

**WELL SUMMARY
MARLIN-3
(W501)**

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1.0 WCR Text

WELL COMPLETION REPORT

ESSO MARLIN C-1

RE-NAMED (AUG. 1968) MARLIN 3

Type of Well

Second field confirmation well, Marlin oil and gas field.

Purpose of Well

To confirm the hydrocarbons discovered in Marlin A-1 and, in conjunction with the seismic mapping and well results, determine the size and reserves of both oil and gas in the structure.

Well StatisticsStatus Suspended gas and oil well.Location
Latitude ³² 39° 14' 44" S.
Longitude 148° 10' 16" E.
Shotpoint 109 Line EG-47.
Water Depth

192 feet

184?

Spudded

December 16, 1966.

Completed

February 5, 1967.

Total Depth

5845 feet.

Casing
30" @ 334 feet
20" @ 739 feet
13-3/8" @ 2229 feet
19-5/8" @ 5501 feet
Plugs
All production testing perforations squeezed.
2400 to 2100 feet
270 to 470 feet
Coring

Four cores were cut for a total footage of 103 feet and a recovery of 44.3 feet, or 43%. Thirty sidewall cores were shot and thirty recovered.

Mudlogging

Core Lab from 2270 feet to total depth.

Electric logging
IES 739 to 5845 feet
SGRC 739 to 5836 feet
GRN 4600 to 5845 feet
MLL 4600 to 5845 feet
LL 4600 to 5842 feet
FDC 4600 to 5845 feet
CDM 739 to 5845 feet
Hydrocarbons

Interval Ft.	Gross Ft.	Net Ft.	Rating
4806-5136	330	177	Gas (test, E.Log, Mudlog).
5136-5154	3 -18	3 -18	Oil ? (E.Log, SWC, partly confirmed by testing).

TestingZone 1 5140-5150 feet.
Perforated twice. Swabbed water with trace of oil and emulsion. Salinity 3390 ppm. Rocked well and produced water 3300 ppm with some emulsion and gas. Shut well in. When well opened flowed clear water at 7 bbl/hr. Salinity 3000-3300 ppm NaCl. R_w = 1.65-at 76° F. Zone squeezed.
Zone 2. 5140-5145 feet
After extensive swabbing, fresh water (3000⁺ ppm) with a few drops of oil was entering the tubing at the rate of 3 bbl/hr. Zone not squeezed.

Zone 3 5130-5140 feet + Zone 2.

Produced oil and gas without swabbing at following rates on various chokes.

<u>Oil(BOPD)</u>	<u>Gas (MMCF/D)</u>	<u>GOR</u>	<u>Water</u>	<u>FTP</u>	<u>BHP</u>
960	8.88	9250	0.2%	1040	1934
593	6.37	10730	0.05%	1500	2086
398	4.32	10860	Nil	1710	2176
1025	9.60	9370	Nil	900	1901
1068	10.30	9650	Nil	610	-

The oil is 50°-52° API gravity, the same as recovered in Marlin A-1. This oil is mixed with condensate and a heavier fraction. The total fluid flow has been reported. Negligible water was produced. Zones 2 and 3 squeezed.

Zone 4 5108-5111 feet

Flowed gas and condensate with no oil or water.

<u>Gas(MMCF/D)</u>	<u>GOR</u>	<u>BCPD</u>	<u>FTP</u>	<u>BHP</u>	<u>Choke</u>
1.74	100,000	17	485	660	1/2"

Geology

<u>Stratigraphy</u>	<u>Formation</u>	<u>Top</u>	<u>Bottom</u>	<u>Thickness</u>	<u>Predicted Top</u>
	Water	Sea Level	192	192	
	Pleistocene-Miocene	- 198	4277(-4246)	4085	
	Lakes Entrance	4277(-4246)	4806(-4775)	529	4260
	Latrobe Valley	4806(-4775)			
	Gas/Oil Contact	5136(-5105)			
	Oil/Water Contact	5154(-5123)??	- Unable to definitely		
	or	5138(-5107)??	establish.		

Lithology

No sample returns above 2270 feet.

Gippsland Formation - Miocene

2270-4277

Marl & Calcareous Mudstone; light grey, soft, light grey-green, fossiliferous, trace quartz grains and carbonaceous flecks, trace pyrite.

Lakes Entrance Formation - Oligocene

4277-4806

Calcareous Mudstone; light olive grey and light grey, soft, similar to above except for occasional grains of glauconite, slight colour change.

Latrobe Valley Delta Complex - Eocene

4806-5845

Interbedded sandstone, siltstone, shale, coal & dolomitic sandstone & dolomite.

Sandstone; dominant lithology, quartzose, light grey, made up of loose clear, clean quartz, very fine to granule, mainly medium to coarse, poor to fair sorting, sub-angular to sub-rounded, carbonaceous and micaceous flecks, trace of pyrite, minor clay matrix in part.

Sand percentage - 51%.

Siltstone; light brown, micaceous, carbonaceous grading to shale in places, pyritic.

Coal; brown black.

Dolomitic Sandstone; quartzose, light grey to white, light tan, hard, tight, fine to granule, dominantly coarse to very coarse. Dolomitic cement and in places 100% dolomite.

(Drill Depths) With Marlin B-1 located 1.5 miles S. of C-1

Correlations

	<u>Marlin C-1</u>	<u>Marlin B-1</u>	
E. Log Marker	2195	2145	(+40)
Lakes Entrance	4278	4260	(+18)
Latrobe Valley	4806	4730	(+76)
"Tight Zone"	5045	5075	(+30)
Marker	5192	5220	(-28)
Marker	5274	5300	(-26)
Marker	5670	5700	(-30)

Conclusions

1. The structural configuration was generally confirmed.
2. This well further confirmed the gas column present in the structure.
3. The oil column was not completely defined.

CORE LABORATORIES, INC.
 Petroleum Reservoir Engineering
 DALLAS TEXAS

Company **ESSO EXPLORATION(AUST) INC.** Formation _____ Page **1** of **1**
 Well **ESSO MARLIN ~~C-1-3~~ 3** Cores **DIAMOND.** File **FL - 115.**
 Field **MARLIN.** Drilling Fluid **BENTONITE.** Date Report **6 JAN 68**
 County _____ State **VICTORIA.** Elevation **31' K.B.** Analysts **P.S. R.S.**
 Location _____ Remarks _____

CORE ANALYSIS RESULTS

(Figures in parentheses refer to footnote remarks)

SAMPLE NUMBER	DEPTH FEET	PERMEABILITY MILLIDARCYS		POROSITY PERCENT	RESIDUAL SATURATION			PROBABLE PRODUCTION	REMARKS
		HORIZONTAL	VERTICAL		OIL % VOLUME	% PORE	TOTAL WATER % PORE		
CORE NO. 1. INTERVAL: 5068 - 5095. RECOVERED: 25'.									
1.	5093	-*		25.2	2.4	49.6			SD; MED. GRN; GRY; SOFT; CLAY MATRIX. *NOT SUITABLE FOR PERM. PLUG.
CORE NO. 3. INTERVAL: 5125 - 5143. RECOVERED: 11'.									
2.	5136	866		30.9	12.6	49.0			SD; CSE. GRN; GRY; FRIABLE; CLAY MATRIX.
CORE NO. 4. INTERVAL: 5143 - 5171. RECOVERED: 8'.									
DISTANCE OF SAMPLE FROM TOP OF CORE.									
3.	1'.	3780		31.0	1.3	88.8			SD; MED-FN. GRN; MICACS; CARBONACEOUS; CLAY MATRIX.
4.	2'.	880		30.4	0.6	86.2			AS ABOVE.
5.	4'.	707		28.4	0.0	78.8			SD; AS ABOVE, W/ THIN COAL STRINGERS.
6.	5'.	3080		32.1	0.6	84.2			SD; AS ABOVE, W/ CARBONACEOUS LAMINATIONS.
7.	6'.	840		29.5	0.0	73.0			AS ABOVE.

NOTE:

- (*) REFER TO ATTACHED LETTER.
- (1) INCOMPLETE CORE RECOVERY--INTERPRETATION RESERVED
- (2) OFF LOCATION ANALYSES--NO INTERPRETATION OF RESULTS

These analyses, opinions or interpretations are based on observations and materials supplied by the client to whom, and for whose exclusive and confidential use, this report is made. The interpretations or opinions expressed represent the best judgment of Core Laboratories, Inc. (all errors and omissions excepted); but Core Laboratories, Inc., and its officers and employees, assume no responsibility and make no warranty or representations, as to the productivity, proper operation, or profitability of any oil, gas or other mineral well or sand in connection with which such report is used or relied upon.

2.0 Drilling Report

DRILLING REPORT - DEPARTMENT OF MINES, VICTORIA

7

TENEMENT NUMBER: Petroleum Exploration Permit No. 38.

HOLDER: Haematite Explorations Pty. Ltd.

OPERATOR: Esso Exploration and Production
Australia Inc.

RE-NAMED
(AUG. 1963)
MARLIN 3
WELL:

Marlin C-1. (Final report).

LOCATION: Latitude: 38°14'44"S
Longitude: 148°10'16"E

DATE OF REPORT: 6th February 1967.

DRILLING PROGRESS:

At Date of Report: 5845' ft.

Previous: 5845 ft.

DRILLING DATA:

Cement was spotted opposite the perforations using $1\frac{1}{2}$ barrels of cement and reversing out the excess. An error was made in drilling out the cement and another plug set. The well was cleaned out to 5112 ft. and a production packer set at 5000 ft.

The interval 5108 ft. to 5111 ft. was perforated and gas flowed at 1.74 MMcf/day. F.T.P. 900 p.s.i. Choke size was $\frac{1}{2}$ " and flow was accompanied by 10 bbl/MMcf of condensate. F.T.H.P. 485 p.s.i. build up to C.I.T.H.P. 1850 p.s.i. after 2 hours.

The perforated interval was squeezed off and the plugging programme put into effect. Some minor difficulties were encountered in picking up the anchors but operations were completed on February 5 and Glomar III moved off location.

WELL DATUM: Rotary Table 31' above mean sea level.

WATER DEPTH: 184 feet.

DRILLING FLUID PROPERTIES - Refer daily drilling mud log.

CASING AND CEMENTING OPERATIONS:

Squeezed off perforations 5108-5111 - 1½ barrels of cement.
Cement plug ± 2400 ft. - 2085 ft.
Cement plug 470 ft. - 270 ft.

LOGS RUN: -

STAND-BY TIME: -

W. M. Lonie
W. M. Lonie, General Manager.

DRILLING REPORT - DEPARTMENT OF MINES, VICTORIA

TENEMENT NUMBER: Petroleum Exploration Permit No. 38.

HOLDER: Haematite Explorations Pty. Ltd.

OPERATOR: Esso Exploration Australia Inc.

WELL: MARLIN C-1. (6)

LOCATION: Latitude: 38°14'44"S

Longitude: 148°10'16"E

DATE OF REPORT: 30th January, 1967.

Drilling Depth (Date of Report) 5845 ft.

DRILLING PROGRESS:

Date of Report: 5845 ft.

Previous: 5845 ft.

DRILLING DATA:

The interval 5140' to 5145' was reperforated. Swabbing to 3700' resulted in the recovery of 33 bbls fluid. (12 bbls above fluid pumped into well and represents a flow of 3 bbls/hr. for 4 hours).

NaCl = 3500 ppm (swab sample). A bottom hole sample was taken and recovered water and a few drops of oil.

Additionally perforated 5130' to 5140' at 4 shots per foot. Cleaned up to flare. Test commenced at 0615 hours on January 25. Flowed 917 bbls oil per day - 52° gravity API. Gas rate 7.7 MMcf/day. Trace of bottom sediments and water. Choke size 44/64". F.T.P. 990 p.s.i. Separator pressure 450 p.s.i. Gas/Oil ratio 8400 tends to confirm log interpretation.

The Choke size was changed to 1/2" and the flow rates 600 BOPD and 6.8 MMcf/day. Gas/Oil ratio 11,000. F.T.P. 1500 p.s.i.

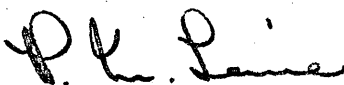
A three hour test with 3/8" choke flowed 402 BOPD (metred), 364 BOPD (in tank). 4.18 MMcf/day gas. Gas/Oil ratio 10,400. No water or sand. F.T.P. 900 p.s.i.; Separator Pressure 560 p.s.i. This test ended at 2005 hours on 26th January.

A final flow test was made with a 52/64" choke and flowed water for one or two minutes before again flowing oil. Time of test 1940-2040 hours, 900-1000 BOPD, 10.3 MMcf/day of gas. Gas/Oil ratio 10,000. 50° API gravity oil and NaCl 3700 ppm., Salinity of water.

DRILLING DATA (CONT'D)

The well was then killed with mud and the tubing pulled.

The production packer was drilled out and a bridge plug run on the wire line, but unable to penetrate below 4600'. In withdrawing, the plug was accidentally set at 400 ft., subsequently recovered and a second attempt made to get below 4600 ft. Again in recovering the bridge plug, it was accidentally set off at 500 ft. and had to be drilled out.


W.M. Lonie, General Manager.

DRILLING REPORT - DEPARTMENT OF MINES, VICTORIA

TENEMENT NUMBER: Petroleum Exploration Permit No. 38

HOLDER: Haematite Explorations Pty. Ltd.

OPERATOR: Esso Exploration Australia Inc.

WELL: Marlin C-1

LOCATION: Latitude: 38°14' 44" S

Longitude: 148° 10' 16" E

DATE OF REPORT: 23rd January, 1967.

Drilling Depth (Date of Report) 5845'

DRILLING PROGRESS:

Date of Report: 5845'

Previous: 5845'

DRILLING DATA:

Testing operations continued

After swabbing to 2800' the wireline picked the top of fluid at 3180 feet and a bridge at 4991 feet. Tubing was filled with fresh water which was reversed circulated, recovering 2 gallons of rust and cement.

Reperforated at 0400 hours on 16th January and picked up perforations on Casing Collar Log. Slight reaction from well was followed by swabbing. Wireline measured rise of 192 feet in 115 minutes.

Sinker bar was used to remove bridge at 5145 feet and clear to 5285 feet, water level at 2242 feet. B.H.S. at 5140 feet recovered 600 cc of gas cut water with slight fluorescence. 3300 ppm.

Swabbed to 3000 feet and recovered 1385 feet of frothy water with hydrocarbon odour. Top of fluid from wireline was 2856 at 0800 hours and 2755 feet at 0900 hours.

Swabbed to 3489 feet and recovered 990 feet of gas cut muddy water (2900 ppm Cl) with traces of foam having fluorescence and oil smell. B.H.S. at 5140 feet recovered 600 cc fluid (2700 ppm Cl). Water level 3215 after rise of 60 feet in 1 hour.

Swabbed to 3860 feet recovered 1125 water (3390 ppm Cl). Foam traces determined as 80/20 oil/water emulsion.

Pumped 36 bbl fresh water to 1900 psi surface pressure and bled back. Well gave strong flow of gas with water and emulsion

LITHOLOGICAL SUMMARY OF FORMATION:

before bleeding off to zero, then flowed by heads at rate of 2 bbl/hour. Fluid 98% water (3300 ppm Cl), i.e., 5400 ppm NaCl equivalent with 2% emulsion.

Shut well in at 0600 hours on 18th January for B.H.P. survey and opened at 0700 hours - rate 2 bbl/hour. Shut in again at 0845 and C.I.T.H.P. built up to 46 psi by 0915. Re-opened at 1120 - rate 10 bbl/hour with clear water (3300 ppm Cl) Rw = 1.65 ohm/m at 76 F.

Total production was 117 bbl of water.

Well was killed at 0400 hours on 19th January and the open interval of 5140 - 5150 was squeezed off. The packer was milled out before a test of the cement squeeze showed a drop in pressure from 2000 to 1500 psi in 10 - 15 minutes. A retrievable packer was set but before re-squeezing a pressure test of 4500 psi did not drop or fade so a Baker Production Packer was set at 5060 feet. The well will now be swabbed dry and observed. If cement squeeze is successful, the tubing will be filled with water and the interval 5140 - 5145 feet perforated again.

.....

Melbourne
GH/JF
24/1/67

RECEIVED

DRILLING REPORT - DEPARTMENT OF MINES, VICTORIA

TENEMENT NUMBER: Petroleum Exploration Permit No. 38.

HOLDER: Haematite Explorations Pty. Ltd.

OPERATOR: Esso Exploration Australia Inc.

WELL: MARLIN C-1

4

LOCATION: Latitude: 38°14'44" S.

Longitude: 148°10'16" E.

DATE OF REPORT: 16th January, 1967.

Drilling Depth (Date of Report) 5845'

DRILLING PROGRESS:

Date of Report: 5845'

Previous: 5845'

DRILLING DATA:

No drilling took place in the period under review but from previous drilling the following has resulted -

Top of Latrobe Valley Formation 4798' ³¹ (-4767) interpreted

From the Neutron Log - (Schlumberger Picks)

- 5092 - 5112 - Gas-Oil Transition
- 5135 - 5155 - Oil
- 5162 - Water

Sidewall coring was completed on January 10 and recovery was 29 samples from 30 shots.

Sandstone samples

5155	5158	5148	5146	5144	5142
5140	5138	5136	5134	5110	5108
5104	5102	5099	5196	4872	

Shale samples numbered 11.

DRILLING FLUID - PROPERTIES

See daily drilling mud log.

CASING AND CEMENTING OPERATIONS

9-5/8" casing set at 5501 and cemented

(top of cement picked at 3145')

STAND-BY TIME

RECEIVED
23 JAN 1957

LITHOLOGICAL SUMMARY OF FORMATION

WELL DATUM:

WATER DEPTH:

Drilling Data continued :

Sidewall Cores at 5136 indicated oil whereas 5134 showed no fluorescence i.e., gas.

In summary	5091 - 5012	gas
	5132 - 5135	gas
	5135 - 5145	oil

9-5/8" casing was set 5501 ft. and cemented. A packer was set at 5070 and repairs of minor nature made to B.O.P.

Testing operations commenced but before successfully perforating at 545 hours on January 15, 5 trips with sinker bar were needed to clear debris. (rust and cement)

Swabbing to 2800' will be followed by attempts to re-perforate.

LOGS RUN: - (For results of logs see daily drilling report)

Velocity Survey

IES
SGRC
MLL
FDC
Neutron
CDM
T, Casing Collar and C.B.L.

K.A. Rowell
K. A. Rowell
General Manager

DRILLING REPORT - DEPARTMENT OF MINES, VICTORIA

TENEMENT NUMBER: Petroleum Exploration Permit No. 38

HOLDER: Haematite Explorations Pty. Ltd.

OPERATOR: Esso Exploration Australia Inc.

WELL: Marlin C-1

3

LOCATION: Latitude: 38° 14' 44" S

Longitude: 148° 10' 16" E

DATE OF REPORT: 10th January, 1967.

Drilling Depth (Date of Report) 5845'

DRILLING PROGRESS:

Date of Report: 5845'

Previous: 5025'

820'

=====

DRILLING DATA:

Core 1 was cut from 5068 - 5095 ft. and 25.3 ft. recovered but after cutting core 2 from 5095 - 5125 the core was lost due to a faulty catcher assembly. Core 3 was cut from 5125 - 5143' and recovery was 11 ft. then core 4 was cut from 5143 - 5151' with a recovery of 8 ft. The core hole was reamed out before drilling ahead to 5845' which is T.D.

It is planned to run a full suite of logs together with sidewall sampling.

DRILLING FLUID - PROPERTIES

Refer daily drilling mud log.

CASING AND CEMENTING OPERATIONS

STAND-BY TIME

LITHOLOGICAL SUMMARY OF FORMATION:

13 JAN 1967

Top Lycopodium

4780 - 5000 Sandstone some shale and coal interbeds

5000 - 5050 Dolomitic sandstone light grey to white tight, hard, quartz grains breaking. Drilling rates vary from 2.3 mins/ft to 18.0 mins/ft.

5050 - 5068 Dolomitic sandstone, carbonaceous siltstone; dark grey, micaceous, pyritic and well compacted. D.R. 3.0 mins/ft.

5068 - 5095 Core 1*

5095 - 5125 Core 2*

5125 - 5144 Core 3*

5143 - 5171 Core 4*

Core 1*

5068 - 5095 ft. Cut 27'. Rec. 25.3 ft.

5068 - 5069 ' Coal

5069-5077' Shale, thin coal streaks

5077 - 5087' Coal, thin shale streaks

5087 - 5093' Shale

5098 - 5093.3' Sst. good, coarse, clean, quartzose: excellent porosity and permeability: 5% clay. No fluorescence, stain or cut. Good odour.

Core 2*

5095 - 5125' Cut 30'. Rec. 0.

Coring time : 5095 - 5115' 4.0 min./ft.

5115-5125' 11.0 min./ft.

Core 3*

5125 - 5144' Cut 19'. Rec. 11'.

5125 - 5135.5' Shale.

5135.5 - 5136 Sandstone, good, clean, porous, instant cut, odour, stain, etc.

Core 4*

5143 - 5171' Cut 28'. Rec. 8'.

(Core depths corrected one foot)

5143 - 5144' Shale

5144 - 5145' Sandstone 5% clay. No fluorescence, show, odour.

5145 - 5145'6" Sandstone, mottled, silty; shale laminae.

5145'6"-5151' Sandstone as above, becoming finer grained, clay matrix.

Note : Core depths assume recovery at top of cored interval: wait on log check.

5171 - 5845

Sandstone, in places dolomitic; siltstone with minor coal and shale. Some coarse loose sand at base.

.....

K. A. Rowell

K. A. Rowell, General Manager.

to BM

Melbourne
BMH/JF
10/1/67

DRILLING REPORT - DEPARTMENT OF MINES, VICTORIA

TENEMENT NUMBER: Petroleum Exploration Permit No. 38.

HOLDER: Haematite Explorations Pty. Ltd.

OPERATOR: Esso Exploration Australia Inc.

WELL: MARLIN C-1. (2)

LOCATION: Latitude: 38°14'44"S

Longitude: 148°10'16"E

DATE OF REPORT: 3rd January, 1967.

Drilling Depth (Date of Report) 5025'.

DRILLING PROGRESS:

Date of Report: 5025 ft.

Previous: 2270 ft.

2755 ft.

=====

DRILLING DATA:

With B.O.P. tested the casing shoe at 2229 ft. was drilled out and well drilled to 5025 ft. The first gas was encountered at 4765 ft. and the top of the Latrobe Valley is estimated to be 4765-4790 ft.

It is planned to drill to 5070 ft. and then core the probable oil zone.

STAND-BY TIME

DRILLING FLUID - PROPERTIES

Refer daily drilling mud log.

interbeds.

calcareous

CASING AND CEMENTING OPERATIONS

413-4130'

bed grading to mudstone with
grey-green colour.

from settings with top L.E.
Formation at 4130'.

STAND-BY TIME

[Faint handwritten notes]

DRILLING REPORT - DEPARTMENT OF MINES, VICTORIA

TENEMENT NUMBER: Petroleum Exploration Permit No. 38.
HOLDER: Haematite Explorations Pty. Ltd.
OPERATOR: Esso Exploration Australia Inc.

WELL: MARLIN C-1. ①

LOCATION: Latitude: 38°14'44"S
Longitude: 148°10'16"E

DATE OF REPORT: 26th December, 1966.

Drilling Depth (Date of Report) 2270 ft.

DRILLING PROGRESS:

Date of Report: 2270 ft.

Previous:

2270 ft.
=====

DRILLING DATA:

Marlin C-1 Well was spudded at 0915 hours 16th December 1966 and drilling commenced with hole at 36" diameter.

30" casing was set to 351 ft. and hole was then drilled at 26" diameter to 738.5 ft. at which depth 20" casing was set.

A 12½" diameter bit was used to drill to 2270 ft. and Induction Electric Log, Sonic Gamma Ray, and Continuous Dip Meter were run before reaming hole to 17½" diameter. 13-3/8" casing was then set to 2229 ft. and the B.O.P. Stack and riser placed in position.

LITHOLOGICAL SUMMARY OF FORMATIONWELL DATUM: Rotary Table 31' above mean sea level.WATER DEPTH: 184 ft.

LITHOLOGY:

2270-2560'	Marl and limestone interbeds.
2560-3080'	Marl.
3080-4035'	Dominantly marl and calcareous mud.
4035-4780'	Marl grading to mudstone with glauconite. Light green colour.

From cuttings pick top L.E. Formation at 4290'.

We attach hereto a copy of the drilling report for the period ending 1947.

Very truly,
K.A.R.

LOGS RUN: East.

K.A. Rowell
K. A. Rowell
General Manager

DRILLING FLUID - PROPERTIES

Daily drilling reports will be forwarded as they become available.

26th December, 1966.

CASING AND CEMENTING OPERATIONS

30" casing - No details.

20" " - 1000 sacks of cement 14.3-15.8 lbs./gal.

13-3/8" casing - 1300 sacks of cement 12.6-14.9 lbs./gal.

STAND-BY TIME

K.A. Rowell
K. A. Rowell, General Manager.

3.0 Velocity Survey

VELOCITY SURVEY

ESSO MARLIN C-1

by

P.E. Towey.

RE-NAMED (AUG. 1968) MARLIN 3

A. INTRODUCTION

Esso Australia contracted Western Geophysical Co. to perform the velocity survey. Under the contract, Western agreed to furnish the following:

(1) Instruments

- a. SSC Model GCE101 Pressure Sensitive Well Geophones
- b. Twelve SIE GA-11 Amplifiers, Input Switching and Power Supply
- c. Western 30 Channel Camera
- d. Three 12 volt Batteries and Charger
- e. Portable Developing System
- f. Two 300 volt Blasters
- g. Three Kaar TR 327 CB Radios
- h. Two RC-5 Remote Control Units for Shooters Radio
- i. Two TA-12 Break amplifier units
- j. Adequate spare parts

(2) Personnel

One Marine Shooter, J.H. Barbour and one Instrument Operator, A. Paar.

(3) One Licensed Shooting Boat

All equipment and Personnel were assembled by January 6, 1967 and the survey was made on January 9, 1967.

B. SURVEY PROCEDURES

Weather was very good during the survey and no undue noise was experienced on the traces.

(1) Shot Positioning

The orientation of Glomar III was E-W during the survey. Buoys were positioned at 500 & 1000 feet on either side of the ship, in a line running N-S through the well site. Exact shot positions were obtained from water arrivals at the well, measured by a geophone in the moonpool.

(2) Shot Size

The powder was packed in 25 lb. cans. All shots were 25 lb.

(3) Well Geophone Positioning

All depth measurements were made using the Schlumberger depth indicator. To minimize rig noise the marine riser was disconnected from the derrick floor and lowered to the casing top. The Schlumberger cable was clamped

with a T-bar device which rested on the casing top at each geophone depth in an attempt to decouple from rig movement.

(4) Time

The first shot was taken at 12.45 p.m. and the last at 4.00 p.m. All told the survey took about six hours of rig time to complete.

C. RESULTS

Thirteen shots were made at seven different levels. Shotholes B & C were used only for shallow levels.

The quality of the records were considered to be good in eleven cases and fair in two. Copies of the records are included below.

The final checkshot times and the integrated sonic time are considered to be in good agreement as is shown by the error chart of figure I.

D. CONCLUSIONS

The velocity survey was successful in tying the integrated sonic log into absolute time values.

MARLIN - 3

FIGURE I

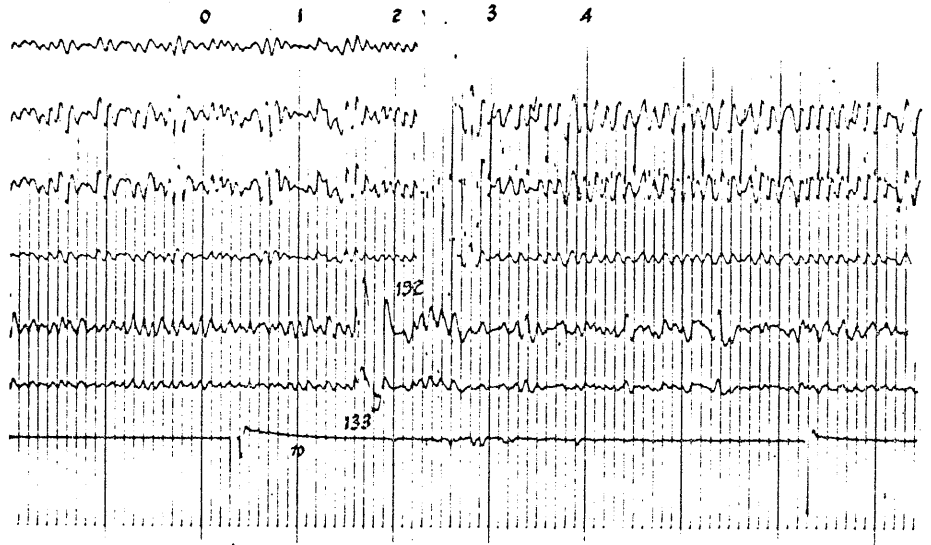
Depth below Sea Level in feet	Average Vertical time from Check Shots	Interval Time from Check Shots	Interval Time from Sonic Log	Diff.	Interval Size in Feet	Error in Microseconds per foot
1000	.161					
		.051	.063	-	-	-
1500	.212					
		.176	.168	-.008	1500	-6
3000	.386					
		.157	.149	-.008	1279	-6
4279	.545					
		.056	.054	-.002	488	-4
4767	.601					
		0.67	0.67	0	633	0
5400	.668					
		.038	.038	0	395	0
5795	.706					

ESSO MARLIN C-1

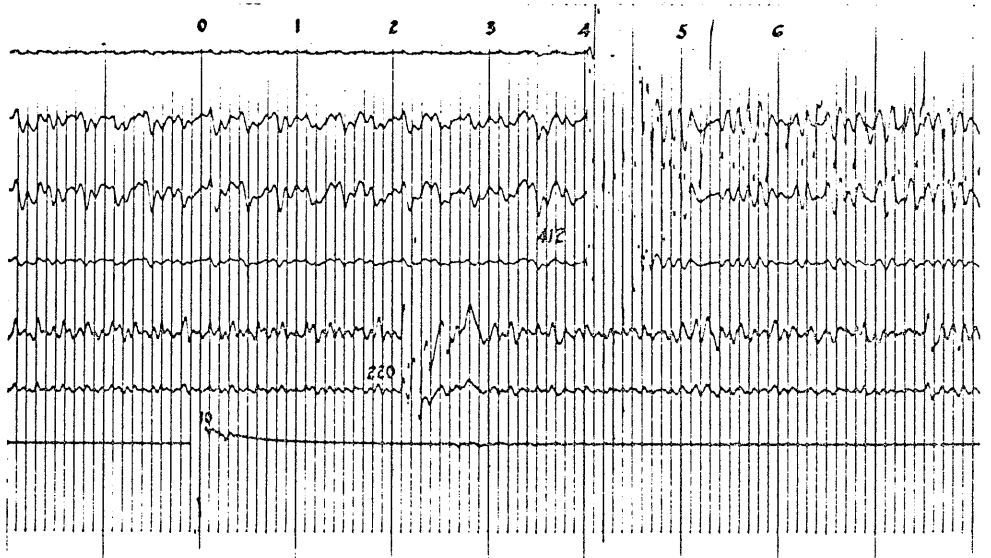
4 of 9

WELL VELOCITY RECORDS

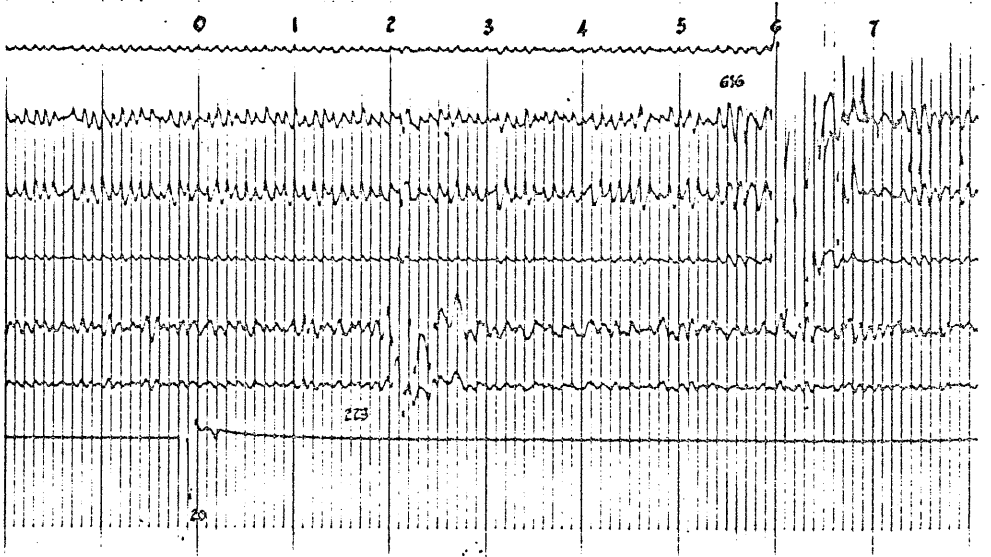
Shot No 1 S.P. C
Depth: 1000'
25 lbs. @ 5'
Offset: 500'
1245 9th Jan. 1967
MARLIN C-1



Shot No 2 S.P. D
Depth: 3000'
25 lbs. @ 5'
Offset: 1000'
1210 9th Jan. 1967
MARLIN C-1



Shot No 3 S.P. D
Depth: 4767'
25 lbs. @ 5'
Offset: 1000'
1334 9th Jan. 1967
MARLIN C-1



ESSO MARLIN C-1

549

WELL VELOCITY RECORDS

Shot No 4 S.P. D

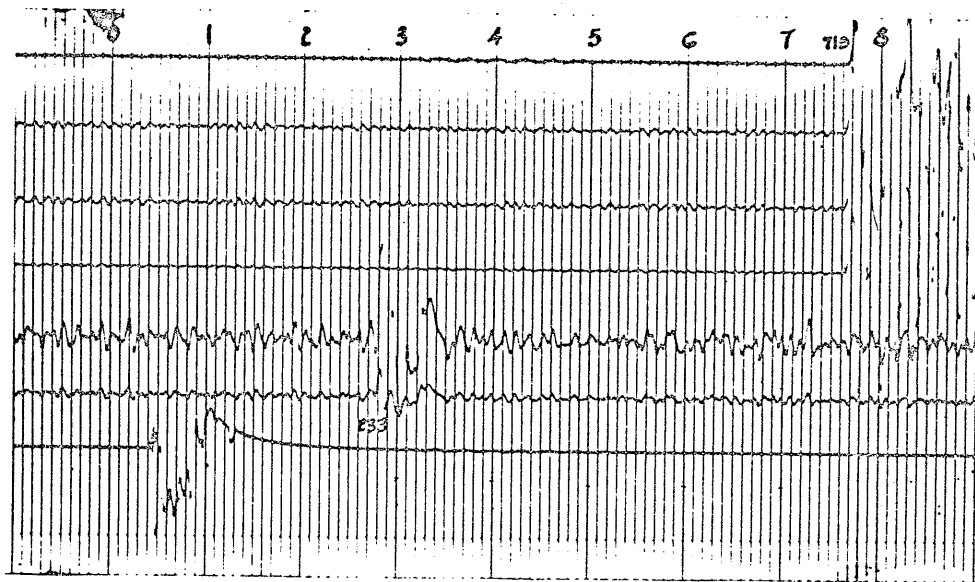
Depth: 5795'

25 lbs. @ 5'

Offset: 1000'

1350 9th Jan. 1967

MARLIN C-1



Shot No 5 S.P. A

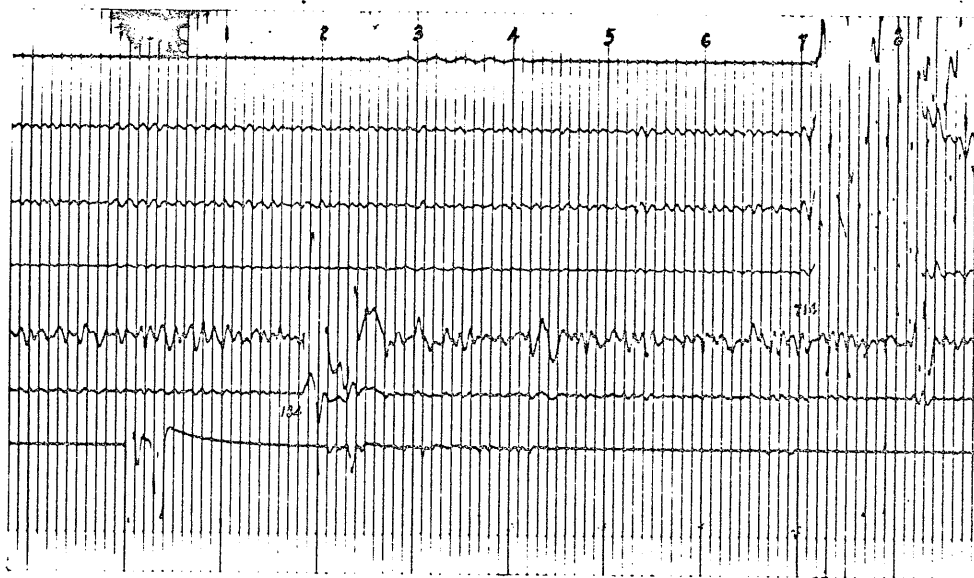
Depth: 5795'

25 lbs. @ 5'

Offset: 1000'

1402 9th Jan. 1967

MARLIN C-1



Shot No 6 S.P. A

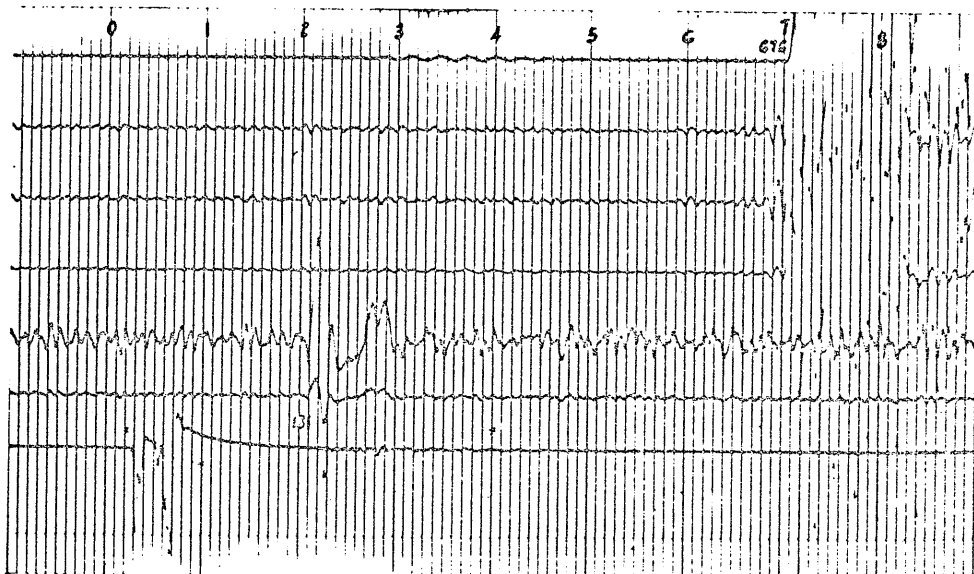
Depth: 5400'

25 lbs. @ 5'

Offset: 1000'

1419 9th Jan. 1967

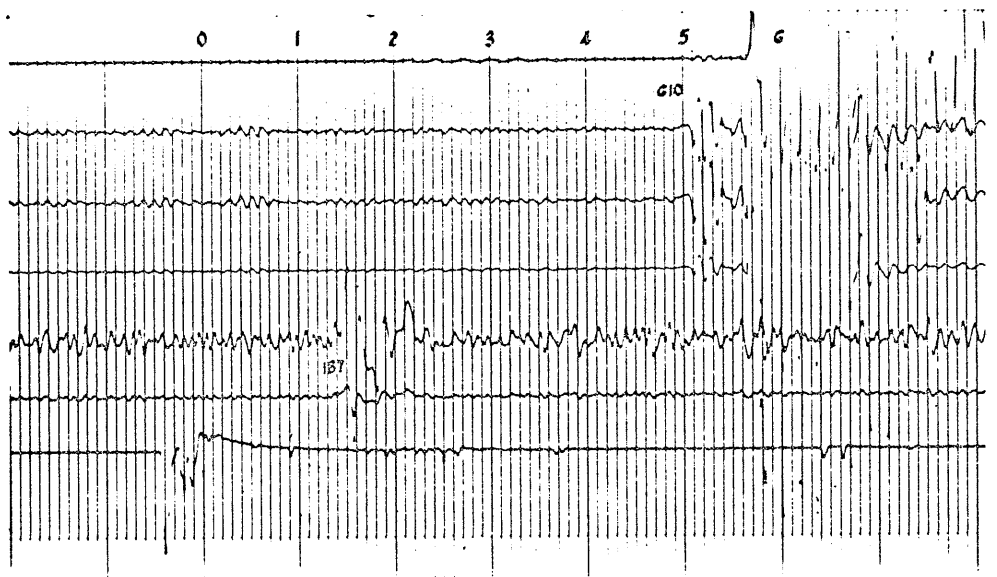
MARLIN C-1



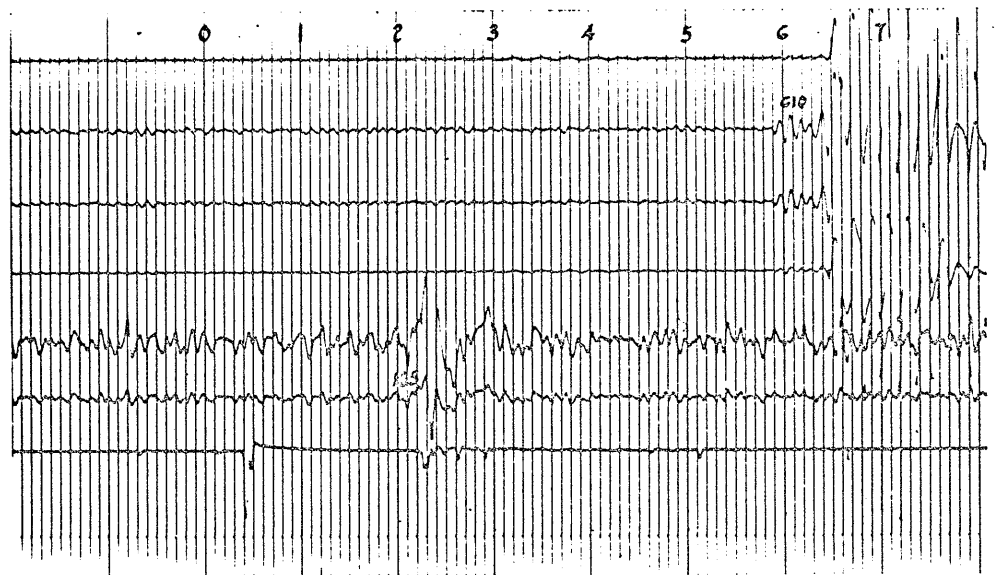
ESSO MARLIN C-1

WELL VELOCITY RECORDS

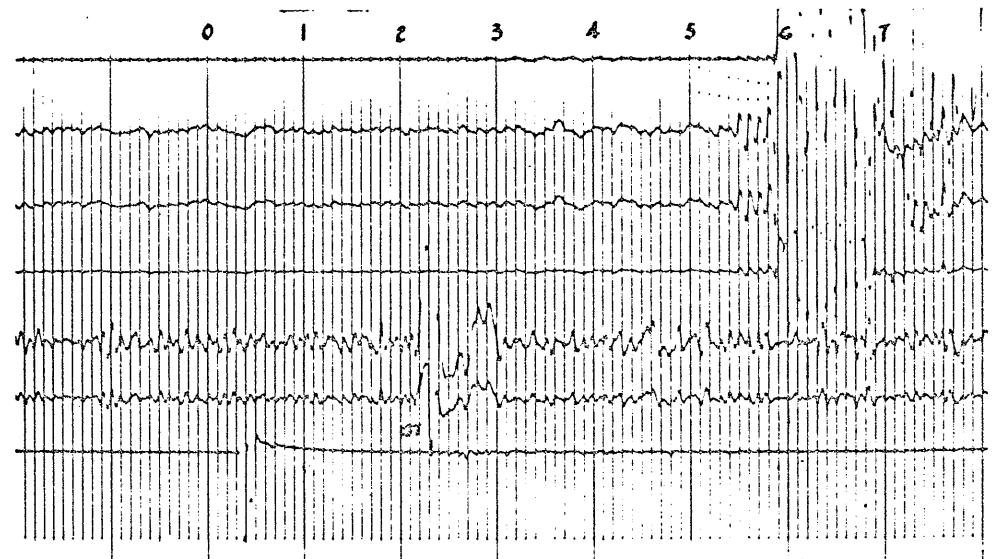
Shot N^o 7 S.P.A
 Depth: 4767
 25 lbs. @ 5'
 Offset: 1000'
 1435 9th Jan. 1967
 MARLIN C-1



Shot N^o 7A S.P.A
 Depth: 4767'
 25 lbs. @ 5'
 Offset: 1000'
 1445' 9th Jan. 1967
 MARLIN C-1

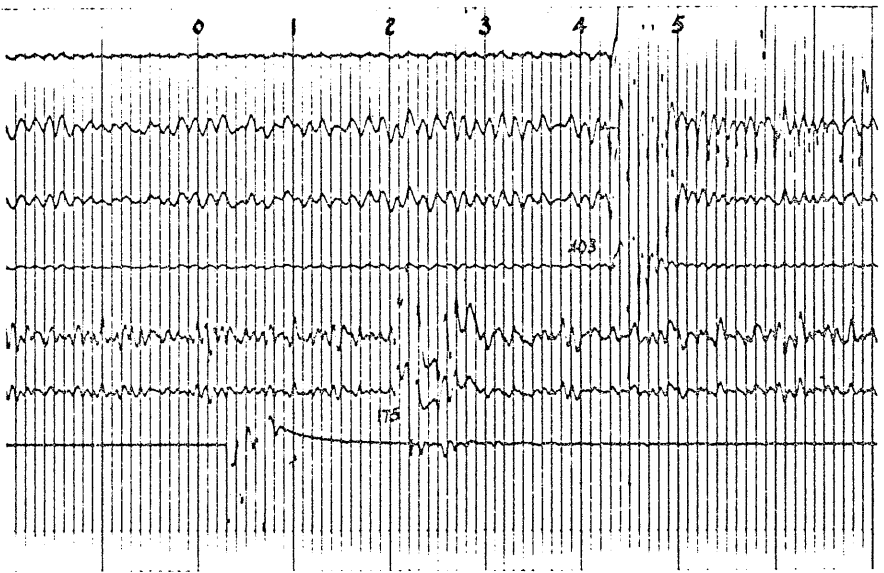


Shot N^o 8 S.P.A
 Depth: 4279'
 25 lbs. @ 5'
 Offset: 1000'
 1455 9th Jan. 1967
 MARLIN C-1

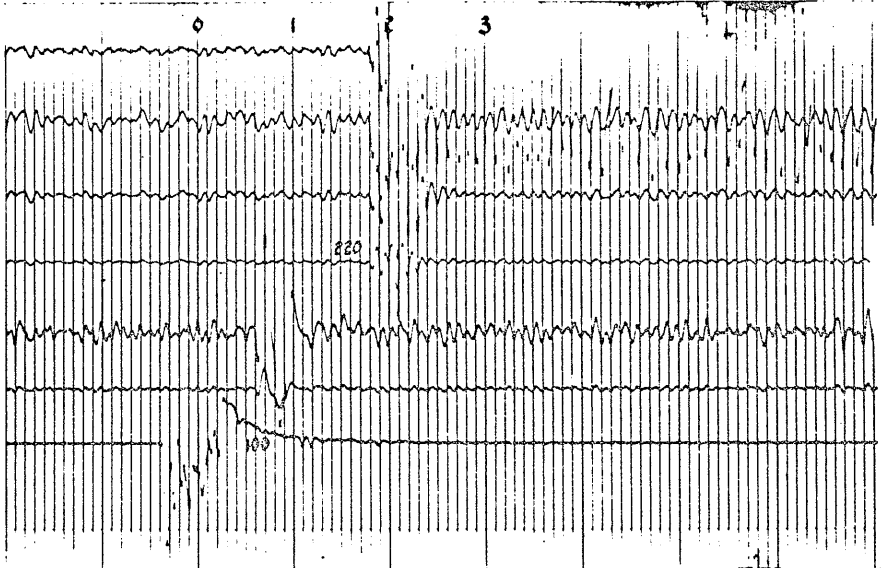


WELL VELOCITY RECORDS

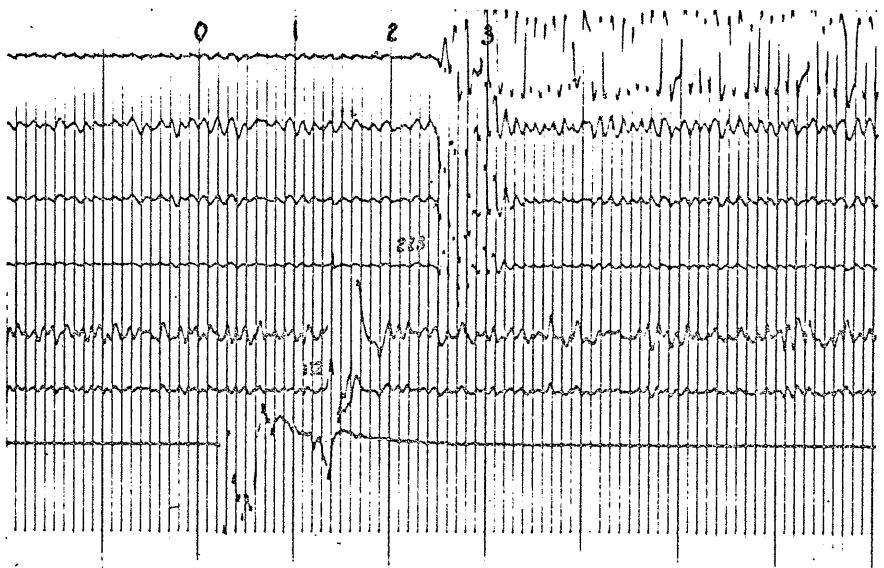
Shot No 9 S.P. A
 Depth: 3000'
 25 lbs. @ 5'
 Offset: 1000'
 1515 9th Jan. 1967
 MARLIN C-1



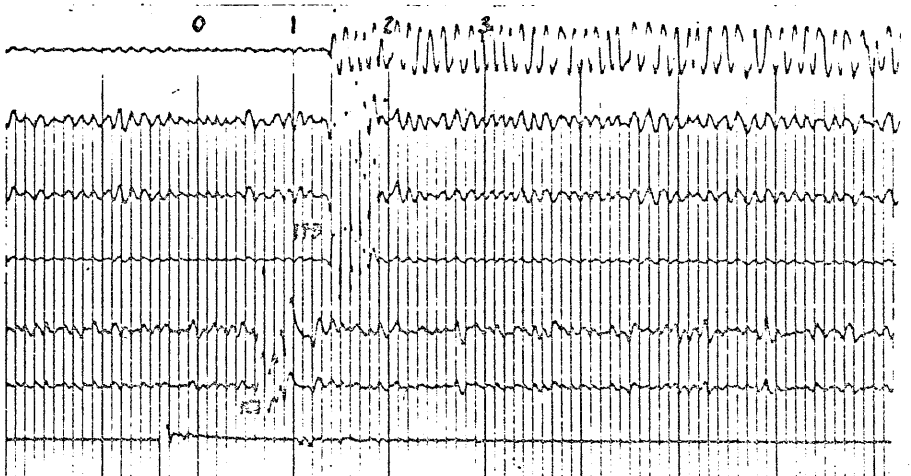
Shot No 10 S.P. B
 Depth: 1500'
 25 lbs. @ 5'
 Offset: 500'
 1530 9th Jan. 1967
 MARLIN C-1



Shot No 10A S.P. B
 Depth: 1500'
 25 lbs. @ 5'
 Offset: 500'
 1545 9th Jan. 1967
 MARLIN C-1



Shot No 11 S.P. B
 Depth: 1000'
 25 lbs. @ 5'
 Offset: 500'
 1557 9th Jan. 1967
 MARLIN C-1

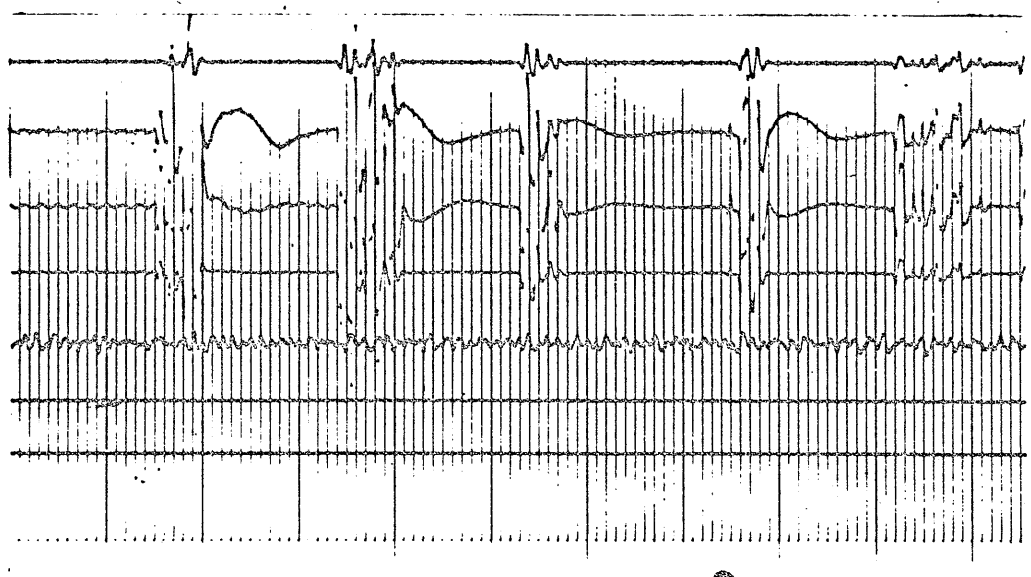


ESSO MARLIN C-1

WELL VELOCITY RECORDS

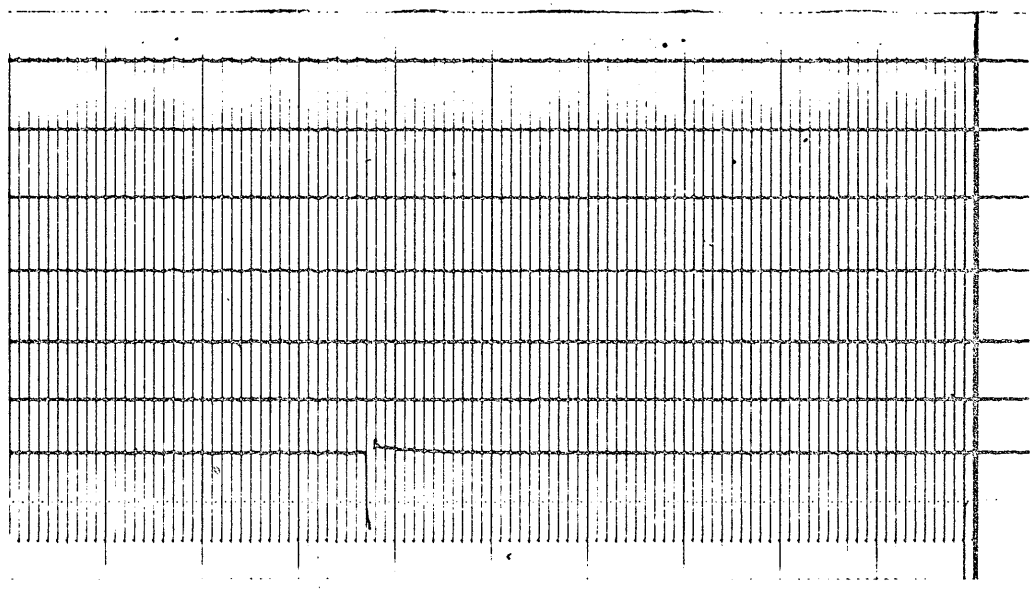
TAP TEST ON WELL
SEISMIC BEFORE SHOOT
9th JAN. 1967

MARLIN C-1



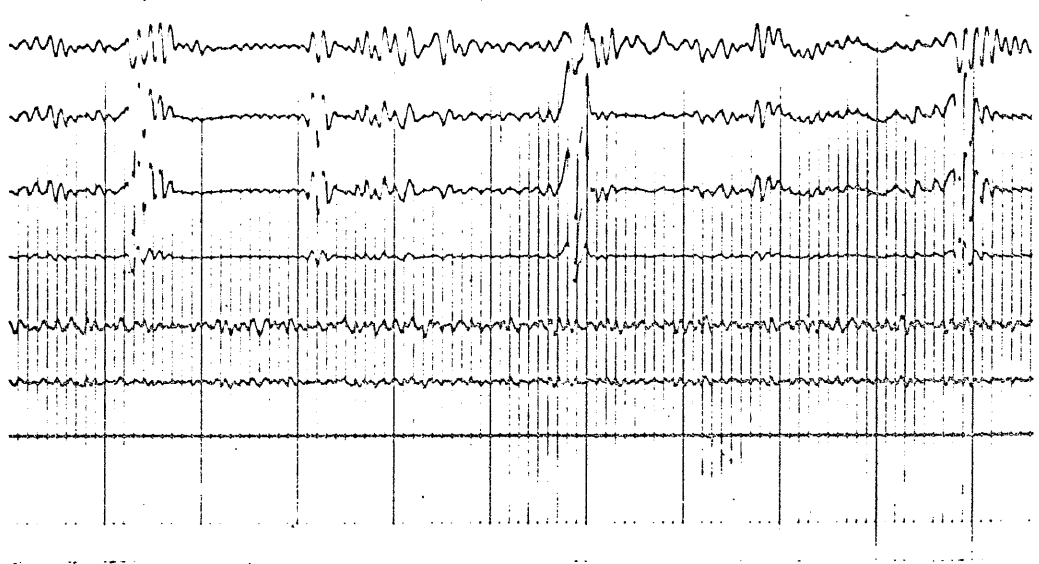
TIME BREAK TEST
BEFORE SHOOT
9th JAN. 1967.

MARLIN C-1

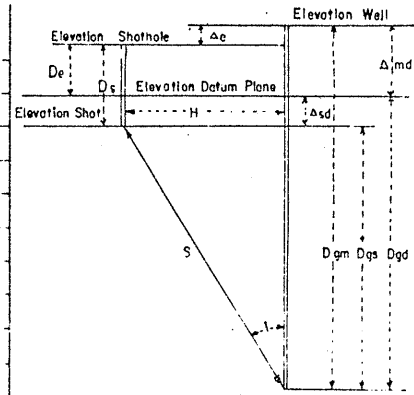


TAP TEST ON WELL
SEISMIC AFTER SHOOT
9th JAN. 1967.

MARLIN C-1



Shot Information - Elevation, Distance & Direction from Well										Company		Well		Elevation		Total Depth		LOCATION									
										ESSO EXPLORATION		MARLIN C-1		31'		5846		Coordinates		Section, Township, Range		County		Area or Field			
										AUSTRALIA INC.		MARLIN C-1		31'		5846		38°14'44" S		Gippsland Basin,		Victoria					
																		DATUM: Sea Level									
Record Number	Shot Hole Number	Time of Shot	Dgm	Ds	tus	tr	T			Dgs	H	TAN i	Cos i	Tgs	Δsd	Δsd/V	Tgd	Tgd Average	Dgd	ΔDgd	ΔTgd	Vi Interval Velocity	Va Average Velocity				
							Reading	Polarity	Grade																		
1	S C	1245	1031	5	.001	133	192	U	G	995	665	6683	8315	100	5	.001	.161	.161	1000				6210				
11	B	1557	1031	5	.001	101	179	U	G	995	505	5075	8917	160	5	.001	.161										
10	B	1530	1531	5	.001	100	220	U	F	1495	500	3344	7484	209	5	.001	.210	.212	1500				7080				
10A	B	1535	1531	5	.001	112	228	U	C	1495	560	3746	9364	213	5	.001	.214										
2S	D	1310	3031	5	.001	220	412	U	G	2995	1100	3673	9386	387	5	.001	.388	.388	3000				7730				
9E	A	1515	3031	5	.001	175	403	U	C	2995	875	2921	9598	387	5	.001	.388										
8E	A	1455	4310	5	.001	187	566	U	G	4274	935	2187	9769	544	5	.001	.545	.545	4279				7850				
3S	D	1334	4798	5	.001	223	610	U	G	4762	1115	2341	9737	600	5	.001	.601	.601	4767				7930				
7A	A	1435	4798	5	.001	187	610	U	F	4762	935	1963	9812	599	5	.001	.600										
7A	A	1445	4798	5	.001	185	610	U	F	4762	925	1942	9816	599	5	.001											
6E	A	1419	5431	5	.001	181	676	U	G	5395	905	1677	9862	667	5	.001	.668	.668	5400				8080				
5S	D	1350	5826	5	.001	223	719	U	G	5790	1160	2003	9805	705	5	.001	.706	.706	5795				8210				
5E	A	1402	5826	5	.001	184	714	U	G	5790	920	1589	9876	705	5	.001	.706										



Dgm = Geophone depth measured from well elevation
Dgs = " " " " shot "
Dgd = " " " " datum "
Ds = Depth of shot
De = Shot hole elevation to datum plane
H = Horizontal distance from well to shotpoint
S = Straight line travel path from shot to well geophone
tus = Uphole time of shotpoint
T = Observed time from shotpoint to well geophone.
tr = " " to reference geophone.
Δe = Difference in elevation between well & shotpoint.
Δsd = " " " " shot & datum plane
Δsd = Ds - De
Dgs = Dgm - Ds ± Δe; tan i = H / Dgs
Tgs = cos i; Tgs = Vert. travel time from shot elev. to geophone
Tgd = Tgs ± Δsd / V = " " " datum plane "
Dgd = Dgm - Δmd
Vi = Interval velocity = ΔDgd / ΔTgd
Va = Average = Dgd / Tgd

Surveyed by: Western Geophysical
Date: 9th January, 1967

Weathering Data:
Casing Record
0028'

MARLIN - 3
9 of 9

4.0 Hydrocarbon Report

4.0 Hydrocarbon Rpt.

PETROLEUM DIVISION

KLA

ESSO PRODUCTION RESEARCH COMPANY

Post Office Box 2189

HOUSTON, TEXAS 77001

PRODUCTION ENGINEERING DIVISION
F. AMES SMITH, MANAGER

June 14, 1967

~~4450-2~~

~~6650-2~~

Mr. N. Belknap
Esso Standard Oil (Australia) Ltd.
Box 4249, G. P. O.
Sydney, N. S. W.
Australia

SJR
/ 4

Attention: Mr. M. M. Tongish

Dear Sir:

"Hydrocarbon Report - Subsurface Oil
Esso Standard Oil (Australia) Ltd.
Marlin C-1 Well"

3

Attached are four copies of a report which presents the results of the analyses requested on a subsurface crude oil sample from the Marlin C-1 well. In addition to the data requested in your letter of March 20 and cable dated April 26, 1967, we have included in this report data requested by Mr. G. E. Crotchett of Crest Engineering Company, Tulsa, Oklahoma. It is our understanding that the plastic viscosity-shear rate data in Table VIII are needed for production and process equipment design considerations.

The Marlin C-1 sample exhibited a high wax content and a high pour point as compared to the previously analyzed Marlin A-1 sample. The comparative data for these samples are tabulated in Tables VI and VII.

As you requested, two copies of this report are being forwarded to Mr. J. L. Roman.

Very truly yours,

F. AMES SMITH

By R. V. Randall
R. V. Randall

RVR:wb
Attachments (4)

cc: Producing Coordination
(Mr. M. C. Sons)
Messrs. Zeb Mayhew
D. M. Stewart
J. L. Roman
C. R. Hocott

MISSING

June 14, 1967

RECEIVED

JUN 15 1967

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EXAMINATION OF SUBSURFACE OIL SAMPLE

Source: Esso Standard Oil (Australia) Ltd., Marlin C-1 Well

Date Taken: January 26, 1967

Sampling Data:

Sampling depth (measured total)	5130 feet
Status of well	<u>Shut in for one hour</u> <u>after a 1.5 hour flow</u> <u>period</u>

Reservoir Data:

Elevation RDB	31 feet
Gas-Oil Contact	<u>5108 feet subsea</u>
Water-Oil Contact	<u>5124 feet subsea</u>
Original reservoir pressure	<u>2240 psig at 5108 ft ss</u>
Original reservoir temperature	<u>166° F at 5108 ft ss</u>
Perforated interval	<u>5099 to 5114 ft ss</u>

Saturation Pressure:

2240 psig at 166° F (After discarding excess gas; sample as received had a saturation pressure of 2465 psig at 166° F)

1718 psig at 75° F

Properties of Sample:

Pressure-Volume Relations	Table I
Flash Liberation and Differential Liberation Results	Table II
Comparison of Experimental and Computed Flash Liberation Results	Table II-A
Hydrocarbon Analysis of Subsurface Oil Sample	Table III
Composition of Gas in Equilibrium with Subsurface Oil at 2240 psig and 166° F	Table IV
Hydrocarbon Composition of Separator Gases and Liquids Obtained in 0, 50, 100 and 200 psig Separators from Subsurface Oil	Table V
Results of Tests Performed on the Residual Liquid Obtained by Flashing Saturated Subsurface Oil to 0 psig and 76° F	Table VI
Results of Tests Performed on the Residual Liquid from Marlin A-1 (Gippsland Shelf No. 4, sampled on March 15, 1966)	Table VII
Viscosity of Residual Liquid from Shear Rates	Table VIII

TABLE I

Pressure-Volume Relations of Subsurface Oil Sample

Source: Esso Standard Oil (Australia) Ltd., Marlin C-1 Well

Date Taken: January 26, 1967

Temperature: 166° F

<u>Pressure psig</u>	<u>Relative Volume V/V_{bp}</u>	<u>*Y = $\frac{P_s - P}{P(\frac{V_t}{V_{bp}} - 1)}$</u>
3500	0.9773	
3200	0.9820	
2900	0.9869	
2600	0.9925	
2305	0.9983	
2240	1.0000	
2210	1.0065	2.066
2202	1.0083	2.064
2187	1.0117	2.057
2142	1.0223	2.039
2088	1.0359	2.015
1982	1.0635	1.970
1830	1.1163	1.914
1687	1.1759	1.851
1543	1.2506	1.789
1387	1.3553	1.716
1247	1.4753	1.659
1110	1.6255	1.610
1007	1.7758	1.559
890	1.9865	1.516
798	2.1972	1.485
758	2.3096	1.468
712	2.4603	1.443
637	2.7617	1.399
572	3.0632	1.381
522	3.3648	1.356
482	3.6664	1.330
438	4.0250	1.315
382	4.6254	1.291
348	5.0785	1.278

Specific Volume at Saturation Pressure = 0.02583 cu ft/lb

*Calculated data for use in correcting subsurface oil sample

P_s = Saturation pressure of sample at 166° F, psia (2255 psia)

P = Pressure below saturation pressure, psia

V_t = Two-phase relative volume factor at 166° F and PV_{bp} = Saturated oil relative volume at 166° F and 2255 psia (2240 psig)

TABLE II

Flash Liberation and Differential Liberation Results - Subsurface Oil Sample

Source: Esso Standard Oil (Australia) Ltd., Marlin C-1 Well

Date Taken: January 26, 1967

Sampling Conditions: Well shut in 1 hour after 1.5 hours flowing period

Properties of Saturated Oil:

Temperature, °F	166	75
Saturation Pressure, psig	2240	1718

Gas Liberation and Shrinkage of Oil:
(Computed Flash)

Pressure (p ₁) psig	Temp. °F	Gas-Oil Ratio: cu. ft. at 60 °F and 14.7 psia/bbl. Residual Oil		Residual Oil Gravity °API at 60 °F	Sp. Gr. Gas at 60 °F (air=1)	V _R /V _S *	1.01
		Flashed at p ₁	Flashed from p ₁ to 0				
0	76	1174	-	46.7	1.006	0.5904	1.69
50	76	936	50	49.9	0.8504	0.6409	1.56
100	76	858	113	50.1	0.7946	0.6451	1.55
200	76	769	219	49.8	0.7393	0.6401	1.72
(Differential at 166° F)							

Pressure psig	Properties of Liberated Gas at 166° F and Indicated Pressure***		Gas-Oil Ratio: cu. ft. at 14.7 psia and 60° F/bbl. Reservoir Oil at 2240 psig, 166° F	Residual Oil Gravity °API at 60 °F	V**/V _S
	Compressibility, Z	Viscosity, cp			
2240	-	-	0		1.0000
2000	0.809	0.0166	74		0.9612
1700	0.825	0.0152	163		0.9179
1400	0.845	0.0138	244		0.8795
1100	0.866	0.0132	318		0.8445
800	0.892	0.0127	388		0.8105
500	0.918	0.0122	459		0.7759
200	0.945	0.0110	537		0.7343
0	0.994	0.0090	656	49.4	0.6605

*V_R, Volume residual oil at 0 psig, 60°FV_S, Volume saturated oil at 2240 psig, 166° F

**V, Volume saturated oil at indicated pressure, 166° F

***, Determined from calculated composition of equilibrium gas

TABLE II-A

Comparison of Experimental and Computed Flash Liberation Results
Subsurface Oil Sample

Source: Esso Standard Oil (Australia) Ltd., Marlin C-1 Well

Date Taken: January 26, 1967

(P ₁) Pressure psig	Temperature ° F	Gas-Oil Ratio - cu ft/bbl Residual Oil				Residual Oil Gravity °API at 60 F		V _R /V _S		P ₁ /P ₀
		Flashed at P ₁		Flashed from P ₁ to 0		Experimental	Computed	Experimental	Computed	
		Experimental	Computed	Experimental	Computed					
0	76	1134	1174	-	-	47.0	46.7	0.5955	0.5904	1.00
100	75	857	855	105	113	50.2	50.1	0.6530	0.6461	1.00

Experimental gravity of gas in 0 psig, 76° F flash = 1.014 (air = 1)

Data Used in Flash Calculations

Subsurface Oil Sample		
Component	Mol %	gal/mol
Hydrogen Sulfide	0.00	
Carbon Dioxide	1.28	9.09
Nitrogen	Nil	
Methane	38.11	
Ethane	7.39	
Propane	7.76	
Iso-Butane	1.79	
N-Butane	4.46	
Iso-Pentane	1.76	
N-Pentane	2.49	
Hexanes	4.38	15.63
Heptanes	5.74	16.54
Octanes	4.98	17.84
Nonanes	3.35	19.34
Heavier Fraction	16.51	31.89
Total	100.00	

K-value Source: NGAA (1957)
Convergence Pressure: 7500 psia

Unadjusted Flash Data	
Molecular weight of heavier fraction	222
Density of heavier fraction, gm/cc at 60 F	0.8443
Specific volume of reservoir fluid at bubble point and 166° F, cu. ft./lb.	0.02583
Mols per barrel	2.905

TABLE III

Hydrocarbon Analysis of Subsurface Oil Sample

Source: Esso Standard Oil (Australia) Ltd., Marlin C-1 Well

Date Taken: January 26, 1967

Component	Weight %	Density g/cc at 60°F	Molecular Weight
Hydrogen Sulfide	0.00		
Carbon Dioxide	0.75		
Nitrogen	0.00		
Methane	8.17		
Ethane	2.97		
Propane	4.57		
Iso-Butane	1.39		
N-Butane	3.46		
Iso-Pentane	1.70		
N-Pentane	2.40		
Hexanes	5.21	0.6905	89
Heptanes	7.67	0.7332	100
Octanes	7.32	0.7478	110
Nonanes	5.42	0.7589	121
Heavier Fraction	48.97	0.8443	222
Total	100.00		
Pentane-Free Fraction		0.7960	159

Orsat Analysis of Gas Liberated at 0 psig and 76°F

Component	Volume %
Hydrocarbons	97.92
Hydrogen Sulfide	0.00
Carbon Dioxide	2.08
Total	100.00

TABLE IV

Composition of Gas in Equilibrium with Subsurface Oil
at 2240 psig and 166° F

Source: Esso Standard Oil (Australia) Ltd., Marlin C-1 Well

Date Taken: January 26, 1967

Component	Composition of Gas	
	Mol %	
Hydrogen Sulfide	0.00	0
Carbon Dioxide	2.53	3.00
Nitrogen	0.00	0
Methane	81.09	81.09
Ethane	7.11	7.11
Propane	4.62	4.62
Iso-Butane	0.77	0.77
N-Butane	1.67	1.67
Iso-Pentane	0.44	0.44
N-Pentane	0.54	0.54
Hexanes	0.56	0.56
Heptanes	0.40	0.40
Octanes	0.19	0.19
Nonanes	0.07	0.07
Heavier Fraction	0.01	0.01
Total	100.00	

TABLE V

Hydrocarbon Composition of Separator Gases and Liquids Obtained
in 0, 50, 100 and 200 psig Separators
from Subsurface Oil Sample

Source: Esso Standard Oil (Australia) Ltd., Marlin C-1 Well

Date Taken: January 26, 1967

Separator Condition: Component	0 psig, 76°F		50 psig, 76°F		100 psig, 76°F		200 psig, 76°F	
	Liquid Mol %	Gas Mol %	Liquid Mol %	Gas Mol %	Liquid Mol %	Gas Mol %	Liquid Mol %	Gas Mol %
Carbon Dioxide	0.03	2.02	0.12	2.25	0.22	2.33	0.41	2.36
Methane	0.37	60.37	1.77	68.54	3.22	72.67	6.19	77.62
Ethane	0.38	11.53	1.73	12.13	2.91	11.83	4.68	10.74
Propane	1.39	11.52	5.04	10.04	7.13	8.38	9.01	6.22
Iso-Butane	0.75	2.40	2.05	1.57	2.45	1.14	2.63	0.75
N-Butane	2.58	5.57	5.89	3.26	6.67	2.27	6.88	1.46
Iso-Pentane	1.96	1.64	3.07	0.67	3.11	0.42	2.97	0.26
N-Pentane	3.14	2.11	4.53	0.78	4.51	0.49	4.26	0.30
Hexanes	8.95	1.68	9.05	0.47	8.51	0.29	7.78	0.17
Heptanes	14.05	0.84	12.34	0.22	11.40	0.13	10.31	0.08
Octanes	12.98	0.26	10.85	0.06	9.97	0.04	8.98	0.03
Nonanes	8.93	0.06	7.33	0.01	6.72	0.01	6.05	0.01
Heavier Fraction	44.49	0.00	36.23	0.00	33.18	0.00	29.85	0.00
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Mol fraction: Liquid=0.37109 Gas=0.62891	Mol fraction: Liquid=0.45573 Gas=0.54427	Mol fraction: Liquid=0.49762 Gas=0.50238	Mol fraction: Liquid=0.55310 Gas=0.44690
--	--	--	--

Separator Gas Gravity (air = 1)	1.0062	0.8504	0.7946	0.7396
---------------------------------	--------	--------	--------	--------

TABLE VI

Results of Tests Performed on the Residual Liquid Obtained
by Flashing Saturated Subsurface Oil
to 0 psig and 76° F

Source: Esso Standard Oil (Australia) Ltd., Marlin C-1 Well

Date Taken: January 26, 1967

Water content in sample:	No free water or emulsion water found in sample.
Wax content:	15.7% by weight
Pour point:	+ 59° F
Viscosity at 75° F:	2.143 centipoise
Viscosity at 70° F:	8.295 centipoise
Viscosity at 55° F:	Unable to get this because it is below the pour point temperature
Salt content:	0.86 pounds NaCl per 1000 barrels of crude

TABLE VII

Results of Tests Performed on the Residual Liquid from Flash at
75° F, 0 psig of Subsurface Oil from Marlin A-1
(Gippsland Shelf No. 4, sampled March 15, 1966)

Wax content:	2.7% by weight
Pour point:	+ 5° F
Salt content:	0.00 pounds NaCl per 1000 barrels of crude
Viscosity at 74° F	1.252 centipoise
Viscosity at 55° F	1.505 centipoise
Viscosity at 32° F	1.947 centipoise

TABLE VIII

Plastic Viscosity of Residual Liquid from Shear Rates

(Tests requested by Mr. G. E. Crotchett of Crest Engineering Company, Tulsa, Oklahoma for equipment design).

Source: Esso Standard Oil (Australia) Ltd., Marlin C-1 Well

Date Taken: January 26, 1967

Temperature: 74° F		Temperature: 56.5 ° F	
Shear Rate sec ⁻¹	Viscosity cp	Shear Rate sec ⁻¹	Viscosity cp
5.8	8.0	5.8	198
11.6	7.0	11.6	106
23.0	7.0	23.0	59.0
46.0	6.5	46.0	37.8
115	6.1	115	20.0
230	6.0	230	13.2

Data determined by use of Wells-Brookfield viscosimeter.

5.0 Palynology

5.0 Palynology.

BASIN GIPPSLAND

DATE _____

WELL NAME MARLIN -3

ELEVATION + 31 feet.

AGE	PALYNOLOGIC ZONES	HIGHEST DATA				LOWEST DATA					
		Preferred Depth	Rtg.	Alternate Depth	Rtg.	2 way time	Preferred Depth	Rtg.	Alternate Depth	Rtg.	2 way time
IG- FO. EOCENE	<u>P. tuberculatus</u>										
	<u>U. N. asperus</u>										
	<u>M. N. asperus</u>										
	<u>L. N. asperus</u>										
	<u>P. asperopolus</u>	5070	1				5146	1			
	<u>U. M. diversus</u>										
	<u>M. M. diversus</u>										
	<u>L. M. diversus</u>										
PALEOCENE	<u>U. L. balmei</u>										
	<u>L. L. balmei</u>										
	<u>T. longus</u>										
CRETACEOUS	<u>T. lilliei</u>										
	<u>N. senectus</u>										
	<u>C. trip./T.pach.</u>										
	<u>C. distocarin.</u>										
	<u>T. pannosus</u>										
EARLY CRETACEOUS											
PRE-CRETACEOUS	<u>T.D.</u>	5846									

COMMENTS:

- RATINGS: 0; SWC or CORE, EXCELLENT CONFIDENCE, assemblage with zone species of spores, pollen and microplankton.
- 1; SWC or CORE, GOOD CONFIDENCE, assemblage with zone species of spores and pollen or microplankton.
- 2; SWC or CORE, POOR CONFIDENCE, assemblage with non-diagnostic spores, pollen and/or microplankton.
- 3; CUTTINGS, FAIR CONFIDENCE, assemblage with zone species of either spore and pollen or microplankton, or both.
- 4; CUTTINGS, NO CONFIDENCE, assemblage with non-diagnostic spores, pollen and/or microplankton.

NOTE: If a sample cannot be assigned to one particular zone, then no entry should be made. Also, if an entry is given a 3 or 4 confidence rating, an alternate depth with a better confidence rating should be entered, if possible.

DATA RECORDED BY: LES./A.D.P.

DATE June 1971; Dec. 1971.

DATA REVISED BY: A.D.P.

DATE Jan. 1971.

FIELD

GEOSTAND

DATE

June 1971

WELL NAME Marlin -3

ELEVATION

+ 31 feet

AGE	PALYNOLOGIC ZONES	HIGHEST DATA				LOWEST DATA					
		Preferred Depth	Rtg.	Alternate Depth	Rtg.	2 way time	Preferred Depth	Rtg.	Alternate Depth	Rtg.	2 way time
MIOC.	<u>T. bellus</u>										
	<u>P. tuberculatus</u>										
Eocene	<u>U. N. asperus</u>										
	<u>L. N. asperus</u>										
	<u>P. asperopolus</u>	5070	1			5127	1				
	<u>U. M. diversus</u>	5146	1			5146	1				
	<u>L. M. diversus</u>										
Paleocene	<u>L. balnei</u>										
	<u>T. longus</u>										
Late Cretaceous	<u>T. hilliei</u>										
	<u>N. senectus</u>										
	<u>C. trip./T. pach.</u>										
	<u>C. distocarin.</u>										
	<u>T. pantosus</u>										
Early Cretaceous	<u>C. paradoxa</u>										
	<u>C. striatus</u>										
	<u>U. C. hughesii</u>										
	<u>L. C. hughesii</u>										
	<u>C. stylosus</u>										
Pre-Cretaceous											

COMMENTS: T.D. 5246 (1.43m)

- RATINGS:
- 0; SWC or CORE, EXCELLENT CONFIDENCE, assemblage with zone species of spores, pollen and microplankton.
 - 1; SWC or CORE, GOOD CONFIDENCE, assemblage with zone species of spores and pollen or microplankton.
 - 2; SWC or CORE, POOR CONFIDENCE, assemblage with non-diagnostic spores, pollen and/or microplankton.
 - 3; CUTTINGS, FAIR CONFIDENCE, assemblage with zone species of either spores and pollen or microplankton, or both.
 - 4; CUTTINGS, NO CONFIDENCE, assemblage with non-diagnostic spores, pollen and/or microplankton.

NOTE: If a sample cannot be assigned to one particular zone, then no entry should be made. Also, if an entry is given a 3 or 4 confidence rating, an alternate depth with a better confidence rating should be entered, if possible.

DATE RECORDED BY: L.E. Stover / A.D. Partridge

DATE June 1971

DATA REVISER BY: CHECKED; L.E.S.

DATE Dec. 1971

Enclosures

PE907650

This is an enclosure indicator page.
The enclosure PE907650 is enclosed within the
container PE907955 at this location in this
document.

The enclosure PE907650 has the following characteristics:

ITEM_BARCODE = PE907650
CONTAINER_BARCODE = PE907955
NAME = Time Depth Curve for Marlin-3
BASIN = GIPPSLAND
PERMIT =
TYPE = WELL
SUBTYPE = VELOCITY_CHART
DESCRIPTION = Time Depth Curve (enclosure from Well
Summary) for Marlin-3
REMARKS =
DATE_CREATED =
DATE_RECEIVED =
W_NO = W501
WELL_NAME = Marlin-3
CONTRACTOR = ESSO EXPLORATION AND PRODUCTION
AUSTRALIA INC.
CLIENT_OP_CO = ESSO EXPLORATION AND PRODUCTION
AUSTRALIA INC.

(Inserted by DNRE - Vic Govt Mines Dept)

PE605049

This is an enclosure indicator page.
The enclosure PE605049 is enclosed within the
container PE907955 at this location in this
document.

The enclosure PE605049 has the following characteristics:

ITEM_BARCODE = PE605049
CONTAINER_BARCODE = PE907955
NAME = Logs and Log Analysis for Marlin-3
BASIN = GIPPSLAND
PERMIT =
TYPE = WELL
SUBTYPE = WELL_LOG
DESCRIPTION = Logs and Log Analysis, Straight Hole,
(enclosure from Well Summary) for
Marlin-3
REMARKS =
DATE_CREATED =
DATE_RECEIVED = 8/06/88
W_NO = W501
WELL_NAME = Marlin-3
CONTRACTOR =
CLIENT_OP_CO = ESSO EXPLORATION AND PRODUCTION
AUSTRALIA INC.

(Inserted by DNRE - Vic Govt Mines Dept)

PE605050

This is an enclosure indicator page.
The enclosure PE605050 is enclosed within the
container PE907955 at this location in this
document.

The enclosure PE605050 has the following characteristics:

ITEM_BARCODE = PE605050
CONTAINER_BARCODE = PE907955
NAME = Mud Log for Marlin-3
BASIN = GIPPSLAND
PERMIT =
TYPE = WELL
SUBTYPE = MUD_LOG
DESCRIPTION = Mud Log (enclosure from Well Summary)
for Marlin-3
REMARKS =
DATE_CREATED = 28/12/66
DATE_RECEIVED =
W_NO = W501
WELL_NAME = Marlin-3
CONTRACTOR = CORE LABORATORIES INC.
CLIENT_OP_CO = ESSO EXPLORATION AND PRODUCTION
AUSTRALIA INC.

(Inserted by DNRE - Vic Govt Mines Dept)