

WELL SUMMARY  
 YARRAM-1  
 (W451)



Natural Resources and Environment

DEPT. NAT. RES & ENV  
 PE905617

<p>WELL SUMMARY          YARRAM-1          (W451)</p>		<p>4          Clipping          Officer's          Initials</p>
<p>ONSHORE          PPL/199</p>	<p>WESTRAILIAN OIL LTD          GIPPSLAND BASIN</p>	
<p>TD = 1875'</p>		
<p>31/03/57</p>		

<p><b>FILE COVER INSTRUCTIONS FOR ACTION OFFICERS</b></p> <p>(1) FOLD NUMBERS: Each subject paper attached to a file is to be given a consecutive number by the attaching officer. Papers must not be removed from or attached to a file without approval.</p> <p>(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 file number in Column 1, indicate to whom the file is to be forwarded in Column 2 and record the date in Column 3.</p> <p>(3) SPRING UP WARNINGS: 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 file number in Column 1, then write "BAU" followed by the action officer's name in Column 2 and the date the file is required in Column 3.</p> <p>(4) P.A. STATUS WARNINGS: When ALL action on a file is completed the officer concerned will initial Column 4 and on the next vacant line, write "P/A" in column (2).</p> <p>REGISTRY MUST BE NOTIFIED OF ANY FILE MOVEMENTS BETWEEN OFFICERS</p>	<p style="writing-mode: vertical-rl; text-orientation: mixed;">LOCATION</p>
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WELL SUMMARY--YARRAM-1 (W451)

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APPENDIX 1.0

*Stratigraphy*

PE904217

This is an enclosure indicator page.  
The enclosure PE904217 is enclosed within the  
container PE904216 at this location in this  
document.

The enclosure PE904217 has the following characteristics:

- ITEM\_BARCODE = PE904217
- CONTAINER\_BARCODE = PE905617
  - NAME = Well Card
  - BASIN = GIPPSLAND
  - PERMIT = PPL/199
  - TYPE = WELL
  - SUBTYPE = WELL\_CARD
- DESCRIPTION = Well Card (enclosure from Well Summary)  
for Yarram-1
- REMARKS =
- DATE\_CREATED = 31/03/57
- DATE\_RECEIVED =
  - W\_NO = W451
  - WELL\_NAME = Yarram-1
- CONTRACTOR =
- CLIENT\_OP\_CO = Westralian Oil Ltd

(Inserted by DNRE - Vic Govt Mines Dept)

*Copy*

MINES DEPARTMENT

VICTORIA

Location On Surveyed Road at  
N.W. corner of Par. 79  
Ph. Devon

Mines (Petroleum) Act, 1935.  
Section 45.

Record of Work at .....YARRAM NO. 1..... bore on

\* Petroleum Prospecting Licence Number ....199..... during week  
~~\* Petroleum Mining Licence~~  
*Feb.*  
ending ~~Midnight January~~ *January* 17th, 1957.

DEPTH	DESCRIPTION OF STRATA
0 - 50'	White & brown coarse-fine sands. Fe stained.
50 - 226'6"	White & yellow very fine-fine sub angular - sub-rounded sands & silts. Few shell fragments.
226'6"- 230'	Hard Pyrite band, also quartz in matrix of band.
230 - 240'	White, medium to coarse quartz sand. Pyrite. very fine-coarse
240 - 600'	Brown coal & sand. Some bry <sup>?</sup> zoa & shell fragments.
600 - 650'	White, coarse, sub angular sand.

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.)

No oil, gas or artesian water met with in this bore to date.

Please note R.L. of derrick floor is 51 feet above sea level.

*Dr. Thomas*  
*27.2.57*  
*to Devon branch*

WESTRALIAN OIL LIMITED.

SIGNED ..... E.F. Dorking-Clark, .....

LEGAL MANAGER ..... Secretary, ..... COY.

Date ..21./...2./1957..

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

Mines (Petroleum) Act, 1935.  
Section 45.

Record of Work at ....YARRAM.NO.1..... bore on

\* Petroleum Prospecting Licence  
\* ~~Petroleum Prospecting Licence~~ Number .....199..... during week  
ending Midnight, February 24, 1957.

DEPTH	DESCRIPTION OF STRATA
650' - 920'	Gravel and sand, coarse to fine, subangular. Bryozoa, shell and limestone fragments in upper part.
920' - 970'	Brown coal, gravel and coarse subangular quartz sand with pyrite.
970' - 990'	White subangular quartz gravel.
990' - 1000'	Brown coal.
1000' - 1130'	White quartz gravel and coarse subangular quartz sand with intercalations of fine-grained micaceous quartz sandstone and thin seams of brown coal.
1130' - 1140'	Brown coal.
1140' - 1170'	Brown coal, white quartz granules and coarse subangular quartz sand.
1170' - 1182'6"	White quartz granules and coarse subangular quartz sand with mica.

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.)

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

NO OIL, GAS OR DEFINITE ARTESIAN WATER MET WITH IN THIS BORE TO DATE. HOWEVER, AFTER BIT HAD BEEN REMOVED FROM HOLE AT 1182'6" DEPTH, CAVING OF SAND AND REDUCTION OF VISCOSITY SUGGESTED SOME INTAKE OF FORMATION WATER INTO HOLE. IT IS THOUGHT BY DRILLER THAT THIS WATER OCCURS BETWEEN 1,000 FEET DEPTH AND THE BOTTOM OF THE HOLE.

SIGNED ...WESTRALIAN.OIL.LIMITED....

LEGAL MANAGER ..E.F..DORKING-CLARK..... COY.  
Secretary.

*J. Thomas*  
*6.3.57*

Date .28.../...2.../...1957.

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

Mines (Petroleum) Act, 1935.  
Section 45.

Record of Work at ...YARRAM NO. 1..... bore on

\* Petroleum Prospecting Licence Number .....199..... during week  
~~\* Petroleum Mineral Lease~~  
ending .MIDNIGHT, .MARCH.3rd.. 19.57.

DEPTH	DESCRIPTION OF STRATA
1182'6"-1250'	Gravel and sand, white, coarse, subangular quartz. Pyrite, brown coal.
1250' -1260'	Brown coal and sand, white coarse, subangular quartz.
1260' -1320'	Gravel, granule and sand, white, coarse, subangular quartz. Pyrite, brown coal.
1320' -1410'	Weathered basalt.
1410' -1463'	Hard Basalt.

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.)

No oil gas or artesian water was struck. Hole cased to 1292 feet. Cemented at 1292 feet.

*J. J. Thomas*  
*15.3.57*

SIGNED .. WESTRALIAN OIL LIMITED .....

LEGAL MANAGER ..... E.F. DORKING-CLARK, .. COY.  
Secretary.

Date ..11./...3../..1957..

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

Mines (Petroleum) Act, 1935.  
Section 45.

Record of Work at .....YARRAM NO. 1..... bore on

\* Petroleum Prospecting Licence Number .....199..... during week  
\* ~~XXXXXXXXXXXXXXXXXXXX~~  
ending ..Midnight, March 10th. 19.57.

DEPTH	DESCRIPTION OF STRATA
1463' - 1610'	Hard dark greyish black basalt.
1610' - 1650'	Soft brown decomposed basalt.

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.)

No oil, gas or artesian water met with.

*Dr. J. ...*  
*18.3.57*  
*WJ*

SIGNED ..... WESTRALIAN OIL LIMITED.....  
E.F. DORKING-CLARK,  
LEGAL MANAGER ..... Secretary..... COY.

Date ...14./...3../1957..

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

Mines (Petroleum) Act, 1935.  
Section 45.

Record of Work at ... YARRAM NO. 1 ..... bore on

\* Petroleum Prospecting Licence Number ..... 199 ..... during week  
\* ~~Petroleum Prospecting Licence~~  
ending ... 7 a.m., March 15th ..... 1957.

DEPTH	DESCRIPTION OF STRATA
1650' - 1680'	Grey and brown clay - decomposed basalt.
1680' - 1700'	Grey and brown decomposed basalt, soft.
1700' - 1770'	Grey partly weathered basalt and dark greyish, black, hard basalt.
1770' - 1810'	Gravel, granule, sand and sandstone.
1810' - 1850'	Greenish grey finegrained arkose. <i>Jurassic</i>
1850' - 1875'	Greenish grey finegrained arkose, and grey shale. <i>The drilling is now complete? at this depth.</i>

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.)

No oil, gas or artesian water met.

*Dr. M. ...  
C. d. 57*

SIGNED ..... WESTRALIAN OIL LIMITED.....

LEGAL MANAGER ..... E.F. DORKING-CLARK... COY.  
Secretary.

Date ... 26 / ... 3 / ... 1957.

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.

APPENDIX 2.0

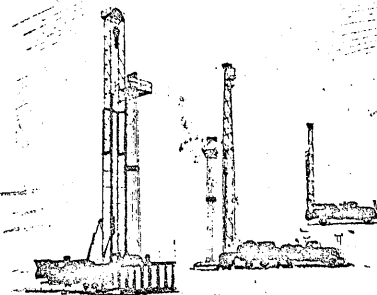
Lithology

Ronald Peterson, Yavram  
Church Rd.

- 0 - 5 soil
- 5 - 20 yellow clay
- 20 - 40 fine sand clay
- 40 - 50 Coarse sand
- 50 - 75 yellow clay
- 75 - 85 Coarse sand
- 85 - 155 Grey Clay
- 155 - 275 Brown coal
- 275 - 300 Inferior brown coal
- 300 - 320 Sandy clay
- 320 - 535 brown clay
- 535 - 585 sandy clay
- 580 - 600 fine to coarse sand
- 600 - 620 brown clay
- 620 - 650 Coarse sand with grey clay
- 650 - 675 Clay
- 675 - 700 Sandy Clay
- 700 - 705 fine sand
- 705 - 720 Coarse sands
- 720 - 785 Sandy clay
- 785 - 795 Fine to coarse sand
- 795 - 810 Grey sandy clay
- 810 - 830 Gravel
- 830 - 835 Fine sand
- 835 - 840 Sandy grey clay

APPENDIX 3.0

Bore Report



**W. L. SIDES & SON PTY. LTD.**  
**DRILLING CONTRACTORS**

REGISTERED OFFICE: WELLINGTON RD., CLAYTON, VICTORIA, 3168  
P.O. BOX 228, CLAYTON, 3168  
TELEGRAMS AND CABLES:  
SIDESON, CLAYTON, VICTORIA

10th May, 1968.

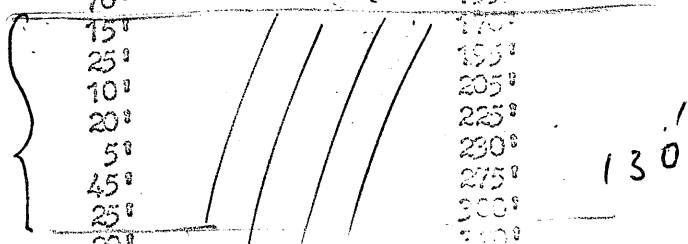
*Council Allotment*  
36

Mr. R.C. Peterson,  
Church Street,  
YARRAM. VIC. 3971.

**YARRAM YARRAM**  
Bore No. 8002.

BORE REPORT.

<u>Strata</u>	<u>Depth</u>	<u>Total</u>
Clays and fine sands	45'	45'
Coarse sand	5'	50'
Clays	25'	75'
Coarse sands	10'	85'
Clays and fine sands	70'	155'
Inferior brown coal	15'	170'
Brown coal	25'	195'
Woody brown coal	10'	205'
Brown coal	20'	225'
Woody brown coal	5'	230'
Brown coal	45'	275'
Inferior brown coal	25'	300'
Fine sands and clays	30'	330'
Brown clay	160'	490'
Grey clay	25'	515'
Brown clay	30'	545'
Brown clay with very fine sands	20'	565'
Inferior coal	10'	575'
Grey clay with fine to coarse sand	10'	585'
Grey clay	5'	590'
Fine to coarse sands with some clay	20'	610'
Grey and brown clay	20'	630'
Coarse sand with clay	5'	635'
Fine sandy clay	5'	640'
Coarse sands with grey clay	20'	660'
Clay with some sand	20'	680'
Fine to coarse sand	5'	685'
Coarse sandy clay	25'	710'
Fine sand	5'	715'
Fine to coarse sands	5'	720'
Coarse sands	10'	730'
Coarse sandy clay	10'	740'
Fine sandy clay	10'	750'
Grey sandy clay	20'	770'
Brown clay	10'	780'
Sandy clay	10'	790'
Yellow and grey sandy clays	5'	795'
Coarse sands	10'	805'
Sandy clays	15'	820'
Coarse sands	15'	835'
Gravelly sands	5'	840'
Fine sands	5'	845'
Sandy clays	12'	857'



130

*See over*

NOTE:- 9 WILLSCREENS (nominal 3' lengths) were installed in the bores as follows:-

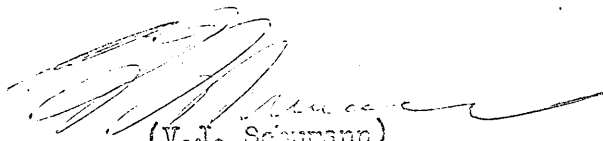
- 4 Screens - one .098 and three .073  
from 816' to 827ft.
- 3 Screens - .060 from 786' to 795'
- 1 Screen - .040 from 714' to 717'
- 1 Screen - .048 from 717' to 720'

Bore flowed over the top at a rate of approximately 6000 g.p.h.

Water was air lifted from the bore at a rate of approximately 20,000 g.p.h.

Water tested with Salinity Bridge reads 320p.p.m.

W.L. SIDES & SON PTY. LTD.

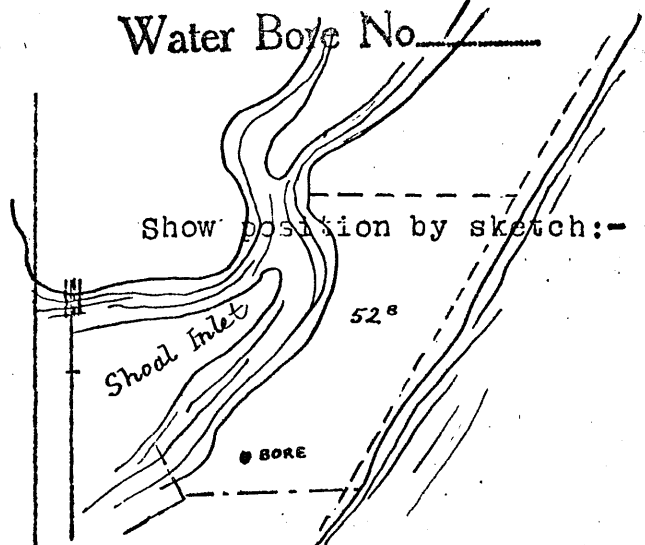
  
(V.J. Schumann)  
SALES MANAGER.

Water Bore No. \_\_\_\_\_

DEPARTMENT OF MINES - VICTORIA

LOG OF PRIVATE BORE FOR WATER

Location of Bore... C.A. 52<sup>B</sup>.....  
 ..... PARISH OF BALLOONG.....  
 ..... COUNTY OF BULN BULN.....  
 ..... AS PER SKETCH.....  
 Owner or Occupier: .....  
 WOODSIDE (LAKES ENTRANCE) OIL CO. N.L..  
 Date Commenced: ..28/.3./1955  
 Date Completed: ..30/.3./1955



Parish **BALLOONG 48**  
 Allotment Section  
 52B.

Strata	From		To	
	Ft.	Ins.	Ft.	Ins.
Surface Sand	0'		28'	
Salt Water Sand	28'		32'	
Blue Clay	32'		34'	
Coarse Sand	34'		37'	
Blue Clay	37'		42'	
Gravel	42'		54'	
Sandy Clay	54'		90'	
Sand and Clay	90'		95'	
Shell, grit and Sand	95'		110'	
Coarse gravel	110'		136'	
Sandy Clay	136'		138'	
Total Depth				

Water struck at .....95... feet. Water stands at ....25.. feet from surface.

Estimated quantity ..3,000.. gallons per hour.

Quality of water: Good. ~~fair~~ ~~bad~~ (Cross out words not applicable)

Length of casing left in bore at completion:

8": ..... ft; 6": 118'6".....ft; 5" .....ft; 4" .....ft.

Remarks: .....

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

(Sgd.) REES B. WITHERS.....  
 Signature of Contractor.

Office Use Only:  
 Chief Government Geologist.....  
 Engineer for Boring .....  
 Drafting Branch .....

Address: 178 VICTORIA PARADE.....

..... EAST MELBOURNE.....

Date: ..... 20/4/55.....

DEPARTMENT OF MINES - VICTORIA

LOG OF PRIVATE BORE FOR WATER

8002

Water Bore No. 2

Show position by sketch:-

See County Sheet

Location of Bore.....

..... Same location as company

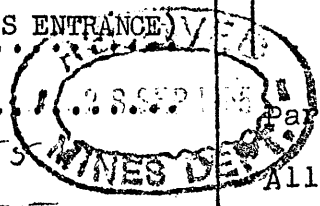
..... Proposed No 1. Oil Well.....

Owner or Occupier: WOODSIDE (LAKES ENTRANCE) OIL COMPANY NO LIABILITY.

.....

Date Commenced: .12.1.8. / 1955

Date Completed: .17.1.8. / 1955



Parish BALLONG, Co. SHIRE OF BULN BU  
Allotment 48 Section  
52A

Strata	From	To
	Ft. Ins.	Ft. Ins.
Sand	0'	20'
Gravel with water	20'	53'
Hard Clay	53'	65'
Sand with little salt water	65'	88'
Heavy gravel with shells. Water brackish.	88'	114'
Sand and shells	114'	121'
Clay with pebbles	121'	146'
Sand - quite fine	146'	167'
Sand and gravel (coarse) Strong stream of water. Water very fine tasting.	167'	194'
Limestone shell	194'	195'
Clay (bottom)	195'	196'
Total Depth		196

Water struck at ..167..... feet. Water stands at ..20... feet from surface.

Estimated quantity ..5000... gallons per hour.

Quality of water: Good. ~~Fair~~. ~~Bad~~. (Cross out words not applicable)

Length of casing left in bore at completion:

8": ..... ft; 6": .178....ft; 5" .....ft; 4" .....ft.

Remarks: ..... Plus 18ft 4" Screen pipe and 8" Lead Packer  
..... Water encountered at 30 ft. but main stream at 167 ft.

Office Use Only:  
Chief Government Geologist.....  
Engineer for Boring .....  
Drafting Branch .....

WOODSIDE (LAKES ENTRANCE) OIL CO. N.L.  
.....  
Signature of Contractor.  
Address: 178 VICTORIA PARADE.....  
..... EAST MELBOURNE, C.2.....  
Date: ..27.9.55.....



Address:

VICTORIAN DEPT. OF MINES  
107 RUSSELL St.  
MELBOURNE.

CORE & CUTTINGS LAB.  
COLLIE St.  
FYSHWICK  
CANBERRA A.C.T.



Date: 5/11/70

Dear Sir,

The B.M.R. Core and Cuttings Laboratory is preparing to register cores/and/cuttings samples from the following well:

YARRAM No.1 (WESTRALIAN OIL Ltd.) 451

I would be most grateful if you will assist in the correct identification of the material by supplying the following additional information:

Well co-ordinates		<i>On surveyed road at N.W. corner of Div 79 Parramatta - south of Wiggan</i>
Elevation G.L.		<i>Unknown</i>
Elevation rig datum		<i>+51 / above sea level</i>
Rig type and model		
Date of spudding-in	-	<i>12<sup>th</sup> February 1957</i>
Date drilling completed	-	<i>15<sup>th</sup> March 1957</i>
Date of rig release	-	
State of completion		<i>Unknown</i>
Well status	-	<i>Dryhole 1075' deep.</i>
Number of cores taken	-	<i>Unknown</i>
Cored intervals	-	"
Core recoveries	-	"
Intervals of cuttings taken	-	"

Your early reply will be much appreciated.

Yours faithfully,

*R. K. Kain*  
Officer-in-Charge,  
Core and Cuttings Laboratory.

*Ch. J. Paul*

1/1

27th November, 1970.

The Officer in Charge,  
B.M.R. Core & Cuttings Laboratory,  
Collie Street,  
FYSHWICK. CANBERRA.A.CT.

Dear Sir,

Yarram No.1 (Westralian Oil Ltd.)

I refer to your letter dated the 5/11/70 and outline below certain information relating to the Yarram No.1. well;-

*N.W corner of*

Location: 12 chains south of allotment 79,  
Parish of Devon Latitude 38°-33'-05" South,  
Longitude 146°-37'-35" East. Datum Sydney  
Observatory.

Reg Datum: Ground level - 48 feet above M.S.L.  
Derrick floor - 51 " " "


Spudding date: 12th February, 1957

Completion date: 15th March, 1957

Well status: 6 inch O.D. casing set to 1292 ft. and  
cemented with 2½ tons of cement.

Comments: No oil or gas or definite shows of artesian  
water but driller thought some formation  
water between 1000 ft and 1150 ft.

Yours faithfully,

  
(R.G. Whiting)  
Director, Oil & Gas Branch

APPENDIX 4.0

Grainsize Analysis



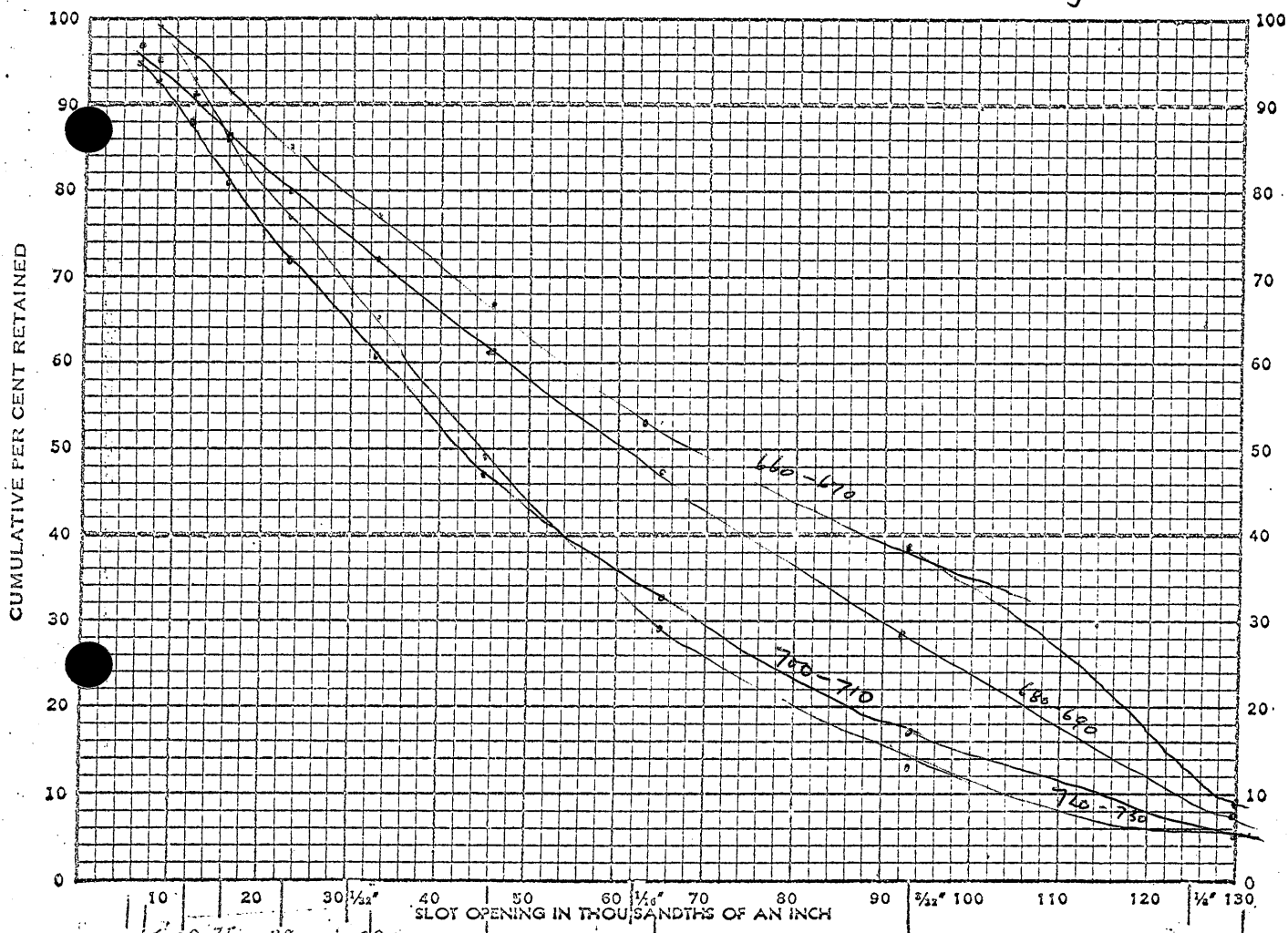
# Geological Survey of Victoria

Sample sent in by W.L. Sides & Son Date \_\_\_\_\_

Address \_\_\_\_\_

From well of \_\_\_\_\_

Remarks 660 - 670 - 150 gms



Sieve No.	Sieve Openings	Cumulative Per Cent Retained	Per Cent Passing
6	.131	12.70	87.30
8	.093	46.22	53.78
10	.065	79.00	21.00
14	.046	99.51	0.49
20	.033	115.38	-15.38
28	.023	127.30	-27.30
35	.016	136.70	-36.70
48	.012	147.57	-47.57
60	.008	149.22	-49.22
100	.006	150.20	-50.20
5	SCREEN SLOT	100	100

NOTES: Eff. Size .012

Uniformity coeff. between 4 + 7

SLOT OPENING RECOMMENDED: \_\_\_\_\_

RECOMMENDED SCREEN: DIA. \_\_\_\_\_ IN. LENGTH \_\_\_\_\_ FT.

BY: \_\_\_\_\_

50  
020



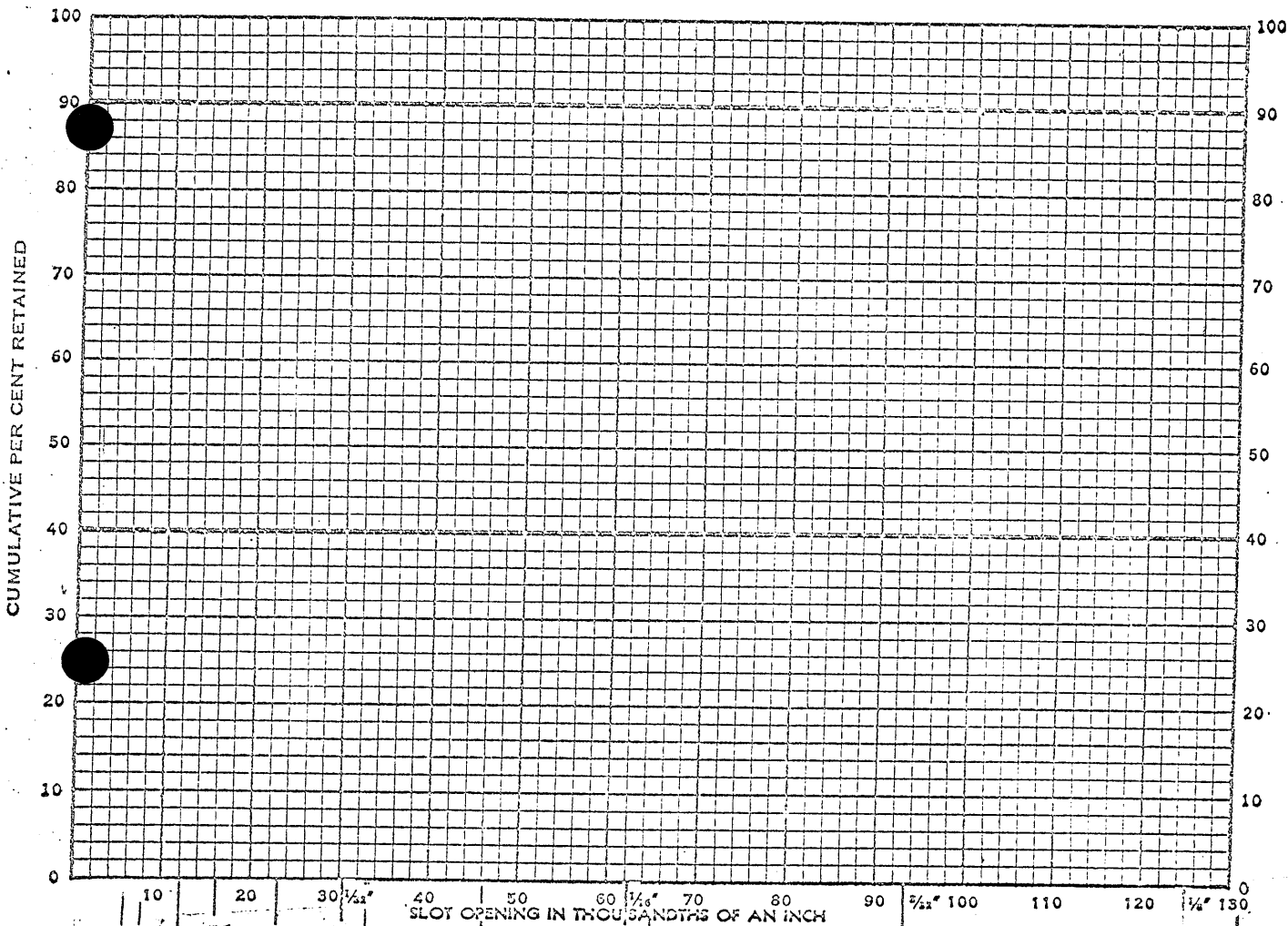
# Geological Survey of Victoria

Sample sent in by \_\_\_\_\_ Date \_\_\_\_\_

Address \_\_\_\_\_

From well of \_\_\_\_\_

Remarks 720-930 - 200 gms.



Sieve No.	Sieve Openings	Cumulative Per Cent Retained	Cumulative Per Cent Retained
6	.151	6.80	3.40
8	.093	25.72	12.96
10	.065	59.56	29.78
14	.046	99.60	49.60
20	.033	130.42	65.21
28	.023	158.68	77.74
35	.016	173.24	86.62
48	.012	186.00	92.00
65	.008	193.28	96.64
100	.006	197.00	98.50
5	SCREEN SLOT	199.70	100

NOTES: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

SLOT OPENING RECOMMENDED: \_\_\_\_\_

RECOMMENDED SCREEN: DIA. \_\_\_\_\_ IN. LENGTH \_\_\_\_\_ FT.

BY: \_\_\_\_\_



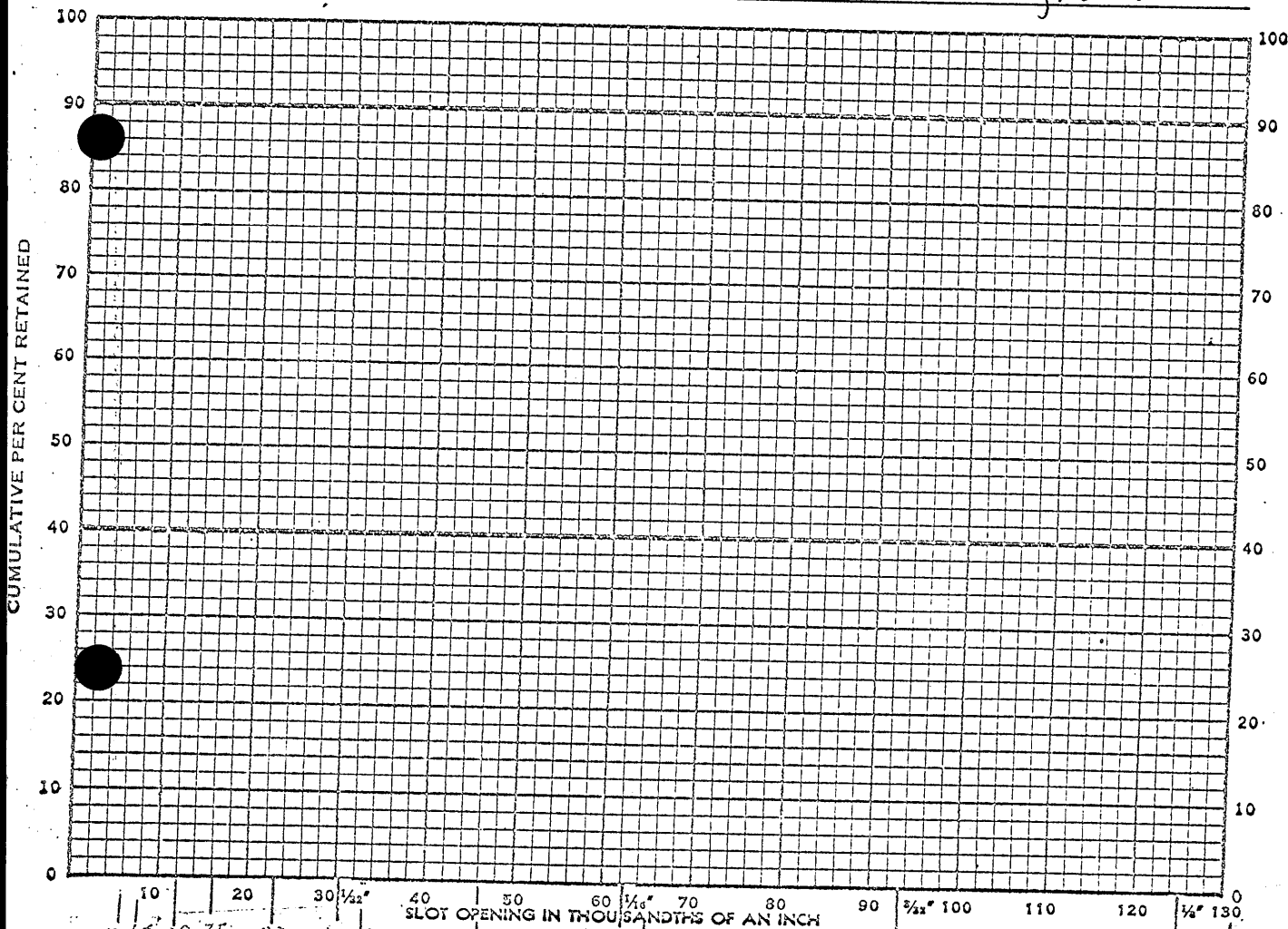
# Geological Survey of Victoria

Sample sent in by \_\_\_\_\_ Date \_\_\_\_\_

Address \_\_\_\_\_

From well of \_\_\_\_\_

Remarks 680 - 690 - 200 gms.



SIEVE OPENINGS	CUMULATIVE PER CENT RETAINED	
.151	16.50	8.25
.093	56.90	29.45
.065	95.50	47.75
.046	122.70	61.35
.033	144.25	72.18
.023	160.55	80.28
.016	177.30	86.65
.012	183.06	91.52
.008	190.32	95.16
.006	195.06	97.53
SCREEN SLOT	200.00	100

NOTES: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

SLOT OPENING RECOMMENDED: \_\_\_\_\_

RECOMMENDED SCREEN: DIA. \_\_\_\_\_ IN. LENGTH \_\_\_\_\_ FT.

\_\_\_\_\_

BY: \_\_\_\_\_



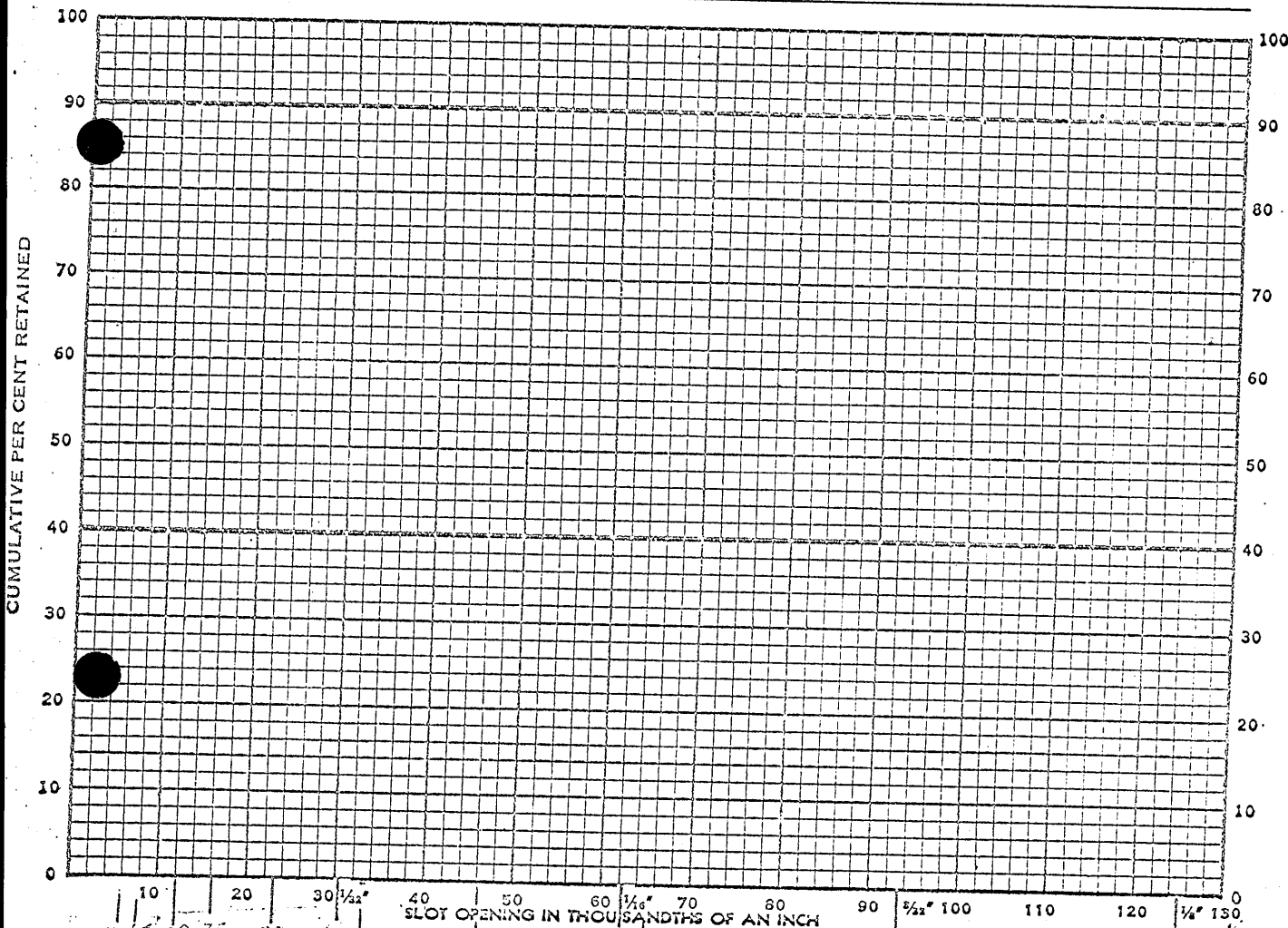
# Geological Survey of Victoria

Sample sent in by \_\_\_\_\_ Date \_\_\_\_\_

Address \_\_\_\_\_

From well of \_\_\_\_\_

Remarks 700 - 710 - 200 gm



SIEVE OPENINGS	CUMULATIVE PER CENT RETAINED	
.181	<del>35.72</del>	
.093	35.72	17.57
.065	65.72	32.86
.046	94.98	47.49
.033	122.25	61.12
.023	144.5	72.3
.016	162.45	81.22
.012	176.96	88.48
.008	186.90	93.35
.006	192.85	96.42
SCREEN SLOT	199.05	99.52

NOTES: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 SLOT OPENING RECOMMENDED: \_\_\_\_\_  
 \_\_\_\_\_  
 RECOMMENDED SCREEN: DIA. \_\_\_\_\_ IN. LENGTH \_\_\_\_\_ FT.  
 \_\_\_\_\_  
 BY: \_\_\_\_\_

APPENDIX 5.0

Palynology



1957/17 U.P

PALYNOLOGICAL EXAMINATION OF LIGNITES FROM WESTRALIAN OIL COMPANY YARRAM NO. 1 BORE, AND A COMPARISON WITH FROME LAKES LTD. LIGNITE FROM GIPPSLAND NO. 2 BORE AT 613 FEET.

Localities:

Ph: Devon	Balloong
Bore: Yarram No. 1	No. 2.
Depth: 240'-250', 320'-330', 980'-990', 1150'-1160', 1282'	613'
Rock Types: Lignite, or lignitic clays and gravels.	Lignitic clay with vari- sized quartz pebbles.
Supplier: Westralian Oil Co.	Frome Lakes Gippsland Fty. Ltd.

Samples from the Yarram No. 1 bore were taken from the five above specified horizons and treated by the Hydrofluoric acid - Schulze's Soln. method.

These preparations were then examined under the microscope, and spore assemblages compared.

In particular a comparison was made between the Nothofagus pollens present in each horizon and those present in a previously treated preparation from Frome Lakes Bore No. 2, Ph. Balloong at 613'.

This site is some 20 miles to the East of the Yarram site.

The Nothofagus specimens in this previous preparation having been designated as species 1, 2, 3 and 4, new species found in the Yarram preparation were given numbers from 5 to 15 consecutively.

Further study of these 15 species reduced the number actually present to 8.

A tentative correlation with Cookson's species "a" - "j" was made (see Table No. 1).

An examination and study of the Nothofagus species present in the Frome Lakes slide has been described in a previous report (attached) and a predominance of Cookson's species "e" and "f" reported.

Studies of preparations from the Yarram horizons were made in an attempt to correlate one or more of these with the 613' bed of Frome Lakes.

Examination of Samples

1. 1282'

Lithology: Lignite

From this material some extremely rich spore preparations were made, all free from curicular and other masking vegetable remains.

The wide range of Nothofagus species present (at least 6 of Cookson's species "a" - "j" were observed occur in such frequencies as to preclude any possibility of correlation with the Frome Lakes 613' preparation.

Table No. 2 below, lists the percentage frequency of *Nothofagus* pollen species in the various Yarram horizons, and a comparison is made with frequencies of similar *Nothofagus* pollens at 613', in the Frome Lakes Bore No. 2.

The presence of species No. 6 which has been related to Cookson's *Nothofagus* species "g" found at Moorlands S.A. in the Lower Tertiary is an indication of a similar age for this horizon.

2. 1150'-1160'

Lithology: Lignite with a little pebbly quartz.

Spores occurred too infrequently here to warrant any comparison with other assemblages.

3. 980'-990'

Lithology: Lignitic clay with vari-sized quartz pebbles.

Lithologically this sample shows a marked similarity to the Frome Lakes 613' sample. Slight textural differences are noticeable but basically they are remarkably similar.

However, palynologically an important difference exists. In this Yarram sample a large proportion (40%) of *Nothofagus* "sp." 5 pollens is present.

No specimens of this pollen "species" has been found in the Frome Lakes preparation.

The preparation from this horizon was much contaminated with extraneous cuticular matter and cellular debris.

4. 320'-330'

Lithology: Lignite with some clay and quartz pebbles.

In the preparation from this horizon the percentages of "species" 1 and 2 pollens begin to approximate those of these "species" in Frome Lakes 613' horizon.

However, in this Yarram preparation once again the presence of "species" absent from Frome Lakes preparation makes no direct correlation possible.

A feature of this horizon was the appreciable number of 5-pored specimens present.

Table 3 below lists the percentage of five pored pollens for each horizon.

5. 240'-250'

Lithology: Clay with lignite and vari-sized quartz pebbles.

This preparation contains *Nothofagus* "species" 1 and 2 in proportions very similar to that of Frome Lakes bore No. 2 613' preparation.

No other species are present in any quantity, and of all the horizons examined this is palynologically the closest equivalent to the Frome Lakes assemblage.

Conclusions:

1. The 240'-250' horizon in Yarram No. 1 bore when compared on a basis of Nothofagus species present bears a close relationship to the 613' horizon in Frome Lakes No. 2 bore.

This conclusion does not necessarily mean that both bores cut this bed at these depths.

Factors affecting the floral composition of samples received for examination are:-

- (a) Contamination of sample due to dangers inherent in ditch sampling methods.
- (b) Environmental changes which may have occurred in the 20 miles or so between the two drill sites. New Nothofagus species may become introduced into an area over this distance, and naturally affect the floristic composition of the sample examined. Environment may later change to that existing in the first area examined, thus leading to false correlation of two horizons studied.

2. That when available, samples from different horizons in localities between these two drill sites should be examined to see if any gradation in Nothofagus fossil pollen assemblages in the one bed does exist.

References:

See attached report on Frome Lakes No. 2 Bore, 613'.

TABLE NO. 1 Tentative Correlation of Nothofagus species examined with Dr. Cookson's species "a" - "j".

Original Nothofagus species	No. referred to above.	Correlated with Dr. Cookson's species
1, 3, 9, 12, 14	1	"e"
2, 4, 11	2	"f"
5, 10	5	"b"
6	6	"g"
7	7	?
8	8	?
13	13	"d"
15	15	"e"

TABLE NO. 2 Nothofagus species pollens in Yarran and Frome Lakes bores at various horizons.

Nothofagus sp.	Frome Lakes Bore No. 2		Yarran Bore No. 1							
	613'		1282'		980'		320'		240'	
	1st Count	2nd Cnt	1st Cnt.	2nd Cnt.	1st Cnt.	2nd Cnt.	1st Cnt.	2nd Cnt.	1st Cnt.	2nd Cnt.
No. 1	60	65	45	40	50	47	46	57	50	55
No. 2	40	35	14	20	12	2	30	26	50	45
No. 5			30	25	29	40	8	5		
No. 6			6	8						
No. 7				1	10	11				
No. 8				2			3	1		
No. 13							12	12		
No. 15			2	3						

Note 1 Fifty pollens were examined in each count.

2 Percentage figures refer to total Nothofagus species.

TABLE NO. 3 Percentages of 5 pored Nothofagus pollens.

	Frome Lakes Bore No. 2		Yarran Bore No. 1			
	613'		1282'	980'	320'	240'
5 pored <u>Nothofagus</u> Pollens	23%		8%	7%	52%	35%

*Handwritten notes:*  
 100%  
 100%  
 100%

PROGRESS REPORT ON PALYNOLOGICAL EXAMINATION OF  
LIGNITIC CLAY SAMPLE SUBMITTED BY  
FROME LAKES PTY. LTD.

Locality

Ph: Balloong  
 Bore: No. 2  
 Depth: 613'  
 Rock Type: Lignitic clay with vari-sized quartz pebbles.  
 Supplier: Frome Lakes Gippsland Pty. Ltd.

A representative sample of this material was macerated and treated by the Hydrofluoric acid - Schulze's Soln. method. This preparation was then examined under the microscope to determine the presence or absence of plant remains.

Result of Examination

A large number of microspores embracing many plant species were noted.

To facilitate a more rapid dating of the microflora a study was made of four species of Nothofagus pollens here designated as species 1, 2 3 and 4.

A comparison can be made between species 1 and 2, and

- (i) Cookson's \* Nothofagus sp. e and f.
- (ii) Couper's + Nothofagus (cranwellae group).

(i) These comparisons are set out below in tabular form.

	Nothofagus sp. e (Cookson)	Nothofagus sp. 1
Exine thickness	1u	less than 1u
Grain	Strongly angular Diam. 18.6 - 42.5u	Strongly angular Diam. 25 - 30u
b.		
	Nothofagus sp. f (Cookson)	Nothofagus sp. 2
Exine thickness	2u	less than 1u
Grain	Very strongly angular Diam. 26 - 47u	Very strongly angular 35u Average.

Cookson states that the association of sp. e with sp. f is common, with sp. e predominating in number, as also does sp. 1 above.

Species e and f are not classified by Cookson in either of the present day groups (Menziesii group or fusca group) of *Nothofagus* pollens.

(ii) Later, Couper in New Zealand proposed a term "cranwellae" for a group of extinct *Nothofagus* pollens with the following diagnostic features:-

"Ora functional, clearly rimmed, no pronounced thickening of exine around ora; In polar view grain usually angled, straight to concave between ora; Exine usually 1u or less with the sharp papillae of the Menziesii type.

A comparison of the properties of sp. 1 and 2 with the above description indicates that they belong to this cranwellae group.

A relationship of sp. 3 with any of Cookson's sp. a - j has not yet been established.

Species 4 may be an aberrant form as only one specimen has been found.

#### Age of Sample.

*Nothofagus* sp. e pollens have a wide range in the Middle Tertiary Period, and the same can be said to a lesser extent of sp. f pollens.

However, New Zealand species of the cranwellae group showing closest affinities to sp. 1 and sp. 2 have, according to Couper, a time range from the Upper Miocene through the Pliocene.

These pollens by comparison are probably of Upper Miocene to Upper Pliocene in age.

J. Douglas.  
Geologist.

#### References:

- \* Cookson, Dr. I.  
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