



GAS FLOW RATE & CONDENSATE ANALYSIS

BARRACOUTA-1

(W486)

2nd COPY

ALTONA PETROCHEMICAL COMPANY PTY. LTD.

MAIDSTONE ST., ALTONA, W.18, VIC.

PRIVATE MAIL BAG NO. 3, ALTONA. TELEPHONE 65-8311. CABLES "ALTOCHEM" MELBOURNE



IN REPLY, PLEASE QUOTE: JR-6040C

April 22, 1965

Confidential

23 APR 1965

Mr. E.J. Stanley,
Esso Exploration Aust.,
G.P.O. Box 4249,
SYDNEY, N.S.W.

Sample Analysis - Gippsland
Shelf No.1

Dear Sir,

Gas and distillate samples were received from your organisation on April 14, 1965, and April 16, 1965 respectively. Some dump tank samples were also received on April 16, 1965. The samples taken at a depth of 3756-56 ft. were drawn on April 12, 1965.

Our Laboratory test results on the above were:

1. Gas

Sample No.	1	2	3a	3b	4
Rate No.	1	2	3	3	4
Flow Rate M.M.S.C.F./D.	1	2	3	3	10
Time	0530	0945	1235	1250	1615
Separator Pressure psig	650	650	625	650	650
Separator Temperature °F	56	52	55	58	68
Sample Size ml.	300	300	300	4000	300
Oxygen mole %				Trace	
Nitrogen mole %	*3.2	*3.2	*3.2	3.2	*3.2
H ₂ S p.p.m.				15	
Total S. p.p.m.				44	
Methane mole %	87.2	87.0	86.2	86.9	86.2
Ethane mole %	5.2	5.3	5.3	5.2	5.4
Propane mole %	2.0	2.1	2.1	2.1	2.2
iso butane mole %	1.1	1.1	1.2	1.1	1.2
n-butane mole %	0.4	0.4	0.5	0.5	0.5
C ₅ 's	0.4	0.4	1.0	0.5	0.8
CO ₂	0.5	0.5	0.5	0.5	0.5

...../2

Rate No. (Cont'd.)	1	2	3	3	4
Calorific Value (calculated)					
BTU/lb. nett				19,930	
gross				22,030	
BTU/S.C.F. nett				988	
gross				1,093	
Average mol. wt.	18.7	18.7	19.1	18.8	19.1
Specific Gravity (air = 1)	0.64	0.65	0.66	0.65	0.66

* The nitrogen figure (3.2%) as determined for sample No.3b only is considered the same for all four samples.

The individual C₅ components making up the total of 0.5% of sample 3b were shown to be present in the following proportions:

iso pentane	mole %	89.6
N pentane	mole %	2.2
2,3 dimethyl butane	mole %	0.7
2 methyl pentane	mole %	2.2
3 methyl pentane	mole %	5.0
2,2 dimethyl butane	mole %	0.3

2. Distillate

Unfortunately the bomb used in the attempt to take a distillate sample at the separator conditions contained water and gas but negligible distillate. Hence no analysis of distillate as present in the separator could be carried out.

A composite was made of the can samples of distillate taken during the rate No.3 run and that sample was used for identification of the individual distillate components. The cans had been filled at atmospheric pressure.

The distillate analysis was -

C ₃ wt.%	0.3
iso butane wt.%	3.4
n butane wt.%	3.0
2,2 dimethyl propane wt.%	0.2
iso pentane	19.8
n pentane	0.9
2,2 dimethyl butane wt.%	1.5
2,3 dimethyl butane wt.%	7.5
2 methyl pentane wt.%	0.6
3 methyl pentane wt.%	12.6

Distillate analysis (Cont'd.)

n hexane	0.3
2,4 dimethyl pentane wt.%	3.5
2,3 dimethyl pentane wt.%	10.3
iso octane (2,2,5 trimethyl pentane) wt.%	3.7
2,2,5 trimethyl hexane	1.1
n octane	3.1
n nonane	0.5
*Unidentified branched C ₈ 's	17.7
**Unidentified branched C ₉ 's	10.0

* 6 C₈ components the two highest being at 5.5%.

** 5 C₉ components the highest being at 3.5%. Also two at 2.5%.

3. Dump Tank Samples

A bulk sediment and water test was requested for each of the four dump tank samples.

Results were -

Sample	1	2	3	4
Rate No.	1	2	3	4
B.S. & W. % vol.	32	30	30	30.5

The above test is carried out by adding 50 mls. of toluene to 50 mls. of sample, shaking and then centrifuging. The B.S. & W. result is determined from the volume of separated water and heavier materials. In each case there were distinct layers of "clay", dark grey emulsion and water (in order of decreasing density). The hydrocarbon layer in each case contained considerable light emulsion. The percentage represented by the various layers were -

Sample	1	2	3	4
"Clay" (as vol. percent of the original 50 ml. sample)	7.5	8	7	6.5
Dark grey emulsion (as vol. percent of the original 50 ml. sample)	18.5	12	13	10
Water (as vol. percent of the original 50 ml. sample)	6	10	10	14
Emulsion in Hydrocarbon Layer (as % of the total 100 ml. volume in the centrifuge tube)	24	40	55	50

Additional tests to those previously reported have been carried out on the water sample submitted by you on April 6, 1965.

Esso Exploration

4 April 22, 1965

The additional results are -

Carbonate p.p.m.	6
Bicarbonate p.p.m.	540
Total dissolved solids p.p.m.	1,380

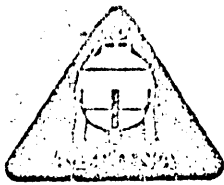
Yours very truly,
ALTONA PETROCHEMICAL CO. PTY. LTD.

R.W. Eustis
General Manager



By O.R. Smith

:mc



2nd Copy.

ALTONA PETROCHEMICAL COMPANY PTY. LTD.

MAIDSTONE ST., ALTONA, W.18, VIC.

PRIVATE MAIL BAG NO. 3, ALTONA. TELEPHONE 65-8311. CABLES "ALTOCHEM" MELBOURNE

IN REPLY, PLEASE QUOTE: JR-6040C

May 7, 1965

10 MAY 1965

CONFIDENTIAL

Mr. E.J. Stanley,
Esso Exploration Aust.,
G.P.O. Box 4249,
SYDNEY, N.S.W.

Dear Sir,

Sample Analysis - Gippsland Shelf No.1

Gas and distillate samples from Gippsland Shelf No.1 Well, Test No.3, were received on April 23, 1965. The samples were drawn on April 21, 1965.

Our Laboratory test results on the above were:

1. Gas

Sample No.	1	2	3	4
Rate No.	2	3	4	5
Time Taken	0724	1025	1545	2325
Separator Pressure psig	598	645	425	440
Separator Temp. °F	48	38	30	34
Oxygen mole %	*nil	*	*	*
Nitrogen mole %	2.8	3.0	2.8	2.8
H ₂ S p.p.m.			20	
Total S p.p.m.			55	
Methane mole %	87.7	87.3	87.6	87.3
Ethane mole %	5.3	5.3	5.3	5.4
Propane mole %	1.9	1.9	2.0	2.1
Isobutane mole %	1.0	1.0	1.1	1.1
n-butane mole %	0.4	0.4	0.4	0.4
C ₅ 's ⁺	0.4	0.4	0.3	0.4
CO ₂	0.5	0.7	0.5	0.5
Calorific Value (calculated)				
B.T.U./lb. nett	20,080	19,910	20,040	20,060
gross	22,200	22,010	22,150	22,180
B.T.U./S.C.F. nett	986	982	985	990
gross	1,090	1,086	1,087	1,094
Average Mol. Wt.	18.6	18.7	18.6	18.7
Specific Gravity (air = 1)	0.64	0.64	0.64	0.64

* All gas samples except No.1 showed small and varying amounts of oxygen which were obviously due to sample contamination with air. The nitrogen figures shown are those obtained by subtracting from the total nitrogen figures, the nitrogen-in-air equivalent of the oxygen found. The resultant similar nitrogen figures would confirm that the oxygen found was due to air contamination.

The individual C₅ and C₆ components making up the total C₅'s* shown above were found to be present in the following proportions:

Sample No.	1	4
iso pentane mole %	89.9	91.7
pentane mole %	2.3	2.3
2,3 dimethylbutane mole %	0.9	0.4
2 methyl pentane mole %	2.3	1.6
3 methyl pentane mole %	4.1	3.3
2,2 dimethyl butane mole %	0.5	0.4

We did not receive the gas sample for rate No.1.

2. Distillate

Sample No.	5	6	7	8	9
Rate No.	1	2	3	4	5
Time Taken	2050-2110	0725	1010	1630	2400
Separator Pressure psig	620	598	610	440	435
Separator Temperature °F	44	48	37	35	36
Methane wt.%	5.1	3.3	1.9	2.7	1.6
Ethane wt.%	5.3	3.0	2.8	3.1	3.0
Propane wt.%	12.9	8.7	13.7	10.5	9.0
iso butane wt.%	11.2	10.9	14.4	11.9	11.5
* n-butane	8.5	7.2	6.1	8.2	7.9
2,2 dimethyl propane) wt.%					
iso pentane wt.%	19.6	22.2	22.6	22.1	21.8
n-pentane wt.%	1.4	1.3	1.5	1.6	1.6
2,2 dimethyl butane wt.%	1.2	1.3	0.8	1.2	1.0
** 2,3 dimethyl butane)	5.1	5.0	4.9	5.1	5.9
2 methyl pentane) wt.%					
3 methyl pentane wt.%	5.1	8.6	6.2	7.4	8.6
n-hexane wt.%	0.2	0.3	0.2	0.3	0.4
2,4 dimethyl pentane wt.%	1.8	2.5	1.9	2.0	2.5
2,3 dimethyl pentane wt.%	5.7	6.9	5.6	5.9	7.0
iso octane wt.%	2.0	2.3	2.1	2.0	2.4
Branched C ₈ 's wt.%	7.7	8.6	8.3	8.7	8.1
2,2,5 trimethyl hexane wt.%	0.7	0.6	0.6	0.7	0.5
n-octane wt.%	1.5	1.6	1.4	1.4	1.6
Branched C ₉ 's wt.%	4.7	5.4	4.6	4.8	5.3
n-nonane wt.%	0.3	0.3	0.4	0.4	0.3

* The wt.% 2,2 dimethyl propane would be approximately 0.5.

** Wt.% 2 methyl propane would be approximately 2.0.

The considerable variation in percentage of light components was most likely due to sample bomb valve leakage, e.g., sample 9 was found to be leaking slightly when received.

Esso Exploration, Sydney

3

May 7, 1965

The additional analyses requested on May 4, 1965, for the canned samples taken will be carried out and reported as soon as possible.

Yours very truly,
ALTONA PETROCHEMICAL CO. PTY. LTD.

R.W. Eustis
General Manager



By M.G. Leckey

imo

CONFIDENTIAL

ESSO GIPPSLAND SHELF NO. 1 - REPORT FOR 13th APRIL, 1965

Interval - 3752 to 3756 ft.

Test No. 4

Test duration - 1 hr. 30 min.

Choke size 18/64 in.

Tubing pressure - 1080 to 1170 p.s.i. (pounds per square in.)

Flow rate - 4.83 million c. ft./day of gas

75.5 barrels/day of distillate

Test No. 5

Test duration - 1 hr. 17 min.

Choke size - 22/64 in.

Flowing tubing pressure - 935 to 1000 p.s.i.

Flow rate - 5.95 million c.ft. / day of gas

74.2 barrels of distillate

Note: At the end of the test the pressure went back up to 1500 p.s.i. in about 2 minutes.

Test No. 6 (final test of this interval).

Time 15.12

Test duration - 2 1/4 hours

Choke size - 28/64 in.

Tubing pressure - 906 p.s.i.

Flow rate 10.55 million c.ft. / day of gas

75 barrels of condensate

- : - : -

Shut well in at 18.00 hours. Squeezed off this zone this morning in preparation for the next test which is to be of the interval 3490 to 3495 ft.

0
ZONE 1

Esso Gippsland Shelf-1
Production Test of Zone No. 1
Perforations 3809'-3814' GR

April 4 and 5, 1965.

A. General Information

1. Test in 9-5/8" Casing
2. Top Baker Model "D" Production Packer set at 3786' GR/CCL.
3. Bottom of 2-7/8" Tubing Stinger set at approximately 3800' GR/CCL.
4. Test string:
 - 5.05' open-ended tubing stinger - 2-7/8"
 - 9.25' Baker 2-7/8" seal units (non-latch bump up)
 - 2-7/8" EUE Tubing from Baker Packer to "job-modified" Boll Weivel tubing hanger resting in 13-5/8" x 11" Cameron Wear Bushing in 13-5/8" Well Head above Ocean Floor. Weight of tubing rests on tubing hanger.
 - 5" O.D. Otis Double Ball Valve (in line) Assembly through BOP's to Regan Mandrel at top of stack. Top of this assembly has guide release device for 2-7/8" AOH Drill Pipe.
 - 2-7/8" AOH Drill Pipe extending from 5" Otis Assembly to Rig Floor.
 - Halliburton Control Head.
5. Production Facilities:

Flow line extended from Control Head to 1440 psi BS & B Test Separator on Helicopter Flight Deck. Liquids dumped to any one of four 118 bbl test tanks on deck of Point Coupee (Supply Boat) tied up on Port side of Glomar III. Gas can be flared to Stern Starboard, to Bow Starboard, or up into derrick.
6. Weather During Test:

4-4-65	Very good working conditions
5-4-65	0800: Seas increasing. Seas 8' SW. Roll 2°. Pitch 3°. Heave 2'.
	1000: Seas 8' SW, Roll 2°, Pitch 4°, Heave 2-3'
	1030: Seas 10' SE (swells)
	1200: Seas 10' SE (swells). Roll 3-4° Pitch 6° Heave 5'. 100,000 lb strain on No. 7 and No. 8 anchor lines.

Sufficient test information obtained by 1100 hours. It was also time to kill well because of increasing seas. Point Coupee pulled away from Glomar III.

B. Test Details

- 2-4-65 Perforated through tubing with Schlumberger Magnajet from 2809-3814' GR/CCL, or 3811-3816' IES with 1 shot per foot (total of 5 shots). Bottom of 2-7/8" Stinger was too close to top of perforations to allow magnet to pull gun over to side of 9-5/8" Casing.
- 3-4-65 Swabbed to 3500'. No entry. Filled tubing with water. Pressured tubing to 2750 psi. Pressure broke back to 2400 psi. Pumped 5 bbl water to formation at 2400 psi. Chloride of water 950 PPM. Filled tubing with water. Swabbed to 3500'. No entry.
- 4-4-65 Filled tubing with water. Pumped 12 bbl water into formation at 2500 psi (1/2 BPM). Swabbed to 2000'. No entry. Perforated 2nd time 3809-3814' GR/CCL with one shot per foot. Pumped 4 bbl water into formation at 2000 psi (3 BPM). Total water pumped into formation during 2 days was 21 bbl.
- 1315-1415: Well flowed 5 bbl water at increasing rate. Switched well to flare line at 1410 hours on 1/8" Choke in Halliburton Control Head on Rig Floor.
- 1415-1435: Cleaned well on 1/8" Choke to flare line. Well flowed estimated 17 bbl water. Capacity of tubing was 22 bbl.
- 1435-1625: Shut well in. Shut in pressure at 1440 hours was 1000 psi. Line up Separator. Flowed well from 1537 to 1545 hours.
- 1625 : Start flowing test. Ran in hole with BHP Bomb No. 1. Set Bomb at 3750'. Used 72-hour Clock. Well flowed on 1/8" Choke on Rig Floor.
- 1630-1825: Clean-up Test.

Notes:

- * BS & B Separator did not have Static Pressure Recorder as ordered. Pressures were read from a Gauge (0-2000 psi) downstream of Orifice fitting at Point "A". Static Pressure Recorder will be installed for tests of other zones.
- ** Temperatures were read from Thermometer on top of body of the horizontal separator.
- + Separator pressures were read from Gauge (0-2000 psi) on top of body of horizontal separator.
- x Flowing tubing pressures were read from Halliburton Gauge on Control Head on Rig Floor. Readings not very accurate. This will be corrected on future tests.
- xx First two diff. recordings are bad. - Adjustable Choke at Separator was set on 26 1/2/64" from 1625 to 1648 hours. Setting

changed to 21/64" at 1648 hours.

Mud Logging Unit gave following results on water samples taken during Test:

Time	RW	Temperature	Chloride
1540	... 2.41	68°	1200
1715	... 3.60	74°	820
1830	... 3.91	74°	760
1830	Shut well in at Separator. Well shut in overnight.		

Shut-in Pressures During the Night

Date	Time	Gauge Pressure at Separator	Gauge Pressure at Control Head - Halliburton Gauge Psi	
4-4-65	1830	1200		
	1845	1210		
	1900	1240		
	1915	1240		
	1930	1250		
	1945	1260		
	2000	1240		
	2015	1260		
	2030	1260		
	2045	1260		
	2100	1320 (Tapped Gauge)	1400	
		2215		1410
		2330		1410
5-4-65	0045		1425	
	0215		1425	
	0315		1425	

Note: 1/8" Choke plugged during the night so Gauge Pressures at Separator are not reliable.

- 0400 - Pull BHP Bomb No. 1 out of hole. Recorder did not operate properly. No information secured. Wireline ram would not operate properly.
- 0515 - Closed Otis double ball valves so BHP Bomb could be removed.
- 0535 - Bled pressure off tubing above Otis double Ball Valve. Unplugged 1/8" Choke.
- 0730 - Shut in pressure on Gauge at Separator was 1500 psi. Started BHP Bomb No. 2 with 12-hour clock at 0620 hours. On bottom with BHP Bomb No. 2 at 0730 hours. Set at 3755' in 2-7/8" tubing.
- 0750 - Open well through Separator for test. No Choke in Control Head. Used adjustable Choke at Separator.
- 0800 - Choke Size - 17/64". Flowing Tubing Pressure from Gauge at Separator located upstream of adjustable Choke (0-2000 psi) - 1230 psi. Separator Pressure - 720 psi.

- 0803 - Fluid Meter Reading - 37.0 bbl
 0805 - Back Pressure Regulator was sticking.
 0812 - Flowing Tubing Pressure - 580 psi. Separator Pressure
 - 470 psi. Diff. - 42.0
 0825-1100: Production Rate No. 1
 1100 - Shut well in at Separator. Following pressures were
 taken from Gauge (0-2000 psi) located upstream from
 Separator.

Time	SI Press	Time	SI Press	Time	SI Press
1101	720	1110	1220	1119	1230
1102	800	1111	1220	1120	1230
1103	880	1112	1225	1121	1230
1104	950	1113	1230	1122	1230
1105	1020	1114	1230	1123	1230
1106	1080	1115	1230	1124	1230
1107	1140	1116	1230	1128	1230
1108	1170	1117	1230		
1109	1200	1118	1230		

- 1115 - Start out of Hole with BHP Bomb No. 2. Very rough seas.
 1132 - Bomb to surface.
 1209 - Start pumping in tubing with 11.5 lb/gal mud. Initial
 pressure 1350 psi.
 1221 - Finish displacing 30 bbl mud in tubing at 1400 psi. Fi-
 nal pressure. Pressure immediately fell to 500 psi.
 1228 - Pressure - 0 psi. Well dead.

Mud Logging Unit gave following results on fluid samples:

Time	RW	Temperature	Chloride
0830	4.79	70°	760
0930	5.20	71°	700
1000	4.72	87°	640
1015	5.09	70°	640
1045	5.21	82°	640
1100	5.12	76°	590

Note: At about 0915 hours well started making emulsion foam with
 trace of distillate on top of samples taken from Separator.

Other Information:

1. See Attachment A - List of Samples for Laboratory
2. See Attachment B - Static Gradient Survey (BHP Bomb No. 2)
3. See Attachment C - Period Pressure Survey During Production
 Test (BHP Bomb No. 2)
4. A continuous sample of fluid was bled from Separator to an open
 5 gal. can during period 1020-1035 hours. Sample was allowed to
 set 24 hours. Samples had a height of 8-11/16" of water and 5/16"
 of distillate mud emulsion on top of the water. Distillate was
 very difficult to break out of the emulsion.
5. Well did not make any sand.

Attachment A

Fluid Samples for Laboratory
(Exposed to Air)

Water samples taken on Production Test No. 1 (no. 2½ cans.)

a. 11 cans at end of test 3 MMCFD, April 5, 1965 (1035-1055 hours).

b. 7 cans taken at 15 min intervals, marked "For EJS" and
Sample No. April 5, 1965 3 MMCFD

- No. 1 at 0930
- No. 2 at 0945
- No. 3 at 1000
- No. 4 at 1015
- No. 5 at 1030
- No. 6 at 1045
- No. 7 at 1100

c. 2 cans at 1800 April 4, 1965 1 MMCFD
2 cans at 0830 April 5, 1965 3 MMCFD
1 can at 0930 " 3 MMCFD
1 can at 1030 " 3 MMCFD
1 can at 1100 " 3 MMCFD

Gas Samples for Laboratory

- No. 1 - 0820
- No. 2 - 1020
- No. 3 - 1034
- No. 4 - 1053

SERVICES
DYNAMOMETER
PRESSURE SURVEYS
TEMPERATURE SURVEYS
PIANO WIRE LINE SERVICE
SONOLOG WELL SOUNDING SERVICE

ROBERT D. AGNEW

P.O. Box 384
DALBY, QUEENSLAND

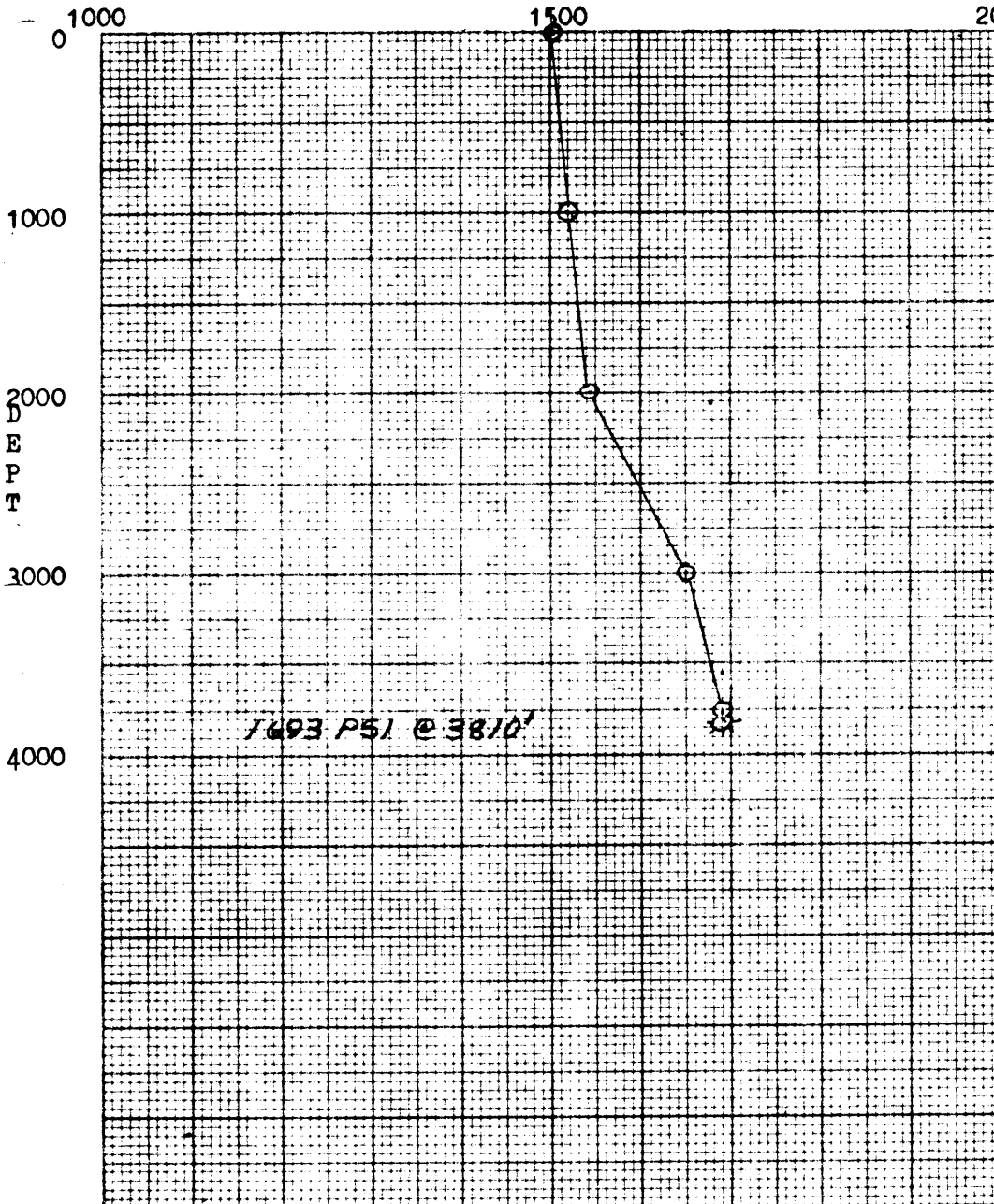
PHONE DALBY 1022

OWNER	ESSO EXPLORATION	FIELD	BASS STRAIGHT AREA	WELL NAME	GIRPSLAND SHELF 1	
CASING	9-5/8"	ELEV.	31'	DATE	April 5, 1965	
LINER DESCRIPTION					ZERO POINT	Rotary Table
PERFORATED	3809'-3814'			DEPTH		
TUBING DETAIL	2-7/8" on Baker Model "D" Packer with open end tubing @ 3802'.			ZONE		

PURPOSE	Static Gradient Survey		
REMARKS	Shut in 6:30 PM April 4, 1965		
PICK UP @	None	MAXIMUM TEMPERATURE	157 °F @ 3755'
ELEMENT	6,000 p.s.i.	SERIAL NO.	22379-N

STABILIZATION PERIOD	13 Hours
GROSS FLUID RATE B/D	x
NET OIL RATE B/D	x
FORMATION GAS MCF/D	x
GAS OIL RATIO CFT/BBL	x
CIRCULATED GAS MCF/D	x
OIL GRAVITY °API	x
BEAN SIZE	x

P R E S S U R E



CASING PRESSURE	Packer
TUBING PRESSURE	1502 psig

Depth	Pressure	Grad't
0	1502	---
1000	1520	.018
2000	1543	.023
3000	1650	.107
*3500	---	---
3755	1690	.052
3810	1693 (Extrapolated)	

* Stop not readable.

On bottom 7:30 AM

By: Robert D. Agnew

DYNAMOMETER
 PRESSURE SURVEYS
 TEMPERATURE SURVEYS
 PIANO WIRE LINE SERVICE
 SONOLOG WELL SOUNDING SERVICE

ROBERT D. AGNEW

P.O. Box 384
 DALBY, QUEENSLAND

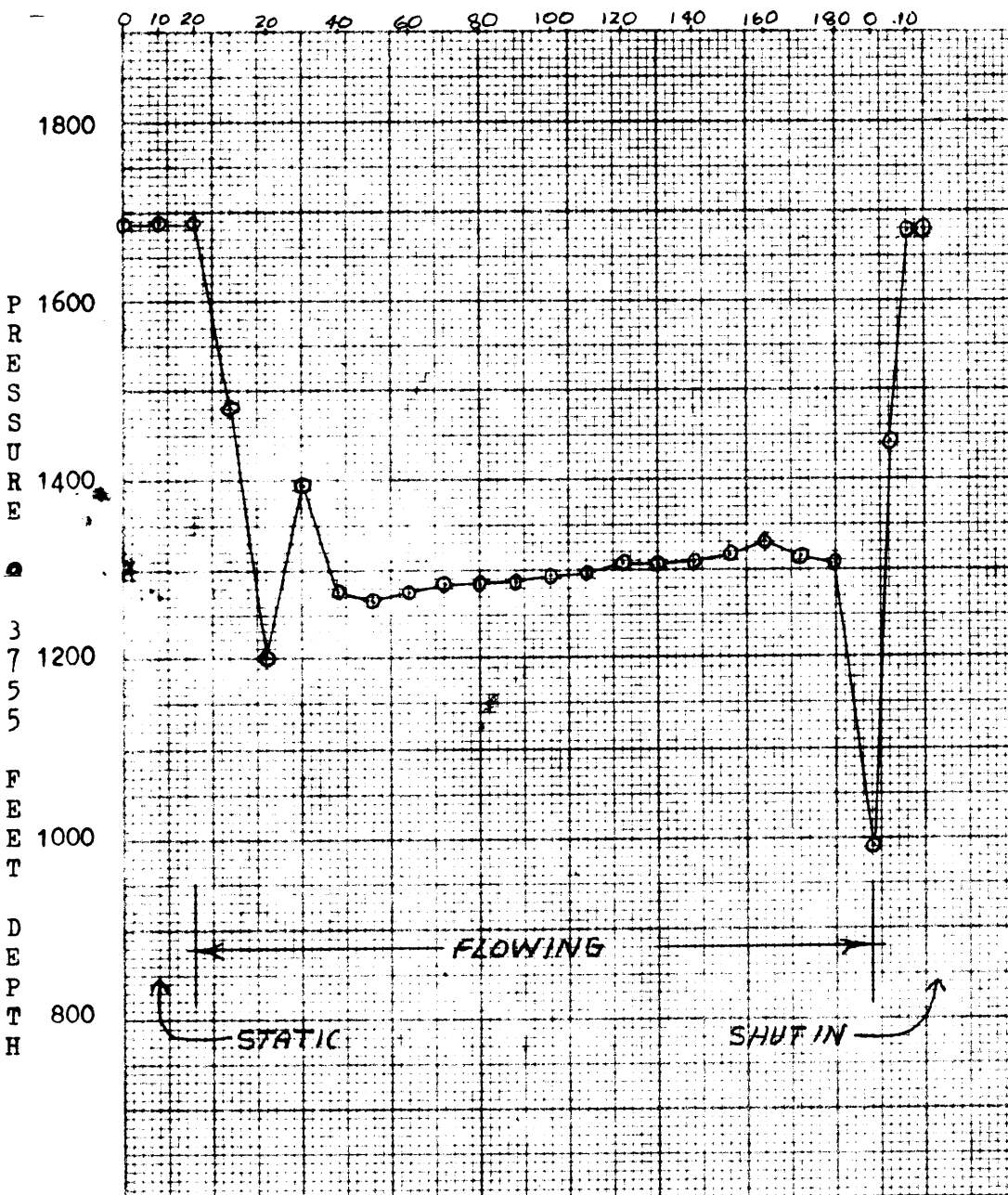
PHONE DALBY 1022

OWNER ESSO EXPLORATION FIELD BASS STRAIGHT AREA WELL NAME GIPPSLAND SHELF 1
 CASING 9-5/8" ELEV. 31' DATE April 5, 1965
 LINER DESCRIPTION ZERO POINT Rotary Table
 PERFORATED 3809'-3814' DEPTH
 TUBING DETAIL 2-7/8" on Bakder Model "D" Packer with open end tubing @ 3802'. ZONE

PURPOSE Period Pressure Survey During Production Test.
 REMARKS On production 7:50 AM. Shut in 11:00 AM.
 PICK UP @ None MAXIMUM TEMPERATURE 157 °F @ 3755'
 ELEMENT 6,000 p.s.i. SERIAL NO. 22379-N

STABILIZATION PERIOD
 GROSS FLUID RATE B/D 750
 NET OIL RATE B/D Trace
 FORMATION GAS MCF/D 2950
 GAS OIL RATIO CFT/BBL
 CIRCULATED GAS MCF/D x
 OIL GRAVITY °API x
 BEAN SIZE 32/64"
 CASING PRESSURE
 TUBING PRESSURE

TIME MINUTES



On bottom 7:30 AM	STATIC
0 min	1687 psig @ 3755'
10 "	1687 "
20 "	1687 "
7:50 AM on production.	
0 min	1687 psig @ 3755'
10 "	1480 "
20 "	1201 "
30 "	1395 "
40 "	1277 "
50 "	1268 "
60 "	1277 "
70 "	1285 "
80 "	1283 "
90 "	1288 "
100 "	1294 "
110 "	1297 "
120 "	1309 "
130 "	1306 "
140 "	1309 "
150 "	1318 "
160 "	1331 "
170 "	1315 "
180 "	1309 "
190 "	993 "
11:00 AM Shut in	
0 min	993 "
5 "	1442 "
10 "	1679 "
15 "	1679 "
11:15 AM	Off bottom.

By; Robert D. Agnew

Clean-up Test Through Separator
Zone No. 1

Summary of Test - Total Recorded Period

Time - (1 hr. 55 mins)	1630-1825 hours
Average Temperature	81.6°
Average Differential - Inches of W.C. (Corrected)	22.93"
Average Static Pressure	640 psig.
Range of Separator Pressure	640-670 psig.
Choke Size	1/8" Positive
Orifice Plate	1.0"
Range of Flowing Tubing Pressure	1050-1100 psig.
Fluid Recovery (Oil Meter Volumes)	
Rate per last hour of test	345.6 BPD
During test recovered 35.9 bbl of water (14.9 bbl out of formation)	
Gas Per Day	0.69 MMCF

Production Test No. 1
Zone No. 1

Summary of Test - Total Recorded Period

Time - (2 hr. 35 mins)	0825-1100 hours
Average Temperature	99.4° F
Average Differential - Inches of W.C. (Corrected)	9.71"
Average Static Pressure	441 psig.
Choke Size	<u>32.5"</u>
	64
	2.0"
Orifice Plate	670-750 psig.
Range of Flowing Tubing Pressure	
Fluid Recovery - 750 BPD (Water with Trace of Distillate)	
Gas Per Day	1.63 MMCF

An. CM/CC/2/5

Report on Samples Nos. 501-506/65

Samples : Condensates
Locality : Bass Strait (Esso Gippsland Shelf
(No.1.)
Sender : The Manager,
Esso Exploration (Aust.) Inc.,
360 Lonsdale Street,
MELBOURNE.

Esso Gippsland Shelf No.1

Six samples of condensate were received for testing.

The samples were obtained during the drilling in Bass Strait of Victoria's first off-shore oil well, bearing the name Esso Gippsland Shelf No.1.

The condensate was accompanied by high-pressure natural gas, and an analysis of this gas has been reported separately.

Details of specific gravities and distillations may be found on the following page.

The distillation figures show that between 80% and 90% of each sample distils in the range of 0-170°C., and would be classed as a gasoline fraction.

Lab.No.	501	502	503	504	505	506
Flowrate No.	1	2	3	4	5	Total
Condensate No.	2	1	3	3	3	
Test No.	3	3	3	3	3	3
Interval (feet)	3492-3497	3492-3497	3492-3497	3492-3497	3492-3497	(Production 3492-3497)
Time	2200	0715	1100	1645	2350	1200
Date	20.4.65	21.4.65	21.4.65	21.4.65	21.4.65	22.4.65

Initial B.P.	28.5°C.	27.5°C.	23.0°C.	24.0°C.	23.0°C.	33.5°C.
	Vol.Temp.	Vol.Temp.	Vol.Temp.	Vol.Temp.	Vol.Temp.	Vol.Temp.
	Mls. °C.	Mls. °C.	Mls. °C.	Mls. °C.	Mls. °C.	Mls. °C.
	10 45.0	10 44.5	10 38.0	10 39.0	10 37.0	10 53.5
	20 55.5	20 54.0	20 48.0	20 46.5	20 47.0	20 64.0
	30 65.5	30 64.5	30 59.0	30 59.0	30 58.5	30 76.5
	40 78.0	40 76.0	40 73.0	40 72.0	40 71.0	40 88.0
	50 91.5	50 87.5	50 89.0	50 86.5	50 81.5	50 101.0
	60 107.0	60 106.0	60 110.5	60 105.0	60 107.0	60 115.0
	70 126.0	70 121.0	70 129.5	70 118.5	70 122.5	70 128.0
	80 144.0	80 133.0	80 155.0	80 142.5	80 146.5	80 143.0
	90 179.5	90 170.0	89 229.5	90 196.0	90 219.0	90 174.0
	95 234.0	94 210.0		93 220.0	93 219.0	96 233.0

Lab.No.	501	502	503	504	505	506
Recovery	95 mls.	94 mls.	89 mls.	93 mls.	91 mls.	96 mls.
End Point	234.0°C.	210.0°C.	229.5°C.	220.0°C.	219.0°C.	233. °C.
Volume of Residue	1.2 mls.	1.8 mls.	1.3 mls.	1.6 mls.	0.8 mls.	1.6 mls.
Distillation Loss	3.8 mls.	4.2 mls.	9.7 mls.	5.4 mls.	8.2 mls.	2.4 mls.
Specific Gravity (15.5°C.)	0.690	0.692	0.681	0.684	0.680	0.703
Sulphur (total) (%)	0.02%	0.02%	0.02%	0.02%	0.02%	0.02%
Colour	Water - white		All Samples			
Odour	Petroliferous		All samples			

John Kennedy

Senior Chemist,
Mines Department.

21st October,

1965

An. GG/3/5

Report on Sample No. 457/65

Sample : Condensate
Locality : Bass Strait (Esso Gippsland Shelf
No.1)
Sender : The Manager,
Esso Exploration (Australia) Inc.,
360 Lonsdale Street,
MELBOURNE.

Description of Samples :

Esso Gippsland Shelf No.1

A sample of condensate was received from Esso Exploration (Australia).

The condensate accompanied a strong gas flow encountered in the off-shore oil well, Esso Gippsland Shelf No.1

Distillation was carried out as prescribed by the Institute of Petroleum Technologists.

Details of Sample :

Drill Stem Test No.2
Interval (feet) 3752-3756
Rate 3
Flow Rate No.3
Date 12 th April, 1965.

Results:

Condensate collected during gas flow at off-shore oil-well, Esso Gippsland Shelf No.1.

Initial Boiling Point 25°C.

<u>Vol.</u>	<u>Temp.</u>
Mls.	°C.
10	41.5
20	53.0
30	64.5
40	77.0
50	91.0
60	108.5
70	125.0
80	141.5
90	200.0
91	200.0

Recovery	91 mls.
End Point	200°C.
Volume of Residue	1.2 mls.
Distillation Loss	7.8 mls.
Specific Gravity (15,5°C).	0.681
Total Sulphur (S)	0.02%
Colour	Water-white
Odour	Pungent. Typical of light petroleum fraction.

The distillation figures show that between 80% and 90% of the sample distills in the range 0-170°C. and would be classed as a gasoline fraction.

John C. Kennedy

Senior Chemist,
Mines Department.

An. MS/GK/5/5

Report on Sample No. 499/65

U.W.R.S. 3732

Sample : Water from off-shore well
 Locality: Bass Strait (Esso Gippsland Shelf No.1)
 Sender : The Manager,
 Esso Exploration (Australia) Inc.,
 360 Lonsdale Street,
 MELBOURNE.

Particulars:

Bore Esso Gippsland Shelf No.1
 Sample Production test sample 1
 Depth (feet) 3809 - 14
 Date 4.4.65 6 p.m.
 Remarks This water sample was obtained during the drilling of the oil well, Esso Gippsland Shelf No.1, off-shore from Seaspray.

<u>Results:</u>	<u>Parts per million</u>
Total solids in solution	1697
(by evaporation)	
Chloride (Cl)	522
Carbonate (CO ₃)	59
Bicarbonate (HCO ₃)	489
Sulphate (SO ₄)	114
Calcium (Ca)	14
Magnesium (Mg)	26
Iron-soluble (Fe)	0.7
Total hardness (as CaCO ₃)	141

pH 8.4

Comment

Insufficient water prevented a more complete analysis being made.

John C. Kennedy

Senior Chemist,
Mines Department.

JCK:SM

11th August, 1965.

AN. GG/PG/25/B

Report on Sample No. 500/65

Sample : Natural Gas
Locality : Bass Strait (Esso Gippsland Shelf No.1)
Sender : The Manager,
Esso Exploration (Australia) Inc.,
G.P.O. Box 4249,
SYDNEY. NEW SOUTH WALES.

Esso Gippsland Shelf No.1

A sample of natural gas was received for analysis. The gas was obtained during the drilling of the well, Esso Gippsland Shelf No.1.

Particulars of Sample

Drilling Company	Esso Exploration (Australia) Inc.
Name of Drill	Esso Gippsland Shelf No.1
Interval (feet)	3492 - 3497
Test No.	3
Flow Rate No.	1
Separator Pressure (p.s.i.)	620
Separator Temperature (°F)	44
Time	2100
Date	20th April 1965

Condition of Sample

The sample was received in a medium-size, high-pressure cylinder.

...

<u>Results :</u>	<u>As Received</u> <u>% V/V</u>	<u>*Air-Free Basis</u> <u>% V/V</u>
Methane	85.2	80.9
Ethane	5.5	5.6
Propane	2.8	2.9
Isobutane	1.09	1.11
n-Butane	0.44	0.45
Isopentane	0.29	0.30
n-Pentane	0.01	0.01
C6 and higher	0.02	0.02
Oxygen	0.4	-
Nitrogen	3.6	2.1
Carbon Dioxide	0.4	0.4

- * The oxygen present was assumed to be due to the presence of air, and after removing this Oxygen and its air-proportional nitrogen, the components were re-calculated on an air-free basis.

John C. Kennedy

Senior Chemist



COMMONWEALTH OF AUSTRALIA

DEPARTMENT OF NATIONAL DEVELOPMENT

TELEPHONE: 4-4261

TELEGRAMS:

"BUROMIN" CANBERRA

POSTAL ADDRESS: BOX 378

CANBERRA CITY

BUREAU OF MINERAL RESOURCES.

GEOLOGY AND GEOPHYSICS.

MLC BUILDING.

LONDON CIRCUIT.

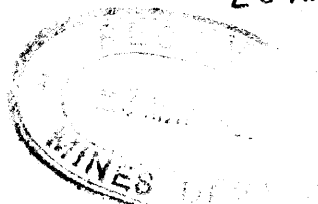
CANBERRA CITY.

A.C.T.

In Reply Please Quote.....62/318.....

The General Manager,
Esso Exploration Australia, Inc.,
Box 4249 G.P.O.,
SYDNEY. N.S.W.

29 APR 1965



Dear Sir,

Gippsland Shelf No. 1

...

Enclosed for your information are the results of analysis, by gas chromatography, of a sample gas collected during a drillstem test of the perforated interval from 3809' to 3814' in the above well.

Yours faithfully,

J.M. Rayner
(J.M. RAYNER)
Director.

for

The Secretary for Mines,
Department of Mines,
Treasury Place,
MELBOURNE. VIC.

M. Kerby *M.M. 3/5/65* *R.L.F. 3/5/65*



COMMONWEALTH OF AUSTRALIA

DEPARTMENT OF NATIONAL DEVELOPMENT

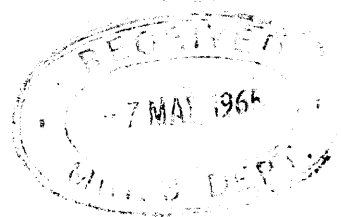
TELEPHONE: 4-4261
TELEGRAMS:
"BUROMIN" CANBERRA
POSTAL ADDRESS: BOX 378
CANBERRA CITY

BUREAU OF MINERAL RESOURCES
GEOLOGY AND GEOPHYSICS.
MLC BUILDING.
LONDON CIRCUIT.
CANBERRA CITY.
A.C.T.

In Reply Please Quote.....62/318.....

5 MAY 1965

The General Manager,
Esso Exploration Australia, Inc.,
Box 4249, G.P.O.,
SYDNEY. N.S.W.



Dear Sir,

Gippsland Shelf No. 1

...

Enclosed for your information are the results of analyses, by gas chromatography, of two samples of gas and a sample of condensate collected during Test No. 2 from the perforated interval 3792'-3756' in the above well.

With reference to my letter of 29th April enclosing results of analysis of a sample of gas from Test No. 1 - please note that "E-Hexane" should correctly read "Neo-Hexane".

Yours faithfully,

J. Meas
(J.M. RAYNER)
65 Director

c.c. The Secretary for Mines,
Department of Mines,
Treasury Place,
MELBOURNE. C.1 Vic.

1. Mr. Mace, To 200, *MM* 10.5.65
2. Mr. Kenley, *JK* 13/5/65

GAS ANALYSIS

WELL: GIPPSLAND SHELF No. 1

Sample Component	From Perforations 3808' - 3815'
H & He	Trace
O & Ar	0.122%
N	1.30 %
CO	Nil
CO ₂	0.59 %
Methane	86.70 %
Ethane	6.15 %
Propane	2.81 %
Iso-Butane	1.00 %
Butane	0.447%
Iso-Pentane	0.607%
Pentane	0.108%
N-Hexane	0.024%
Iso-Hexanes	0.138%
Hexanes	Trace
H ₂ S	Nil

2.512

86.70

11.284

99.996

Analysis by: J. Fuchel.

Note: In this after removal of condensate.

GAS ANALYSIS

WELL: ESSO - GIPPSLAND SHELF No. 1

SAMPLE COMPONENT	Prod. Test No. 1 Depth: 3492'-3497' Sample No. 3 Flow Rate No. 2 Separator Pressure: 610 PSIG Separator Temp: 46°F Date: 21st April, 1965 Time: 0806 Hours.
H, He O+Ar N CO CO ₂ METHANE ETHANE PROPANE ISOBUTANE BUTANE ISOPENTANE PENTANE DIMETHYLBUTANES 3-METHYLPENTANE 2-METHYLPENTANE HEXANE HEPTANES AND HIGHER N ₂ S	N. De TRACE 2.0 % N. De 0.55% 85.9 % 5.78% 3.03% 1.17% 0.52% 0.62% 0.26% 0.01% 0.08% 0.06% N. De TRACES N. De

- NOTES:
- 1) N. De - Not Detected
 - 2) Composition of the gas, as above, is quoted for the sample on hand at the time of testing only.
 - 3) Analysis by : J. Puchel on 14th May, 1965.

CONDENSATE ANALYSIS

WELL: ESSO - GIPPSLAND SHELF No.1,

SAMPLES P. Test No.3; Depth 3492'-3497'; Sample No.2: Date 21.4. 1965

SAMPLES DETAIL COMPONENT	TIME: ? SAMPLE No.2 FLOW RATE No.1	TIME: 0740 SAMPLE No.2 FLOW RATE No.2	TIME: 1050 SAMPLE No.2 FLOW RATE No.3	TIME: 1550 SAMPLE No.2 FLOW RATE No.4	TIME: 2340 SAMPLE No.2 FLOW RATE No.5
	%	%	%	%	%
PERMANENT NON-HYDROCARBON GASES + METHANE)	0.11	0.03	0.02	0.04	0.02
ETHANE	N.D.c.	0.11	0.02	0.03	0.03
PROPANE	0.32	3.37	3.06	2.48	3.17
ISOBUTANE	3.78	8.07	9.53	8.32	8.69
BUTANE	4.75	6.85	8.51	7.07	7.64
ISOPENTANE	29.5	27.9	29.3	29.4	29.5
PENTANE	1.43	0.88	0.89	0.90	0.90
DIMETHYLBUTANES	1.49	1.14	1.15	1.27	1.21
2-METHYLPENTANE	6.65	6.23	6.02	5.84	5.94
3-METHYLPENTANE + CYCLOPENTANE	10.95	9.72	9.45	9.40	9.54
HEXANE	Dc	0.35	0.33	0.37	0.28
3-ETHYLPENTANE + 2,4 DIMETHYL- BUTANE	3.28	2.55	2.18	2.43	2.38
3,3 DIMETHYLPENTANE + METHYL- CYCLOHEXANES + 2,2,3 - TRIMETHYLBUTANE	0.92	0.35	0.23	0.37	0.21
2,2 - AND 2,3 - DIMETHYLPENTANES) + CYCLOHEXANE + METHYLHEXANES	5.75	9.52	6.82	9.92	9.60
HEPTANE	Dc.	D.c.	D.c.	0.37	0.27
2,2,4 - TRIMETHYLPENTANE + TETRAMETHYLBUTANES	0.32	0.35	0.19	0.22	0.23
TETRAMETHYLBUTANES + BENZENE	3.77	3.21	2.66	2.98	2.92
METHYLHEXANES + METHYL- CYCLOHEXANE + METHYLETHYL PENTANES	2.34	2.19	1.54	1.82	1.83
ETHYLHEXANES + DIMETHYL- HEXANES	4.36	3.55	2.79	3.30	3.49
DIMETHYLHEXANE + METHYL- HEPTANES + CYCLOHEPTANE	2.74	1.95	1.88	1.64	1.97
METHYLHEPTANES	2.91	1.75	2.75	1.59	2.05
OCTANE	D.c.	D.c.	D.c.	D.c.	D.c.
C ₉ ISO ALKANES (TRIMETHYL- + ETHYL-) + TOLUENE	5.97	4.35	4.93	4.03	3.76
OTHER C ₉ AND HIGHER	8.70	5.55	5.78	6.20	4.34

- NOTES: 1) N.D.c NOT DETECTED
 2) D.c. Detected but unable to estimate
 3) a. Samples were supplied in loosely-sealed tin containers.
 b. Composition of condensates, as above, is quoted for the samples on hand at the time of testing only.
 4) Ananalysis by: J. Puchel on 16th June, 1965.

GAS ANALYSIS

Well: Gippsland Shelf No.1

SAMPLE COMPONENT	Test No.2	
	Flow MMCF/D Depth: 3752'-3756' Time: 1300 Hrs. Date: 12.4.65	Flow MMCF/D Separator Pressure 615 PST Separator Temp. 62°F Time: 1315 Hrs. Date: 12.4.65
H1 He	Trace	N.De.
O+Ar	0.102%	0.09%
N	1.30%	1.50%
CO	N.De.	N.De.
CO ₂	0.59%	0.83%
Methane	86.7%	87.1%
Ethane	6.15%	5.38%
Propane	2.83%	2.98%
Iso-Butane	1.00%	1.03%
Butane	0.447%	0.484%
Iso-Pentane	0.607%	0.490%
Pentane	0.018%	0.015%
Neo-Hexane	0.024%	N.De.
Other Hexane and Higher	0.238%	0.174%
H ₂ S	Nil	Nil

NOTE: 1, N.De. - Not Detected.
2, Analysis by: J. Puchel.

CONDENSATE ANALYSIS

Well: Gippsland Shelf No.1

Sample: Test No.2, Depth: 3752'-3756', Flow Rate 3 MMCF/D,
Time 1300 hours, Date 12.4.65.

Sample Container: One gallon screw-cap tin.

COMPONENT	%	COMPONENT	%
N ₂ O	0.01	2,2,3,3 - Tetramethyl Butane } Trimethylpentanes	0.26
CO ₂	N.Do.		
Methane	N.Do.	Benzene +2,2,4 Trimethyl- pentane	2.69
Ethane	0.27	Methylethypentanes + Methy- cyclohexane	1.06
Propane	0.45	Ethylhexanes + Dimethyl- hexanes	0.69
Isobutane	8.97	Dimethylhexanes + Cyclo- heptane	1.10
Butane	7.39	Methylheptane	2.21
Iso-pentane	25.6	Octane	1.83
Pentane	0.92	C ₉ -Isocaliphatics + Toluene+ } C ₈ Cycloaliphatics	9.80
Dimethylbutanes	1.15		
3-Methylpentane	5.78		
2-Methylpentane	9.32	C ₉ Aliphatics + C ₈ Aromatics + } C ₉ Cycloaliphatics + Higher	8.16
Hexane	0.48		
3-Ethylpentane } 2,4-Dimethylpentane }	2.55		
3,3-Dimethylpentane + Methyl- cyclopentane } +2,2,3-Trimethyl Butane }	0.30		
2,2 and 2,3-Dimethylpentanes } Cyclohexane }	0.79		
Methylhexanes	6.22		
Heptane	2.01		

Additional characteristics: Results from F.I.A. Chromatography
indicate ratio $\frac{\text{ALIPHATICS}}{\text{AROMATICS}} = 2$ (approx.)

NOTES: 1, N.Do. - Not Detected.
2, Analysis by : J. Puchel