DEPT. NAT. RES & ENV

PE906115

Natural Resources and Environment

AGRICULTURE • RESOURCES • CONSERVATION • LAND MANAGEMENT

WELL SUMMARY

FROME LAKES - 3 (W448)

1 Folio No	2 Referred to	3 Date	4 Clearing Officer's Initials	1 Folio No.	2 Referred to	3 Date	4 Clearing Officer's Initials

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(2) REFERRAL TO OTHER OFFICERS: When an Officer completes action on the file and further action is required by some other Officer, please initial Column (4) and on the next vacant line, enter the relevant folio number in Column (1), indicate to whom the file is to be forwarded in Column (2) and record the date in Column (3).

(3) BRING UP MARKINGS: When action on a file is required at a later date, the officer will initial Column (4) and, on the next vacant line, enter the relevant folio number in Column (1), then write "B/U" followed by the action officer's name in Column (2) and the date the file is required in Column (3).

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LOCATION

EARLIER FILES	LATER FILES	RECORDS DISPOSITION

RELEVANT FILES

File No.	Subject

SYMBOLS FOR ACTION OFFICERS

EXECUTIVE

Secretary	SEC
Deputy Secretary	DS
Executive Director Portfolio Management	EDPM
Executive Director Performance Evaluation	EDPE
Executive Director Primary Industries and Chief Scientist	EDPI,CS
Executive Director Catchment Mgt & Sustainable Agriculture	EDCMSA
Executive Director Minerals and Petroleum	EDMP
Executive Director Forests Service	EDFS
Executive Director Parks, Flora and Fauna	EDPF
Executive Director Land Victoria	EDLV
Executive Director Regional Services	EDRS

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Chief Finance Officer	CFNO
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Director Capital Policy	DCP
Director Human Resources	DHR
Director Planning & Budget	DPB
Director Information Technology & Telecommunications	DITT
Director Business Reform	DBR
Manager Business Improvement	MBI
Manager Administrative Policy & Procedures	MAPP
Manager Metropolitan Administrative Operations	MMAO
Manager Corporate Communications & Information	MCCI
Manager Electronic Information Services	MEIS
Manager Library & Information Services	MLIS

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Manager Geological Survey Victoria	MGSV
Manager Mineral & Petroleum Operations	MMPO
Manager Minerals Development	MMD
Manager Extractive Industries	MEI
Manager Minerals & Petroleum Titles	MMPT

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Manager Plant Standards	MPS
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Director Bureau of Animal Welfare	DBAW
Director Fisheries	DF
Director Quality Assurance	DQA
Director Agribusiness	DA

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Manager Internal Audit & Risk Mgt Policy	MIARMP
Manager Strategic Quality Assurance	MSQA

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Director Catchment & Water Resources	DCWR
Director Sustainable Development	DSD
Director Office of Rural Affairs	DORA
Director Natural Resource Policy	DNRP

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Chief Fire Officer	CFO
Manager Forest Management	MFM
Manager Regional Forests Agreements	MRFA

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Manager Business Management Parks, Flora & Fauna	MBMPFF
Manager Flora & Fauna	MFF
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Director Resources & Reform	DRR
Surveyor General	SG
Valuer General	VG
Director Land Registry	DLR
Director Crown Land Management	DCLM

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Manager Portfolio Coordination	MPC
Manager Environmental Policy	MEP
Manager Policy Support	MPOS
Director Media	DM

FROME LAKES-3 (W448)

Well Summary Report

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WELL SUMMARY

FROME-LAKES PROPRIETARY LIMITED
(Incorporated in Victoria)

TELEPHONE
MF

95 COLLINS ST.,
MELBOURNE, C.1

157

November 20, 1956

Hon. W. J. Mibus, M.L.A.
Minister for Mines,
Department of Mines,
Treasury Gardens,
Melbourne, C.2.

Dear Sir,

Further to our letter of November 13, we now have pleasure in submitting herewith copy of lithologic log for Frome-Lakes Exploration Well Gippsland No. 2.

Location details of our No. 3 well, as required by regulations under the Mines Petroleum Act, are as follows:-

(a) Designation: Frome-Lakes Gippsland No. 3

(b) Location: Parish of Balloong. Roadside, 580 feet east of southwest corner of allotment 22A.

(c) Distance from nearest boundary of licence: 1¼ miles.

(d) Height of derrick floor: 30 feet above sea level.

(e) Diameter of hole at surface: 7⅞".

(f) Depth proposed: 1500 to 2000 feet.

(g) Drilling method: Rotary.

(h) Extent of coring: Minimum of 40 feet.

Yours very truly,

C. N. Osborne

N. Osborne
General Manager

Dr Thomas
2 copies
10/12/56

NO/jg

Enclosure: Lithologic log - Frome-Lakes Exploration Well No. 2

FROME-LAKES PROPRIETARY LIMITED
(Incorporated in Victoria)

PEP PROS. LICENCE

95 COLLINS ST.,
MELBOURNE, C.1

December 3, 1956

Hon. W. J. Mibus, M.L.A.,
Minister for Mines,
Treasury Gardens,
Melbourne, C.2.

Dear Sir,

We have to report that our Frome-Lakes Exploration Well Gippsland No. 3 has reached a total depth of 1876 feet, finishing in brown coal after having penetrated the entire marine Tertiary formation at 1866 feet. No signs of oil or gas was discovered in this well during the drilling, and bailing tests on completion also failed to reveal their presence.

The bailing tests demonstrated a small flow of fresh water, believed to be coming from the lower part of the hole, probably from porous calcareous sandstone or sandy limestone of the Lakes Entrance formation between 1845 and 1856 feet. This water stands at an equilibrium level considerably below surface.

Our drilling contractor will plug the well in accordance with the requirements of the Mines Department drilling superintendent, following which we should appreciate your approval to abandon. As a result of the discovery of an appreciable thickness of lignitic strata above the typical marine Gippsland formation in this well, we have decided to deepen our No. 2 well. The drilling outfit has consequently been moved back to this location and the well is now being cleaned out preparatory to drilling ahead.

Yours very truly,

20/12/56 N. Osborne

N. Osborne
General Manager

Mr. McEachern states that it is satisfied with action taken by company in plugging this well.
NO/JG

COMPLETION REPORT

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4 CHARTS
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5 MAPS.

Frome Report No. 7100-G-59

EXPLORATION DRILLING IN THE TERTIARY BASIN OF SOUTHEAST GIPPSLAND, VICTORIA

by

Richard L. Wood

FROME-LAKES PROPRIETARY LTD.,
MELBOURNE, AUSTRALIA.

April, 1957.

Completion Report Frome Lakes Gippsland N°1
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" " " N°2
" " " N°3
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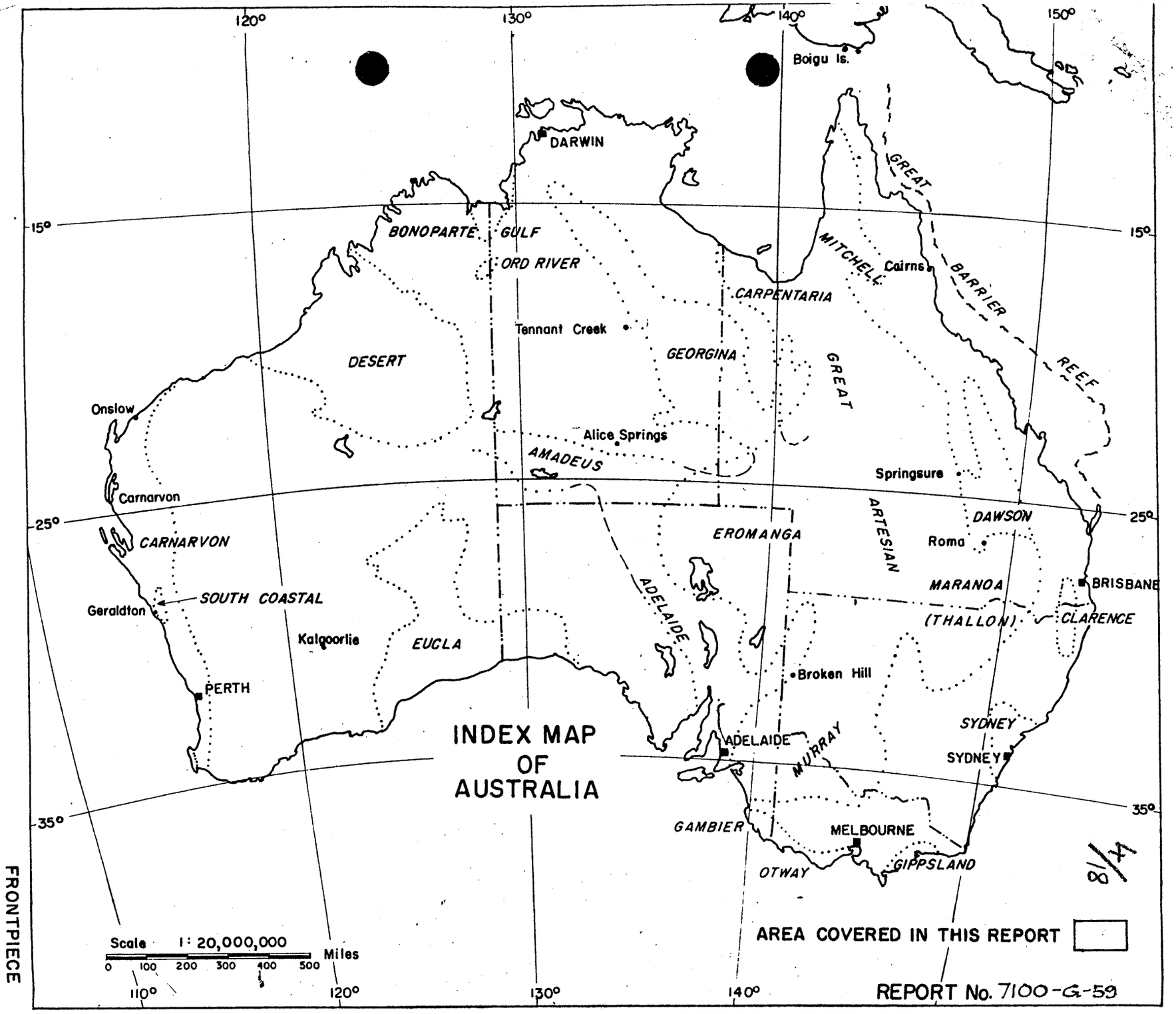
120°
130°
140°
150°
15°
25°
35°
Boigu Is.
DARWIN
BONOPARTE GULF
ORD RIVER
GREAT
MITCHELL
Cairns
BARRIER
REEF
CARPENTARIA
Tennant Creek
DESERT
GEORGINA
GREAT
Onslow
Alice Springs
AMADEUS
Springsure
Carnarvon
CARNARVON
EROMANGA
ARTESIAN
DAWSON
Roma
SOUTH COASTAL
Geraldton
ADELAIDE
MARANOA
(THALLON)
BRISBANE
CLARENCE
Kalgoorlie
EUCLA
PERTH
Broken Hill
SYDNEY
ADELAIDE
MURRAY
SYDNEY
GAMBIER
MELBOURNE
OTWAY
GIPPSLAND
INDEX MAP
OF
AUSTRALIA
Scale 1: 20,000,000
0 100 200 300 400 500 Miles
AREA COVERED IN THIS REPORT
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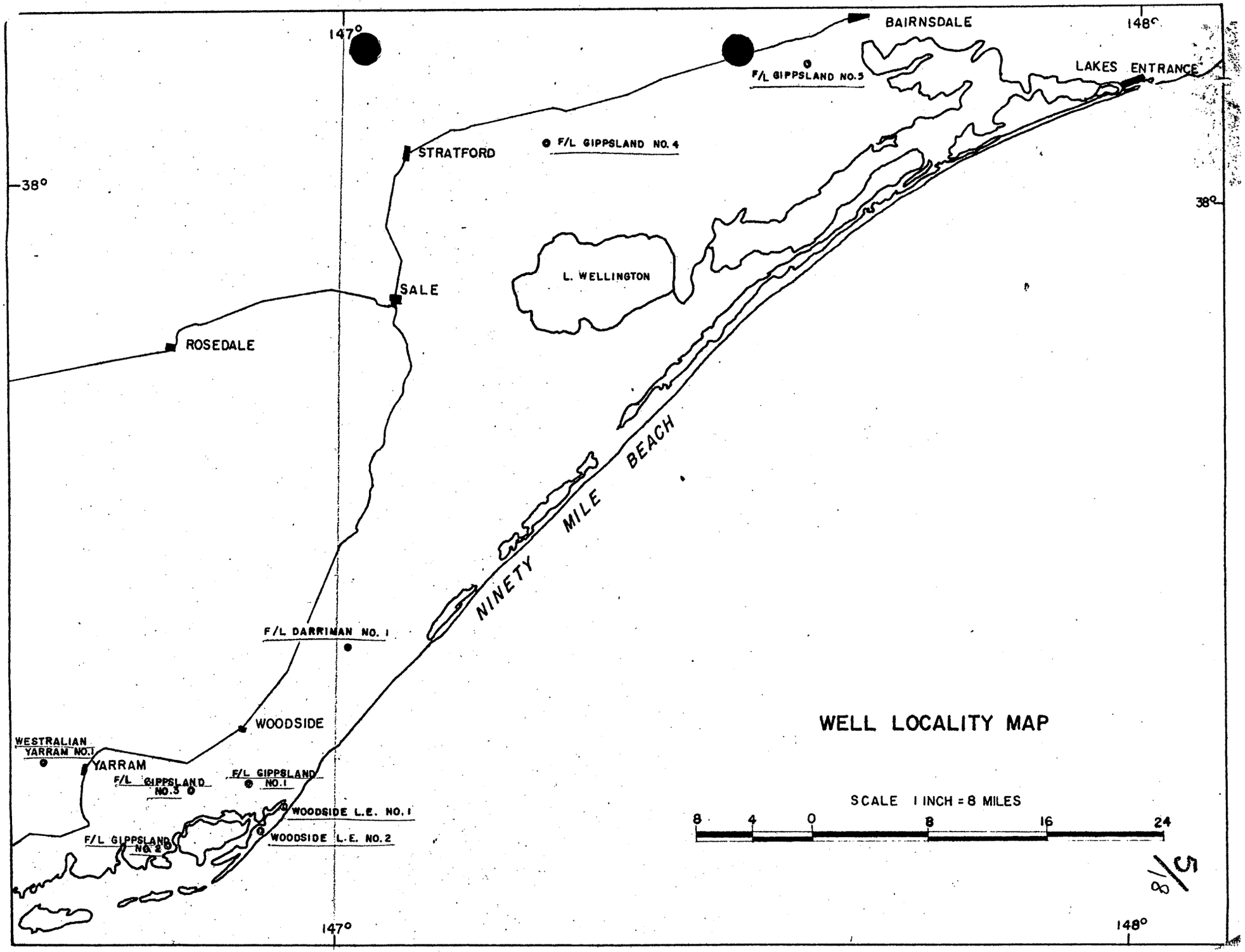
FRONTPIECE


147°
148°
38°
BAIRNSDALE
LAKES ENTRANCE
F/L GIPPSLAND NO.5
F/L GIPPSLAND NO.4
STRATFORD
SALE
L. WELLINGTON
ROSEDALE
NINETY MILE BEACH
F/L DARRIMAN NO. 1
WOODSIDE
WESTRALIAN YARRAM NO.1
YARRAM
F/L GIPPSLAND NO.3
F/L GIPPSLAND NO.1
WOODSIDE L.E. NO.1
F/L GIPPSLAND NO.2
WOODSIDE L.E. NO.2
WELL LOCALITY MAP
SCALE 1 INCH = 8 MILES
8 4 0 8 16 24
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EXPLORATION DRILLING IN THE TERTIARY BASIN OF SOUTHEAST GIPPSLAND, VICTORIA

ABSTRACT

Frome-Lakes Gippsland wells were drilled through the base of the marine Tertiary on local gravity anomalies in southeast Gippsland. The wells were drilled to test the glauconitic sandstone, a shore line facies of the basal marine Tertiary formation. In some parts of the Gippsland basin this sandstone is known to contain small quantities of oil. All of the present wells penetrated the objective horizon with no indications of oil or gas.

Subsurface maps constructed from bore information do not indicate any features favouring Tertiary petroleum prospects. The Gippsland Tertiary oil appears to be unaffected by structure but to be preserved in small stratigraphic traps only. These traps are apparently the result of porosity and permeability variations within the glauconitic sandstone.

EXPLORATION DRILLING IN THE TERTIARY BASIN OF SOUTHEAST GIPPSLAND, VICTORIA

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Completion Report on Frome Lakes Gippsland 1 2 3 4 5

By Richard L. Wood

INTRODUCTION

In September 1956 Frome-Lakes Pty. Ltd. "spudded in" the first of a series of shallow exploratory wells in southeast Gippsland, Victoria. Five wells had been drilled by January 25, 1957 when the drilling program was suspended pending analysis of the results of the five wells drilled and a study of this data and that from other wells in the area. An exchange of information, well by well, was arranged between Frome-Lakes Pty. Ltd. and two other companies with adjacent areas, Woodside (Lakes Entrance) Oil Company and Westralian Oil Company.

In the light of the large amount of new information available as the result of the recent exploration wells in Gippsland, a revision of previous subsurface maps is necessary. This report will therefore be a completion report on the five Gippsland wells and will also include a set of revised subsurface maps similar to those in my report entitled "Subsurface Studies of East and South Gippsland, Victoria", May 1956.

Two new subsurface maps are included and discussed in this report. One of these maps the "Log Map of the Lakes Entrance Formation with Isopach Lines of the Glauconitic Sand" combines all of the present information directly relating to the Tertiary oil of Gippsland, and the major discussion will relate to this map.

OBJECTIVE

Frome-Lakes five shallow exploration wells were drilled for the purpose of testing the oil prospects of the marine Tertiary, mainly the basal member - the so-called glauconitic sandstone - from which small quantities of oil have been reported in several parts of Gippsland, chiefly the Lakes Entrance area.

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DRILLING LOCATIONS

Frome Lakes drilled their Darriman No. 1 well in the south-western part of their lease area hoping to find the glauconitic sandstone favourably developed in that area. No sign of oil was found in the Darriman well and the base of the marine Tertiary was not developed in a true sandstone facies.

When the Woodside (Lakes Entrance) Oil Company drilled a glauconitic sandstone facies with shows of oil in one of their wells southeast of Darriman and nearer to the granite outcrop at the south-western edge of the basin, it became apparent that the elusive glauconitic sandstone must be a shore line facies of the basal marine section. With this idea in mind, Frome-Lakes decided to test the basal marine Tertiary within its licence area on gravity anomalies in localities more favourable for shore line development. The Darriman well, located on a seismic and gravity high suggested that gravity is related to structure in this area and therefore gravity highs were selected in four of the five wells drilled. No. 3 was located on a gravity low re-entrant to ensure gravity representation and geographic distribution in the southern part of the basin. No. 5, west of Bairnsdale, was located on both a gravity and topographic high.

NOTES ON THE ACCOMPANYING PLATES

Plates 1-5 are the individual lithologic logs of the Gippsland wells. A drilling rate log is plotted against the detailed 10 foot descriptive log of the lithology.

Plate 6 is a well data sheet. This sheet shows generalized stratigraphic sections of the Gippsland wells, two Woodside (Lakes Entrance) Oil Company wells and one Westralian Oil Company well. A brief resumé of operational and testing data accompanies each section.

Plates 7-9 are revised subsurface maps which have been reviewed in detail in my previous report "Subsurface Studies of South and East Gippsland, Victoria" (May 1956). The addition of the results of the

recent exploration drilling in Gippsland brings these maps up to date and fills in some detail especially in the south-western section of our licence area.

Plate 10 is a new subsurface map contoured on the base of the marine Tertiary in the Lakes Entrance/Sale/Woodside area. All depths have been computed from mean sea level. The base of the marine Tertiary is taken to be the base of the glauconitic sandstone where present, alternatively the top of the Yallourn formation.

The bore information for the construction of plates 7-10 is listed in Table 1 accompanying this report.

GEOLOGY

The stratigraphy and structure of the Gippsland Tertiary Basin have been reviewed in detail by Evans (1954) and Boutakoff (1955) and this will not be discussed in this report in any more detail than revealed in the individual wells.

The five Gippsland wells penetrated all of the known marine Tertiary formations present in Gippsland. The No. 5 well penetrated the entire Tertiary section and was abandoned below sands correlated with the Yallourn formation in metamorphic rocks of assumed Ordovician age.

Four of the wells penetrated the glauconitic sandstone with no indications of any oil or gas. One well penetrated a deeper-water limestone facies of the glauconitic sand and it also had no indications of any oil or gas.

The thickness of the formations encountered in the five wells are recorded in the following table - (See also Plate 6, Well Data Sheet).

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Formation and Age (Crespin 1954)	Lithology	Thickness in feet				
		No. 1	No. 2	No. 3	No. 4	No. 5
Jemmy's Point L. Pliocene	Clay and sands with shelly bands	578	370	657	360	394
Mitchell R. U. Miocene	Sandy marl, marl - glauconitic in places	628	625	493	390	256
Gippsland Limestone L. Miocene	Polyzoal lime-stones and marls	565	499	625	670	260
Lakes Entrance [illegible] Miocene	Fine-grained marls, some places micaceous becoming glauconitic and sandy towards the base	166	68	90	327	440
Yallourn M. Eocene	Lignitic sands and clays with intercalated brown coal seams	21+	.5+	11.5+	68+	135

Plates 7 and 10 illustrate structural conditions in the Tertiary, but it is emphasised that these maps, as well as Plates 8 and 9, represent regional trends rather than a detailed picture of conditions, as close bore control is lacking over a large part of the area under review.

The most prominent feature of Plate 10, "Contour Map of the Base of the Marine Tertiary" is the large synclinal trough developed through Lake Wellington and Seacombe to the southeast. This regional low is presumably the eastward extension of the Latrobe Valley syncline.

Three faults in the southern half of the area are suggested by the bore information, as plotted on the subsurface maps. It is felt they may have been pre-Tertiary faults that have been active during

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the deposition of the Tertiary. The large east-west fault known as the Rosedale fault has been substantiated by surface evidence.

Within the wedge formed by the two faults south of the Latrobe River the base of the marine Tertiary appears to form a nose pitching to the northeast. Detailed bore information is lacking in this area and the contours are incomplete.

A second synclinal trough is suggested in the Woodside area, plunging east-southeast. Information from several recent wells in that area suggest that the basin rises rapidly to the west with the marine Tertiary practically disappearing in the Westralian Yarram No. 1 Well about two miles west of Yarram.

As a result of the large number of bores drilled in the Lakes Entrance area, more precision is possible in contouring. A large inset of this area is shown on Plate 10 to include the detail. The main feature of this inset is a structural terrace dipping gently southward. The slope of the base of the marine Tertiary breaks and becomes more gentle between bores 95 and 96 and forms the structural terrace. Only the base of the marine Tertiary which is the glauconitic sandstone in this area is affected by this feature. Since the larger accumulation of oil from this sandstone is located on the southern slope of the structural terrace around Foster's bore (No. 104), it appears that this feature may have more control over the small accumulation of oil in that area.

Plate No. 11 entitled "Log Map of the Lakes Entrance Formation with Isopach Lines of the Glauconitic Sand" is the major plate in this report. Compiled on this plate is all of the presently known pertinent information relating to the main occurrence of Tertiary oil in Gippsland.

Its purpose is to depict by lithologic logs, electric logs where possible, the lithologic development of the Lakes Entrance formation. The map shows the areal distribution of this stratigraphic interval, each log being shown on the map at the location of the bore from which it was derived. The oil-bearing basal sandstone member is not present throughout the basin as glauconitic sand but Isopach lines of this sand or its equivalent have been superimposed upon the log map, and oil shows are indicated againt the pertinent logs.

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Only three electric logs were available when compiling the map. Most of the information is from drillers' logs from bores dating back as far as 1924. Except for a few bores from which cores were examined by the Commonwealth Palaeontologist, the bores were drilled without any geologic supervision. Therefore, there are no stratigraphic divisions for most bores and they must be interpreted from the lithologic descriptions which in practically all cases are anything but definite and provide no information as to porosity and permeability. Since most of the bores were drilled for oil, the depth and thickness of the potential reservoir rock, the glauconitic sand, is fairly accurate. Table I shows the information from which the map was constructed. Where the records appeared contradictory the figures that seemed more reliable were used.

The logs show the Lakes Entrance formation to consist mainly of marl which towards the base becomes glauconitic and either arenaceous or calcareous depending mainly on the distance from the old shore line. They also roughly indicate the shape of the Tertiary basin. In the southwest the formation thins rapidly from Woodside to Yarram as shown by the three Frome-Lakes bores. Two miles west of Yarram in the Westralian Yarram No. 1 there is present no marine formation recognisable as the Lakes Entrance. North of the Ninety Mile Beach the formation thins against Jurassic and Palaeozoic hills. East of Lakes Entrance, the Lakes Entrance formation might be abruptly cut out. At Lakes Entrance the thickness is fairly uniform with glauconitic sand at the base.

In Cobden's bore (No. 116) there is no glauconitic sand recorded and possibly no Lakes Entrance formation. The records are not very clear. Gravity and magnetic data for that area suggest the presence of a fault to the east of which crystalline basement and old Palaeozoic rocks are probably near the surface.

The isopach map of the glauconitic sand suggests three main areas of sand deposition separated by two marine embayments. Oil and gas have been reported from all three sand areas, with the best shows from the thicker sand deposits. The Lakes Entrance Field, with glauconitic sand thickness up to 85 feet, has actually produced small

quantities of oil. The large map does not show the sand at Lakes Entrance in detail. An inset showing all of the bores drilled in that area indicates which bores contained oil and where they are located in relation to the reservoir thickness.

Near Lake Wellington oil was reported in two bores. Oil and gas shows were reported from the glauconitic sand in the Amalgamated Oil Bore No. 1 (No. 48). In the Pelican Point bore (No. 50) which did not penetrate to the glauconitic sand, numerous shows of oil and gas were reported from the limestone above the Lakes Entrance formation. Frome-Lakes Gippsland No. 4 bore was drilled west of these bores and penetrated a thinner section of glauconitic sand with no shows. Frome-Lakes Gippsland No. 5 well was drilled to the north of the Amalgamated Oil bore, and although encountering a similar very sandy facies of the Lakes Entrance formation, did not contain any oil or gas in the glauconitic sand. A thin film of oil was noticed momentarily when the first sand sample was washed, but this film could not be reproduced or any other indication of oil observed.

CONCLUSIONS

Considering their favourable distribution for adequately testing the Woodside-Yarram area, the results of the exploration wells drilled by Frome-Lakes, Woodside Oil Co. and Westralian Oil Ltd. must be accepted as condemning the southern part of the Gippsland Basin as a potential source of commercial oil, whether structure or porosity variation is the controlling factor in accumulation. Further, the Frome-Lakes Stratford and Bairnsdale wells finally discourage the idea that the northern marginal zone might be favourable.

Analysis of the log map, Plate 11, suggests that the oil in the marine Tertiary of Gippsland does not follow any definite pattern of accumulation. No bores with shows of oil were drilled on definite structures, while all Frome-Lakes bores including the

Darriman No. 1 bore were drilled on either gravity or seismic structure and those that penetrated glauconitic sand had no shows of oil or gas. The Tertiary oil appears not to be controlled by structure but must accumulate in small stratigraphic traps associated with porosity variation in the glauconitic sandstone. A complicating and discouraging feature is the appearance of fresh water in the glauconitic sands throughout the region, denoting considerable flushing.

Isopach map, Plate 11, shows two areas where there appears to be a thickening of the glauconitic sandstone and near which some shows of oil have been reported in bores. No structural association is suggested by aeromagnetics or gravity however. These areas are about the same size as Lake Entrance, but the depth to the glauconitic sand is much deeper - greater than 2,600 feet at Lake Victoria and greater than 1,300 feet at Lake King.

The description of the glauconitic sandstone in the bore logs is not sufficiently detailed to allow a comparison of porosity and permeability between different areas. We are therefore unable to say whether the Lakes Victoria and King areas are mor or less favourable in this respect than the Lakes Entrance area. It is probable that they are more or less the same and that consequently no accumulation of oil large enough to justify the great expense of probing for stratigraphic traps can be expected.

APPENDIX

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OPERATIONAL NOTES ON THE FROME-LAKES GIPPSLAND WELLS

The Gippsland wells were drilled for Frome-Lakes Pty. Ltd. by a local contractor, W. L. Sides and Son, with a Failing 1500 rotary plant. The standard Failing was supplemented by additional equipment such as shale shaker, weight indicator, and blowout preventor etc. This was the contractor's first oil drilling venture with rotary equipment and some difficulties were experienced while drilling the No. 1 well with both men and equipment. These difficulties were overcome once a pattern for drilling was set up and the balance of the wells were drilled quite smoothly and efficiently.

Plate No. 6 "Well Data Sheet" sets out the basic information for each of the Gippsland wells with a lithologic section. Recently drilled competitors' wells are included on this plate with as much information as is available at present.

Presented below in tabulated form are the operational details of the five Frome-Lakes wells for reference and comparison.

	No. 1	No. 1A	No. 2	No. 3	No. 4	No. 5
Location (Refer: Well Locality Map)	Approx. 4 miles south of Woodside, Vic.		8 miles SE of Yarram	8 miles ESE of Yarram	9½ miles east of Stratford	3 miles SW of Bairnsdale
Elevation (1) Derrick Floor	36'	37'	15'	30'	126'	253'
(2) Ground Level	33.5'	33.5'	12'	27'	123'	250'
Date commenced	24.9.56	9.10.56	3.11.56*	15.11.56	18.12.56	10.1.57
Date abandoned	4.10.56	28.10.56	15.12.56	30.11.56	8. 1.57	25.1.57
Casing (1) Length	582'	615'	1065'	783'	488'	423'
(2) Size	6½" O.D. at bottom	6½" O.D. to surface	6" O.D. to surface	6½" O.D. to surface	6½" O.D. to surface	6" O.D. to surface
(3) Cement	W/25 sks.	W/95 sks	W/133 sks.	W/100 sks.	W/60 sks.	W/56 sks.
Total depth	790'	1962'	1552'	1876' 6"	1815'	1550'
Drilled	790'	1904'	1518'	1866' 6"	1745'	1495'
Cored	-	58'	34'	10'	70'	55'
Recovery	-	8'	25.5'	1'	28'	16.25'
	-	14%	75%	10%	40%	30%
Maximum deviation	-	0°	0°	2°	2°	5°
Depth of "	-	998'	1500'	1500'	1500'	1000'
Testing Program	-	Bailed glauconitic sand zone- no shows of oil or gas	Bailed as in No.1A No shows	Bailed as in No.1A No shows	Bailed as in No. 1A No shows	Bailed as in No.1A No shows
Hole troubles	Well abandoned with "frozen pipe" at 769' recovered later	Tight hole at 750' - changed mud - no further difficulty	Core barrel stuck 3 days at 621' - no further trouble	None	None	None
Test bailing						
+ Mud level	Not tested	No record	108'	122'	97'	114'
+ [redacted]ed down level		No record	240'	148'	213'	333'
+ Equilibrium level on standing		45'	Flowing	35'	98'	258'
Gallons bailed		No record	2400	2700	2500	3600
Oil or Gas show		Nil	Nil	Nil	Nil	Nil

* Suspended 10-11 to 10-12.56

\+ Depth below well head

For completeness a few general and a few qualifying statements are necessary.

$7\frac{7}{8}$ inch hole was drilled from the surface in all wells into a solid marl where casing was set. At that point either $6\frac{1}{2}$ inch O.D. or 6 inch O.D. casing was cemented as indicated in Table I. The hole was then reduced to about $5\frac{3}{4}$ inch depending on the size of bits available and this reduced hole was carried down to total depth.

Hole trouble started in the No. 1 well after it had reached a depth of 790 feet in soft sand. While making a trip the pipe became frozen at 769 feet. The well finally had to be abandoned and the No. 1A well started 80 feet away. The reason for the pipe becoming "frozen" was thought to be poor mud. A local clay had been used with Bentonite on the No. 1 well. A pure Bentonite mud was used on the remaining wells with no further tight hole problems.

Loss of circulation while coring on the No. 2 well resulted in a 3 day fishing job - there was no repetition of this type of trouble either.

A coring program had been set up to obtain maximum information with minimum coring. It was intended, as a rule, to core only the prospective oil horizon, the "glauconitic sand" zone, but the program was flexible and the well site geologist was authorised to call for a core at any time considered necessary. A total of 227 feet were cored for all the wells with a 34.7% recovery of $78\frac{3}{4}$ feet.

All cores proved to be barren of oil or gas but as a final check before abandoning the wells each hole was bailed as quickly as possible until the fluid level could be lowered no further and then maintained at that state for about $\frac{1}{2}$ - 1 hour. The well was then allowed to rest approximately 30 minutes until equilibrium fluid level under normal conditions was reached. After resting a further sample was dipped from the top of the column to be checked for signs of oil or gas. No indications of oil or gas were observed throughout the bailing tests.

BIBLIOGRAPHY

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: : : : : : : :

LITHOLOGY

- WEEKLY REPORTS

MINES DEPARTMENT

VICTORIA

Mines (Petroleum) Act, 1935.
Section 45.

Record of Work at ....GIPPSLAND NO. 3..... bore on

* Petroleum Prospecting Licence
* Petroleum Mineral Lease Number .....157..... during week

ending .Midnight,.November.25th.19.56.

DEPTH	DESCRIPTION OF STRATA
758'6"-830'	Light grey to pale yellow very hard granular limestone
830' - 980'	Grey soft polyzoal marl with many round yellow quartz granules.
980' -1150'	Grey soft polyzoal and formaniferal glauconitic marl.
1150' -1320'	White granular coarse hard polyzoal limestone.
1320' -1450'	Light brown to grey soft fossiliferous marl with hard grey limestone bands.
1450' -1500'	White granular polyzoal limestone.
1500' -1549'6"	White granular to crystalline hard tight glauconitic polyzoal limestone.

Notes by Driller in Charge (State in notes whether water, gas or petroleum has been met with, and, if so, give depth and nature of occurrence, also depth to which casing has been inserted and cemented.)

$7\frac{7}{8}$" hole was drilled to 788 feet. 783 feet of $6\frac{1}{2}$" O.D. casing was cemented to the surface. $5\frac{3}{4}$" open hole has been carried down to the present depth. Core No. 1 was cut from 1329 - 1339 feet with a recovery of one foot of grey soft glauconitic and ligneous marl. No indications of oil, gas, or artesian water have so far been observed.

SIGNED .....H. C. Warren,.....
Secretary.
LEGAL MANAGER ..FromeLakes Pty. Ltd..... COY.

Date .29th/November..1956.

N.B. - The Act also requires the Minister to be notified immediately water, gas or petroleum is encountered.

Analyses of water, gas and oil should be submitted if available.

MINES DEPARTMENT

VICTORIA

2/2

Mines (Petroleum) Act, 1935.
Section 45.

Record of Work at ....GIPPSLAND.NO..3..... bore on

* Petroleum Prospecting Licence
* ~~Petroleum Mineral Lease~~ Number ....157..... during week

ending MIDNIGHT, NOVEMBER 30, 1956.

DEPTH	DESCRIPTION OF STRATA
1549'6" - 1600'	Light grey crystalline fossiliferous slightly glauconitic limestone
1600' - 1720'	White granular porous slightly glauconitic polyzoal limestone
1720' - 1775'	Brown soft fossiliferous slightly pyritic marl
1775' - 1830'	Light grey-green velvety textured soft marl
1830' - 1845'	Same marl but highly glauconitic
1845' - 1856'	Light grey soft friable calcareous glauconitic sandstone - no shows
1856' - 1865'	Light grey fine textured highly glauconitic marl
1865' - 1876'6"	Brown coal
1876'6"	Total depth

Notes by Driller in Charge (State in notes whether water, gas or petroleum has been met with, and, if so, give depth and nature of occurrence, also depth to which casing has been inserted and cemented.)

6½" OD casing cemented to 783'

No shows of oil, gas, or artesian water

SIGNED .....
SECRETARY
~~LEGAL MANAGER~~ Frome Lakes Pty. Ltd. ..... COY.

Date ...../...../..... .

N.B. - The Act also requires the Minister to be notified immediately water, gas or petroleum is encountered.

Analyses of water, gas and oil should be submitted if available.

LITHOLOGY

– HOCKING

PROVISIONAL STRATIGRAPHIC REPORT

FROME-LAKES GIPPSLAND NO. 3 A

Copies:
* Drillers log
* Drilling time chart

Location: Parish Balloong, 38°35'16"S, 146°50'10"E.

Elevation: 30' DF.

T.D.: 1876'6"

Casing: 6½" @ 783'.

Samples: 10ft. screen samples, badly contaminated in most cases.
Core at 1329-39ft, rec. 10'6".

Lithologic Log:

0-90: poorly sorted bn. to gy. sand & gravel, more so towards base.

90-150: more even-grd. yellowish coarse sand.

150-190: sand; also chips of gy. calc° sst / sandy marl, also 'coal' fragments; shell material, more common downwards; Ditrupa noted at 170ft.

190-220: hard reddish-brown calcareous sandstone, fine organic material.

220-230: sandy marl, as above 190ft, with bryozoa.

230-410: light grey to bn. sand & grit.

410-480: well-sorted fine gy. sand, chips of bn. coal.

480-540: loose dark gy-bn. poorly-sorted sand & gravel (well-rounded); coal fragments.

540-550: horizon of bn. coal.

550-670: as for 480-540 ft., partic. gravelly between 520-600ft.

670-760: sand; gy. sandy marl, with shells, bryozoa, + Ditrupa; also traces of coal fragments (contam°?)

760-820: yellowish to gy. sandy limestone & minor calcareous sst.

820-1050: gy. glauc. sandy 'marl' + interbedded (less common) sandy marly lst / lst & calc° sst; well-rounded, polished, yellowish quartz granules appear below 1840 ft. (occ. assoc° c 'marl').

1050-1070: gy. sandy marl, abundant glauconite, rich shell material.

1070-1600: grey marly limestone associated limestone (sl. sandy throughout)

1600-1650: ~~transition~~ white limestone.

1650-1720: predominantly gy. marly limestone

1720-1760: " dark gy. marl.

1760-1845: 'puggy' lt. bn (becoming grnish) foraminiferal marl, (more) pyritic towards base.

1845-1865: lt. gy. glauc. marl, v. sandy, glauc° & pyr°: towards base; gravel & bn. coal in 1860-70 sample.

1865-TD.: bn. coal.

Stratigraphic Interpretation:

0 - 670 feet : Plio-Pleistocene Beds.

0 - 150 : sands + gravels

150 - 230 : calcareous 'fragments' with marine fossils - ? Globs. Magenido, 160-80ft. Jemmy's Pt. longue.

230 - 480 : generally well-sorted (? estuarine) sands [Ammonia beccarii & Elph. sp are v. common

480 - 670 : "coal measures" with coal horizon at 540 - 550ft.

670 - 760 feet : Jemmy's Point/ Tambo River Formation

Grey sandy marl with shells, bryozoa, Ditrupa. Traces of coal indicate close association with non-marine beds. Foraminifera consist primarily of miliolids (which do not occur above 670ft), Elphidium spp (E. parri below 720ft.), and Massilina lapidigera and Valvulineria kalimnensis in the lower beds — typical Kalimnan species.

760 - 1760 feet : Gippsland Limestone

Approximate stage subdivision is as follows:

760 - 1070 ft. (Bairnsdalian):

Sandy limestones (marly limestones), minor calcareous sands, generally glauconitic (particularly so at base). Shallow-water fauna persists; the fauna in the limestones is poor. Operculina victoriensis is recorded below 1010 ft. Pelagics are extremely rare, although one Orbulina universa was recorded at 1060-70ft.

1070 - 1190ft. (Balcombian):

Predominantly grey, partially glauconitic, marly limestones. Orbulina suturalis was noted, together with Globigerinoides bisphaerica, representing a very limited pelagic suite. Amphistegina sp. (cf. lessonii) occurs below 1100ft.

1190 - 1290 ft. (Batesfordian)

Tentatively taken as the range of the Batesfordian, this interval of interbedded limestones and marly limestones represents the range of Lepidocyclina sp. A typical cuttings sample containing the species was analysed as follows:

CARB.	93.4	(93)
SAND	2.0	(2)
CL/SILT	4.6	(5)

Lep checks: 1160-70 ✗, 1170-80 ✓, 1190-1200 ✓

.../3.

1290-1760 ft. (Longfordian)

Core No.1 (1339-39ft.) — a slightly sandy bryozoal limestone — contains Globigerinoides triloba + G. bispherica, as well as rare Astrononion centroplax. The latter is recorded in traces throughout the sequences of hard ? dolomitic marly limestones and limestones. Globigerina woodi (close to G. ampliapertura) is found in the basal marls, and indicates the lower limits of the stage.

1760-1865 feet : Lakes Entrance Formation.

The upper slightly greenish pyritic 'pruggy' marls contains a typical Janjukian assemblage, including Globigerina parva. These marls grade into a light grey glauconitic marl with depth, the latter being sandy to gravelly, and glauconite-rich, at the base. Basal brown coal fragments indicate a close association with the underlying coal measures. Faunas remain typical Janjukian. Almaena gippslandica was noted from a cuttings sample at 1850-1860 ft.

There was no evidence of F.U.4 being present.

1865 - 1876.5 feet : Latrobe Valley Coal Measures.

A brown coal horizon was the only one penetrated before reaching total depth.

B. Hocking.
5. 6. 64.

b = bryozoa
m = mollusca
D = Ditrupa
M = miliolids

FROME-LAKES GIPPSLAND NO. 3

Interval 700-1100 feet.

700-10: bryozoa, Ditrupa, gastropods, Elphid. Mass. lap. miliolids, (one gastropod has a miliolid & sand, buried in its "mouth".
* qnsh. gy, quite sandy, marl? (one c miliolid) (almost gravel in pts.)

710-20: quite sandy marl? as above, still containing fragments of black fibrous carbonaceous material { Elph. sp / Mass. lap etc { medium ~~fine~~ sand associated.

720-30: v. common b, m, D & M. ≡ v. sandy marl.?
* Elphidium parri

730-40: as above.

740-50: " "
* S
GENUINE gy. sandy glauc. marl.
coal fragments etc - in situ?

NOTE: A LOT OF SO-CALLED MARL IS - IN FACT - DRILLING MUD.
{ ~~gastropod & sand, D. Elphidium in mouth~~
{ hence carb. mat. & much of "gravel" could be derived
{ shells mostly filled by sand

750-60: gravel & sand (presumably contamination)

754: sand aggregated by drilling mud.

760-70: chips of ~~glauc-lim.~~ greyish / sandy limestone. D

770-80: as above.

~~780-90~~ 775: sandy limestone ~~+ soft~~ calcareous sand.

780-90: sandy limestone

785: sandy limestone, occ. chips of lustrous & fibrous black carbon. material.

788: BIT SAMPLE Chip of HARD yellowish sandy limestone.

../2

800-10: yellowish gy (with more glauc) sandy limestone, also Calc sst.
(← not much loose shell material).

810-20: ·····

820-30: ···· , also gyish. sandy ! marl.

830-40: pred. gy. sandy lst (or marly lst).
(~glauc)

840-50: sandy lst; more commonly gy. sandy ? marl; v. common well-rounded, polished quartz granules, often yellowish, some assoc. with soft sandy marl.

850-60: as above

860-70: " " ; still chips of hard sandy limestone.

870-80: "

880-90: yellowish + gy. sandy marl (marly limestone) * quartz granules persisting

890-900: above, also: ∧ glauc-lim (gyish) sandy limestone

900-910: ·····

910-20: gy. sandy (some glauc) marl / marly lst.

baby Turritella + other gastro's.

920-30: ··— — — (still: granules)

930-40: gy; fairly hard, sandy marly lst, also more marly matl.

940-50: marly-looking material; shell matl v. common, partic. Turritella, etc.

950-60: ———————

Washed: (mostly) grey sandy lst / marly lst

··/3

960-70: as above; still granules of quartz.

970-80: - - - - -

980-90: sandy marl, coarser glauc gn. (qz. granules virtually gone)

990-1000: as above, /\ glauc. prominent; one chips of sandy (! marly) lst.

1000-10: yellow sandy marl or calc. sst (possibly latter; ~~flinty~~ clayey appearance prob. drill. mud).
-Ditrupa v. common.

NOTE: striated miliolid occurs here & well above

1010-20: yellowish sandy limestone (sl. marly) (presumably calcareous sandstone)
-D
-Operculina vict.

~~1020-30~~ as above; larger chips of qy. (glauc.) marly lst ← looks like TR

1030-40: yellowish qyish. rubbish.

1040-50: qy. sandy marl (?); consid. amt. of fine organic material

1050-60: ? glauc sandy marl; v. common loose glauc. pellets.

1060-70: as above, again abund glauc. pellets, also abundant fine shell material (as well as M, etc) (eg Turr)

1070-80: as above, glauc. not quite so common.

1080-90: - - - - heavy drilling mud contamination.

1090-1100: - - - - - × ; glauc. far less common.

* 200-220' hard bn. sandy limestone chips

FROME-LAKES GIPPSL.

No. 3

0 - 90 : brown ~~to~~ grey gravel, grit, + coarse sand (poor sorting), v. gravelly at base

90 - 150 : yellow-bn. coarse sand / grit, more even gns sl. coarser 140-150 with good rounding (+ polishing)

150 - 170 : grit + sand, occasional (? Recent) shelly material.

170 - 240' : gy. calcareous grit + sand, fine shell fragments common. * gnds. large

240 - 410 : lt. gy.-bn. sand (loose), occasional gravel, shell fragments not abundant + becoming progressively less so.

* gn size decreases below 360'.

410 - 480 : fine-med. gy sand + v. fine shell material, sl. coarser at base (med. gnd)

480 - 650 : loose dk gy-bn. poorly sorted sand, more gravelly lower down, fine grains of ~~coal~~, coarser gns, smooth + well polished + rounded. * large coal fragments 540-50'.

520 - 600 : coarser stuff

650 - 670 : as above, gy instead of dk gy/bn

670 - 700+ : coarse sand - gravel, fine shells, inc. Ditrupa

SAMPLE GAP : 700 - 1100

1100 - 1270 : gy sandy glauc. marl, organic material (bryozoa, etc) not abundant.

1270 - ~~1330~~ 1600 : limestone (part. marly), organic material more common. less so after 1330'.

1600 - 1650 : white limestone

1650 - : brnish gy marly limestone - marl, compact, foraminiferal

1329-39 Core No. 1
yellow gy sl. sandy limestone.

PE603437

This is an enclosure indicator page.
The enclosure PE603437 is enclosed within the container PE906115 at this location in this document.

The enclosure PE603437 has the following characteristics:

ITEM_BARCODE	= PE603437
CONTAINER_BARCODE	= PE906115
NAME	= Lithological Log
BASIN	= GIPPSLAND
PERMIT	= PPL 157
TYPE	= WELL
SUBTYPE	= WELL_LOG
DESCRIPTION	= Lithological Log of Frome Lakes-3
REMARKS	= has lithologic descriptions alongside
DATE_CREATED	= 30/11/1956
DATE_RECEIVED	=
W_NO	= W448
WELL_NAME	= FROME LAKES-3
CONTRACTOR	=
CLIENT_OP_CO	= FROME-LAKES PTY LTD

(Inserted by DNRE - Vic Govt Mines Dept)

PE906116

This is an enclosure indicator page.
The enclosure PE906116 is enclosed within the container PE906115 at this location in this document.

The enclosure PE906116 has the following characteristics:

ITEM_BARCODE	= PE906116
CONTAINER_BARCODE	= PE906115
NAME	= Table of Gippsland Bores 1 of 4
BASIN	= GIPPSLAND
PERMIT	= PPL 157
TYPE	= WELL
SUBTYPE	= DIAGRAM
DESCRIPTION	= Data Table of Gippsland bores containing data on location and stratigraphic depths 1 of 4.
REMARKS	=
DATE_CREATED	= 30/04/1957
DATE_RECEIVED	=
W_NO	= W448
WELL_NAME	= FROME LAKES-3
CONTRACTOR	=
CLIENT_OP_CO	= FROME-LAKES PTY LTD

(Inserted by DNRE - Vic Govt Mines Dept)

PE906117

This is an enclosure indicator page.
The enclosure PE906117 is enclosed within the container PE906115 at this location in this document.

The enclosure PE906117 has the following characteristics:

ITEM_BARCODE	= PE906117
CONTAINER_BARCODE	= PE906115
NAME	= Table of Gippsland Bores 2 of 4
BASIN	= GIPPSLAND
PERMIT	= PPL 157
TYPE	= WELL
SUBTYPE	= DIAGRAM
DESCRIPTION	= Data Table of Gippsland bores containing data on location and stratigraphic depths 2 of 4.
REMARKS	=
DATE_CREATED	= 30/04/1957
DATE_RECEIVED	=
W_NO	= W448
WELL_NAME	= FROME LAKES-3
CONTRACTOR	=
CLIENT_OP_CO	= FROME-LAKES PTY LTD

(Inserted by DNRE - Vic Govt Mines Dept)

PE906118

This is an enclosure indicator page.
The enclosure PE906118 is enclosed within the container PE906115 at this location in this document.

The enclosure PE906118 has the following characteristics:

ITEM_BARCODE	= PE906118
CONTAINER_BARCODE	= PE906115
NAME	= Table of Gippsland Bores 3 of 4
BASIN	= GIPPSLAND
PERMIT	= PPL 157
TYPE	= WELL
SUBTYPE	= DIAGRAM
DESCRIPTION	= Data Table of Gippsland bores containing data on location and stratigraphic depths 3 of 4.
REMARKS	=
DATE_CREATED	= 30/04/1957
DATE_RECEIVED	=
W_NO	= W448
WELL_NAME	= FROME LAKES-3
CONTRACTOR	=
CLIENT_OP_CO	= FROME-LAKES PTY LTD

(Inserted by DNRE - Vic Govt Mines Dept)

PE906119

This is an enclosure indicator page.
The enclosure PE906119 is enclosed within the container PE906115 at this location in this document.

The enclosure PE906119 has the following characteristics:

ITEM_BARCODE	= PE906119
CONTAINER_BARCODE	= PE906115
NAME	= Table of Gippsland Bores 4 of 4
BASIN	= GIPPSLAND
PERMIT	= PPL 157
TYPE	= WELL
SUBTYPE	= DIAGRAM
DESCRIPTION	= Data Table of Gippsland bores containing data on location and stratigraphic depths 4 of 4.
REMARKS	=
DATE_CREATED	= 30/04/1957
DATE_RECEIVED	=
W_NO	= W448
WELL_NAME	= FROME LAKES-3
CONTRACTOR	=
CLIENT_OP_CO	= FROME-LAKES PTY LTD

(Inserted by DNRE - Vic Govt Mines Dept)