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ANNUAL REPORT
 ON **3 NOV 1982**
 EXPLORATION LICENCE 6/79
 (CATAMARAN)
 FOR THE PERIOD 16.11.81 TO 15.11.82

VOLUME 1

N.T. Perkins
October, 1982

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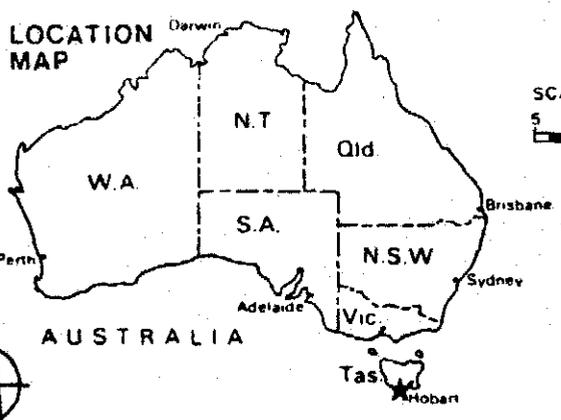
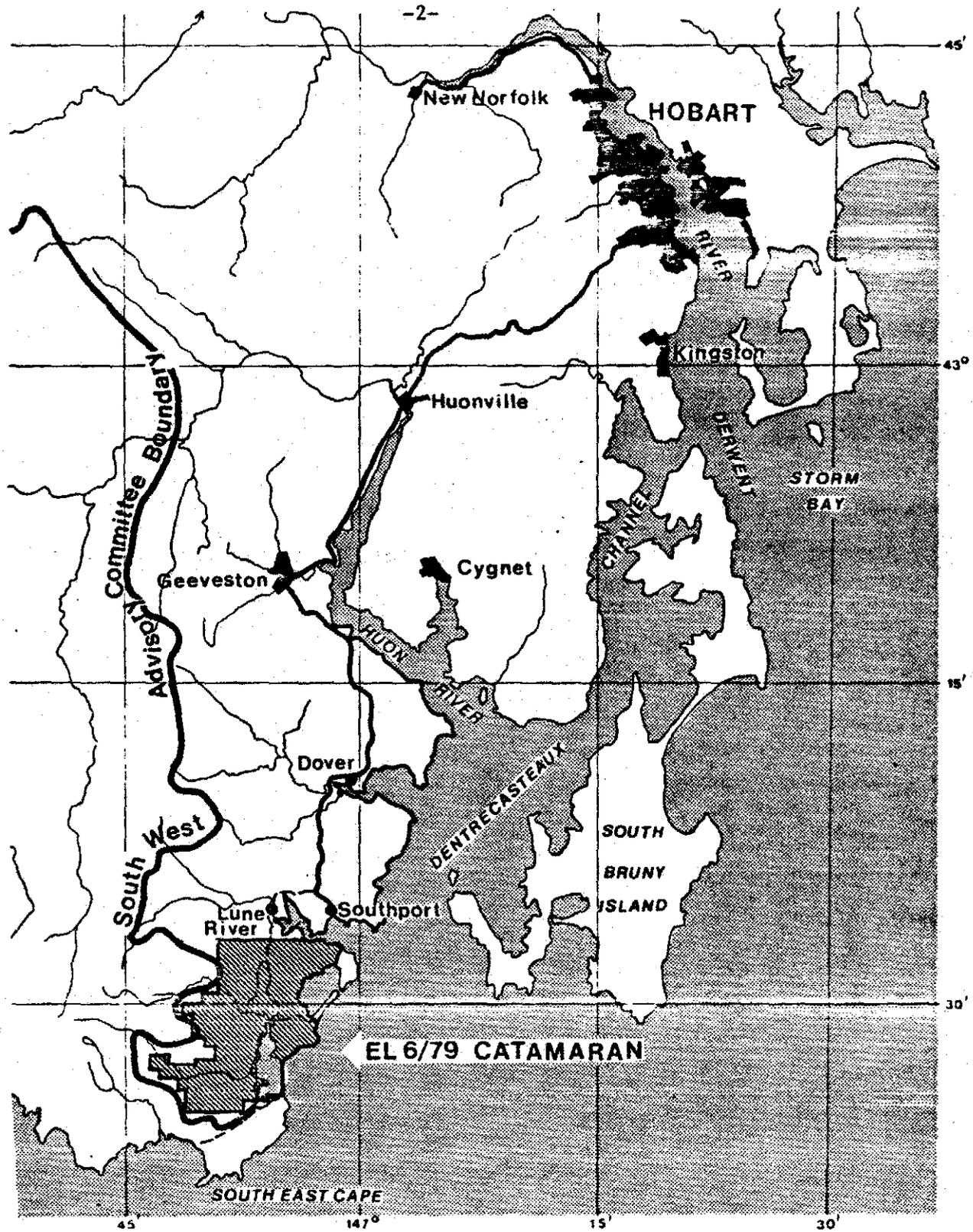


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1.0 INTRODUCTION

Exploration Licence 6/79 (Catamaran) covers an area of 136 square kilometres in the vicinity of Recherche Bay, south-eastern Tasmania (Figure 1). It was granted to Marathon Petroleum Australia, Ltd on May 16, 1980 for a period of six (6) months and renewed on November 16, 1980, May 16, 1981 for further six (6) month periods. Due to a change in government policy the renewal period was extended to twelve (12) months and as such the licence was renewed on November 16, 1981.

This report presents a review of exploration undertaken on EL 6/79 (Catamaran) during the period November 16, 1981 to November 15, 1982.



5 cm

SCALE 1 500 000
5 0 5 10 15 20 25 Km

FIGURE 1

Marathon Petroleum Australia, Ltd.
BRISBANE AUSTRALIA

TASMANIA PROJECT

Mapped by Tos. Londs Date Aug 88 Plan No CIC45
Drawn by L.P.

2.0 GEOLOGY OF EL 6/79 CATAMARAN

EL 6/79 Catamaran is situated within the Tasmanian Basin which covers an area of approximately 20,000 square kilometres and contains over 1000m of Permo-Triassic intruded and faulted clastic continental and paralic sediments. These sediments overlie Ordovician marine sediments of the Junee Group and have been intruded by sills of Jurassic dolerite (Spry and Banks, 1962).

A geological map of the tenement, synthesized from photogeological interpretation, ground gravity and magnetic surveys, drilling and field reconnaissance is presented as Plate 1. A summary of the stratigraphy of the area is given in Figure 2.

2.1 Stratigraphy

2.1.1 Ordovician Sediments

The Ordovician age Junee Group outcrops on the upfaulted western side of the Lune River Fault. The Group consists of conglomerates and limestones outcropping at the base of steep ridges which extend from the western boundary of the area towards the west. The Gordon Limestone has been mined near Ida Bay for many years.

2.1.2 Permian Sediments

The Lower Permian Supergroup of Permian age also outcrops to the west of the Lune River Fault. The sediments are predominantly arenaceous and together with the basal Triassic (Upper Permian Supergroup) sandstones form the resistant capping rocks of the steep ridges to the west at the Lune River Fault.

2.1.3 Triassic Sediments

Triassic Sediments of the Upper Permian Supergroup occur in a downfaulted block to the east of the Lune River Fault.

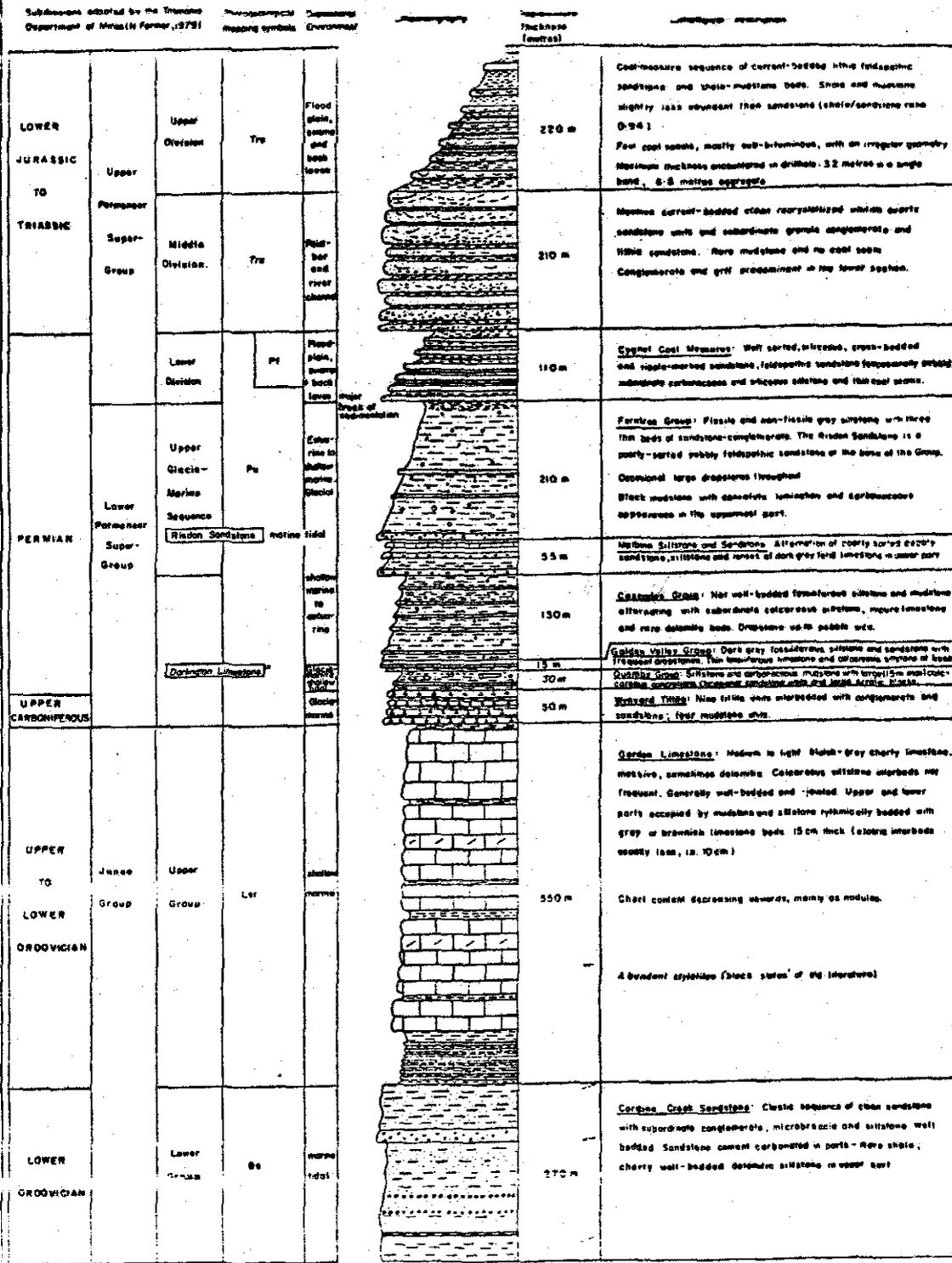
The Triassic sedimentary sequence consists of a basal fluvial sandstone unit (Triassic Sandstones) some 210m in thickness which grades upwards into a mudstone dominated unit (Triassic Coal Measures), some 220m in thickness. The major coal seams are found within this upper mudstone unit.

MPAL has recognised seven coaly intervals within these coal measures. They have been named A to G, A being the uppermost interval and G the lower most (Plate 2).

The sandstones are in general grey or light grey, fine to medium grained and quartzose or quartzo-feldspathic. Minor intervals of green, medium grained, lithic (mainly volcanic) sandstone have been recognised. The sandstones commonly occur as large (up to 15m), massive beds but do sometimes exhibit cross-bedding. Bases are commonly erosional and sometimes contain bands of pebble lags. Pebbles, fine grained sandstones and mudstones are also common, usually at the top of massive sandy units.

FIGURE 2

Summary of the stratigraphy in the Catarman - Mount La Perouse Area,
Southern Tasmania.



* Definitions within this group follow the nomenclature proposed by Pethyph, Pether and Siewer (1972)

- MUDSTONE
- COAL
- SILTSTONE
- SANDSTONE
- COARSE-GRAINED SANDSTONE
- CONGLOMERATE
- TILLITE
- DROPSTONE (isolated)
- Limestone
- DOLOMITIC LIMESTONE
- CURRENT-BEDDING

The mudstones are coloured light to dark grey, green, brown an reddish brown. They are commonly massive but can also be laminated with carbonaceous bands. Individual beds rarely exceed one metre.

Coal is commonly associated with these mudstones but is also found as minor bands in sandstone. It occurs in seams rarely greater than one metre thick and usually less than 30 centimetres. The coal is generally dull or heavy with few bright bands and contains a high inherent ash content. It is believed (Bacon, 1980) to have formed in bogs flooded by oxygenated water where the decay process would have been largely aerobic.

Smyth 1979 in Bacon 1980

Pointed out to MPAL by CAR !!!

An airfall tuff, 0.17m thick, is recognised at 7.52m in borehole CA 102F (Plate 3). It resembles a light greenish-grey claystone in hand specimen and does not produce any unusual geophysical log response.

A fluvial depositional model is suggested for the area during the Triassic. This is supported by Bacon (1980) who reached a similar conclusion for similar Triassic sediments on the Final Tier in the northeast of the basin.

Fingal

2.1.4 Jurassic Dolerite

Tholeiitic Jurassic dolerite has intruded the Permo-Triassic sediments throughout most of the Tasmania Basin. Due to the extensive dolerite outcrop, a large amount of work has been done on the dolerites (Leaman and Naqvi, 1967; Sutherland, 1967). The dolerite has been implanted as sills and feeder dykes. Only minor thermal metamorphism seems to have occurred near most margins of the sills.

A sample of dolerite from a sill at 296m in borehole CA 109 has been described in thin section as fine to medium grained and composed of pigeonite and augite phenocrysts in a groundmass of felted plagioclase lathsf with granular pyroxene (Pontifex, 1982).

2.1.5 Tertiary Basalts

Tertiary basalts outcrop on the tip of ridges in the north of the area. A quarry near the main road shows two flows in section with what appears to be a tuff in between. These flows are relatively thin (3 - 4m) and indicated that although the basalt section may be thick (74m in CA 106F) it is probalby made up of a series of minor flows. These basalts are likely to be valley fill deposits.

2.1.6 Unconsolidated Cainozoic Sediments

Unconsolidated sediments can be found blanketing most of the area. Dolerite scree covers most of the ridges, and clays and sands can be found on the flood plains and swampy areas near the coast.

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2.2 Structure

The structure of E.L. 6/79 is dominated by fault bound dolerite intruded blocks. The dolerite has intruded the Triassic sediments throughout the Tasmania Basin. Geophysical interpretation shows numerous faults (Plate 1), which could also be related to dilation effects from the intrusion of the dolerite (Leaman and Naqvi, 1967).

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3.0 EXPLORATION

Work carried out during the period November 16, 1981 to November 15, 1982 included:-

a) A 1665.8m stratigraphic drilling programme comprising twelve (12) drillholes. The location of the drillholes are shown on Plate 3 and the stratigraphic intersections tabulated in Table 1.

Results of the drilling programme were reported to the Department of Mines in Perkins (1982). However general corrections to the data given are required. Preliminary drillhole locations were shown in Plate 1 of that report. The drillhole locations have since been field checked and the correct locations are shown in Plate 3 of this report. The drillholes which were cored now have the suffix F added to denote a fully cored hole (ie. CA 102 becomes CA 102F).

Analytical samples have since been depth corrected ^{showing} using wireline geophysical logs, the corrected sample depths are shown in Table 2. An updated set of drillhole graphic logs have also been prepared, and are included as Plates 4 to 12.

b) Results of the coal analytical test programme have been received. The best programme and results are given as Appendix A. These results indicate that the coal at Catamaran is a low sulphur, orthydrous, high volatile bituminous A (ASTM) coal similar to other Tasmania Basin Triassic Coals. A summary of raw and washed coal quality and graphic from Coal Interval A in drillholes CA 106F and CA 111F are shown in Tables 3 and 4.

c) A revision of the geophysical interpretation by Dr D. Leaman (Appendix B) using the drillhole data confirms the interpretation and shows that the original depth estimates to dolerite were in most cases correct. Measurement of the drill core density and magnetic susceptibility also confirmed that the original estimates for these properties were correct.

DRILL HOLE INTERSECTION SUMMARYTABLE 1

<u>DRILLHOLE</u>	<u>TOTAL DEPTH (STATUS)</u> (m)	<u>INTERSECTION</u>	
CA101	42.00 (abandoned)	0.00 - 42.00	Tertiary Basalt
CA102F	170.00 (completed)	14.85 - 15.47	Triassic Sediments
		36.00 - 36.50	Coal C Interval
		38.50 - 51.27	Dolerite Sill
		51.84 - 52.28	Coal E "
		50.24 - 59.59	Coal
		67.52 - 67.68	Coal F "
		67.96 - 68.27	Coal F "
		74.10 - 74.78	Coal F "
		75.43 - 75.52	Coal F "
		75.87 - 76.00	Coal F "
		87.64 - 87.90	Coal G "
92.81 - 93.01	Coal G "		
CA103	29.00 (abandoned)	0.00 - 29.00	Dolerite scree
CA104	39.00 (abandoned)	0.00 - 39.00	Dolerite scree
CA105F	79.00 (completed)	0.00 - 70.55	Triassic Sediments
		60.87 - 61.31	Coal D Interval
		61.53 - 61.77	Coal D "
		62.21 - 63.42	Coal D "
		70.55 - 79.00	Dolerite
CA106F	234.16 (completed)	0.00 - 72.00	Tertiary Basalt
		72.00 - 225.00	Triassic Sediments
		131.67 - 132.71	Coal A Interval
		133.82 - 135.03	Coal A "
		150.93 - 151.44	Coal B "
		181.39 - 182.02	Coal C "
		187.20 - 187.83	Coal C "
		188.72 - 189.25	Coal C "
		189.29 - 189.49	Coal C "
		189.62 - 190.61	Coal C "
		208.21 - 208.39	Coal D "
		209.08 - 210.52	Coal D "
		210.94 - 211.37	Coal D "
		211.61 - 212.41	Coal D "
225.00 - 234.16	Dolerite		

TABLE 1 (cont.)

<u>DRILLHOLE</u>	<u>TOTAL DEPTH STATUS</u> (m)	<u>INTERSECTION</u>	
CA107	57.46 (abandoned)	0.00 - 57.46	Dolerite scree
CA108	39.43 (abandoned)	0.00 - 39.43	Dolerite scree
CA109F	300.36 (completed)	0.00 - 295.36	Triassic Sediments
		183.92 - 184.35	Coal A Interval
		256.96 - 257.90	Coal C "
		284.86 - 287.10	Coal D "
CA110	304.00 (completed)	0.00 - 304.00	Triassic Sediments
		27.71 - 30.28	Coal A Interval
		72.72 - 72.97	Coal C "
		74.19 - 74.74	Coal C "
		75.26 - 75.96	Coal C "
		87.78 - 90.69	Coal D "
		92.39 - 93.49	Coal D "
		100.00 - 117.99	Dolerite Sill
		119.00 - 119.40	Coal E Interval
		143.90 - 145.00	Coal F "
		147.50 - 148.00	Coal F "
169.90 - 170.40	Coal G "		
CA111F	171.50	0.00 - 48.35	Dolerite scree
		48.35 - 156.00	Triassic Sediments
		65.19 - 65.35	Coal A Interval
		67.93 - 68.73	Coal A "
		74.03 - 74.33	Coal A "
		75.29 - 75.50	Coal A "
		79.52 - 80.62	Coal A "
		149.89 - 150.29	Coal D "
		150.67 - 150.82	Coal D "
		153.10 - 153.30	Coal D "
		153.75 - 156.04	Coal D "
156.62 - 171.50	Dolerite		
CA112	108.40	0.00 - 37.00	Dolerite scree
		37.00 - 105.00	Triassic Sediments
		105.00 - 108.40	Dolerite

COAL ANALYTICAL PLY SUMMARY

DRILLHOLE NUMBER	PLY NO.	COAL INTERVAL	TOP (m)	BOTTOM (m)	THICKNESS (m)	CORE REC.
CA102F	1	C	14.85	15.47	0.62	100
	2	E	51.84	52.28	0.44	100
	3	E	59.24	59.59	0.35	100
	4	F	74.10	74.78	0.68	94
	5	G	87.64	87.90	0.26	100
CA105F	1	D	60.87	61.31	0.44	100
	2	D	61.31	61.53	0.22	100
	3	D	61.53	61.77	0.24	100
	4	D	61.77	62.21	0.44	100
	5	D	62.21	62.94	0.73	100
	6	D	62.94	63.42	0.48	100
CA106F	1	A	131.67	132.71	1.04	100
	2	A	132.71	132.82	0.11	100
	3	A	132.82	133.43	0.61	100
	4	A	133.43	134.00	0.57	100
	5	A	134.00	135.03	1.03	100
CA109F	1	C	256.96	257.90	0.94	100
	2	D	284.86	286.60	1.74	51
	3	D	286.60	287.10	0.50	50
CA110 (chiphole)	1	CO	14.	16.	2	
	2	A	28.	29.	1	
	3	A	29.	30.	1	
	4	A	30.	31.	1	
	5	C	73.	74.	1	
	6	C	74.	75.	1	
	7	C	75.	76.	1	
	8	C	76.	77.	1	
	9	C	77.	78.	1	
	10	D	91.	92.	1	
	11	D	92.	93.	1	
	12	D	93.	94.	1	
CA111F	1	D	149.89	150.29	0.40	60
	2	D	150.29	150.35	0.06	100
	3	D	150.35	150.82	0.47	32
	4	D	153.10	154.86	1.76	74
	5	D	154.86	156.04	1.18	91
	6	A	78.62	79.30	0.68	100
	7	A	79.30	79.52	0.22	100
	8	A	79.52	80.62	1.10	100

(CO - UNNAMED COAL INTERVAL)

CORE ANALYTICAL SUMMARY SHEET

TENEMENT: EL 6/79 CATWARAN

HOLE NO. CA 106F

COAL INTERVAL: A SEAM

Graphic Log	% Core Recov.	Raw Coal Analysis								Washed Coal Analysis (adb) Float R.D. 1.80																			
		Moist %	Ash %	V.M. %	S.E. Mj/Kg		Total Sulphur %	C.S.N.	R.D.	Yield %	Moist %	Ash %	V.M. %	S.E. Mj/Kg		Total Sulphur %	P %	Cl %	Ash Fusion Temps. (Red Atmos.)				H.G.I.	C.S.N.	Grey King	R.D.			
					a.d.b.	d.a.f.								a.d.b.	d.a.f.				Def.	Soft.	Hemi.	Flow.							
<p>131.67 PLY 1 (1.04) PLY 2 (0.11) 132.71 132.82 PLY 3 (0.61) 133.43 PLY 4 (0.57) 134.00 PLY 5 (1.03) 135.03</p>	100	5.9	55.5		11.0		0.16			62.2	5.6	41.8		16.82		0.17													
	100	4.4	77.9					2.4																					
	100	5.6	41.2		16.56		0.25			71.1	5.9	32.7		19.87		0.21													
	100	6.2	53.6		10.41		.11			42.2	7.1	27.9		21.47		0.21													
	100	7.3	22.1		23.16		0.67			93.0	7.5	18.6		24.51		0.24													
Composite Plys 3, 4, & 5								1.70		69.6	6.4	25.3	23.1	22.20		0.22	0.001			1360	1590	1600	>1600	49	4	A	1.56		

Table No. 3
Hole No. CA 106F

Comments



Marathon Petroleum Australia, Ltd.

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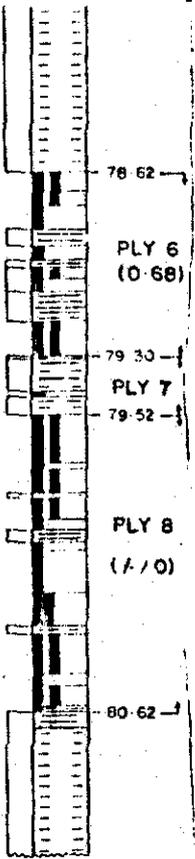
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CORE ANALYTICAL SUMMARY SHEET

TENEMENT: EL 6/79 CATAMARAN

HOLE NO. CA 111

COAL INTERVAL: A SEAM

Graphic Log	Core Recov.	Raw Coal Analysis								Washed Coal Analysis (adb) Float R.D. 1.80																		
		Moist %	Ash %	V.M. %	S.E. Mj/Kg		Total Sulphur %	C.S.N.	R.D.	Yield %	Moist %	Ash %	V.M. %	S.E. Mj/Kg		Total Sulphur %	P %	Cl %	Ash Fusion Temps. C (Red Atmos)				H.G.I.	C.S.N.	Grey King	R.D.		
					a.d.b.	d.a.f.								a.d.b.	d.a.f.				Def.	Soft.	Hemi.	Flow.						
																												
PLY 6 (0-68)	100	7.3	47.5		14.91		0.44			56.4	5.6	29.4		22.63		0.49												
PLY 7 (79-52)	100	7.3	46.4		14.36		0.69	1172		58.2	6.3	30.8		21.58		0.45												
PLY 8 (7-0)	100	6.8	31.6		21.22		0.34			79.7	5.8	21.3		25.72		0.40												
Composite Ply 6, 7 & 8								1.64		69.39	5.9	24.4		22.8	24.04		0.42	.003			1250	1440	1490	1540	73	1	B	1.51
Composite																												

Comments

Hole No. CA 111
Table No. 4



Marathon Petroleum Australia, Ltd.

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4.0 INTERPRETATION

Assessment of the results obtained from the stratigraphic drilling programme indicated that:-

(a) Triassic sediments are present on the eastern side of the Lune River Fault (Plate 1). The majority of the sediments appear to be the target uppermost coal measures.

(b) Seven distinct coaly intervals can be recognised within these coal measures. These have been named A to G, A being the highest in the sequence and G the lowest (Plate 2). Most coal seams are generally less than 1m in thickness but the A interval is 2.21m thick in CA 106F and 2.00m thick in CA 111F.

A thin (less than 20m) dolerite sill is emplaced within the coal measures between the D and E intervals. The main dolerite body which is below the coaly sequence and discussed in the Third Six Monthly Progress Report seems to have been intersected in hole CA 112.

(c) From the seam thickness considerations and the analytical data Coal Interval A appears to be the most prospective coal interval. Examples of the seam graphics and raw and washed coal quality from Coal Interval A from CA 106F and CA 111F are shown in Tables 3 and 4.

(d) An area in the north of the EL just south of the old Ida Bay Mine contains an inferred coal resource. Further drilling is required to estimate the size of the resource. A cross-section through the Inferred resource is shown in Plate 13.

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5.0 FUTURE WORK

Work to be undertaken in the next year includes:-

- (a) A 1500m chip and core drilling programme to trace Coal Interval A in the northern part of the area, and determine the size of the inferred coal resource, and to drill any untested areas.
- (b) preparation of a comprehensive geological evaluation of E.L. 6/79.

6.0 REFERENCES

- Bacon, C.A., 1980: Sedimentology of the Freshwater Sequences, Upper Permian Supergroup on Fingal Tier. Tasmanian Department of Mines. Dep. 1980/21
- Leaman, D.E. and Naqvi, I.H., 1967: Geology and Geophysics of the Cygnet District. Tasmanian Department of Mines Dull. 49
- Perkins, N.T., 1982: Fourth Six Monthly Report on Exploration Licence 6/79 (Catamaran). Unpublished Report
- Pontifex and Associates, 1982: Mineralogy Report 3752, Exploration of Thin Sections from CA 109, Catamaran. Report to MPAL (Unpublished)
- Spry, A.H. and Banks, M.R., 1962: The Geology of Tasmania. Journal Geological Society of Australia, 9
- Sutherland, F.L., 1967: Considerations on the Emplacement of Jurassic Dolerites Tasmania. Papers and Proc. Royal Society of Tasmania, 100

APPENDIX A**ANALYTICAL TEST PROGRAMME
AND RESULTS**

FLOAT/SINK TESTWORK CA 102F

"	"	CA 105F
"	"	CA 106F
"	"	CA 109F
"	"	CA 110
"	"	CA 111F

DETAILED ANALYTICAL
TESTWORK, COMPOSITES CA 106F & CA 111F

ANALYTICAL TEST PROGRAMME

Coal analyses undertaken on bore cores from E.L. 6/79 Catamaran, follow a scheme appropriate for the assessment of a steaming coal resource.

Bore core was sampled in the field, with reference to wireline geophysical logs.

The coal analyses were undertaken by the Australian Coal Industry Research Laboratory (ACIRL) mostly at their Ipswich Laboratory, to the relevant Australian Standards.

The analytical scheme followed on the bore cores and the analytical results included in the Appendices to this report are tabulated below.

E.L. 6/79 CATAMARAN ANALYTICAL TESTWORK

<u>Borehole</u>	<u>Core Size</u>	<u>Stage 1</u>				<u>Stage 2</u>
CA 102F	HQ	"Ply by Ply" float/sink				
105F	HQ	"	"	"	"	
106F	HQ	"	"	"	"	Detailed Washed Coal Composite Analysis
109F	HQ	"	"	"	"	
111F	HQ	"	"	"	"	Detailed Washed Coal Composite Analysis
110	chip samples	"	"	"	"	

Slim core ply samples for "ply by ply" float/sink testwork were analysed in the following manner:-

Coal Plys

- Stage 1
1. Weigh
 2. Crush to -11.2mm, retain a reserve of all sample in excess of that required for step 3.
 3. Float/sink at 1.40, 1.60 and 1.80 relative densities*
 4. Analyse each R.D. fraction for mass, ash, moisture, specific energy and total sulphur.
 5. Determine relative density of the S1.80 fraction.

* These R.D.'s were used in holes CA 102 and CA 105 but due to poor yields, 1.40 was dropped and 2.00 was added for the other three holes.

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Stage 2 (performed on CA 106F and CA 111F only)

Proximate Analysis

Specific Energy

Forms of sulphur

Phosphorous

Ash Analysis - major

- trace

Ultimate Analysis

Relative Density

Ash Fusion Properties

Hardgrove Grindability Index

CSN

Vitrinite Reflectance

Maceral Analysis

Gray-King Coke Type

Stone Plys

1. Weigh
2. Prepare - retaining a reserve sample - 3.18mm
3. Analyse for ash, moisture and relative density.

Choice of ply composites for detailed Stage II analyses was made following assessment of the Stage 1 analytical results.

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Report No. 05/4623

Date 25th May, 1982

ANALYSIS AND TESTING REPORT



AUSTRALIAN COAL INDUSTRY RESEARCH LABORATORIES LTD.

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2113

Authorisation Letter, J. McLean-Hodgson, 23.4.82

Origin MARATHON PETROLEUM AUSTRALIA LTD

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11th Floor, AMP Place, 10 Eagle Street,
BRISBANE. Q. 4000

Copy to Mr. R. Kempnich

SAMPLES

The following slim core intersections from Hole No. CA102 are analysed in this report.

<u>Sample</u>	<u>Interval</u>	<u>Description</u>	<u>Mass (g)</u>
1	0.62	Marginal	2323
2	0.44	Coal	2632
3	0.35	Coal	1783
4	0.77	Coal	2647
5	0.31	Coal	1875

METHOD OF TEST

The samples were analysed according to instructions received by letter, J. McLean-Hodgson, 23.4.82.

ANALYSIS AND TESTING REPORT



AUSTRALIAN COAL INDUSTRY
RESEARCH LABORATORIES LTD.

P.O. Box 83,
North Ryde, N.S.W.,
2113

Authorisation Letter, J. McLean-Hodgson, 23.4.82
Origin MARATHON PETROLEUM AUSTRALIA LTD
Report to Mr. J. McLean-Hodgson, Exploration Supervisor
Coal,

Hole No. CA102

Sample No. 1

<u>Relative Density</u> <u>Fraction</u>	<u>Mass %</u>	<u>Air-dried</u> <u>Moisture %</u>	<u>Fractional</u>		<u>Specific Energy</u> <u>MJ/kg</u>
			<u>Ash %</u>	<u>Total</u> <u>Sulphur %</u>	
F1.60	3.2	6.8	29.1	0.54	21.090
1.60 - 1.80	31.7	6.9	42.6	0.30	15.350
S1.80	65.1	6.1	65.9	0.17	6.160

<u>Relative Density</u> <u>Fraction</u>	<u>Mass %</u>	<u>Air-dried</u> <u>Moisture %</u>	<u>Cumulative Floats</u>		<u>Specific Energy</u> <u>MJ/kg</u>
			<u>Ash %</u>	<u>Total</u> <u>Sulphur %</u>	
F1.60	3.2	6.8	29.1	0.54	21.090
F1.80	34.9	6.9	41.4	0.32	15.880
Raw Coal	100.0	6.4	57.3	0.22	9.550

Relative Density of S1.80 = 2.10

ANALYSIS AND TESTING REPORT



AUSTRALIAN COAL INDUSTRY
RESEARCH LABORATORIES LTD.

P.O. Box 83,
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Authorisation Letter, J. McLean-Hodgson, 23.4.82
Origin MARATHON PETROLEUM AUSTRALIA LTD
Report to Mr. J. McLean-Hodgson, Exploration Supervisor
Coal,

Hole No. CA102

Sample No. 2

<u>Relative Density</u>		<u>Fractional</u>				
<u>Fraction</u>	<u>Mass %</u>	<u>Air-dried Moisture %</u>	<u>Ash %</u>	<u>Total Sulphur %</u>	<u>Specific Energy MJ/kg</u>	
F1.60	4.8	5.7	26.1	0.46	22.680	
1.60 - 1.80	5.6	7.0	43.3	0.38	15.340	
S1.80	89.6	8.9	71.2	0.12	3.590	

<u>Relative Density</u>		<u>Cumulative Floats</u>				
<u>Fraction</u>	<u>Mass %</u>	<u>Air-dried Moisture %</u>	<u>Ash %</u>	<u>Total Sulphur %</u>	<u>Specific Energy MJ/kg</u>	
F1.60	4.8	5.7	26.1	0.46	22.680	
F1.80	10.4	6.4	35.4	0.20	18.730	
Raw Coal	100.0	8.6	67.5	0.15	5.160	

Relative Density of S1.80 = 2.13

028



ANALYSIS AND TESTING REPORT

Report No. 05/4623

Date 25th May, 1982

AUSTRALIAN COAL INDUSTRY RESEARCH LABORATORIES LTD.

P.O. Box 83,
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2113

Authorisation Letter, J. McLean-Hodgson, 23.4.82

Origin MARATHON PETROLEUM AUSTRALIA LTD

Report to Mr. J. McLean-Hodgson, Exploration Supervisor
Coal,

Hole No. CA102

Sample No. 3

<u>Relative Density</u> Fraction	<u>Mass %</u>	<u>Fractional</u>		<u>Total Sulphur %</u>	<u>Specific Energy MJ/kg</u>
		<u>Air-dried Moisture %</u>	<u>Ash %</u>		
F1.40	3.4	4.2	13.8	0.61	27.780
1.40 - 1.60	11.9	5.6	24.2	0.57	22.860
1.60 - 1.80	16.0	5.3	38.0	0.41	15.970
S1.80	68.7	7.5	75.7	0.10	3.750

<u>Relative Density</u> Fraction	<u>Mass %</u>	<u>Cumulative Floats</u>			<u>Specific Energy MJ/kg</u>
		<u>Air-dried Moisture %</u>	<u>Ash %</u>	<u>Total Sulphur %</u>	
F1.40	3.4	4.2	13.8	0.61	27.780
F1.60	15.3	5.3	21.9	0.58	23.950
F1.80	31.3	5.3	30.1	0.49	19.870
Raw Coal	100.0	6.8	61.4	0.22	8.800

Relative Density of S1.80 = 2.23



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ANALYSIS AND TESTING REPORT

Authorisation Letter, J. McLean-Hodgson, 23.4.82
Origin MARATHON PETROLEUM AUSTRALIA LTD
Report to Mr. J. McLean-Hodgson, Exploration Supervisor
Coal.

Hole No. CA102

Sample No. 4

<u>Relative Density</u> Fraction	<u>Mass %</u>	<u>Fractional</u>			<u>Specific Energy</u> MJ/kg
		<u>Air-dried</u> <u>Moisture %</u>	<u>Ash %</u>	<u>Total</u> <u>Sulphur %</u>	
F1.40	3.4	4.0	15.8	0.61	27.700
1.40 - 1.60	16.5	3.4	26.7	0.49	23.950
1.60 - 1.80	43.7	5.0	44.5	0.27	16.880
S1.80	36.4	5.5	67.4	0.14	7.840

<u>Relative Density</u> Fraction	<u>Mass %</u>	<u>Cumulative Floats</u>			<u>Specific Energy</u> MJ/kg
		<u>Air-dried</u> <u>Moisture %</u>	<u>Ash %</u>	<u>Total</u> <u>Sulphur %</u>	
F1.40	3.4	4.0	15.8	0.61	27.700
F1.60	19.9	3.5	24.8	0.51	24.590
F1.80	63.6	4.5	38.3	0.35	19.290
Raw Coal	100.0	4.9	48.9	0.27	15.120

Relative Density of S1.80 = 2.06

ANALYSIS AND TESTING REPORT

Report No. 05/4623

Date 25th May, 1982



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Authorisation Letter, J. McLean-Hodgson, 23.4.82
Origin MARATHON PETROLEUM AUSTRALIA LTD
Report to Mr. J. McLean-Hodgson, Exploration Supervisor
Coal,

Hole No. CA102Sample No. 5Relative DensityFractional

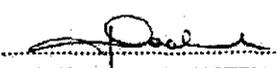
<u>Fraction</u>	<u>Mass %</u>	<u>Air-dried Moisture %</u>	<u>Ash %</u>	<u>Total Sulphur %</u>	<u>Specific Energy MJ/kg</u>
F1.60	3.4	4.4	19.3	0.62	26.520
1.60 - 1.80	5.3	8.0	45.6	0.29	15.260
S1.80	91.3	9.4	72.5	0.08	3.270

Relative DensityCumulative Floats

<u>Fraction</u>	<u>Mass %</u>	<u>Air-dried Moisture %</u>	<u>Ash %</u>	<u>Total Sulphur %</u>	<u>Specific Energy MJ/kg</u>
F1.60	3.4	4.4	19.3	0.62	26.520
F1.80	8.7	6.6	35.3	0.42	19.660
Raw Coal	100.0	9.2	69.3	0.11	4.700

Relative Density of S1.80 = 2.16

Date 25th May, 1982


 AUSTRALIAN COAL INDUSTRY RESEARCH LABORATORIES LTD.

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690031

031



ANALYSIS AND TESTING REPORT

Report No. 05/4624

Date 26th May, 1982

AUSTRALIAN COAL INDUSTRY RESEARCH LABORATORIES LTD.

P.O. Box 83,
North Ryde, N.S.W.,
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Authorisation Letter, J. McLean-Hodgson, 23.4.82

Origin MARATHON PETROLEUM AUSTRALIA LTD

Report to Mr. J. McLean-Hodgson, Exploration Supervisor
Coal,
11th Floor, AMP Place, 10 Eagle Street,
BRISBANE. Q. 4000

Copy to Mr. R. Kempnich

SAMPLES

The following slim core intersections from Hole No. CA105 are analysed in this report.

<u>Sample</u>	<u>Interval</u>	<u>Description</u>	<u>Mass (g)</u>
1	0.44	Coal	2144
2	0.22	Non-Coal	743
3	0.24	Coal	1006
4	0.44	Non-Coal	2146
5	0.73	Coal	2943
6	0.48	Coal	1770

METHOD OF TEST

The samples were analysed according to instructions received by letter, J. McLean-Hodgson, 23.4.82.

690032

ANALYSIS AND TESTING REPORT

Date 26th May, 1982



AUSTRALIAN COAL INDUSTRY
RESEARCH LABORATORIES LTD.

P.O. Box 83,
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Authorisation Letter, J. McLean-Hodgson, 23.4.82
Origin MARATHON PETROLEUM AUSTRALIA LTD
Report to Mr. J. McLean-Hodgson, Exploration Supervisor
Coal,

Hole No. CA105Sample No. 1Relative DensityFractional

<u>Fraction</u>	<u>Mass %</u>	<u>Air-dried Moisture %</u>	<u>Ash %</u>	<u>Total Sulphur %</u>	<u>Specific Energy MJ/kg</u>
F1.40	5.8	8.5	13.6	0.47	26.350
1.40 - 1.60	18.1	7.3	26.7	0.40	21.770
1.60 - 1.80	31.9	7.1	43.6	0.27	15.620
S1.80	44.2	7.0	63.9	0.24	7.650

Relative DensityCumulative Floats

<u>Fraction</u>	<u>Mass %</u>	<u>Air-dried Moisture %</u>	<u>Ash %</u>	<u>Total Sulphur %</u>	<u>Specific Energy MJ/kg</u>
F1.40	5.8	8.5	13.6	0.47	26.350
F1.60	23.9	7.6	23.5	0.42	22.880
F1.80	55.8	7.3	35.0	0.33	18.730
Raw Coal	100.0	7.2	47.8	0.29	13.830

Relative Density of S1.80 = 2.05

690033

ANALYSIS AND TESTING REPORT



AUSTRALIAN COAL INDUSTRY
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Authorisation Letter, J. McLean-Hodgson, 23.4.82
Origin MARATHON PETROLEUM AUSTRALIA LTD
Report to Mr. J. McLean-Hodgson, Exploration Supervisor
Coal,

Hole No. CA105

Sample No. 3

<u>Relative Density</u>		<u>Fractional</u>				<u>Specific Energy MJ/kg</u>
<u>Fraction</u>	<u>Mass %</u>	<u>Air-dried Moisture %</u>	<u>Ash %</u>	<u>Total Sulphur %</u>		
F1.60	13.0	6.5	27.1	0.41	22.150	
1.60 - 1.80	22.5	7.0	44.7	0.25	15.230	
S1.80	64.5	8.6	65.8	0.10	6.240	

<u>Relative Density</u>		<u>Cumulative Floats</u>			<u>Specific Energy MJ/kg</u>
<u>Fraction</u>	<u>Mass %</u>	<u>Air-dried Moisture %</u>	<u>Ash %</u>	<u>Total Sulphur %</u>	
F1.60	13.0	6.5	27.1	0.41	22.150
F1.80	35.5	6.8	38.3	0.31	17.760
Raw Coal	100.0	8.0	56.0	0.17	10.330

Relative Density of S1.80 = 2.07

690034



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ANALYSIS AND TESTING REPORT

Report No. 05/4624

Date 26th May, 1982

Authorisation Letter, J. McLean-Hodgson, 23.4.82

Origin MARATHON PETROLEUM AUSTRALIA LTD

Report to Mr. J. McLean-Hodgson, Exploration Supervisor
Coal,

Hole No. CA105

Sample No. 5

<u>Fraction</u>	<u>Mass %</u>	<u>Fractional</u>			<u>Specific Energy MJ/kg</u>
		<u>Air-dried Moisture %</u>	<u>Ash %</u>	<u>Total Sulphur %</u>	
F1.40	8.9	8.0	16.7	0.49	25.160
1.40 - 1.60	11.0	7.1	27.8	0.47	21.210
1.60 - 1.80	8.7	9.0	44.4	0.47	14.390
S1.80	71.4	7.0	74.5	0.11	3.790

<u>Fraction</u>	<u>Mass %</u>	<u>Cumulative Floats</u>			<u>Specific Energy MJ/kg</u>
		<u>Air-dried Moisture %</u>	<u>Ash %</u>	<u>Total Sulphur %</u>	
F1.40	8.9	8.0	16.7	0.49	25.160
F1.60	19.9	7.5	22.8	0.48	22.980
F1.80	28.6	8.0	29.4	0.48	20.360
Raw Coal	100.0	7.3	61.6	0.21	8.530

Relative Density of S1.80 = 2.24

690035

035



ANALYSIS AND TESTING REPORT

Report No. 05/4624

Date 26th May, 1982

AUSTRALIAN COAL INDUSTRY RESEARCH LABORATORIES LTD.

P.O. Box 83,
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Authorisation Letter, J. McLean-Hodgson, 23.4.82
Origin MARATHON PETROLEUM AUSTRALIA LTD
Report to Mr. J. McLean-Hodgson, Exploration Supervisor
Coal,

Hole No. CA105 Sample No. 6

<u>Relative Density</u> Fraction	<u>Mass %</u>	<u>Fractional</u>			<u>Specific Energy</u> MJ/kg
		<u>Air-dried</u> <u>Moisture %</u>	<u>Ash %</u>	<u>Total</u> <u>Sulphur %</u>	
F1.40	17.2	7.2	13.9	0.55	26.190
1.40 - 1.60	51.8	9.0	25.8	0.45	21.190
1.60 - 1.80	13.1	8.6	42.8	0.36	14.840
S1.80	17.9	7.9	66.7	0.27	6.420

<u>Relative Density</u> Fraction	<u>Mass %</u>	<u>Cumulative Floats</u>			<u>Specific Energy</u> MJ/kg
		<u>Air-dried</u> <u>Moisture %</u>	<u>Ash %</u>	<u>Total</u> <u>Sulphur %</u>	
F1.40	17.2	7.2	13.9	0.55	26.190
F1.60	69.0	8.6	22.8	0.47	22.440
F1.80	82.1	8.6	26.0	0.46	21.220
Raw Coal	100.0	8.4	33.3	0.42	18.570

Relative Density of S1.80 = 2.07

690036

ANALYSIS AND TESTING REPORT

Date 26th May, 1982



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P.O. Box 83,
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2113

Authorisation Letter, J. McLean-Hodgson, 23.4.82
Origin MARATHON PETROLEUM AUSTRALIA LTD
Report to Mr. J. McLean-Hodgson, Exploration Supervisor
Coal,

Hole No. CA105Stone Plies

<u>Sample</u>	<u>Air-dried Moisture %</u>	<u>Ash %</u>	<u>Relative Density</u>
2	8.7	75.6	2.23
4	14.0	78.9	2.22

Date 26th May, 1982



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[Signature]
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IPSWICH LABORATORY

690037

ANALYSIS AND TESTING REPORT



AUSTRALIAN COAL INDUSTRY RESEARCH LABORATORIES LTD.

P.O. Box 83,
North Ryde, N.S.W.,
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Authorisation Letter, J. McLean-Hodgson, 23.4.82
Origin MARATHON PETROLEUM AUSTRALIA PTY LTD
Report to Mr J. McLean-Hodgson,
11th Floor, AMP Place, 10 Eagle Street,
BRISBANE Q. 4000

Copy to: Mr R. Kempnich

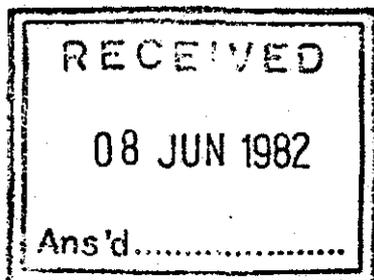
SAMPLES

The following slim core intersections from Hole No. CA106 are analysed in this report.

<u>Ply No.</u>	<u>Interval (m)</u>	<u>Description</u>	<u>Mass (g)</u>
1	1.06	Coal	4690
2	0.11	Non-Coal	629
3	0.68	Coal	3380
4	0.54	Marginal	3090
5	1.04	Coal	3410

METHOD OF TEST

The samples were analysed according to instructions received by letters, J. McLean-Hodgson, 23.4.82 and 21.5.82.



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038



AUSTRALIAN COAL INDUSTRY
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P.O. Box 83,
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ANALYSIS AND TESTING REPORT

Report No. 05/4625

Date 7th June, 1982

Authorisation Letter, J. McLean-Hodgson, 23.4.82

Origin MARATHON PETROLEUM AUSTRALIA PTY LTD

Report to Mr J. McLean-Hodgson,

Hole No. CA106

Fly 1

Fractional

Relative Density Fraction	Mass %	Air-dried Moisture %	Ash %	Total Sulphur %	Specific Energy MJ/kg
F1.60	13.7	7.1	27.4	0.23	21.960
1.60 - 1.80	30.5	5.3	41.1	0.17	17.160
1.80 - 2.00	18.0	4.8	54.0	0.13	12.340
S2.00	37.8	6.4	78.0	0.14	1.430

Cumulative Floats

Relative Density Fraction	Mass %	Air-dried Moisture %	Ash %	Total Sulphur %	Specific Energy MJ/kg
F1.60	13.7	7.1	27.4	0.23	21.960
F1.80	44.2	5.9	36.9	0.19	18.650
F2.00	62.2	5.6	41.8	0.17	16.820
Raw Coal	100.0	5.9	55.5	0.16	11.000

Relative Density of S2.00 = 2.30

ANALYSIS AND TESTING REPORT



AUSTRALIAN COAL INDUSTRY
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P.O. Box 83,
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Authorisation Letter, J. McLean-Hodgson, 23.4.82

Origin MARATHON PETROLEUM AUSTRALIA PTY LTD

Report to Mr J. McLean-Hodgson,

Hole No. CA1D6

Ply 3

Relative Density Fraction	Mass %	Fractional			Specific Energy MJ/kg
		Air-dried Moisture %	Ash %	Total Sulphur %	
F1.60	35.4	6.6	25.0	0.23	22.630
1.60 - 1.80	35.7	5.3	40.3	0.19	17.130
1.80 - 2.00	17.7	4.9	55.9	0.18	10.830
S2.00	11.2	4.4	72.1	0.61	4.570

Relative Density Fraction	Mass %	Cumulative Floats			Specific Energy MJ/kg
		Air-dried Moisture %	Ash %	Total Sulphur %	
F1.60	35.4	6.6	25.0	0.23	22.630
F1.80	71.1	5.9	32.7	0.21	19.870
F2.00	88.8	5.7	37.3	0.20	18.070
Raw Coal	100.0	5.6	41.2	0.25	16.560

Relative Density of S2.00 = 2.23

040



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ANALYSIS AND TESTING REPORT

Report No. 05/4625

Date 7th June, 1982

Authorisation Letter, J. McLean-Hodgson, 23.4.82

Origin MARATHON PETROLEUM AUSTRALIA PTY LTD

Report to Mr J. McLean-Hodgson.

Hole No. CA106	Ply 4	Fractional			Total Sulphur %	Specific Energy MJ/kg	
		Relative Density Fraction	Mass %	Air-dried Moisture %			Ash %
		F1.60	31.9	7.7	22.9	0.22	23.290
		1.60 - 1.80	10.3	5.3	43.5	0.17	15.830
		1.80 - 2.00	9.0	6.6	56.9	0.13	9.900
		S2.00	48.8	5.4	75.1	0.03	0.950

Relative Density Fraction	Mass %	Cumulative Floats			Total Sulphur %	Specific Energy MJ/kg
		Air-dried Moisture %	Ash %			
F1.60	31.9	7.7	22.9	0.22	23.290	
F1.80	42.2	7.1	27.9	0.21	21.470	
F2.00	51.2	7.0	33.0	0.19	19.440	
Raw Coal	100.0	6.2	53.6	0.11	10.410	

Relative Density of S2.00 = 2.38

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AUSTRALIAN COAL INDUSTRY
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ANALYSIS AND TESTING REPORT

Report No. 05/4625

Date 7th June, 1982

Authorisation Letter, J. McLean-Hodgson, 23.4.82

Origin MARATHON PETROLEUM AUSTRALIA PTY LTD

Report to Mr J. McLean-Hodgson.

Hole No. CA106Ply 5

<u>Relative Density Fraction</u>	<u>Mass %</u>	<u>Fractional</u>		<u>Total Sulphur %</u>	<u>Specific Energy MJ/kg</u>
		<u>Air-dried Moisture %</u>	<u>Ash %</u>		
F1.60	87.3	7.6	17.4	0.24	24.920
1.60 - 1.80	5.7	6.1	36.9	0.22	18.180
1.80 - 2.00	1.4	6.4	54.2	0.71	10.310
S2.00	5.6	4.1	71.9	7.80	3.930

<u>Relative Density Fraction</u>	<u>Mass %</u>	<u>Cumulative Floats</u>			<u>Specific Energy MJ/kg</u>
		<u>Air-dried Moisture %</u>	<u>Ash %</u>	<u>Total Sulphur %</u>	
F1.60	87.3	7.6	17.4	0.24	24.920
F1.80	93.0	7.5	18.6	0.24	24.510
F2.00	94.4	7.5	19.1	0.25	24.300
Raw Coal	100.0	7.3	22.1	0.67	23.160

Relative Density of S2.00 = 2.48

ANALYSIS AND TESTING REPORT

042



AUSTRALIAN COAL INDUSTRY
RESEARCH LABORATORIES LTD.

P.O. Box 83,
North Ryde, N.S.W.,
2113

Authorisation Letter, J. McLean-Hodgson, 23.4.82

Origin MARATHON PETROLEUM AUSTRALIA PTY LTD

Report to Mr J. McLean-Hodgson,

Hole No. CA106

Stone Ply

<u>Ply No.</u>	<u>Air-dried Moisture %</u>	<u>Ash %</u>	<u>Relative Density</u>
2	4.4	77.9	2.40

Date 7th June, 1982

[Signature]
.....
AUSTRALIAN COAL INDUSTRY RESEARCH LABORATORIES LTD.

IPSWICH LABORATORY



THIS LABORATORY IS REGISTERED BY THE NATIONAL
ASSOCIATION OF TESTING AUTHORITIES, AUSTRALIA.
THE TESTS REPORTED HEREIN HAVE BEEN PERFORMED
IN ACCORDANCE WITH ITS TERMS OF REGISTRATION.

ANALYSIS AND TESTING REPORT



AUSTRALIAN COAL INDUSTRY RESEARCH LABORATORIES LTD.

P.O. Box 83,
North Ryde, N.S.W.,
2113

Authorisation Letter, J. McLean-Hodgson, 23.4.82
Origin MARATHON PETROLEUM AUSTRALIA, LTD
Report to Mr J. McLean-Hodgson,
G.P.O. Box 687,
BRISBANE Q. 4001

Copy to: Mr R. Kempnich

SAMPLES

The following slim core intersections from Hole No. CA109 are analysed in this report.

<u>Ply No.</u>	<u>Interval (m)</u>	<u>Description</u>	<u>Mass (g)</u>
1	0.96	Coal	4250
2	0.70	Coal	3640
3	0.25	Coal	877

METHOD OF TEST

The samples were analysed according to instructions received by letters, J. McLean-Hodgson, 23.4.82 and 21.5.82.

RECEIVED
21 JUN 1982
Ans'd.....

044.



ANALYSIS AND TESTING REPORT

Report No. 05/4683

Date 17th June, 1982

AUSTRALIAN COAL INDUSTRY
RESEARCH LABORATORIES LTD.

P.O. Box 83,
North Ryde, N.S.W.,
2113

Authorisation Letter, J. McLean-Hodgson, 23.4.82

Origin MARATHON PETROLEUM AUSTRALIA, LTD

Report to Mr J. McLean-Hodgson,

Hole No. CA109

Ply 1

Fractional

<u>Relative Density Fraction</u>	<u>Mass %</u>	<u>Air-dried Moisture %</u>	<u>Ash %</u>	<u>Total Sulphur %</u>	<u>Specific Energy MJ/kg</u>
F1.60	45.6	4.8	23.3	0.38	24.570
1.60 - 1.80	28.5	5.1	37.4	0.29	19.030
1.80 - 2.00	8.0	5.7	52.6	0.17	12.940
S2.00	17.9	6.2	77.3	0.06	2.150

Cumulative Floats

<u>Relative Density Fraction</u>	<u>Mass %</u>	<u>Air-dried Moisture %</u>	<u>Ash %</u>	<u>Total Sulphur %</u>	<u>Specific Energy MJ/kg</u>
F1.60	45.6	4.8	23.3	0.38	24.570
F1.80	74.1	4.9	28.7	0.35	22.440
F2.00	82.1	5.0	31.0	0.33	21.510
Raw Coal	100.0	5.2	39.3	0.28	18.050

Relative Density of S2.00 = 2.33

045



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ANALYSIS AND TESTING REPORT

Report No. 05/4683

Date 17th June, 1982

Authorisation Letter, J. McLean-Hodgson, 23.4.82

Origin MARATHON PETROLEUM AUSTRALIA, LTD

Report to Mr J. McLean-Hodgson,

Hole No. CA109

Ply 2

Fractional

<u>Relative Density Fraction</u>	<u>Mass %</u>	<u>Air-dried Moisture %</u>	<u>Ash %</u>	<u>Total Sulphur %</u>	<u>Specific Energy MJ/kg</u>
F1.60	2.3	6.6	14.2	1.34	26.240
1.60 - 1.80	5.9	7.9	27.6	0.90	20.510
1.80 - 2.00	5.9	8.1	41.6	0.29	15.090
S2.00	85.9	5.4	86.2	0.03	1.360

Cumulative Floats

<u>Relative Density Fraction</u>	<u>Mass %</u>	<u>Air-dried Moisture %</u>	<u>Ash %</u>	<u>Total Sulphur %</u>	<u>Specific Energy MJ/kg</u>
F1.60	2.3	6.6	14.2	1.34	26.240
F1.80	8.2	7.5	23.8	1.02	22.120
F2.00	14.1	7.8	31.3	0.72	19.180
Raw Coal	100.0	5.7	78.5	0.13	3.870

Relative Density of S2.00 = 2.51

ANALYSIS AND TESTING REPORT

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Origin MARATHON PETROLEUM AUSTRALIA, LTD

Report to Mr J. McLean-Hodgson.

Hole No. CA109

Fly 3

Fractional

Relative Density Fraction	Mass %	Air-dried Moisture %	Ash %	Total Sulphur %	Specific Energy MJ/kg
F1.60	2.4	5.7	11.9	0.28	27.610
1.60 - 1.80	7.5	7.3	25.3	0.86	21.280
1.80 - 1.90	16.7	9.1	40.2	0.59	15.420
S2.00	73.4	8.8	66.4	0.05	5.560

Cumulative Floats

Relative Density Fraction	Mass %	Air-dried Moisture %	Ash %	Total Sulphur %	Specific Energy MJ/kg
F1.60	2.4	5.7	11.9	0.28	27.610
F1.80	9.9	6.9	22.1	0.72	22.820
F2.00	26.6	8.3	33.4	0.64	18.170
Raw Coal	100.0	8.7	57.6	0.21	8.920

Relative Density of S2.00 = 2.25

Date 17th June, 1982



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AUSTRALIAN COAL INDUSTRY RESEARCH LABORATORIES LTD.

IPSWICH LABORATORY

690047

ANALYSIS AND TESTING REPORT

Report No. 05/4626

Date 9th June, 1982



AUSTRALIAN COAL INDUSTRY
RESEARCH LABORATORIES LTD.

P.O. Box 83,
North Ryde, N.S.W.,
2113

Copy to Mr. R. Kempnich

Authorisation Letter, J. McLean-Hodgson, 13.5.82
Origin MARATHON PETROLEUM AUSTRALIA LTD
Report to Mr. J. McLean-Hodgson, Exploration Supervisor -
Coal
AMP Place, 10 Eagle Street,
BRISBANE. Q. 4000

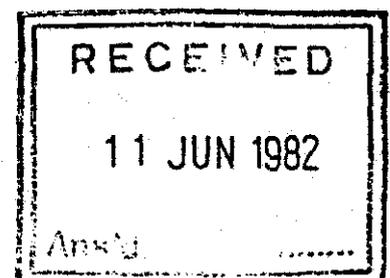
SAMPLES

The following chip samples from Hole No. CA110 are analysed
in this report.

<u>Ply No.</u>	<u>Interval (m)</u>	<u>Description</u>	<u>Mass (g)</u>
1	2	Coal	340
2	1	Coal	1595
3	1	Coal	2137
4	1	Coal	1735
5	1	Coal	917
6	1	Coal	960
7	1	Coal	481
8	1	Coal	370
9	1	Coal	1330
10	1	Coal	1128
11	1	Coal	398
12	1	Coal	363

METHOD OF TEST

The chip samples received were analysed according to
instructions received by letters, J. McLean-Hodgson, 23.4.82, 13.5.82
and 21.5.82.



048



ANALYSIS AND TESTING REPORT

Report No.

Date 9th June, 1982

AUSTRALIAN COAL INDUSTRY
RESEARCH LABORATORIES LTD.

P.O. Box 83,
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2113

Authorisation Letter, J. McLean-Hodgson, 13.5.82
Origin MARATHON PETROLEUM AUSTRALIA LTD
Report to Mr. J. McLean-Hodgson, Exploration Supervisor -
Coal,

Hole No. CA110Flv 1

<u>Relative Density Fraction</u>	<u>Mass %</u>	<u>Fractional</u>			<u>Specific Energy MJ/kg</u>
		<u>Air-dried Moisture %</u>	<u>Ash %</u>	<u>Total Sulphur %</u>	
F1.60	48.8	6.9	17.2	0.31	25.130
1.60 - 1.80	19.1	4.5	38.6	0.17	17.430
1.80 - 2.00	5.2	3.9	54.0	*	11.420
S2.00	26.9	3.7	78.9	0.51	2.100

<u>Relative Density Fraction</u>	<u>Mass %</u>	<u>Cumulative Floats</u>			<u>Specific Energy MJ/kg</u>
		<u>Air-dried Moisture %</u>	<u>Ash %</u>	<u>Total Sulphur %</u>	
F1.60	48.8	6.9	17.2	0.31	25.130
F1.80	67.9	6.2	23.2	0.27	22.960
F2.00	73.1	6.1	25.4	-	22.140
Raw Coal	100.0	5.4	39.8	-	16.750

Relative Density of S2.00 = 2.37

* Insufficient sample

690049

049



AUSTRALIAN COAL INDUSTRY
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ANALYSIS AND TESTING REPORT

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Date 9th June, 1982

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Report to Mr. J. McLean-Hodgson, Exploration Supervisor -
Coal

Hole No. CA110Ply 2

<u>Relative Density Fraction</u>	<u>Mass %</u>	<u>Fractional</u>			<u>Specific Energy MJ/kg</u>
		<u>Air-dried Moisture %</u>	<u>Ash %</u>	<u>Total Sulphur %</u>	
F1.60	16.9	6.7	21.0	0.55	23.930
1.60 - 1.80	44.1	5.3	40.1	0.28	17.210
1.80 - 2.00	16.5	4.8	53.5	0.27	12.320
S2.00	22.5	2.7	79.2	4.50	2.800

<u>Relative Density Fraction</u>	<u>Mass %</u>	<u>Cumulative Floats</u>			<u>Specific Energy MJ/kg</u>
		<u>Air-dried Moisture %</u>	<u>Ash %</u>	<u>Total Sulphur %</u>	
F1.60	16.9	6.7	21.0	0.55	23.930
F1.80	61.0	5.7	34.8	0.36	19.070
F2.00	77.5	5.5	38.8	0.34	17.630
Raw Coal	100.0	4.9	47.9	1.27	14.300

Relative Density of S2.00 = 2.50

690050

050



ANALYSIS AND TESTING REPORT

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Authorisation Letter, J. McLean-Hodgson, 13.5.82
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Report to Mr. J. McLean-Hodgson, Exploration Supervisor
Coal

Hole No. CA110

Ply 3

<u>Relative Density Fraction</u>	<u>Mass %</u>	<u>Fractional</u>			<u>Specific Energy MJ/kg</u>
		<u>Air-dried Moisture %</u>	<u>Ash %</u>	<u>Total Sulphur %</u>	
F1.60	57.5	9.4	17.1	0.48	24.430
1.60 - 1.80	10.7	6.9	38.8	0.41	17.270
1.80 - 2.00	2.5	4.1	54.8	0.55	11.060
S2.00	29.3	4.4	84.4	0.93	0.620

<u>Relative Density Fraction</u>	<u>Mass %</u>	<u>Cumulative Floats</u>			<u>Specific Energy MJ/kg</u>
		<u>Air-dried Moisture %</u>	<u>Ash %</u>	<u>Total Sulphur %</u>	
F1.60	57.5	9.4	17.1	0.48	24.430
F1.80	68.2	9.0	20.5	0.47	23.310
F2.00	70.7	8.8	21.7	0.47	22.870
Raw Coal	100.0	7.5	40.1	0.61	16.350

Relative Density of S2.00 = 2.50

690051

ANALYSIS AND TESTING REPORT

Report No. 05/4626

Date 9th June, 1982



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2113

Authorisation Letter, J. McLean-Hodgson, 13.5.82
Origin MARATHON PETROLEUM AUSTRALIA LTD
Report to Mr. J. McLean-Hodgson, Exploration Supervisor
Coal,

Hole No. CA110Ply 4

<u>Relative Density Fraction</u>	<u>Mass %</u>	<u>Fractional</u>			<u>Specific Energy MJ/ka</u>
		<u>Air-dried Moisture %</u>	<u>Ash %</u>	<u>Total Sulphur %</u>	
F1.60	40.0	8.1	18.0	0.45	24.470
1.60 - 1.80	14.8	7.2	37.5	0.32	17.530
1.80 - 2.00	4.7	5.4	53.3	0.42	12.060
S2.00	40.5	4.4	84.3	0.51	0.810

<u>Relative Density Fraction</u>	<u>Mass %</u>	<u>Cumulative Floats</u>			<u>Specific Energy MJ/ka</u>
		<u>Air-dried Moisture %</u>	<u>Ash %</u>	<u>Total Sulphur %</u>	
F1.60	40.0	8.1	18.0	0.45	24.470
F1.80	54.8	7.9	23.3	0.42	22.600
F2.00	59.5	7.7	25.6	0.42	21.760
Raw Coal	100.0	6.3	49.4	0.45	13.280

Relative Density of S2.00 = 2.52

690052

ANALYSIS AND TESTING REPORT

Report No. 05/4526

Date 9th June, 1982



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Authorisation Letter, J. McLean-Hodgson, 13.5.82
Origin MARATHON PETROLEUM AUSTRALIA LTD
Report to Mr. J. McLean-Hodgson, Exploration Supervisor -
Coal,

Hole No. CA110Ply 5

<u>Relative Density Fraction</u>	<u>Mass %</u>	<u>Fractional</u>			<u>Specific Energy MJ/kg</u>
		<u>Air-dried Moisture %</u>	<u>Ash %</u>	<u>Total Sulphur %</u>	
F1.60	11.6	7.4	18.8	0.48	24.850
1.60 - 1.80	8.0	6.6	44.5	0.29	16.010
1.80 - 2.00	15.9	8.1	60.1	0.17	9.080
S2.00	64.5	7.9	83.0	0.16	1.360

<u>Relative Density Fraction</u>	<u>Mass %</u>	<u>Cumulative Floats</u>			<u>Specific Energy MJ/kg</u>
		<u>Air-dried Moisture %</u>	<u>Ash %</u>	<u>Total Sulphur %</u>	
F1.60	11.6	7.4	18.8	0.48	24.850
F1.80	19.6	7.1	29.3	0.40	21.240
F2.00	35.5	7.5	43.1	0.30	15.800
Raw Coal	100.0	7.8	68.8	0.21	6.480

Relative Density of S2.00 = 2.29

690053

ANALYSIS AND TESTING REPORT

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Report to Mr. J. McLean-Hodgson, Exploration Supervisor -
Coal,

Hole No. CA110Ply 6

<u>Relative Density Fraction</u>	<u>Mass %</u>	<u>Fractional</u>			<u>Specific Energy MJ/kg</u>
		<u>Air-dried Moisture %</u>	<u>Ash %</u>	<u>Total Sulphur %</u>	
F1.60	2.5	6.1	23.1	0.35	23.160
1.60 - 1.80	4.0	5.0	43.3	0.34	16.060
1.80 - 2.00	14.8	8.6	64.3	0.19	7.160
S2.00	78.7	8.3	80.4	0.15	1.970

<u>Relative Density Fraction</u>	<u>Mass %</u>	<u>Cumulative Floats</u>			<u>Specific Energy MJ/kg</u>
		<u>Air-dried Moisture %</u>	<u>Ash %</u>	<u>Total Sulphur %</u>	
F1.60	2.5	6.1	23.1	0.35	23.160
F1.80	6.5	5.4	35.5	0.34	18.790
F2.00	21.3	7.6	55.5	0.24	10.710
Raw Coal	100.0	8.2	75.1	0.17	3.830

Relative Density of S2.00 = 2.25

690054

054

ANALYSIS AND TESTING REPORT

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AUSTRALIAN COAL INDUSTRY
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Report to Mr. J. McLean-Hodgson, Exploration Supervisor -
Coal

Hole No. CA110Ply 7

<u>Relative Density Fraction</u>	<u>Mass %</u>	<u>Fractional</u>			<u>Specific Energy MJ/kg</u>
		<u>Air-dried Moisture %</u>	<u>Ash %</u>	<u>Total Sulphur %</u>	
F1.60	8.3	6.0	25.1	0.29	22.650
1.60 - 1.80	18.5	5.8	39.9	0.24	17.130
1.80 - 2.00	20.2	6.1	58.1	0.14	9.670
S2.00	53.0	6.8	78.8	0.22	2.340

<u>Relative Density Fraction</u>	<u>Mass %</u>	<u>Cumulative Floats</u>			<u>Specific Energy MJ/kg</u>
		<u>Air-dried Moisture %</u>	<u>Ash %</u>	<u>Total Sulphur %</u>	
F1.60	8.3	6.0	25.1	0.29	22.650
F1.80	26.8	5.9	35.3	0.26	18.840
F2.00	47.0	6.0	45.1	0.21	14.900
Raw Coal	100.0	6.4	63.0	0.21	8.240

Relative Density of S2.00 = 2.25

690055

055



AUSTRALIAN COAL INDUSTRY
RESEARCH LABORATORIES LTD.

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ANALYSIS AND TESTING REPORT

Report No. 05/4626

Date 9th June, 1982

Authorisation Letter, J. McLean-Hodgson, 13.5.82
Origin MARATHON PETROLEUM AUSTRALIA LTD
Report to Mr. J. McLean-Hodgson, Exploration Supervisor - Coal.

Hole No. CA110

Ply 8

<u>Relative Density Fraction</u>	<u>Mass %</u>	<u>Fractional</u>			<u>Specific Energy MJ/kg</u>
		<u>Air-dried Moisture %</u>	<u>Ash %</u>	<u>Total Sulphur %</u>	
F1.60	8.6	7.1	23.5	0.32	23.270
1.60 - 1.80	12.2	5.7	41.3	0.18	16.560
1.80 - 2.00	14.6	6.9	57.2	0.13	8.070
S2.00	64.6	6.9	81.1	0.25	0.570

<u>Relative Density Fraction</u>	<u>Mass %</u>	<u>Cumulative Floats</u>			<u>Specific Energy MJ/kg</u>
		<u>Air-dried Moisture %</u>	<u>Ash %</u>	<u>Total Sulphur %</u>	
F1.60	8.6	7.1	23.5	0.32	23.270
F1.80	20.8	6.3	33.9	0.24	19.330
F2.00	35.4	6.5	43.5	0.19	14.690
Raw Coal	100.0	6.8	67.8	0.23	5.570

Relative Density of S2.00 = 2.30

690056

056



AUSTRALIAN COAL INDUSTRY
RESEARCH LABORATORIES LTD.

P.O. Box 83,
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ANALYSIS AND TESTING REPORT

Report No. 05/4626

Date 10th June, 1982

Authorisation Letter, J. McLean-Hodgson, 13.5.82
Origin MARATHON PETROLEUM AUSTRALIA LTD
Report to Mr. J. McLean-Hodgson, Exploration Supervisor -
Coal,

Hole No. CA110

Ply 9

Relative Density Fraction	Mass %	Fractional			Specific Energy MJ/kg
		Air-dried Moisture %	Ash %	Total Sulphur %	
F1.60	1.1	7.2	24.2	*	22.090
1.60 - 1.80	5.5	6.6	42.7	0.23	15.880
1.80 - 2.00	16.2	6.2	55.6	0.15	10.320
52.00	77.2	5.5	80.9	0.04	1.400

Relative Density Fraction	Mass %	Cumulative Floats			Specific Energy MJ/kg
		Air-dried Moisture %	Ash %	Total Sulphur %	
F1.60	1.1	7.2	24.2	-	22.090
F1.80	6.6	6.7	39.6	-	16.920
F2.00	22.8	6.3	51.0	-	12.230
Raw Coal	100.0	5.7	74.1	-	3.870

Relative Density of 52.00 = 2.33

* Insufficient sample for analysis

690057

Report No. 05/4626

Date 10th June, 1982

ANALYSIS AND TESTING REPORT



AUSTRALIAN COAL INDUSTRY
RESEARCH LABORATORIES LTD.

P.O. Box 83,
North Ryde, N.S.W.,
2113

Authorisation Letter, J. McLean-Hodgson, 13.5.82
Origin MARATHON PETROLEUM AUSTRALIA LTD
Report to Mr. J. McLean-Hodgson, Exploration Supervisor -
Coal,

Hole No. CA110

Ply 10

Relative Density Fraction	Mass %	Fractional			Specific Energy MJ/kg
		Air-dried Moisture %	Ash %	Total Sulphur %	
F1.60	15.9	8.0	23.7	0.38	22.870
1.60 - 1.80	12.0	6.8	39.9	0.31	16.800
1.80 - 2.00	22.6	6.7	56.4	0.23	10.070
52.00	49.5	6.2	81.5	0.15	1.330

Relative Density Fraction	Mass %	Cumulative Floats			Specific Energy MJ/kg
		Air-dried Moisture %	Ash %	Total Sulphur %	
F1.60	15.9	8.0	23.7	0.38	22.870
F1.80	27.9	7.5	30.7	0.35	20.260
F2.00	50.5	7.1	42.2	0.30	15.700
Raw Coal	100.0	6.7	61.6	0.22	8.590

Relative Density of 52.00 = 2.33

690058

058



AUSTRALIAN COAL INDUSTRY
RESEARCH LABORATORIES LTD.

P.O. Box 23,
North Hyde, N.S.W.,
2113

ANALYSIS AND TESTING REPORT

Report No. 05/4626

Date 10th June, 1982

Authorisation Letter, J. McLean-Hodgson, 13.5.82
Origin MARATHON PETROLEUM AUSTRALIA LTD
Report to Mr. J. McLean-Hodgson, Exploration Supervisor -
Coal,

Hole No. CA110

Ply 11

Relative Density Fraction	Mass %	Air-dried Moisture %	Fractional		Specific Energy MJ/kg
			Ash %	Total Sulphur %	
F1.80	2.0	5.3	34.8	*	*
1.80 - 2.00	5.3	5.4	59.1	*	8.610
2.00	92.7	5.2	79.9	0.10	1.600

Cumulative Floats

Relative Density Fraction	Mass %	Air-dried Moisture %	Ash %
1.80	2.0	5.3	34.8
2.00	7.3	5.4	52.4
Raw Coal	100.0	5.2	77.9

Relative Density of 52.00 = 2.34

Insufficient sample for analysis

690059



ANALYSIS AND TESTING REPORT

Date 9th June, 1982

AUSTRALIAN COAL INDUSTRY
RESEARCH LABORATORIES LTD.

P.O. Box 83,
North Ryde, N.S.W.,
2113

Authorisation Letter, J. McLean-Hodgson, 13.5.82

Origin MARATHON PETROLEUM AUSTRALIA LTD

Report to Mr. J. McLean-Hodgson, Exploration Supervisor -
Coal,

Hole No. CA110

Ply 12

Fractional

<u>Relative Density</u> <u>Fraction</u>	<u>Mass %</u>	<u>Air-dried</u> <u>Moisture %</u>	<u>Ash %</u>	<u>Total</u> <u>Sulphur %</u>	<u>Specific Energy</u> <u>MJ/kg</u>
F1.60	25.9	6.8	16.4	0.62	25.550
1.60 - 1.80	8.8	4.8	44.1	0.34	15.640
1.80 - 2.00	18.2	5.7	56.5	0.22	9.860
S2.00	47.1	5.1	76.6	0.20	3.000

Cumulative Floats

<u>Relative Density</u> <u>Fraction</u>	<u>Mass %</u>	<u>Air-dried</u> <u>Moisture %</u>	<u>Ash %</u>	<u>Total</u> <u>Sulphur %</u>	<u>Specific Energy</u> <u>MJ/kg</u>
F1.60	25.9	6.8	16.4	0.62	25.550
F1.80	34.7	6.3	23.4	0.55	23.040
F2.00	52.9	6.1	34.8	0.44	18.500
Raw Coal	100.0	5.6	54.5	0.33	11.200

Relative Density of S2.00 = 2.28

Date 9th June, 1982

[Signature]
AUSTRALIAN COAL INDUSTRY RESEARCH LABORATORIES LTD.

IPSWICH LABORATORY



THIS LABORATORY IS REGISTERED BY THE NATIONAL
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IN ACCORDANCE WITH ITS TERMS OF REGISTRATION.

690060

ANALYSIS AND TESTING REPORT

Report No. 05/4684

Date 24th June, 1982



AUSTRALIAN COAL INDUSTRY
RESEARCH LABORATORIES LTD.

P.O. Box 83,
North Ryde, N.S.W.,
2113

Authorisation Letter, J. McLean-Hodgson, 23.4.82

Origin MARATHON PETROLEUM AUSTRALIA, LTD

Report to Mr J. McLean-Hodgson,

G.P.O. Box 687,

BRISBANE Q. 4001

Copy to: Mr R. Kempnich

SAMPLES

The following slim core intersections from Hole No. CA111 are analysed in this report.

<u>Ply No.</u>	<u>Interval (m)</u>	<u>Description</u>	<u>Mass (g)</u>
1	0.24	Coal	406
2	0.06	Non-Coal	161
3	0.15	Coal	353
4	1.30	Coal	3,080
5	1.09	Coal	2,960
6	0.50	Coal	2,880
7	0.22	Non-Coal	1,049
8	1.06	Coal	4,770

METHOD OF TEST

The samples were analysed according to instructions received by letters, J. McLean-Hodgson, 23.4.82 and 21.5.82.

690061

ANALYSIS AND TESTING REPORT

Report No. 05/4684

Date 24th June, 1982



AUSTRALIAN COAL INDUSTRY
RESEARCH LABORATORIES LTD.

P.O. Box 83,
North Ryde, N.S.W.,
2113

Authorisation Letter, J. McLean-Hodgson, 23.4.82

Origin MARATHON PETROLEUM AUSTRALIA, LTD

Report to Mr J. McLean-Hodgson,

Hole No. CA 111

Ply 1

Fractional

<u>Relative Density Fraction</u>	<u>Mass %</u>	<u>Air-dried Moisture %</u>	<u>Ash %</u>	<u>Total Sulphur %</u>	<u>Specific Energy MJ/kg</u>
F1.60	85.6	2.4	7.3	0.50	32.450
1.60 - 2.00	5.9	8.1	54.5	0.20	11.740
S2.00	8.5	11.6	74.5	0.12	3.150

Cumulative Floats

<u>Relative Density Fraction</u>	<u>Mass %</u>	<u>Air-dried Moisture %</u>	<u>Ash %</u>	<u>Total Sulphur %</u>	<u>Specific Energy MJ/kg</u>
F1.60	85.6	2.4	7.3	0.50	32.450
F2.00	91.5	2.8	10.3	0.48	21.120
Raw Coal	100.0	3.5	15.8	0.45	28.740

Relative Density of S2.00 = 2.15

690062

Date 24th June, 1982

ANALYSIS AND TESTING REPORT



AUSTRALIAN COAL INDUSTRY
RESEARCH LABORATORIES LTD.

P.O. Box 83,
North Ryde, N.S.W.,
2113

Authorisation Letter, J. McLean-Hodgson, 23.4.82

Origin MARATHON PETROLEUM AUSTRALIA LTD

Report to Mr. J. McLean-Hodgson,

Hole No. CA 111

Ply 3

<u>Relative Density Fraction</u>	<u>Mass %</u>	<u>Air-dried Moisture %</u>	<u>Fractional</u>		<u>Specific Energy MJ/kg</u>
			<u>Ash %</u>	<u>Total Sulphur %</u>	
F1.60	57.7	3.6	19.3	0.45	26.640
1.60 - 1.80	22.2	5.2	36.8	0.22	17.460
1.80 - 2.00	5.4	7.6	56.1	0.21	*
52.00	14.7	9.2	68.4	0.06	3.830

Cumulative Floats

<u>Relative Density Fraction</u>	<u>Mass %</u>	<u>Air-dried Moisture %</u>	<u>Ash %</u>	<u>Total Sulphur %</u>	<u>Specific Energy MJ/kg</u>
F1.60	57.7	3.6	19.3	0.45	26.640
F1.80	79.9	4.0	24.2	0.39	24.090
F2.00	85.3	4.3	26.2	0.38	-
Raw Coal	100.0	5.0	32.4	0.33	-

Relative Density of 52.00 = 2.15

* Insufficient sample for analysis

690063

Report No. 05/4684

Date 24th June, 1982

ANALYSIS AND TESTING REPORT



AUSTRALIAN COAL INDUSTRY
RESEARCH LABORATORIES LTD.

P.O. Box 83,
North Ryde, N.S.W.,
2113

Authorisation Letter, J. McLean-Hodgson, 23.4.82

Origin MARATHON PETROLEUM AUSTRALIA, LTD

Report to Mr. J. McLean-Hodgson,

Hole No. CA 111

Ply 4

Fractional

<u>Relative Density Fraction</u>	<u>Mass %</u>	<u>Air-dried Moisture %</u>	<u>Ash %</u>	<u>Total Sulphur %</u>	<u>Specific Energy MJ/kg</u>
F1.60	1.9	5.2	21.1	0.39	25.500
1.60 - 1.80	16.6	7.2	35.0	0.14	18.950
1.80 - 2.00	31.8	10.4	56.0	0.06	9.060
S2.00	49.7	11.6	73.8	0.05	2.900

Cumulative Floats

<u>Relative Density Fraction</u>	<u>Mass %</u>	<u>Air-dried Moisture %</u>	<u>Ash %</u>	<u>Total Sulphur %</u>	<u>Specific Energy MJ/kg</u>
F1.60	1.9	5.2	21.1	0.39	25.500
F1.80	18.5	7.0	33.6	0.17	19.620
F2.00	50.3	9.1	47.8	0.10	12.940
Raw Coal	100.0	10.4	60.7	0.08	7.950

Relative Density of S2.00 = 2.21

690064

ANALYSIS AND TESTING REPORT

Report No. 05/4684

Date 24th June, 1982



AUSTRALIAN COAL INDUSTRY
RESEARCH LABORATORIES LTD.

P.O. Box 83,
North Ryde, N.S.W.,
2113

Authorisation Letter, J. McLean-Hodgson, 23.4.82

Origin MARATHON PETROLEUM AUSTRALIA LTD.

Report to Mr J. McLean-Hodgson,

Hole No. CA 111

Ply 5

Relative Density Fraction	Mass %	Air-dried Moisture %	Fractional		Specific Energy MJ/kg
			Ash %	Total Sulphur %	
F1.60	2.5	9.1	23.3	0.19	22.890
1.60 - 1.80	8.8	7.7	30.3	0.15	20.670
1.80 - 2.00	22.3	8.8	49.1	0.09	12.220
S2.00	66.4	10.5	72.9	0.03	4.550

Relative Density Fraction	Mass %	Air-dried Moisture %	Cumulative Floats		Specific Energy MJ/kg
			Ash %	Total Sulphur %	
F1.60	2.5	9.1	23.3	0.19	22.890
F1.80	11.3	8.0	28.8	0.16	21.160
F2.00	33.6	8.5	42.3	0.11	15.230
Raw Coal	100.0	9.8	62.6	0.06	8.140

Relative Density of S2.00 = 2.24

690065

Report No. 05/4684

Date 24th June, 1982

ANALYSIS AND TESTING REPORT



AUSTRALIAN COAL INDUSTRY
RESEARCH LABORATORIES LTD.

P.O. Box 83,
North Ryde, N.S.W.,
2113

Authorisation Letter, J. McLean-Hodgson, 23.4.82

Origin MARATHON PETROLEUM AUSTRALIA LTD

Report to Mr J. McLean-Hodgson,

Hole No. CA 111

Ply 6

Fractional

<u>Relative Density Fraction</u>	<u>Mass %</u>	<u>Air-dried Moisture %</u>	<u>Ash %</u>	<u>Total Sulphur %</u>	<u>Specific Energy MJ/kg</u>
F1.60	34.2	4.5	19.1	0.57	27.030
1.60 - 1.80	22.2	7.3	45.3	0.37	15.860
1.80 - 2.00	16.6	8.8	60.4	0.36	8.700
S2.00	27.0	10.1	77.5	0.37	2.590

Cumulative Floats

<u>Relative Density Fraction</u>	<u>Mass %</u>	<u>Air-dried Moisture %</u>	<u>Ash %</u>	<u>Total Sulphur %</u>	<u>Specific Energy MJ/kg</u>
F1.60	34.2	4.5	19.1	0.57	27.030
F1.80	56.4	5.6	29.4	0.49	22.630
F2.00	73.0	6.3	36.5	0.46	19.470
Raw Coal	100.0	7.3	47.5	0.44	14.910

Relative Density of S2.00 = 2.21

690066

ANALYSIS AND TESTING REPORT

Report No. 05/4684

Date 24th June, 1982



AUSTRALIAN COAL INDUSTRY
RESEARCH LABORATORIES LTD.

P.O. Box 83,
North Ryde, N.S.W.,
2113

Authorisation Letter, J. McLean-Hodgson, 23.4.82

Origin MARATHON PETROLEUM AUSTRALIA LTD

Report to Mr J. McLean-Hodgson.

Hole No. CA 111

Ply 8

Fractional

<u>Relative Density Fraction</u>	<u>Mass %</u>	<u>Air-dried Moisture %</u>	<u>Ash %</u>	<u>Total Sulphur %</u>	<u>Specific Energy MJ/kg</u>
F1.60	66.8	5.4	16.9	0.44	27.630
1.60 - 1.80	12.9	8.1	44.3	0.21	15.850
1.80 - 2.00	5.6	10.1	59.7	0.15	8.530
S2.00	14.7	11.1	76.6	0.07	1.640

Cumulative Floats

<u>Relative Density Fraction</u>	<u>Mass %</u>	<u>Air-dried Moisture %</u>	<u>Ash %</u>	<u>Total Sulphur %</u>	<u>Specific Energy MJ/kg</u>
F1.60	66.8	5.4	16.9	0.44	27.630
F1.80	79.7	5.8	21.3	0.40	25.720
F2.00	85.3	6.1	23.9	0.39	24.600
Raw Coal	100.0	6.8	31.6	0.34	21.220

Relative Density of S2.00 = 2.16

690067



ANALYSIS AND TESTING REPORT

Date 24th June, 1982

AUSTRALIAN COAL INDUSTRY
RESEARCH LABORATORIES LTD.

P.O. Box 83,
North Ryde, N.S.W.,
2113

Authorisation Letter, J. McLean-Hodgson, 23.4.82

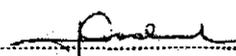
Origin MARATHON PETROLEUM AUSTRALIA, LTD

Report to Mr. J. McLean-Hodgson,

Hole No. CA111Stone Plies

<u>Ply No.</u>	<u>Air-dried Moisture %</u>	<u>Ash %</u>	<u>Relative Density</u>
2	6.1	72.8	2.15
7	8.4	46.4	1.72

Date 24th June, 1982


 AUSTRALIAN COAL INDUSTRY RESEARCH LABORATORIES LTD.

IPSWICH LABORATORY

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IN ACCORDANCE WITH ITS TERMS OF REGISTRATION.



690068

ANALYSIS AND TESTING REPORT

Report No. 05/5064 (Inter)

21st September, 1982

Date



AUSTRALIAN COAL INDUSTRY
RESEARCH LABORATORIES LTD.

P.O. Box 83,
North Ryde, N.S.W.,
2113

Copy to: Mr N. Perkins

Authorisation Letters, J. McLean-Hodgson, N. Perkins
Origin MARATHON PETROLEUM AUSTRALIA, LTD
Report to Mr J. McLean-Hodgson,
G.P.O. Box 687,
BRISBANE Q. 4001

Hole No. CA111, Ply 7Washability Data

Relative Density Fraction	Mass %	Fractional		Total Sulphur %	Specific Energy MJ/kg
		Air-dried Moisture %	Ash %		
F1.60	33.1	5.1	21.9	0.51	25.50
1.60 - 1.80	25.1	7.8	42.6	0.37	16.40
1.80 - 2.00	22.6	7.8	61.8	0.24	8.10
S2.00	19.2	9.8	75.2	1.97	2.46

Relative Density of S2.00 = 2.23

Cumulative Floats

Relative Density Fraction	Mass %	Cumulative Floats		Total Sulphur %	Specific Energy MJ/kg
		Air-dried Moisture %	Ash %		
F1.60	33.1	5.1	21.9	0.51	25.50
F1.80	58.2	6.3	30.8	0.45	21.58
F2.00	80.8	6.7	39.5	0.39	17.80
Raw Coal	100.0	7.3	46.4	0.69	14.86

690069



AUSTRALIAN COAL INDUSTRY
RESEARCH LABORATORIES LTD.

P.O. Box 83,
North Ryde, N.S.W.
2113

COAL ANALYSIS

Report No. 05/5064

Date 21st September, 1982

Authorisation Letters, J. McLean-Hodgson, N. Perkins

Origin MARATHON PETROLEUM AUSTRALIA, LTD

Report to Mr. J. McLean-Hodgson.

Sample Details	Hole No. CA 106	Hole No. CA 111
	Plies 3 + 4 + 5	Plies 6 + 7 + 8
	Floats 1.80	Floats 1.80
As Received Basis		
Total Moisture %		
As Analysed Basis		
Moisture %	6.4	5.9
Ash %	25.3	24.4
Volatile Matter %	23.1	22.8
Fixed Carbon %	45.2	46.9
Sulphur %	0.22	0.42
Chlorine %		
Phosphorus %		
Specific Energy MJ/kg. (Calorific Value)	22.20	24.04
Crucible Swelling No.	$\frac{1}{2}$	1
Gray King Coke Type	A	B
Hardgrove Grindability Index	49	73
Relative Density	1.56	1.51

Copies have been sent to

Determinations carried out in Duplicate
Analysed in accordance with AS1039

Relative Density by ACIRL Method

Sampled by Received



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[Signature]
AUSTRALIAN COAL INDUSTRY RESEARCH LABORATORIES LTD.

IPSWICH LABORATORY

690070

070.



COAL ANALYSIS

Report No. 05/5064

Date 21st September, 1982

AUSTRALIAN COAL INDUSTRY
RESEARCH LABORATORIES LTD.

P.O. Box 83,
North Ryde, N.S.W.
2113

Authorisation Letters, J. McLean-Hodgson, N. Perkins

Origin MARATHON PETROLEUM AUSTRALIA, LTD

Report to Mr J. McLean-Hodgson,

Sample Details	Hole No. CA 106		Hole No. CA 111	
	Plies 3 + 4 + 5		Plies 6 + 7 + 8	
	Floats 1.80		Floats 1.80	
Dry-ash-free Basis				
Carbon %	81.90		84.90	
Hydrogen %	4.71		5.17	
Nitrogen %	1.64		1.43	
Sulphur %	0.32		0.60	
Oxygen %	11.43		7.90	
Carbonates (CO ₂) %	0.31		0.20	
Forms of Sulphur				
Pyritic %	0.08		0.17	
Sulphate %	< 0.01		< 0.01	
Organic %	0.13		0.24	

Copies have been sent to

Determinations carried out in Duplicate
Analysed in accordance with AS1038

As Analysed basis

Sampled by _____ Received _____



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IN ACCORDANCE WITH ITS TERMS OF REGISTRATION.

[Signature]
AUSTRALIAN COAL INDUSTRY RESEARCH LABORATORIES LTD.

IPSWICH LABORATORY

690071



COAL ANALYSIS

Report No. 05/5064
 21st September, 198
 Date

AUSTRALIAN COAL INDUSTRY
 RESEARCH LABORATORIES LTD.

P.O. Box 83,
 North Ryde, N.S.W.,
 2113

Authorisation Letters, J. McLean-Hodgson, N. Perkins
 Origin MARATHON PETROLEUM AUSTRALIA, LTD
 Report to Mr J. McLean-Hodgson,

Sample Details	Hole No. CA 106	Hole No. CA 111
	Plies 3 + 4 + 5	Plies 6 + 7 + 8
	Floats 1.80	Floats 1.80
As Received Basis Total Moisture %		
As Analysed Basis		
Moisture %		
Ash %		
Volatile Matter %		
Fixed Carbon %		
Sulphur %		
Chlorine %		
Phosphorus %		
Specific Energy MJ/kg. (Calorific Value)		
Ash Fusibility Temperatures	Reducing	Reducing
Deformation °C	1360	1250
Spherical °C	1590	1440
Hemisphere °C	1600	1490
Flow °C	>1600	1540

Copies have been sent to

Determination carried out in Duplicate
 Analysed in accordance with AS1038

Sampled by Received



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 THE TESTS REPORTED HEREIN HAVE BEEN PERFORMED
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[Signature]
 AUSTRALIAN COAL INDUSTRY RESEARCH LABORATORIES LTD.
 IPSWICH LABORATORY



COAL ANALYSIS

Report No. 05/5064 (FINAL)

Date 1st October, 1982

AUSTRALIAN COAL INDUSTRY
RESEARCH LABORATORIES LTD.

P.O. Box 83,
North Ryde, N.S.W.
2113

Authorisation Letters, J. McLean-Hodgson, N. Perkins
Origin MARATHON PETROLEUM AUSTRALIA, LTD
Report to Mr. J. McLean-Hodgson, Exploration Supervisor
Coal
11th Floor, AMP Place, 10 Eagle Street,
BRISBANE. Q. 4000

Copy to Mr. N. Perkins

Sample Details	Hole No. CA106	Hole No. CA111		
	Plies 3 - 5	Plies 6 - 8		
	Floats 1.80	Floats 1.80		
As Received Basis				
Total Moisture %				
As Analysed Basis				
Moisture %				
Ash %				
Volatile Matter %				
Fixed Carbon %				
Sulphur %				
Chlorine %				
Phosphorus %	0.001	0.003		
Specific Energy MJ/kg. (Calorific Value)				
Crucible Swelling No.				
Gray King Coke Type				

Copies have been sent to

Determinations carried out in Duplicate
Analysed in accordance with AS 1038

Sampled by Received



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[Signature]
AUSTRALIAN COAL INDUSTRY RESEARCH LABORATORIES LTD.

IPSWICH LABORATORY

690073



AUSTRALIAN COAL INDUSTRY
RESEARCH LABORATORIES LTD.

P.O. Box 83,
North Ryde, N.S.W.,
2113

COAL ASH AND MINERAL ANALYSIS REPORT

Report No. 05/5064

1st October, 1982
Date

Authorisation Letters, J. McLean-Hodgson, N. Perkins
Origin MARATHON PETROLEUM AUSTRALIA, LTD
Report to Mr. J. McLean-Hodgson, Exploration Supervisor
Coal,

Sample Details	Hole No. CA106 Plies 3 - 5 Floats 1.80	Hole No. CA111 Plies 6 - 8 Floats 1.80		
Silicon as SiO ₂ %	71.5	59.8		
Aluminium as Al ₂ O ₃ %	22.0	26.2		
Iron as Fe ₂ O ₃ %	3.84	8.16		
Calcium as CaO %	1.40	2.88		
Magnesium as MgO %	0.20	1.19		
Titanium as TiO ₂ %	1.15	0.88		
Sodium as Na ₂ O %	0.01	0.08		
Potassium as K ₂ O %	0.10	0.74		
Phosphorus as P ₂ O ₅ %	0.01	0.03		
Manganese as Mn ₃ O ₄ %	0.09	0.38		
Sulphur as SO ₃ %	0.27	0.20		

Copies have been sent to

Determination carried out in Duplicate
Analysed ~~XXXX~~ in accordance with by XRF



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IN ACCORDANCE WITH ITS TERMS OF REGISTRATION.

J. McLean
AUSTRALIAN COAL INDUSTRY RESEARCH LABORATORIES LTD.

690074

PETROGRAPHIC ANALYSIS OF COAL

Report No. 05/5064

Date 1st October, 1982



AUSTRALIAN COAL INDUSTRY
RESEARCH LABORATORIES LTD.

P.O. Box 83
North Ryde, N.S.W.
2113

Authorisation Letters, J. McLean-Hodgson, N. Perkins

Client MARATHON PETROLEUM AUSTRALIA, LTD

Report to Mr. J. McLean-Hodgson, Exploration Supervisor
Coal,

SAMPLE DETAILS: Hole No. CA106 Plies 3 - 5 Floats 1.80

MEAN MAXIMUM REFLECTANCE OF VITRINITE % 0.63

REFLECTANCE MEASUREMENTS AT 546 nm LIGHT WAVELENGTH

OIL REFRACTIVE INDEX: 1.518

NEW MACERAL CLASSIFICATION

MACERAL	VOLUME %	MACERAL	VOLUME %	MACERAL GROUP	VOLUME %	
Vitrinite	21	Vitrinite	21	Vitrinite	21	
Resinite	Trace	Resinite	Trace		Exinite	7
Sporinite	6	Sporinite	6			
Cutinite	1	Cutinite	1			
Fusinite	4	Fusinite	4	Inertinite	44	
Semi fusinite	30	Semi fusinite	29			
		Macrinite	1			
		Sclerotinite	-			
Micrinite	10	Micrinite	2			
		Inertodetrinite	8			
Mineral Matter	28	Mineral Matter	28	Mineral Matter	28	

In line with current practices of the International Committee for Coal Petrology, A.C.I.R.L. is now applying a new standard maceral classification for coal petrography.

For convenience, reports will be prepared using both the old and new nomenclatures for a period so that continuity can apply to past and future results.

AUSTRALIAN COAL INDUSTRY RESEARCH LABORATORIES LTD.
IPSWICH LABORATORY

690075

PETROGRAPHIC ANALYSIS OF COAL

Report No. 05/5064

Date 1st October, 1982



AUSTRALIAN COAL INDUSTRY
RESEARCH LABORATORIES LTD.

P.O. Box 83
North Ryde, N.S.W.
2113

Authorisation Letters, J. McLean-Hodgson, N. Perkins

Client MARATHON PETROLEUM AUSTRALIA, LTD

Report to Mr. J. McLean-Hodgson, Exploration Supervisor,
Coal

SAMPLE DETAILS: Hole No. CA111 Plies 6 - 8 Floats 1.80

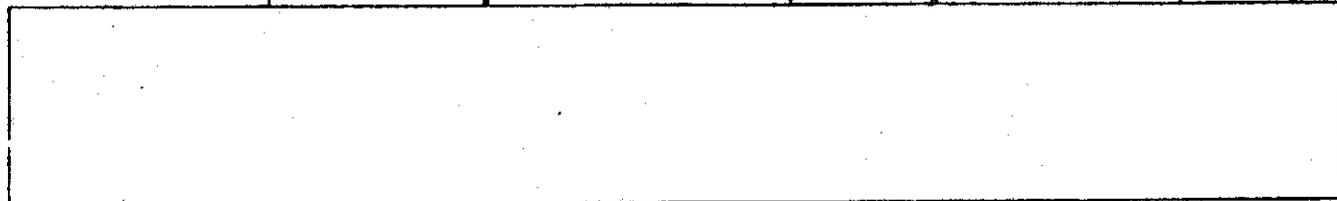
MEAN MAXIMUM REFLECTANCE OF VITRINITE % 0.87

REFLECTANCE MEASUREMENTS AT 546 n m LIGHT WAVELENGTH

OIL REFRACTIVE INDEX: 1.518

NEW MACERAL CLASSIFICATION

MACERAL	VOLUME %	MACERAL	VOLUME %	MACERAL GROUP	VOLUME %
Vitrinite	28	Vitrinite	28	Vitrinite	28
Resinite	Trace	Resinite	Trace		Exinite
Sporinite	1	Sporinite	1		
Cutinite	1	Cutinite	1		
Fusinite	5	Fusinite	5		
Semi fusinite	21	Semi fusinite	20	Inertinite	38
		Macrinite	1		
		Sclerotinite	Trace		
Micrinite	12	Micrinite	2		
		Inertodetrinite	10		
Mineral Matter	32	Mineral Matter	32	Mineral Matter	32



In line with current practices of the International Committee for Coal Petrology, A.C.I.R.L. is now applying a new standard maceral classification for coal petrography.

For convenience, reports will be prepared using both the old and new nomenclatures for a period so that continuity can apply to past and future results.

[Signature]
AUSTRALIAN COAL INDUSTRY RESEARCH LABORATORIES LTD.
IPSWICH LABORATORY

690076

076



AUSTRALIAN COAL INDUSTRY RESEARCH LABORATORIES LTD.

P.O. Box 83,
North Ryde, N.S.W.,
2113

ANALYSIS AND TESTING REPORT

Report No. 05/5064

1st October, 1982

Date

Authorisation Letters, J. McLean-Hodgson, N. Perkins

Origin MARATHON PETROLEUM AUSTRALIA, LTD

Report to Mr. J. McLean-Hodgson, Exploration Supervisor,
Coal

TRACE ELEMENTS ANALYSIS OF COAL

	Hole No. CA 106 Plies 3 - 5 Floats 1.80	Hole No. CA 111 Plies 6 - 8 Floats 1.80
Mercury as Hg (ug/g)	0.02	0.02
Vanadium as V (ug/g)	19.2	34.6
Cadmium as Cd (ug/g)	0.12	0.08
Lead a Pb (ug/g)	16.1	13.8

Date 1st October, 1982



THIS LABORATORY IS REGISTERED BY THE NATIONAL ASSOCIATION OF TESTING AUTHORITIES, AUSTRALIA. THE TESTS REPORTED HEREIN HAVE BEEN PERFORMED IN ACCORDANCE WITH ITS TERMS OF REGISTRATION.

[Signature]
AUSTRALIAN COAL INDUSTRY RESEARCH LABORATORIES LTD.

IPSWICH LABORATORY

690077

077



ANALYSIS AND TESTING REPORT

Report No. 05/5254
13th October, 1982
Date

AUSTRALIAN COAL INDUSTRY RESEARCH LABORATORIES LTD.

P.O. Box 83,
North Ryde, N.S.W.,
2113

Authorisation Letter, N. Perkins, 11.10.82
Origin MARATHON PETROLEUM AUSTRALIA LTD
Report to Mr. J. McLean-Hodgson, Exploration Supervisor - Coal
11th Floor, AMP Place, 10 Eagle Street,
BRISBANE. Q. 4000

Copy to Mr. N. Perkins

<u>Sample</u>	<u>Relative Density</u>
Hole No. CA106 Plies 3 - 5 Raw Coal	1.70
Hole No. CA111 Plies 6 - 8 Raw Coal	1.64

Relative Density by ACIRL method

Date 13th October, 1982

[Signature]
AUSTRALIAN COAL INDUSTRY RESEARCH LABORATORIES LTD.
IPSWICH LABORATORY



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690078

078

APPENDIX B

**REVIEW OF GEOPHYSICAL INTERPRETATION, GEOPHYSICAL SURVEYS,
CATAMARAN AREA, TASMANIA, EL 6/79
BY LEAMAN GEOPHYSICS, JULY 1982**

690079

079

REVIEW OF GEOPHYSICAL INTERPRETATION

GEOPHYSICAL SURVEYS

CATAMARAN AREA, TASMANIA - EL 6/79

for

MARATHON PETROLEUM AUSTRALIA LTD.

by

LEAMAN GEOPHYSICS

July, 1982

690080

INTRODUCTION:

Gravity and magnetic data acquired by Marathon Petroleum Australia Ltd. in exploration licence area EL 6/79 at Catamaran, Southern Tasmania, were interpreted by Leaman (1981). The magnetic data were used to support and upgrade a relatively low standard geological basemap. In this area dolerite and dolerite products are important and not readily assessed rock materials. The gravity data were interpreted to provide a general structural guide. Information on faulting and dolerite intrusion was particularly important to an assessment of coal reserves. Proper evaluation of potential reserve areas and, the possible mining problems or methods, is intimately related to definition of fault blocks and any intrusions within them.

The initial drilling programme was begun in late 1981 and completed in mid 1982. This report summarises the drilling results, discusses the reliability of the interpretation and outlines revisions where necessary.

DRILLING RESULTS:

The table summarises results from the recent drilling programme. Older drilling results were discussed in the original interpretation report (Leaman, 1981) where they were used to provide a patchy, basic control.

Of the nine holes which yielded an effective result three were in complete agreement with the interpreted prediction (105, 109, 112) and three others were within the stated error envelope (102, 107, 110) although two (102, 110) did not terminate in dolerite within the stated depth range (inconclusive). Results were poor in holes 106, 111 and especially 108.

Examination of materials within each hole is also revealing. Sandstone dominates the coal measures section in holes 105, 109, 112 whereas the proportion of sandstone-shale is 70:30 (approx.) in 102, 110 and about 50:50 in 106.

The original interpretation summary is reproduced in Figure 1. Hole positions are indicated.

DISCUSSION:

No discussion is necessary in respect of holes 101, 103, 104, 105, 109, 112. The results suggest that the density contrast used (about 0.50 t/m^3 ; dolerite-coal measures) is about the right order of magnitude for sandstone-dominated successions. Where the shale content is significant the contrast is clearly reduced which accounts for the understatement noted for holes 102 and 110. The minimum contrast is probably about 0.35 t/m^3 . The overstatement noted in 107 can be related to the presence of scree rather than coal measures.

081

Hole	Approx Coords (N, E)	Depth to dolerite(m)		Total Depth	Materials
		Predicted	Observed		
101	864,911	~400	-	42	basalt
102	879,914	~150	38-51	170	0-38 coal m, -51 dol, -170 coal m.
103	826,904	~300	-	28	scree
104	904,905	~100	-	39	scree
105	844,918	<100	71-	79	coal m, dolerite
106	864,911	~400	225-	234	0-72 basalt, -225 coal m, dol.
107	804,905	~100	40-	57	0-40 talus, dolerite
108	800,890	~300	21-	39	0-21 coal m, dolerite
109	827,903	~300	296-	300	0-296 coal m, dolerite
110	855,924	<250	100-115	304	0-100, 115-304 coal m.
111	797,889	~300	36-47 157-	171	coal measures, dolerite
112	804,908	~100	11,31,63, 106	108	coal measures, minor dolerite intrusions

Holes 108, 111 are located together in a region with exposed coal measures and an associated sizeable negative gravity anomaly. Although substantial positive gradients have been observed to the immediate west there is no obvious reason for the discrepancy. It is possible that the dolerite encountered is part of relatively thin sills. However, in each case more dolerite has been proven than observed in other thin sills (holes 102, 111, 112). The magnetic data from traverses 51-59, 54-679 has been re-examined. Station 54 is centrally located between holes 108 and 111. The regional anomaly across the gravimetric low is relatively low amplitude (500nT), smooth and long wavelength (~1800m). It is quite consistent with a major intrusion at moderate depth although it is possible that lateral effects could produce a similar illusion. Line 54-679 is perpendicular to 51-59 and indicates dolerite at shallow depth west of 54 (exposed about 400m west of 54). Although the observations are not readily compiled into profiles for modelling, line segments 54-679, 654-658, 59-539, 59-654 have been grouped to provide a working profile (Figure 2). These segments roughly correspond to Section 2 (Figure 8 of Leaman, 1981) and the gravity model has been reviewed magnetically. All general forms can be reproduced easily; the high frequency effects can be shown to be related to local variations in magnetisation and overburden. The gravity section is supported at the predicted order of magnitude. Indeed the section of modelled profile over the graben has precisely the form and amplitude of the field observed between 51-59 (approx perpendicular to Section 2).

Given these results, and assuming exclusion of thin intrusions, the position of the western fault (marked probable in Figure 1) may either be further east than indicated or a multiple structure. Neither possibility would radically alter the gravity-magnetic model for Section 2. A further interesting point relates to the difference in depth to dolerite at these closely related sites (108, 111). It is possible that 108 was stopped in a slightly thicker version of the upper body found in 111.

082

The gross overestimate noted for hole 106, a region with substantial negative anomalies, implies that the hole may have been drilled west of an inferred N-S trending fault. It is also possible that Tertiary sediments may be present beneath part of the thick basalt flows in the north of the region (contrast against dolerite - 0.90 t/m^3) and the large negative effects observed may be related to Tertiary, not Triassic materials. It is noteworthy that the negative axis correlates easily with basalt-covered areas and an erratic Tertiary-sediment valley fill beneath basalt is typical Tasmanian experience. At the possible contrast, 25m of sediment could contribute about one mgal (equivalent to 75-100m of coal measures). The above discussion presumes, of course, that the dolerite encountered at 225m is not a thin sill.

As noted above, thin dolerite bodies have been observed in three holes (102, 111, 112). In view of the separation of these holes and general observation of the Tasmanian Jurassic dolerites, it is most unlikely that the occurrences represent a 'marker' horizon. It must also be observed that several other holes completed in dolerite may not have encountered the main sheet.

The large north-south fault inferred across the centre of the area appears to be supported by the results although its exact position remains unconfirmed. Minor modification of the probable position of two other faults has been noted above (near 106 and 108/111) (see Figure 1).

Examination of the geophysical logs provided for each hole indicates that the best seams, in terms of thickness and quality (low density, high resistivity etc.) occur at shallow depth (<30m) near holes 110 and 102. Results seem disappointing in the region of the southern coal 'exposures' (holes 108, 111; 104, 107, 112) - perhaps these sites were below the coal-bearing horizon.

CONCLUSIONS:

The original interpretation, though based largely on potentially ambiguous gravity data, has proven reasonably reliable. Indeed the initial drilling programme has suggested very few refinements. This is partly due to the location of the drill sites (access problems), the areas drilled (best data coverage) and the absence of dolerite (basement) in some deep holes. The latter is particularly important since several holes have not definitely established the level of the main dolerite sheet (e.g. 102, 106, 110, 112). Any future drilling should prove at least 25m of dolerite before termination since most thin sills are 8 to 15m thick. Textural characteristics at 25m from the roof are commonly distinctive and allow separation of large and small intrusions.

Some minor deviations in the interpretation can be related to the density contrasts employed. The value used seems adequate for predominantly sandstone successions only.

Other refinements relate to the exact placement of some faults. Many of the larger faults have been proven but the position of these structures is still not known to better than 100 to 200m.

083

Further drilling can be planned on the base provided and should perhaps be directed at the shallow seams in the region of holes 105, 110. Only thin dolerite and/or basalt bodies should interfere in any way in this region at depths less than 70 to 100m. It may be found after more dense, detailed drilling that small dolerite bodies and faults may be of some account. Detailed magnetic survey may then be warranted in specific, very small areas.

REFERENCES:

Leaman, D.E., 1981. Interpretation of Geophysical Surveys, Catamaran Area, Tasmania. EL 6/79. Confidential report.

Report submitted on behalf of
Leaman Geophysics
by



Dr. D. E. Leaman B.Sc. Ph.D
M.Aus.I.M.M., M.M.I.C.A

690084

LEAMAN GEOPHYSICS
G.P.O. Box 320 D,
Hobart, Tasmania 7001

690086

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of M.	A.O.	C.G.	E.O.	D.S.M.E.
				Registrar
Received	3 - NOV 1982			E & IL
Answered				
DEPT. OF MINES				
REF. No. 9096/82				

ANNUAL REPORT
 ON 3 NOV 1982
 EXPLORATION LICENCE 6/79
 (CATAMARAN)
 FOR THE PERIOD 16.11.81 TO 15.11.82

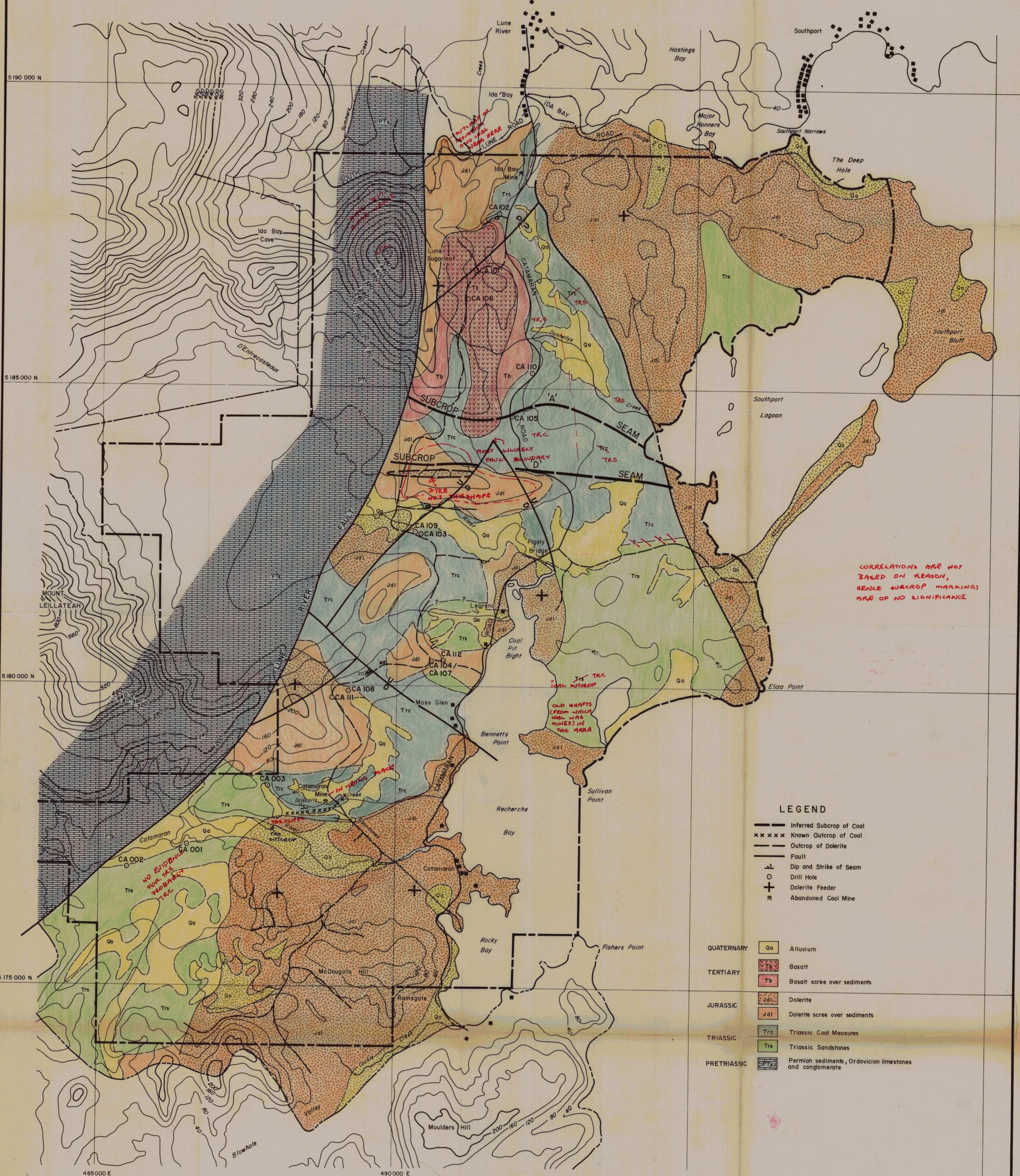
MICROFILMED

VOLUME 2

PLATES

N.T. Perkins
October, 1982

OPEN FILE



CORRELATIONS ARE NOT BASED ON REASON, HENCE SUBCROP MARKINGS ARE OF NO SIGNIFICANCE

NO EVIDENCE FOR TRS PROBABLY TRC

OLD SHAFTS (FROM WHICH COAL WAS MINED) IN THIS AREA

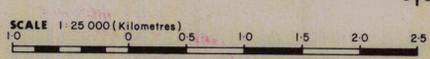
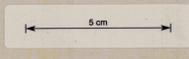
LEGEND

- Inferred Subcrop of Coal
- xxxx Known Outcrop of Coal
- Outcrop of Dolerite
- Fault
- ↖ Dip and Strike of Seam
- Drill Hole
- ⊕ Dolerite Feeder
- ⊗ Abandoned Coal Mine

QUATERNARY	Qa	Alluvium
TERTIARY	Tb	Basalt
	Ts	Basalt scree over sediments
JURASSIC	Jdl	Dolerite
	Jdl	Dolerite scree over sediments
TRIASSIC	Trc	Triassic Coal Measures
	Trs	Triassic Sandstones
PRETRIASSIC	PTs	Permian sediments, Ordovician limestones and conglomerate

LEGEND

- EL. Boundary
- S.W.A.C. Boundary
- Road
- Railway



690087

Marathon Petroleum Australia, Ltd.

Brisbane Australia

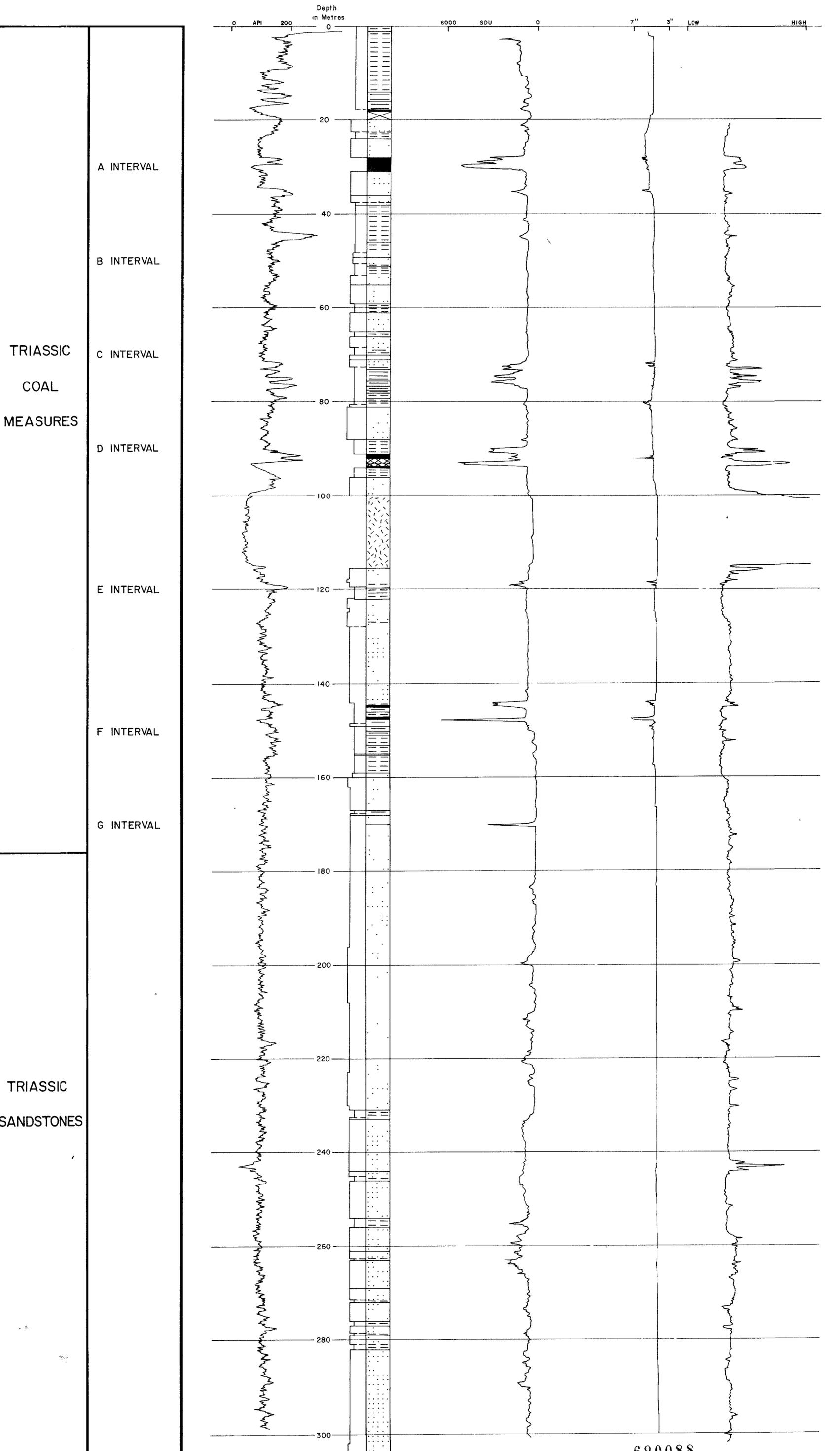
Hobart SK 55-8 Tasmania

EL. 679 CATAMARAN — TASMANIA PROJECT

Plan Showing

GEOLOGY MAP

Drawn by S.A.W.	Date SEP 82	Plan No.	File	877
Mapped by N.T.P.	Date AUG 82	Amended by	Plate 1	



TRIASSIC
COAL
MEASURES

A INTERVAL
B INTERVAL
C INTERVAL
D INTERVAL
E INTERVAL
F INTERVAL
G INTERVAL

TRIASSIC
SANDSTONES

GAMMA RAY SEAM LOG L.S. DENSITY CALIPER RESISTIVITY

690088

TD 304m

Plate 2

878

Marathon Petroleum Australia, Ltd.
BRISBANE AUSTRALIA

E.L. 679 CATAMARAN
Plan Showing

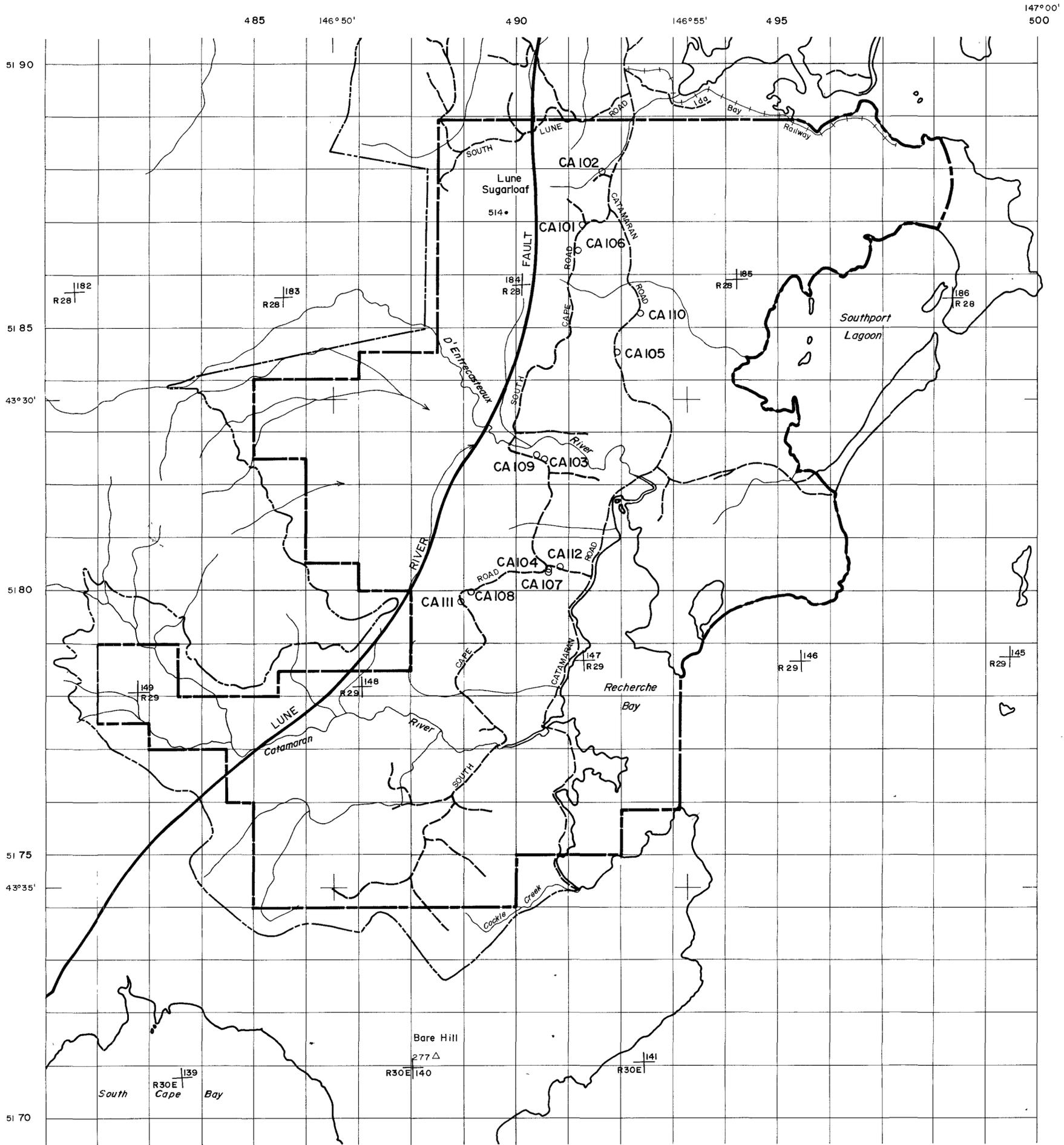
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HOLE No. CA 110

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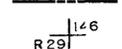
Maped by B.A.W. Date AUG. 1982 Plan No. CM 026

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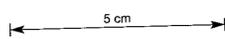
82-1555 v.2/2



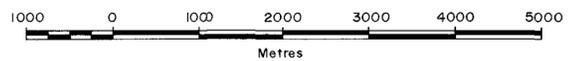
TOPOGRAPHIC LEGEND

-  Sealed Road
-  Unsealed Road
-  E.L. Boundary
-  S.W.A.C. Boundary
-  Photo Centre
-  CM 112 Drillhole location & number

690089



SCALE 1:50 000



Marathon Petroleum Australia, Ltd
Brisbane Australia

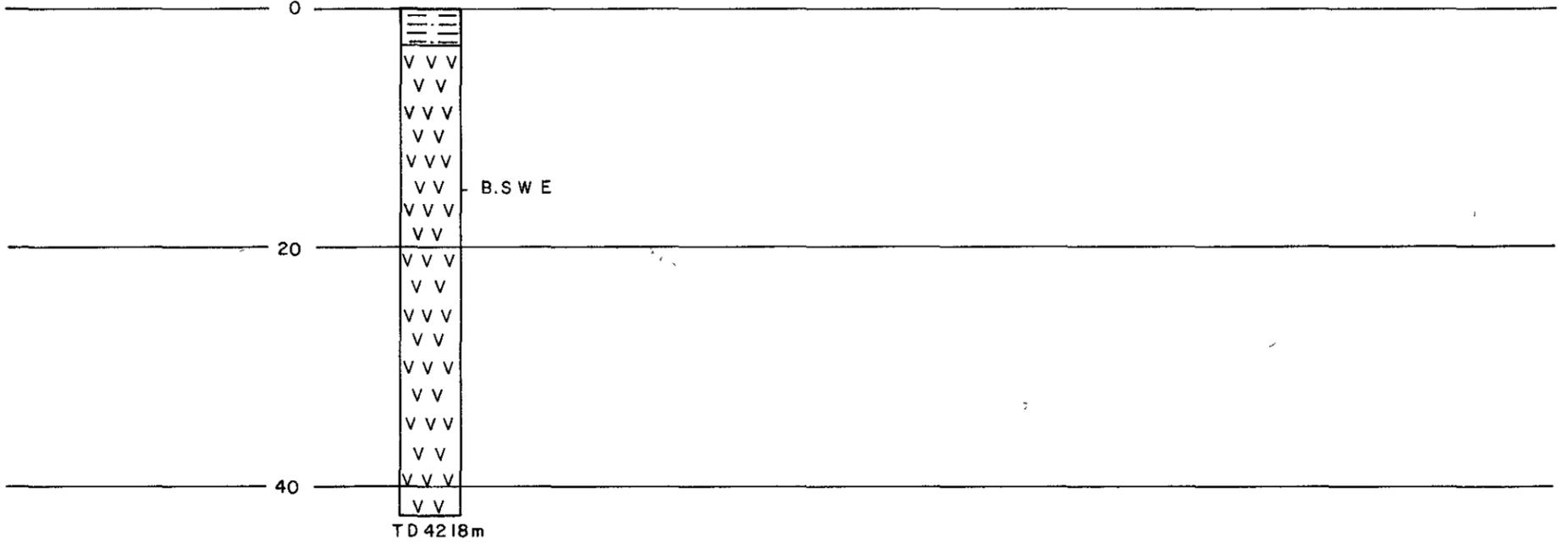
South East Cape (Sh. 8210) Tasmania
E.L. 6/79 Catamaran - Tasmania Project
Plan Showing

DRILL HOLE LOCATION MAP

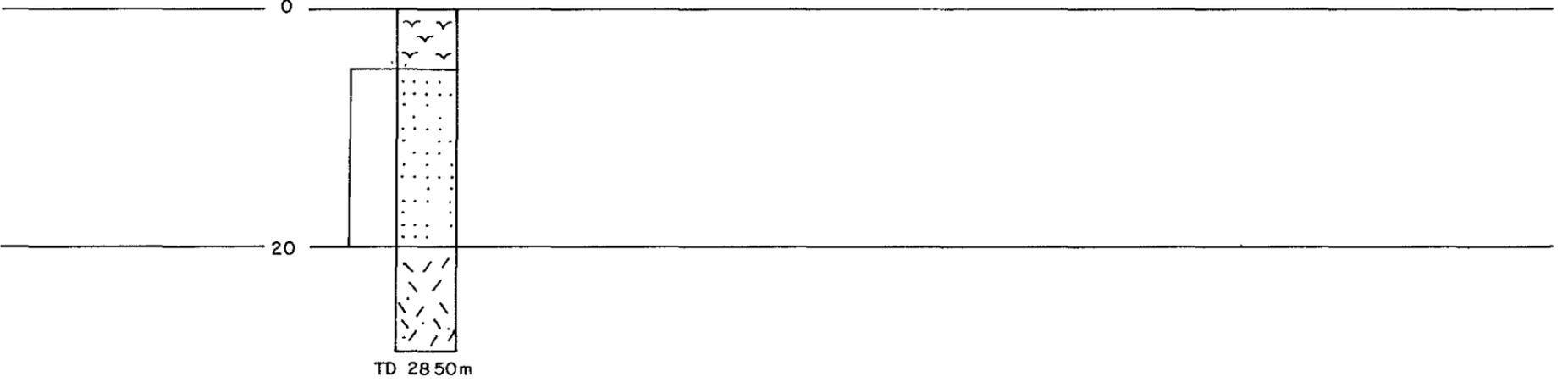
DRAWN BY J Andrews	DATE Jun '82	MAP No
ORIGINAL DATA	DATE May '82	REVISED

Depth
in Metres

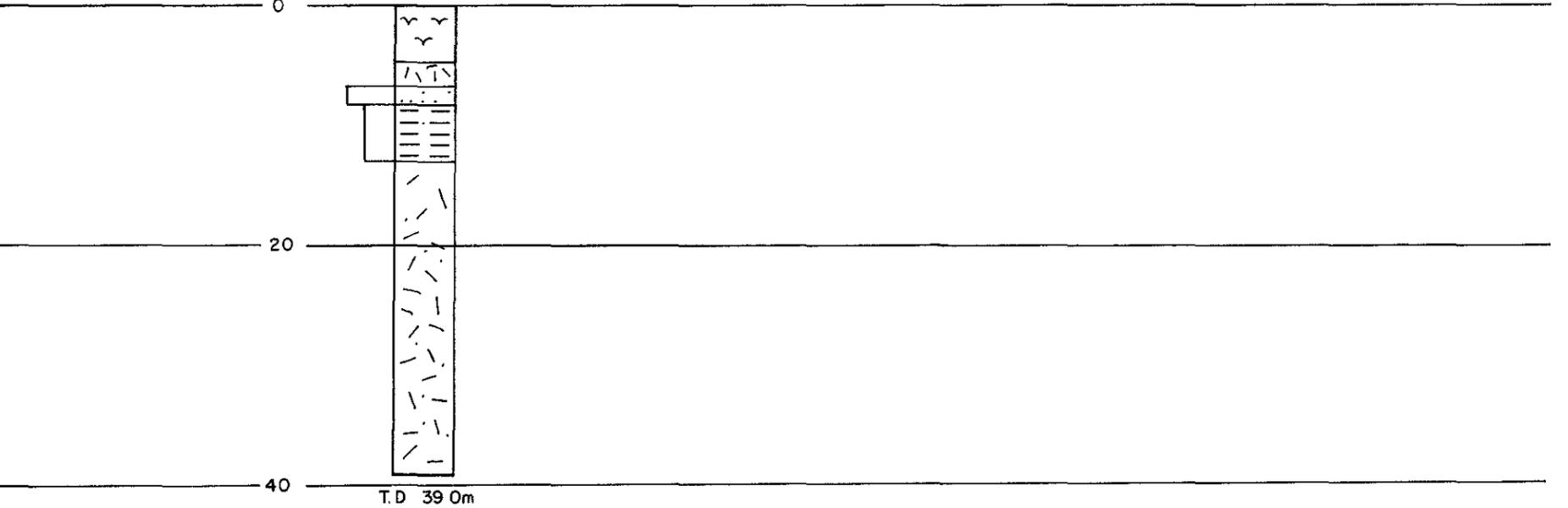
CA 101



CA 103



CA 104

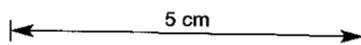


SEAM LOG

690090

Plate 4

880



Marathon Petroleum Australia, Ltd.
BRISBANE AUSTRALIA

E. L. 679 CATAMARAN

Plan Showing

DRILL HOLE SECTION
HOLE No's. CA 101, 103, 104

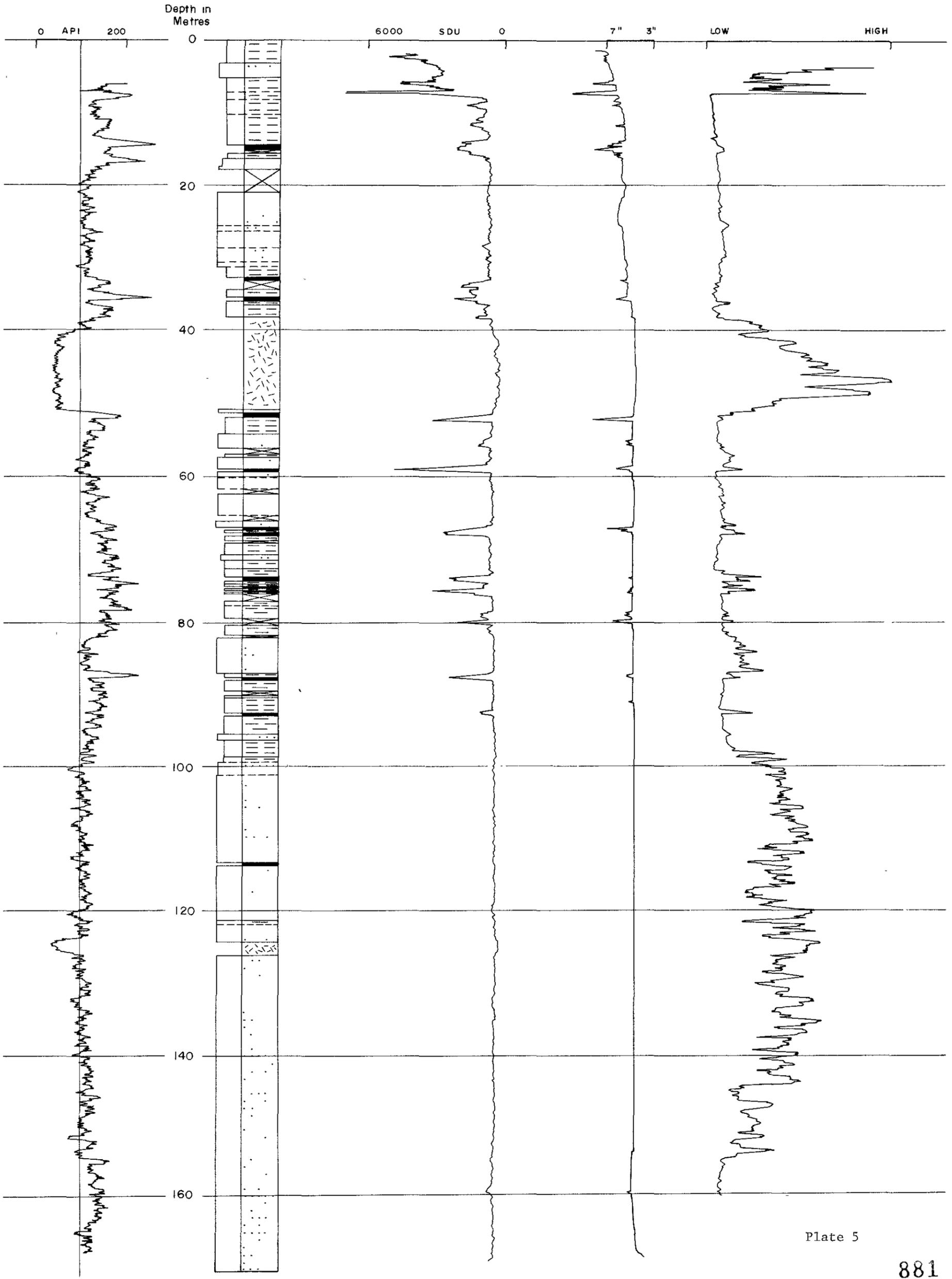
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Mapped by _____ Date JUNE 1982

Plan No CIA3T5-5

HOLE No's 101, 103, 104

82-1855 v2/2



TD 170.0m

Plate 5

881

GAMMA RAY

SEAM LOG

L.S. DENSITY

CALIPER

RESISTIVITY

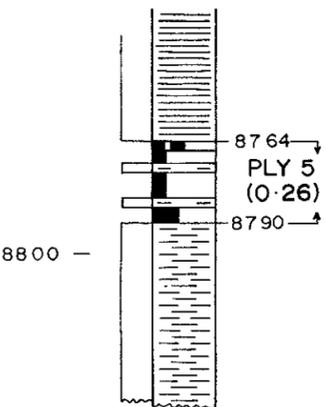
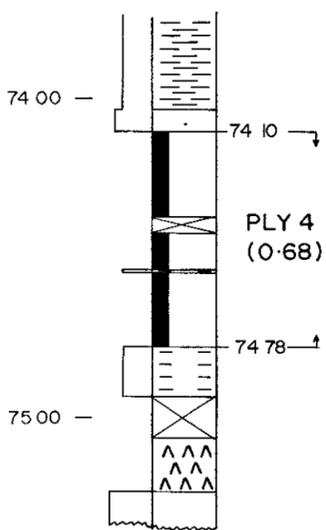
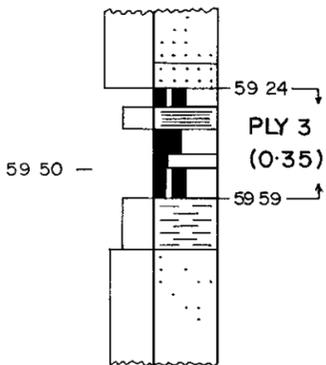
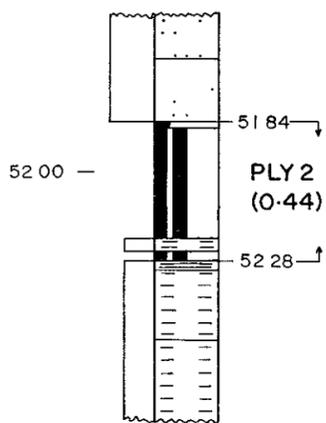
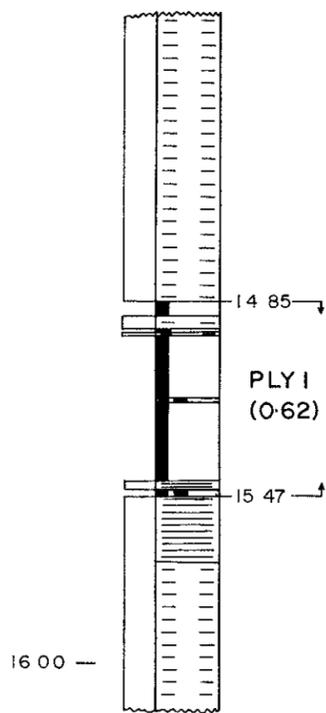
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SCALE 1 500

Marathon Petroleum Australia, Ltd.
 E L 679 CATAMARAN
 DRILL HOLE SECTION
 HOLE No. CA 102 F
 Mapped by J. Andrews Date May 1982 Plan No. CIA3 T5-3

HOLE No. CA 102

8a-1855 v.2a



690091

SCALE 1:20

Plate 5A

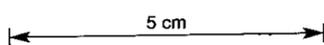
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Marathon Petroleum Australia, Ltd.
BRISBANE AUSTRALIA
Hobart SK 55-8 Tasmania

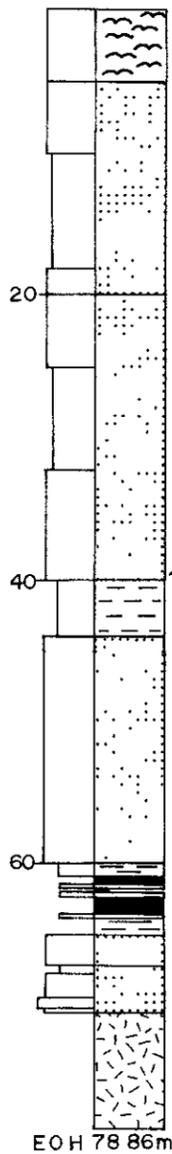
EL 679 CATAMARAN
Plan Showing

DRILL HOLE SECTION
HOLE No. CA 102

Mapped by M R M Date Aug '82 Plan No CM021



82-1855 v ab



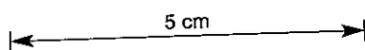
SEAM LOG

SCALE 1:500

690092

Plate 6

883



Marathon Petroleum Australia, Ltd.
BRISBANE AUSTRALIA

Hobart SK 55-8 Tasmania

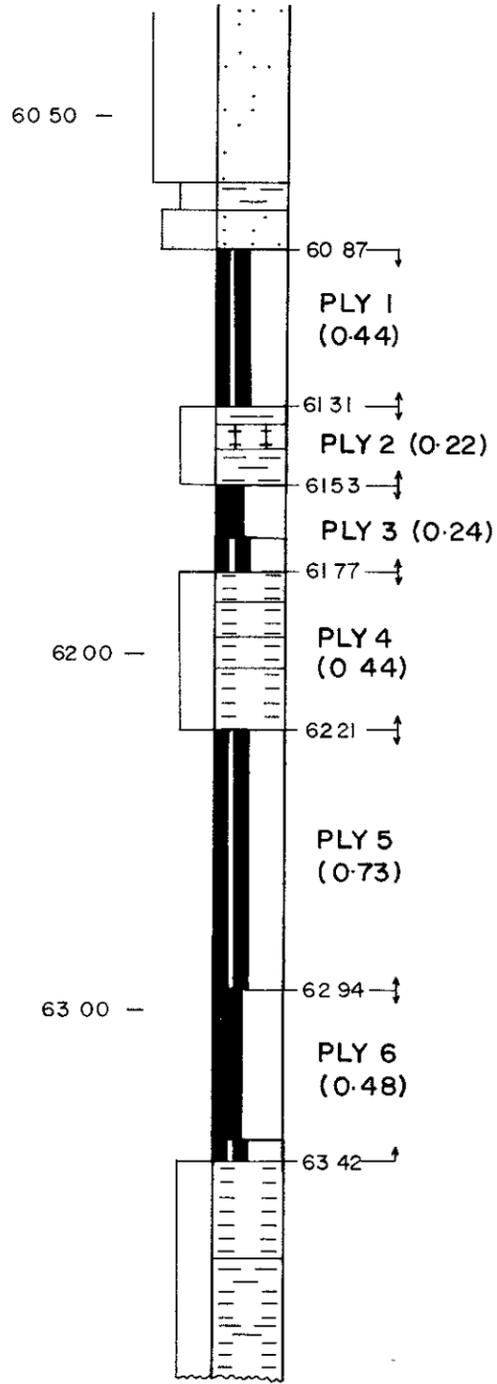
E.L. 679 CATAMARAN

Plan Showing

**DRILL HOLE SECTION
HOLE No. CA105 F**

Mapped by _____ Date June '82 Plan No. CIA 3 T 5-8

Drawn by J. Andrews



690093

Plate 6A

884

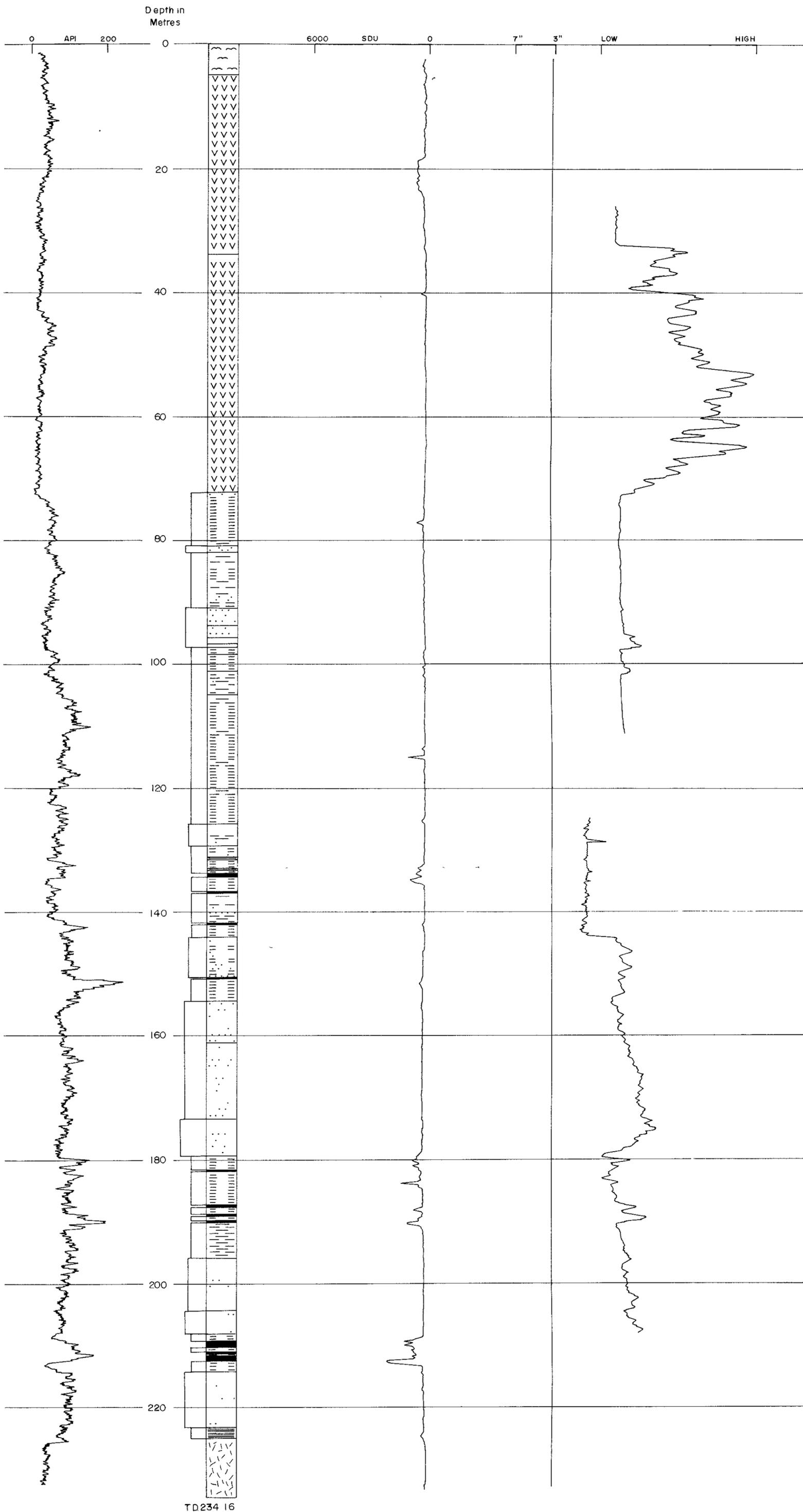
Marathon Petroleum Australia, Ltd.
BRISBANE AUSTRALIA
Hobart SK 55-8 Tasmania

EL 679 CATAMARAN
Plan Showing

DRILL HOLE SECTION
HOLE No. CA 105

Mapped by M R M Plan No C1A3T5-10
Drawn by J ANDREWS Date AUG '82

82-1855 v.2/2.



TD234 16

GAMMA RAY

SEAM LOG
SCALE 1:500

L.S. DENSITY

CALIPER

RESISTIVITY

690094

Plate 7, 885

Marathon Petroleum Australia, Ltd
BRISBANE AUSTRALIA
Hobart SK 55-8 Tasmania

E. L. 679 CATAMARAN
Plan Showing

DRILL HOLE SECTION
HOLE No. CA 106 F

Mapped by
Drawn by J.A. Date Jun '82

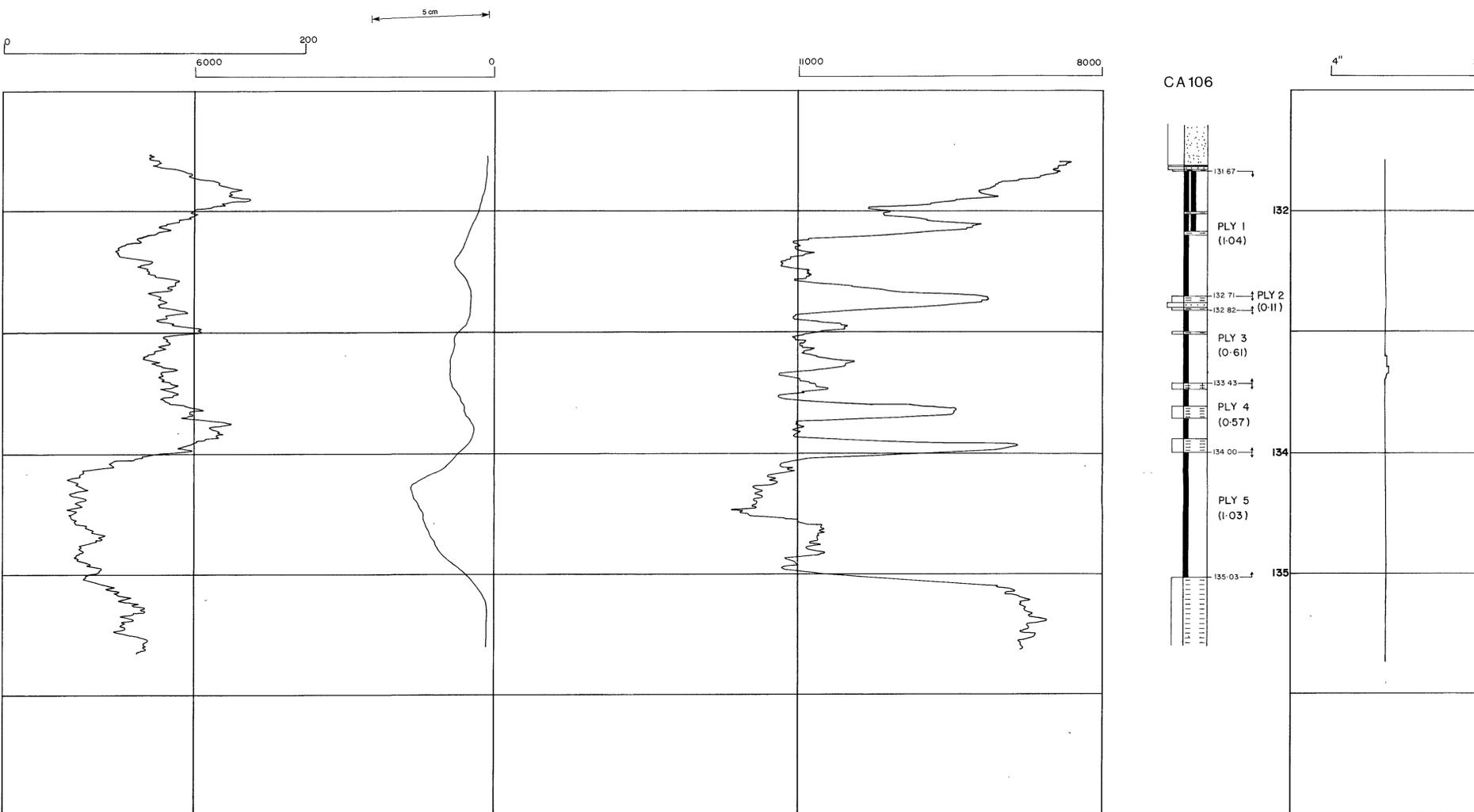
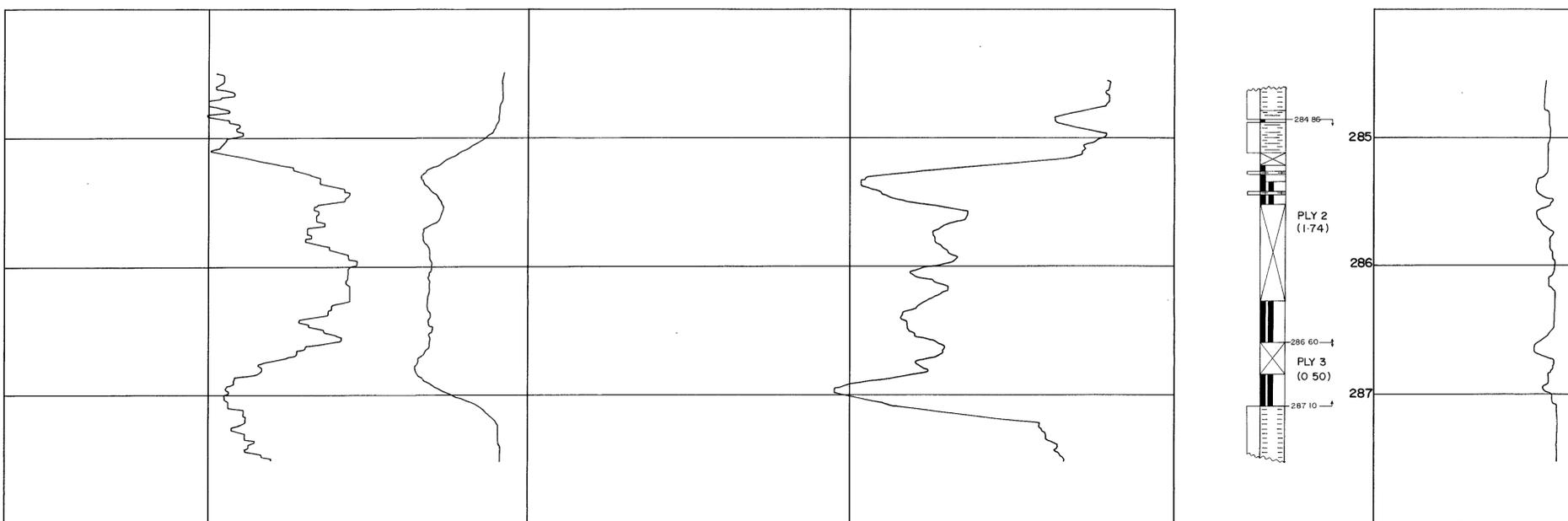
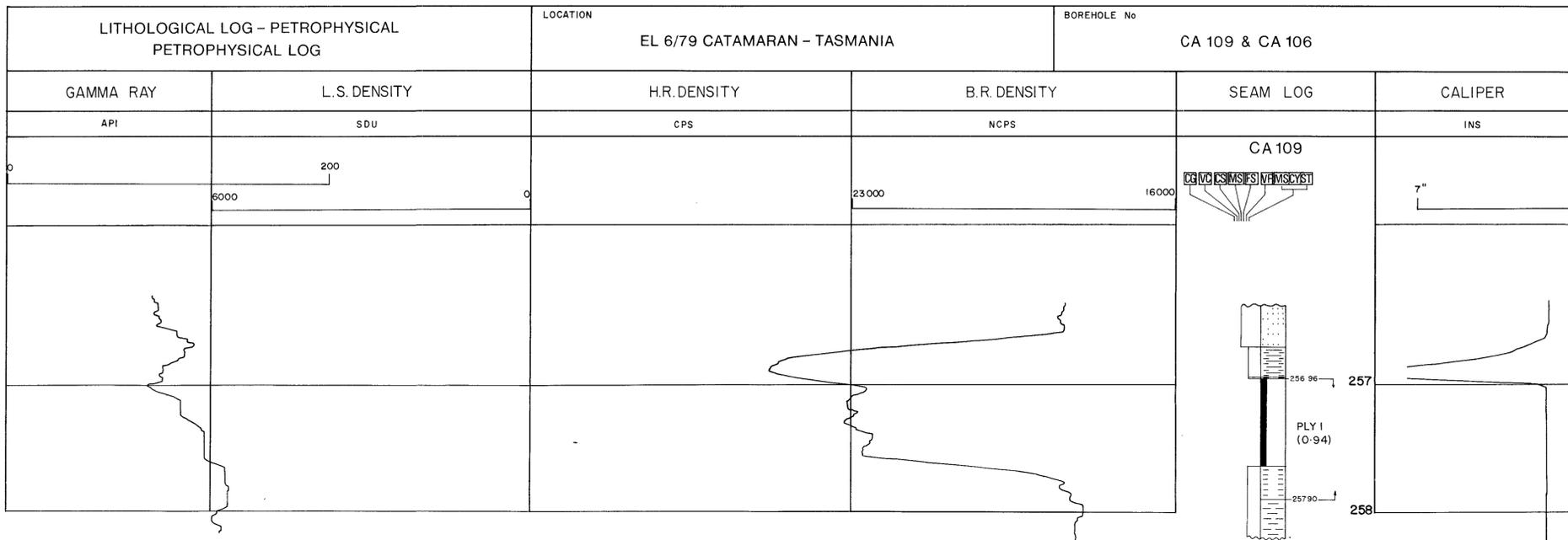
Plan No. CM018

5 cm

NOTE: Gamma Ray and L.S. Density logged through NQ Rods.

82-1855 v.2/2

HOLE No. CA 106



690095

Marathon Petroleum Australia, Ltd.
Brisbane Australia

CATAMARAN TASMANIA
DRILL HOLES CA 109 & CA 106
Plan Showing
LITHOLOGICAL LOG - PETROPHYSICAL LOG
CORRELATION PLOT

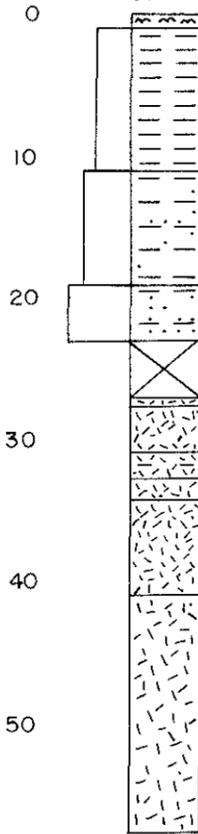
Drawn by J. Andrews	Date Aug '82	Plan No.	File
Mapped by	Date	Amended by	

Plate 7A 886

82-1555 a/2

Depth in Metres

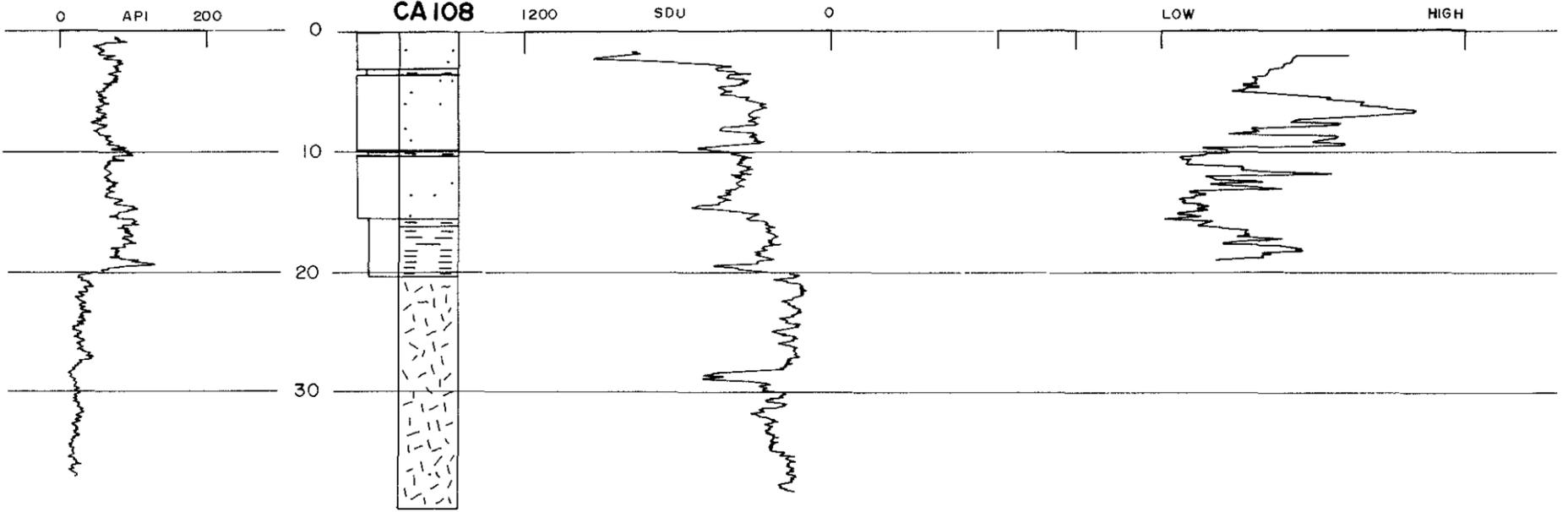
CA 107



T D 57.46

Depth in Metres

CA 108



T D 39.45

GAMMA RAY

SEAM LOG

L.S. DENSITY

CALIPER

RESISTIVITY

690096

Plate 8

887

5 cm

Marathon Petroleum Australia, Ltd.

BRISBANE AUSTRALIA

Hobart SK 55-8 Tasmania

E.L. 679 CATAMARAN

Plan Showing

SCALE 1:500

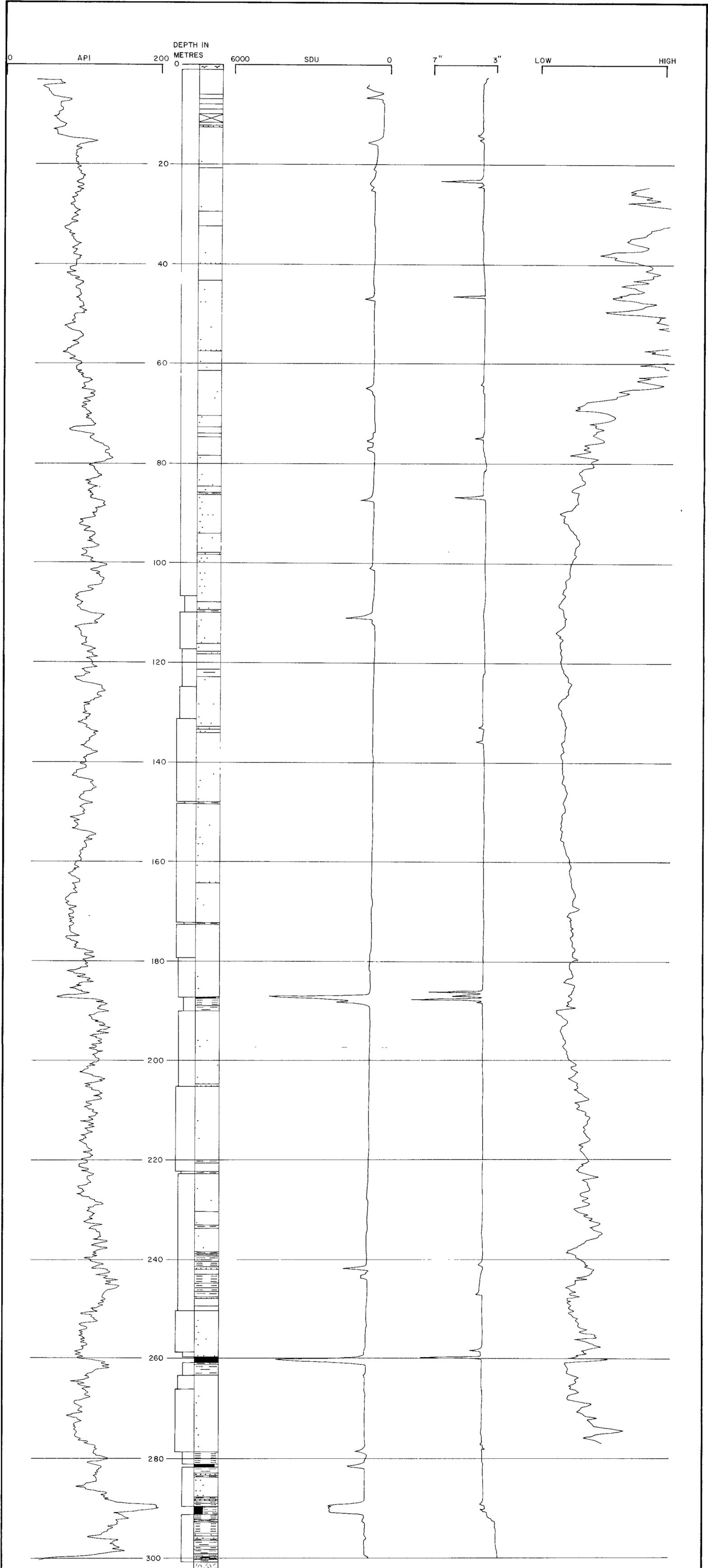
DRILL HOLE SECTION

HOLE No. CA107 & CA108

Mapped by J Andrews Date June '82 Plan No CIA 3 T5-4

HOLE No. CA107 & CA108

82-1855 v.2/2



TD 300 36m

690097

GAMMA RAY SEAM LOG L.S. DENSITY CALIPER RESISTIVITY

Plate 9 888

Marathon Petroleum Australia, Ltd.
 BRISBANE AUSTRALIA
 Hobart SK 55-8 Tasmania

E.L. 679 CATAMARAN
 Plan Showing

DRILL HOLE SECTION
HOLE No. CA 109

Mapped by _____ Plan No. CM 019
 Drawn by S.M.B.J.A. Date JUNE '82

5 cm

Hole No. CA 109

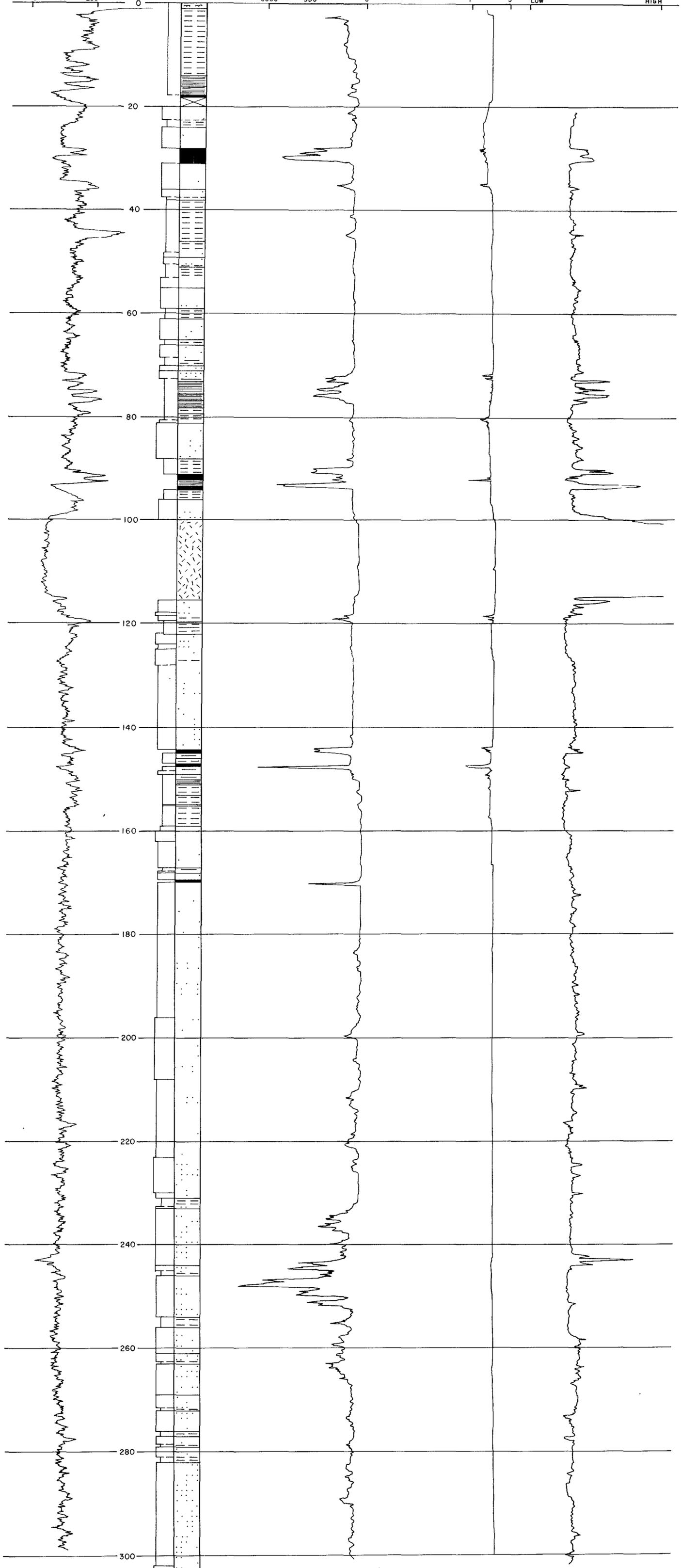
82-1855 2k

Depth
in Metres

0 API 200

6000 SDU 0

7" 3" LOW HIGH



GAMMA RAY

SEAM LOG
SCALE 1 500

L.S. DENSITY

CALIPER

RESISTIVITY

690098

Plate 10

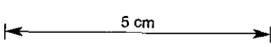
889

Marathon Petroleum Australia, Ltd.
BRISBANE AUSTRALIA

E L. 679 CATAMARAN
Plan Showing

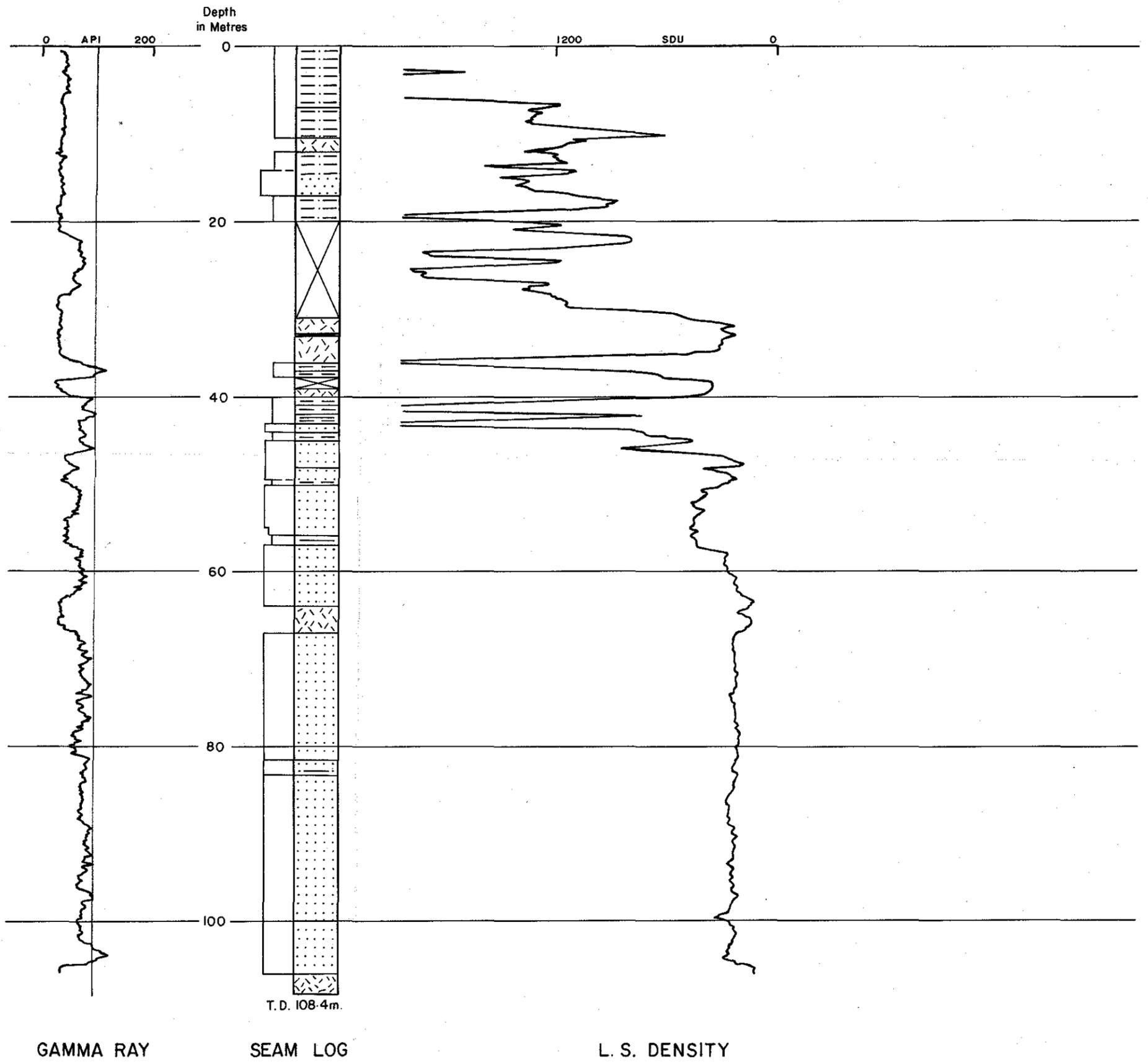
DRILL HOLE SECTION
HOLE No. CA 110

Mapped by _____ Date _____ Plan No. CM 020
Drawn by B A W



NOTE Density 50 NDE
Malfunction 245 5m to 252 5m

HOLE No. CA 110



690101

Plate 12

892

Marathon Petroleum Australia, Ltd.
BRISBANE AUSTRALIA

E.L. 679 CATAMARAN

Plan Showing

DRILL HOLE SECTION

HOLE No. CA 112

Mapped by _____ Date JUNE, 1982. Plan No. CIA3T5-7

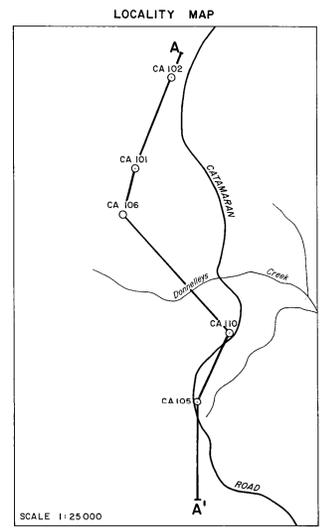
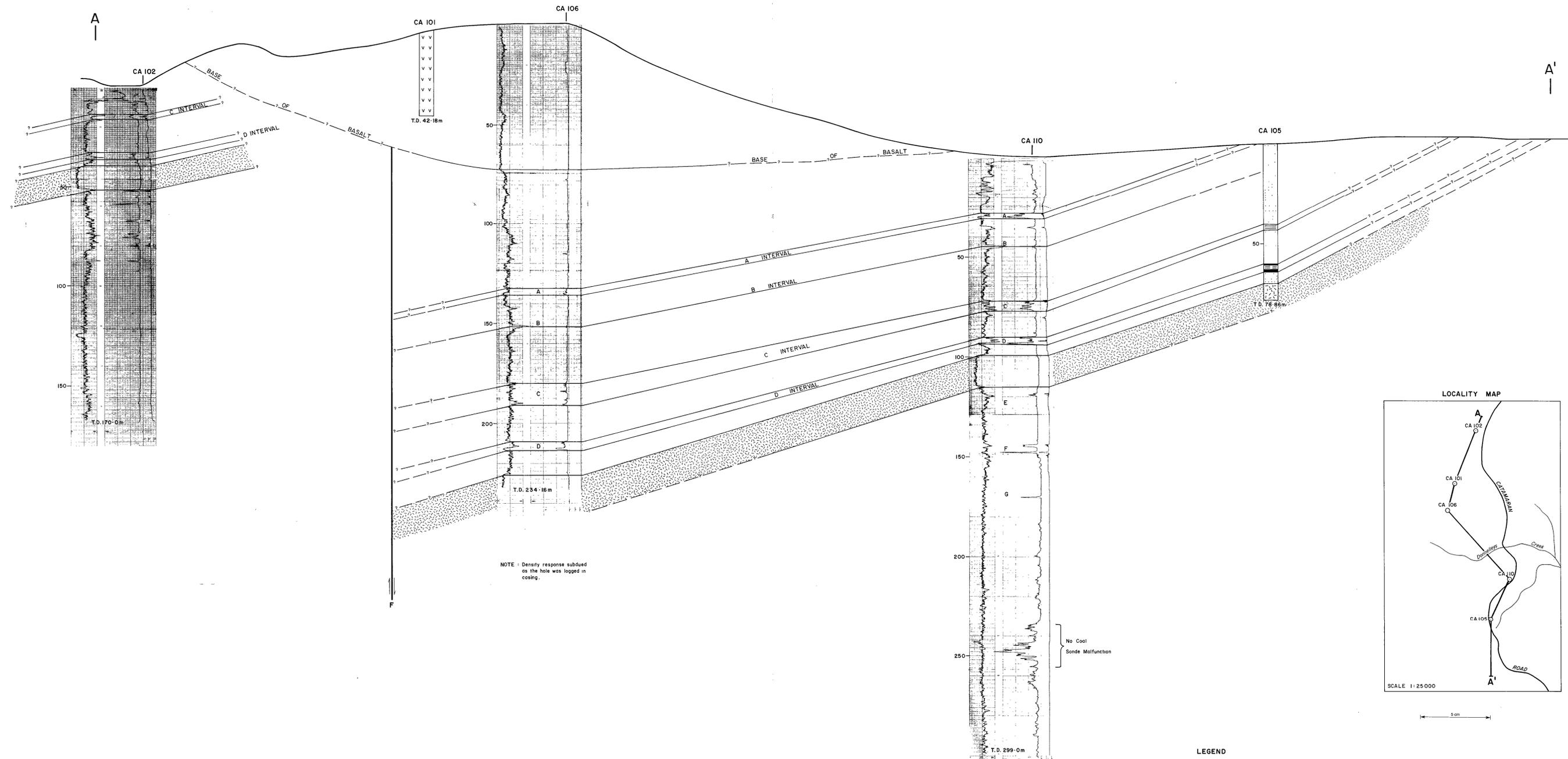
Drawn by B. A. W.

5 cm

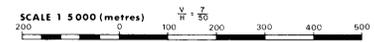
SCALE 1:500

82-1855 2/2

HOLE No. CA 112



- LEGEND**
- Dolerite
 - Sandstone
 - Carbonaceous Mudstone
 - Mudstone
 - Basalt



690102

Marathon Petroleum Australia, Ltd.
 South East Cape Sheet 8210 S.E. Tasmania
 EL 679 CATAMARAN TASMANIA PROJECT
 Plan Showing
GEOPHYSICAL CROSS SECTION
A - A'

Drawn by S.M. Date SEPT 82 Plan No. File
 Mapped by N.T. PERKINS Date SEPT 82 Amended by

Scale 13 893