(C) Mast:

Make:	Lee C. Moore
Type:	Cantilever
Capacity:	386,000

(D) Pumps - Two:

Make:	Oilwell
Type:	P214
Size:	$7\frac{1}{4}$" x 14"
Motors:	G.M. 6/71

(E) Blowout preventer equipment:

(i)		(ii)	
Make:	Cameron	Make:	Regan 10"
Size:	12"	Series:	900
Series:	900		

(F) Hole Sizes and Depths:

26"	to	50'
$17\frac{1}{2}$"	to	150'
$12\frac{1}{4}$"	to	1250'
$8\frac{3}{4}$"	to	3890'

(G) Casing and Cementing Details:

Size	20"	$13\frac{3}{8}$"	$9\frac{5}{8}$"
Weight	Conductor	48 lbs	36 lbs
Grade	Pipe	H40	J55
Range		2	2
Setting Depth	50'	140	1236
Type of Collar	-	Nil	Float Collar
Depth Collar		-	1164
Type Shoe		Float Shoe	Guide Shoe
Cement Plug		Bottom only	Top and bottom plugs
Depth Shoe		140	1236
Centralizers		Nil	2
Qty. Cement	100	180	310
Method used	Halliburton	Halliburton	Halliburton

(H) Drilling Fluid:

(i) Type:

A Freshwater - Bentonite - Lignosulphonate system of drilling mud was generally used throughout the well.

From 0' to 210' a freshwater conventional mud with minor treatment was used. From 210' to T.D. a Milwhite lignosulphonate system was used with regular treatments of unicol, milcon, caustic soda, supercol and cellucol.

(ii) Average Properties:

Week	Depth Ft.	Weight lbs. U.S. Gall.	Visc. Secs/ 946 cc	W.L. c.c.	FC ins.	pH.
1	2009	9.7	50	9.0	3/32	9.6
2	3890	9.8	48	6.8	2/32	9.4

(iii) Treatment: regularly with following chemicals:

	lbs.		lbs.
Cal. chloride	1,330	Myrtan	900
Soda ash	1,493	Supercol	15,750
Sodium Bi. carb.	1,960	Mica	168
Ligcon	2,100	Zeogel	1,596
XP 20	300	Salt Gel	1,550
Unicol	3,350	Q. Broxin	450
Caustic Soda	980	Cellucol	484
Synergic	348		

(I) Water Supply:

Water was pumped from a water hole 1.2 miles from the rig. In addition 30,000 gallons were carried to the rig by a water tanker.

(J) Perforations and Shooting: Nil

(K) Plug back and cementation jobs:

(a) The well was plugged back from 3890' to 3660', and the cement cleaned out to 3690' before running D.S.T. No. 1.

(b) Abandonment Plugs were set in the well after testing:-

3690' - 3490'
1336' - 1136'
50' - 0'

(L) Fishing Operation: Nil

(M) Side-tracking hole: Nil

(N) Deviation:

$1\frac{3}{4}^{o}$ at 150 feet	2^{o} at 1550 feet	$1\frac{1}{2}^{o}$ at 2640 feet
$1\frac{1}{2}^{o}$ at 244 feet	$1\frac{1}{4}^{o}$ at 2059 feet	$\frac{1}{4}^{o}$ at 3210 feet
$\frac{3}{4}^{o}$ at 666 feet	$1\frac{1}{4}^{o}$ at 2323 feet	$1\frac{1}{2}^{o}$ at 3860 feet
2^{o} at 1099 feet	$1\frac{1}{4}^{o}$ at 2473 feet	

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3. LOGGING AND TESTING

(A) Ditch cuttings

Representative samples were collected at the shale shaker every 10 feet. These samples were washed, dried and examined. Sample descriptions are given in Appendix 2.

(B) Coring

(i) Two conventional cores were cut:-

(a) Core 1: 2473' - 2487'. Recovered 11 feet (78.6%)

(b) Core 2: 2670' - 2684'. Recovered 2 feet (14.3%)

Details of these are given in Appendix 3.

(ii) Twenty-three sidewall cores were recovered. Details of these cores are included in Appendix 4, with an explanation of the running of the C.S.T. which did not function properly.

(C) Electrical and other logs

Schlumberger Seaco Inc. ran the following logs:

(i) Induction Electrical log:

Run 1: 1245' - 3889'

(ii) Borehole Compensated Sonic/Gamma Ray Log:

Run 1: 1245' - 3878' (Gamma Ray 20' - 3878')

(iii) Compensated Formation Density:

Run 1: 3080' - 3879'

(D) Drilling Time

Drilling time was recorded by a "Geolograph" mounted on the derrick floor. The penetration rate is plotted on the composite log (Enclosure 1).

(E) Gas Log

Gas detecting equipment including gas chromatography was supplied, operated and maintained by Data Analysis Pty. Ltd. at the well site. The equipment was operated from a depth of 130' to total depth. The gas detector readings are plotted on the composite log (Enclosure 1).

(F) Testing

One drill stem test was conducted over the interval 3535' - 3690' and recovered slightly gas cut water with fine sand. A full report is included in Appendix 5.

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REGIONAL GEOLOGY

The regional geology of the Gippsland Basin, in which Seacombe South No. 1 well is located, is outlined in the Colliers Hill Well Completion Report, page 7.

STRATIGRAPHY

The sequence found in Seacombe South No. 1 was as follows:-

Age	Formation	Well Depth	Thickness
Upper-Miocene - Recent	Post-Gippsland Limestone Sediments	0'	1080'
Lower and Middle Miocene	Gippsland Limestone	1080'	2230'
Oligocene	Lakes Entrance	3310'	235'
Eocene	Latrobe Valley Coal Measures	3545'	345' +
		T.D. 3890'	

The recognition of the rock units given in the stratigraphic Table is based on conventional and sidewall cores, cuttings and wireline log characters. These characters were correlated with Wellington Park Nos. 1 & 2, Bengworden South No. 1 and Spoon Bay No. 1. The ages assigned to the rock units are those generally accepted to these units in the Gippsland Basin. (Hocking 1965 & Jenkin 1968).

Post Gippsland Limestone (0' - 1080')

In preparing the reports for earlier wells drilled the wireline log characters were the most useful features for stratigraphic breakdown coupled with well correlation. Because a full suite of logs was not run above 1245' it was thought best not to attempt a full stratigraphic division in the top part of the well.

Based on cuttings and gamma ray log the top of the Jemmy's Point Formation probably occurs at 410' and the top of the Tambo River Formation at 710'. Above 410' the presence of coal indicates that the Boisdale Beds were also encountered.

The details of the rock units drilled are shown on the Composite Log (Enclosure 1).

Gippsland Limestone (1080' - 3310')

The top of the unit is selected on the first appearance of a limestone, as seen in the cuttings. The general lithology consists of interbedded crystalline limestone, coquina, calcarenite marls, and marly limestone, which is often partly very clayey with varying amounts of loose glauconite.

The coquina consists of sponge spicules, coral stems, skeletal remains, bryozoans and pelecypods.

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From 2473' to 2487' and from 2670' to 2684' two cores were cut to verify the lithology. A detailed description of the cores is included in Appendix 3 and 4.

Lakes Entrance Formation (3310' - 3545')

The lithology of the Lakes Entrance Formation is very similar to Spoon Bay No. 1 with the same wire-line log characters which were used to select its top. The top of the formation is characterised by marls which are found interbedded with calcareous mudstones. Towards the base of the unit, at least two thin bands of dolomite occur. These are separated by massive calcareous mudstones, contrasting with the occurrence at Spoon Bay where the interbedded material is a glauconitic sandstone.

Latrobe Valley Coal Measures (3545' - 3890' (T.D.))

At the Seacombe South No. 1 well the Latrobe Valley Coal Measures consists of an upper fine-grained sandstone bed and a lower sequence of fine to coarse-grained sandstone with interbedded coal. These two units are separated by a 10' dolomite bed.

Because the cuttings did not indicate a lithological change from the marine sediments of the overlying Lakes Entrance Formation to the none-marine sediments of the LVCM until 3700', the selection of the top of the LVCM was made on the basis of the sidewall cores as being between 3500' and 3560' with the final selection of 3545' being chosen from the wire-line logs.

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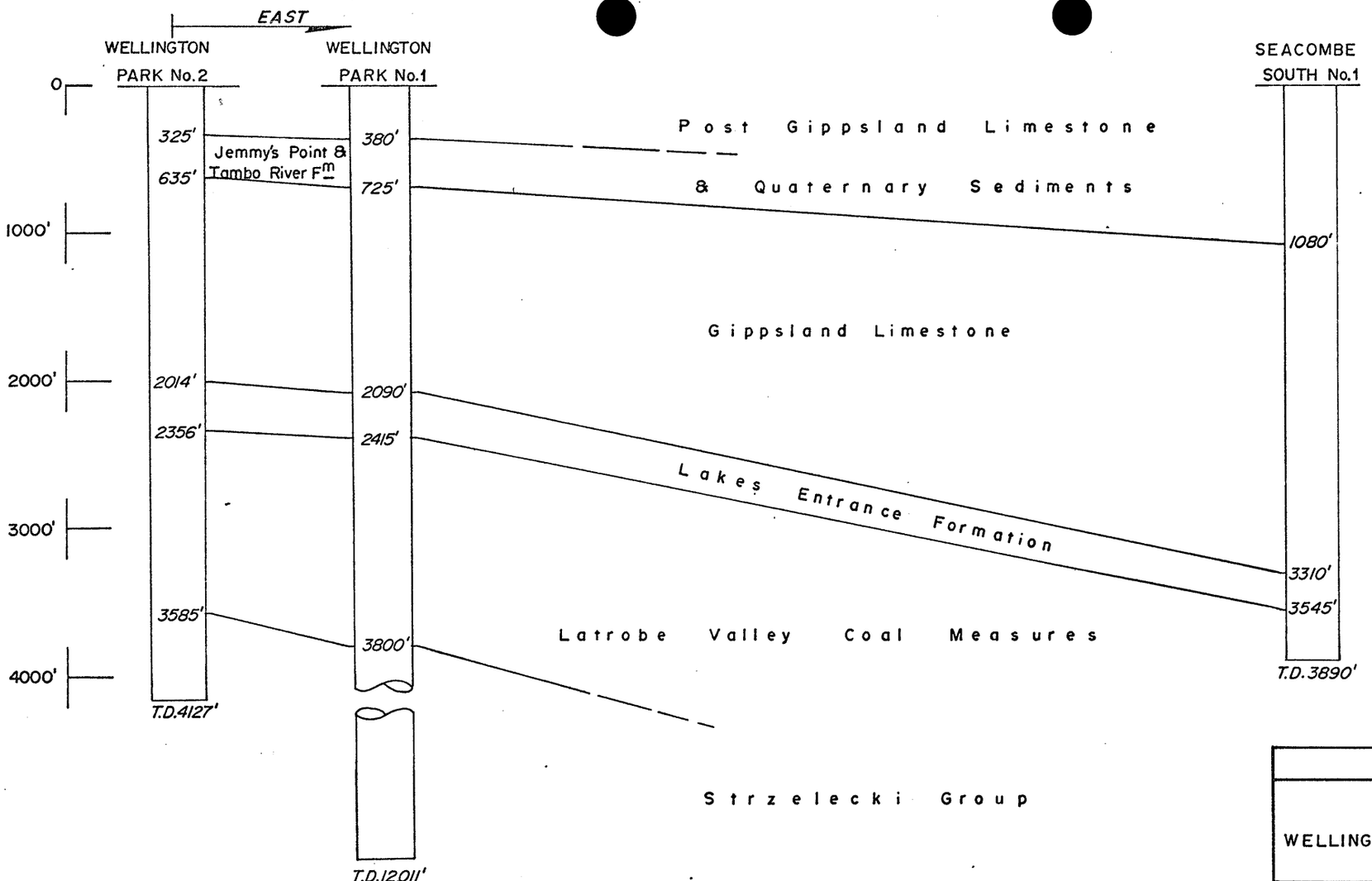
RESULTS OBTAINED FROM DRILLING

(1) Seacombe South No. 1 well was drilled to examine a feature that had been interpreted on the seismic lines as a channel within the Gippsland Limestone. The predicted interval for this channel was 2500' - 2800' and it was planned to cut at least one core if the channel was encountered. During drilling at a depth of 2430' a small amount of coal was found and so a core was cut. This core did not show any evidence of a channel. In order to confirm that the lithology was similar throughout the interval of the predicted channel a second core was cut at 2670'. These two cores, sidewall cores, and wire-line logs indicate that if a channel was present then it is filled with the same sediments that occur above and below.

(2) An indication of hydrocarbons was seen on the gas detector equipment when drilling the top sands of the LVCM (3495' - 3740') with the chromatographic analysis showing up to 60 units of methane.

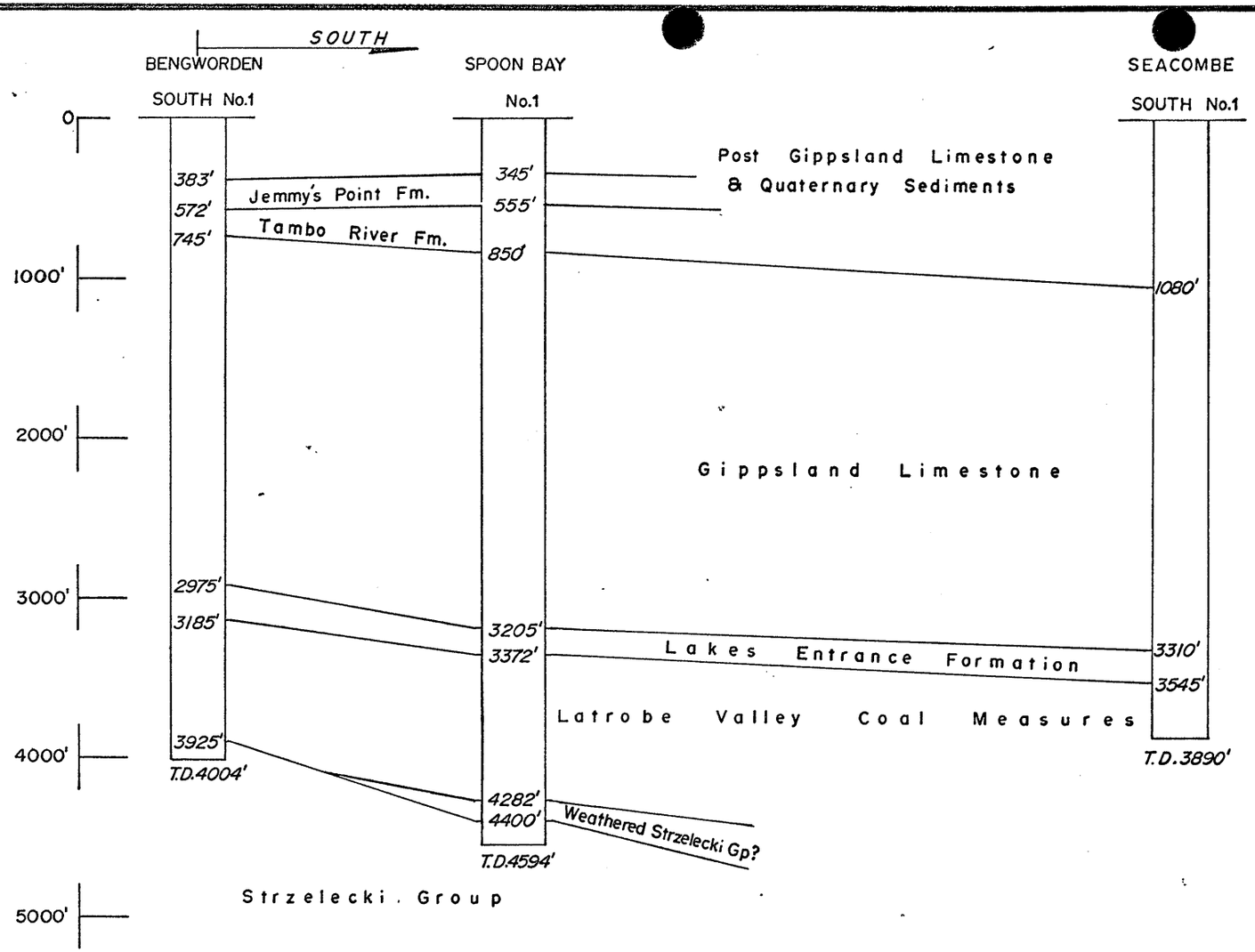
A drill stem test carried out over the interval 3535' - 3690' yielded slightly gas cut water, mud and fine sand. The slight amount of gas present is considered to represent a minor amount of residual dissolved gas which has not been flushed from the Latrobe Valley Coal Measures because of the fine-grained nature of the top sands of the LVCM.

SEACOMBE SOUTH - 1



WOODSIDE OIL N. L.	
CORRELATION DIAGRAM WELLINGTON PARK Nos. 2 & 1—SEACOMBE SOUTH No.1	
Horizontal scale 1"=1mile	Vertical scale 1"= 1000 feet
Date: January 1971	Drg. No.: 85
Report: Well Completion	Enclosure: 2

SEACOMBE SOUTH



WOODSIDE OIL N. L.	
CORRELATION DIAGRAM BENGWORDEN STH. No.1 – SPOON BAY No.1 – & SEACOMBE SOUTH No.1	
Horizontal scale 1" = 1 mile	Vertical scale 1 = 1000 ft.
Date: January, 1971	Drg. No.: 86
Report: Well Completion	Enclosure: 3

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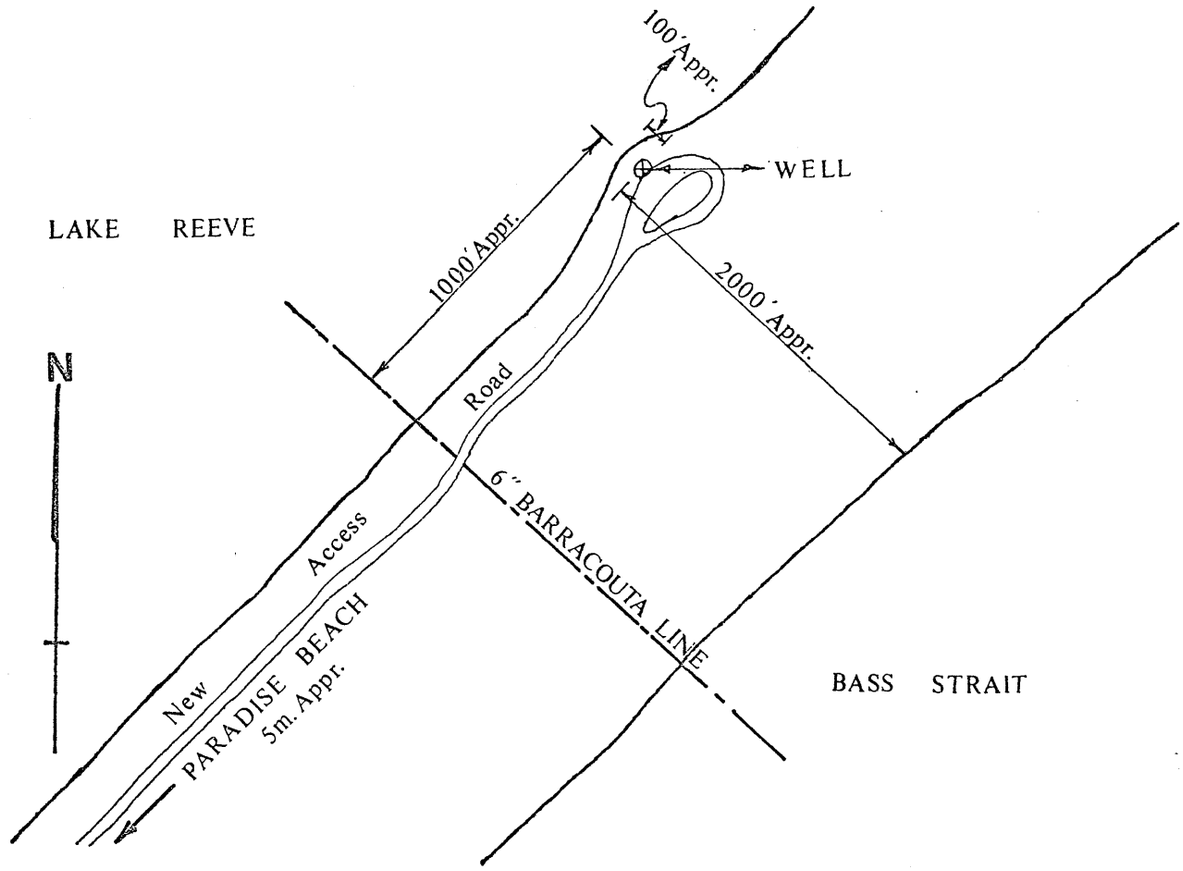
WOODSIDE OIL N.L.

GIPPSLAND OIL RIG LOCATION SKETCH.

LOCATION: SOUTH SEACOMBE WELL 1.



AMG GEOGRAPHICALS: LATITUDE 38°08'29.30"
LONGITUDE 147°29'06.70"

AMG CO-ORDINATES: N5778362.19 E 5452517.08
(Metres A Zone 55)

ATM GEOGRAPHICALS: LATITUDE 38°08'30.54"
LONGITUDE 147°29'13.64

ATM CO-ORDINATES: N 296265.17 E 542562.22
(Yards Zone 7)

REDUCED LEVELS: - (Datum Williamstown)

Ground Level	- 6.07
Rotor Table	5.78
Kelly Bushing	6.26

CADASTRAL DESCRIPTION: Crown Allotment 19[a]
Parish: Booran
County: Buln Buln

Surveyed by	A.J. May	Approved	P.F. Gardner
Calculations	A.J. May	Date	20/11/70.
Drawn	A.J. May	Drawing No.	177/1

ENGINEERING SURVEYS (AUSTRALIA) PTY. LTD.
166-168, Albert Road, SOUTH MELBOURNE.

PE906290

This is an enclosure indicator page.
The enclosure PE906290 is enclosed within the container PE902798 at this location in this document.

The enclosure PE906290 has the following characteristics:

ITEM_BARCODE	= PE906290
CONTAINER_BARCODE	= PE902798
NAME	= Locality Map
BASIN	= GIPPSLAND
PERMIT	= PEP72
TYPE	= GENERAL
SUBTYPE	= SRVY_MAP
DESCRIPTION	= Location of S.P. 43
REMARKS	=
DATE_CREATED	= 19/08/70
DATE_RECEIVED	=
W_NO	= W613
WELL_NAME	= SEACOMBE SOUTH-1
CONTRACTOR	= ENGINEERING SURVEYS (AUST) PTY LTD
CLIENT_OP_CO	= WOODSIDE OIL COMPANY

(Inserted by DNRE - Vic Govt Mines Dept)

Appendix 2

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SEACOMBE SOUTH I.

WOODSIDE OIL N.L.

SEACOMBE SOUTH NO. 1

DRILL CUTTINGS SAMPLE DESCRIPTIONS

Depth	Lithologic Description
0 - 35	No samples collected.
35 - 80	Drift sand comprising very coarse to coarse grained quartz, with occasional pebbles. Some grey silty clay. Minor shell fragments, mica and chips of coal (black).
80 - 160	Coarse gravel, reddish-brown sand and minor grey sandy clay, often lumpy.
160 - 170	80% Gravel, brown, granule to pebble size with minor coarse sand. 20% Clay, reddish-brown, kaolinitic, calcareous.
170 - 180	50% Gravel, as above. 50% Clay, as above.
180 - 190	70% Clay, reddish-brown, sandy, calcareous. 30% Gravel, as above.
190 - 200	75% Clay, reddish-brown. 25% Gravel, comprising abundant reddish-brown, clear cloudy coarse to very coarse quartz, well sorted, no cement, occasionally very fine grained, pale grey sandstone calcareous.
200 - 210	75% Clay 25% Gravel — as above.
210 - 220	60% Clay 40% Gravel — as above, with occasional dark pebbles.
220 - 230	60% Clay 40% Gravel — as above.
230 - 240	90% Clay, dark grey, oozy, washes away easily. 10% Gravel, comprising abundant pebbles and coarse to very coarse reddish brown, clear, cloudy quartz, well sorted, abundant pyrite (fine grained), black coal specks. Top of Boisdale Beds - 235 feet.
240 - 250	75% Clay 25% Gravel — as above.
250 - 260	75% Clay 25% Gravel — as above.

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SEACOMBE SOUTH I.

260 - 270	100% Loose sand, poorly consolidated, pale grey comprising abundant coarse to very coarse colourless, cloudy, reddish-brown, yellow quartz, well sorted, good porosity. Abundant pyrite aggregates, woody fragments, coal chips, weathered feldspars. Some clay.
270 - 280	75% Sand, as above. 25% Clay, grey, washes away easily.
280 - 290	90% Sand, as above, moderately well sorted. Good porosity. 10% Clay, as grey lumps, washes off easily. Abundant carbonaceous material, i.e. woody fragments and coal chips.
290 - 300	90% Sand 10% Clay } as above.
300 - 310	90% Sand 10% Clay } as above.
310 - 320	75% Sand 25% Clay } as above.
320 - 330	75% Sand 25% Clay } as above.
330 - 340	75% Sand 25% Clay } as above.
340 - 350	50% Sand 50% Clay } as above.
350 - 360	60% Sand, as above. 40% Clay, as above, not lumpy.
360 - 370	60% Sand, as above, with increase in medium to fine grained quartz. 40% Clay, as above.
370 - 380	75% Sand 25% Clay } as above.
380 - 390	75% Sand 25% Clay } as above.
390 - 400	90% Sand 10% Clay } as above.
400 - 410	75% Sand, pale grey, comprising abundant, loose colourless, cloudy, grey quartz, fine to coarse grained, subangular, subrounded, poorly sorted. 25% Limestone comprising fossil fragments. Abundant pyrite and mica. Tentative top of Jemmy's Point Formation 400'.
410 - 420	75% Sand. 25% Fossiliferous fragments } as above occasionally with silty components
420 - 430	75% Sand 25% Fossiliferous fragments } as above, very micaceous.

430 - 440	50% Sand. 50% Fossil fragments.	as above, lithics.
440 - 445	50% Sand. 50% Fossil fragments.	as above. Fossil fragments include corals and gastropods.
445 - 450	100% Marl, dark grey, bluish grey, oozy, washes away easily, very silty. Some fossil fragments, sand as cavings. Tentative top of Tambo River Formation 445'.	
450 - 460	100% Marl, silty.	
460 - 470	90% Marl, as above. 10% Fossiliferous fragments.	
470 - 480	75% Marl. 25% Fossiliferous fragments.	as above.
480 - 490	75% Marl 25% Fossiliferous fragments.	as above.
490 - 500	75% Marl. 25% Fossiliferous fragments.	as above.
500 - 510	50% Marl. 50% Fossiliferous fragments.	as above.
510 - 520	75% Fossiliferous fragments, dominantly gastropods, ditrupa worm casts and coral matter. 25% Marl, grey, oozy, not recoverable.	
520 - 530	75% Fossil fragments. 25% Marl.	as above.
530 - 540	50% Marl. 40% Fossil fragments, abundant corals, gastropods. 10% Siltstone, pale grey, speckled lithic inclusions. Sandy in parts.	
540 - 550	60% Marl. 30% Fossil fragments. 10% Siltstone.	as above, abundant coal fragments (probably cavings).
550 - 560	40% Marl. 40% Fossil fragments, corals, ditrupa worm casts. 15% Siltstone. 5% Sand, loose quartz, colourless, cloudy, fine grained, speckled.	
560 - 570	50% Marl. 25% Fossil fragments. 25% Sandstone.	
570 - 580	50% Marl. 25% Fossil fragments. 25% Sandstone.	as above.

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SEACOMBE SOUTH I.

580 - 590	50% Marl. 25% Fossil fragments. 25% Sandstone, dominantly very fine grained. — as above.
590 - 600	75% Marl. 25% Fossil fragments. — as above.
600 - 610	75% Marl. 25% Fossil fragments. — as above, occasional skeletal limestone.
610 - 620	75% Marl. 25% Fossil fragments, including gastropods and echinoderms.
620 - 630	90% Marl, as above, occasionally lumpy, silty. 10% Fossil fragments.
630 - 640	75% Marl, grey, dark grey, silty in places. 25% Fossil fragments, including gastropods, echinoderms, corals, also ditrupa worm casts.
640 - 650	75% Marl, as above. 25% Fossil fragments.
650 - 660	75% Marl. 25% Fossil fragments. — as above.
660 - 670	75% Marl. 25% Fossil fragments. — as above.
670 - 680	80% Marl. 20% Fossil fragments. — as above.
680 - 690	80% Marl, dark grey. 20% Fossil fragments, as above, abundant molluscs.
690 - 700	90% Marl. 10% Fossil fragments. — as above.
700 - 710	80% Marl, dark grey, bluish grey. 10% Fossil fragments. 10% Calcarenite, pale grey, strongly calcareous, occasional loose quartz, poorly cemented, abundant lithic inclusions. First appearance of calcarenites, although traces of calcarenite were noted in the preceding sample. Tentative top of Gippsland Limestone - 700'.
710 - 720	90% Marl. 10% Calcarenite. — as above, marl assuming a greenish grey tinge. Only traces of fossil fragments.
720 - 730	90% Marl. 10% Calcarenite. — as above, trace fossil fragments.
730 - 740	90% Marl. 10% Calcarenite. — as above.

740 - 750	100% Marl, greenish grey, silty in part, trace fossil fragments.
750 - 760	100% Marl, greenish grey, washes away easily. Trace fossil fragments and calcarenite.
760 - 770	100% Marl, greenish grey, as above.
770 - 780	100% Marl, as above.
780 - 790	100% Marl, as above, rare fossil fragments.
790 - 800	100% Marl, as above.
800 - 810	100% Marl, as above.
810 - 820	100% Marl, as above.
820 - 830	100% Marl, as above.
830 - 840	100% Marl, as above.
840 - 850	100% Marl, as above.
850 - 860	100% Marl, as above, occasional calcarenite with flecks of coal.
860 - 870	100% Marl, as above.
870 - 880	100% Marl, as above.
880 - 890	100% Marl, greenish grey, fossiliferous, glauconitic, calcarenite, trace of coal, shell fragments, corals, echinoid stems.
890 - 900	100% Marl, as above.
900 - 910	100% Marl, as above.
910 - 920	100% Marl, as above.
920 - 930	100% Marl, as above, angular, clear quartz grains and lithic fragments, pyritic.
930 - 940	100% Marl, as above.
940 - 950	100% Marl, as above.
950 - 960	100% Marl, greenish grey, very fossiliferous, shell fragments, forams, echinoid stems, corals, trace of glauconite, pyrite and coal, very fine grained quartz and orange lithic fragments 5 - 10%.
960 - 970	100% Marl, as above, calcarenite increasing.
970 - 980	100% Marl, as above.
980 - 990	100% Marl, as above, limestone and detritals about 50% of sample.
990 - 1000	100% Marl, as above, limestone and detritals about 50%.

1000 - 1010	100% Marl, as above.
1010 - 1020	100% Marl, as above, limestone and detritals 50 - 60%, very fossiliferous.
1020 - 1030	100% Marl, as above, limestone and detritals 50 - 60%.
1030 - 1040	100% Marl, as above, limestone and detritals 50 - 60%.
1040 - 1050	100% Marl, as above.
1050 - 1060	100% Marl, as above.
1060 - 1070	100% Marl, as above.
1070 - 1080	100% Marl, as above.
1080 - 1090	90% Limestone, light grey to white, glauconitic, micritic, very fossiliferous, sandy, soft to firm, corals, bryozoa, stems. 10% Marl, as above.
1090 - 1100	90% Limestone, as above. 10% Marl, as above.
1100 - 1110	90% Limestone, as above. 10% Marl, as above.
1110 - 1120	90% Limestone, as above. 10% Marl, as above.
1120 - 1130	90% Limestone, as above. 10% Marl, light grey.
1130 - 1140	80% Limestone, as above. 20% Marl, as above.
1140 - 1150	80% Limestone, as above. 20% Marl, as above.
1150 - 1160	80% Limestone, as above. 20% Marl, as above.
1160 - 1170	60% Limestone, as above. 40% Marl, light grey.
1170 - 1180	70% Limestone, light grey, micritic, glauconitic, carbonaceous, very fossiliferous, quartz grains, and orange lithic fragments. 30% Marl, as above.
1180 - 1190	60% Limestone, as above. 40% Marl, as above.
1190 - 1200	80% Limestone, as above, abundant forams. 20% Marl, as above.
1200 - 1210	70% Limestone, as above. 30% Marl, as above.

1210 - 1220	70% Limestone, as above. 30% Marl, as above.	
1220 - 1230	80% Limestone, as above. 20% Marl, as above.	
1230 - 1240	80% Limestone, as above, micaceous. 20% Marl, light grey to brown carbonaceous, micaceous.	
1240 - 1250	90% Limestone, as above. 10% Marl, as above.	
1250 - 1260	50% Fossiliferous limestone, comprising lamellibranchs, corals, echinoids. 25% Marl, bluish grey, silty in part. 20% Calcarenite, pale grey, very fine grained, speckled. 5% Sand, loose, colourless, yellow quartz.	
1260 - 1270	50% Fossiliferous limestone. 25% Marl. 20% Calcarenite. 5% Sand.	as above.
1270 - 1280	40% Fossiliferous limestone. 30% Marl. 20% Calcarenite. 10% Sand.	as above.
1280 - 1290	40% Marl. 30% Fossiliferous limestone. 20% Calcarenite. 10% Sand.	as above.
1290 - 1300	40% Marl. 30% Fossiliferous limestone. 20% Calcarenite. 10% Sand.	as above.
1300 - 1310	50% Marl. 40% Fossiliferous limestone. 10% Calcarenite.	as above, only trace of quartz.
1310 - 1320	50% Marl. 40% Fossiliferous limestone. 10% Calcarenite.	as above.
1320 - 1330	50% Marl. 40% Fossiliferous limestone. 10% Calcarenite.	as above.
1330 - 1340	50% Marl. 40% Fossiliferous limestone. 10% Calcarenite.	as above.
1340 - 1350	50% Marl. 40% Fossiliferous limestone. 10% Calcarenite.	as above.
1350 - 1360	40% Marl. 40% Fossiliferous limestone. 20% Calcarenite.	as above. Samples are contaminated with diesel fuel.

1360 - 1370	50% Fossiliferous limestone. 25% Marl. 25% Calcarenite, as above with rare dark green lithics.	as above.
1370 - 1380	50% Fossiliferous limestone. 25% Calcarenite. 25% Marl.	as above.
1380 - 1390	50% Fossiliferous limestone. 25% Marl. 25% Calcarenite.	as above.
1390 - 1400	50% Fossiliferous limestone. 25% Marl. 25% Calcarenite.	as above.
1400 - 1410	60% Fossiliferous limestone. 30% Marl. 10% Calcarenite.	as above.
1410 - 1420	60% Fossiliferous limestone. 30% Marl. 10% Calcarenite.	as above.
1420 - 1430	70% Fossiliferous limestone. 25% Marl. 5% Calcarenite.	as above.
1430 - 1440	75% Fossiliferous limestone. 25% Marl.	as above.
1440 - 1450	50% Marl, greyish green, silty in part. 50% Fossiliferous limestone, with traces of calcite.	
1450 - 1460	75% Fossiliferous limestone, with rare calcite. Occasional glauconite embedded within matrix. 25% Marl, as above.	
1460 - 1470	75% Fossiliferous limestone. 25% Marl.	as above with relative increase in glauconite.
1470 - 1480	80% Fossiliferous limestone, with fragments of gastropods, lamellibranchs, and corals. 10% Marl, bluish grey to grey, silty. 10% Occasional calcarenite components.	
1480 - 1490	80% Fossiliferous limestone. 10% Calcarenite. 10% Marl. traces of green glauconite grains.	as above with occasional hard crystalline limestone,
1490 - 1500	65% Fossiliferous limestone. 25% Calcarenite. 10% Marl. Occasional glauconite grains.	as above with occasional hard crystalline limestone.

1500 - 1510 — 50% Limestone, comprising 75% fossiliferous limestone and the rest, dark grey, grey crystalline limestone, hard, often layered.
40% Calcarenite, pale grey, well cemented, occasionally dark green or black lithics. Rare glauconite grains.
10% Marl, as above.

1510 - 1520 — 50% Limestone.)
40% Calcarenite.) as above, abundant fossil fragments.
10% Marl.)

1520 - 1530 — 60% Limestone.)
30% Calcarenite.) as above, dominantly made up of fossil fragments and crystalline limestone.
10% Marl.)

1530 - 1540 — 70% Limestone.)
20% Calcarenite.) as above, with prominent dark green, black lithic inclusions.
10% Marl.)

1540 - 1550 — 60% Limestone, comprising of fossiliferous fragments and crystalline limestone.
30% Calcarenite, with occasional inclusions of dark green black lithics and glauconite grains.
10% Marl.

1550 - 1560 — 70% Limestone.)
20% Calcarenite.) as above.
10% Marl.)

1560 - 1570 — 70% Calcarenite, as above.
30% Limestone, as above.
Trace of coal and quartz grains.

1570 - 1580 — 80% Calcarenite, as above.
20% Limestone, as above.

1580 - 1590 — 80% Calcarenite, white to medium grey, very fine grained, glauconite inclusions, speckled appearance, very fossiliferous.
20% Limestone, white to medium grey, crystalline with fossil fragments, trace of coal.

1590 - 1600 — 70% Calcarenite, as above.
30% Limestone, as above.

1600 - 1610 — 70% Calcarenite, as above.
30% Limestone, as above.

1610 - 1620 — 80% Calcarenite, as above.
20% Limestone, as above.

1620 - 1630 — 60% Calcarenite, as above.
40% Limestone, as above.

1630 - 1640 — 60% Limestone, as above.
40% Calcarenite, as above.

1640 - 1650 — 50% Calcarenite, as above.
50% Limestone, as above.

1650 - 1660 — 60% Calcarenite, as above.
40% Limestone, as above.

1660 - 1670 — 70% Calcarenite, as above.
30% Limestone, as above.

1670 - 1680	90% Calcarenite, as above. 10% Limestone, as above.
1680 - 1690	90% Calcarenite, as above. 10% Limestone, as above.
1690 - 1700	90% Calcarenite, as above. 10% Limestone, as above.
1700 - 1710	90% Calcarenite, as above. 10% Limestone, as above.
1710 - 1720	90% Calcarenite, as above. 10% Limestone, as above.
1720 - 1730	90% Calcarenite, as above. 10% Limestone, as above.
1730 - 1740	80% Calcarenite, as above. 20% Limestone, as above.
1740 - 1750	80% Calcarenite, as above. 10% Limestone, as above. 10% Marl, light brown.
1750 - 1760	80% Calcarenite, as above. 10% Limestone, as above. 10% Marl, as above.
1760 - 1770	80% Calcarenite, as above. 10% Limestone, as above. 10% Marl, as above.
1770 - 1780	80% Calcarenite, as above. 10% Limestone, as above. 10% Marl, as above.
1780 - 1790	90% Calcarenite, white to medium grey, speckled, very fine grained, glauconitic, fossiliferous. 10% Limestone, white to medium grey, crystalline, fossiliferous, corals, forams abundant.
1790 - 1800	80% Calcarenite, as above. 20% Limestone, as above.
1800 - 1810	90% Calcarenite, as above, trace of clay. 10% Limestone, as above.
1810 - 1820	100% Calcarenite, as above.
1820 - 1830	100% Calcarenite, as above.
1830 - 1840	100% Calcarenite, as above.
1840 - 1850	100% Calcarenite, as above, very fossiliferous, abundant forams, corals, trace of clay.
1850 - 1860	90% Calcarenite, as above. 10% Marl, light brown.
1860 - 1870	90% Calcarenite, as above. 10% Marl, light brown.

1870 - 1880	80% Calcarenite, as above. 20% Marl, light greyish brown.
1880 - 1890	80% Calcarenite, as above. 20% Marl, as above.
1890 - 1900	70% Calcarenite, as above. 30% Marl, as above.
1900 - 1910	40% Calcarenite, as above. 30% Marl, as above. 30% Limestone, white to medium grey, crystalline, very fossiliferous.
1910 - 1920	60% Calcarenite, as above, clayey. 40% Limestone, as above.
1920 - 1930	60% Limestone, as above, very fossiliferous. 40% Calcarenite, as above, clayey.
1930 - 1940	70% Limestone, white to light grey, very fossiliferous. 30% Calcarenite, as above.
1940 - 1950	60% Calcarenite, as above. 40% Marl, light grey, brown.
1950 - 1960	70% Calcarenite, white to light grey, speckled, fossiliferous, glauconitic. 30% Marl, light grey, brown, very oozy.
1960 - 1970	70% Calcarenite, as above. 30% Marl, light grey, brown.
1970 - 1980	60% Calcarenite, as above. 40% Marl, as above.
1980 - 1990	60% Calcarenite, as above. 40% Marl, as above.
1990 - 2000	50% Calcarenite, as above. 50% Marl, as above.
2000 - 2010	80% Calcarenite, white to medium grey, speckled, occasional glauconite. 10% Limestone, white, crystalline, fossiliferous. 10% Marl, light grey-brown, very soft, oozy.
2010 - 2020	70% Calcarenite, as above. 20% Marl, as above. 10% Limestone, as above.
2020 - 2030	70% Calcarenite. 30% Limestone. } as above.
2030 - 2040	70% Calcarenite. 30% Limestone. } as above. Trace of marl.
2040 - 2050	80% Calcarenite, white to medium grey, massive, fossils, occasional angular quartz grains and glauconite. 20% Marl, reddish brown.

2050 - 2060 — 60% Calcarenite, as above.
40% Limestone, white to medium grey, massive, fossiliferous with crystalline matrix.

2060 - 2070 — 50% Limestone, fossiliferous, also crystalline variety with glauconitic inclusions. Occasional foraminiferal remains.
25% Calcarenite, abundant pale grey, white, and colourless varieties.
25% Marl, bluish grey.

2070 - 2080 — 50% Limestone:)
25% Marl.) as above.
25% Calcarenite.)

2080 - 2090 — 50% Limestone.)
25% Marl.) as above.
25% Calcarenite.)

2090 - 2100 — 75% Limestone, abundantly fossiliferous comprising coral stems, echinoids, gastropods, lamellibranchs and forams. Occasional dark green lithics and glauconitic inclusions. Also crystalline limestone, pale grey to colourless. Some vuggy porosity.
15% Calcarenite, as above.
10% Marl, grey, occasionally silty, washes off easily.

2100 - 2110 — 75% Limestone.)
15% Calcarenite.) as above.
10% Marl.)

2110 - 2120 — 75% Limestone, abundantly fossiliferous, coral stems, echinoids, bryozoans. Glauconite, dark green, black lithic inclusions. Some vuggy porosity.
15% Calcarenite, pale grey, grey.
10% Marl, light brown, not very sticky, silty in part.

2120 - 2130 — 90% Limestone.)
10% Marl.) as above.

2130 - 2140 — 90% Limestone.)
10% Marl.) as above.

2140 - 2150 — 90% Limestone.)
10% Marl.) as above.

2150 - 2160 — 90% Limestone.)
10% Marl.) as above.

2160 - 2170 — 90% Limestone, as above.
10% Marl, predominantly pale grey, however greenish grey variety also noticed.

2170 - 2180 — 75% Limestone, dominantly fossiliferous comprising abundant forams, corals. Specks of coal, glauconite.
25% Marl, predominantly bluish grey, more argillaceous than previous sample, silty in part.

2180 - 2190	50% Marl, as above. 50% Limestone, dominantly fossiliferous.	
2190 - 2200	75% Marl, as above. 25% Limestone.	
2200 - 2210	75% Marl. 25% Limestone.	as above.
2210 - 2220	90% Marl. 10% Limestone.	as above.
2220 - 2230	90% Marl. 10% Limestone.	as above.
2230 - 2240	75% Marl. 25% Limestone.	as above.
2240 - 2250	50% Marl. 50% Limestone.	as above with minor lumps of clay.
2250 - 2260	50% Marl. 50% Limestone.	as above with occasional soft, oozy clay.
2260 - 2270	75% Marl. 25% Limestone.	as above.
2270 - 2280	75% Marl. 25% Limestone.	as above, with occasional dark brown limonitic fragments.
2280 - 2290	90% Marl. 10% Limestone.	as above with rare glauconite as infills of fossil fragments.
2290 - 2300	80% Marl. 20% Limestone.	as above with occasional specks of black coal, glauconite.
2300 - 2310	50% Marl. 50% Limestone.	as above with black coal specks and dark lithic inclusions.
2310 - 2320	50% Marl, assuming a grey to brown grey colour. 50% Limestone, as above. Samples contain abundant limonite stained chips and flakes, blebs and specks of coal.	
2320 - 2330	75% Limestone 25% Marl.	as above with trace of pale brown sandstone, very fine grained, well cemented, slightly calcareous matrix, with various amounts of carbonaceous inclusions. Abundant forams, glauconitic infills abundant.
2330 - 2340	90% Limestone. 10% Marl.	as above, with abundant indurated limestone, strongly calcareous cement.

2340 - 2350	90% Limestone.) 10% Marl.) as above.
2350 - 2360	75% Limestone. 25% Marl.
2360 - 2370	75% Limestone.) 25% Marl.) as above.
2370 - 2380	50% Marl, grey, soft, silty in part. 50% Limestone, pale grey, white, colourless, dominantly fossiliferous, hard, massive, containing abundant coral stems and echinoids. No porosity. Occasional specks of black coal and green glauconite.
2380 - 2390	50% Marl, grey, soft, as above. 50% Limestone.
2390 - 2400	75% Limestone.) as above, dominantly 25% Marl.) fossiliferous.
2400 - 2410	50% Marl.) 50% Limestone.) as above.
2410 - 2420	75% Limestone, dominantly fossiliferous, brachiopods, coral stems, echinoids, pyritic crystals, glauconite infills of forams. Occasional veinlets of pyrite material. 25% Marl, as above.
2420 - 2430	80% Limestone, as above, 1% coal as inclusions, occasional grains of clear, subrounded quartz. 20% Marl, as above.
2430 - 2440	70% Limestone, as above, 1% coal as inclusions. 30% Marl, as above.
2440 - 2450	95% Limestone, as above, 1% coal as inclusions. 5% Marl, as above.
2450 - 2460	70% Limestone, as above, 1% coal as inclusions. 30% Marl, as above.
2460 - 2470	70% Limestone.) 30% Marl.) as above.
2470 - 2480	75% Limestone.) 25% Marl.) as above.
2480 - 2490	75% Limestone.) 25% Marl.) as above.
2490 - 2500	50% Limestone.) 50% Marl.) as above.
2510 - 2520	75% Limestone, grey, colourless, predominantly fossiliferous, other variety includes a pale grey microcrystalline, compact, strongly calcareous. 25% Marl, grey, silty in part.

2520 - 2530	75% Limestone. 25% Marl.	abundant pyrite as encrustations and linings of cavities. Occasional lumps of clay.
	Trace brown, dark brown siltstone, carbonaceous, micromicaceous.	
2530 - 2540	90% Limestone. 10% Marl.	as above with abundant pyrite, trace of dark brown siltstone, some reddish brown, colourless, subangular quartz. Some coal specks.
2540 - 2550	75% Limestone. 25% Marl.	as above, with very little pyrite, quartz and coal pieces.
2550 - 2560	50% Limestone. 50% Marl.	as above.
2560 - 2570	75% Marl. 25% Limestone.	as above, with lumps of clay. Only traces of clear subangular quartz and black coal. Occasional pyritic fragments.
2570 - 2580	75% Marl. 25% Limestone.	as above.
2580 - 2590	90% Marl, bluish grey, oozy. 10% Limestone, as above.	
2590 - 2600	90% Marl. 10% Limestone.	as above, no trace of quartz components.
2600 - 2610	90% Marl. 10% Limestone.	as above.
2610 - 2620	75% Marl. 25% Limestone.	as above.
2620 - 2630	75% Marl. 25% Limestone.	with occasional colourless cloudy quartz.
2630 - 2640	75% Marl. 25% Limestone.	as above.
2640 - 2650	75% Marl. 25% Limestone.	as above.
2650 - 2660	75% Marl. 25% Limestone.	as above.
2660 - 2670	90% Marl. 10% Limestone.	as above with occasional carbonaceous flecks, quartz.
2670 - 2684	100% Marl, massive, slightly sandy, argillaceous, carbonaceous, calcareous.	
	See description for Core No. 2.	

2684 - 2690	90% Marl, dark grey to grey, sticky, some clay lumps, occasionally sandy, calcareous, trace of quartz grains. 10% Limestone, some fossiliferous variety.
2690 - 2700	90% Marl. 10% Limestone. — as above. Occasional pyritic fragments.
2700 - 2710	75% Marl. 25% Limestone. — as above with trace carbonaceous streaks.
2710 - 2720	50% Marl. 50% Limestone. — as above, with trace of pyrite and carbonaceous flecks.
2720 - 2730	50% Marl. 50% Limestone. — as above.
2730 - 2740	50% Marl. 50% Limestone. — as above.
2740 - 2750	50% Limestone, as above, with abundant microcrystalline pyrite, occasional glauconite as inclusions within limestone matrix. 50% Marl, as above. Trace clear, subangular, angular quartz. Occasional forams and fossil fragments.
2750 - 2760	60% Marl. 40% Limestone. — as above.
2760 - 2770	60% Marl. 40% Limestone. — as above.
2770 - 2780	75% Marl. 25% Limestone. — as above, marl as large lumps, occasional fossil fragments embedded in limestone matrix.
2780 - 2790	90% Marl. 10% Limestone. — as above. Sample consists dominantly of clayey lumps. Occasional mudstone found as chips.
2790 - 2800	90% Marl, bluish grey to grey, lumpy, silty in part, calcareous. 10% Limestone, dominantly grey crystalline, occasionally fossiliferous (brachiopod remains) embedded in calcareous matrix. Trace of clear subangular quartz, pyrite grains and occasional carbonaceous streaks, glauconite as inclusions. Mudstone chips.
2800 - 2810	60% Marl, as above. 30% Limestone. 10% Mudstone, grey, strongly argillaceous, calcareous, soft, slightly friable, grading to marl. Silty. Trace pyrite.
2810 - 2820	50% Marl. 25% Limestone. 25% Mudstone. — as above.

2820 - 2830	50% Marl. 25% Limestone. 25% Mudstone.	as above, marl found as sticky lumps.
2830 - 2840	50% Marl, as above, lumpy. 40% Mudstone, as chips, strongly argillaceous, calcareous. 10% Limestone, crystalline and fossiliferous.	
2840 - 2850	50% Mudstone. 40% Marl. 10% Limestone.	as above, sample very clayey.
2850 - 2860	50% Mudstone. 40% Marl. 10% Limestone.	as above.
2860 - 2870	60% Marl. 30% Mudstone. 10% Limestone.	as above, with dominant pyrite as veins and dendritic pattern on depositional interfaces.
2870 - 2880	75% Marl. 15% Mudstone. 10% Limestone.	as above, sample very clayey with very little solids recovered after prolonged washing.
2880 - 2890	75% Marl. 15% Mudstone. 10% Limestone.	sample very clayey, abundant pyrite in the sample.
2890 - 2900	75% Marl. 15% Mudstone. 10% Limestone.	as above. Sample very clayey - very little solids to be recovered.
2900 - 2910	70% Marl, blue-grey. 20% Mudstone, light green-grey to medium grey, pyritic, occasional fine grain quartz, calcareous, blocky. 10% Limestone, white to light grey, crystalline and fossiliferous, corals, forams.	
2910 - 2920	70% Marl. 20% Mudstone. 10% Limestone.	as above.
2920 - 2930	80% Marl. 10% Mudstone. 10% Limestone.	as above.
2930 - 2940	80% Marl. 10% Mudstone. 10% Limestone.	as above.
2940 - 2950	70% Marl. 25% Mudstone. 5% Limestone.	as above.
2950 - 2960	70% Marl. 20% Mudstone. 10% Limestone.	as above.
2960 - 2970	70% Marl. 20% Mudstone. 10% Limestone.	as above.

2970 - 2980	70% Marl. 20% Mudstone. 10% Limestone. — as above, abundant pyrite and forams.
2980 - 2990	70% Marl. 20% Mudstone. 10% Limestone. — as above.
2990 - 3000	70% Marl. 20% Mudstone. 10% Limestone. — as above.
3000 - 3010	60% Marl, blue-grey, fossiliferous. 30% Mudstone, light brown to grey, pyritic, glauconitic, very calcareous, occasional very fine quartz grains. 10% Limestone, crystalline, fossiliferous, with abundant corals and forams, white to light grey.
3010 - 3020	70% Marl. 20% Mudstone. — as above. 10% Limestone, probably as lentils within the marl.
3020 - 3030	70% Marl. 20% Mudstone. 10% Limestone. — as above.
3030 - 3040	Same as for interval 3020 - 3030.
3040 - 3050	70% Marl. 20% Mudstone. 10% Limestone. — as above.
3050 - 3060	80% Marl. 20% Mudstone. — as above.
3060 - 3070	70% Marl. 20% Mudstone. 10% Limestone. — as above.
3070 - 3080	70% Marl. 20% Mudstone. 10% Limestone. — as above.
3080 - 3090	70% Marl. 20% Mudstone. 10% Limestone. — as above.
3090 - 3100	70% Marl, blue-grey, fossiliferous, corals, forams. 20% Mudstone, light green to brown, calcareous, pyritic, glauconitic. 10% Limestone, white, light grey, tan, crystalline, fossiliferous, pyritic.
3100 - 3110	70% Marl. 20% Mudstone. 10% Limestone. — as above.
3110 - 3120	70% Marl. 20% Mudstone. — as above. 10% Limestone, very fine to fine, subrounded quartz grains.

3120 - 3130	70% Marl. 20% Mudstone. 10% Limestone.	as above, trace of coal.
3130 - 3140	70% Marl. 20% Mudstone. 10% Limestone.	as above, trace of coal.
3140 - 3150	70% Marl. 20% Mudstone. 10% Limestone.	as above.
3150 - 3160	70% Marl. 20% Mudstone. 10% Limestone.	as above.
3160 - 3170	70% Marl. 20% Mudstone. 10% Limestone.	as above.
3170 - 3180	70% Marl. 20% Mudstone. 10% Limestone.	as above.
3180 - 3190	70% Marl. 20% Mudstone. 10% Limestone.	as above.
3190 - 3200	70% Marl, blue-grey, very fossiliferous. 20% Mudstone, light green, tan, brown, massive, blocky, calcareous, pyritic, glauconitic, trace very fine to fine quartz, trace of round, black coal grains. 10% Limestone, white to tan, crystalline, very fossiliferous, abundant corals and forams.	
3200 - 3210	70% Marl. 20% Mudstone. 10% Limestone.	as above.
3210 - 3220	70% Marl. 20% Mudstone. 10% Limestone.	as above.
3220 - 3230	70% Marl. 20% Mudstone. 10% Limestone.	as above.
3230 - 3240	70% Marl. 20% Mudstone. 10% Limestone.	as above.
3240 - 3250	70% Marl. 20% Mudstone. 10% Limestone.	as above.
3250 - 3260	50% Marl, grey, soft, as lumps. 25% Mudstone, pale green, greenish grey, moderately soft, silty in part, strongly pyritic, very calcareous, also glauconitic. 25% Limestone, pale grey to colourless, fine grained, occasionally fossiliferous, approaching calcilutite. Trace siltstone, dark brown, brown, calcitic, micromicaceous. Random quartz, clear, cloudy, subangular.	

3260 - 3270	50% Marl, as above. 25% Mudstone, often grading to marl. 25% Limestone (calcilutite). Abundant discrete grains of dark green glauconite grains, pyrite.	
3270 - 3280	50% Marl. 25% Mudstone. 25% Calcilutite.	as above.
3280 - 3290	50% Marl. 25% Mudstone. 25% Calcilutite.	as above, with trace of brown siltstone.
3290 - 3300	60% Marl. 25% Mudstone. 15% Calcilutite.	as above, very clayey.
3300 - 3310	60% Marl. 25% Mudstone. 15% Calcilutite.	as above, abundant glauconite and pyrite grains.
3310 - 3320	50% Marl. 30% Mudstone. 20% Calcilutite.	as above.
3320 - 3330	50% Marl. 40% Mudstone. 10% Calcilutite.	as above.
3330 - 3340	50% Marl. 40% Mudstone. 10% Calcilutite.	as above.
3340 - 3350	50% Marl. 40% Mudstone. 10% Calcilutite.	as above.
3350 - 3360	60% Marl. 30% Mudstone. 10% Calcilutite.	as above.
3360 - 3370	60% Marl. 30% Mudstone, greenish grey, pockets of calcareous material. 10% Calcilutite.	
3370 - 3380	75% Marl. 20% Mudstone. 5% Calcilutite.	as above with occasional pyrite.
3380 - 3390	75% Marl. 20% Mudstone. 5% Calcilutite.	as above.
3390 - 3400	75% Marl. 20% Mudstone. 5% Calcilutite.	as above, with traces of clear quartz, subrounded, rounded, discrete grains of glauconite, pyrite.
3400 - 3410	80% Marl. 20% Mudstone.	as above, sample very clayey.

3140 - 3420	80% Marl. 20% Mudstone.	as above, trace calcilutite.
3420 - 3430	80% Marl. 20% Mudstone.	as above, trace calcilutite and abundant glauconite.
3430 - 3440	90% Marl. 10% Mudstone.	as above, sample very clayey occasional small mudstone chips, soft, green, recovered from wash. Very glauconitic, abundant pyrite granules, often as replacement mineral or as infills of fossil remains. Trace of clear quartz, fine to medium grained, subrounded, rounded. Trace of calcilutite.
3440 - 3450	100% Marl, green to greenish grey. Soft, sticky, very little solids recovered from wash. Trace mudstone, calcilutite. Abundant glauconitic grains.	
3450 - 3460	100% Marl, as above with trace of mudstone and calcilutite. With coarse grains of dark green glauconite.	
3460 - 3470	100% Marl, as above, trace of dolomite(?)	
3470 - 3480	100% Marl, as above, trace of mudstone, abundant glauconite.	
3480 - 3490	100% Marl, as above, trace of dolomite(?)	
3490 - 3500	100% Marl, as above. Occasionally fossiliferous, dominantly forams, silty in part, strongly calcareous. Glauconitic.	
3500 - 3510	100% Marl, as above, glauconitic, abundant pyrite and rare forams.	
3510 - 3520	95% Marl. 5% Glauconite.	as above.
3520 - 3530	95% Marl, as above. 5% Glauconite, dark green, partly weathered. Trace dolomite.	
3530 - 3540	95% Marl. 5% Glauconite.	as above, trace dolomite. Rare small chips mudstone.
3540 - 3550	95% Marl. 5% Glauconite.	as above, trace dolomite. Dolomite, tan, coloured.
3550 - 3560	90% Marl, as above. 10% Glauconite, as above, weathered.	
3560 - 3570	90% Marl. 10% Glauconite.	as above, abundant pyrite and trace of calcilutite, mudstone.

35/65 SEACOMBE SOUTH I

3570 - 3580	80% Marl. 10% Mudstone. 5% Calcilutite. 5% Glauconite.	as above.
3580 - 3590	75% Marl. 15% Mudstone. 10% Calcilutite.	Abundant glauconite and pyrite grains. Trace quartz grains, dolomite.
3590 - 3600	75% Marl. 20% Mudstone. 5% Calcilutite.	as above. Trace quartz, dolomite, abundant glauconite.
3600 - 3610	75% Marl. 20% Mudstone. 5% Glauconite.	as above.
3610 - 3620	75% Marl. 25% Mudstone.	abundant glauconite, pyrite, rare quartz, dolomite.
3620 - 3630	75% Marl. 20% Mudstone. 5% Calcilutite.	as above.
3630 - 3640	70% Marl. 15% Mudstone. 10% Glauconite. 5% Dolomite, massive, brown, pale brown.	as above. Gas kicks. No fluorescence.
3640 - 3650	70% Marl. 15% Mudstone. 10% Glauconite, weathered. 5% Dolomite.	Gas abundant, pyrite, occasionally fossiliferous. Gas kicks. No fluorescence.
3650 - 3660	75% Marl. 20% Mudstone. 5% Glauconite.	Trace dolomite, pyrite, calcilutite, gas kicks. No fluorescence.
3660 - 3670	75% Marl. 25% Mudstone.	Abundant pyrite, glauconite. Gas kicks, no fluorescence.
3670 - 3680	75% Marl. 25% Mudstone.	Abundant pyrite, weathered glauconite, trace quartz, dolomite, gas kicks, no fluorescence.
3680 - 3690	90% Marl. 10% Mudstone.	as above.
3690 - 3700	75% Marl. 25% Mudstone.	as above, abundant glauconite, pyrite.
3700 - 3710	50% Marl, greenish grey, sticky, soft. 25% Sandstone, dark brown, very fine grained to fine grained, moderately firm, friable, grades to siltstone in places. Strongly pyritic matrix. Tight. Minor loose quartz, pale grey, colourless, subrounded, rounded, fine grained, glauconitic in part. 25% Mudstone, pale green, greenish grey, argillaceous, soft, blocky, glauconitic, pyritic. No fluorescence.	

3710 - 3720	50% Sandstone. 25% Marl. 25% Mudstone.	as above with abundant glauconite embedded in sandstone matrix. Very pyritic. Abundant loose glauconite. Tight. No fluorescence.
	Trace siltstone, pale grey, occasional quartz embedded in matrix.	
3720 - 3730	50% Sandstone. 25% Marl. 20% Mudstone. 5% Siltstone.	as above.
3730 - 3740	60% Sandstone. 20% Marl. 10% Mudstone. 10% Siltstone.	as above. Sandstone contains pyrite.
3740 - 3750	75% Sandstone. 10% Marl. 10% Siltstone. 5% Mudstone.	as above.
3750 - 3760	75% Sandstone. 10% Marl. 10% Siltstone. 5% Mudstone.	as above, abundant loose glauconitic grains.
3760 - 3770	75% Sandstone. 10% Marl. 10% Siltstone. 5% Mudstone.	as before, abundant loose pyritic grains, glauconite.
3770 - 3780	50% Sandstone. 35% Coal. 15% Mudstone.	
	Coal black, dark brown, dull lustre, soft, lignitic.	
3780 - 3790	90% Coal, as above. 10% Sandstone, as above.	
3790 - 3800	90% Coal, as above. 10% Sandstone, as above.	
3800 - 3810	90% Sandstone, medium to coarse grained, well sorted, subrounded to rounded, 90 - 95% milky and clear quartz, pyritic. 5% Coal, as above. 5% Mudstone. Trace siltstone, as above.	
3810 - 3820	95% Sandstone, as above. Trace mudstone and siltstone. 5% Coal, as above.	
3820 - 3830	100% Sandstone, as above. Trace coal, siltstone and mudstone.	
3830 - 3840	90% Sandstone, as above. Trace of clay. 10% Coal.	

3850 - 3860	60% Sandstone, as above. Trace clay. 40% Coal, as above.
3860 - 3870	70% Sandstone, as above. Trace clay. 30% Coal, as above.
3870 - 3880	90% Sandstone, as above. Trace clay. 10% Coal, as above.
3880 - 3889	90% Sandstone, as above. Trace clay. 10% Coal, as above.

CORE DESCRIPTION SHEET

SEACOMBE SOUTH I.

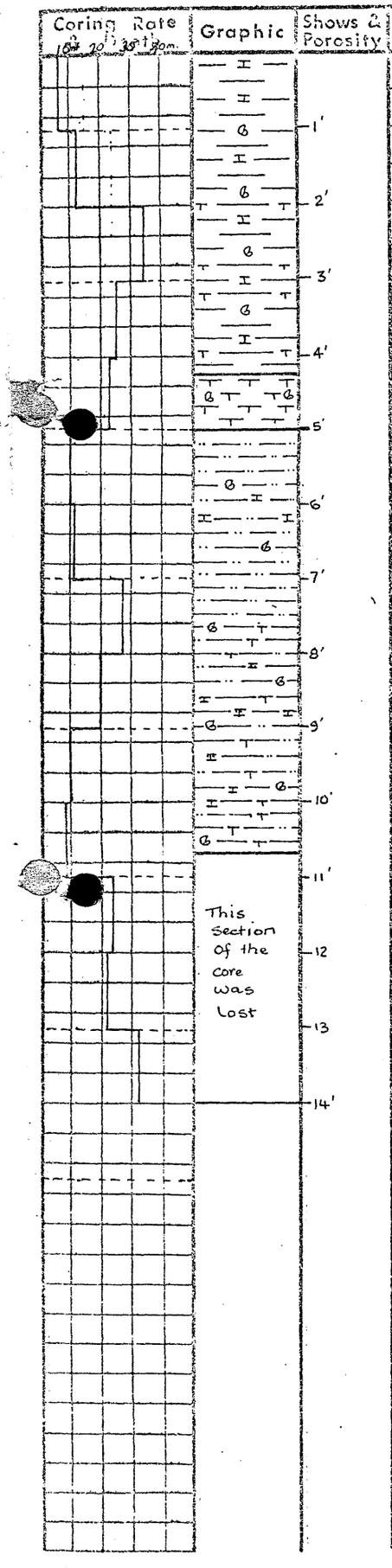
Company: WOODSIDE OIL N.L. Well : SEACOMBE SOUTH NO. 1

Core No: One Formation : Gippsland Limestone.

Interval : 2473' - 2487' Bit Type : Hughes/HF

Recovery: 10'8" Bit Size : $7\frac{7}{8}$"

Date : 8th November, 1970. Described By: A. Marimuthu



Lithologic Description

Top 4'3" CALCAREOUS MUDSTONE grading to MARL. Grey to greenish grey, massive, blocky fracture, soft, occasionally friable, rarely fissile, shaley in places, slightly pyritic, moderately to strongly calcareous, strongly fossiliferous, comprising dendritic corals, lamellibranchs, brachiopods and forams. Section generally tight, no fluorescence.

4'3" to 5'0" MARL*
Dark grey to bluish grey, blocky, silty in part, soft, sticky, strongly fossiliferous comprising dominantly of dendritic corals and minor skeletal remains. Occasionally glauconite is found as infills of fossil structures. Slightly carbonaceous.

5'0" to 10'8" CALCAREOUS SILTSTONE grading to MARL.
Greenish grey to grey, massive with blocky fracture, occasionally pyritic clayey matrix, silty in part, strongly calcareous, strongly fossiliferous comprising brachiopods, bryozoans, corals and forams. Some fossils have been replaced by a pale grey or colourless crystalline limestone. This section exhibits no porosity, nil fluorescence.

*Approximately 6" of marl was lost from this section while the core was being removed from the core barrel.

39/65 2 of 2.

CORE DESCRIPTION SHEET SEACOMBE SOUTH I.

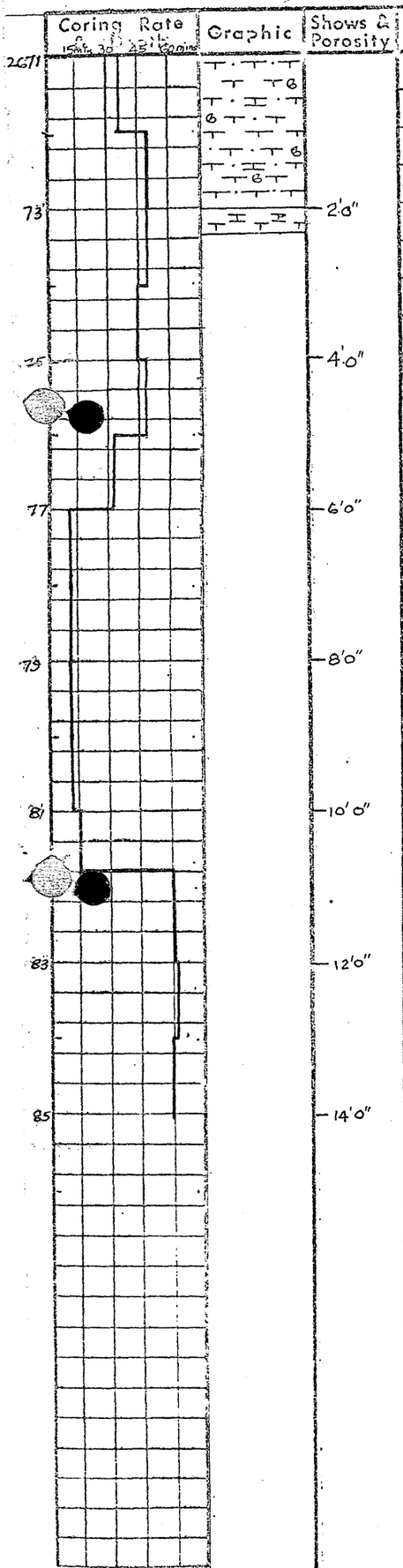
Company: WOODSIDE OIL N.L. Well : SEACOMBE SOUTH NO. 1

Core No: Two Formation : Gippsland Limestone

Interval : 2671' - 2685' Bit Type : Hughes/HF

Recovery: 2'4" Bit Size : $7\frac{7}{8}$"

Date : 9th November, 1970. Described By: A. Marimuthu



Lithologic Description

Top 2' MARL.

Dark grey to greenish grey, massive, blocky fracture, slightly friable, very strongly argillaceous, sandy in part, strongly carbonaceous in places, randomly calcareous with thin pyritic veins, together with occasional dendritic type coral remains.

Tight, no fluorescence.

No "gas kicks" recorded on chromatograph.

Bottom 4" CARBONACEOUS MARL.

Black to bluish black with rare black carbonaceous bands, massive, hard, slightly friable, strongly calcareous, silty in part. No fossil remains. Fresh or broken surface revealed odour of fresh tar.

Tight, no fluorescence.

No "gas kicks".

SIDEWALL CORES

The sidewall coring programme was designed to obtain 25 cores from the well in one run of the gun (CST).

In the first run it was found that the gun was not functioning properly because after shooting at 25 positions the recovery was 30 cores.

The second and third runs were designed to see if the gun was faulty or if it had been wired incorrectly. This problem was not fully resolved so it was decided to complete the coring programme with a different gun. Thus the fourth run was successful.

The details of the four runs are given below:-

Run No.	Bullets in gun:	Shots fired:	Cores Recovered:	Cores Accepted:
1	30	25	30	2(undescribed below)
2	28	5	5	Nil
3	23	3	3	3
4	30	15	15	15

4/65 SEACOMBE SOUTH I.

Core 3. 2850' Recovered $1\frac{1}{4}$"

MARL grading in places to a siltstone.

Grey, soft, slightly friable, compact, sandy in part, strongly argillaceous, very strongly calcareous. This sample is impregnated with less glauconite grains than cores 1 and 2.

Core 4. 2800' Recovered 1"

MARL

Grey, moderately hard, compact, slightly friable, strongly argillaceous, very strongly calcareous, rarely sandy, slightly pyritic in places.

Core 5. 2744' Recovered $\frac{3}{4}$"

MARL.

Greenish grey, moderately hard, compact, slightly friable, strongly argillaceous, strongly pyritic, slightly sandy in places, very strongly calcareous with occasional calcite (?) crystals disseminated throughout the sample.

Core 6. 2679' Recovered $\frac{3}{4}$"

MARL

Greenish grey, soft, very friable, strongly argillaceous, rarely pyritic, very strongly calcareous with prominent calcitic? bands distributed throughout the sample.

Core 7. 2675' Recovered $\frac{1}{2}$"

MARL grading to siltstone.

Dark grey, soft, very friable, strongly argillaceous, rarely sandy, together with prominent bands of pyrite. Very strongly calcareous.

Core 8. 2600' Recovered $1\frac{1}{2}$"

MARL grading to siltstone

Greenish grey, compact, not easily friable, blocky fracture, strongly argillaceous, very strongly calcareous, rarely carbonaceous.

Core 9. 2518' Recovered $\frac{1}{2}$"

MUDSTONE grading to marl.

Grey, compact, slightly friable, conchoidal fracture, occasional bands of calcareous material and rare lithic inclusions.

Core 10 2450' Recovered 1¼"

MUDSTONE grading to marl

Grey, compact, slightly friable together with prominent calcareous or dolomitic material. Rare lithics as inclusions.

Core 11 2400' Recovered 1"

MUDSTONE grading to marl

Brownish grey, slightly friable, strongly argillaceous, with occasional kaolinitic patches. Some pale grey calcareous aggregates are distributed throughout the sample together with lithics as inclusions.

Core 12 2350' Recovered ¾"

MUDSTONE

Grey to brownish grey, slightly friable, strongly argillaceous with prominent dark green and green glauconite grains disseminated throughout the matrix together with rare pale grey calcareous aggregates.

Core 13 2300' Recovered 1½"

MUDSTONE, grading to marl.

Grey to brownish grey, slightly friable, strongly argillaceous, occasional calcareous aggregates together with discrete grains of dark green and green glauconite. Rarely pyritic.

Core 14 2250' Recovered 1¼"

CALCARENITE grading to marl.

Bluish grey, moderately to poorly friable, slightly sandy in places, strongly argillaceous. occasionally carbonaceous together with abundant dark green and green coarse grained glauconite disseminated throughout the matrix.

Core 15 1500' Recovered 1½"

MARL

Dark grey, compact, conchoidal fracture, silty in part, occasionally carbonaceous, strongly calcareous together with prominent dark green and green, fine to medium grained glauconite distributed throughout the sample.

43/65

SEACOMBE SOUTH I.

RUN 2*

Core ∝ A — Recovered ¾"

SANDSTONE

Pale grey, comprising abundant pale grey to colourless, medium to fine grained, rare coarse grained quartz, subrounded to rounded, moderately to poorly sorted, poorly cemented, strongly carbonaceous in places. Good porosity, nil fluorescence.

Core β B — Recovered 1¼"

SANDSTONE

Pale grey to pale brown comprising abundant pale grey to colourless, fine to very fine grained quartz, generally subrounded, moderate to well sorted, poorly cemented, strongly carbonaceous matrix. Good to fair porosity, no fluorescence.

Core γ C — Recovered 1¼"

SANDSTONE

Pale grey to pale brown, comprising abundant pale grey to colourless, fine to very fine grained quartz, generally subrounded, moderate to well sorted, poorly consolidated, strongly carbonaceous matrix, often earthy, with prominent dark brown and black lignitic material distributed throughout the sample. Abundant dark green and green glauconite together with flakes of micaceous material are also disseminated throughout the core. Traces of kaolinitic matter are found in isolated pockets. Good porosity, nil fluorescence.

Core δ D — Recovered 1½"

SANDSTONE

Pale grey to grey, comprising abundant pale grey to colourless, very fine grained quartz, subrounded to rounded, well sorted, very slightly argillaceous with a strongly carbonaceous matrix together with occasional bands of dark brown to black lignitic material and dark green grains of glauconite. The sample is generally very crumbly. Good porosity, nil fluorescence.

Core ε E — Recovered 1"

SANDSTONE

Grey, comprising abundant pale grey to colourless very fine to fine grained subrounded to rounded quartz, well sorted, slightly argillaceous in places, with a strongly carbonaceous matrix. Dark brown and black lithic grains are fairly common. Sample generally is poorly consolidated. Good porosity, no fluorescence.

* A depth could not be given to these cores as it was not known which bullets and in what sequence they were fired.

SAMPLE RECOVERED FROM D.S.T. OPERATIONS

SANDSTONE

Grey comprising abundant pale grey to colourless quartz, fine to very fine grained, subrounded to rounded, well sorted with prominent dark brown carbonaceous material and dark green and green lithics as inclusions, rarely micaceous. Good porosity.

4 5/65

SIDEWALL CORE DESCRIPTIONS Seacombe South 1.

SEACOMBE SOUTH NO. 1

RUN 3

Core A. 3570' Recovered 1¼".

SANDSTONE

Dark grey to grey, comprising very fine to fine grained quartz, subrounded to rounded, well sorted. weakly kaolinitic, strongly carbonaceous. occasionally glauconitic. Good porosity, nil fluorescence.

Core B. 3565' Recovered 1¼".

SANDSTONE

Dark brown to dark grey, comprising abundant pale brown, grey to colourless quartz, subrounded to rounded, moderately well sorted, weakly kaolinitic, soft, slightly friable, strongly micromicaceous, slightly argillaceous, with a strongly carbonaceous matrix, earthy, poorly consolidated. Good to fair porosity, no fluorescence.

Core C. 3560' Recovered 1¼"

SANDSTONE

Dark grey to dark brown comprising abundant pale grey to colourless quartz, subrounded to rounded, moderately well sorted, weakly kaolinitic, soft, slightly friable, strongly micromicaceous, slightly argillaceous with a strongly carbonaceous matrix. Prominent dark brown and black vitreous coal aggregates, earthy, poorly consolidated. Good to fair porosity.

RUN 4

Core 1. 3500' Recovered 1½"

MARL grading to calcilutite.

Greyish brown, compact, blocky fracture, slightly friable, strongly pyritic, occasionally glauconitic, and very strongly calcareous.

Core 2. 3450' Recovered 1½"

MARL grading to calcilutite.

Dark grey, compact, slightly friable, strongly argillaceous, sandy in part, rarely pyritic, strongly glauconitic, very strongly calcareous.

APPENDIX 7

52/65

CHEMICAL ANALYSES OF WATER SAMPLES

I. A series of water samples were collected before drilling in order to select a site to pump water for making mud.

(A) Samples 1439/70 and 1440/70 were collected in the vicinity of the well site.

(B) Sample A (No. 1612/70) was collected from Lake Reeve, approx. 250 yards southwest of the well site.

(C) Sample B (No. 1613/70) was collected from Lake Reeve, opposite the well site.

(D) Sample C (No. 1614/70) was collected from Lake Reeve, approx. 100 yards northeast of the well site.

(E) Sample D was badly contaminated hence an analysis was not attempted.

II. After T.D. was reached, a drill stem test was conducted over the interval 3535' - 3690'.

(A) Sample 1870/70 and 1871/70 were collected from the first and second of three drill collars.

(B) Samples were also collected from pipe stands and these are tabulated as follows:-

Stand No.	6	-	Sample No.		1873/70
"	" 13	-	"	"	1874/70
"	" 17	-	"	"	1875/70
"	" 20	-	"	"	1876/70
"	" 23	-	"	"	1877/70
"	" 25	-	"	"	1878/70

APPENDIX 7

53/65

CWM

ADDRESS ALL COMMUNICATIONS
CHIEF CHEMIST
TELEPHONE: 630321

AN. LS. 4/9

JCK/SW

MINES DEPARTMENT
CHEMICAL BRANCH
5 PARLIAMENT PLACE
MELBOURNE, VIC. 3002

23/9/70

Report on Sample No. 1439/70

~~U.W.R.S.~~

Sample : Lake Water

Locality : ~~Parish~~ Seacombe South

Sender Woodside Oil Co.
151 Flinders Street
Melbourne.

Particulars:

Bore
Plant
Sample
Date
Depth (feet)
Aquifer level (feet)
Static level (feet)
Drawdown (feet)
Aquifer type
Yield (gph)
Test type
Bore cased to (feet)
Position
Owner
Address
Remarks
Label No.

A sample of water was received for analysis.

It was labelled "Seacombe South No. 1., Sample collected from Lake Reeve".

Results:		Parts per million
Total solids in solution		22,130
Chloride	(Cl)	11,685
Carbonate	(CO_3)	22
Bicarbonate	(HCO_3)	167
Sulphate	(SO_4)	2128
Nitrate	(NO_3)	Nil
Calcium	(Ca)	550
Magnesium	(Mg)	755
Sodium	(Na)	6450
Potassium	(K)	227
Iron-Total	(Fe)	–
Iron-Soluble	(Fe)	0.2
Silicate	(SiO_3)	3
Total hardness (as $CaCO_3$)		4,481

pH	8.4	
Electrical Conductivity at 25°C.	31,112	micromhos/cm.
Specific Resistance at 21 °C.	35	ohmcm.

John C. Kennedy
Chief Chemist

c WM.

54/65

ADDRESS ALL COMMUNICATIONS
CHIEF CHEMIST
TELEPHONE: 630321

AN. LS. 4/9
JCK/SW

MINES DEPARTMENT
CHEMICAL BRANCH
5 PARLIAMENT PLACE
MELBOURNE, VIC. 3002

23/9/70

Report on Sample No. 1440/70
~~U.W.R.S.~~

Sample : Soak Water
Locality : ~~Parish~~ Seacombe South
Sender Woodside Oil Co.
151 Flinders Street
Melbourne

Particulars:

Bore
Plant
Sample
Date
Depth (feet)
Aquifer level (feet)
Static level (feet)
Drawdown (feet)
Aquifer type
Yield (gph)
Test type
Bore cased to (feet)
Position
Owner
Address
Remarks
Label No.

A sample of water was received for analysis.

It was labelled "Seacombe South No. 1, Collected from Soak"

Results:		Parts per million	
Total solids in solution		2569	
Chloride	(Cl)	1346	
Carbonate	(CO_3)	6	
Bicarbonate	(HCO_3)	168	
Sulphate	(SO_4)	94	
Nitrate	(NO_3)	Nil	
Calcium	(Ca)	128	
Magnesium	(Mg)	71	
Sodium	(Na)	700	
Potassium	(K)	14	
Iron-Total	(Fe)	-	
Iron-Soluble	(Fe)	0.2	
Silicate	(SiO_3)	5	
Total hardness (as $CaCO_3$)		609	
pH		8.3	
Electrical Conductivity at 25°C.		4375	micromhos/cm.
Specific Resistance at 21 °C.		247	ohmcm.

John McKinnedy
Chief Chemist

ADDRESS ALL COMMUNICATIONS
CHIEF CHEMIST
TELEPHONE: 630821

55/65

MINES DEPARTMENT
CHEMICAL BRANCH
5 PARLIAMENT PLACE
MELBOURNE, VIC. 3002

GMG:MS
An. HM,RM, 5/10

7th January, 1970

RECEIVED
11 JAN 1971
Ans'd.....

Report on Sample No. 1612/70
U.W.R.S. 7707

Sample : Lake Water
Locality : Parish Seacombe South
Sender Woodside Oil N.L.,
151 Flinders Street,
MELBOURNE.

Particulars:	
Bore	Seacombe South No.1
Plant	–
Sample	A
Date	–
Depth (feet)	–
Aquifer level (feet)	–
Static level (feet)	–
Drawdown (feet)	–
Aquifer type	–
Yield (gph)	–
Test type	–
Bore cased to (feet)	–
Position	Lake Reeves
Owner	–
Address	–
Remarks	–
Label No.	–

Results:		Parts per million	me/litre
Total solids in solution		24,480	
Chloride	(Cl)	11,580	326.67
Carbonate	(CO_3)	Nil	--
Bicarbonate	(HCO_3)	170	2.79
Sulphate	(SO_4)	2,034	42.35
Nitrate	(NO_3)	Nil	--
Calcium	(Ca)	509	25.40
Magnesium	(Mg)	701	57.66
Sodium	(Na)	6,336	275.62
Potassium	(K)	239	6.11
Iron-Total	(Fe)	–	--
Iron-Soluble	(Fe)	0.1	--
Silicate	(SiO_3)	4	--
Total hardness (as $CaCO_3$)		4,154	
pH		8.4	
Electrical Conductivity at 25°C.		41,750	micromhos/cm.
Specific Resistance at 20.9°C.		27	ohmcm.

Chief Chemist

ADDRESS ALL COMMUNICATIONS
CHIEF CHEMIST
TELEPHONE: 630321

56/65

MINES DEPARTMENT
CHEMICAL BRANCH
5 PARLIAMENT PLACE
MELBOURNE, VIC. 3002

GMG:MS
An. HM, RM, 5/10

7th January, 1971

RECEIVED
11 JAN 1971
Ans'd.....

Report on Sample No. 1613/70
U.W.R.S. 7708

Sample : Lake Water
Locality : Parish Seacombe South
Sender Woodside Oil N.L.
151 Flinders Street,
MELBOURNE.

Particulars:	
Bore	Seacombe South No.1
Plant	–
Sample	B
Date	–
Depth (feet)	–
Aquifer level (feet)	–
Static level (feet)	–
Drawdown (feet)	–
Aquifer type	–
Yield (gph)	–
Test type	–
Bore cased to (feet)	–
Position	Lake Reeves
Owner	–
Address	–
Remarks	–
Label No.	–

Results:		Parts per million	me/litre
Total solids in solution	Summation	2,230	
Chloride	(Cl)	11,660	328.93
Carbonate	(CO_3)	Nil	--
Bicarbonate	(HCO_3)	190	3.11
Sulphate	(SO_4)	2,240	46.64
Nitrate	(NO_3)	Nil	--
Calcium	(Ca)	509	25.40
Magnesium	(Mg)	743	61.12
Sodium	(Na)	6,711	291.93
Potassium	(K)	244	6.24
Iron-Total	(Fe)	–	--
Iron-Soluble	(Fe)	0.2	--
Silicate	(SiO_3)	1	--
Total hardness (as $CaCO_3$)		4,327	
pH		8.4	
Electrical Conductivity at 25°C.		40,600	micromhos/cm.
Specific Resistance at 20.9 °C.		28	ohmcm.

Chief Chemist

ADDRESS ALL COMMUNICATIONS
CHIEF CHEMIST
TELEPHONE: 630321

57/65

MINES DEPARTMENT
CHEMICAL BRANCH
5 PARLIAMENT PLACE
MELBOURNE, VIC. 3002

GMG:MS
An. HM, RM, 5/10

7th January, 1971

RECEIVED
11 JAN 1971
Ans'd.....

Report on Sample No. 1614/70
U.W.R.S. 7709

Sample : Lake Water
Locality : Parish Seacombe South
Sender Woodside Oil N.L.
151 Flinders Street,
MELBOURNE.

Particulars:

Bore		Seacombe South No.1
Plant		-
Sample		C
Date		-
Depth	(feet)	-
Aquifer level	(feet)	-
Static level	(feet)	-
Drawdown	(feet)	-
Aquifer type		-
Yield (gph)		-
Test type		-
Bore cased to	(feet)	-
Position		Lake Reeves
Owner		-
Address		-
Remarks		-
Label No.		-

Results:		Parts per million	me/litre
Total solids in solution	Summation	23,800	
Chloride	(Cl)	12,700	358.27
Carbonate	(CO_3)	Nil	--
Bicarbonate	(HCO_3)	255	4.18
Sulphate	(SO_4)	2,174	4.26
Nitrate	(NO_3)	Nil	--
Calcium	(Ca)	463	23.10
Magnesium	(Mg)	813	66.88
Sodium	(Na)	7,105	309.07
Potassium	(K)	247	6.32
Iron-Total	(Fe)	-	--
Iron-Soluble	(Fe)	0.1	--
Silicate	(SiO_3)	1	--
Total hardness (as $CaCO_3$)		4,499	
pH		8.4	
Electrical Conductivity at 25°C.		44,490	micromhos/cm.
Specific Resistance at 20.9°C.		25	ohmcm.

Chief Chemist

ADDRESS ALL COMMUNICATIONS
CHIEF CHEMIST
TELEPHONE: 630321
GMG:MS
An. MC,DL, 2/12

58/65

MINES DEPARTMENT
CHEMICAL BRANCH
5 PARLIAMENT PLACE
MELBOURNE, VIC. 3002

15th December, 1970

Report on Sample No.1870/70

Sample : Bore Water

Locality : Seacombe South

Sender : Woodside Oil N.L.,
151 Flinders Street,
MELBOURNE.

Particulars:

Samples	: Water
Oil Bore	: Seacombe South No.1
Drill Stem Test	: No.1
Interval	: 3535'-3690'
Recovered	: 270' mud 2945' of slightly gas, cut,water
Formation	: Sand 284' above tester
Remarks	: 1 of 3 Drill Collar

Results:		Parts per million	me/litre
Total solids in solution (Summation)		3250	
Chloride	(Cl)	876	24.7
Carbonate	(CO_3)	56	1.9
Bicarbonate	(HCO_3)	1204	19.7
Sulphate	(SO_4)	Nil	Nil
Nitrate	(NO_3)	Nil	Nil
Calcium	(Ca)	22	1.1
Magnesium	(Mg)	9.0	0.7
Sodium	(Na)	1002	43.6
Potassium	(K)	36	0.9
Iron-Total	(Fe)	-	-
Iron-Soluble	(Fe)	0.8	-
Silicate	(SiO_3)	38	-
Total hardness (as $CaCO_3$)		91	
pH		8.8	
Electrical Conductivity at 25°C.		4441	micromhos/cm.
Specific Resistance at 21.0°C.		244	ohmcm.

Chief Chemist

ADDRESS ALL COMMUNICATIONS
CHIEF CHEMIST
TELEPHONE: 630321

GMG:MS
An. MC, DL, 2/12

5%/65

MINES DEPARTMENT
CHEMICAL BRANCH
5 PARLIAMENT PLACE
MELBOURNE, VIC. 3002

15th December, 1970

Report on Sample No.1871/70

Sample : Bore Water

Locality : Seacombe South

Sender : Woodside Oil N.L.,
151 Flinders Street,
MELBOURNE.

Particulars:

Sample	: Water
Oil Bore	: Seacombe South No.1
Drill Stem Test	: No.1
Interval	: 3535'-3690'
Recovered	: 270' mud 2945' of slightly gas, cut, water
Formation	: Sand 284' above tester
Remarks	: 2 of 3 Drill Collar

Results:	Parts per million	
Total solids in solution	2637	
pH	8.6	
Electrical Conductivity at 25°C.	4488	micromhos/cm.
Specific Resistance at 21.0°C.	241	ohmcm.

Chief Chemist

ADDRESS ALL COMMUNICATIONS
CHIEF CHEMIST
TELEPHONE: 630321

GMG:MS

An. MC,DL, 2/12

60/65

MINES DEPARTMENT
CHEMICAL BRANCH
5 PARLIAMENT PLACE
MELBOURNE, VIC. 3002

15th December, 1970

Report on Sample No.1873/70

Sample : Bore Water

Locality : Seacombe South

Sender : Woodside Oil N.L.,
151 Flinders Street,
MELBOURNE.

Particulars:

Samples	: Waters
Oil Bore	: Seacombe South No.1
Drill Stem Test	: No.1
Interval	: 3535'-3690'
Recovered	: 270' mud 2945' of slightly gas, cut, water
Formation	: Sand 284' above tester
Remarks	: Stand No.6

Results:	Parts per million
Total solids in solution	4084
pH	9.4
Electrical Conductivity at 25°C.	6822 micromhos/cm.
Specific Resistance at 21.0°C.	159 ohmcm.

Chief Chemist

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CHIEF CHEMIST
TELEPHONE: 630321

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6/65

MINES DEPARTMENT
CHEMICAL BRANCH
5 PARLIAMENT PLACE
MELBOURNE, VIC. 3002

15th December, 1970

Report on Sample No.1874/70

Sample : Bore Water

Locality : Seacombe South

Sender : Woodside Oil N.L.,
151 Flinders Street,
MELBOURNE.

Particulars:

Samples	:	Waters
Oil Bore	:	Seacombe South No.1
Drill Stem Test	:	No.1
Interval	:	3535'-3690'
Recovered	:	270' mud 2945' of slightly gas, cut, water
Formation	:	Sand 284' above tester
Remarks	:	Stand No.13

Results:	Parts per million
Total solids in solution	4341
pH	8.5
Electrical Conductivity at 25°C.	7227 micromhos/cm.
Specific Resistance at 21.0°C.	150 ohmcm.

Chief Chemist

62/65

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MINES DEPARTMENT
CHEMICAL BRANCH
5 PARLIAMENT PLACE
MELBOURNE, VIC. 3002

14th December, 1970

Report on Sample No.1875/70

Sample : Water

Locality : Seacombe South

Sender : Woodside Oil N.L.,
151 Flinders Street,
MELBOURNE.

Particulars:

Samples	:	Waters
Oil Bore	:	Seacombe South No.1
Drill Stem Test	:	No.1
Interval	:	3535'-3690'
Recovered	:	270' mud 2945' of slightly gas, cut, water
Formation	:	Sand 284' above tester
Remarks	:	Stand No.17

Results:	Parts per million	
Total solids in solution	2821	
pH	8.8	
Electrical Conductivity at 25°C.	4791	micromhos/cm.
Specific Resistance at 21.0°C.	226	ohmcm.

Chief Chemist

63/65

ADDRESS ALL COMMUNICATIONS
CHIEF CHEMIST
TELEPHONE: 630321

GMG:MS

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MINES DEPARTMENT
CHEMICAL BRANCH
5 PARLIAMENT PLACE
MELBOURNE, VIC. 3002

14th December, 1970

Report on Sample No.1876/70

Sample : Water

Locality : Seacombe South

Sender : Woodside Oil N.L.,
151 Flinders Street,
MELBOURNE.

Particulars:

Samples	: Waters
Oil Bore	: Seacombe South No.1
Drill Stem Test	: No.1
Interval	: 3535'-3690'
Recovered	: 270' mud 2945' of slightly gas, cut, water.
Formation	: Sand 284' above tester
Remarks	: Stand No.20

Results:	Parts per million
Total solids in solution	2681
pH	8.8
Electrical Conductivity at 25°C.	4560 micromhos/cm.
Specific Resistance at 21.0°C.	237 ohmcm.

Chief Chemist

64/65

ADDRESS ALL COMMUNICATIONS
CHIEF CHEMIST
TELEPHONE: 630321

GMG:MS
An. MC,DL, 2/12

MINES DEPARTMENT
CHEMICAL BRANCH
5 PARLIAMENT PLACE
MELBOURNE, VIC. 3002

14th December, 1970

Report on Sample No.1877/70

Sample : Water

Locality : Seacombe South

Sender : Woodside Oil N.L.,
151 Flinders Street,
MELBOURNE.

Particulars:

Samples	:	Waters
Oil Bore	:	Seacombe South No.1
Drill Stem Test	:	No.1
Interval	:	3535'-3690'
Recovered	:	270' mud 2945' of slightly gas, cut, water.
Formation	:	Sand 284' above tester
Remarks	:	Stand No.23

Results:	Parts per million	
Total solids in solution	2637	
pH	8.6	
Electrical Conductivity at 25°C.	4488	micromhos/cm.
Specific Resistance at 21.0°C.	241	ohmcm.

Chief Chemist

65/65

ADDRESS ALL COMMUNICATIONS
CHIEF CHEMIST
TELEPHONE: 630321
GMG:MS
An. MC,DL, 2/12

MINES DEPARTMENT
CHEMICAL BRANCH
5 PARLIAMENT PLACE
MELBOURNE, VIC. 3002

15th December, 1970

Report on Sample No.1878/70

Sample : Water

Locality : Seacombe South

Sender : Woodside Oil N.L.,
151 Flinders Street,
MELBOURNE.

Particulars:

Sample	: Waters
Oil Bore	: Seacombe South No.1
Drill Stem Test	: No.1
Interval	: 3535'-3690'
Recovered	: 270' mud, 2945' of slightly gas, cut, water.
Formation	: Sand 284' above tester
Remarks	: Stand No.25

Results:

		Parts per million	me/litre
Total solids in solution		3365	
Chloride	(Cl)	944	26.6
Carbonate	(CO_3)	103	3.4
Bicarbonate	(HCO_3)	1180	19.3
Sulphate	(SO_4)	Nil	-
Nitrate	(NO_3)	Nil	-
Calcium	(Ca)	18.0	0.9
Magnesium	(Mg)	8.0	0.6
Sodium	(Na)	1071	46.6
Potassium	(K)	39	1.0
Iron-Total	(Fe)	-	-
Iron-Soluble	(Fe)	1.7	0.1
Silicate	(SiO_3)	43	-
Total hardness (as $CaCO_3$)		78	
pH		8.8	
Electrical Conductivity at 25°C.		4685	micromhos/cm.
Specific Resistance at 21.0°C.		231	ohmcm.

Chief Chemist

4 9/65

FLUID SAMPLE DATA

Sampler Pressure _____ P.S.I.G. at Surface
Recovery: Cu. Ft. Gas _____
cc. Oil _____
cc. Water _____
cc. Mud _____
Tot. Liquid cc. _____
Gravity _____ ° API @ _____ °F.
Gas/Oil Ratio _____ cu. ft./bbl.

	RESISTIVITY	CHLORIDE CONTENT
Recovery Water	_____ @ _____ °F.	1500 ppm
Recovery Mud	_____ @ _____ °F.	
Recovery Mud Filtrate	_____ @ _____ °F.	_____ ppm
Mud Pit Sample	_____ @ _____ °F.	
Mud Pit Sample Filtrate	_____ @ _____ °F.	_____ ppm
Mud Weight	9.7 vis	66 cp

Date 11-13-70 Ticket Number 456084
Kind of Job OPEN HOLE Halliburton District SALE AUSTRALIA
Tester MR. BURGESS Witness MR. MANN
Drilling Contractor RICHTER BAWDEN DR

EQUIPMENT & HOLE DATA

Formation Tested Latrobe valley coal measurement
Elevation 5' Ft.
Net Productive Interval 110' Ft.
All Depths Measured From Kelly Bushing
Total Depth 3890' Plug back T.D. 3690' Ft.
Main Hole/Casing Size 8 3/4"
Drill Collar Length 267' I.D. 2¼"
Drill Pipe Length 3251' I.D. 3.826"
Packer Depth(s) 3529'-3535' Ft.
Depth Tester Valve 3515' Ft.

Cushion TYPE AMOUNT Ft. Depth Back Pres. Valve Surface Choke 1.00" Bottom Choke 75"

Recovered 280 Feet of mud
Recovered 2945 Feet of water-slightly sandy and gas cut
Recovered Feet of
Recovered Feet of
Recovered Feet of

Meas. From Tester Valve

Remarks Opened tool for 42 minute flow with a good blow decreasing over a period of 15 minutes to nothing. Closed tool for 30 minute final closed in pressure.

CHARTS PICKED UP BY CUSTOMER.

TEMPERATURE	Gauge No. 1040 Depth: 3516 Ft.	Gauge No. 1043 Depth: 3686 Ft.	Gauge No. Depth: Ft.	TIME
	12 Hour Clock	12 Hour Clock	Hour Clock	Tool Opened 4:00 P.M.
Est. °F.	Blanked Off No	Blanked Off Yes	Blanked Off	Tool Closed 5:12 P.M.
Actual 120 °F.	Pressures	Pressures	Pressures	

		Field	Office	Field	Office	Field	Office	Reported Minutes	Computed Minutes
Initial Hydrostatic		1842	1844	1899	1932				
First Period	Flow Initial	724	649	1582	1548			—	—
	Flow Final	1551	1561	1582	1635			42	
	Closed in	1551	1562	1610	1636			30	
Second Period	Flow Initial							—	—
	Flow Final								
	Closed in								
Third Period	Flow Initial							—	—
	Flow Final								
	Closed in								
Final Hydrostatic		1827	1844	1899	1932			—	—

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FORMATION TEST DATA

LITTLE'S

8

Legal Location Sec. - Twp. - Rng.
Lease Name SEACOMBE SOUTH
Well No. 1
Test No. 1
Tested Interval 3535'-3890'
Field Area PEP-72
County VICTORIA
State AUSTRALIA
Lease Owner/Company Name WOODSIDE OIL COMPANY

	O. D.	I. D.	LENGTH	DEPTH
Reversing Sub	5.75"	2.75"	12.00'	
Water Cushion Valve				
Drill Pipe	4½"	3.826"	3251'	
Drill Collars		2¼"	267'	
Handling Sub & Choke Assembly	4.87"	2.58"	23.80'	
Dual CIP Valve	5.00"	.89"	56.08"	
Dual CIP Sampler				
Hydro-Spring Tester	5.00"	.75"	60.21"	3515'
Multiple CIP Sampler				
Extension Joint				
AP Running Case	5.00"	3.00"	48.37"	3516'
Hydraulic Jar	5.00"	1.00"	39.46"	
VR Safety Joint	5.00"	1.00"	28.35"	
Pressure Equalizing Crossover				
Packer Assembly	7 3/4"	1.75"	75.00"	3529'
Distributor				
Packer Assembly	8.00"	1.75"	75.00"	3535'
Flush Joint Anchor	5.00"	2.37"	32'	
Pressure Equalizing Tube				
Blanked-Off B.T. Running Case				
Drill Collars	6½"	2¼"	119'	
Anchor Pipe Safety Joint				
Packer Assembly				
Packer Assembly				
Anchor Pipe Safety Joint				
Side Wall Anchor				
Drill Collars				
Flush Joint Anchor				
Blanked-Off B.T. Running Case	5.00"	2.37"	48.71'	3686'

5/65

NOMENCLATURE

b	= Approximate Radius of Investigation	Feet
b_1	= Approximate Radius of Investigation (Net Pay Zone h_1)	Feet
D.R.	= Damage Ratio	——
El	= Elevation	Feet
GD	= B.T. Gauge Depth (From Surface Reference)	Feet
h	= Interval Tested	Feet
h_1	= Net Pay Thickness	Feet
K	= Permeability	md
K_1	= Permeability (From Net Pay Zone h_1)	md
m	= Slope Extrapolated Pressure Plot (Psi^2/cycle Gas)	psi/cycle
OF_1	= Maximum Indicated Flow Rate	MCF/D
OF_2	= Minimum Indicated Flow Rate	MCF/D
OF_3	= Theoretical Open Flow Potential with/Damage Removed Max.	MCF/D
OF_4	= Theoretical Open Flow Potential with/Damage Removed Min.	MCF/D
P_s	= Extrapolated Static Pressure	Psig.
P_F	= Final Flow Pressure	Psig.
P_{ot}	= Potentiometric Surface (Fresh Water *)	Feet
Q	= Average Adjusted Production Rate During Test	bbls/day
Q_1	= Theoretical Production w/Damage Removed	bbls/day
Q_g	= Measured Gas Production Rate	MCF/D
R	= Corrected Recovery	bbls
r_w	= Radius of Well Bore	Feet
t	= Flow Time	Minutes
t_o	= Total Flow Time	Minutes
T	= Temperature Rankine	°R
Z	= Compressibility Factor	——
μ	= Viscosity Gas or Liquid	CP
Log	= Common Log	

* Potentiometric Surface Reference to Rotary Table When Elevation Not Given, Fresh Water Corrected to 100° F.

PE906291

This is an enclosure indicator page.
The enclosure PE906291 is enclosed within the container PE902798 at this location in this document.

The enclosure PE906291 has the following characteristics:

ITEM_BARCODE	= PE906291
CONTAINER_BARCODE	= PE902798
NAME	= FIT Photograph Graphs
BASIN	= GIPPSLAND
PERMIT	= PEP72
TYPE	= WELL
SUBTYPE	= DIAGRAM
DESCRIPTION	= Photograph Graphs of Formation Interval Tests for Seacombe South-1
REMARKS	= Black and white (negative) photograph
DATE_CREATED	= 13/11/70
DATE_RECEIVED	=
W_NO	= W613
WELL_NAME	= SEACOMBE SOUTH-1
CONTRACTOR	= HALLIBURTON SERVICES
CLIENT_OP_CO	= WOODSIDE OIL COMPANY

(Inserted by DNRE - Vic Govt Mines Dept)

PE601459

This is an enclosure indicator page.
The enclosure PE601459 is enclosed within the container PE902798 at this location in this document.

The enclosure PE601459 has the following characteristics:

ITEM_BARCODE	= PE601459
CONTAINER_BARCODE	= PE902798
NAME	= Composite Well Log
BASIN	= GIPPSLAND
PERMIT	= PEP/72
TYPE	= WELL
SUBTYPE	= COMPOSITE_LOG
DESCRIPTION	= Composite Well Log (enclosure from WCR) for Seacombe South-1
REMARKS	=
DATE_CREATED	= 15/11/70
DATE_RECEIVED	=
W_NO	= W613
WELL_NAME	= Seacombe South-1
CONTRACTOR	= Woodside Oil NL
CLIENT_OP_CO	= Woodside Oil NL

(Inserted by DNRE - Vic Govt Mines Dept)

PE601460

This is an enclosure indicator page.
The enclosure PE601460 is enclosed within the container PE902798 at this location in this document.

The enclosure PE601460 has the following characteristics:

ITEM_BARCODE	= PE601460
CONTAINER_BARCODE	= PE902798
NAME	= Synthetic Seismogram
BASIN	= GIPPSLAND
PERMIT	= PEP/72
TYPE	= WELL
SUBTYPE	= SYNTH_SEISMOGRAM
DESCRIPTION	= Synthetic Seismogram (enclosure from WCR) for Seacombe South-1
REMARKS	=
DATE_CREATED	= 31/12/70
DATE_RECEIVED	=
W_NO	= W613
WELL_NAME	= Seacombe South-1
CONTRACTOR	= Woodside Oil NL
CLIENT_OP_CO	= Woodside Oil NL

(Inserted by DNRE - Vic Govt Mines Dept)