WOODSIDE (LAKES ENTRANCE) OIL COMPANY N.L.

SUNDAY ISLAND NO. 1 WELL

COMPLETION REPORT

by

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of

MINES ADMINISTRATION PROPRIETARY LTD.

C O N T E N T S

1 ABSTRACT

Woodside Sunday Island No. 1 was drilled in P.E.P. 42 (Victoria) by Richter Bawden Drilling Pty.Ltd. using Woodside's Brewster N4 rig. It was drilled to a total depth of 6,003 feet, of which 1,664 feet were Tertiary sediments and 4,339 feet were non-porous Mesozoic sediments.

As the granites of Wilson's Promontory, which had been expected at 4,750 feet, had not been reached at 6,003 feet, it became apparent that they had probably been down-faulted to an unknown depth, and that the sediments were not in a normal on-lap condition. Consequently as 4,337 feet of non-productive Strzelecki sediments had been penetrated, it was considered that further drilling was not justified. Consequently the well was abandoned at the depth of 6,003 feet.

The Tertiary penetrated differs considerably from that found in other parts of the basin, in that the entire marine Tertiary sediments are absent. The Tertiary has therefore been divided as follows :

(i) The sands, clays, marls and shell bands of the marine section of the Bushy Park Beds.

(ii) The sands, clays and peats of the continental or lower part of the Bushy Park Beds.

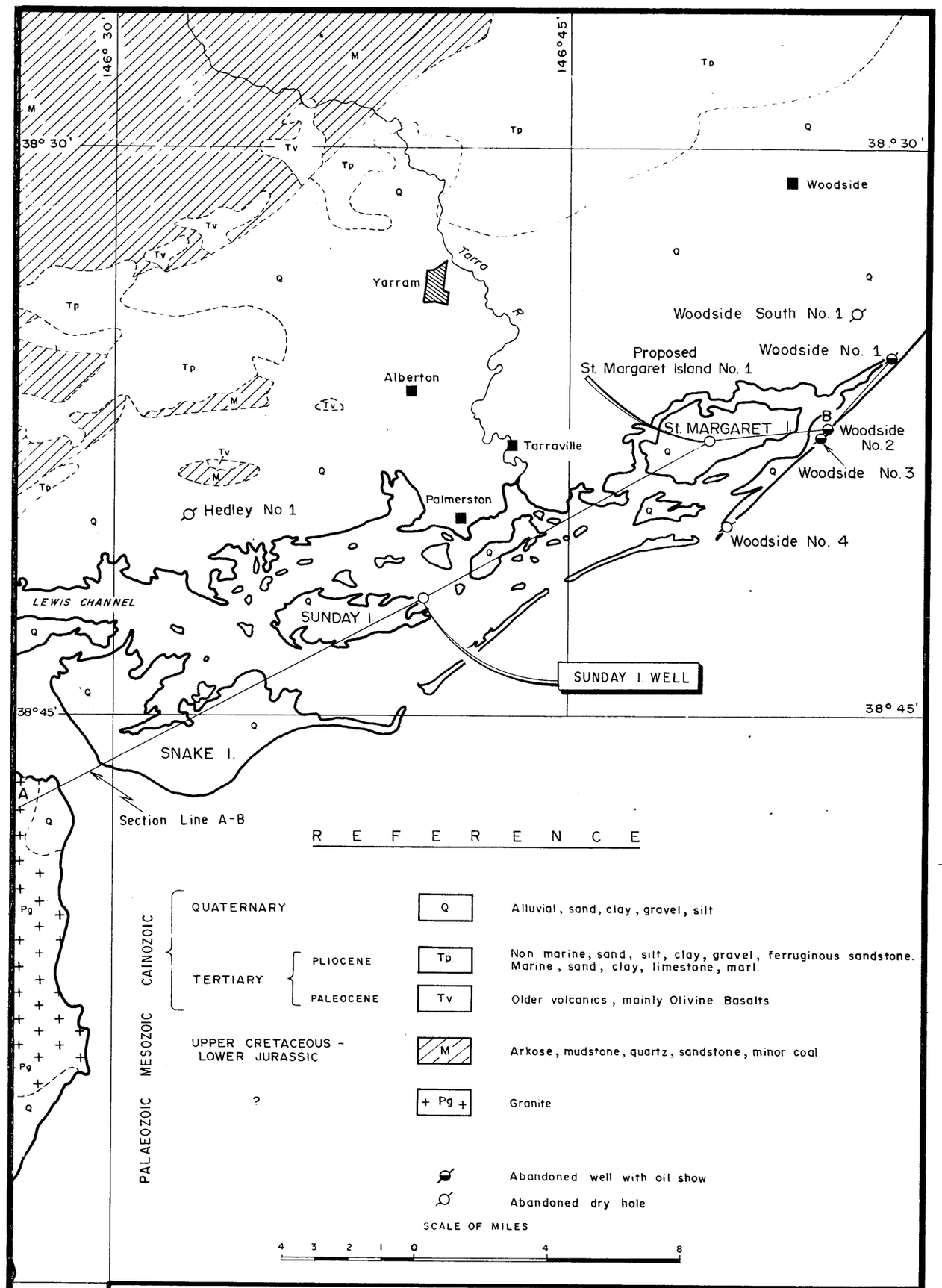
(iii) The brown coal, clays, sands and gravels of the Latrobe Valley Coal Measures.

The Tertiary rests unconformably on the Mesozoic Strzelecki Group which is made up of green and grey arkose, siltstone and shale.

A granite basement although expected at 4,750 feet was not encountered in this well.

The sands and gravels of the Latrobe Valley Coal Measures have high porosities and permeabilities similar to those found in this formation in other parts of the Gippsland Basin. Drill-Stem Test No. 1 covered one of these sands from which fresh water was produced. Tight conditions are present in the sandstones of the Strzelecki Group.

No accumulations of hydrocarbons were encountered and the hole was, therefore, plugged and abandoned.



WOODSIDE (LAKES ENTRANCE) OIL CO. N.L.

REGIONAL GEOLOGY MAP

SOUTHWEST GIPPSLAND

SHOWING POSITION OF SUNDAY ISLAND No.1 WELL

After P.S.S.A. 1959 - 64

Compiled from B.M.R. plans, Victorian Dept of Mine's plans and reconnaissance traverses

SCALE : 4 MILES = 1 INCH

Drafting by GEODRAFTING SERVICES

Date: February, 1966

11 INTRODUCTION

Woodside Sunday Island No. 1 was located 2½ miles south-west of Port Albert on the south eastern Victoria coastline and 16 miles south-west of Woodside's Woodside South No. 1 Well, the nearest subsidized well. This area forms the southern part of the onshore section of the Gippsland Basin.

Sunday Island No. 1 was drilled as a stratigraphic test of both the Tertiary and the Mesozoic formations. It was hoped that the well would intercept the thinning of both Tertiary and Mesozoic formations by onlap onto the granite outcropping at Wilson's Promontory and that commercial accumulations of hydrocarbons would be found in stratigraphical traps. The principal targets, were the sands of the Latrobe Valley Coal Measures from which gas has been produced offshore, and the sandstones of the Strzelecki Group in which oil shows have been encountered in Woodside Wells Nos. 1 and 2 onshore.

It was hoped also that granite would be encountered directly below the Strzelecki Group at approximately 4,750 feet, this depth being determined from Aeromagnetics.

111 WELL HISTORY

1. GENERAL DATA :

(a)	Well name & number	Sunday Island No. 1
(b)	Location	Latitude : 38° 42' 19" Longitude :146° 40' 11"
(c)	Name & address of tenement holder :	Woodside (Lakes Entrance) Oil Co. N.L. 792 Elizabeth St., MELBOURNE, Victoria.
(d)	Details of petroleum tenement :	Petroleum Exploration Permit No. 42.
(e)	District :	Shire : Alberton County : Buln Buln Parish : Sunday Island
(f)	Total depth :	6,003 feet
(g)	Date drilling commenced :	19th November, 1965
(h)	Date drilling completed :	4th January, 1966
(i)	Date well completed	5th January, 1966
(j)	Date rig released	6th January, 1966
(k)	Drilling time to T.D.	46 days
(l)	Elevation	11 ft. above sea level.
(m)	Status	Dry, plugged & abandoned.
(n)	Cost	

2. DRILLING DATA :

(a)	Contractor :	Richter Bawden Drilling Pty. Ltd. Elizabeth Street, Brisbane. Queensland.
(b)	Drilling Plant :	
	Make	Brewster
	Type	N-4
	Rated capacity with $3\frac{1}{2}$" drill pipe	7,500'
	Rated capacity with $4\frac{1}{2}$" drill pipe	5,500'
	Motors	G.M. diesel 6-71 twin 6 Rated 396 B.H.P.
(c)	Mast :	
	Make	Lee C. Moore
	Type	Jacknife 126'
	Capacity	368,000 lbs.

2. DRILLING DATA (Cont'd.)

(d)	Pumps - Two :	
	Make	Oilwell
	Type	214.P
	Size	$7\frac{1}{4}$" x 14"
	Motors	G.M. diesel, 6.71 twin 6 rated 396 BHP.
(e)	Blowout preventer equipment :	
	(i) Make	Cameron
	Size	12" Double gate
	Series	900
	(ii) Make	Regan
	Size	10"
	Series	900
(f)	Hole sizes & depths :	
	22" Conductor pipe	K.B. to 20' R.K.B.
	$17\frac{1}{2}$" Hole	20' to 330' R.K.B.
	$12\frac{1}{4}$" Hole	330' to 1966'R.K.B.
	$8\frac{3}{4}$" Hole	1966' to 6003' R.K.B.
(g)	Casing details :	
	(i) Size	$13\frac{3}{8}$"
	Weight	48 lbs.
	Grade	H.40
	Range	2
	Setting depth	315 ft.
	(ii) Size	$9\frac{5}{8}$"
	Weight	36 lbs.
	Grade	J-55
	Range	2
	Setting Depth	1962 ft.
(h)	Casing cementing details :	
	(i) Size	$13\frac{3}{8}$"
	Setting depth	315 ft.
	Qty. cmt. used	250 sacks
	Cement to	surface
	Method	B.J. Cementing Unit Guide shoe Top cement plug.
	(ii) Size	$9\frac{5}{8}$"
	Setting depth	1962 ft.
	Qty. cmt. used	300 sacks
	Cement to	950 ft.
	Method	B.J. Cementing Unit Guide shoe Float Collar Top cement plug Bottom cement plug

2. DRILLING DATA (Cont'd.)

(i) Drilling Fluid :

(i) Type - To 315' Bentonite/water only
To 2500' Ligno-sulphonate system
To T.D. Ligno-sulphonate with 10% distillate.

(ii) Treatment With stock chemicals on location or day to day basis as required.

(iii) Mud Material & Chemical Consumption :

Supercol	35,550 lbs.	(Viscosity)
Volclay	35,600 lbs.	(Viscosity)
Unical	17,800 lbs.	(Thinners & pH)
Milcon	9,000 lbs.	(Water loss control)
Caustic	2,730 lbs.	(Thinners & pH)
Cellucol	Nil	(Water loss control)
Soda Bicarb	300 lbs.	(Cement contamination)
Barytes	Nil	(Weight)

(iv) Average Weight Analysis :

Week	Depth feet	Weight lbs.per U.S. gal.	Viscosity secs. 946 cc	W.L. c.c	F.C. inches	pH
1.	1680	9.2	93	6.6	2/32	8.4
2.	2315	9.3	92	7.0	1/32	8.1
3.	3659	9.8	53	4.7	2/32	9.1
4.	4751	10.2	55	5.3	2/32	9.0
5.	5338	10.2	49	4.8	2/32	8.8
6.	5883	10.2	48	5.2	2/32	8.6
7.	6002	10.2	53	4.9	2/32	9.0

(j) Water Supply :

Water was pumped from open soakage pit. Water well was drilled to 200 feet, with 8 inch casing set to 60 feet, and 6 inch casing set to 168 feet.

(k) Perforations and Shooting - Nil

(l) Plug back and Cementation Jobs :

Plug to prevent sloughing

1. 0' - 43'

Plug backs - on abandonment

Two plugs at following depths :

2. 2080' - 1830' 90 sacks Gippsland construction cement. Slurry weight 15 lbs per gal. pumped to hole.

3. 20' - Ground Level 22 sacks Gippsland construction cement. Slurry weight 15 lbs. per gal. poured to hole.

2. DRILLING DATA (Cont'd.)

(m) Fishing Operations :

1. At 4470' to recover 12 x 6½" drill collars, 42 joints and part drill pipe. Pipe failure.

(n) Side-tracked hole : Nil

3. LOGGING AND TESTING

(a) Ditch Cuttings :

Representative samples were collected at 10 ft. intervals throughout the hole and at 5 ft. interval whilst coring. The samples were collected from the shale shaker, washed, dried, described, split into three and distributed to :

(i) Bureau of Mineral Resources, Canberra A.C.T.
(ii) The Victoria Department of Mines, Victoria
(iii) Woodside (Lakes Entrance) Oil Co. N.L.

(b) Coring :

The original coring program called for cores to be cut every three hundred feet as well as in intervals exhibiting porosity, oil or gas. If possible a core was to be cut at the boundary of the Lakes Entrance Formation and the Latrobe Valley Coal Measures.

To a depth of 3000 feet cores were cut at approximately 300 feet intervals. Because of little variation in the section penetrated below this the interval was then extended to 500 feet.

No. of cores cut :	15
Total footage cored	193 ft.
Total footage recovered	125 feet 9 inches
Percentage recovered	65.2%

Core No.	Interval	Cut	Recovery	Recovery%	Type of Core Heads
1	625'- 645'	20'	15'	75	7⅞" Hughes H.F.
* 2	1015'-1035'	20'	0'	0	8¾" " S.F.
3.	1370'-1385'	15'	3'	20	8¾" " S.F.
4.	1666'-1680'	14'	12½'	89	8¾" " H.F.
5.	1965'-1967'	2'	2'	100	8¾" " H.F.
6.	2315'-2322'	7'	5¾'	82	8¾" " H.F.
7.	2620'-2635'	15'	10½'	69	8¾" " H.F.
8.	2946'-2957'	11'	11'	100	8¾" " H.F.
9.	3454'-3465'	11'	9'	82	8¾" " H.F.
10.	3956'-3976'	20'	18½'	93	7⅞" " H.F.
11.	4314'-4325'	11'	10'	91	7⅞" " H.F.
12.	4767'-4780'	13'	1'	8	7⅞" " H.F.
13.	5241'-5252'	11'	6½'	59	7⅞" " H.F.
14.	5795'-5805'	10'	9'	90	7⅞" " H.F.
15.	5988'-6001'	13'	12'	92	7⅞" " H.F.

* As the interval of this core is an unconsolidated sandstone, no further attempt was made to obtain recovery.

(c) Side Wall Sampling :

A total of 45 sidewall samples were taken over the interval 475 feet to 5918 feet. Because of extreme caving over the entire depth of the hole, recoveries were generally small. The depth of the samples are:

RUN NO. 1

475'	1153'	1260'	1510'
950'	1170'	1460'	1520'
1025'	1180'	1470'	1610'
1080'	1200'	1480'	1620'

RUN NO. 2

2100'	3360'	4975'
2220'	3572'	5050'
2440'	3700'	5150'
2740'	3884'	5380'
2750'	4050'	5510'
2760'	4200'	5620'
2820'	4450'	5718'
3040'	4550'	5805*
3160'	4660'	5918'
3285'	4914'	

(d) Electrical and Other Logs :

(i) Electrical Logs
Run 1 319' - 1965'
Run 2 1963' - 6002'

(ii) Microlog - Caliper
Run 1 319' - 1965'
Run 2 1962 - 6002'

(iii) Sonic
Run 1 319' - 1956'
Run 2 1962' - 5992'

(iv) Gamma Ray - Neutron
Run 1 34' - 1965'
Run 2 400' - 6002'

(v) Continuous Dipmeter
Run 1 319' - 1962'
Run 2 1962' - 5999'

(vi) Temperature Log
Run 1 750' - 1895'

(e) Drilling time and Gas Log :

Drilling times were recorded by means of a geolograph located on the rig floor.
A Johnson - Williams gas detector coupled with a Honeywell - Brown continuous recorder was in operation throughout the duration of the well with the exception of the intervals 1590' to 1960' and 3950' to 4120'. Continuous operation was restricted over these intervals because of a malfunctioning battery charger. No gas shows were encountered. Gas background increased slightly on the addition of diesel oil to the drilling mud.

(f) Formation Testing :

Only one formation test was made; this was over the lower part of the Latrobe Valley Coal Measures (See Appendix No. 3)

Drill Stem Test No. 1 (1491' to 1680')

Recovery: 1040 feet total recovery. 300 feet mud and muddy water with slight fluorescence 530 feet water (salinity 900 P.P.M.) 210 feet sand.
The reasons for the test were fluorescence and porosity indications in the Latrobe Valley Coal Measures. The porous interval contains a very small residual oil saturation in the form of a tar, but is dominantly water filled.

Remarks:

The tool plugged almost immediately it opened, then unplugged approximately 15 minutes later. The tail-pipe became partially plugged after a further 15 minutes and did not clear during the remainder of the test.

(g) Deviation Surveys :

Equipment : Double recorded Totco inclinometer:

Results :

110'	$\frac{3}{4}^{o}$	3625'	$2\frac{1}{2}^{o}$
200'	$\frac{3}{4}$	3926'	$2\frac{1}{2}$
300'	$\frac{3}{4}$	4275'	4
600	$\frac{1}{4}$	4535'	5
1000'	$\frac{1}{4}$	4740'	$4\frac{1}{4}$
1650	$\frac{1}{2}$	4900'	$3\frac{3}{4}$
1950	1	5080'	$3\frac{3}{4}$
2300'	$1\frac{1}{4}$	5224'	$4\frac{1}{4}$
2600'	$1\frac{3}{4}$	5358'	3
2900'	2	5475'	4
3425'	3	5560'	4
		5767'	$3\frac{3}{4}$
		5948'	$3\frac{1}{2}$

(h) Temperature Survey :

A temperature log was run by Schlumberger Seaco over the cased interval 750 to 1895 feet. Its purpose was to locate the top of cement bonding. (See Enclosure No. 5)

(i) Other Well Surveys :

A Continuous Dipmeter Survey was run by Schlumberger Seaco from 319' to 5999'. (See appendix No. 4 and enclosure No. 5).

IV GEOLOGY

(1) Summary of Previous Work:

Exploration for oil in the Gippsland Basin commenced in earnest in 1924 after the discovery of oil at Lakes Entrance. Since then, geological knowledge of the basin has increased considerably due to the large number of wells drilled, the surface geological surveys, and the geophysical investigations carried out. These have been financed by private companies, the State Government and the Commonwealth Government.

Although a large number of wells have been drilled in the basin, the data obtained from wells drilled prior to 1961, the year Woodside (Lakes Entrance) Oil Company drilled its first well, is of limited value. More recent wells, both onshore and offshore have greatly increased the knowledge of the individual Tertiary and Mesozoic formations. Knowledge of the Palaeozoic sediments is confined mainly to that obtained from outcrop.

Very few wells have been drilled in the southern region of the Gippsland Basin. The nearest well to Woodside Sunday Island No. 1 to have penetrated the entire Tertiary sequence is Woodside No. 2, approximately 16 miles from the well-site. In this well 3,253 feet of Tertiary sediments, and 2,563 feet of Mesozoic sediments were penetrated.. Traces of oil or gas were present in both Tertiary and Mesozoic sediments. Woodside No. 2 was abandoned in the Mesozoic Strzelecki Group.

Geophysical work is also limited in this part of the Gippsland Basin. Gravitational surveys were carried out as early as 1924. This extended to the larger islands off the coastline including Sunday Island (Alberton Sheet No. 877 and 881A Map No. 739).

An Aeromagnetic survey of the Alberton sheet was flown by the Bureau of Mineral Resources in 1951. The prognosed depth of basement (4750') was determined from this survey. (Quilty 1965).

(2) Summary of Regional Geology :

The Gippsland Basin is a sequence of marine and continental Tertiary sediments overlying Mesozoic sediments in the southern and central part of the

basin and Palaeozoic sediments in the northern section. The onshore region of the basin covers most of the eastern coast of Victoria extending up to fifty miles inland. More than half of the basin, however, lies off-shore.

Basement in the Gippsland area is steeply dipping Ordovician and Silurian sediments and Metamorphics intruded by Granites (Webb 1964). Devonian marine [illegible]ntinental sediments are present with the marine sediments [illegible] faunas in outcrops in both northern and southern parts of the basin. Unconformities mark the top and bottom of the Upper Devonian.

Carboniferous and Permian sedimentation was restricted with Carboniferous sediments penetrated in only S.W. Bairnsdale No. 1 and Permian sediments in Duck Bay No. 1. Both these wells were drilled by Arco - Woodside. Continental conditions prevailed throughout this period and the presence of a suspected glacial tillite in Permian sediments near Carrajung in the central western part of the basin corresponds to periods of glaciation found in other parts of southern Australia. Volcanics mark the end of Permian deposition.

No sediments of Triassic age are known in the Gippsland Basin.

Jurassic and lower Cretaceous sedimentation is represented by the Strzelecki Group, a non marine sequence of arkose and felspathic greywacke. These were deposited in an east-west trending graben with the maximum thickness thought to be as much as 20,000 feet. The only wells to penetrate this formation entirely have been to the north of the basin.

In the central part of the basin, the Strzelecki or Lower Cretaceous passes into the Upper Cretaceous.

The relation between the Upper Cretaceous and the Strzelecki Formation is not known as both have never been penetrated in the one well and the Upper Cretaceous is not seen in outcrop.

The Eocene Latrobe Valley Coal Measures is almost entirely terrestial and is made up of clays, unconsolidated sands and gravels and brown coal. However, in the western part of the basin basalt and basaltic

soils mark the base of the Tertiary. A marine transgression commenced at the end of the Eocene and the resultant marine conditions continued through to the Pliocene. Included in this are the Lakes Entrance Formation, the Gippsland Limestone, and the Tambo River Formation. During the Pliocene, marine and continental conditions alternated and the resultant Bushy Park Beds contain peats and clays as well as fossiliferous sandstones.

A generalised stratigraphic succession of the Tertiary and Mesozoic in the Gippsland Basin may be represented thus :

Age		Formation	Rock Type
Pliocene		Bushy Park Beds	Clays, peats, fossiliferous limestone & sands.
Marine	Upper Miocene	Tambo River Formation	Fossiliferous
	Miocene	Gippsland Limestone	Marls, limestone & shales
	Oligocene	Lakes Entrance Formation	
Continental Eocene		Latrobe Valley Coal Measures	Sands, gravels and coals.
Mesozoic		Undifferentiated Upper Cretaceous	Sandstone & siltstones.
		Strzelecki Lower Cretaceous Formation	Sandstone, siltstone & shales

3. Stratigraphic Table of formations encountered on Sunday Island No 1 Well

Age	Formation	Rock Type	Top	ASL	Thick
TERTIARY					
Pliocene	Bushy Park Beds	Sands, coquina peat & clays	Surf.	+21	939
Eocene & Paleocene	Latrobe Valley Coal Measures	Coal sandstones and clay	939	-918	725
MESOZOIC					
Upper Jurassic Lower Cretaceous	Strzelecki Group	Arkose, greywacke, siltstone & shale	1664 1673	1643	4339+

4. STRATIGRAPHY

(i) TERTIARY

Bushy Park Beds (Surface to 939') 939 Feet.

In Woodside's Sunday Island No. 1 Well this formation can be divided into two units. The upper unit (surface to 639 feet) is mainly unconsolidated sands with interbedded coquina bands while the lower unit (638 to 939 feet) is peat and clay.

This subdivision cannot be compared with that proposed by Hocking (1965). The upper unit corresponds to Hocking's upper unit while the lower unit has become extremely carbonaceous and clayey. This varies considerably from that proposed by Hocking.

Surface to 638 feet - Upper Unit

The dominant lithology of this unit is sand, fine medium coarse grained and granular in part, composed of clear to milky subangular to subrounded quartz grains. The cloudy quartz generally exhibits better rounding and often contains pyrite inclusions. Sorting is generally poor. Present throughout are thin bands of clay, generally grey in colour. Between 110 and 270 feet are numerous Coquina beds interbedded with marl and sand. The coquina contains fragments of Lamellibranchs, Gastropods, Bryzoa, Foraminifera and Echinodermata. The marl beds are often associated with shell fragments and are grey and very calcareous. The lithology, and occurrence of Bryzoa would suggest that the interval 110 to 270 feet is equivalent to the Jemmy's Point Formation, which is thought to be a marine interelation within the Bushy Park Formation.

638 to 939 Lower Unit

This unit is composed of clay and peat possibly with one grading into the other. The peat is very carbonaceous and clayey and contains numerous wood fragments. This interval has been placed in the Bushy Park Beds in preference to the Latrobe Valley Coal Measures for two reasons -

(i) The carbonaceous material is in the form of peat rather than brown coal.

(ii) The inclusion of this interval in the Latrobe Valley Coal Measures would mean there is a thickening of this formation towards Wilson's

Promontory where a thinning is postulated. Although a core and side well cores were cut in this interval, palynology has not provided any additional information.

Latrobe Valley Coal Measures (939 to 1664 feet) 725 ft.

This formation is composed entirely of poorly consolidated sandstone and brown coal with minor bands of clay.

The sandstone is made up of fine to granule sized quartz grains, clear and cloudy, generally subrounded but becoming angular towards the base, and both well and poorly sorted. All sandstones are very porous with very little white kaolinitic matrix and with porosities (calculated from Sonic log) of up to 35%. Unlike most wells in the Gippsland Basin, the Latrobe Valley Coal Measures in this well cannot be sub-divided. It consists of sandstone with interbedded brown coal throughout. The coal is clayey in part and generally poorly consolidated.

Owing to the very low salinities of the formations waters, all sandstones have quite a large positive spontaneous potential

(ii) MESOZOIC

Strzelecki Group (1664 to 6003 feet) 4339 feet.

The basic lithology of this group is sandstone interbedded with siltstone and shale with minor intraformational conglomerates. For convenience the detailed lithology will be described thus.

1664-2820: Sandstone with interbedded siltstone, shale and minor coal.

Sandstone white, light grey to light green, fine to medium grained, tight with up to 15% white kaolinitic, slightly chloritic and calcareous matrix. It contains rare points of ferrunginous staining, carbonaceous in part with thin bands rich in carbonaceous material, variably felspathic, lithic (light green and grey), dominantly quartzose with quartz grains subangular to subrounded and slightly clouded to clear. Sorting is poor to moderate.

Siltstone light green to light grey, grading into the sandstone described on previous page, slightly carbonaceous, micaceous and feldspathic, dominantly lithic and quartzose.

Shale grey, variably carbonaceous argillaceous with plant fragments common as well as bands very rich in carbonaceous material. Some of these bands grade into thin seams of black coal.

2820-4252: Sandstone with intraformational conglomerates interbedded with siltstone and shale.

Sandstone light grey to light green, fine to coarse grained, light with very little matrix (dominantly kaolinitic, partly chloritic and calcareous) slightly carbonaceous and feldspathic, lithic (brown light green and dark grey) mainly quartzose (cloudy). Sorting is moderate to poor with grains subangular to subrounded. Also present are thin banks of sandstone, brown, medium grained, tight with a brown calcareous cement making up approximately 20% of the sediment, feldspathic (blue and white) quartzose, moderately well sorted with all grains subangular to subrounded.

Intraformational Conglomerates:
These are dominantly the light grey sandstone with elongated rounded fragments of siltstone and shale up to 4 inches across. These fragments and interbeds are as described above.

4252-4492: Interbedded siltstone, shale & coal with minor very thin bands of marl.

Siltstone and shale light grey as described above.

Marl brown, partly argillaceous dominantly calcareous with rare fine to medium quartz grains throughout. The marl present in Core No. 11 (4314 to 4325 feet) is disconformable with the overlying shale and grades into the shale below.

4492-6003: Interbedded sandstone, siltstone and shale. Beds of siltstone and shale are thick and abundant towards the top of this interval. The basal 700 feet however, are almost entirely sandstone.

Sandstone light grey to light green & brown as described above.

Siltstone & shale light green as described above.

5. STRUCTURE

Woodside's Sunday Island No. 1 was drilled as a stratigraphic test of the Tertiary and the Mesozoic sediments of the southern part of the Gippsland Basin. It was hoped that it would encounter the pinch-out of the Eocene and the Lower Cretaceous and Jurassic sandstones in on-lap position on the granites of Wilson's Promontory.

The marine Tertiary had pinched out completely at Sunday Island and the continental Latrobe Valley Coal Measures, the main target, had thinned from 1062 feet thick at Woodside South No. 1 to 725 feet in this well. If this rate of thinning continues, a complete pinch-out of Latrobe Valley Coal Measures would not occur at Wilson's Promontory.

Very little dip is present in all Tertiary formations. There is however, quite a large difference in the dip azimuth of the Bushy Park Beds and that of the Latrobe Valley Coal Measures. The Bushy Park Beds dip to the west while the Coal Measures dip to the east or south-east. Both formations have a dip of one to two degrees (See appendix No. 4).

Dips throughout the Strzelecki Group vary considerably in magnitude but little in direction. Dips as low as 1^{o} and as high as 30^{o} are possibly due to current bedding which was present in a number of cores cut in thisformation. The dip azimuth of this formation ranges between west and north west.

6. OCCURRENCE OF HYDROCARBONS

White to light blue fluorescence was present in a number of sands through the Tertiary. The intervals are as follows :

400	to	410 feet
1160	to	1230 feet
1510	to	1550 feet
1610	to	1620 feet

Drill Stem Test No. 1 (1491 to 1680 feet) covered the last two intervals and produced slightly oil cut water and mud. This oil was a brown tarry substance exhibiting a bright blue fluorescence. Sand grains recovered from the testing tool also contained a coating of the same substance. No gas was detected while drilling through these formations, and no gas cutting was present in water recovered from the test.

The presence of tar staining and the lack of any gas would suggest that flushing of all sandstones has occurred.

No gas or oil fluorescence was noted while drilling the Strzelecki Group.

7. POROSITY AND PERMEABILITY :

Both Tertiary formations have a number of unconsolidated porous and permeable sands. Porosity of the Bushy Park Beds is high with a microlog determination of 40%. Porosity determination from the Sonic Log is completely unreliable as dt shale cannot be determined.

More accurate values can be determined in the sandstones of the Latrobe Valley Coal Measures. A porosity range from 35 to 40% can be calculated from the Sonic Log. Permeability is also very good. Drill Stem Test No. 1 (1451 to 1680 feet) produced a large amount of fresh water before sand grains from the formation blocked the testing tool.

Porosities throughout the Strzelecki Group are low and generally less than 15%. Rare sections have porosity up to 17% as determined by the Sonic Log. Because of these low porosities, no drill stem tests were run in this formation.

8. CONTRIBUTIONS TO GEOLOGICAL CONCEPTS:

The Tertiary section penetrated in Sunday Island No. 1 Well was different to that expected and different to that present in all other wells in the Gippsland Basin. Sunday Island No. 1 proved that thinning of Tertiary does occur but is more rapid in the marine Tertiary than in the continental Latrobe Valley Coal Measures. The porous sands of the latter formation are still present though somewhat thinner than usual.

The presence of fluorescence in the Tertiary sands would indicate that migration of oil has occurred. It is unknown, however, whether stratigraphic traps towards Wilson's Promontory, 12 miles away do occur in the Latrobe Valley Coal Measures.

The large thickness of the Strzelecki Group was not anticipated. It was thought that this may pinch out against Wilson's Promontory. It may still do so but this is masked by faulting of both it and the granite as large thickness present would suggest that faulting has occurred along the edge of the basin.

Sunday Island 20/3?

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VII APPENDICES

No. 1 Core Descriptions

No. 2 Descriptions of Side-wall cores.

No. 3 Drill stem test reports

No. 4 Continuous Dip Meter

APPENDIX NO. 1

CORE DESCRIPTIONS

SUNDAY ISLAND NO. 1 WELL

CORE NO. 1 : 625'-645' Recovered 15' (75% recovery)

PEAT, brown tending to a brown carbonaceous earth. Trace of fluorescence throughout.

CORE NO. 2 : 1015'-1035' No recovery.

CORE NO. 3 : 1370'-1385' Recovered 3' (20% recovery)

Top 1' : Coal, dark brown with numerous fracture planes.

Coal-Clay, lighter in colour towards the clay, containing dark brown to carbonaceous fragments.

Bottom 1' Clay, light brown to grey, plastic and containing a number of fragments of carbonaceous material.
A strong smell of H_2S throughout.

No indication of dip or petroleum.

CORE NO. 4 : 1666'-1680' Cut 14' recovered 12'6" (89% recovery)

Sandstone, light green to grey and tight.
70% quartz sandstone, fine to medium grained, light grey to green.
30% weathered felspar forming a kaolinitic matrix. Traces of red-brown mineral present, limonitized pyrite, trace of biotite. A few carbonaceous layers $\frac{1}{8}$" thick (e.g.1675' 10").

Initial dip 10^{o} - 15^{o}.

The amount of kaolinitic matrix varies slightly throughout the core, as does the grain size. The finer grained sections has less matrix.

CORE NO. 5 1965'-1967' : Recovered 2' (100% recovery)

Shale, with minor silty and very fine grained sandstone bands. The shale is dark grey with carbonaceous whisps. One large coal fragment (elongated) is present as well as one well present plant. Graded bedding is present going from shale to sandstone. The siltstone region of the gradation has a variation in the amount of carbonaceous material and here a dip of approximately 10^{o} was determined.

Sandstone, dark grey, fine grained, tight with an argillaceous and clay matrix, variably carbonaceous, lithic, and quartzose.

Slickensliding is present.

No hydrocarbon indication.

CORE NO. 6 2315'-2322' Cut 7' recovered 5'9" (82% recovery)

Shale, grey variably carbonaceous with numerous plant fragments. Most fragments are elongated and extend across the entire width of the core. At 2216' there is a 2" band very rich in leaf fragments. Here the core is dark grey to black in colour and the carbonaceous content

much higher. A number of thin coal bands (vitrain) are present throughout.

No definite structure, being approximately horizontal.

No petroleum indications.

CORE NO. 7 2620'-2635' Cut 15' recovered 10'5" (69% recovery)

Top 2'4" : Siltstone, grey, compact, conchoidal fracture, micaceous, quartzose with fractures filled with calcite. Rare zone of flakes of carbonaceous material. Few thin bands of pyrite. Very slight increase in grain-size. At 2622'4" abrupt change to sandstone (unconformable).

8'1" : Sandstone, grading from silt to very fine grained into fine to medium grained, quartzose with slightly calcareous matrix. Quartz grains clear, cloudy, greyish green, subangular, well sorted. Bands of carbonaceous material few, but throughout denote dip of up to 30° and current bedded. Minor parts and bands of dark grey siltstone-shale. Slight variation in grain-size throughout, mainly fine-grained, tight.

CORE NO. 8 2946'-2957' Cut 11' recovered 11'(100% recovery)

Sandstone, fine, medium and coarse-grained, green to grey, tight with a white kaolinitic matrix (less than 15%). It is slightly limonitic (orange), feldspathic in part, variably lithic and carbonaceous with bands rich in both, mainly quartzose.

The interval 2946'-2952'6" is mainly fine to medium grained with a thin coarse grained interval.

Included in this at approximately 2948' is a band containing a large amount of carbonaceous fragments. Most of it is coal. Between 2951'-2952'6" coarse subangular to subrounded felspar and quartz fragments are common.

The interval 2951'6"-2957' is dominantly coarse to very coarse-grained. Thin layers rich in carbonaceous material are present. The boundary between the fine sandstone and the coarser sandstone is very sharp with no gradation apparent. This basal section contains a large number of pebble sized grey, well rounded shale fragments. In between these fragments is the normal coarse-grained sandstone with a kaolinitic matrix. The shale fragments are generally elongated, giving a good indication of dip. The boundary between the two sandstone layers in most cases also gives an indication of dip (approximately 30°).

CORE NO. 9 3454'-3465' Cut 11' recovered 9' (82% recovery)

Sandstone, light grey, light green, fine to medium grained tight with very little matrix. The matrix is dominantly kaolinitic, but partly

calcareous. The constituents are felspar (white to pink), lithic, (Brown and dark grey), quartzose (cloudy, light grey and light green). In places the felspar appears to have "flowed" under compaction so that the felspar, almost wholly altered to kaolinite, is in thin whisps between quartz or lithic grains. Sorting is moderate with grains subangular to subrounded. Towards the base are areas rich in carbonaceous material. These are elongated along the bedding plane.

The carbonaceous strata indicate a dip of approximately 30°.

No petroleum indications.

CORE NO.10 3956'-3976' Cut 20' recovered 18½' (93% recovery)

Sandstone, fine to medium grained, tight, light grey, quartzose, feldspathic, lithic, white kaolinitic matrix, traces of mica (biotite) glauconite and carbonaceous material. A few very thin scaly carbonaceous streaks and parts with shale fragments. Also small and large coal fragments.

3956'-3974'4": Randomly dispersed rounded fragments and streaks of grey/brown shale and light grey, fine-grained sandstone.

3957'-3962': Light grey sandstone with a few very thin carbonaceous streaks. Sandstone slightly coarser in first 2'.

3962'-3965': Grey sandstone from fine to medium grained.

3964'8": Large coal fragments.

3965'-3968': Medium grained with very finely disseminated streaky flaky bands of carbonaceous material with a few scattered larger fragments and some small light grey brown shale fragments.

3968'-3970': Fine to medium grained, light grey sandstone.

3970'-3973': Scattered carbonaceous streaks and a few light grey brown shale fragments. Dip about 5° - 15°.

3973'10": 4" band of well rounded elongated tight grey and brown, small and large shale fragments, with one fragment (approximately 4" diameter) spattered with carbonaceous material. Intraformational conglomerate with grading. The sandstone is coarser in between the shale fragments than in the part beneath the conglomerate. Tendency to imbricate structure. The fractures have split the fragments (slip about ⅛") They are filled with calcite in which blobs of pyrite appear.

CORE NO. 11 4314' - 4325' Cut 11' recovered 10' (91% recovery)

Interbedded grey Siltstone and Shale with minor amounts very fine grained Sandstone towards the base. The shale is varyingly calcareous and very carbonaceous in places, with plant and wood fragments present. The siltstone is dark grey, slightly lithic and carbonaceous, variably calcareous (very calcareous in places), feldspathic, quartzose. An argillaceous matrix is possibly also present. The sandstone is very fine grained and of the same composition as the siltstone. Dip is approximately 5°. Slickensliding is present towards the base with the resultant fractures calcite-filled. These make an angle of approximately 35° with the vertical axis of the core.

Top 1'8": Shale, grey very calcareous towards the base.

4" : Marl (? Limestone) brown, extremely calcareous with some rare quartz grains present. The boundary with the overlying grey shale or marl is extremely abrupt and resembles and ever stylolytic surface - i.e. the curves are smooth. At the boundary is concentrated black carbonaceous material. The base of the brown marl shows a gradual mixing with the grey shale.

1' Siltstone calcareous in part. At 4317' there is another band of brown marl. However, the boundary both above and below is gradual with the centre somewhat darker brown.

1' Siltstone,

4' Shale

Bottom 2' : Siltstone and Shale interbedded with minor very fine-grained sandstone. Slight current bedding is present in this interval.

? top Neoz

No petroleum indications.

CORE NO. 12 4767'-4780: Cut 13' recovered 1'(8% Recovery)

Sandstone; greenish grey, tight, fine to medium grained. Very little matrix, kaolinitic, quartzose, feldspathic, lithic, glauconitic and slightly calcareous. A few very thin discontinuous bands are carbonaceous indicating a dip of 5° - 10°. One band of elongated, rounded shale fragment(s). (brown grey). Subarkosic.

CORE NO. 13 5241'-5252': Cut 11' recovered 6½' (59% recovery)

Top 6": Shale blue-black, discontinuous streaks and flakes of carbonaceous material. Fossil twigs..

2'6": Shale and Siltstone blue-black shale and light grey siltstone sequence. Many sedimentary structures e.g. current bedding, grading, slumping, convolute bedding. Very few thin carbonaceous streaks. Dip (possibly initial) 10°.

6" : Shale as above.

1'3" : Shale and Siltstone; grading into Sandstone. Light grey, very tight, very fine grained with current bedding. 5245'-5245'4" some carbonaceous flakes. The sandstone has a few dark streaks. Dip approximately 10°.

1'7": Sandstone as above

Bottom 2" : Shale as above.

CORE NO. 14 5795'-5805 Cut 10' recovered 9' (90% recovery)

Sandstone, light green to light grey, generally medium grained, moderately sorted, completely tight with very little kaolinic matrix, slightly feldspathic, variably carbonaceous and lithic with the main sandstone dominantly quartzose.

Lithics are brown, black and grey. Lithic and carbonaceous material are somewhat elongated while quartz is subangular to subrounded. Quartz generally slightly clouded. Throughout the sandstone are discontinuous laminations of black coal or carbonaceous material. Some of the bands are concentrated in one area with the greatest thickness of one lamination being about 1/16". The coal is generally marked by a large number of horizontal fractures which are filled with calcite. These lineages indicate a dip of between 15°-20°.

From 5795'-5799' the sandstone is very poorly sorted and containing a large number of elongated lithic and carbonaceous fragments. Coal fragments are much bigger and larger in this area. Coarse quartz grains are also present in places and are generally made up of clear quartz. The grey lithic gragments are dominantly siltstone, slightly carbonaceous and mainly quartzose. The size of the lithic fragments vary, though generally they are approximately $\frac{1}{4}$ - $\frac{1}{2}$" in length and approximately $\frac{1}{8}$" across. An extremely large dark grey shale fragment is present at 5799' and take up most of the core.

Dip approximately 15°.

No petroleum indications.

CORE NO. 15 5988'-6001': Cut 13' recovered 12'

Sandstone, light grey to green, tight with little matrix, mainly kaolinitic, well sorted, sub-angular to subrounded. At 5989' numerous thin discontinuous carbonaceous streaks. At 5992' sandstone as above, quartzose, feldspathic, lithic, and some carbonaceous streaks with a dip approximately 10°. From 5993'-5944' grading into siltstone. Foresets and minor carbonaceous streaks. 5994'-5995' sandstone with some carbonaceous streaks, crossbedded. Dip about 10°. At 5996' sudden influx of coarser sandstone with shale pebbles, elongated up to 1", slight imbrication. Also coarser coal fragments in streaks. Wash-in. From 5996'-5999' is sandstone with very minor carbonaceous streaks.
At 5999' a sharp change to shale, cross-bedded. Last 4" is sandstone.

DESCRIPTIONS
of
SIDE WALL CORES

475'	Sandstone	grey, medium grained with some peat
950'	Peat	dark brown, compact
1025'	Muddy Sand	
1080'	Sandstone	mainly medium grained with few granules poorly sorted, carbonaceous intrusions, quartzose.
1153'	Sandstone	fine to medium grained, porous, quartzose well sorted.
1170'	Sandstone	medium to coarse grained, carbonaceous, quartzose, moderately sorted.
1180'	Sandstone	fine grained, porous, carbonaceous micaceous, quartzose, well sorted.
1200'	Sandstone	medium grained, quartzose, well sorted.
1260'	Sandstone	very coarse grained quartzose.
1460'	Lignite	
1470'	Lignite	
1480'	Lignite	
1510	Clay with numerous fine quartz grains.	
1520'	Lignite	
1610'	Sandstone	very fine to fine grained, light brown with clay pieces and mica flakes, quartzose.
1620'	Sandstone	coarse grained, mainly quartzose
2100'	Sandstone	light grey, fine to medium grained, tight, lithic, feldspathic, quartzose with moderate sorting.
2220'	Sandstone	as for 2100 with more dark lithic fragments.
2440'	Sandstone	as for 2100 with less matrix, and a small percentage of limonitic material.
2740'	Sandstone	light grey, medium-grained with more felspar than sample from 2440.
2750'	Sandstone	light grey, fine to medium grained also with a large amount of felspar.
2760'	Sandstone	light grey
2820	Sandstone	light grey
3040	Sandstone	light grey with large percentage of argillaceous material.
3160'	Sandstone	light grey, fine to medium grained with large amount of matrix.

3285'	Shale	grey.
3360'	Shale	grey.
3572'	Sandstone	light grey, fine to medium grained.
3700'	Sandstone	light grey with large amount of matrix.
3884'	Sandstone	with dark lithic and carbonaceous fragments set in a white quartzose matrix.
4050	Sandstone	light grey.
4200'	Sandstone	grey fine to medium grained, tight with fairly large percentage of matrix, lithic, mainly quartzose.
4450'	Shale	light grey with a calcite vein cutting it vertically.
4550'	Sandstone	grey with large amount of matrix.
4660'	Siltstone	grey, grading into a very fine grained sandstone with a small percentage of matrix.
4914	Shale	grey, similar to previous shale samples.
4975'	Sandstone	grey, medium grained, tight with very little matrix, carbonaceous, lithic feldspathic, quartzose.
5050'	Sandstone	grey, medium grained, tight with large amount of argillaceous matrix, quartzose, carbonaceous, lithic.
5150	Shale	grey as for 4914
5380'	Sandstone	light grey, fine to medium grained with kaolinitic matrix, slightly carbonaceous, lithic, quartzose.
5510	Shale	grey
5620	Shale	grey
5718	Sandstone	light grey with medium grained fragments tight with large amounts of argillaceous matrix, quartzose, carbonaceous, lithic.
5805'	Sandstone	light grey as from previous sample.
5918'	Siltstone	grey, slightly lithic, carbonaceous, quartzose with micaceous and carbonaceous fragments throughout.

CONTINUOUS DIPMETER SURVEY

430' - 480' This interval makes up the sandy upper section of the Bushy Park Beds. Dips rarely exceed two degrees while the dip azimuth is between 270 and 249 degrees. Lithology, angle of dip and dip azimuth vary very little across this section.

480' - 948' Dips over this interval rarely exceed one degree. However, lithology and dip azimuth vary considerably. The dip azimuth starts at 270 degrees and gradually moves in a southerly direction to 183 degrees at 948'. Although there is an abrupt change in all log characteristics and lithology at 638', no change is seen by the dipmeter.

948' - 1689' This interval covers the sands, coals and clays of the Latrobe Valley Coal Measures and generally does not show great variations. The average dip is less than 4 degrees with dips exceeding ten degrees rare. The normal dip azimuth is between 153 and 173 degrees. Any azimuth outside this range is probably a result of sedimentary processes. Although the boundary between Latrobe Valley Coal Measures and the Strzelecki Group is placed at 1666' using electrical and radioactivity logs, the change in dip azimuth does not occur till 1689'.

1689' - 6002' The entire Strzelecki Group is covered by this interval. Lithology and dip azimuth do not vary greatly throughout, with the lithology dominantly arkose or greywacke and the range of azimuth between 320 and 360 degrees. Dips however, reflect the current bedding seen in cores cut in this formation and reach a maximum of 35°. The average dip however, is between 5 and 10 degrees.

An Interpretation of the Stratigraphy of ~~pre~~ post-Strzelecki Group Sediments encountered in Woodside Sunday Island Well No.1

3 Copy 1/2

Woodside (Lakes Entrance) Oil Co. N.L. drilled their Sunday Island No.1 well at the eastern end of Sunday Island from November 1965 to January 1966. A study of the ~~pre~~ post-Strzelecki group sedimentation was made in order to establish the stratigraphic sequence encountered.

For this study the following information was used:

(a) The core and cuttings description given by Woodside's well-site geologists.

(b) The Electrical log, Micro log, Sonic log and Gamma Ray-Neutron log obtained by Schlumberger for Woodside.

(c) Palynological study by Dr. I.C. Cookson.

(a) Summarizing the lithologies given by well-site geologists we have:-

0'	-	110'	Sandstone with clay beds
110'	-	180'	Sandstone with clay beds
180'	-	270'	As for 110'-180' but with numerous marl bands.
270'	-	410'	Sandstone
410'	-	625'	Sandstone with peat and brown coal beds
625'	-	1665'	Sandstone and coal
1665'	-	T.D.	Strzelecki Group sediments.

(b) From a study of the Electrical log there can be seen the following divisions.

These divisions follow the sequence of sedimentation with the older formations considered first.

From total depth to 1665' the log shows typical Strzelecki Group characteristics.

From 1665' to 965' Typical characteristics of Latrobe Valley Coal Measures.

From 640' - 965' the logs are overall very uniform and show comparatively little character. The SP Value and Resistivity Values are identical to those of clay beds within the unit 1665'-965' and as such it is considered that this unit is part of the Latrobe Valley Coal Measures. Further support for this is seen in the Gamma Ray-Newton Log and the Sonic Log.

From 580' to 640' The electrical characters are tending towards coal but they are not developed to the same extent as seen deeper in the well. The Caliper log shows that the hole had caved badly above 635 feet and it is considered that this could influence the logs and that coal is predominant in this section.

From 580' - 480' The electrical log shows a break at 480' but it is seen from the califer log that the hole is badly caved above 480' and as this change cannot be matched on the other logs it is considered that the break is due to caving of the hole.

From 480' - 320' The electrical log indicates uniform sedimentation

From 480' - 100' The Gamma-Newton Log also indicates comparatively uniform sedimentation.

(c) Only three cores were taken in ~~pre~~ post-Strzelecki Group sediments and from these in only two was any recovery obtained.

The palynological examination of these cores was undertaken by Dr. I.C. Cookson who was able to advise that Core 3 (1370-1385) appeared to be somewhere between pre-Pliocene and post-Eocene. It is thus considered that this core came from the Latrobe Valley Coal Measures.

Thus from the data given above the following is considered the stratigraphic sequence:-

0' - 110'		Quaternary Bushy Park Beds
110' - 180'		Marine interrelation within Bushy Park Beds
180' - 410'	or 625	Bushy Park Beds
410' or 625' - 1665		Latrobe Valley Coal Measures
1665 - T.D.		Strzelecki Group.

P. W. BOLLEN. 1/2/66

OIL and GAS DIVISION

TERTIARY PALYNOLOGY OF WELLS AND BORES IN CORNER INLET SECTOR, ONSHORE GIPPSLAND BASIN.

by

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Palaeontology Report: 1978/8

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INTRODUCTION:

Twenty-one samples were examined from five coal bores and two petroleum wells in the south-west corner of the onshore Gippsland Basin. The results from the analysis of the samples is presented on the Summary Table, while the spore-pollen species identified in the samples are plotted on the two accompanying Distribution Charts. Discussion of geologically significant conclusions that can be drawn from this data is presented below:

GEOLOGICAL COMMENTS:

1. The coals referred to the Triporopollenites bellus Zone of Stover and Partridge (1973) and sampled in the bores Alberton East-1 at 308 feet, Alberton West-167 at 421 feet, Gippsland-2 at 600-610 feet, and Sunday Island-1 at 625 to 645 feet correlate with the Yallourn Seam in the Latrobe Valley.

2. The Upper subdivision of the Triporopollenites bellus Zone overlying these coals is distinguished by the presence of Haloragacidites amolosus, Stephanocolpites oblatus Martin, common occurrence of Monosulcites waitakiensis and conspicuous occurrence of Cyperaceae and grass pollen. This unit correlates with the Lower Boisdale Beds in Wurruk Wurruk-1 (see Partridge 1971) and probably with the post-Yallourn Seam Clays. It is stressed that this unit is older than the Jemmy's Point Formation. None of the samples examined can be correlated with the Jemmy's Point Formation. They are all older. It is pointed out that referring the unit above the youngest coals to the Boisdale Beds and saying it is older than the Jemmy's Point Formation reverses the stratigraphic order given by Jenkin (1968).

3. The coals referred to the Lower T.bellus Zone all have rather low diversity assemblages. However, the species composition and species abundances are all very similar. This is the reason they can be confidently assigned to the same zone.

4. The coal at the top of core-3 (1370-85 feet) in Sunday Island-1 contained a T. bellus Zone assemblage and is virtually indistinguishable from the sample from core-1. Since core-3 had very low recovery (20%) and the coal at the top of the core is described as having numerous fracture planes, it is suggested that this coal has caved from higher in the hole. The sample from the bottom of core-3 gave a Middle N. asperus Zone age which is more consistent with the known geology.

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3/4

5. The SWC-14 at 1025 feet in Sunday Island-1 was potentially contaminated with drilling mud which could not be cleaned from the sample. A Middle N. asperus Zone age is given to the sample based on presence of Triorites magnificus, Santalumidites cainozoicus, Proteacidites adenanthoides, Tricolpites phillipsii and Agloreidia qualumis. If these species are discounted as contamination, which seems unlikely, the next most likely age assignment is to the Upper N. asperus Zone based on frequent occurrence of Proteacidites stipplatus. If the sample is contaminated it is difficult to explain absence of key indicator species form the T. bellus Zone which occurs higher in the hole.

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SUMMARY TABLE

WELL OR BORE	SAMPLE	DEPTH (in feet)	LITHOLOGY	ZONE	CONFIDENCE RATING	AGE	COMMENTS
ALBERTON EAST-1	CORE	211	CARB. SILTST.	UPPER *T. BELLUS*	1	MIDDLE-LATE MIOCENE	-
	CORE	240	SHALE	UPPER *T. BELLUS*	0	MIDDLE-LATE MIOCENE	RARE DINOFLAGELLATES PRESENT
	CORE	308	COAL	LOWER *T. BELLUS*	2	MIDDLE-MIOCENE	-
	CORE	534	CLAYSTONE	*P. TUBERCULATUS*	1	OLIGOCENE-EARLY MIOCENE	-
ALBERTON EAST-2	CORE	330-85	SILTSTONE	UPPER *T. BELLUS*	0	MIDDLE-LATE MIOCENE	RARE DINOFLAGELLATES PRESENT
	CORE	440-45	SILTSTONE	*T. BELLUS*	1	MIDDLE-LATE MIOCENE	RARE DINOFLAGELLATES PRESENT
ALBERTON WEST-142	CORE	58	SILTSTONE	*T. BELLUS*	1	MIDDLE-LATE MIOCENE	RARE DINOFLAGELLATES PRESENT
ALBERTON WEST-167	CORE-1	381	CARB. SILTST.	UPPER *T. BELLUS*	0	MIDDLE-LATE MIOCENE	
	CORE-2	421	COAL	LOWER *T. BELLUS*	2	MIDDLE MIOCENE	
	CORE-3	703	CARB. SILTST.	*P. TUBERCULATUS*	2	OLIGOCENE-EARLY MIOCENE	
ALBERTON WEST-168	CORE-1	133	COAL	*P. TUBERCULATUS*	2	OLIGOCENE-EARLY MIOCENE	
	CORE-7	442	COAL	UPPER *N.ASPERUS*	0	EARLY OLIGOCENE	COMMON *PROTEACIDITES STIPPLATUS*
	CORE-8	508	COAL	MIDDLE *N.ASPERUS*	0	LATE EOCENE	COMMON *TRICRITES MAGNIFICUS*
FROME LAKES							
GIPPSLAND-2	CUTTINGS	500-10	COAL	INDETERMINANT			VIRTUALLY BARREN
	CUTTINGS	600-10	COAL	LOWER *T. BELLUS*	1	MIDDLE MIOCENE	-
SUNDAY ISLAND-1	CORE-1	625-45	COAL	LOWER *T. BELLUS*	1	MIDDLE MIOCENE	-
	SWC-14	1025	-	MIDDLE *N. ASPERUS*	2	LATE EOCENE	POSSIBLY CONTAMINATED
	CORE-3	1370-85(TOP)	COAL	LOWER *T. BELLUS*	1	MIDDLE MIOCENE	CAVED FROM ABOVE
	CORE-3	1370-85(BOTTOM)	-	MIDDLE *N. ASPERUS*	2	LATE EOCENE	-
	SWC-7	1460	COAL	MIDDLE *N. ASPERUS*	0	LATE EOCENE	COMMON *T. MAGNIFICUS*
	SWC-2	1610	WHITE CLAY	MIDDLE *N. ASPERUS*	2	LATE EOCENE	

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Well Name _____ Basin ONSHORE GIPPSLAND Sheet No. 1 of 2

SAMPLE TYPE * / DEPTHS / PALYNOMORPHS	C	C	C	C		C	C		C		C	C	C		C	C	C		T	T		C	S	C	C	C	S	S
	Alb. East 1	Alb. East 1	Alb. East 1	Alb. East 1		Alb. East 2	Alb. East 2		Alb. NW. 1		Alb. NW. 1	Alb. NW. 1	Alb. NW. 1		Alb. NW. 1	Alb. NW. 1	Alb. NW. 1		Gippsland 3	Gippsland 3		Sunfish 1	Sunfish 1	Sunfish 1	Sunfish 1	Sunfish 1	Sunfish 1	Sunfish 1
	230	250	308	335		330 - 333	440 - 443		58		331	425	707		135	442	503		520 - 535	800 - 810		625 - 645	1225	1335 - 1338	1370 - 1371	1400	1610	
A. myriosporites																												
A. qualumis																												
A. sectus																												
A. australis																												
A. genialis																												
B. discontormis																												
B. arcuatus																												
B. elongatus																												
B. minimus																												
B. elegansiformis																												
B. trigonalis																												
B. verrucosus																												
B. emarciatus																												
C. beskermensis																												
C. chenopodiaceoides																												
C. orthoteichus																												
C. palaespora																												
C. porospora																												
C. annulata																												
C. splendens																												
C. subtilis																												
Cyperaceae sp.																												
D. australiensis																												
D. simplex																												
D. granulatus																												
D. tuberculatus																												
D. barrellus																												
D. tholus																												
E. notensis																												
E. cranslexinus																												
E. scabratus																												
F. baiteus																												
F. crater																												
F. lucunosus																												
F. palaequetrus																												
G. calathus																												
G. major									cf.																			
G. bassensis																												
G. nebulosus																												
Guettarditites sp.																												
H. amplosus																												
H. haloragoides																												
H. harrisii																												
H. elliottii																												
I. anguloclavatus																												
I. irregularis																												
K. waterbolkii																												
L. crassus																												
L. florinii																												
M. grandis																												
M. subtilis																												
M. robustus																												
M. spinysporis																												
M. antarticus																												
M. homcopunctatus																												
M. hypolacnoides																												
Monoporites sp.																												
M. uvatus																												
M. waitakiensis																												
M. eucalyptoides convexus																												
M. eucalyptoides orthus																												
M. parvus/mesonesus																												
M. verrucosus																												
N. asperus																												
N. brachyspinulosus																												
N. deminutus																												
N. emaciidus/heterus																												
N. falcatus																												

7/7

Well Name _____ Basin ONSHORE GIPPSLAND Sheet No. 2 of 2

SAMPLE TYPE * / DEPTHS / PALYNOMORPHS	Alb. East 1 211 C	Alb. East 1 240 C	Alb. East 1 305 C	Alb. East 1 334 C	Alb. East 2 330 - 332 C	Alb. East 2 440 - 443 C	Alb. W. 142 58 C	Alb. W. 142 331 C	Alb. W. 103 421 C	Alb. W. 167 703 C	Alb. W. 103 435 C	Alb. W. 103 442 C	Alb. W. 103 508 C	Gippsland 305 - 310 T	Gippsland 600 - 610 T	Sunday Is. 1 925 - 935 C	Sunday Is. 1 1025 S	Sunday Is. 1 1350 C	Sunday Is. 1 1440 S	Sunday Is. 1 1010 S
N. vansteenisii																				
P. ochesis																				
P. catastus																				
P. polyoratus																				
P. vesicus																				
P. densus																				
P. velosus																				
P. mawsonii																				
P. palaeogenicus																				
P. nanus																				
P. ostentatus																				
P. microsaccatus																				
P. esobalteus																				
P. simplex																				
P. lyculatus																				
P. adenanthoides (Prot.)																				
P. annularis																				
P. crassus																				
P. obscurus																				
P. plicatus																				
P. pseudomoides																				
P. recavus																				
P. rectomarginis																				
P. reflexus																				
P. stipplatus																				
P. tenuiexinus																				
P. truncatus																				
P. tuberculatus																				
P. micus																				
R. escharus																				
R. miniscoros																				
R. mallatus																				
R. micraulaxus																				
S. clinozoicus																				
S. rotundus																				
S. oblatus																				
S. (Trip.) punctatus																				
S. anstellus																				
T. palynus																				
T. phillipsii (C)																				
T. simatus																				
T. thomasii																				
T. adelaidensis																				
T. geraniodes																				
T. leuros																				
T. paenestriatus																				
T. retequetrus																				
T. scabratus																				
T. sphaerica																				
T. magnificus (P3)																				
T. canaemuricoides																				
T. ambiguus																				
T. bellus																				
T. chnosus																				
T. scabratus																				
T. antipodica																				
V. alienus																				
V. attinatus																				
V. cristatus																				
V. kopukuensis																				
M. communalis																				
P. dampieri																				

*C=core; S=sidewall core; T=cuttings

PALYNOLOGICAL EXAMINATION OF SUBSURFACE SAMPLES FROM ONSHORE GIPPSLAND BASIN BY A. D. PARTRIDGE (ESSO AUSTRALIA LTD). ,1978

Alberton East-1: Core at 801 feet
Lithology: Micaceous, clay choked sandstone.
Age: Proteacidites tuberculatus Zone (Oligocene to Early Miocene).
Remarks: This sample only gave a low yield of fossils. It is considered marine as it is dominated by dinoflagellates. Although the dinoflagellates are all long ranging the assemblage overall favours a Miocene age.

Alberton West-168: Core-5 at 324 feet.
Lithology: Very carbonaceous clay or coal.
Age: Upper N. asperus Zone to Lower P. tuberculatus Zone.

Alberton West-168: Core-6 at 383 feet.
Lithology: Coal
Age: As for Core-5.

Woodside South-1: Core-8 at 1952 feet.
Lithology: Coal.
Age: Upper N. asperus Zone to Lower P. tuberculatus Zone, but more likely the former because the sample is overlayen by Lakes Entrance Formation.

Remarks: Because the above three samples are coals it is impossible to say whether they belong to the Upper N. asperus Zone or to the Lower P. tuberculatus Zone. The problem is that the key species for identifying the base of the P. tuberculatus Zone (especially Cyatheacidites annulatus) have NEVER been found in coals. It can be said with some confidence, however, that the samples are all younger than the Middle N. asperus Zone.

Sunday Island-1: SWC 1/9 at 1200 feet.
Lithology: Carbonaceous sandstone.
Age: Middle N. asperus Zone.

Remarks: This sample only gave a very low yield so my evidence for a Middle N. asperus Zone age is very weak. It is based on a single specimen of Deflandrea extensa and a specimen of Spinidinium sp., neither of which have been recorded above this zone.

ξ

TELEPHONE
34 0484

TELEGRAMS
UNI MELB PARKVILLE

University of Melbourne

SCHOOL OF BOTANY

Parkville N.2, Victoria

WOODSIDE (LAKE E) OIL COMPANY

SUNDAY ISLAND NO.1 BORE

Core 1 (625-645 ft.) - The residue from this sample consists almost entirely of cuticular and woody fragments. Age ?

Core 3 (1370-1385 ft.) - Two samples examined (a) powdery, black and peat-like, (b) a brownish solid core. The spore and pollen content of these two samples is roughly similar, both agreeing in the rich occurrence of pollen of Nothofagus (Southern Beech). Judging by the absence of certain well-characterized Paleocene and Eocene types and the high percentage of pollen similar to that of the species of Nothofagus now restricted to New Guinea and New Caledonia, the age of both samples appears to be somewhere between pre-Pliocene and post-Eocene. Unfortunately, the upper limit of this "Brassi" type of Nothofagus in Australia has not yet been determined.

Core 5 (1965-1967 ft.) - Sample taken at 1965 ft. The pollen and spore content is low and the individual specimens present poorly preserved. Woody and cuticular fragments are abundant. The following spore types have been observed :

Cicatricosisporites australiensis, C. cf. ludbrooki
Stereisporites cf. antiqua^sporites
Osmundacidites wellmanni
Lycopodium austroclavatidites
Pilosisporites notensis (one example only)
Cyatheidites australis
Neoraistrichia truncatus; cf. Cyclosporites hughesi; cf. Velosporites triquetrus.

Unfortunately all these types have a fairly wide vertical distribution in the Upper Mesozoic of S.E. Australia. This preliminary study suggests that the age of the deposit approaches Aptian-Albian.

Isabel C. Cookson, D.Sc.

9th December, 1965

PALYNOLOGICAL EXAMINATION OF CORES & SIDEWALL CORES FROM THE GOLDEN BEACH WEST NO.1, ST. MARGARETS ISLAND NO.1, SUNDAY ISLAND NO.1 AND HUTSON DOWNS NO.1 WELLS.

by J. G. Douglas, M.Sc.

Cores and sidewall cores examined from Golden Beach West No.1 to 5022 feet (Sidewall Core 8), I regard as Lower Miocene - Eocene in age. Core 7 (6840-6860 feet) is probably from beds of Palaeocene - U. Cretaceous age.

Cores from 7320 and 7500 feet contained undiagnostic articular fragments with no indication of Lower Cretaceous (Strzelecki Group Age).

St. Margarets Island No.1, cores from the deepest beds sampled (3795 and 4408 feet) were barren.

✓ Sunday Island No.1, cores from 4450 feet and 5795-5805 feet were also barren.

Hutson Downs No.1, core to 4800 feet was barren. Core from 5120-5130 feet was from beds of probable Palaeocene age. Core from 5673 feet was barren. Core at 6090 feet (deepest received), contained leaf cuticles, and some undiagnostic fern microspores. Again no characteristic L.Cretaceous taxa were present.

That is, no undoubtedly L.Cretaceous microfossils were isolated by me from any of these wells.

J. G. Douglas,
Geologist. 4/5/66.

SERVICE (AUSTRALIA) PTY. LTD.

RECEIVED
14 DEC 1965
ATHEN

1/2

TESTING REPORT

DRILL-STEM TEST DATA

Well Name SUNDAY ISLAND.	Test No. 1
Well Number 1	Zone Tested L.V.C.M.
Company WOODSIDE (L.E.) OIL CO. N.L.	Date November 27, 1965
Comp. Rep. D. Langton	Tester R.W. Stephens

Recorder No.	2237	Recorder No.	2238
Clock Range	12 hr.	Clock Range	24 hr.
Depth	1518'	Depth	1474'
Initial Hydro Mud Press.	767	Initial Hydro Mud Press.	723
Initial Shut-in Press.	707	Initial Shut-in Press.	672
Initial Flow Press.		Initial Flow Press.	
Final Flow Press.		Final Flow Press.	
Final Shut-in Press.		Final Shut-in Press.	
Final Hydro Mud Press.	763	Final Hydro Mud Press.	715
Temperature	107°	Tool Open Before I.S.I.	Mins.
Mud Drop	10'	Initial Shut-in	Mins.
Mud Weight	9.4	Viscosity 74	Flow Period Mins.
Fluid Loss	7.4	Final Shut-in	Mins.
Interval Tested	1491 - 1680	Surface Choke Size	-
Net Pay Tested	100	Bottom Choke Size	1/2"
Top Packer Depth	1485	Main Hole Size	8 3/4"
Bottom Packer Depth	1491	Rat Hole Size	7 7/8"
Total Depth	1680'	Feet of Rat Hole	15
Drill Pipe Size	4 1/2" F.H.	Wt. 16.6	Type of Test Dual Conventional
Drill Collar I.D.	2 1/4"	Ft. Run 179	Cushion Amount—Type
Anchor Size	6 1/2" & 4 3/4"	Rubber size	7 3/4"

Recovery—Total Feet 1040

Recovered 300 Feet Of Mud & Muddy water

Recovered 530 Feet Of Fairly clean water

Recovered 210 Feet Of Sand

Recovered Feet Of

Remarks

The tool plugged almost immediately it opened, then unplugged about 5 minutes later - The tailpipe became partially plugged after a further 15 minutes (approx.) and did not clear during the remainder of the test.

DRILL STEM TEST REPORT

2/2

Company: WOODSIDE (LAKES ENTRANCE) OIL CO.N.L Date: 27th November, 1965.

Area: SUNDAY ISLAND Well: No.1. R.T. Elevation:

Test No.: 1. Interval: 1491 - 1680 Formation: Latrobe Valley Coal Measures.

Tester, Size and Type: $4\frac{3}{4}$" B-J Packer, Size and Type: $4\frac{3}{4}$" B.T.

Rubber, O.D.: $7\frac{3}{4}$" B.H. Choke Size: $\frac{1}{2}$" Drill Pipe, Size: $4\frac{1}{2}$" F.H.

Full Hole, I.D.: $8\frac{3}{4}$" Rat Hole, I.D.: $7\frac{7}{8}$" Casing, I.D.: 8.921

Anchor, O.D. and I.D.: $6\frac{1}{2}$"x$2\frac{1}{4}$" and $4\frac{3}{4}$" x $2\frac{1}{2}$" Sump Volume: 20 cub. ft. Water Cushion: None.

S/I Disk Valve, Depth: 1466 Tester Valve, Depth: 1473 Air Chamber Volume: -

Pressure Gauges:) Kuster AK-1 Range: 830 P.S.I. No.: 2.

(Anchor (Perforations: 25'

Mud Weight: 9.4 Filtrate Salinity: 1100 Annulus Drop: 10'

DIARY OF TEST — Started In: 6.35 pm On Bottom: 8.30 pm.

Valve Opened: 8.33 pm. Valve Closed: 9.13 pm Disk Broken: -

Valve Opened: 9.58 pm. Gas to Surface: - Oil to Surface: -

Valve Shut: 10.10 pm. Pulled Packer: 10.10 pm Out of Hole:

Initial Shut In Time: 45 Flowing Time: 52 Final Shut In Time: -

SURFACE PRODUCTION —

Air ~~or Gas~~, Fair Blow. (Time:
cu. ft./day (
(Rate:

Oil, (Time:
bbls./day (Rate:

PIPE RECOVERY — Total 1040'
Oil: Water: 530' Mud:& Muddy Water 300'
Sand: 210' (Fine White)

TOTAL PRODUCTION — Gas: Oil Water:

PRESSURE RECORD (Corrected Pressures) —

		Depth	IHH~~MX~~P	IFP	I.S.I.P.	F.F.P.	F.S.I.P.	FHH	Temp.
Top Gauge:	2238	1474	~~723~~	380		550	690	715 ~~710~~	107
Bottom Gauge:	2237	1518	~~767~~	720		720	720	~~770~~ 763	

SAMPLES — Sampling Point Type of Fluid Sp.G. Salinity 950.

Remarks :

The tool plugged almost immediately it opened, then unplugged about 15 minutes later - the tailpipe became partially plugged after a further 15 minutes (approx.) and did not clear during the remainder of the test.

Comments on Well Completion Report of Woodside Sunday Island No.1 Well, Submitted by Woodside (Lakes Entrance) Oil Co. N.L.

The comments contained herein are not of an editorial nature, nor do they refer to manner of presentation of the results. The comments are concerned with errors and differing interpretation.

1. The Elevation given in the "Well History" is 11 ft. above sea level. This does not indicate if this is ground level or Well Datum. It is usual to give both elevation. On the Electric logs the following are given:

   G.L. 10'
   KB 21'

2. The boundary between Bushy Park Beds and the Latrobe Valley Coal Measures.

   The writer's views differ on the placing of the boundary in the well. However, he considers that this difference will be resolved when more bore hole data has been examined in the area. Currently 2 bores are being drilled in the area.

3. In discussing the Bushy Park Beds under section 4 "Stratigraphy" the report implies that Hocking (1965) is the originator of this term. This is not correct. The Bushy Park Beds were named and described by Jenkin (1964) as indicated by Hocking (1965) in his Table No.1.

4. Graphic representation of the geology of the area as shown in the "Geological Section after drilling of Sunday Island No.1 Well" contains 2 aspects that are felt to be erroneous.

   (a) Bushy Park Beds are shown to be absent in Woodside No.1 and No.2 Wells. The writer accepts Hocking (1965) view that the base of the Bushy Park Beds occurs at a depth of 740 ft. in Woodside No.1 Well and at a depth of 770 ft. in Woodside No.2 Well.

   (b) The interfingering of the Gippsland Limestone with the Bushy Park Beds cannot be accepted by the writer and he considers that the Gippsland Limestone has thinned out to be either completely absent or represented by sand in the Sunday Island No.1 Well.

References and Annotations

Hocking, J.B., 1965: Characteristics of Tertiary Formations of Southern and South-Eastern Gippsland.

Mines Dept., Vict., Unpub.Rept. 1965/5.

Table 1 (Frontpiece) gives the Source of Rock Unit Definition that is used.
The definition of the Bushy Park Beds given is in complete accord with that given in Jenkin's work.

Jenkin, J.J., 1964: The Geomorphology and Upper Cainozoic Geology of South-East Gippsland Victoria.

Mines Dept. Vict., Unpub.Rept. 1965/61.

This Unpublished Report is a copy of a Ph.D. Thesis successfully submitted to the University of Melbourne. It contains the definition of the Bushy Park Beds and discusses the Haunted-Hills Gravels, defines the Coongulmerang Beds, and discusses the Jemmy's Point Formation.

Bollen, P.W., 1966: An Interpretation of the Stratigraphy of Post-Strezelecki Group Sediments encountered in Woodside Sunday Island No.1.

Mines Dept. Vic., Unpub.Rept. 1966/1.

This gives a different interpretation to that given in the Well Completion Report.

P.W. Bollen
9/5/66

CHEMICAL BRANCH
MINES DEPARTMENT
CHEMICAL LABORATORIES—
Departments of Agriculture, Health, and Mines, Victoria
JCK:SP
Phone: 63 0321

STATE LABORATORIES
MACARTHUR STREET
MELBOURNE, C.1

31st October, 1966

An. CM/6/12

Report on Sample No. 1313/65

Sample : Heavy Black Oil
Locality : Woodside Sunday Island No.1 Well.
Sender : The Manager,
Woodside (Lakes Entrance) Oil, Co;
792 Elizabeth Street,
MELBOURNE.

Description of Sample:

Woodside Sunday Island No.1 Well

A small sample consisting of heavy black oil and some solid material, was received for analysis, if size of sample permitted.

The material was obtained at a depth of 550-600 feet during the drilling of Woodside Sunday Island No.1 Well.

Results:

The amount of oil remaining after purification was too small for any systematic testing. Such facts as were obtained are given as follows:

Colour	Black
Fluorescence (under U.V. light)	Light brown
Odour	None
Transparency	Opaque
Condition	Heavy, very viscous
Sulphur (S)	0.16%

John C. Kennedy

Senior Chemist,
Mines Department.

CHEMICAL BRANCH
MINES DEPARTMENT
CHEMICAL LABORATORIES—
Departments of Agriculture, Health, and Mines, Victoria
JCK:SP
Phone: 63 0321

STATE LABORATORIES
MACARTHUR STREET
MELBOURNE, C.1

12th October, 1966

An. MM/FF/29/4

Report on Sample No. 364/66
U.W.R.S. 4202

Sample : Water from Oil Well
Locality : Sunday Island
Sender : The Manager,
Woodside (Lakes Entrance) Oil.Co.,
792 Elizabeth Street,
MELBOURNE.

Particulars:

No.	364
U.W.R.S.	4202
Bore	Sunday Island No.1 Well
Sample	D.S.T. No.1
Aquifer level (feet)	1491 to 1680
Position	Sunday Island No.1 Well

Results :		Parts per million	Me.per litre
Total solids in solution		1840	
Chloride	(Cl)	163	4.6
Carbonate	(CO_3)	Nil	Nil
Bicarbonate	(HCO_3)	148	2.4
Sulphate	(SO_4)	51	1.1
Nitrate	(NO_3)	Nil	Nil
Calcium	(Ca)	62	3.1
Magnesium	(Mg)	43	3.5
Sodium	(Na)	466	20.3
Potassium	(K)	43	1.1
Iron-Soluble	(Fe)	2.0	0.1
Total hardness (as $CaCO_3$)		330	

pH 7.8

Comment

There is a huge preponderance of cations over anions shown by this analysis. The common anions have been determined and it is assumed that a drilling additive is present that is essentially a sodium salt of an organic grouping.

Time does not permit us to investigate this organic material, and, in any case, all of the water sample supplied has been used.

John C. Kennedy
Senior Chemist,
Mines Department.

W495

Geochem

26 JUN 1987

SUNDAY ISLAND 1
SUN-1
Gippsland Basin 38 42 s. lat. 146 40 e. long.

#	M	FT	%I-C	%O-C	%N	%H	S1	S2	TMAX	PI	HI	GP
1	1082	3550	3.6	4.24	0.08	0.78	0.11	5.7	478	0.02	135	5.9
2	1209	3965	11.3	10.04	0.10	0.94	0.62	11.1	503	0.05	110	11.7
3	1250	4100	16.1	2.79	bdl	0.50	0.09	2.0	477	0.04	73	2.1
4	1326	4350	6.3	1.54	bdl	0.57	0.15	1.8	478	0.07	118	2.0
5	1341	4400	12.4	1.00	bdl	0.53	0.13	0.9	480	0.13	87	1.0
6	1357	4450	2.5	1.38	bdl	0.56	0.14	1.4	481	0.09	102	1.6
[redacted]	1482	4860	1.3	2.05	bdl	0.56	0.21	2.5	487	0.08	119	2.7
[redacted]	1595	5230	1.8	3.41	0.06	0.70	0.35	4.7	481	0.07	139	5.1
9	1598	5241	bdl	1.02	bdl	0.50	0.08	0.7	487	0.10	73	0.8
10	1677	5500	1.7	3.81	0.07	0.67	0.34	4.0	494	0.08	104	4.3
11	1729	5670	1.1	1.51	bdl	0.59	0.16	1.5	482	0.09	100	1.7

Pyrolysis run with CDS Pyroprobe and modified interface: TMAX inaccurate.
M is sample depth in meters.
FT is sample depth in feet.
%I-C is inorganic carbon as % calcium carbonate in rock.
%O-C is organic carbon as % carbon in rock.
%N is % nitrogen in rock.
%H is % hydrogen in rock.
S1 is pyrolysis free-hydrocarbon signal (mg hydrocarbons/g rock).
S2 is pyrolysis kerogen signal (mg S2 hydrocarbons/g rock).
PI is production index [S1/(S1+S2)].
TMAX is temperature at which S2 signal is maximum (deg C).
HI is hydrogen index (mg hydrocarbons/g O-C).
GP is genetic potential (kg hydrocarbons/ton rock) (S1+S2).
'bdl' means 'below detection limit'; '---' means 'not determined'.
'ndm' means 'no definitive maximum'.

V1 ENCLOSURES

No. 1 Locality Map showing relation to regional Geology.

No. 2 Stratigraphic column before drilling

No. 3 Geological Section through Well before and after drilling.

No. 4 Composite well log.

No. 5 Copies of electric logs.

PE902932

This is an enclosure indicator page.
The enclosure PE902932 is enclosed within the container PE902929 at this location in this document.

The enclosure PE902932 has the following characteristics:

ITEM_BARCODE	= PE902932
CONTAINER_BARCODE	= PE902929
NAME	= Geological Section
BASIN	= GIPPSLAND
PERMIT	=
TYPE	= WELL
SUBTYPE	= CROSS_SECTION
DESCRIPTION	= Geological Cross Section Wilson's Promontory - Woodside No 1 Well
REMARKS	=
DATE_CREATED	= 1/11/65
DATE_RECEIVED	=
W_NO	= W495
WELL_NAME	= Sunday Island-1
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

PE902933

This is an enclosure indicator page.
The enclosure PE902933 is enclosed within the container PE902929 at this location in this document.

The enclosure PE902933 has the following characteristics:

ITEM_BARCODE	= PE902933
CONTAINER_BARCODE	= PE902929
NAME	= Generalised Stratigraphic Column
BASIN	= GIPPSLAND
PERMIT	=
TYPE	= WELL
SUBTYPE	= STRAT_COLUMN
DESCRIPTION	= Generalised Stratigraphic Column as assumed before drilling Sunday Island No 1
REMARKS	=
DATE_CREATED	= 1/04/66
DATE_RECEIVED	=
W_NO	= W495
WELL_NAME	= Sunday Island-1
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

PE902930

This is an enclosure indicator page.
The enclosure PE902930 is enclosed within the container PE902929 at this location in this document.

The enclosure PE902930 has the following characteristics:

ITEM_BARCODE	= PE902930
CONTAINER_BARCODE	= PE902929
NAME	= Geological Section
BASIN	= GIPPSLAND
PERMIT	=
TYPE	= WELL
SUBTYPE	= CROSS_SECTION
DESCRIPTION	= Geological Cross Section after drilling of Sunday Island No 1 Well
REMARKS	=
DATE_CREATED	= 1/03/66
DATE_RECEIVED	=
W_NO	= W495
WELL_NAME	= Sunday Island-1
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

PE902931

This is an enclosure indicator page.
The enclosure PE902931 is enclosed within the container PE902929 at this location in this document.

The enclosure PE902931 has the following characteristics:

ITEM_BARCODE	= PE902931
CONTAINER_BARCODE	= PE902929
NAME	= Geological Section
BASIN	= GIPPSLAND
PERMIT	=
TYPE	= WELL
SUBTYPE	= CROSS_SECTION
DESCRIPTION	= Geological Cross Section Wilson's Promontory - Woodside No 1 Well
REMARKS	=
DATE_CREATED	= 1/11/65
DATE_RECEIVED	=
W_NO	= W495
WELL_NAME	= Sunday Island-1
CONTRACTOR	= ESSO
CLIENT_OP_CO	= ESSO

(Inserted by DNRE - Vic Govt Mines Dept)

PE602709

This is an enclosure indicator page.
The enclosure PE602709 is enclosed within the container PE902929 at this location in this document.

The enclosure PE602709 has the following characteristics:

ITEM_BARCODE	= PE602709
CONTAINER_BARCODE	= PE902929
NAME	= Sunday Island 1 Composite well log sheet 1 of 2
BASIN	= GIPPSLAND
PERMIT	= PEP42
TYPE	= WELL
SUBTYPE	= COMPOSITE_LOG
DESCRIPTION	= Sunday Island 1 Composite well log sheet 1 of 2
REMARKS	=
DATE_CREATED	=
DATE_RECEIVED	=
W_NO	= W495
WELL_NAME	= Sunday Island-1
CONTRACTOR	= Schlumberger
CLIENT_OP_CO	= Woodside (Lakes Entrance) Oil Co N.L

(Inserted by DNRE - Vic Govt Mines Dept)

PE602710

This is an enclosure indicator page.
The enclosure PE602710 is enclosed within the container PE902929 at this location in this document.

The enclosure PE602710 has the following characteristics:

ITEM_BARCODE	= PE602710
CONTAINER_BARCODE	= PE902929
NAME	= Sunday Island 1 Composite well log sheet 2 of 2
BASIN	= GIPPSLAND
PERMIT	= PEP42
TYPE	= WELL
SUBTYPE	= COMPOSITE_LOG
DESCRIPTION	= Sunday Island 1 Composite well log sheet 2 of 2
REMARKS	=
DATE_CREATED	=
DATE_RECEIVED	=
W_NO	= W495
WELL_NAME	= Sunday Island-1
CONTRACTOR	= Schlumberger
CLIENT_OP_CO	= Woodside (Lakes Entrance) Oil Co N.L

(Inserted by DNRE - Vic Govt Mines Dept)

PE603667

This is an enclosure indicator page.
The enclosure PE603667 is enclosed within the container PE902929 at this location in this document.

The enclosure PE603667 has the following characteristics:

ITEM_BARCODE	= PE603667
CONTAINER_BARCODE	= PE902929
NAME	= Continuous Dipmeter
BASIN	= GIPPSLAND
PERMIT	= PEP42
TYPE	= WELL
SUBTYPE	= WELL_LOG
DESCRIPTION	= Continuous Dipmeter Log for Sunday Island-1
REMARKS	=
DATE_CREATED	= 30/11/65
DATE_RECEIVED	=
W_NO	= W495
WELL_NAME	= SUNDAY ISLAND-1
CONTRACTOR	= SCHLUMBERGER
CLIENT_OP_CO	= WOODSIDE OIL NL

(Inserted by DNRE - Vic Govt Mines Dept)

PE906353

This is an enclosure indicator page.
The enclosure PE906353 is enclosed within the container PE902929 at this location in this document.

The enclosure PE906353 has the following characteristics:

ITEM_BARCODE	= PE906353
CONTAINER_BARCODE	= PE902929
NAME	= Time-Depth Curve
BASIN	= GIPPSLAND
PERMIT	= PEP42
TYPE	= WELL
SUBTYPE	= VELOCITY_CHART
DESCRIPTION	= Time-Depth Curve for Sunday Island-1
REMARKS	=
DATE_CREATED	=
DATE_RECEIVED	= 31/07/86
W_NO	= W495
WELL_NAME	= SUNDAY ISLAND-1
CONTRACTOR	=
CLIENT_OP_CO	= WOODSIDE OIL NL

(Inserted by DNRE - Vic Govt Mines Dept)

PE906354

This is an enclosure indicator page.
The enclosure PE906354 is enclosed within the container PE902929 at this location in this document.

The enclosure PE906354 has the following characteristics:

ITEM_BARCODE	= PE906354
CONTAINER_BARCODE	= PE902929
NAME	= Drill Stem Test Photo, 1 of 2
BASIN	= GIPPSLAND
PERMIT	= PEP42
TYPE	= WELL
SUBTYPE	= DST
DESCRIPTION	= Drill Stem Test Photo, 1 of 2 , Sunday Island-1
REMARKS	=
DATE_CREATED	= 27/11/65
DATE_RECEIVED	=
W_NO	= W495
WELL_NAME	= SUNDAY ISLAND-1
CONTRACTOR	= BJ SERVICE (AUSTRALIA)
CLIENT_OP_CO	= WOODSIDE OIL NL

(Inserted by DNRE - Vic Govt Mines Dept)

PE906355

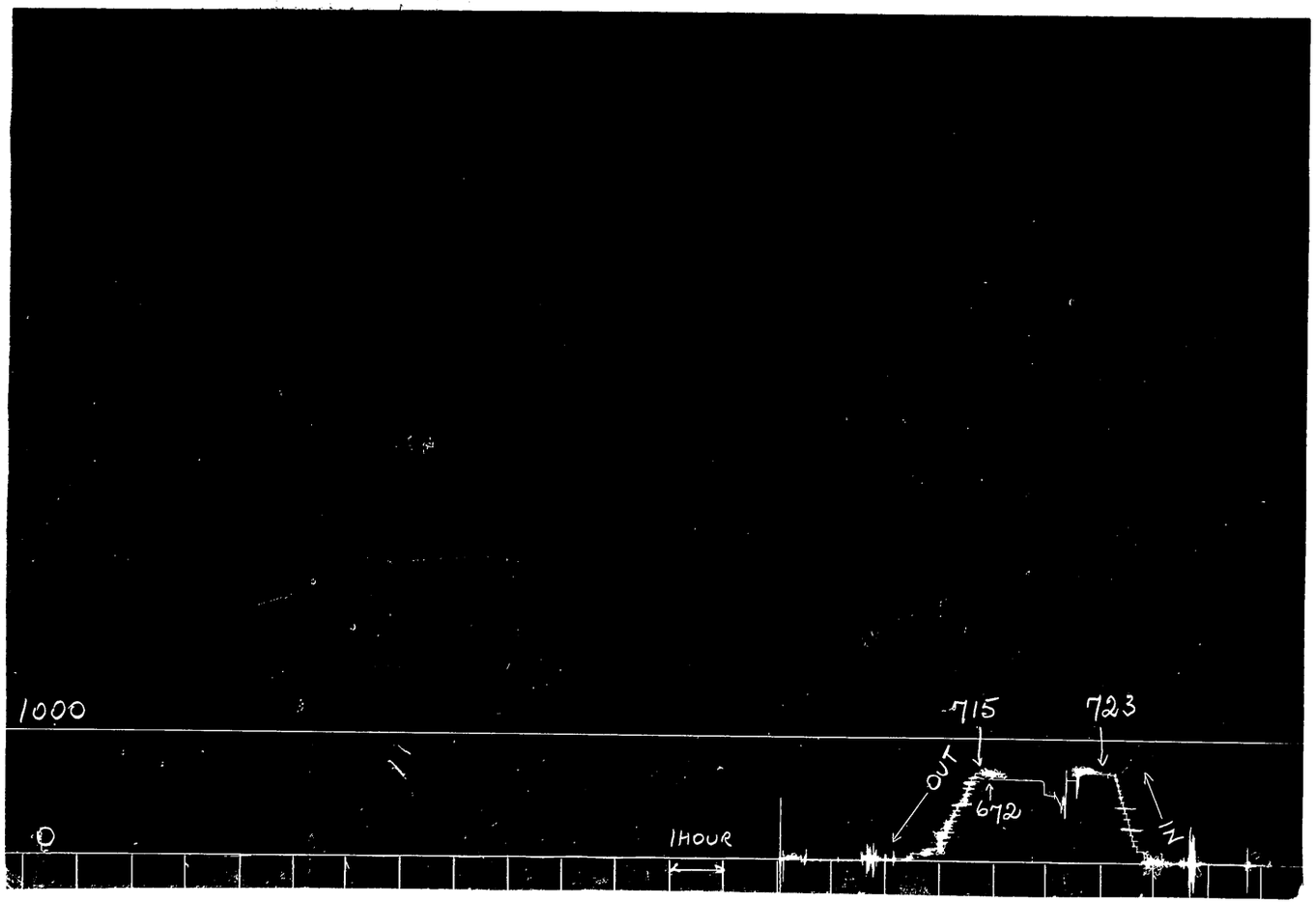
This is an enclosure indicator page.
The enclosure PE906355 is enclosed within the container PE902929 at this location in this document.

The enclosure PE906355 has the following characteristics:

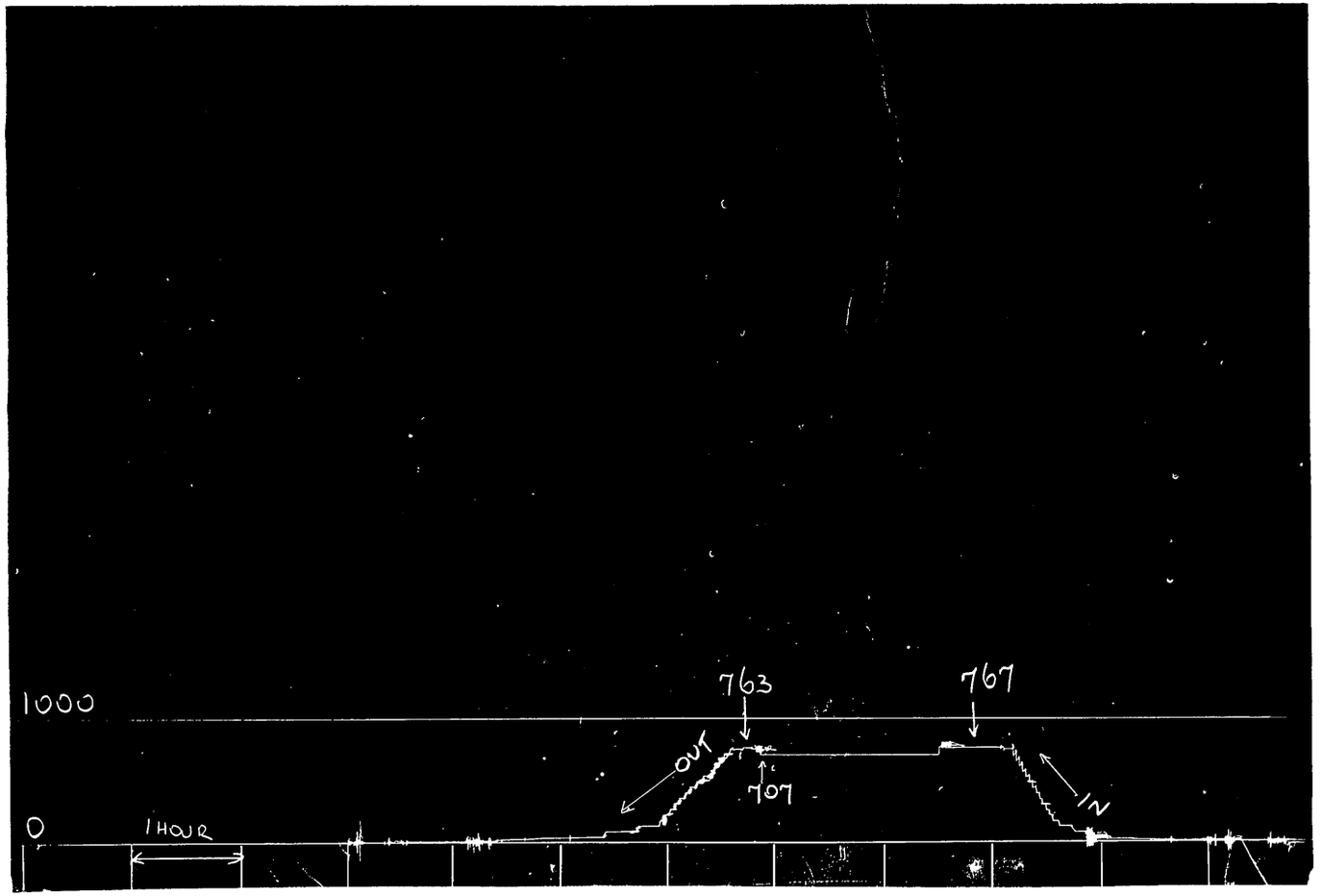
ITEM_BARCODE	= PE906355
CONTAINER_BARCODE	= PE902929
NAME	= Drill Stem Test Photo, 2 of 2
BASIN	= GIPPSLAND
PERMIT	= PEP42
TYPE	= WELL
SUBTYPE	= DST
DESCRIPTION	= Drill Stem Test Photo, 2 of 2 , Sunday Island-1
REMARKS	=
DATE_CREATED	= 27/11/65
DATE_RECEIVED	=
W_NO	= W495
WELL_NAME	= SUNDAY ISLAND-1
CONTRACTOR	= BJ SERVICE (AUSTRALIA)
CLIENT_OP_CO	= WOODSIDE OIL NL

(Inserted by DNRE - Vic Govt Mines Dept)

WOODSIDE (LAKES ENTRANCE) OIL CO. N.L.
NOVEMBER 27, 1965 SUNDAY ISLAND NO.1 TEST NO.1
RECORDER NO.2238 RECORDER DEPTH 1474'



WOODSIDE (LAKES ENTRANCE) OIL CO. N.L.
NOVEMBER 27, 1965 SUNDAY ISLAND NO.1 TEST NO.1
RECORDER NO.2237 RECORDER DEPTH 1518'



Well SUNDAY ISLAND NO.1

Company WOODSIDE (L.E.) OIL CO. N.L.

Comp. Rep. D. Langton

Tester R.W. Stephens

B J SERVICE (AUSTRALIA) PTY. LTD.

ROOM 3, THIRD FLOOR, PERRY HOUSE, 131-145 ELIZABETH ST., BRISBANE

Test No. 1

Date November 27, 1965

Mud Wt.	9.4	Tool Open	8:33 P.M.	Main Hole Size	8¾"
Viscosity	74	Tool Shut-In		Rat Hole Size	7 7/8"
Filter Cake	2/32	Time Shut-In		Top Packer Depth	1485'
Water Loss	7.4	Initial Shut-In Pres.	672	Bottom Packer Depth	1491'
Mud Drop	10'	Tool Open		Total Depth	1680'
Formation	Latrobe Valley Coal Meas.	Initial Flow Pres.		Rubber Size	7¾"
Recorder No.	2238	Final Flow Pres.		Hole Condition	Good
Clock Range	24 hr.	Tool Closed		Pipe Size	4½" F.H.
Depth	1474'	Time Shut-In		D.C. Size	2¼" I.D.
Recorder No.	2237	Final Shut-In Pres.		Ft. D.C. Run	179
Clock Range	12 hr.	Initial Hydro Mud Pres.	723	Water Cushion Run	
Depth	1518'	Final Hydro Mud Pres.	715	Bottom Hole Choke	½"
B.H. Temperature	107°	Type Test	Dual Conventional	Surface Choke	-

Remarks Tool plugged almost immediately it opened, then unplugged about 15 minutes later. Tailpipe became partially plugged after a further 15 minutes (approx.) and did not clear during the remainder of test.

Recovery 300 feet of mud and muddy water, 530 feet of fairly clean water, 210 feet of sand.