470001

ESSO BLUEBONE -1

WELL COMPLETION REPORT

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OR_360

470002

ESSO BLUEBONE-1

WELL COMPLETION REPORT

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ENCLOSURES

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I. SUMMARY

(a) Drilling

Bluebone-1 was drilled in offshore Tasmanian waters in licence T/4P, approximately 20 miles north of Flinders Island at latitude 39° 24' 24.296" S. and longitude 147° 50' 52.740" E. in 158' of water.

The Glomar III departed Groper 2 location at 02:15 hours September 25, 1969 and arrived at Bluebone-1 location at 15:30 hours. The four primary moorings, Nos. 1, 4, 5 and 8 were secured in 10 hours and then tested to 50 kips and the vessel centred over the location. The remaining moorings were set without any delay to drilling operations.

The well was spudded with a 36 inch hole opener and 17½ inch pilot bit at 06:30 hours, 26 September, 1969, only 28.25 hours after departing the Groper 2 location. After drilling 41 feet, the 36 inch hole opener was pulled and 26 inch hole was drilled to 375 feet K.B. . Total drilling time for 185 feet of conductor hole was 2.75 hours.

Conductor pipe consisted of three joints of 20 inch casing and an upper 30 inch x 20 inch "pile joint". A collet connector had to be used to run the casing. The operation required 13.25 hours. This was the first use of a pile joint with the Glomar III rig.

Surface hole was drilled 875 feet to total depth of 1250 feet in 4.5 hours. Nine and five-eight inch surface casing were run and landed with one joint of 13 3/8 inch casing and a 13 5/8 inch head housing.

After running the B.O.P. and marine riser, the well was then drilled into basement at 1966 feet with two 8½ inch, type X3A-J bits. The first bit was pulled after 1.2 hours and 426 feet to cut a core and although not worn was not re-run. A second core was cut after encountering basement of 1966 feet. Total 8½ inch drilling time was 3.75 hours. Total drilling time for Bluebone-1 was 11 hours or 6.05% of the total time of 7.57 days required to complete the well.

Two abandonment plugs were set; 1280 feet to 1030 feet across the casing shoe using 1000 sacks of neat cement with 2% $CaCl_2$ and from 600 feet to 400 feet, using 75 sacks of cement and the B.O.P. equipment was retrieved.

(b) Geological

Bluebone-1 was designed to evaluate the hydrocarbon potential of a stratigraphic pinchout play formed by the onlapping seal of Lakes Entrance mudstones and marls overlying the south western pinchout flank of Eocene Latrobe Complex sands. A basal seal is formed by the impermeable dense Devonian Granites and weathered granite profile.

Bluebone-1 was drilled 13 miles south of Mullet-1 in a previously untested portion of the Groper-Mullet trend (Plate Ia).

Bluebone-1 probably penetrated Plio-Pleistocene sediments at the sea floor. The top of the Miocene Gippsland Formation was not seen as there were no sample returns until 1250' and it is not possible to define it on the electric logs.

The Gippsland Formation is known to extend from 1250 to 1517 and consists mainly of very fossiliferous skeletal limestones and marls.

The top of the Oligocene Lakes Entrance is placed at 1517 based on cuttings and logs. Predominantly it is a grey-green argillaceous and glauconitic sandstone and sandy mudstone sequence.

The Latrobe Complex was encountered from 1714 to 1940 and consisted of interbedded silty sands and mudstones. The sands are poor to moderate reservoir beds, having only moderate porosity and poor permeability.

Basement was penetrated at 1940' and is granite. The uppermost 10' being a weathered equivalent. The granite is massive, crystalloblastic and weakly fractured.

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II. INTRODUCTION

(a) Concept of Prospect

Following the drilling of Groper-1 and Mullet-1 further work led to the seismic definition of further stratigraphic plays updip and geographically distant from the first two wells. Groper-2 was the first of a two well program to further evaluate the Groper-Mullet trend along the Bassian Rise, and this was followed by Bluebone-1 to the southeast.

Bluebone-1 was proposed to evaluate the large separate play that exists to the south of that penetrated by Mullet-1 (Plate Ia). No hydrocarbons were encountered in Mullet-1 (as was the case also in Groper-1) and it was hoped that a large hydrocarbon reservoir existed updip from Mullet-1 in the Bluebone location.

(b) Structure of Prospect

No structure other than an updip pinchout exists in the prospect area. The trapping mechanism is dependent entirely on an upper seal being provided by the onlapping Lakes Entrance Fm. Impermeable granites and weathered granite material forms a basal seal in the area. Plate Ib is the revised structure contour map on the top of the Latrobe sands, showing the extent and attitude of this formation.

III. WELL HISTORY

1. General Data

(a) Well Name: Bluebone-1

(b) Operator: Esso Exploration & Production Aust. Inc.,
ANZ Bank Building,
71 Collins Street,
HOBART. Tasmania. 7000.

(c) Tenement Holders: Hematite Petroleum Pty. Limited.,
440 Collins Street,
MELBOURNE. Victoria. 3000.

(d) Details of Petroleum Tenement: T/4P covering 394 blocks.

(e) District: Gippsland Basin, offshore Tasmania.

(f) Location: Latitude: 39° 24' 24.296" S.
Longitude: 147° 50' 52.740" E.

X 574,078
Y 142,039

Zone 7, Shot Point 4512 on Line G69A-321.

(g) Elevation: Mean sea level, K.B. 31' above M.S.L.

(h) Water Depth: 158'

(i) Total Depth: 1984'

(j) Date Drilling Commenced: September 26, 1969.

(k) Date Drilling Completed: October 1st, 1969.

(l) Well Abandoned: October 1st, 1969.

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(m) Rig Released: 1600 hrs. October 1st, 1969.

(n) Drilling Time to T.D: 11 hours.

(o) Status: Plugged and abandoned.

(p) Total Cost: To be furnished later.

2. Drilling Data:

(a) Drilling Contractor: Global Marine Inc.,
380 Lonsdale Street,
Melbourne, Vic. 3000.

(b) Drilling Plant: Make - National
Type - 1625 DE
Rated Capacity - 20,000' with 5" DP
Motors - Cummins VT-12-GA-30 for electric power.

(c) Derrick: 136' x 58' x 34' special design
galvanised 1,000,000 lb Hookload capacity.

(d) B.O.P. Equipment:

Make -	Hydril	Hydril	Cameron Triple U.
Size -	20' (MSP)	13 5/8"(GK)	13 5/8"
Working Pressure -	12000	5000	5000

(e) Pumps: (2) Make - National
Type - G.-1000-C Duplex
Size - 7 3/4" x 16"
Motors - Dual Electric independent drives from above motors.

(f) Hole Sizes & Depth: 26" to ~~275~~ 375', 17½" to 1250'
8½" to total depth.

(g) Casing & Liner & Cementing Details:

Note	Size	Weight	Grade	Range	Depth	Details
1.P/jt.	30"	310/ft.	B	N/A	193'	
2.	20"	105/ft.	B	N/A	350'	Hung with Baker Shoe.
3.	9-5/8"	40/ft.	J55/N80	3	1230'	Landed with Shoe.
	2 jts.	13 3/8- 54/ft.	N80	3		

Centralizers Nos. 1-3-5 & 7 jts.

1 & 2 above — Cemented with 300 sacks Aust. "N" plus 2% pre-hydrated gel/mixed with salt water (average slurry 13.5 ppg.) Followed by 300 sacks Aust. "N" plus 2% $CaCl_2$ (average slurry 15.4 ppg.)

3 above — Cemented with 641 sacks Aust. "N" plus 2% pre-hydrated gel-average slurry 13.4 ppg. Followed by 360 sacks Aust. "N" plus 2% $CaCl_2$.
Average slurry 15.4 ppg.
Displaced with 80 bbls. mud

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(h) Drilling Fluid:

WT	12.4 lbs/gall.
VIS	48
F. LOSS	10.2 c.c.
F. CAKE	2/32"
% SAND	1.12
% SOLIDS	1.8
OIL	-
pH	12.5
NaCl	-
ALK	0.93

(i) Water Supply: Drilling water was transported to the Glomar III by the Pt. Coupee and stored in tanks on board.

(j) Perforation Record: No perforations.

(k) Plugs:

	1.	2.
Depth:	1280-1030	600-400
Amt.Cement(sx)	100	75
Type:	Aust"N" with 2% $CaCl_2$	

(l) Fishing Operations: None.

3. Formation Sampling

(a) Ditch Cuttings

Cuttings were taken over a normal shale shaker at 10' intervals from 1250' to 1984'. All samples were lagged and caught by the mud logging personnel under the supervision of Esso geologists and are representative of the labelled depths. Representative suites of samples are stored with the B.M.R., the Tasmania Mines Department and with EEPA.

(b) Coring

The original coring program called for cores to be taken near the base of the Lakes Entrance Formation and in basement, as well as at any hydrocarbon shows.

Two cores were cut:-

Core	Depth	Cut	Recovery	%Rec.
1.	1675 - 1687	12'	4'	33%
2.	1966 - 1984(TD)	18'	18'	100%

A total of 38' of core was cut and 22' (58%) were recovered.

The cores were slabbed into three parts. One slab from each core stored at the B.M.R., the Tasmania Mines Department and Esso Spotswood Warehouse in Melbourne respectively. Core descriptions are included in Appendix III.

(c) Sidewall Sampling

Two runs for sidewall cores were made between 350' and 1984' by Schlumberger Seaco, with a CST; of the 22 cores attempted 21 were recovered. Those that have been used for palynological and palaeontological studies have since been destroyed during analysis. The remaining sidewall cores are stored at the Esso warehouse at Spottswood, Victoria. These are listed and described in Appendix III and depths at which these were taken are shown on the Well Completion Log (Figure I)

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4. Logging & Surveys

(a) Electric & Other Logging

Wireline logging was carried out by Schlumberger Seaco. The following logs were run on Bluebone-1.

IES	Run 1	Interval 1259 - 350
	2	1977 - 1229
BHCS/GR	Run 1	1250 - 350
BHCS/SP	2	1969 - 1229
C.D.M.		1977 - 1229
FDC/GR		1976 - 1229

A wave compensating device was used during all logging operations to compensate for movement of the drilling vessel.

(b) Penetration Rate Log

A record of the penetration rate was kept at all times during drilling and is included in this report as part of Figure 2.

(c) Mud Gas Log

Mud gas logging services were carried out by Core Laboratories Inc. under the supervision of Esso geologists. In addition to the continuous hot wire, a gas chromatograph was used to detail all mud gas shows. A CO_2 analyzer was in operation during drilling of the well and a Waring Blender was used to enable cuttings gas to be recorded.

The cuttings were examined for stain and fluorescence. The mud gas log is included as part of the grapholog (Figure 2).

(d) Deviation Surveys

No deviation surveys were performed.

(e) Temperature Surveys

None, except the bottom hole thermometer run with Schlumberger logs.

(f) Velocity Surveys

Velocity Surveys were run from 1230' to T.D. by United Geophysical Corp., under the supervision of an Esso geophysicist. The results are summarized in Figure 3.

(g) Other Well Surveys

None.

5. Testing

(a) Formation Testing

None.

(b) Production Testing

None.

IV. GEOLOGY

The following stratigraphy was encountered in Bluebone-1:-

Age	Formation	Formation Top	Subsea Depth	Thickness
	Water	31'	MSL	158'
Plio-Pleistocene	-	Sea floor 223'	- 158'	?
Miocene	Gippsland	?	?	267+
Oligocene	Lakes Entrance	1517'	-1486'	197'
Eocene	Latrobe	1714'	-1683'	226'
Devonian	Granite	1940'	-1909'	44+

TD 1984' (-1953')

Gippsland Formation (1250' - 1517', 267'+)

Sampling of the cuttings was not carried out until 1250'. The Gippsland Formation top is not known from logs and the thickness of the overlying Plio-Pleistocene sediments is unknown.

1250' - 1517' - Sequence of Marls and skeletal limestones.

Marls — light grey green, soft, glauconitic in part, slightly pyritic with a trace of fossils.

Skeletal limestones - light grey, white, unconsolidated, moderately well sorted, glauconitic. Trace quartz, unconsolidated medium to coarse grained, angular to rounded.

Limestones - light grey, firm to hard, argillaceous, glauconitic with abundant fossiliferous debris, dolomitic, massive.

A comparable thickness and facies of this formation was penetrated by Mullet-1. As with the Gippsland Formation in Mullet-1 zonation is impossible and the possible age of the formation is not known other than that it is of Miocene age.

Lakes Entrance Formation (1517 - 1714', 197')

1517' - 1714' The entire section is predominantly a highly argillaceous and glauconitic sandstone with minor sandy mudstones.

Sandstones — dark grey-green and calcareous, strongly argillaceous and glauconitic; generally massive with minor laminations. The sand grains are poorly sorted, fine to coarse grained, angular to rounded. Mica is abundant and fossils are common.

Mudstones — Similar to above but having much more than 50% silty material.

The Lakes Entrance Formation in Bluebone-1 has, from an inspection of the samples and interpretation of the gamma ray log, a greater sand content than was found in this formation in Mullet-1.

Core analysis (see Appendix III) showed the formation to have 40% porosity. It was not possible to carry out permeability studies due to the lack of compactness of the material but it appeared to have little to no apparent permeability.

If tight the formation may afford a fair top seal on the Latrobe sediments, but it is possible that this has not always been the case.

Onlap similar to that seen from Groper-1 to Groper-2 is thought to have occurred between Mullet-1 and Bluebone-1. Although palaeontological results were disappointing, no zonation being possible, it is thought that the age of the basal Lakes Entrance Formation ranges from lowermost Oligocene in Mullet-1 to Lower Miocene at Bluebone-1. (Appendix II). As log correlation between Groper-1 and Groper-2 suggests that the Lakes Entrance Formation in both wells is Oligocene, the interpretation of the cross-section (Plate 1d) favours the latter as the palaeontologic data is not conclusive. The sand percentage also increases from Mullet-1 to Bluebone-1 and this factor reduces the possibility of finding a good top seal in the area.

Latrobe Complex (1714' - 1940'; 226')

The anticipated pay zone of this well consisted of silty sandstones and mudstones.

Sandstones	grey-white, medium to coarse grained, poorly to moderately sorted; in part conglomeratic and pebbly, unconsolidated, with clay matrix. Poor permeability.
Mudstones	light brown to dark brown, weakly laminated to massive, soft to firm, weakly carbonaceous and micaceous - sandy in part. No porosity or permeability.

This unit is interpreted as being a braided stream sequence with interbedded silts of either overbank deposits or deposited in a marshy environment.

Plate 1b is the structure contour map of the top of the Latrobe based on velocity information from Bluebone-1 and shows the eroded limits of the Latrobe.

The section penetrated was as anticipated but no hydrocarbons were detected, the formation being water flushed.

The fact that Bluebone-1 penetrated 226' and Mullet-1 only 70' of Latrobe sediments is not significant in that separate embayments (Plate 1a) were tested.

The age of this formation is Eocene (Appendix I).

Basement: Upper Devonian Granite (1940' to TD: 44'+)

1940' - 1950'	Weathered zone composed of weathered feldspars and amphiboles and quartz from the underlying granites; clayey.
1950' - 1984'	Granite - grey; weakly fractured with infillings of chlorite. Crystalloblastic with coarse grained quartz, plagioclase and orthoclase. Biotite and dark green amphiboles are present as accessories; pegmatitic, with very coarse grained prophyroblastic quartz in microcline ground mass.

This granite is impermeable and as in Mullet-1 and Groper-1 would afford an excellent base seal for any stratigraphic hydrocarbon entrapments.

V. REFERENCES

Esso G69A Marine Seismic Survey

Esso Groper-2 Well Completion Report.

APPENDIX I

PALYNOLOGY OF BLUEBONE-1

P.R. Evans

November 21, 1969.

INTRODUCTION

Six sidewall cores and cuttings, from the interval 1700'-1960', and a sample of core # 1 at 1676' in Bluebone # 1 were received for palynological examination on October 3rd, 1969. The following results were obtained.

SUMMARY

Sample	Depth (ft.)	Age	Comment
SWC 6	1623	Indeterminate	No yield.
Core # 1	1676	"	" "
SWC 5	1694	"	" "
SWC 4	1756	"	" "
SWC 3	1797	Eocene	
SWC 1	1943	Indeterminate	" "

COMMENT

The Eocene age of SWC 3, 1797', is based on a good assemblage, but the possibility that it might be of Oligocene age cannot be ruled out.

Fossils identified within the assemblage in which the age is based include:-

Nothofagidites deminutus - vansteenisi	common.
N. emarcidus - heterus	common.
N. goniatus	
N. asperus	
N. flemingii	
Simplicepollis meridianus	
Periporopollenites polyoratus	
Cupanieidites reticularis	
C. orthoteichus	
Triorites harrisii	rare.
Dacrydiumites mawsonii	

Laevigatosporites major

Proteacidites minimus - subscabratus

P. annularis

P. spp. nov.

Monoporate sp. nov.

Liliacüdites sp. nov.

cf. Gothanipollis

Peromonoletes densus

Myrtacieidites mesonesus

Bankiaeidites minimus

Polycolpites esobalteus

APPENDIX II

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BLUEBONE - 1

PALAEONTOLOGICAL REPORT

D.J. Taylor.

Table 1 of this Appendix lists the microfauna and their distribution in samples from Bluebone-1.

The Planktonic distribution is shown in the top left hand section of the table with horizontal lines indicating the diagnostic species. Only 6 planktonic specimens are present in the entire section, and so detailed zonation is nearly impossible. The basal transgression lacks planktonic species, but by inference it can be no older than lower Miocene, as in GROPER-2. *

Distribution of benthonic species is shown on the rest of the sheet again with horizontal lines indicating the diagnostic species. The initial marine sediments are glauconitic and sandy (quartzose) together with a mass of biogenic rubble which indicates water depths of less than 100' with a suggestion that the deposits are offshore bars or even dunes. At 1020' & 1122' an abundance of Operculina victoriensis was recorded with only one specimen of Amphistegina lessonii. This would suggest depths of less than 100', well inshore from the seaward edge of a shallow embayment. At and above 1122' in B LUEBONE-1 there are indications of strong wave base action and in no place was the depositional depth greater than 100'.

* Refer to Page 7 for discussion of age used in the Well Completion Log and Cross-section (Plate 1d)

MICRO-FAUNAL DISTRIBUTION — BLUEBONE-1

TABLE I.
APPENDIX II

ALL DEPTHS FROM DATUM +31' M.S.L.

500 1000 1500

PLANKTONICS

1. Globigerina apertura
2. Orbulina universa
3. Globigerina bulloides
4. Orbulina suturalis
5. Globigerinoides bisphericus
6. Globorotalia conica

CALC. BENTHONICS I

7. Cibicides mediocris
8. C. pseudoungerianus
9. C. refulgens
10. C. cygnorum
11. Eponides repandus
12. Anomalinoides macroglabra
13. Cibicides opacus
14. Discorbinella bertheloti
15. Cibicides thiara
16. Astrononion centroplax
17. Gyroidinoides zealandicus
18. Siphonina australis
19. Anomalina aotea
20. Anomalinoides procolligera
21. Cibicides perforatus
22. Karreria "pseudoconvexa"

CALC. BENTHONICS II

23. Parrellina imperatrix
24. Notorotalia howchini
25. Elphidium chapmani
26. E. craasatum
27. Parrellina verriculata
28. Notorotalia miocenica
29. N. clathrata
30. Elpidium pseudoinflatum
31. Notorotalia crassimurra
32. Parrellina crespinae

1680 - base of faunal sequence

CALC BENTHONICS III

33. Operculina victoriensis
34. Amphistegina lessonii

CALC. BENTHONICS IV

35. Cassidulina subglobosa

CALC. BENTHONICS V

36. Euuvigerina peregrina
37. Brizalina noblis
38. Bolivina robusta
39. Brizalina zedirecta
40. Trifarina bradyi
41. Siphouvigerina plebja

CALC. BENTHONICS VI

42. Lagena spp.
43. Nodosaria spp.
44. Lenticulina spp.

ARENACEOUS BENTHONICS

45. Ammoshaeroidina sphaeroidiniformis
46. Textularia fistulosa
47. T. semicarinata
48. Ammobaculites sp?

BRYOZOA
ECHINOID spines
MOLLUSCA
GLAUCONITE
QUARTZ - angular
QUARTZ - round

LEGEND

↓ - side wall cores at 410'; 513'; 550'; 598'; 680'; 795'; 890'; 976'; 1020'; 1122'; 1180'; 1250'; 1320'; 1415'; 1568.

• = 1 - 20 specimens
| = more than 20 specimens
X = fresh and worn bryozoa
/ = worn bryozoa.

‡ = Core-1 samples at 1675 & 1679'
Rotary cuttings not used due to 200' sample lag.

5 cm

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BLUEBONE NO. 1

SIDE WALL CORE DESCRIPTIONS

Depth	Recovery	Description
410'	1"	Sandstone; grey, fine grained, moderately well sorted, very calcareous and glauconitic; abundant clay, weakly consolidated.
513'	½"	Sandstone: yellow-brown - as above.
550'	½"	Sandstone: light grey, as above.
598'	½"	Sandstone: light to dark grey, silty and calcareous; as above.
680'	1½"	Siltstone: calcareous, yellow orange, poorly consolidated, quartzose silt present, abundant foraminifera.
795'	1¾"	Calcareous Siltstone: grey, as above.
890'	1¾"	Calcarenite: silty, grey, well sorted, very glauconitic, moderately consolidated, abundant siltsized quartz.
976'	1¾"	Calcarenite: grey, moderately well sorted and compacted, argillaceous, quartzose, abundant fossils. Very glauconitic (20%).
1020'	1¾"	Calcarenite: grey, moderately well sorted and compacted, argillaceous, quartzose, abundant fossils. Very glauconitic.
1122'	1¾"	Calcarenite: As above.
1180'	1¾"	Calcarenite: cream, well sorted, non glauconitic, micaceous, moderately consolidated.
1250'	1¾"	Calcarenite: grey, well sorted, weakly glauconitic.
1320'	1½"	Marl: light green-yellow, very fine grained, fossil fragments in very argillaceous matrix, soft.
1415'	1½"	Mudstone: light grey-green, firm to soft, silty, glauconitic, calcareous.
1498'	No return	
1568'	1¾"	Sandstone: glauconitic, argillaceous, light green to dark grey green, calcareous, soft to firm (as in core No. 1).
1623'	1¾"	Sandstone: as above.
1694'	1¾"	Sandstone: as above.
1756'	1¾"	Sandy Mudstone: light brown, massive, interbedded with coarse grained, angular to rounded quartz grains; no porosity or permeability.

Depth	Recovery	Description
1797'	1¾"	Mudstone: light to dark brown, weakly laminated to massive, soft to firm, moderately well compacted, weakly carbonaceous and micaceous.
1850'	1¾"	Sandstone: conglomeratic and pebbly; grey, coarse grained to granular with abundant pebbles, quartzose, soft and unconsolidated in light grey puggy clay matrix.
1943'	1¾"	Granite: weathered; light grey-green, with altered feldspar and amphiboles.

ESSO STANDARD OIL (AUSTRALIA) LTD.

CORE DESCRIPTION

470618

Core No. 1

WELL: BLUEBONE No.1

Interval Cored 1675-87 ft., Cut 12 ft., Recovered 4 ft., (33 %) Fm. Lakes Entrance

Bit Type C-11, Bit Size 8-5/16" in., Desc. by A.K. Svalbe Date 30.9.69

Depth & Coring Rate (min./ft.)	Graphic (1" = 5')	Shows	Interval (ft.)	Descriptive Lithology
0 5 10	1670		1675-79:	Argillaceous, glauconitic sandstone: light green-dark grey-green, calcareous, massive to weakly laminated, firm to soft, weakly compacted, semi-consolidated 60% by volume sand. Sands fine to coarse grained, dominantly medium grained, angular to rounded, moderately to poorly sorted, with some coarser bands containing well rounded pebbles quartzose, with all sandy material being clear to smoky quartz, strongly glauconitic (20%), with fine grained, rounded glauconite evenly scattered throughout - light green grey clay matrix. Abundant muscovite, biotite and bronzite flakes. Minor fossil fragments of brachiopod and lamellibranch valves some foraminifera. Poorly developed current ripples and current ripple laminations in rare dark green-olive shaly laminations. No visible burrows. Poor permeability; Porosity from analysis 40%.
1675				
	1680			
1687				
	1690			

REMARKS:

5 cm

APPENDIX III

ESSO STANDARD OIL (AUSTRALIA) LTD.

CORE DESCRIPTION

470019

Core No. 2

WELL: BLUEBONE No.1

Interval Cored 1966-1984 ft., Cut 18 ft., Recovered 18 ft., (100 %) Fm. Basement

Bit Type C-20, Bit Size 8-5/16" in., Desc. by A.K. Svalbe Date 30.9.69

Depth & Coring Rate (min./ft.)	Graphic (1" = 5')	Shows	Interval (ft.)	Descriptive Lithology
0 20 40	1960		1966-84	Granite-Granodiorite. Speckled, grey, black and dark green, massive, fresh, weakly fractured, with fractures infilled with chlorite. Crystalloblastic, with coarse grained crystals of quartz, plagioclase and lesser orthoclase and minor microcline. Accessory biotite and pale to dark green amphiboles. Pegmatitic vein of very coarse grained porphyroblasti quartz in microcline ground mass @ 1973'. Devonian granite basement.
1966				
	1970			
	1980			
1984				
	1990			

REMARKS:

5 cm

LIST & INTERPRETATION OF ELECTRIC LOGS - BLUEBONE-1

The following logs were run by Schlumberger Seaco Inc. on Bluebone-1:-

IES	Run 1	Interval	350 - 1259'
IES	Run 2	"	1229 - 1977'
BHCS/GR	Run 1	"	350 - 1250'
BHCS/SP	Run 2	"	1229 - 1969'
CDM	Run 2	"	1229 - 1977'
FDC/GR	Run 2	"	1229 - 1976'

A wave compensating device was used during all logging operations to compensate for movement of the drilling vessel.

COMMENTS

The Latrobe Complex in Bluebone-1 is saturated with water having salinities less than 15,000 ppm, no hydrocarbons being present at all.

Porosities of the sands within the section range between 25-30%, but from an inspection of the Gamma Ray log appear to be generally silty.

Dipmeter results indicate that sedimentation during Latrobe time at Bluebone-1 tended to the northwest.

470021

Form 6.123.3/71

BASIN GIPPSLAND BASIN BY David TAYLOR

WELL NAME BLUE BONE-1 DATE 16 April 1971 ELEV. +31'

Foram Zonules

		Highest Data	Quality	2 Way Time	Lowest Data	Quality	2 Way Time
MIOCENE	A Alternate						
	B Alternate						
	C Alternate						
	D_1 Alternate						
	D_2 Alternate	795	2		795	2	
	E Alternate	890	1		890	1	
	F Alternate	976	2		1122	1	
	G Alternate						
	H_1 Alternate						
	H_2 Alternate				1695	4	
OLIGOCENE	I_1 Alternate						
	I_2 Alternate						
	J_1 Alternate						
	J_2 Alternate						
ECC.	K Alternate						
	Pre K						

SWC at 1695' is F or pre-F to H. No diagnostic planktonics below 1122' make determination impossible.

COMMENTS:

Note: If highest or lowest data is a 3 or 4, then an alternate 0, 1, 2 highest or lowest data will be filled in if control is available.

If a sample cannot be interpreted to be one zonule, as apart from the other, no entry should be made.

0 SWC or Core - Complete assemblage (very high confidence).
1 SWC or Core - Almost complete assemblage (high confidence).
2 SWC or Core - Close to zonule change but able to interpret (low confidence)
3 Cuttings - Complete assemblage (low confidence).
4 Cuttings - Incomplete assemblage, next to uninterpretable or Sed. with depth suspicion (very low confidence).

Date Revised

470622

BASIN CIPPSLAND DATE

WELL NAME BLUEBONE -1 ELEVATION +31

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
M. MIOC.	T. bellus										
	P. tuberculatus										
EOCENE	U. N. asperus										
	L. N. asperus	1797	2				1797	2			
	P. asperopolus										
	U. M. diversus										
	L. M. diversus										
PALEO-CENE	L. balmei										
	T. longus										
LATE CRETACEOUS	T. lilliei										
	N. senectus										
	C. trip./T.pach.										
	C. distocarin.										
	T. pannosus										
EARLY CRETACEOUS	C. paradoxa										
	C. striatus										
	U. C. hughesii										
	L. C. hughesii										
	C. stylosus										
Pre-Cretaceous											

COMMENTS:

T.D. 1984 (0.5Ga)

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 microplaakton, 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: L.E.S. / A.D.P. DATE June 1971

DATA REVISED BY: checked; L.E.S. DATE Dec. 1971

470023

Petroleum Technology Laboratory, Bureau of Mineral Resources, Geology and Geophysics, Canberra

CORE ANALYSIS RESULTS

NOTE: (i) Unless otherwise stated, porosities and permeabilities were determined on two plugs (V&H) cut vertically and horizontally to the axis of the core. Ruska porosimeter and permeameter were used with air and dry nitrogen as the saturating and flowing media respectively. (ii) Oil and water saturations were determined using Soxhlet type apparatus. (iii) Acetone test precipitates are recorded as Neg., Trace, Fair, Strong or Very Strong.

WELL NAME AND NO. BLUEBONE NO 1

DATE ANALYSIS COMPLETED 28/5/76

Core No.	Sample Depth (feet)		Lithology	Average Effective Porosity two plugs (% Bulk Vol.	Absolute Permeability (Millidarcy)		Average Density (gm/cc.)		Fluid Saturation (% pore space)		Core Water Salinity (p.p.m. NaCl)	Acetone Test	Fluorescence of freshly broken core	
	From	To			V	H	Dry Bulk	Apparent Grain	Water	Oil				
1	1981'8"	1982'5"	Granite	2.9	<0.1	<0.1	2.64	2.70	N.D.	N.D.	N.D.	N.D.	N.D.	
1	1983'0"	1983'7"	Slst; v.calc.	40.0	N.D.	100	1.58	2.68	29.2	Nil.	N.D.	Nil	Nil	

Remarks: -

General File No. ~~82/399~~ 74/1076

Well File No. _____

GEOLOGICAL MAP

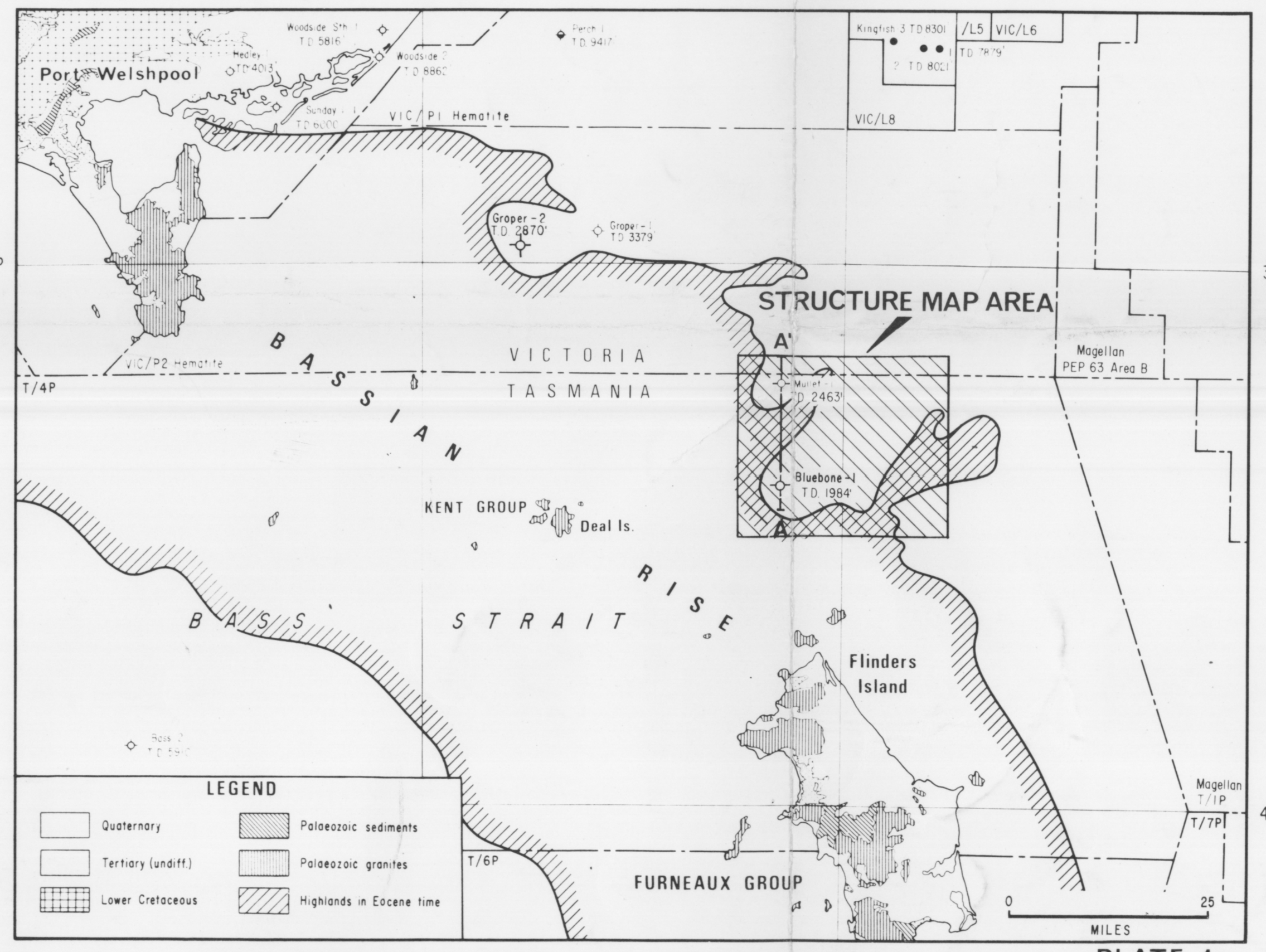
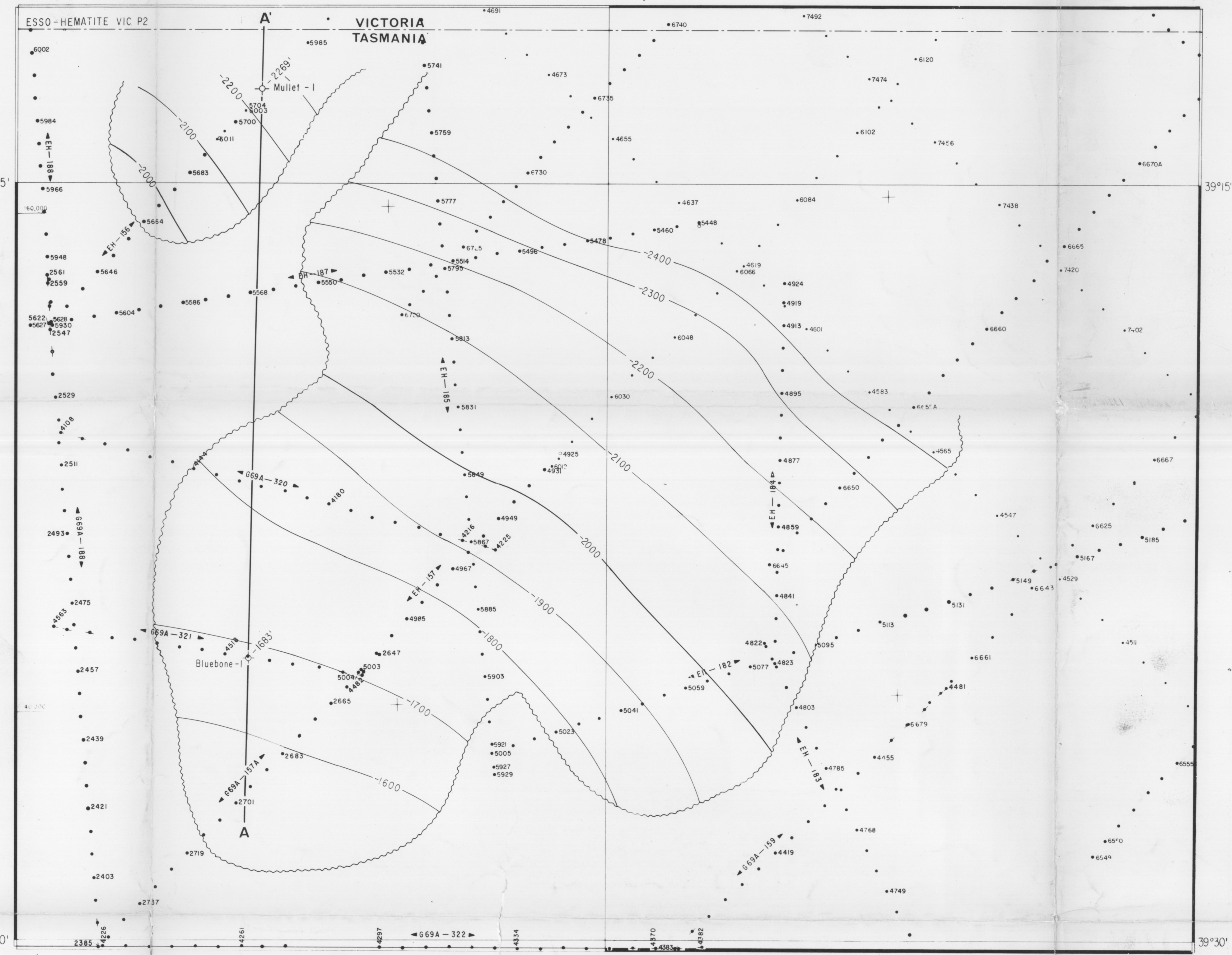


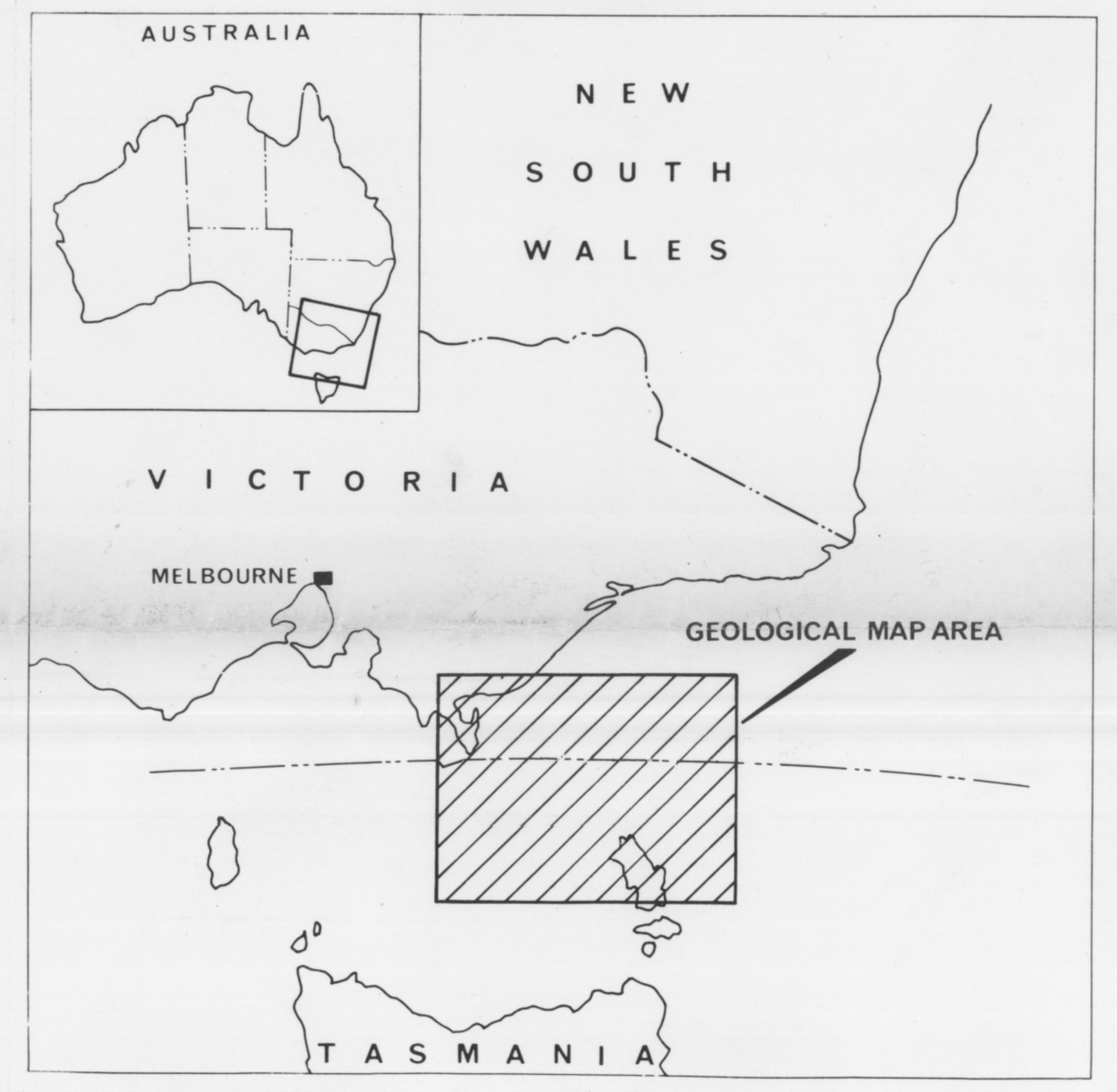
PLATE 1a



STRUCTURE MAP ON LATROBE TOPOGRAPHIC SURFACE

PLATE 1b

MAP INDEX



LEGEND

Symbol		Lithology	
○	Drilling location	MS	Micritic skeletal limestone
⌖	Dry and abandoned well		Sandstone
•	Digital seismic shot point		Mudstone
U/D	Fault; 'D' downthrown side		Shale
A——A'	Line of cross - section		Marl
			Glauconite
			Granite

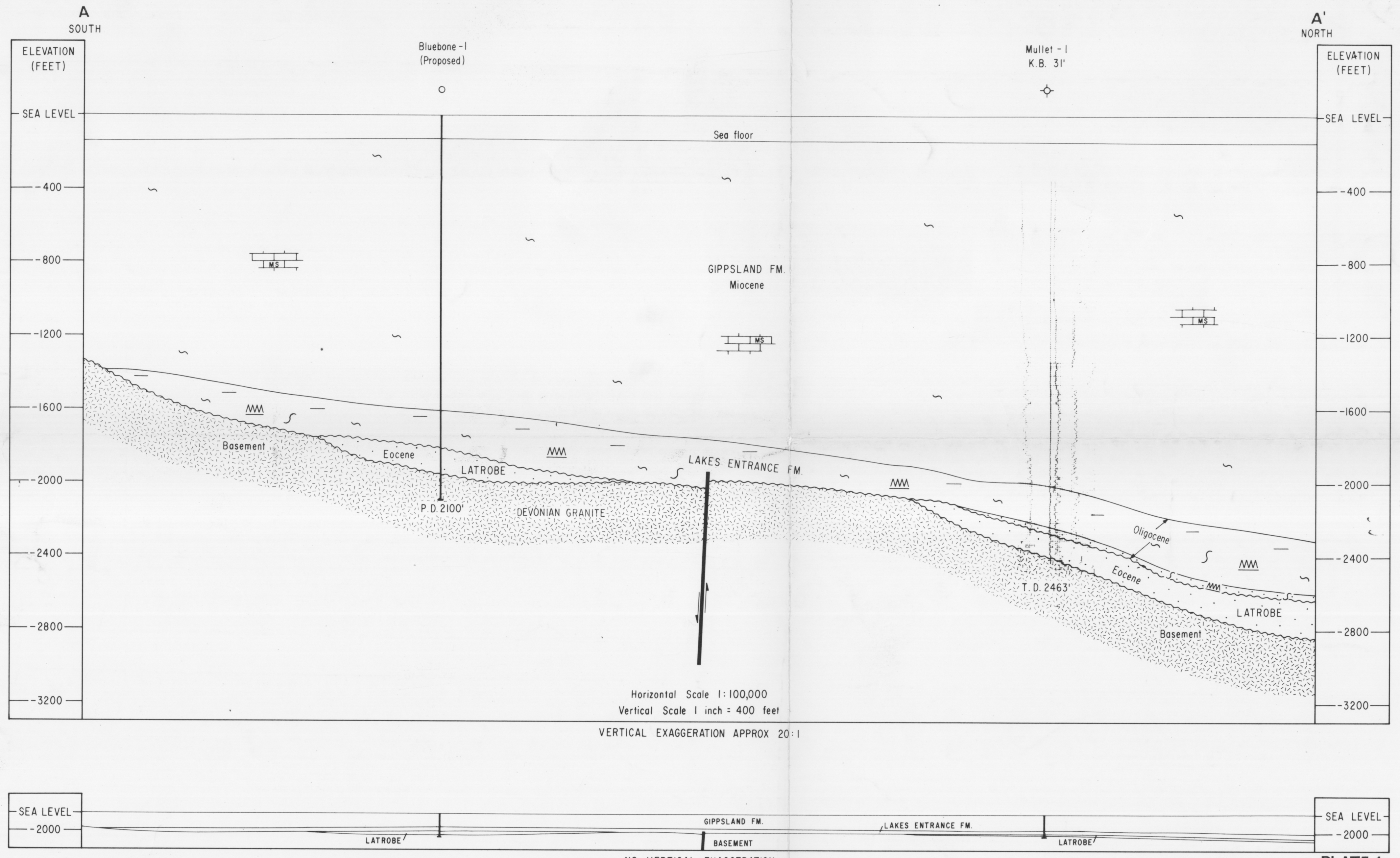


PLATE 1c

GEOLOGICAL CROSS-SECTION BEFORE DRILLING

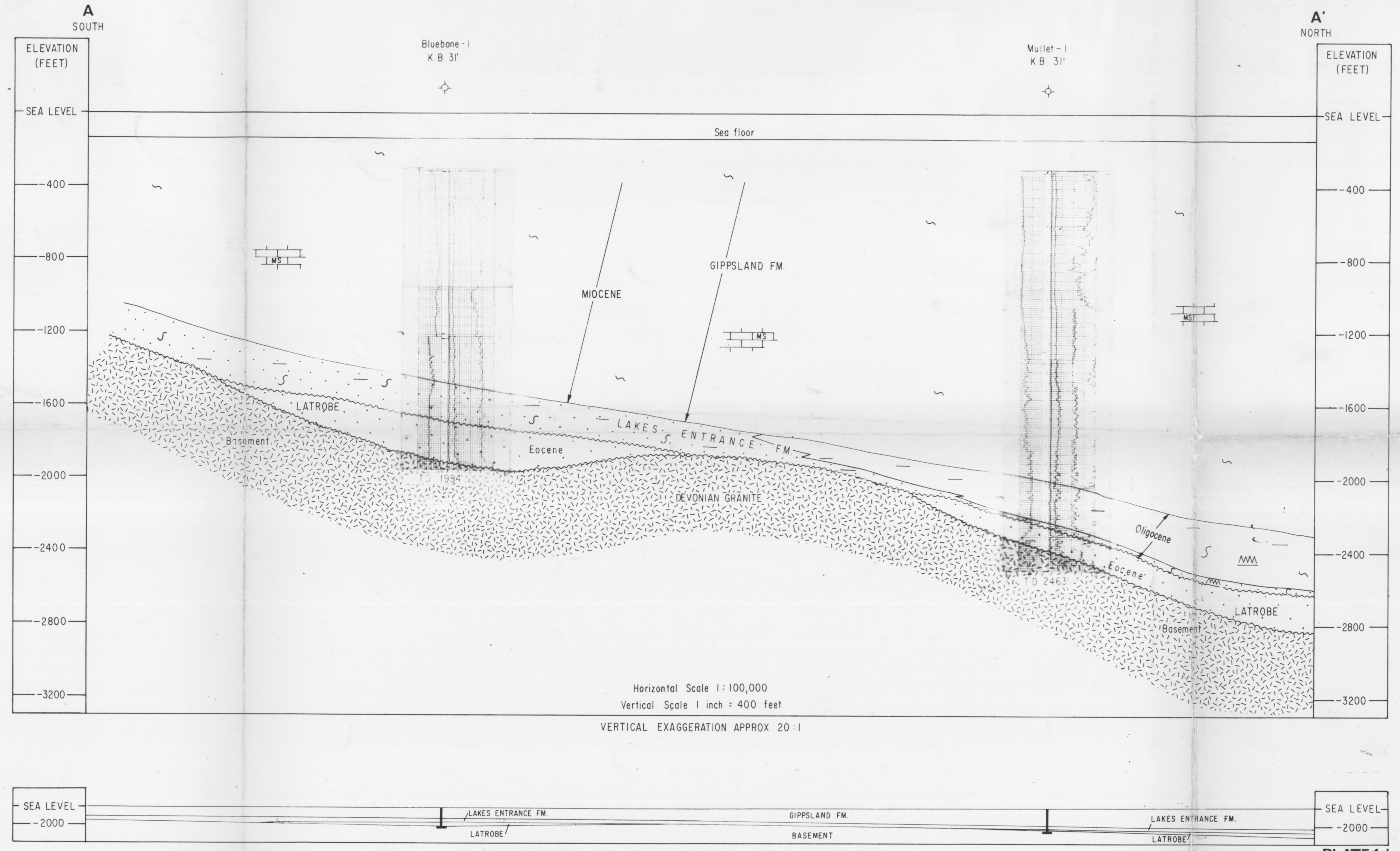


PLATE 1d

GEOLOGICAL CROSS-SECTION AFTER DRILLING

ESSO EXPLORATION AND PRODUCTION AUSTRALIA INC.

GIPPSLAND BASIN

VICTORIA – TASMANIA

470024

GEOLOGICAL LOCALITY MAP, LATROBE SRUCTURE MAP AND GEOLOGICAL CROSS SECTION A-A' BEFORE AND AFTER DRILLING

5 cm

CONTOUR INTERVAL: 100 FEET   DATUM: SEA LEVEL

Scale 1 : 100,000

2 1 0 2 4

MILES

AUTHOR: C.N. CURNOW   DRAFTED BY: R.HAHMO

TO ACCOMPANY: FINAL SUBSIDY REPORT BLUEBONE - 1   DATE: NOVEMBER 1969

PLATE I

OR - 0360

5 cm

470025

OR-0360

Dwg: 1191/OP/2

FIGURE 1

ESSO EXPLORATION AND PRODUCTION AUSTRALIA INC.

WELL COMPLETION LOG

ESSO BLUEBONE - 1

CONCESSION: T/4P STATE: TASMANIA BASIN: GIPPSLAND

LOCATION: Lat. 39° 24' 26"S Long. 147° 50' 53"E

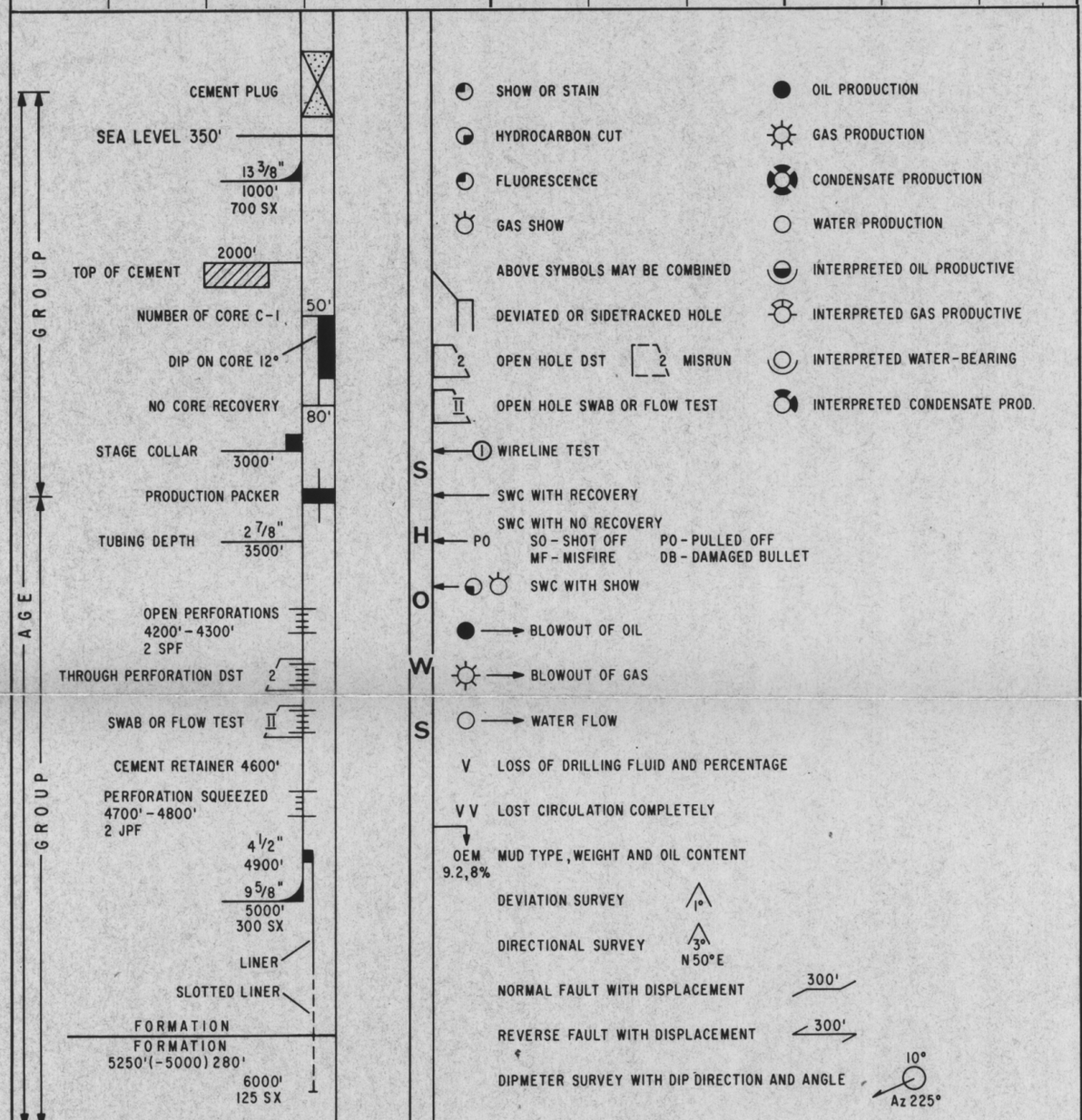
ELEVATION: G.L. M.S.L. K.B. +31' WATER DEPTH: 158'

SPUDDED: 26 SEPT., '69 COMPLETED: 1 OCT.,'69 DRILLED BY: GLOBAL MARINE

CLASSIFICATION: WILDCAT STATUS: PLUGGED & ABANDONED

TOTAL DEPTH: 1984' PLUGGED BACK T.D.: SEA FLOOR

CASING AND TUBING				PLUGS			PERFORATIONS		
SIZE	SET AT	SX. CMT.	FORMATION	FROM	TO	SX. CMT.	FROM	TO	No. FT.
30"	193'			1930'	1280'	100			
20"	350'	300	GIPPSLAND	600'	400'	75			
9 5/8"	1230'	641	GIPPSLAND						



UNCONFORMITY

WIRE LINE LOGGING SERVICES

LOG	INTERVAL	LOG	INTERVAL
IES LOG RUN 1	1259' — 350'		
" " RUN 2	1977' — 1229'		
BHCS/GR	1250' — 350'		
BHCS/SP	1969' — 1229'		
CDM	1229' — 1969'		
FDC/GR	1229' — 1976'		

Run No / Depth Scale	1 / 2"	2 / 2"			
Date	30 – 9 – 69	30 – 9 – 69			
First Reading	1259'	1977'			
Last Reading	350'	1229'			
Interval Measured	909'	748'			
Casing Logger	350'	1229'			
Casing Driller	350'	1229'			
Depth Reached	1260'	1978'			
Bottom Driller	1250'	1984'			
Mud Nature	SEAWATER	SPERSENE			
Density / Viscosity		12·4 / 57			
Mud Resistivity	at °F	1·0 at 60 °F	at °F	at °F	at °F
Mud Resistivity BHT	at 100 °F	0·65 at 95 °F	at °F	at °F	at °F
pH / Fluid Loss	CC	12 / 11·9 CC	CC	CC	CC
Origin of Sample		FLOWLINE			
Rmf	at °F	0·59 at 60 °F	at °F	at °F	at °F
Rmc	at °F	1·83 at 60 °F	at °F	at °F	at °F
Bit Size 1	12¼" to 1250'	8½" to T.D.	to	to	to
2	to	to	to	to	to
Casing Size	20" / 13⅜"	9⅝"			
Opr. Rig Time					
Truck No.	2035'	2035'			
Recorded by	B. THOMSON	B. THOMSON			
Witness	A. SVALBE	A. SVALBE			

REMARKS: A wave compensating device was used (Displacement 2')

LOGGING DATA					EQUIPMENT DATA		
Run No.	1 & 2				Run No.	1 & 2	
Type of Sonde	6FF40				Panel	H-733	
S N Spacing	16"				Cartridge	F-711	
Stand-off	1½"				Sonde	M-581	
S.B.R.	1				Test Loop	D-789	

SPONTANEOUS POTENTIAL
millivolts

10
– +

DEPTHS

RESISTIVITY
ohms – m²/m

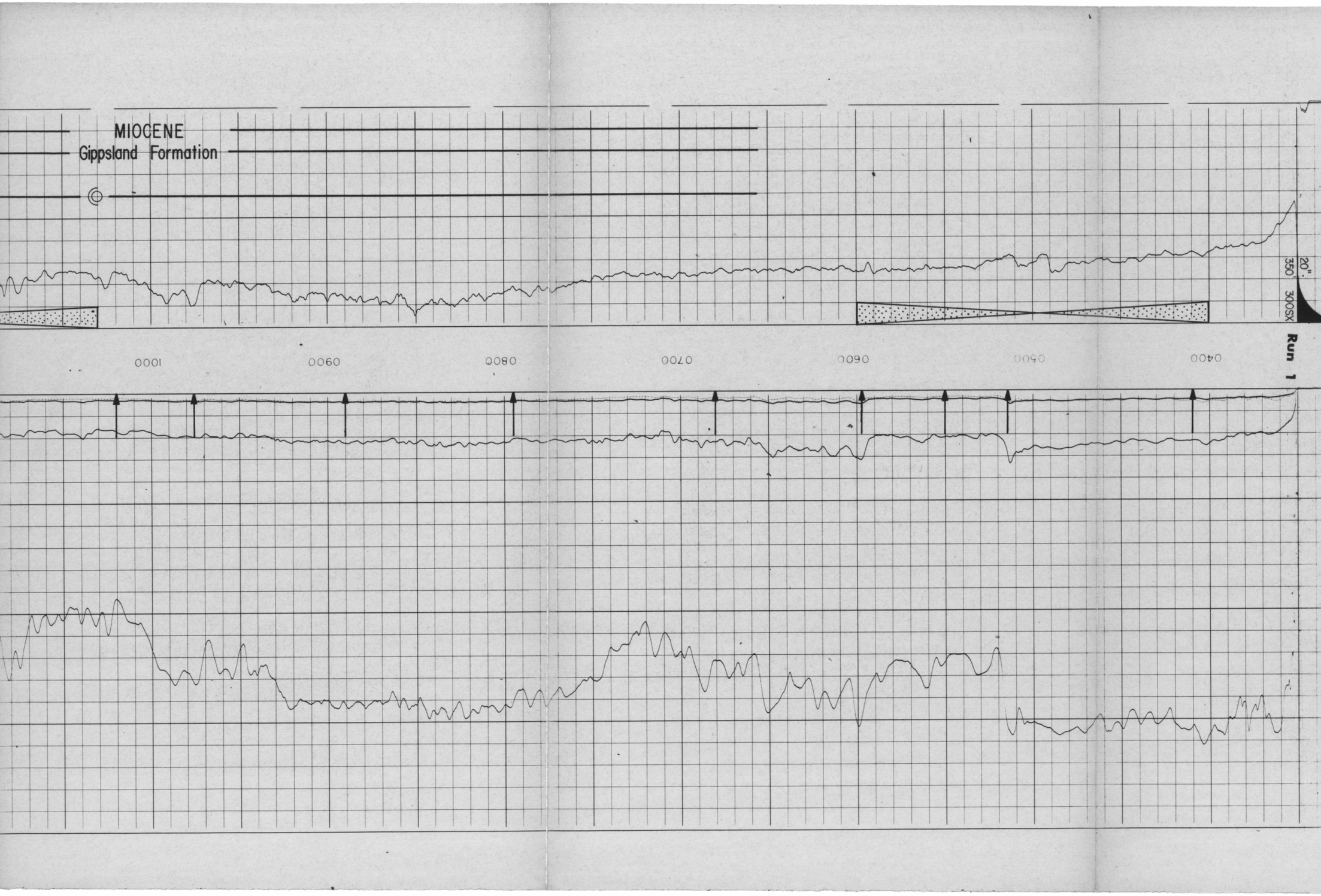
16" NORMAL
0 — 4
0 — 20
0 — 200

INDUCTION
0 — 20
0 — 200

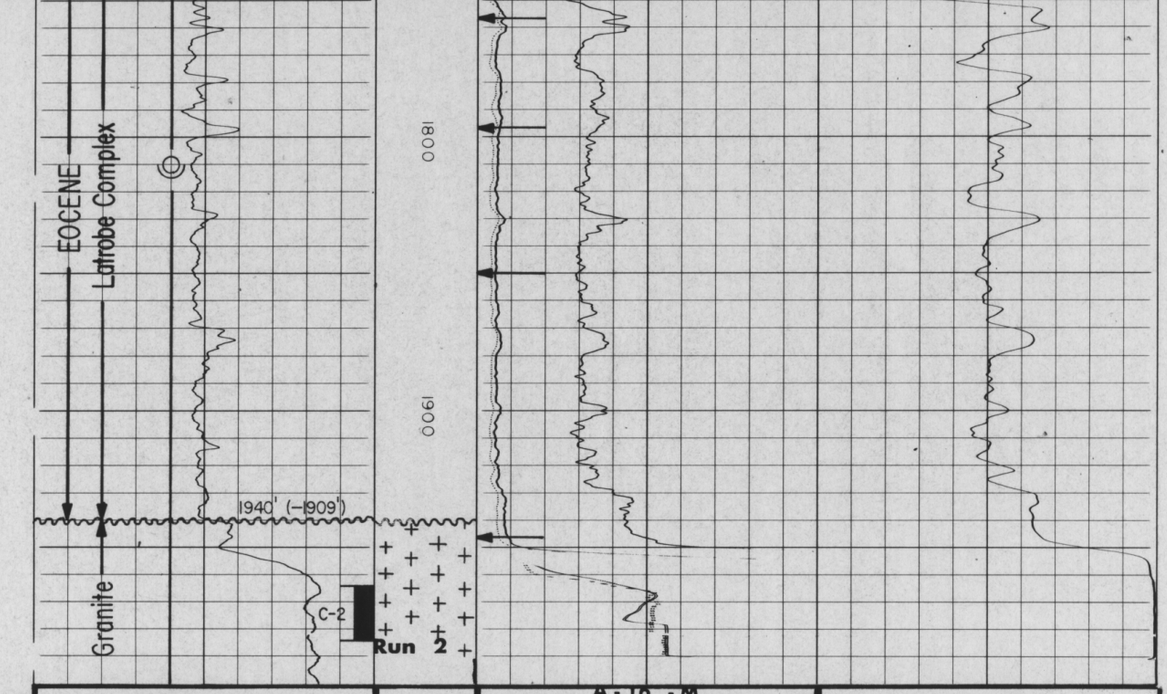
CONDUCTIVITY
millimhos – m/m² = 1000 / ohms – m²/m

INDUCTION
2000 — 0
1000 — 2000

0300


MIOCENE
Gippsland Formation
20"
350
300SX
Run 1
0400
0500
0600
0700
0800
0900
1000

OLIGOCENE
Lakes Entrance Formation
1517'(-1486')
1714'(-1683')
EL,RET
C
9 5/8"
1250'
641 SX
Run 1
Run 2
NR
1100
1200
1300
1400
1500
1600
1700



A-16 -M
SHORT NORMAL
0 4
0 20
0 200

INDUCTION
0 20
0 200

RESISTIVITY
ohms – m²/m

6FF40
INDUCTION
2000 0
4000 2000

5 cm

– 10 +

2"

SPONTANEOUS-POTENTIAL
millivolts

DEPTHS

CONDUCTIVITY
millimhos/m = $\frac{1000}{\text{ohms} - m^2/m}$

COMPANY ESSO AUSTRALIA
WELL BLUEBONE 1
FIELD WILDCAT
COUNTY AUSTRALIA STATE VICTORIA

SCHL. FR 1977
SCHL. TD 1978
DRLR TD 1984
Elev:
KB 31
DF 30
GL 0

OR-0360

5 cm

470626

FIGURE 2

CORE LAB Graphology

CORE LABORATORIES, INC.

Form 1-322 Graphology Head Domestic

These analyses, opinions or interpretations are based on observations and material 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 profitableness of any oil, gas or other mineral well or sand in connection with which such report is used or relied upon.

COMPANY ESSO STANDARD OIL (AUSTRALIA) LTD.
WELL BLUEBONE 1
FIELD WILDCAT
COUNTY TASMANIA STATE AUSTRALIA
LOCATION LAT : 39° 24' 26" ELEVATION 31'KB
LONG: 147° 50' 52"

DEPTH LOGGED, FROM 1250 TO 1984' FT.
DATE LOGGED 29 SEPTEMBER 1969
CREW CHIEF MIDDLETON FILE NO. FL-155-18L
DRLG. FLUID SEA WATER SURFACE TO 1260 FT.
GEL SPERSENE/XP20 1260 TO 1984 FT.

LEGEND

ABBREVIATIONS

NB = NEW BIT
NCB = NEW CORE BIT
CO = CIRCULATED OUT
DST = DRILL STEM TEST
LAT = LOGGED AFTER TRIP
TG = TRIP GAS
NR = NO RETURNS
DS = DIRECTIONAL SURVEY
DC = DEPTH CORRECTION
DEPTHS CORRESPOND TO DRILL PIPE MEASUREMENTS
MEASURED FROM
KELLY BUSHING

RESISTIVITY, OHM-METERS
Rm = MUD
Rmc = MUD CAKE
Rmf = MUD FILTRATE

MUD DATA
CK = CAKE THICKNESS 32nds
V = VISCOSITY API SECONDS
F = FILTRATE API CC'S
W = WEIGHT (LBS/US GAL)
S = SALINITY, ppm Cl (NaCl)

LITHOLOGY

SAND, SALT, COAL, CALCARENITE, CONG, CLAY, DOLOMITE, MUDSTONE, ANHYDRITE OR GYPSUM, SHALE, CHERT, GRANITE, LIMESTONE, MARL, SILTSTONE

DRILLING RATE

MIN/FT ☒
FT/HR ☐
DRILLING
REAMING
CORING
5 1 2 4 6 8 12 16

DRILLING
ACTIVITY
LITHOLOGY
DEPTH

HYDROCARBON ANALYSIS

CHROMATOGRAPHIC
Drilling Mud Gas
Methane — 1 — Butane — 4 —
Ethane — 2 — Pentane — 5 —
Propane — 3 — Hexane+ — 6+ —
Calibration:
1/8% Methane = 5000 PPM
1/8% Ethane = 5000 PPM
1/8% Propane = 5000 PPM
1/8% Butane = 5000 PPM
PPM — THOUSANDS
0 5 25 75 15 30 50 150 250 375 500

OIL SHOW
Trace Poor Fair Good

HOT WIRE
CO_2 .....
Drilling Mud Gas ———
H_2S -.-.-.-.-
Drill Cuttings Gas – – – – – –
Calibration:
1% Methane = 50 UNITS
UNITS
5 10 20 40 70 100 150 200 250 300

REMARKS

FORMATION DESCRIPTION, MUD DATA, DRILL STEM TESTS, etc.

VERTICAL SCALE
2" = 100'

1 FOOT = 240 FEET

NB NO.4
HTC X3AJ 8 1/2"
T2 B2 IG
1 1/2 Hrs.

NB 4
CMT

1300
1400
1500
1600
1700
1800
1900
2000

CHRIS C11

CB 1
NB 5

NB NO.5
HTC X3AJ 8 1/2"
T5 B3 IG
1 1/2 Hrs.

CHRIS C20

CB 2

TOTAL DEPTH.

CASING RECORD
9 5/8" SET AT 1230'

1250'-1650'

CALCARENITE: (SKELETAL LIMESTONE, GY TO WH, SOFT, UNCONSOL MED TO CRSE GR, FOSSIL FRAGS, GLAUC

MARL: GY TO GY GRN, SOFT, GLAUC, W/ GY ARGILL MTX, FOSSIL, SLI PYRITIC.

LIMESTONE: SKELETAL LT BRN TO FAUN, MD TO FIRM, WELL COMP, GLAUC, SLI DOLIC, FOSSIL, ARGILL.

MUD DATA
DEPTH = 1500'
WT =12.4 PV =27
V =47 YP =10
F =10.2 CK = 2
IG = 3 10G = 3
SD = 1/2% SOL =18
PH =12.5 ALK =95
CL =5600 CA =200

CARBIDE LAG
DEPTH = 1850'
LAG= 16MIN/56STKS.

CORE NO.1
1675'-1687' REC.4'

1650'-1930'

SANDSTONE: WH TO GY UNCONSOL, MED TO CRSE GR, GRANULAR, ANG TO RNDED, MOD WELL SORT, WITH CLR TO MILKY QTZ AND MINOR LITHICS OF GY CHERT

1930'-1966'

SANDSTONE: QTZ ARENITE, UNCONSOL, WH - GY, V CRSE GR-PEBBLY ANG TO RNDED, WELL SORT, DK BRN MUSCOVITE, BIOTITE, MINOR YELL FELDSPAR, WTHD AUGITE.

CORE NO.2
1966'-1984' REC.18'

470627 OR.0360

FIGURE 3

ONE WAY TIME BELOW SEA LEVEL

.05 .10 .15 .20 .25 .30 .35 .40 .45 .50 .55 .60 .65 .70 .75 .80 .85 .90 .95

0·1 0·2 0·3 0·4 0·5 0·6 0·7 0·8 0·9 1·0 1·1 1·2 1·3 1·4 1·5 1·6 1·7 1·8 1·9

TWO WAY TIME BELOW SEA LEVEL

500 1000 1500 2000 2500 3000 3500 4000 4500 5000 5500 6000 6500

TIME DEPTH CURVE

AVERAGE VELOCITY DEPTH CURVE

INTERVAL VELOCITY DEPTH CURVE

BASEMENT VELOCITY 18500 Ft/Sec.

6000 7000 8000 9000 10,000 11,000 12,000

AVERAGE AND INTERVAL VELOCITY – FEET PER SECOND

DEPTH IN FEET BELOW SEA LEVEL

DEPTH IN FEET BELOW SEA LEVEL

ESSO EXPLORATION AND PRODUCTION AUSTRALIA INC.

BLUEBONE - 1

TIME DEPTH CURVE

DATUM: MEAN SEA LEVEL

AUTHOR: P.J.BIRMINGHAM

CO ORDINATES:
147° 50' 53"E
39° 24' 26"S

LEGEND

⊙ Check Shots

⊡ Sonic Log

160' Water Depth

5 cm

FIGURE 3

11910-11

SCHLUMBERGER

CONTINUOUS DIPMETER

COUNTRY AUSTRALIA
FIELD WILDCAT
WELL KILDERRIE 1
COMPANY ESSO STANDARD OIL (AUSTRALIA) LTD.

LOCATION
FIELD -
STATE VICTORIA
COUNTRY AUSTRALIA

COMPANY ESSO STANDARD OIL (AUSTRALIA) LTD.

Lat. 38° 55' 55"S
Long. 141° 59' 30"E

Permanent Datum: G.L.
Elev.: K.B. 20 ft
D.F.
G.L.

Elevation of Perm. Datum

Date: 5-7-65
Depth-Driller: 1750
Depth-Logger: 1750
Bottom Logged Interval: 1750
Top Logged Interval: 1200
Type Fluid in Hole: Gel Chem
Salinity, PPM Cl: 1000
Density: 9.7
Level: Full
Max. Rec. Temp. Deg. F.: 100
Operating Rig Time: 12 hrs
Recorded By: Hall
Witnessed By: Mr. Hall

Run No.	One	Two	Three
Bit Size	8 1/2"	8 1/2"	
Type Bit	Reed	Reed	
Depth-Driller	1750	1750	
Depth-Logger	1750	1750	
Bottom Logged Interval	1750	1750	
Top Logged Interval	1200	1200	
Type Fluid in Hole	Gel Chem	Gel Chem	
Salinity, PPM Cl	1000	1000	
Density	9.7	9.7	
Level	Full	Full	
Max. Rec. Temp. Deg. F.	100	100	
Operating Rig Time	12 hrs	12 hrs	
Recorded By	Hall	Hall	
Witnessed By	Mr. Hall	Mr. Hall	

Run No.	Date	Depth-Driller	Depth-Logger	Bottom Logged Interval	Top Logged Interval	Type Fluid in Hole	Salinity, PPM Cl	Density	Level	Max. Rec. Temp. Deg. F.	Operating Rig Time	Recorded By	Witnessed By
One	5-7-65	1750	1750	1750	1200	Gel Chem	1000	9.7	Full	100	12 hrs	Hall	Mr. Hall
Two													
Three													

Correlation Class: 1, Good 2, Fair 3, Possible

1 cm

1/240 Depth: 1/600

Sonde Position

REFERENCE 45°

NORTH

1200
1300
1400
1500
1600
1700
1800
1900

S.P.

CLASS 1 GOOD CORRELATION
CLASS 2 PROBABLE CORRELATION
CLASS 3 POSSIBLE CORRELATION

REFERENCE 45°

NORTH

1200
1300
1400
1500
1600
1700
1800
1900

CLASS 1 GOOD CORRELATION
CLASS 2 PROBABLE CORRELATION
CLASS 3 POSSIBLE CORRELATION

1 cm

Enclosure 2

4700'-7824'

SCHLUMBERGER

BOREHOLE COMPENSATED SONIC LOG (WITH CALIPER)

COMPANY ESSO EXPLORATION AND PRODUCTION AUSTRALIA INC.

WELL BLUEBONE 1

FIELD WILDCAT

COUNTY AUSTRALIA STATE VICTORIA

LOCATION Latitude 39° 24' 26" S Longitude 147° 50' 53" E

Sec. Twp. Rge.

Other Services: IES FDCGR CDM CIS CST BHCSGR SLT

COUNTY AUSTRALIA

FIELD or LOCATION WILDCAT

WELL BLUEBONE 1

COMPANY ESSO

Permanent Datum:	M.S.L.	Elev.:	0
Log Measured From	K.B.	31	Ft. Above Perm. Datum
Drilling Measured From	K.B.		

Elev.: K.B.	31
D.F.	30
G.L.	0

Date	1 OCTOBER 1969		
Run No.	2		
Depth—Driller	7824		
Depth—Logger	7822		
Btm. Log Interval	7822		
Top Log Interval	1229		
Casing—Driller	1229 @	@	@
Casing—Logger	1224 @	@	@
Bit Size	8 1/2"		
Type Fluid in Hole	SEE BELOW		
Dens. / Visc.	12.4 / 47		
pH / Fluid Loss	/ ml	/ ml	/ ml
Source of Sample	FLOWLINE		
R_m @ Meas. Temp.	1.0 @ 60 °F	@ °F	@ °F
R_{mf} @ Meas. Temp.	0.93 @ 60 °F	@ °F	@ °F
R_{mc} @ Meas. Temp.	0.62 @ 100 °F	@ °F	@ °F
Source: R_{mf} / R_{mc}	PRESS / PRESS	/	/
R_m @ BHT	@ °F	@ °F	@ °F
R_{mf} @ BHT	@ °F	@ °F	@ °F
R_{mc} @ BHT	@ °F	@ °F	@ °F
Time Since Circ.	5 HRS.		
Max. Rec. Temp.	100 °F	°F	°F
Equip. Location	2 1251 SAL		
Recorded By	B. THOMSON		
Witnessed By	A. EVANS		

FOLD HERE

The well name, location and borehole reference data were furnished by the customer.

REMARKS Wave Compensating Device used Displacement 2 feet

Changes in Mud Type or Additional Samples

Scale Changes

	Type Log	Depth	Scale Up Hole	Scale Down Hole
Date / Sample No.				
Depth—Driller	BHCSC			
Type Fluid in Hole				
Dens. / Visc.				
ph / Fluid Loss ml				
Source of Sample				
R_m @ Meas. Temp. @ °F @ °F				
R_{mf} @ Meas. Temp. @ °F @ °F				
R_{mc} @ Meas. Temp. @ °F @ °F				
Source: R_{mf} / R_{mc}				
R_m @ BHT @ °F @ °F				
R_{mf} @ BHT @ °F @ °F				
R_{mc} @ BHT @ °F @ °F				

Equipment Data

Run No.	Tool Type	Tool Position	Other

C.D.t SPRING S.O.t

Equip. Used: CART. No. B-46

PANEL No. A-58

SONDE No. A-50

5 cm

Velocity (feet per second) = 1,000,000 / Interval Transit Time (microseconds per foot)

SPONTANEOUS-POTENTIAL MILLIVOLTS	DEPTHS	INTERVAL TRANSIT TIME MICROSECONDS PER FOOT
– 15 +	2"	T_3 R_1 R_2 R_3 140 90 40 190 140
CALIPER HOLE DIAM. IN INCHES 6" 16"		
	6000	
	6100	
	6200	
	6300	
	6400	
	6500	
	6600	
	6700	
	6800	
	6900	
6" 16"		
CALIPER HOLE DIAM. IN INCHES		T_3 R_1 R_2 R_3 190 140 140 90 40
– 15 +	2"	
SPONTANEOUS-POTENTIAL MILLIVOLTS	DEPTHS	INTERVAL TRANSIT TIME MICROSECONDS PER FOOT

COMPANY ESSO AUSTRALIA

WELL BLUEBONE 1

FIELD WILDCAT

COUNTY AUSTRALIA STATE VICTORIA

FR 1969

TD 1969

DKLR TD 1984

Elev.:

KB 31

DF 30

GL 0

4700.30 Enclosure 3 OR.0360

SCHLUMBERGER
BOREHOLE COMPENSATED SONIC LOG (WITH CALIPER)

COUNTY AUSTRALIA
FIELD or LOCATION WILDCAT
WELL BLUEBONE 1
COMPANY ESSO

COMPANY ESSO EXPLORATION AND PRODUCTION AUSTRALIA INC.
WELL BLUEBONE 1
FIELD WILDCAT
COUNTY AUSTRALIA STATE VICTORIA
LOCATION Latitude: 39° 24' 26" S. Longitude: 147° 50' 53" E.
Other Services: IES, FDCGR, CDM, CIS, CST, BHCSGR, SLT
Sec. Twp. Rge.

Permanent Datum: M.S.L. Elev. 0
Log Measured From K.B. 31 Ft. Above Perm. Datum
Drilling Measured From K.B.
Elev.: K.B. 31 D.F. 30 G.L. 0

Date	1st OCTOBER 1969			
Run No.	1			
Depth—Driller	1984			
Depth—Logger	1969			
Btm. Log Interval	1969			
Top Log Interval	1229			
Casing—Driller	1229 @	@	@	@
Casing—Logger	1229			
Bit Size	8-1/2"			
Type Fluid in Hole	SPERSENE			
Dens. / Visc.	12.4 / 57			
pH / Fluid Loss	12 / 11.9 ml	ml	ml	ml
Source of Sample	FLOWLINE			
R_m @ Meas. Temp.	1.09 @ 60 °F	@ °F	@ °F	@ °F
R_{mf} @ Meas. Temp.	0.59 @ 60 °F	@ °F	@ °F	@ °F
R_{mc} @ Meas. Temp.	1.83 @ 60 °F	@ °F	@ °F	@ °F
Source: R_{mf} / R_{mc}	PRESS / PRESS			
R_m @ BHT	0.62 @ 100 °F	@ °F	@ °F	@ °F
Time Since Circ.	5 HRS			
Max. Rec. Temp.	100 °F	°F	°F	°F
Equip. / Location	SAL			
Recorded By	B. THOMSON			
Witnessed By	A. SVALBE			

FOLD HERE — The well name, location and borehole reference data were furnished by the customer.

REMARKS

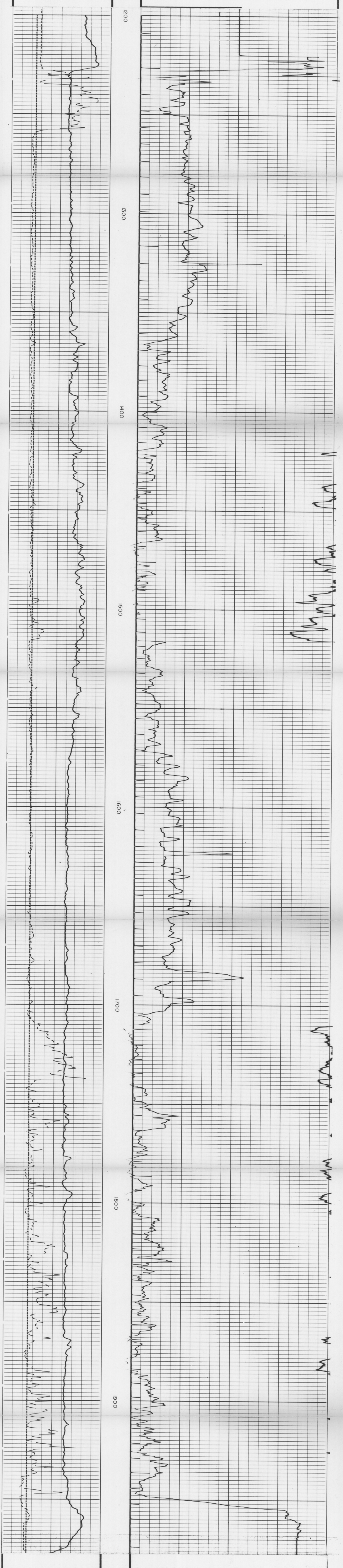
Changes in Mud Type or Additional Samples				Scale Changes			
Date / Sample No.			Type Log	Depth	Scale Up Hole	Scale Down Hole
Depth—Driller			BHCSC			
Type Fluid in Hole						
Dens. / Visc.						
ph / Fluid Loss	ml	ml				
Source of Sample			Equipment Data			
R_m @ Meas. Temp.	@ °F	@ °F	Run No.	Tool Type	Tool Position	Other
R_{mf} @ Meas. Temp.	@ °F	@ °F				
R_{mc} @ Meas. Temp.	@ °F	@ °F				
Source: R_{mf} / R_{mc}						
R_m @ BHT	@ °F	@ °F				
R_{mf} @ BHT	@ °F	@ °F				
R_{mc} @ BHT	@ °F	@ °F				

C.D.: SPRING S.O.:
Equip. Used: CART. No. B-46
PANEL No. A-58
SONDE No. A-50

Velocity (feet per second) = 1,000,000 / Interval Transit Time (microseconds per foot)

5 cm

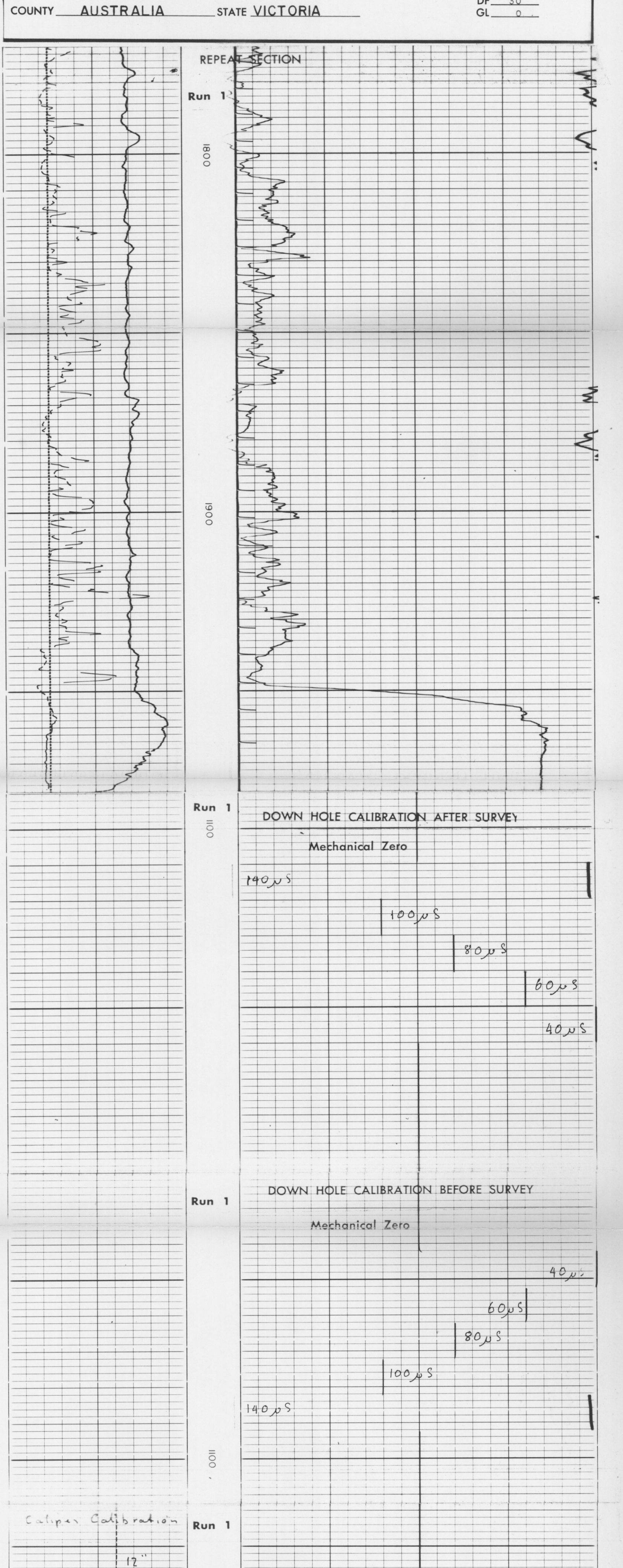
SPONTANEOUS-POTENTIAL MILLIVOLTS	DEPTHS	INTERVAL TRANSIT TIME MICROSECONDS PER FOOT
15 — +	5"	T 3 R1 2 R2 — 140 / 90 / 40; 190 / 140
CALIPER HOLE DIAM. IN INCHES 6" — 16"		



CALIPER HOLE DIAM. IN INCHES 6" — 16"		T 3 R1 2 R2 — 140 / 90 / 40; 190 / 140
15 — +	5"	
SPONTANEOUS-POTENTIAL MILLIVOLTS	DEPTHS	INTERVAL TRANSIT TIME MICROSECONDS PER FOOT

COMPANY ESSO AUSTRALIA
WELL BLUEBONE 1
FIELD WILDCAT
COUNTY AUSTRALIA STATE VICTORIA

FR 1969
TD 1969
DRLR TD 1984
Elev: KB 31
DF 30
GL 0



Enclosure 4

470031

OR-0360

SCHLUMBERGER

BOREHOLE COMPENSATED SONIC LOG - GAMMA RAY

COUNTY AUSTRALIA
FIELD or LOCATION WILDCAT
WELL BLUEBONE I
COMPANY ESSO

COMPANY ESSO EXPLORATION AND PRODUCTION AUSTRALIA INC.
WELL BLUEBONE I
FIELD WILDCAT
COUNTY AUSTRALIA STATE VICTORIA
LOCATION Latitude: 39° 24' 26" S. Longitude: 147° 50' 53" E.
Sec. Twp. Rge.

Other Services: IES FDC BHCSC CIS CST CDM SLT

Permanent Datum: MSL, Elev. 0
Log Measured From KB, 31 Ft. Above Perm. Datum
Drilling Measured From KB 31

Elev.: K.B. 31 D.F. 30 G.L. 0

Date	27 SEPT 1969			
Run No.	1 2"			
Depth—Driller	1250			
Depth—Logger	1260			
Btm. Log Interval	1255			
Top Log Interval	350			
Casing—Driller	350 @	@	@	@
Casing—Logger	350			
Bit Size	12-1/4			
Type Fluid in Hole	SEAWATER			
Dens. / Visc.				
pH / Fluid Loss	ml	ml	ml	ml
Source of Sample				
R_m @ Meas. Temp.	0.28 @ 57°F	@ °F	@ °F	@ °F
R_{mf} @ Meas. Temp.	@ °F	@ °F	@ °F	@ °F
R_{mc} @ Meas. Temp.	@ °F	@ °F	@ °F	@ °F
Source: R_{mf} / R_{mc}				
R_m @ BHT	@ °F	@ °F	@ °F	@ °F
Time Since Circ.	2 HRS			
Max. Rec. Temp.	100°F	°F	°F	°F
Equip. / Location	2035 / SAL			
Recorded By	B. THOMSON			
Witnessed By	A.K. SVALBE			

FOLD HERE The well name, location and borehole reference data were furnished by the customer.

REMARKS Film spliced at 370' due to tool hanging up on casing shoe

Changes in Mud Type or Additional Samples					
Date / Sample No.					
Depth—Driller					
Type Fluid in Hole					
Dens. / Visc.					
ph / Fluid Loss		ml			
Source of Sample					
R_m @ Meas. Temp.	@	°F	@	°F	
R_{mf} @ Meas. Temp.	@	°F	@	°F	
R_{mc} @ Meas. Temp.	@	°F	@	°F	
Source: R_{mf} / R_{mc}					
R_m @ BHT	@	°F	@	°F	
R_{mf} @ BHT	@	°F	@	°F	
R_{mc} @ BHT	@	°F	@	°F	

Scale Changes			
Type Log	Depth	Scale Up Hole	Scale Down Hole
BHCSGR			

Equipment Data				
Run No.	Tool Type	Pad Type	Tool Pos.	Other

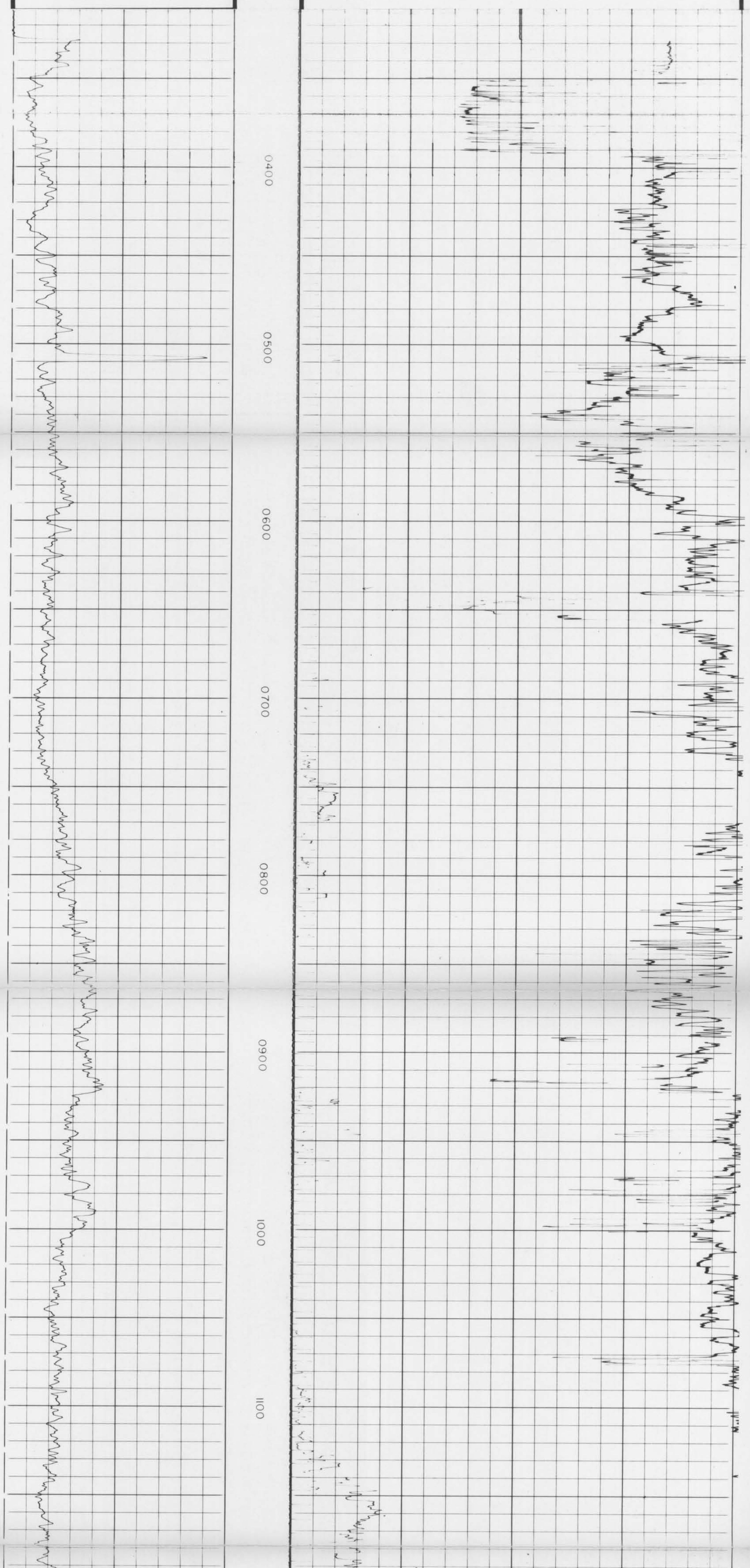
C.D.: S.O.:
Equip. Used: CART. No. B-46
PANEL No. A-58
SONDE No. A-50

CALIBRATION:	BACKGND. CPS.	SOURCE CPS.	GALV. INCR. DIVISIONS	SENS. TAP (FOR CAL.)	SENS. TAP (RECORD)	TIME CONST.	RECORDING SPEED (FT./MIN.)
GAMMA RAY:	16	420	8.25	400	200	2	

5 cm

$$\text{Velocity (feet per second)} = \frac{1{,}000{,}000}{\text{Interval Transit Time (microseconds per foot)}}$$

GAMMA RAY API UNITS	DEPTHS	INTERVAL TRANSIT TIME MICROSECONDS PER FOOT
0 — 100	2"	T 3 R1 2 R2; 140 — 90 — 40; 190 — 140



0 — 100	2"	T 3 R1 2 R2; 190 — 140; 140 — 90 — 40
GAMMA RAY API UNITS	DEPTHS	INTERVAL TRANSIT TIME MICROSECONDS PER FOOT

COMPANY ESSO AUSTRALIA
WELL BLUEBONE I
FIELD WILDCAT
COUNTY AUSTRALIA STATE VICTORIA

SCHL. FR 1255
SCHL. TD 1260
DRLR TD 1250
Elev:
KB 31
DF 30
GL 0

SCHLUMBERGER

COMPANY ESSO EXPLORATION AND PRODUCTION AUSTRALIA INC.
WELL BLUEBONE 1
FIELD WILDCAT
COUNTY GIPPSLAND STATE VICTORIA AUSTRALIA

LOCATION: 38°12'30"S, 147°29'30"E

Other Services: BHC-GR

Permanent Datum: MEAN SEA LEVEL
Elevation: 0 m
Log Measured From: KELLY BUSHING
4.5 m Above Perm. Datum
Drilling Measured From: KELLY BUSHING

Date: 1-JUL-1975
Run No.: ONE
Depth-Driller: 2500 m
Depth-Logger: 2500 m
Bottom Logged Interval: 2500 m
Top Logged Interval: 1000 m
Casing-Driller: 20" @ 1000 m
Casing-Logger: 1000 m
Bit Size: 17½"
Type Fluid in Hole: SEAWATER
Density: 1.1 kg/m³
Viscosity: 0.0 mPa·s
pH: 0.0
Fluid Loss: 0.0 ml
Source of Sample: CIRCULATED
Rm @ Meas. Temp.: 0.0 Ω·m @ 0 °C
Rmf @ Meas. Temp.: 0.0 Ω·m @ 0 °C
Rmc @ Meas. Temp.: 0.0 Ω·m @ 0 °C
Source: Rmf: Rmc:
Rm @ BHT: 0.0 Ω·m @ 0 °C
Time Since Circ.: 0 HR
Max. Rec. Temp.: 0 °C @ 0 m
Equipment No.: 1502
Location: BELLBRAE
Recorded By: R. SMITH
Witnessed By: J. SMITH

COMPANY: AUSTRALIA
FIELD: WILDCAT
LOCATION: BLUEBONE 1
WELL: BLUEBONE 1

RECORDED ENVIRONMENTALIZED SONIC LOG - GAMMA RAY

Run No. | Bottom Log Interval | Top Log Interval | Casing Size | Type Fluid in Hole | Density | Viscosity | pH | Fluid Loss | Source of Sample | Rm @ Meas. Temp. | Rmf @ Meas. Temp. | Rmc @ Meas. Temp. | Source Rmf / Rmc | Rm @ BHT | Time Since Circ. | Max. Rec. Temp. | Equipment No. | Location | Recorded By | Witnessed By

ONE | 2500 m | 1000 m | 20" @ 1000 m | SEAWATER | 1.1 kg/m³ | 0.0 mPa·s | 0.0 | 0.0 ml | CIRCULATED | 0.0 Ω·m @ 0 °C | 0.0 Ω·m @ 0 °C | 0.0 Ω·m @ 0 °C | / | 0.0 Ω·m @ 0 °C | 0 HR | 0 °C @ 0 m | 1502 | BELLBRAE | R. SMITH | J. SMITH

Other Services: BHC-GR

Permanent Datum: MEAN SEA LEVEL
Elevation: 0 m
Log Measured From: KELLY BUSHING
4.5 m Above Perm. Datum
Drilling Measured From: KELLY BUSHING

Run No. | Date | Depth-Driller | Depth-Logger | Bottom Logged Interval | Top Logged Interval | Casing-Driller | Casing-Logger | Bit Size | Type Fluid in Hole | Density | Viscosity | pH | Fluid Loss | Source of Sample | Rm @ Meas. Temp. | Rmf @ Meas. Temp. | Rmc @ Meas. Temp. | Source Rmf / Rmc | Rm @ BHT | Time Since Circ. | Max. Rec. Temp. | Equipment No. | Location | Recorded By | Witnessed By

ONE | 1-JUL-1975 | 2500 m | 2500 m | 2500 m | 1000 m | 20" @ 1000 m | 1000 m | 17½" | SEAWATER | 1.1 kg/m³ | 0.0 mPa·s | 0.0 | 0.0 ml | CIRCULATED | 0.0 Ω·m @ 0 °C | 0.0 Ω·m @ 0 °C | 0.0 Ω·m @ 0 °C | / | 0.0 Ω·m @ 0 °C | 0 HR | 0 °C @ 0 m | 1502 | BELLBRAE | R. SMITH | J. SMITH

This well name, location and borehole information was communicated by the customer.

REMARKS: Tools rejected at 2500' due to tool dropping out of clamp arms.

Changes in Mud Type or Additional Samples

Depth | Type Log Before | Depth | Scale Changes: Scale Up Hole | Scale Down Hole

Depth | Type Fluid in Hole

Tools Run: Equipment Data

Run No. | Tool Type | Pad Type | Tool Pos. | Other

Rm @ Meas. Temp. | @ °F
Rmf @ Meas. Temp. | @ °F
Rmc @ Meas. Temp. | @ °F
Source Rmf / Rmc
Rm @ BHT | @ °F
Rm @ BHT | @ °F
Rm @ BHT | @ °F

CASING SIZE & BIT SIZE
Weight, Grade, Type
Fluid Type
FLUID LOSS
PH
RESISTIVITY
TEMPERATURE
VISCOSITY
DENSITY
LOGGING DATE
RUN NUMBER
DEPTH-DRILLER
DEPTH-LOGGER
BTM. LOG INTERVAL
TOP LOG INTERVAL
CASING-DRILLER
CASING-LOGGER
BIT SIZE
TYPE FLUID IN HOLE
DENSITY
VISCOSITY
PH
FLUID LOSS
SOURCE OF SAMPLE
RM @ MEAS. TEMP.
RMF @ MEAS. TEMP.
RMC @ MEAS. TEMP.
SOURCE RMF / RMC
RM @ BHT
TIME SINCE CIRC.
MAX. REC. TEMP.
EQUIP. LOCATION
RECORDED BY
WITNESSED BY

CALIBRATION | MACHINE OPR. | SOURCE OPR. | EACH HIGH DIVISION | EACH TAP DIVISION | RUN TAP (CALC.) | RUN TAP (RECORD) | TIME CONST. | RECORDING SPEED (FT./MIN.)
Gamma Ray | | | | | | | | |

Velocity (feet per second): 1,000,000 / Interval Transit Time (microseconds per foot)

5 cm

GAMMA RAY
API UNITS

INTERVAL TRANSIT TIME
MICROSECONDS PER FOOT

T.T. A.....

5"

1000
1500
2000
2500
3000
3500
4000
4500
5000

T.T. A.....

5"

GAMMA RAY
API UNITS

INTERVAL TRANSIT TIME
MICROSECONDS PER FOOT

COMPANY ESSO AUSTRALIA
WELL BLUEBONE 1
FIELD WILDCAT
COUNTY AUSTRALIA STATE VICTORIA

SONIC TT 40.0
SONIC TT 120.0
DELTA TT 80.0
Date 29 JUL
Run ONE
DEPTH 2500 m
BHT 80 °C
MRT 80 °C
No. 1

CALIBRATION DATA

REPEAT SECTION

Run 1

DOWN HOLE CALIBRATION AFTER SURVEY

40 μs/f
80 μs/f
120 μs/f

Mechanical Zero

DOWN HOLE CALIBRATION BEFORE SURVEY

Run 1

Mechanical Zero

40 μs/f
80 μs/f
120 μs/f

SURFACE CALIBRATION

Run 1

Mechanical Zero
Electrical Zero
Zig in Position
Background

STATISTICAL VARIATIONS
At Log Scale and T.C.

Run 1

5 cm

Enclosure 6

42003

COUNTY AUSTRALIA
FIELD or LOCATION WILDCAT
WELL BLUEBONE I
COMPANY ESSO

SCHLUMBERGER

COMPENSATED FORMATION DENSITY LOG
Gamma-Gamma

COMPANY ESSO EXPLORATION AND PRODUCTION AUSTRALIA INC.
WELL BLUEBONE I
FIELD WILDCAT
COUNTY AUSTRALIA STATE VICTORIA
Location: Latitude 38° 24' 26" S
Longitude 147° 50' 55" E
Sec. Twp. Rge.
Permanent Datum: MSL Elev.: 0
Log Measured From KB 31 Ft. Above Perm. Datum
Drilling Measured From KB

Date	30th Sept 1969
Run No.	ONE
Type Log	FDC
Depth—Driller	1984
Depth—Logger	1978
Bottom logged interval	1978
Top logged interval	1579
Type fluid in hole	SEA WATER
Salinity, PPM Cl.	
Density	9.4
Viscosity	34
Fluid loss	9.8
Max. rec. temp. deg F.	94°F AGE
Operating rig time	6 HRS
Recorded by	A. SWALBE
Witnessed by	MR. MCMINN

RUN No.	Bit	From	To	Size	Wgt.	From	To
ONE	8 1/2	1579	1984	9 5/8		1523	

BOREHOLE RECORD
CASING RECORD

Other Services: DLL BHC GR

FOLD HERE

The well name, location and borehole reference data were furnished by the customer.

EQUIPMENT DATA

Run No.	PG P-	PCD	PSC	PGS-	Source No.	SFT-106	SGH	Logging Unit	Location
1	D-558	D175	B-34					2055	GBL
2									
3									

CALIBRATION DATA

Run No.	Gamma Ray API Scale	Gamma Ray Background CPS	FDC — Before Log — ACPS Total CPS	FDC — Before Log — ACPS P_1	FDC — Before Log — ACPS P_2	FDC — After Log — ACPS P_1	FDC — After Log — ACPS P_2
1	150	20	420	396	648	396	648
2							
3							

LOGGING DATA

Run No.	General Depths From	General Depths To	Speed Ft./Min.	Gamma Ray Tc	Gamma Ray API Scale	FDC Selectors Liquid Density	Grain Density	Hole Fluid	Porosity Scale
1	1976	1289	30	2	150				

MUD DATA

Run No.	Rm. @ °F	% Solids by Vol.	% Oil by Vol.	% Water by Vol.	Viscosity, Sec./Qt @ °F	Solids, Av. Sp. Gr.
1	1.0 @ 60 °F				57 @ °F	
2	@ °F				@ °F	
3	@ °F				@ °F	

Remarks: BHT recorded 4hrs after bit off bottom. WCD used. Displacement 2'

5 cm

All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not, guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to Clause 7 of our General Terms and Conditions as set out in our current Price Schedule.

CALIPER
HOLE DIAM. IN INCHES

6" 16"

DEPTHS

2"

-.25 0 +.25
CORRECTION
GRAMS/CC.

GAMMA RAY
API UNITS

0 150

BULK DENSITY
GRAMS/CC.

2.0 2.5 3.0

1300
1400
1500
1600
1700
1800
1900

0 150

2.0 2.5 3.0

GAMMA RAY
API UNITS

BULK DENSITY
GRAMS/CC.

6" 16"

2"

-.25 0 +.25
CORRECTION
GRAMS/CC.

CALIPER
HOLE DIAM. IN INCHES

DEPTHS

COMPANY ESSO AUSTRALIA
WELL BLUEBONE I
FIELD WILDCAT
COUNTY AUSTRALIA STATE VICTORIA

Rm 1.0 @ 60 °F
BHT 95 °F

SCHL. FR 1976
SCHL TD 1979
DRLR TD 1984
Elev.:
KB 31
DF 30
GL 0

SCHLUMBERGER

COMPENSATED FORMATION DENSITY LOG

COMPANY: ESSO AUSTRALIA LTD. — WELL: BLUEBONE 1 — FIELD: WILDCAT — COUNTY: AUSTRALIA STATE: VICTORIA

Company ESSO PRODUCTION AUSTRALIA INC.
Well BLUEBONE 1
Field WILDCAT
County AUSTRALIA State VICTORIA

Location: 4 Miles

Permanent Datum: MEAN SEA LEVEL — Elevation: 0 — Elev.: K.B. 0 — D.F. 0 — G.L. 0

Log Measured From: KELLY BUSHING — 0 Ft. Above Perm. Datum

Drilling Measured From: KELLY BUSHING

Run No.	One	Two	Three
Date	8-5-72	8-6-72	
Depth-Driller	8,510	10,000	
Depth-Logger	8,510	10,000	
Bottom Logged Interval	8,510	10,000	
Top Logged Interval	1,000	8,500	
Type Fluid in Hole	GEL-CHEM	GEL-CHEM	
Salinity, PPM Cl	17,000	17,000	
Density	10.0	10.0	
Level	FULL	FULL	
Max. Rec. Temp. Deg. F.	190	210	
Operating Time	6	6	
Recorded By	R. ROBERTS	R. ROBERTS	
Witnessed By	MR. BOYD	MR. BOYD	

CALIBRATION DATA

Run No.	Time	Before Log — Depth	Before Log — Reading	After Log — Depth	After Log — Reading
1	0800	8,500	2.65	8,500	2.65
2	0800	10,000	2.65	10,000	2.65

LOGGING DATA

Run No.	Tool Type	Position	Matrix	Matrix Value	Fluid Density	Max. Rec. Temp. Deg. F.	Equipment Number	Location
1	DUAL SPACING	CENTERED	LIME	2.71	1.0	190	3609	ESSO
2	DUAL SPACING	CENTERED	LIME	2.71	1.0	210	3609	ESSO

RUN DATA

Run No.	Bit No.	Type	From	To	Size	Wt.	Visc.	Fluid Loss	Source of Sample
1	3	7 7/8	1,000	8,510	9.0	38	40	6.0	MUD PIT
2	4	7 7/8	8,500	10,000	9.0	38	40	6.0	MUD PIT

Remarks: RUN 1 RECORDED WITH 8" x 60" SKID.
RUN 2 WITH CENTRALIZERS 8" x 60" SKID.

CALIPER
HOLE DIAM. IN INCHES
6
16

CAMMA RAY
API UNITS
0
100

BULK DENSITY
GRAMS/CC
1.95
2.95

CORRECTION
GRAMS/CC
-.25
0
+.25

1/100

1000'

CAMMA RAY
API UNITS

BULK DENSITY
GRAMS/CC

CORRECTION
GRAMS/CC

CALIPER
HOLE DIAM. IN INCHES

Company ESSO AUSTRALIA — For — Bott — Top
Well BLUEBONE 1
Field WILDCAT
County AUSTRALIA State VICTORIA

BDL 18
BDL 19
BDL 20
BDL 21
BDL 22

CALIBRATION DATA

REPEAT SECTION — REPEAT SECTION

Run 1

CALIBRATION AFTER SURVEY

Run 1

Mechanical Zero
Rad. Trans.
Zg on .4" WATER
Zl on .4" WATER

CALIBRATION BEFORE SURVEY

Run 1

Mechanical Zero
Rad. Trans.
Zg on .4" WATER
Zl on .4" WATER

SURFACE CALIBRATION

Mechanical Zero
Run 1
Thermal Zero
Rad. Trans.
SHP Lock
Zg on
Backgound

Run 2

CALIPER CALIBRATION

ELECTRICAL VARIATIONS
Along Bore Hole (A.B.H.)

ELECTRICAL VARIATIONS
Cable Head Tension (C.H.T.)

Run 1

Run 2

MONITOR CALIBRATION

Mech. Zero
Rad. Trans.
Test Act.
Test Bkgd.
Mechanical Check
Mech. Zero on
Mech. Zero on
Mech. Zero
Rad. Trans.
Test Calib.
Test Calib.
Zg on
Zl on
Mech. Zero on

1 cm

Enclosure 8. 470035 OR-0360

SCHLUMBERGER INDUCTION - ELECTRICAL LOG

COUNTY AUSTRALIA
FIELD or LOCATION WILDCAT
WELL BLUEBONE
COMPANY ESSO

COMPANY ESSO EXPLORATION AND PRODUCTION AUSTRALIA INC.
WELL BLUEBONE 1
FIELD WILDCAT
COUNTY AUSTRALIA STATE VICTORIA
LOCATION Latitude: 39° 24' 26" S Longitude: 147° 50' 53" E
Other Services: BHCSGR, BHCSC, FDC, CST, CIS, CDM, SLT
Sec. ___ Twp. ___ Rge. ___

Permanent Datum: MSL, Elev. 0
Log Measured From KB, 31 Ft. Above Perm. Datum
Drilling Measured From KB
Elev.: K.B. 31 D.F. 30 G.L. 0

Date	30th Sept 1969	30th Sept 1969		
Run No.	1 2"	2 2"		
Depth—Driller	1250	1984		
Depth—Logger	1260	1978		
Btm. Log Interval	1259	1977		
Top Log Interval	350	1229		
Casing—Driller	350 @	1229 @	@	@
Casing—Logger	350	1229		
Bit Size	12 1/4	8 1/2		
Type Fluid in Hole	SEAWATER	SPERSENE		
Dens. | Visc.		12.4 | 57		
pH | Fluid Loss	ml	12 | 11.9 ml	ml	ml
Source of Sample		FLOWLINE		
R_m @ Meas. Temp.	@ °F	1.0 @ 60 °F	@ °F	@ °F
R_{mf} @ Meas. Temp.	@ °F	0.59 @ 60 °F	@ °F	@ °F
R_{mc} @ Meas. Temp.	@ °F	1.83 @ 60 °F	@ °F	@ °F
Source: R_{mf} | R_{mc}		PRESS | PRESS		
R_m @ BHT	@ °F	@ °F	@ °F	@ °F
Time Since Circ.	2hrs	2hrs		
Max. Rec. Temp.	100 °F	°F	°F	°F
Equip. | Location	2035 | SAL	2035 | SAL		
Recorded By	B Thomson	B Thomson		
Witnessed By	A Svalbe	A Svalbe		

FOLD HERE The well name, location and borehole reference data were furnished by the customer.

REMARKS WCD used. Displacement 2' RUN 2

Changes in Mud Type or Additional Samples				
Date | Sample No.				
Depth—Driller				
Type Fluid in Hole				
Dens. | Visc.				
ph | Fluid Loss		ml		ml
Source of Sample				
R_m @ Meas. Temp.	@	°F	@	°F
R_{mf} @ Meas. Temp.	@	°F	@	°F
R_{mc} @ Meas. Temp.	@	°F	@	°F
Source: R_{mf} | R_{mc}				
R_m @ BHT	@	°F	@	°F
R_{mf} @ BHT	@	°F	@	°F
R_{mc} @ BHT	@	°F	@	°F

Scale Changes			
Type Log	Depth	Scale Up Hole	Scale Down Hole
IES			

Equipment Data			
Run No.	Tool Type	Tool Position	Other
1&2	6FF40		

Run No.:	1	2
C.D.:		
S.O.:	1 1/2"	1 1/2"
Equip. PANEL No.:	H-733	H-733
Used: CART. No.:	F-711	F-711
SONDE No.:	M-581	M-581
IAP No.:	D-789	D-789
S.B.R.:	1	1

5 cm

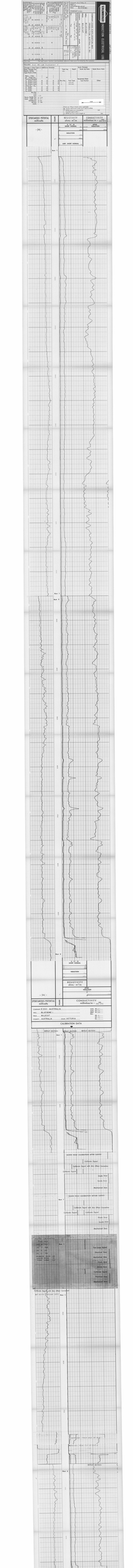
Check one, filling in blanks where applicable:
[X] Surface determined sonde errors used for 6FF40.
[ ] 6FF40 sonde error corrected for ___ inch borehole signal at Rm = ___
[ ] 6FF40 zero set in hole at depth of ___ feet.

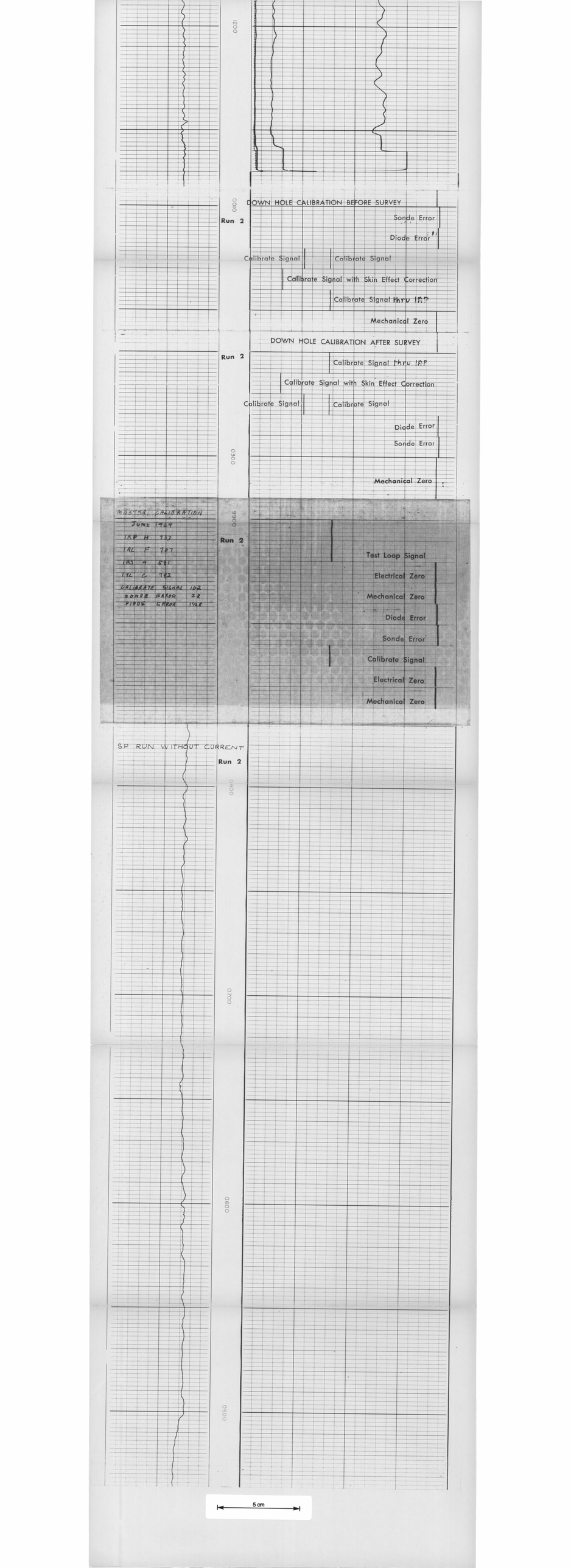
SPONTANEOUS POTENTIAL millivolts	DEPTHS	RESISTIVITY ohms - m²/m	CONDUCTIVITY millimhos/m = 1000 / ohms - m²/m
− |10| +	2"	A - 16" - M SHORT NORMAL 0 — 20; 0 — 200. INDUCTION 0 — 20; 0 — 200. AMP. SHORT NORMAL 0 — 4	6FF40 INDUCTION 2000 — 0; 4000 — 2000

SPONTANEOUS-POTENTIAL millivolts	DEPTHS	RESISTIVITY ohms – m²/m	CONDUCTIVITY millimhos/m = 1000 / ohms – m²/m
− |10| +	2"	A - 16" - M SHORT NORMAL 0 — 4; 0 — 20; 0 — 200. INDUCTION 0 — 20; 0 — 200	6FF40 INDUCTION 2000 — 0; 4000 — 2000

COMPANY ESSO AUSTRALIA
WELL BLUEBONE 1
FIELD WILDCAT
COUNTY AUSTRALIA STATE VICTORIA

SCHL. FR 1259
SCHL. TD 1260
DRLR TD 1250
Elev:
KB 31
DF 30
GL 0




1200
1000
DOWN HOLE CALIBRATION BEFORE SURVEY
Run 2
Sonde Error
Diode Error
Calibrate Signal
Calibrate Signal
Calibrate Signal with Skin Effect Correction
Calibrate Signal thru IRP
Mechanical Zero
DOWN HOLE CALIBRATION AFTER SURVEY
Run 2
Calibrate Signal thru IRP
Calibrate Signal with Skin Effect Correction
Calibrate Signal
Calibrate Signal
Diode Error
Sonde Error
0300
Mechanical Zero
MASTER CALIBRATION
JUNE 1964
IRP H 737
IRL F 727
IRS A 681
IRL C 782
CALIBRATE SIGNAL 10Z
SONDE ERROR 2R
PITOT ERROR 15R
0900
Run 2
Test Loop Signal
Electrical Zero
Mechanical Zero
Diode Error
Sonde Error
Calibrate Signal
Electrical Zero
Mechanical Zero
SP RUN WITHOUT CURRENT
Run 2
0800
0700
0600
0500
5 cm