

CAPRICORN MINING LIMITED,  
17-23 QUEENSBRIDGE STREET,  
SOUTH MELBOURNE.

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EL 27/79 ANNUAL REPORT

**LANGLOH.**

THIRD YEAR

**13 OCT 1982**

17/10/81 to 16/10/82

**OPEN FILE**

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EL 27/79 ANNUAL REPORT  
THIRD YEAR 17/10/81 to 16/10/82

INTRODUCTION

1/.Scope of the Report

This report deals with all exploration activity related to EL 27/79 during the 12 months ending 16/10/82.

Most of the expenditure was concentrated on the Langloh coal prospect where a drilling, logging and assay programme was completed, and a topographic map was produced by contract surveyors. All results are presented and the current understanding of outcrop and sub-surface geology is discussed.

A non-prospective block in the northern part of the licence area is defined and details of relinquishment are included.

Expenditure for the year is tabulated and a work programme for the next year is outlined.

2/.Tenement Details

EL 27/79 (coal) covers  $870\text{km}^2$  of the middle reaches of the Derwent Valley (Fig. 1). The licence was granted to Capricorn Mining Ltd. on 16/10/1979 and is now due for the third renewal. To date no portion of the EL has been relinquished.

3/.Exploration Approach

The approach has been to gather data from previous work, then select the most prospective area and thoroughly explore this prospect to the point

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where it can either be developed or relinquished. It is necessary to employ this method for the systematic exploration of the whole EL, so that the area can be reduced in accordance with the Mines Department requirements, without relinquishing prospective ground.

The initial area of interest is clearly at Langloh where a history of exploration drilling exists and some coal has been mined in the past.

#### SUMMARY

- 1/. Exploration during the third year has concentrated on the Langloh prospect where a target area has been defined by field mapping and eleven holes were drilled over a six km<sup>2</sup> area.
- 2/. Six holes encountered significant coal intersections of quality comparable to the best known Tasmanian Triassic coals. Five of these intersections indicate a single seam which dips towards the N.W., with very little or no faulting.
- 3/. A 100km<sup>2</sup> non-prospective block is relinquished.
- 4/. During year 4, in-place open cut and underground reserves at Langloh will be quantified after the drilling of several further delineation holes. Feasibility studies will be undertaken.
- 5/. The EL will be reduced in area by further geological mapping and possibly scout drilling.

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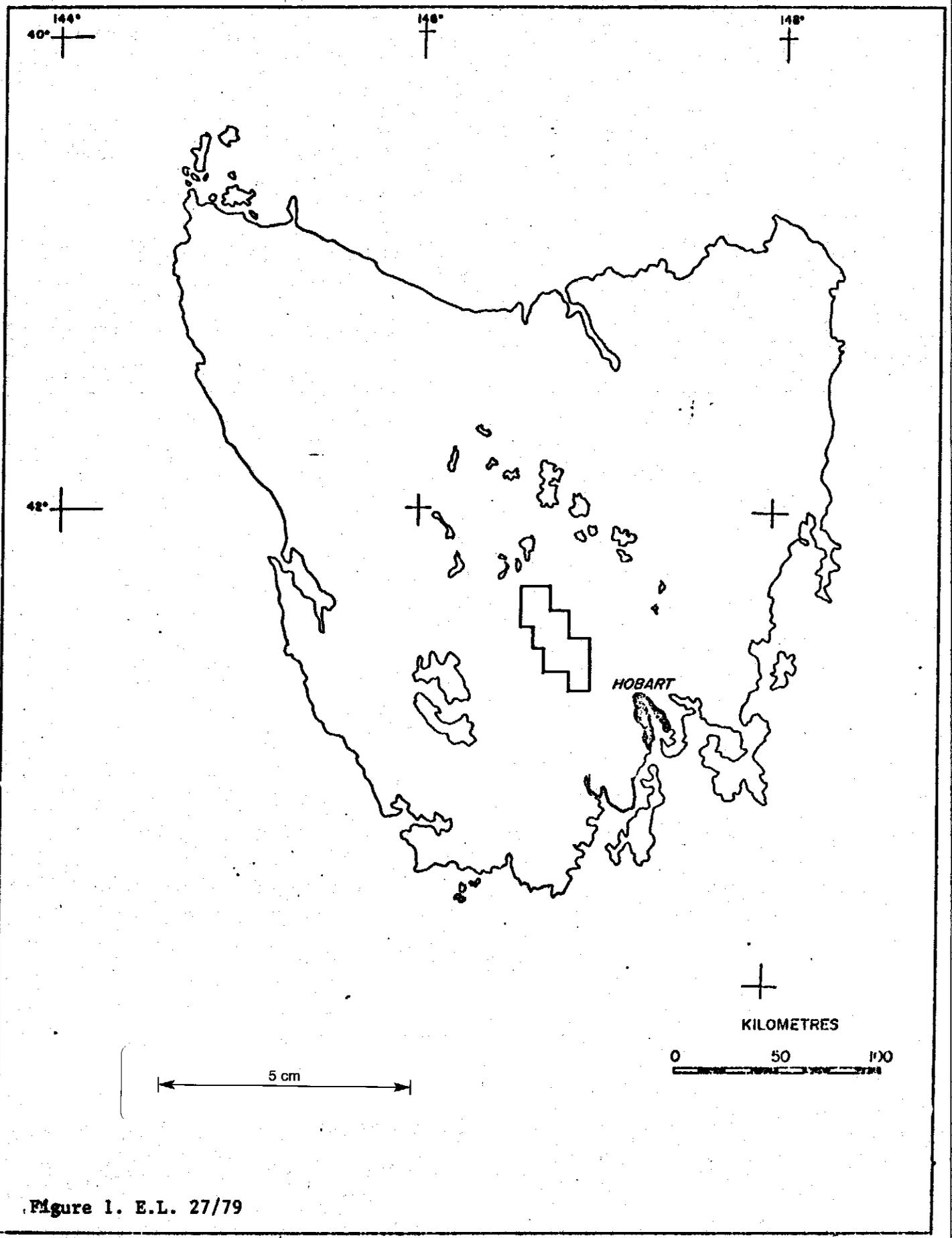


Figure 1. E.L. 27/79

## EXPLORATION

### 1/. Exploration History

#### (a) Government Drilling

Past exploration has centred on the Langloh area where coal was intermittently mined underground until early 1963. Government drilling programmes were conducted in 1894, 1939, 1944-46 and 1956. Maps showing the location of these holes, plus graphic logs, were made available by the Department of Mines, Bellerive. A 1962 plan of the Langloh underground mine (Appendix 1) was provided by Mr E. Archer, Bothwell and was used to estimate the area affected by mining on the geological map (Figure 2). The boreholes have been replotted on the 1:2,500 topographic map (Figure 3).

#### (b) Capricorn Drilling

In 1981, seven partly cored holes were drilled by General Geological Services (in Glenie et al., 1982 on behalf of Capricorn), in an attempt to find extensions of the coal which had been mined at Langloh. Selected data from this drilling and the early government work have been integrated with results from the 1982 drilling (by Petrecon Australia Pty. Ltd.), and are included in the interpretation of the coal seam geology.

### 2/. Geology of the Langloh Area

The coal at Langloh is hosted by medium grained, well sorted, trough cross-bedded lithic sandstone. The lithic sandstone sequence is assumed to correlate with the Triassic coal measures from other parts of the Tasmania Basin (Bacon, 1980 Forsyth 1976, Hale 1962, Noldart 1975, Turner 1980), ie. with the youngest part of the Upper Freshwater Sequence of the Pammeener Super-Group, (Forsyth, et al 1974).

A 12km<sup>2</sup> area was mapped to define the area of coal potential around the Langloh Mine. The map (Figure 2) shows that Langloh is located in a block of Triassic sandstone bounded to the west by Tertiary sediments and to the east by Jurassic dolerite. Cross bedded quartz sandstone outcrops about 1.5km S.E. of the mine and occurs as float to the east of Westfield. This sandstone has affinities with the Lower Triassic, ie. Ross Sandstone, common in central Tasmania.

The dip of the lithic sandstone is towards the N.W. at two outcrop localities (Figure 2) and this direction is consistent with the coal seam dip as interpreted from drill hole correlations. The inferred lithic sandstone/quartz sandstone contact is parallel with the lithic sandstone strike implying conformability. However, the absence of sub-lithic and quartz-mica sandstone and/or shale indicates that the complete Triassic section may not be present. At the dolerite/sandstone contact, the dolerite appears to dip under the sandstone at an angle of about 4°, at least at the eastern margin where hole H - 08 intersected dolerite at 17 metres.

A fault contact is inferred at the western edge of the Triassic block, where at least 100 metres of clay with minor silt, sand and disseminated lignitic debris are exposed. Several hills and ridges to the west of this fault are capped with ferricrete and in some cases fossil angiosperm leaves were observed in ferricrete float fragments, implying that the ferricrete is the product of ground water alteration of the Tertiary sediments. It is unclear whether the ferricrete is genetically related to nearby basalt, however the field distribution of the basalt shows that it is younger than both the Tertiary clay and probably the fault.

Minor discrete patches of silcrete outcrop, and occur as float parallel with, and slightly downslope from, the basalt/sandstone contact.

It can be reasonably expected that the Triassic extends northwards under

the basalt for an unknown distance.

The map has not been extended south of the highway because the interpretation of previous drilling involved a single major coal seam which is intersected by the surface topography, north of the highway, across the full width of the Triassic block. The location of the 1982 holes was based on this hypothesis.

### 3/. Drilling

Eleven holes, (H - 08 to H - 18) were drilled at Langloh during May, 1982, by contractor H. J. Stacpoole, 1 Lindsay Street, Invermay. Details of the equipment used are summarised in Table 1. (Hole locations are shown in Figures 2 and 3), and the survey and depth data are summarised in Table 2.

Ten holes were collared in Triassic lithic sandstone and were fully cored (NQ = 45.1mm core diameter). The eleventh (H - 13) was entirely open drilled in Tertiary clay to confirm the field interpretation that a thick block of Tertiary clay existed rather than a superficial cover over the Triassic.

The major aims of the programme were to firstly, locate coal close enough to the surface to be considered for open cut potential, and secondly to complete a drill hole coverage of the lithic sandstone block which was adequate for interpreting the sub-surface coal geology. The latter aim incorporated some checking of previous drilling.

Six holes (H - 09, - 10, - 12, - 14, - 16, - 17), intersected cumulative single seam coal thicknesses ranging from 1.81 to 4.83 metres. Depths to the top of the coal range from 12.84 metres, (H - 10) to 45.40 metres (H - 16). Excluding H - 12 the coals are considered to correlate and to be the same seam. Minor coal was encountered in H - 11, H - 15, and H - 18. In the case of the latter two, the coal was intersected immediately below soil cover and is interpreted as the contact between the main seam and the topography. It is not yet clear whether

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the section drilled in H-11 and H-12 correlate with the above mentioned single seam. Coal seam correlations are discussed in more detail in Section 7.

H-8 intersected dolerite at 16.85 metres and was abandoned at 20.95 metres. With the exception of H-13, drilled entirely in Tertiary clays, all other holes commenced and were completed in the Triassic lithic sandstone sequence.

Lithologic logs are presented in Appendix 2, graphic logs in Appendix 3 and geophysical logs in Appendix 4. A photographic record was kept of core in coal bearing sections (see Appendix 5).



Figure 4. Stacpoole's Fox B80.

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Table 1. SUMMARY OF DRILLING EQUIPMENT AND METHODS, LANGLOH, MAY, 1982.

RIG: Fox B80, truck-mounted hydraulic drill (Figure 4).

CREW: 1 Driller  
1 Off-sider  
1 Water truck driver/off-sider

WATER-SUPPLY: Trucked from Clyde River and from farm dams on Ellangowan, Kimbolton and Norley. Permission was obtained from the Council and the land-owners respectively.

CASING: HQ (96.1 mm) steel.

BIT: Double Dimple diamond bit

ADDITIVES: Super Gel Bentonite  
Rotril cutting powder  
Teepol detergent

HOLE STATUS: Each hole has a 3 metre length of 5 inch diameter steel casing holding the collar open. The casing is covered with a steel cap at ground level.

TABLE 2. SUMMARY OF DRILL HOLE LOCATIONS AND DEPTHS

LANGLOH MAY, 1982.

HOLE NO:	AMG CO-ORDINATES	COLLAR REDUCED LEVEL (metres)	TOTAL DEPTH (metres)
H - 08	484,214 M. E. 5,290,833 M. N.	165.48	20.95
H - 09	483,019 M. E. 5,290,022 M. N.	191.93	30.05
H - 10	482,215 M. E. 5,289,652 M. N.	145.92	27.00
H - 11	481,469 M. E. 5,290,084 M. N.	124.48	27.00
H - 12	481,741 M. E. 5,290.908 M. N.	156.17	69.00
H - 13	NOT SURVEYED		19.00
H - 14	482,087 M. E. 5,290,708 M. N.	157.96	57.39
H - 15	481,931 M. E. 5,290,346 M. N.	144.89	28.80
H - 16	482,490 M. E. 5,290,584 M. N.	168.40	57.45
H - 17	482,838 M. E. 5,290,284 M. N.	166.40	26.10
H - 18	483,967 M. E. 5,290,244 M. N.	165.18	21.00

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*low* 15  
 \$26,720  
 \$69.63/m

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#### 4/. Geophysical Logging

Contract loggers B.P.B. were employed to log the most promising 1982 holes and to re-log those 1981 holes which were still standing. The Coal Combination Sonde, (consisting of caliper, natural gamma radiation, long spaced density and bed resolution density tools) was used. L.S.D. has deep resolving power but cannot distinguish beds less than 350mm thick. Thus it was ideal for measuring variation in density over the complete drilled section, but required supplement by the B.R.D. through the coal mudstone sequences where greater detail of the thin units was required. It was also important to have a measure of changes in the hole diameter, via the caliper log, especially for density and gamma log interpretation. The 4 logs provided the basic profile for stratigraphic correlation and gave accurate depths to the top of the coal and thicknesses of coal sections. The density logs were used to correct depths on the original field logs, being especially useful when core loss has occurred. The complete-hole logs (gamma, caliper and L.S.D.) were run at 9 metres per second and graphed at a scale of 1:100. Pre-defined coal sections were run at 2 metres per second (caliper and B.R.D.) and graphed at 1:20 scale. The logs are presented in Appendix 4.

In most holes sediment at the bottom prevented the sonde reaching the T.D. drilled. This demonstrates the need to drill several metres below the target seam and in H - 16, which had silted over 6 metres from the bottom, the lower coal ply had been buried. In H - 06 the tool would not pass 53.1 metres (T.D. = 157.0m) due to hole collapse, however this did not affect detection of the coal seam between 13 and 19 metres. In H - 04 however, the main body of the seam was encountered at the same depth as the water table, (approx 22 metres), thus distorting the density log. The gamma tool is less affected by the change from water to air, and for H - 04 the gamma log gives a more accurate profile of the coal seam.

Log density values are currently being correlated with laboratory measured density and ash content so that some basic relationships can be established for calibrating the density tools prior to the next drilling programme, and so that coal quality can be roughly assessed immediately after drilling. This work has not yet been completed.

#### 5/. Coal Assay Results

Whole core proximate analysis, relative density, specific energy and washability tests were performed by S.G.S. Sydney in accordance with Australian Standards 2519-1982. Only coal intersections of significant thickness (ie. ranging from 1.81 to 4.83 metres in H-09, H-10, H-12, H-14, H-16, H-17), were analysed.

The assay results were summarised in Table 3. and for full S.G.S. reports see Appendix 6.

Table 3. shows that the coal quality is quite high by Tasmanian standards. The entire seam weighted mean percent Ash (airdried) ranges from 18.67 (H - 10) to 28.97 (H - 17) and corresponding Volatile Matter ranges from 11.53 (H - 09) to 24.81 (H - 10). The sulphur content is typical of known Tasmanian Triassic coals, ranging from 0.19% to 0.43%. Raw coal, airdried, Composite Specific Energy Values range from 19.67 to 26.28 megajoules/kg. Both the sulphur and S.E. analyses were taken on 16 composite samples which constitute the whole seam thickness intersected in the 6 holes mentioned above.

Sink-Float testing was conducted on the same composite samples of slim line core, in an effort to obtain an estimation of the washability properties and the yield which could be expected at an ash content of around 20%.

In all but four samples the Sink-Float fractions were F1.40, S1.40-F1.50, S1.50-F1.60, and S1.60. The remaining four were S1.60-F1.80, instead of S1.80 fraction, (see Appendix 7).

TABLE 3. SUMMARY OF COAL ASSAY DATA

LANGLOH MAY, 1982.

HOLE NO.	CUMULATIVE COAL SEAM THICKNESS (METRES)	*%ASH		*%VOLATILE MATTER		*COMPOSITE SPECIFIC ENERGY (mj./kg.)	*COMPOSITE %SULPHUR	*COMPOSITE SINK/FLOAT s1.50 - Fl.60.			
		weighted mean	range	weighted mean	range			fractional mass% ash%	cumulative mass% ash%		
H - 09	3.13	28.27	22.5-40.0	11.53	9.6-13.7	20.54	0.23	18.9	29.3	74.0	21.7
						26.28	0.29	7.9	28.4	88.8	16.0
H - 10	4.83	18.67	13.3-31.1	24.81	19.7-28.2	21.72	0.26	17.6	28.8	80.9	19.2
						25.86	0.26	3.9	30.6	95.8	12.7
						23.87	0.32	4.4	28.9	88.2	13.3
H - 12	1.81	24.2	24.0-24.3	16.20	15.8-16.4	23.44	0.43	15.4	26.5	76.0	17.1
						24.52	0.40	27.4	24.5	85.4	18.5
H - 14	3.66	25.05	19.7-29.8	17.09	16.0-18.1	21.04	0.22	17.2	28.2	65.4	20.3
						25.62	0.33	7.0	30.2	90.3	16.3
						23.74	0.34	10.7	32.2	80.0	18.2
H - 16	3.65	25.34	18.4-37.6	18.32	15.1-21.1	19.67	0.22	20.4	33.1	69.3	25.2
						25.62	0.41	9.3	28.2	88.6	16.0
						25.68	0.37	9.7	26.8	88.1	15.3
H - 17	3.78	28.97	22.8-40.5	13.65	9.9-18.2	19.96	0.19	23.3	32.1	72.2	25.5
						24.12	0.24	23.2	28.5	87.1	20.6
						24.68	0.32	12.4	30.2	81.5	17.8

\* RAW COAL, AIR DRIED

A summary of results is included in Table 3. The main point to note is that at a liquid medium S.G. of 1.60, the sample mass which floated ranged from 65.4% to 95.8% (16 samples) and this yield had a cumulative ash content ranging from 12.7% to 25.5%.

#### 6/. Topographic Survey

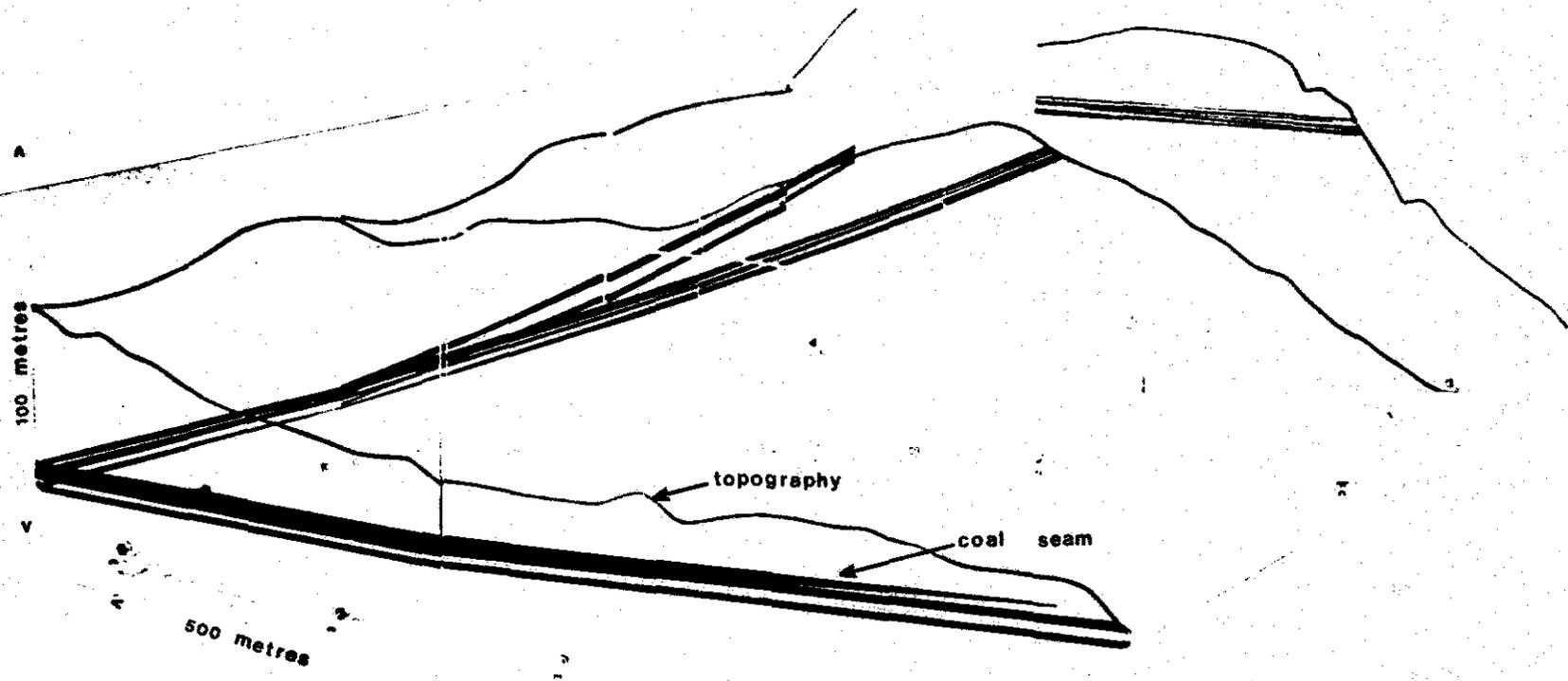
Hobart surveyor E. B. Valentine was contracted to produce a detailed topographic contour map of the exploration area and to survey the collar co-ordinates and reduced levels for both the 1981 and 1982 drill holes. This information is necessary for stratigraphic correlations, reserve estimation and any future planning which considers the location of property boundaries, buildings and H.E.C. installations.

The map (Fig. 3) was drafted onto the Australian metric map grid at a scale of 1:2,500 with a two metre contour interval. Two of the early government drill hole sites (Bore 2, 1939 and Bore 1, 1956) were located and this enabled the remaining bores to be re-plotted on the new map.

#### 7/. Interpretation of Coal Seam Geology

A model is currently being built at the Bass Strait Oil and Gas premises, 5 Battery Square, to demonstrate the geometry and orientation of the main coal seam. Using both the stratigraphic information from all holes drilled to date, plus the surveyed topographic map, the model (Fig. 5) is being constructed from clear perspex panels erected on a 1.75 x 1.50 wooden table.

The Australian map grid was drafted on the table at a scale of 1:2,000 and the individual panels represent two-dimensional sections between drill holes.



3-DIMENSIONAL MODEL IN PERSPEX

FIGURE 5.

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Only the topographic surface and the main coal seam have been taped onto the sections (vertical scale = 400:1), thus when several sections are in place a sensible perception of the coal seam in 3 dimensions, and of the 3 dimensional variation in over-burden thickness, can be gained.

Currently, sections through 13 holes have been constructed and the picture emerging is that a single seam exists, composed of between 3 and 6 plies separated by mudstone bands, and dipping towards the north west no faulting of the coal seam has been detected, although minor irregularities exist in the top-of-coal topography. Although the number of plies within the seam varies frequently, the overall seam thickness is fairly constant. It is not yet clear whether any directional splitting trend exist, however the thickest cumulative coal occurs in N-S section through Kimbolton Hill (Fig. 5).

The model also demonstrates that some of the coal is close enough to the surface to be considered for open cut mining. A task for Year 4 is to delimit the volume of proven open cuttable coal. Top-of coal contour maps and seam isopachs are currently being prepared.

No detailed analysis of the host rock stratigraphy and petrography has yet been undertaken, however it is clear that frequent fining-up cycles within the sandstones occur and that the coal and mudstones could fit the back swamp facies of the meandering stream, i.e. fluvial point bar, vertical section models, (e.g. Allen 1965, Rust 1977). These cycles comprise basal open framework conglomerates of reworked lutites, on a erosional scour surface, and overlain by thick units of massive (or large scale cross bedded) sandstones which fine-upwards to lutites and coal. Typically, between several and several tens of fining-up cycles are encountered within the sandstones before any mudstone/coal appears in the stratigraphy.

8/. Partial Relinquishment

Under the new (1/7/1982) conditions governing exploration, it will be necessary to reduce the area of EL 27/79 to 250km<sup>2</sup> by 16/10/1984. This will be done by sequentially eliminating blocks which can be shown to have low prospectivity.

We wish to relinquish a 100km<sup>2</sup> block (Figure 6), in the NW of the licence area at the current renewal. Reconnaissance field work reveals that Triassic fluvial sandstones outcrop over much of the area. However, they are the quartz and quartz-mica arenites which are older and stratigraphically lower than the coal-hosting lithic sandstones.

The relinquished block is bounded by the following A.M.G.

co-ordinates -

- S.E. Corner : 480,000 m. E., 5,305,000 m. N.
- S.W. Corner : 470,000 m. E., 5,305,000 m. N.
- N.W. Corner : 470,000 m. E., 5,315,000 m. N.
- N.E. Corner : 480,000 m. E., 5,315,000 m. N.

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PERMIT EXPENDITURE FOR YEAR 3.

The table below shows the major components of the exploration expenditure from September 1981 to July 1982. Expenditure for the remainder of the permit year will be passed on to the Director of Mines when the accounting is completed.

<u>ITEM:</u>	<u>COST:</u>	
DRILLING	\$ 26 720	i.e. \$70/ha
TOPOGRAPHIC MAP	8 253	
GEOPHYSICAL LOGGING	1 910	
COAL ASSAY	2 852	
GEOLOGICAL CONSULTANTS FEE		
(a) General Geological Services	7 000	
(b) Petrecon Australia	18 875	
MISCELLANEOUS	225	
	<u>\$ 65 835</u>	i.e. \$78/ha <sup>2</sup>
		for 870 km <sup>2</sup>

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PROPOSED 1982-83 WORK PROGRAMME

The exploration programme for year 4 (year ending 16.10.83) is planned in three phases, to be conducted simultaneously.

1. Complete proven open-cuttable reserves at Langloh and commence mine feasibility and marketing studies. This will involve several additional slimline core exploration holes and probably some bulk samples of coal for washability testing.
2. Explore deeper extensions of the Langloh seam to a point where a reserve suitable for underground mining could be considered.
3. Systematically prospect other parts of the EL by reconnaissance field mapping with support scout drilling. This phase will delimit bodies of lithic sandstone for more detailed exploration, and non-prospective blocks of the EL for relinquishment.

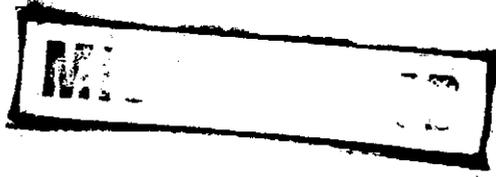
Expenditure on the reduced area of the EL (770km<sup>2</sup>) for 1982-83 is required to be \$154,000. The above programme will meet this commitment.

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**LANGLON**

THIRD YEAR

**13 OCT 1982**

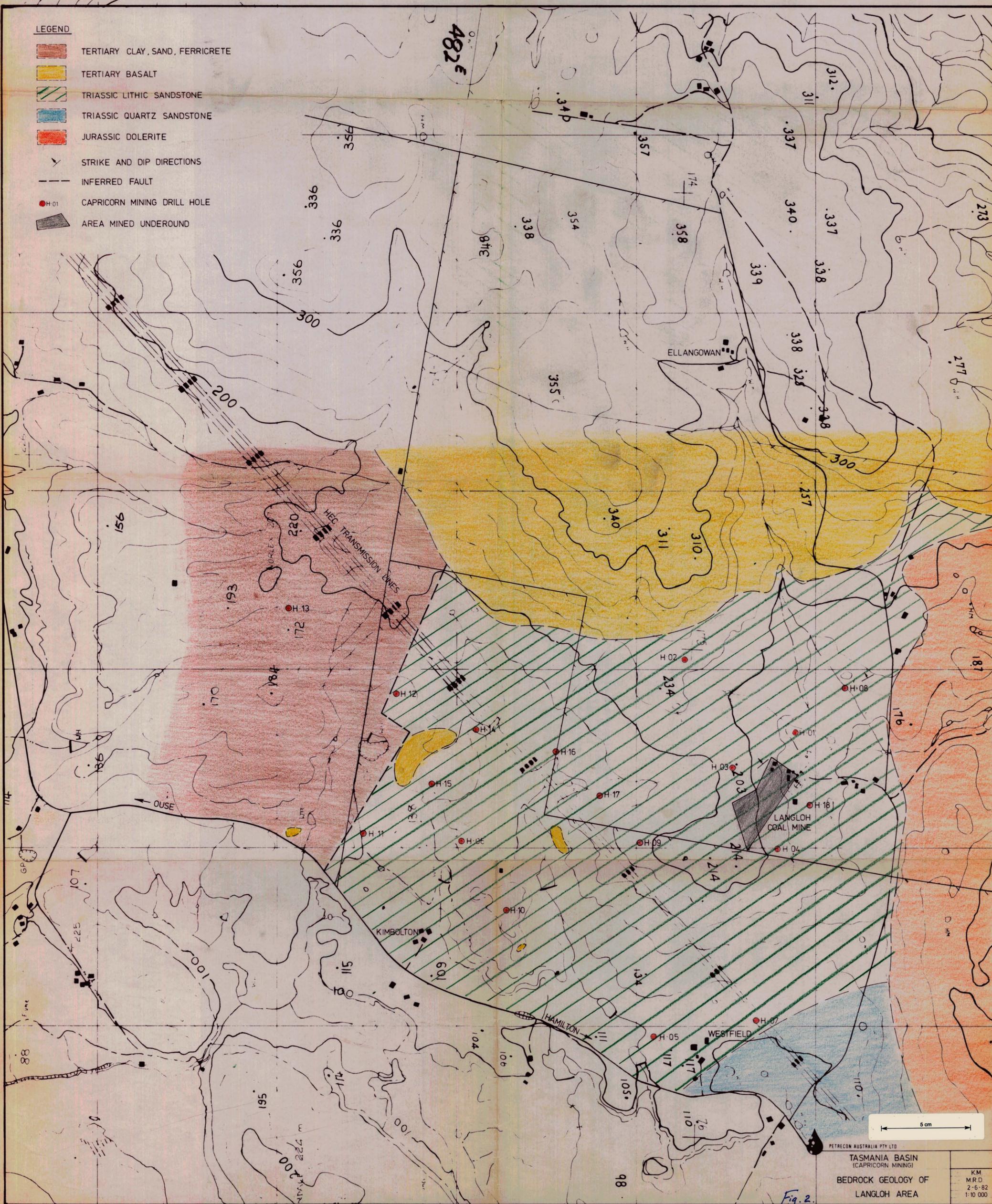
17/10/81 to 16/10/82

**MICROFILMED**

**OPEN FILE**

LEGEND

-  TERTIARY CLAY, SAND, FERRICRETE
-  TERTIARY BASALT
-  TRIASSIC LITHIC SANDSTONE
-  TRIASSIC QUARTZ SANDSTONE
-  JURASSIC DOLERITE
-  STRIKE AND DIP DIRECTIONS
-  INFERRED FAULT
-  CAPRICORN MINING DRILL HOLE
-  AREA MINED UNDERGROUND



PETRECON AUSTRALIA PTY LTD  
 TASMANIA BASIN  
 (CAPRICORN MINING)  
 BEDROCK GEOLOGY OF  
 LANGLOH AREA

KM  
 M.R.D.  
 2-6-82  
 1:10 000

Fig. 2.



E. BARRIE VALENTINE  
 AUTHORISED SURVEYORS & TOWN PLANNERS  
 183 MACQUARIE STREET, HOBART, TELEPHONE 34 92 88

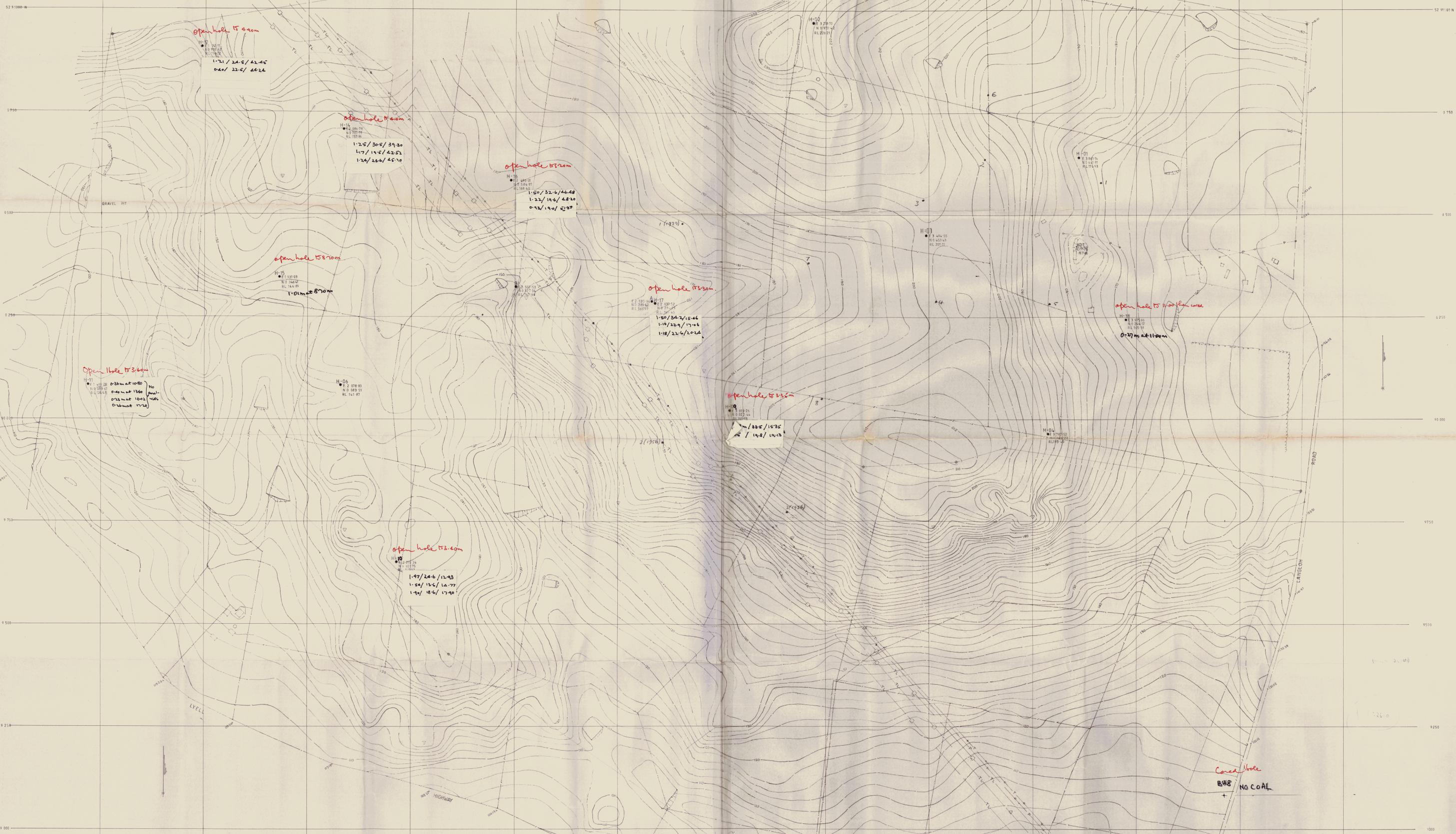
Capricorn Mining Ltd  
 Contour & Detail Plan

REFERENCE No.	SCALE 1:2500	AMG
82037	DRAWN T.M.	
	DATE 21.7.82	

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 AUTHORISED SURVEYORS & TOWN PLANNERS  
 183 MACQUARIE STREET, HOBART, TELEPHONE 34 92 88

Capricorn Mining Ltd  
 Contour & Detail Plan

REFERENCE No.	SCALE 1:2500	AMG
82037	DRAWN T.M.	
	DATE 21.7.82	



open hole 15.4m  
H-01  
1-21/24.5/42.45  
048/22.5/44.24

open hole 16.3m  
H-02  
1-25/30.5/39.30  
1-17/19.5/42.52  
1-24/25.6/45.10

open hole 17.3m  
H-03  
1-50/52.6/44.48  
1-22/19.6/48.10  
0-12/19.2/21.97

open hole 15.8m  
H-04  
1-01/1.0/1.0  
1-01/1.0/1.0

open hole 17.3m  
H-05  
1-50/54.2/15.44  
1-18/22.9/17.46  
1-18/22.6/20.24

open hole 15.0m  
H-06  
0-27/1.0/1.0

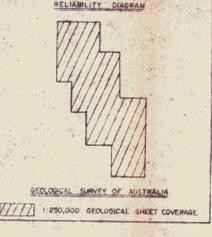
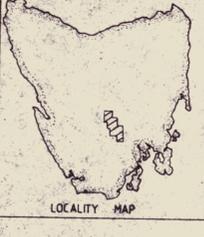
Open hole 15.6m  
H-07  
0-28/1.0/1.0  
0-29/1.36/1.36  
0-23/1.60/1.60  
0-26/1.72/1.72

H-08  
0-28/1.0/1.0  
0-29/1.36/1.36  
0-23/1.60/1.60  
0-26/1.72/1.72

open hole 15.3m  
H-09  
1-10/10.0/10.0  
1-10/10.0/10.0

open hole 17.3m  
H-10  
1-47/24.6/12.93  
1-54/15.6/12.77  
1-90/18.6/17.40

Cased Hole  
BWS  
NO COAL



### TASMANIAN E.L. AREA 2 BASE MAP

Scale 1:50,000



HORIZONTAL DATUM: AUSTRALIAN GEODETIC DATUM 1984  
VERTICAL DATUM: AUSTRALIAN HEIGHT DATUM  
PROJECTION: TRANSVERSE MERCATOR

PERMANENT	REFERENCE
Quaternary	Quaternary deposits
Tertiary	Tertiary deposits
Cretaceous	Cretaceous rocks
Jurassic	Jurassic rocks
Triassic	Triassic rocks
Permian	Permian rocks

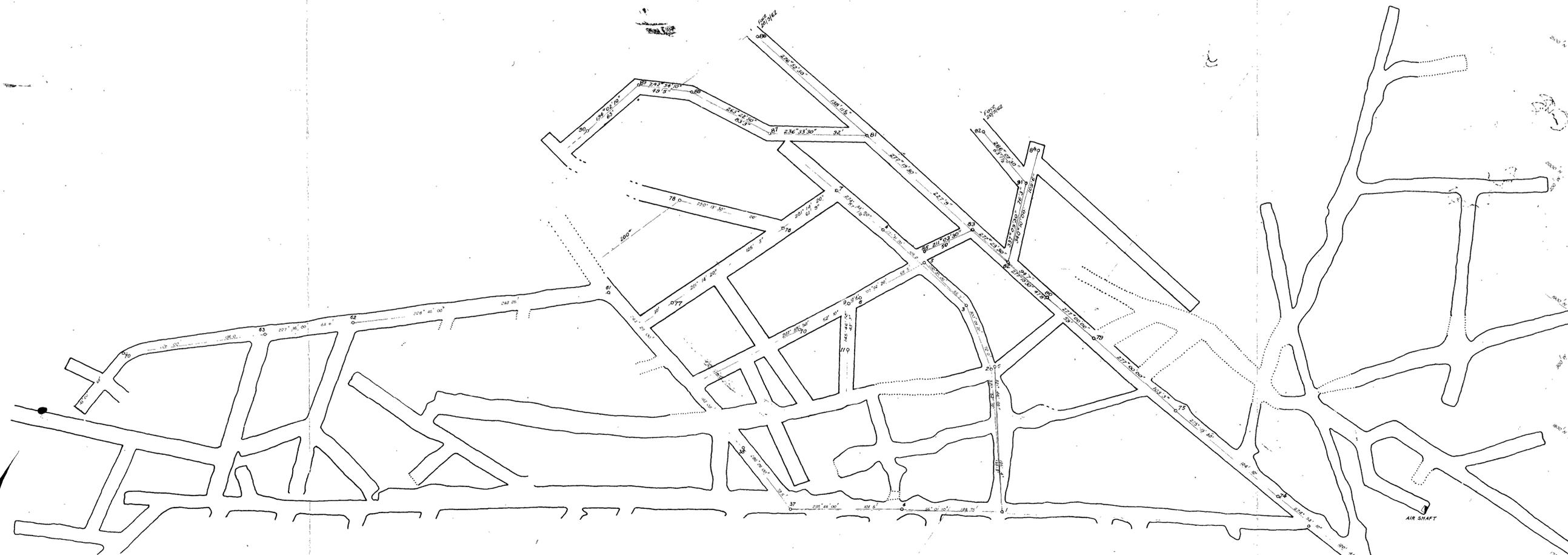
CAPRICORN MINING LTD.  
AREA 2 E.L.27/79

746026  
Fig. 6

APPENDIX 1

MAP OF THE LANGLOH UNDERGROUND MINE

SEE FICHE NUMBER FIVE



LANGLOH COAL MINE



706028 SHEET C.

Additions surveyed by D Bestard 20-9-62



## APPENDIX 2

LITHOLOGIC LOGS.

SEE FICHE NUMBER ONE

PROJECT/E.L.: Langloh/E.L. 27/79      RIG/METHOD: Fox B80/Diamond      TOTAL DEPTH: 30.05 Metres  
HOLE NO.: H-o9      CORE SIZE: NQ      DRILLER/ASSISTANT: W.B./R.L./T.S.  
LOCATION: 483,019 M.E./5,290,022 M.N.      COMMENCED: 11/5/82      CORE LOGGED: K. Morrison  
COLLAR ELEVATION: 191.93      FINISHED: 12/5/82      GEOLOGIST: K. Morrison

METRES DRILLED	% RECOVERY	LITHOLOGY	ROCK DESCRIPTION	REMARKS
0.00 - 3.35	OPEN HOLE		PRE COLLAR	
3.35 - 8:27	100	Sandstone	Massive, medium grained lithic arenite. Occasional mud pellet bed, wisps of coaly material. Foreset beds of sst. defined by traces of black organic fragments. Some secondary carbonate? On fracture surfaces. Rock is oxidized.	
8.27 - 8.50	100	Conglomerate	Mudstone pebbles, rounded and flattened. Grades to lithic wacke.	
8.50 - 14.68	100	Sandstone	Massive, medium grained lithic arenite. Minor wisps, pellets of coal mudstone. Some secondary carbonate parallel to bedding. Alternations of oxidized/non oxidized rock. Minor zones (5-10cm) of sub wacke.	Oxidized zone to approx. 14 metres.
14.68 - 15.04	100	Mudstone	Carbonaceous, black - grey, oily.	
15.04 - 16.04	100	Coal	Dull, medium - heavy. Minor bright bands (1-10mm) with blocky fracture. some carbonate replacement in vertical fractures. Abrupt contacts top and bottom.	
16.04 - 17.62	100	Mudstone	Carbonaceous, finely laminated with siltstone.	
17.62 - 17.94	100	Sandstone	Fine lithic with abundant carbonaceous bands, minor siltstone.	
17.94 - 18.10	100	Siltstone	With minor interlaminated mudstone. Undulating cross lamination. Very small scale trough cross bedding in silts.	

PROJECT/E.L.:  
HOLE NO.: H-09  
LOCATION:  
COLLAR ELEVATION:

RIG/METHOD:  
CORE SIZE:  
COMMENCED:  
FINISHED:

TOTAL DEPTH:  
DRILLER/ASSISTANT:  
CORE LOGGED:  
GEOLOGIST:

METRES DRILLED	% RECOVERY	LITHOLOGY	ROCK DESCRIPTION	REMARKS
18.10 - 18.41	100	Sandstone	Lithic. Fine - very fine, massive.	
18.41 - 19.12	100	Siltstone	Interbedded, laminated with very fine sst., mudstone. Coaly wisps.	
19.12 - 20.24	100	Coal	Dull, minor bright (2mm - 5cm bands) Medium density to 20.19. Then heavier to 20.24. 12mm bright band at bottom.	
20.24 - 22.91	100	Mudstone	Grey, wavy, undulating lamination with mudstone/siltstone alternation. Fine sst. bands towards bottom (fining-up, with several cycles).	
22.91 - 23.33	100	Siltstone	Cross laminated with carbonaceous bedding traces. Some sharp erosional contacts within the unit. Soft sediment deformation structures. Grades down to fine sst. (fining - up).	
23.33 - 24.24	100	Sandstone	Fine - medium, some cross laminated (finer grained). Secondary pyrite on break surfaces.	
24.24 - 24.73	100	Sandstone	Massive, medium grained lithic arenite.	
24.73 - 25.01	100	Sandstone	Fine grained, with carbonaceous laminations minor siltstone. Abrupt top, bottom contacts.	
25.01 - 30.05	100	Sandstone	Medium, massive lithic arenite. At 25.21, a 5cm laminated mudstone band minor conglomerate bands. Flasers, wisps of coaly debris, especially associated with finer grained sst. but also with pebble conglomerate.	

**PROJECT/E.L.:** Langloh/EL 27/79      **RIG/METHOD:** Fox B80/Diamond      **TOTAL DEPTH:** 27.00 Metres  
**HOLE NO.:** H-10      **CORE SIZE:** NQ      **DRILLER/ASSISTANT:** W. B./R.L./T.S.  
**LOCATION:** 482,215 M.E./5,289,652 M.N.      **COMMENCED:** 12.5.82      **CORE LOGGED:** K.M.  
**COLLAR ELEVATION:** 145.92      **FINISHED:** 13.5.82      **GEOLOGIST:** K.M.

METRES DRILLED	% RECOVERY	LITHOLOGY	ROCK DESCRIPTION	REMARKS
0.00-3.40		OPEN HOLE	Pre collar	
3.40-4.70	100	Conglomerate	Lutite pebble conglomerate with lesser lithic arenite, lithic wacke. At 3.85-4.25 a zone of conglomerate with clasts of irregular shaped, non-flattened siltstone. (very little reworking) Rock is oxidized. Some secondary carbonate.	
4.70-12.84	100	Sandstone	Massive lithic arenite. Medium grain size, with some fining-up cycles between 10.26-11.95: Several zones enriched in wisps, flasers of coal + mudstone pellets some blebs secondary carbonate. Between 11.95-12.85 : interbedded conglomerate/sst with upward decrease in size, density of pebbles in each cycle. Clasts = sst. mdst. carbonaceous shale, coal.	Base oxidation = 9.60
12.84-13.00	100	Coal	Dull heavy, sharp, horizontal top contact.	
13.00-14.62	100	Coal	Dull, medium, minor bright bands (<0.5cm) with dirt bads (<1cm), small dirt lenses cleating with secondary carbonate. Slickensided on break surfaces.	Watertable (gamma log) = 13.04
14.62-15.21	49	Mudstone	Grey-black, more carbonaceous at top. Very clayey. Abundant wisps of coaly material	Poor recovery assumed mudstone washed out.

PROJECT/E.L.:RIG/METHOD:TOTAL DEPTH:HOLE NO.: H-10CORE SIZE:DRILLER/ASSISTANT:LOCATION:COMMENCED:CORE LOGGED:COLLAR ELEVATION:FINISHED:GEOLOGIST:

METRES DRILLED	% RECOVERY	LITHOLOGY	ROCK DESCRIPTION	REMARKS
15.21-16.80	100	Coal	Dull, medium - heavy. Uniform, no dirt bands. Minor pods of dirt, minor cleating, secondary carbonate, bright bands.	
16.80-16.85	100	Mudstone	Carbonaceous, soft, fissile, clayey.	
16.85-17.44	100	Siltstone	Interlaminated with mudstone. Cross lamination in siltstone, coaly wisps in mdst.	
17.44-18.55	83	Mudstone	Grading from siltstone above. Grey, clayey mudstone with carbonaceous material. Very brittle when dry.	Difficult to drill - core chewed and washed out.
18.55-20.35	100	Coal	Dull, medium density. Very uniform with few dirt bands.	
20.35-21.00	86	Mudstone	Abrupt change from overlying coal. At about 20.50 grey mdst. grades to mdst./slst. (fining - up)	
21.00-21.44	100	Siltstone	With alternating, interlaminated mdst. rock readily splits parallel to bedding. Cross lamination defined in silt units.	
21.44-23.47	100	Mudstone	With minor siltstone. Soft sediment deformation structures, minor coaly fragments. Dries and cracks rapidly on exposure.	
23.47-25.04	100	Siltstone	Cross laminated, with minor mudstone.	
25.04-25.75	100	Sandstone	Fine, lithic, with minor siltstone. Small scale cross bedding defined by carbonaceous traces.	



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706035 COAL DRILLING LOG SHEET

PROJECT/E.L.: Langloh E.L. 27/79RIG/METHOD:TOTAL DEPTH: 27.0 MetresHOLE NO.: H-11CORE SIZE: NQDRILLER/ASSISTANT: W.B./R.L./ T.S.LOCATION: 481,469 M.E./5,290,084 M.N.COMMENCED: 13/5/82CORE LOGGED: K. MorrisonCOLLAR ELEVATION: 156.17FINISHED: 14/5/82GEOLOGIST: K.M.

METRES DRILLED	% RECOVERY	LITHOLOGY	ROCK DESCRIPTION	REMARKS
0.00-3.60	PRE COLLAR	OPEN HOLE	Soil, decomposed sandstone.	
3.60-8.75	100	Sandstone	Massive lithic arenite, bands of alternating oxidized/non-oxidized rock.	
8.75-9.90	59	Conglomerate	Mudstone conglomerate in several bands, interbedded with mudstone.	
			Rock is oxidized, fractured with slickensided surfaces. Some bodies of sand.	
9.90-10.05	100	Sandstone	Medium lithic arenite. Top contact is erosional. Scour and fill.	
10.05-10.26	100	Mudstone	Black carbonaceous.	
10.26-10.80	100	Mudstone	Grey, greasy feel, slickensided on break.	
10.80-11.16	100	Coal	Uniform, semi-bright-dull, abundant carbonate-filled veinlets.	
11.16-13.60	100	Mudstone	Grey, greasy feel. Cracks readily on drying. Wispy, undulating carbonaceous laminations.	
13.60-14.00	100	Coal	Semi-bright dull, Low apparent density. Abundant secondary carbonate in cleats and horizontal bands. Dirt bands at 13.77-13.79.	

PROJECT/E.L.: RIG/METHOD: TOTAL DEPTH:  
HOLE NO.: H-11 CORE SIZE: DRILLER/ASSISTANT:  
LOCATION: COMMENCED: CORE LOGGED:  
COLLAR ELEVATION: FINISHED: GEOLOGIST:

METRES DRILLED	CORE LENGTH	% RECOVERY	LITHOLOGY	ROCK DESCRIPTION	REMARKS
14.00-14.18		100	Mudstone	Deformation structures. Carbonaceous wisps, silty in places.	
14.18-14.36		100	Siltstone	Grading down from mudstone (Fining Up) cross laminated. Plant macrofossils.	
14.36-15.97		100	Mudstone	Grey, cross laminated, undulating laminations, slickensided on break surfaces.	
15.97-16.02		100	Mudstone	Carbonaceous, non-erosional upper contact.	
16.02-16.25		100	Coal	Dull, abundant bright bands, secondary carbonate.	
16.25-17.20		100	Mudstone	Cross laminated with siltstone. Truncation surfaces, soft sediment slump, fault structures, minor pebbles of reworked coal.	
17.20-17.26		100	Coal	Semi-bright, with dirt bands, secondary carbonate. Grading down to carbonaceous mudstone.	
17.26-17.70		100	Mudstone	Becoming less carbonaceous down. Undulose micro lamination.	
17.70-18.03		100	Siltstone	Cross laminated siltstone/grey mudstone.	
18.03-18.86		100	Mudstone	Grey undulose, carbonaceous lamination.	
18.86-19.42		100	Siltstone	Cross laminated siltstone/mudstone.	

PROJECT/E.L.:RIG/METHOD:TOTAL DEPTH:HOLE NO.: H-11CORE SIZE:DRILLER/ASSISTANT:LOCATION:COMMENCED:CORE LOGGED:COLLAR ELEVATION:FINISHED:GEOLOGIST:

METRES DRILLED	CORE LENGTH	*RECOVERY	LITHOLOGY	ROCK DESCRIPTION	REMARKS
19.42-20.46		100	Sandstone	Fine lithic arenite. Minor siltstone.	
20.46-20.58		100	Siltstone	Cross laminated. Part of frequently changing energy levels in overbank facies.	
20.58-20.84		100	Sandstone	Fine lithic arenite. Small scale trough cross bedding.	
20.84-21.00		100	Siltstone	Siltstone with minor mud bands.	
21.00-21.69		100	Sandstone	Massive to cross laminated, defined by carbonaceous traces of troughs.	
21.69-22.42		100	Siltstone	High density of carbonaceous cross lamination plus undulating, wispy lamination, especially in coarse, fine arenites. Minor secondary carbonate parallel to bedding.	
23.12-23.24		100	Mudstone	Grey laminated, carbonaceous wisps.	
23.24-23.60		100	Siltstone	Intense soft sediment folding, load structures. Small sand lenses.	
23.60-25.18		87	Mudstone	Cracks into small blocks on drying. Minor siltstone, minor slicksiding. Top 12cm and bottom 25cm = black carbonaceous shale : splits parallel to bedding.	



PROJECT/E.L.: Langloh/E.L. 27/79      RIG/METHOD: Fox B80/Diamond      TOTAL DEPTH: 69.0 Metres  
HOLE NO.: H-12      CORE SIZE: NQ      DRILLER/ASSISTANT: W.B./R.L./T.S.  
LOCATION: 481,741 M.E./5,290,908 M.N.      COMMENCED: 14/5/82      CORE LOGGED: K. Morrison.  
COLLAR ELEVATION: 156.17      FINISHED: 15/5/82      GEOLOGIST: K. Morrison

METRES DRILLED	% RECOVERY	LITHOLOGY	ROCK DESCRIPTION	REMARKS
0.00 - 4.90	OPEN HOLE		PRE COLLAR Soil decomposed sst.	
4.90 - 25.53	97	Sandstone	Medium grained lithic with mud pellets, coal wisps, flasers, conglomerate bands. Foresets defined by flattened carbonaceous fragments. Minor veins filled with 2 <sup>o</sup> Co <sub>3</sub> . Fining-up cycles (coarse to fine-medium) at 14.00 metres. At 18.40 - colour change to green sst. Mudstone bands at 18.74 - 18.94 and 20.00 - 20.35.	1st non-oxidized sst. at 9.00
25.53 - 25.63	100	Mudstone	Top 40mm = black carbonaceous, overlying a fining - up cycle of fine lithic sst. - siltstone - grey mudstone. Minor CO <sub>3</sub> veining in sst. Basal pebble conglomerate band.	
25.63 - 26.70	100	Sandstone	Grey medium grained lithic arenite, sand grains = quartzose rock fragments quartz, feldspar, pink and green grains, black and white micas. basal conglomerate of lutite pebbles, flattened coal frags.	
26.70 - 27.82	100	Coal	Dull, heavy, with minor carbonaceous mudstone. Grades into coal from overlying carbonaceous mudstone. Minor bright bands with cleating, 2 <sup>o</sup> pyrite crystals.	
27.82 - 28.45	100	Mudstone	Grey, soft, grading down to siltstone.	
28.45 - 28.88	100	Siltstone	Fining - up. Ranging from fine sst. to silty mudstone, with narrow bands	

<u>PROJECT/E.L.:</u>	<u>RIG/METHOD:</u>	<u>TOTAL DEPTH:</u>
<u>HOLE NO.:</u> H-12	<u>CORE SIZE:</u>	<u>DRILLER/ASSISTANT:</u>
<u>LOCATION:</u>	<u>COMMENCED:</u>	<u>CORE LOGGED:</u>
<u>COLLAR ELEVATION:</u>	<u>FINISHED:</u>	<u>GEOLOGIST:</u>

METRES DRILLED	% RECOVERY	LITHOLOGY	ROCK DESCRIPTION	REMARKS
			of siltstone.	
28.88 - 30.60	100	Mudstone	Grey. Minor irregular bodies of siltstone. Lenses, flasers of carbonaceous lutite. Mudstone cracks on drying. Dicroidium flora at 29.39.	
			Mudstone grades down to siltstone.	
30.60 - 30.86	100	Sandstone	Fine to very fine cross stratified lithic sst. Fining - up Carbonaceous definition of small scale cross stratification.	
30.86 - 31.16	100	Siltstone	Grey, cross laminated. Abundant carbonaceous fragments on bedding, lamination planes.	
31.16 - 31.38	100	Sandstone	Grey, fine grained, cross stratified.	
31.38 - 31.87	100	Siltstone	Cross stratified, with carbonaceous material. Minor mudstone band (1cm). Grades down to very fine sst.	
31.87 - 36.05	100	Sandstone	Medium - fine grained lithic arenite. Carbonaceous material more common in finer grained sst. Some fining - up cycles and some erosional contact within the sands.	
36.05 - 36.30	100	Siltstone	Finning - up cycle of fine sst. to laminated mudstone with transitional siltstone. Carbonaceous wisps in sst.	
36.30 - 42.43	100	Sandstone	Grey, medium lithic arenite. Sand grains = grey quartzose rock frags.	

<u>PROJECT/E.L.:</u>		<u>RIG/METHOD:</u>		<u>TOTAL DEPTH:</u>	
<u>HOLE NO.:</u>	H-12	<u>CORE SIZE:</u>		<u>DRILLER/ASSISTANT:</u>	
<u>LOCATION:</u>		<u>COMMENCED:</u>		<u>CORE LOGGED:</u>	
<u>COLLAR ELEVATION:</u>		<u>FINISHED:</u>		<u>GEOLOGIST:</u>	

METRES DRILLED	% RECOVERY	LITHOLOGY	ROCK DESCRIPTION	REMARKS
			black opaque minerals, common accessory green, pink grains. No apparent concentration of individual components. Matrix = white	
			Kaolinite? clay. Three small bands of pebbles between 38.99 - 42.00.	
			Minor CO <sub>2</sub> veining.	
42.44 - 43.62	100	Coal	Dull, minor bright bands with cleating, 2° CO <sub>2</sub> , 2(1-2cm) dirt bands plus a 3cm, fine sst. band which is discordant to and has sharp contact with coal.	
3.62 - 44.20	100	Mudstone	Grey to black, more carbonaceous at top and bottom. Undulated laminations, soft sediment deformation structures.	
44.20 - 44.85	100	Coal	Dull, minor bright bands, CO <sub>2</sub> veining.	
44.85 - 46.48	100	Mudstone	Grades down from more carbonaceous mudstone to grey/mudstone siltstone, with minor very fine sst. slickensided? on break surfaces oblique to core axis.	
46.48 - 48.78	100	Sandstone	Fine grained lithic arenite. Carbonaceous bands in several narrow zones. Minor small scale cross bedding. Basal breccia of large angular clasts of laminated siltstone.	
48.78 - 59.80	100	Sandstone	Medium with minor medium-fine, lithic arenite. Sharp upper contact.	

PROJECT/E.L.: RIG/METHOD: TOTAL DEPTH:  
HOLE NO.: H-12 CORE SIZE: DRILLER/ASSISTANT:  
LOCATION: COMMENCED: CORE LOGGED:  
COLLAR ELEVATION: FINISHED: GEOLOGIST:

METRES DRILLED	% RECOVERY	LITHOLOGY	ROCK DESCRIPTION	REMARKS
			Minor zones of horizontal carbonaceous, micaceous bands. Minor oblique CO <sub>2</sub> veins. Common disseminated carbonaceous material. Minor lone mudstone pellets.	
59.80 - 59.90	100	Mudstone	Carbonaceous. Fractures with greasy, resinous (phyllitic) surfaces, oblique to core axis.	
59.90 - 60.15	100	Sandstone	Medium grained, grey-green lithic arenite. At 60.00-60.05 a band of mudstone-pebble conglomerate.	
60.15 - 60.46	100	Coal	Dull, minor bright bands. Irregular near-vertical CO <sub>2</sub> veining.	
60.46 - 62.74	100	Mudstone	Grey, clayey mudstone, planar laminated. Grading up to more carbonaceous mudstone. Minor irregular bodies of silt, fine sand towards base of unit.	
62.74 - 69.00	100	Sandstone	Grey - green medium, lithic arenite. Minor finer grained sst. within fining - up cycles. Minor carbonaceous wisps, mudstone pebbles.	
			<u>END OF HOLE</u>	



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COAL DRILLING LOG SHEET

PROJECT/E.L.: Langloh/E.L. 27/79      RIG/METHOD: Fox 880/Diamond      TOTAL DEPTH: 57.39  
HOLE NO.: H-14      CORE SIZE: NQ      DRILLER/ASSISTANT: W.B./R.L./T.S.  
LOCATION: 482,087 M.E./5,290,708 M.N.      COMMENCED: 17/5/82      CORE LOGGED: K. Morrison, Brett Sculthorpe.  
COLLAR ELEVATION: 157.96      FINISHED: 18/5/82      GEOLOGIST: K. Morrison

METRES DRILLED	% RECOVERY	LITHOLOGY	ROCK DESCRIPTION	REMARKS
0.00 - 4.00	OPEN HOLE	PRE COLLAR		
4.00 - 18.79	100	Sandstone	Lithic arenite, medium with lesser fine-medium grained. Minor carbonaceous material as cross bed traces. Some grey, white colour banding (carbonate replacement?). Minor lone pebbles, clay pellets. Some fining-up cycles, basal conglomerate at 15.16-15.57. At 18.22 a gradational change from grey-white sst. down to green (ground water colouration)	Base oxidation zone = 9.30.
18.79 - 19.38	100	Mudstone	Grey, laminated carbonaceous mudstone. breaks easily, splits parallel to bedding. Abundant carbonaceous wisps, soft sediment deformation structures. One minor 4cm dull coal band.	
19.38 - 19.47	100	Conglomerate	Mudstone pebbles up to 4cm. Supported in a sst. matrix.	
19.47 - 26.89	100	Sandstone	Massive to cross bedded, with minor fine lithic arenite. Minor zones of pebble bands, mud-rich bands and high concentration of organic debris. Green colouration in some of the pebble bands.	
26.89 - 27.13	100	Siltstone	Grey with fine carbonaceous plane and cross lamination.	
27.13 - 29.85	100	Mudstone	Fining-up from basal silty, sandy mudstone with irregular shaped sand bodies, up to massive grey mudstone. Sharp non-erosional bottom contact.	

PROJECT/E.L.: RIG/METHOD: TOTAL DEPTH:  
HOLE NO.: H-14 CORE SIZE: DRILLER/ASSISTANT:  
LOCATION: COMMENCED: CORE LOGGED:  
COLLAR ELEVATION: FINISHED: GEOLOGIST:

METRES DRILLED	% RECOVERY	LITHOLOGY	ROCK DESCRIPTION	REMARKS
29.85 - 39.20	100	Sandstone	Medium grained grey lithic arenite. Some colour banding (carbonate replacement?). Minor zones of horizontal carbonaceous lamination, small scale planar bedding. (Core readily breaks in such zones). Minor pebbles.	
9.20 - 40.47	100	Coal	Dull, medium density. Two 1-2cm dirt bands. Breaks in core show slickensided - like surfaces.	
40.47 - 42.23		Mudstone	Grey carbonaceous, clayey mudstone with minor interbedded silt, fine sst. Fining-up trend. Fragments of reworked, flattened coal.	
42.23 - 43.47	100	Coal	Dull, minor bright bands with cleating, 2 <sup>o</sup> CO <sub>2</sub> . Two slickensided oblique core breaks.	
43.47 - 45.09	core less?	Mudstone	Grey, laminated. Varying carbonaceous content soft sediment deformation load structures.	
45.09 - 46.33	100	Coal	Dull, heavy coal with irregular veins CO <sub>2</sub> and minor bright bands. Grades down overshort distance to carbonaceous mudstone at bottom.	
46.33 - 57.39		Mudstone	Grey laminated mudstone with minor siltstones, fine sst. carbonaceous mudstone. Grey mudstone, commonly interlaminated (planar and cross), with siltstone. Abundant carbonaceous debris, plant fossils. Some folding, load structures in mudstone.	



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706047

COAL DRILLING LOG SHEET

PROJECT/E.L.: Langloh/E.L. 27/79      RIG/METHOD: Fox B80/Diamond      TOTAL DEPTH: 57.45 Metres  
HOLE NO.: H-16      CORE SIZE: NQ      DRILLER/ASSISTANT: W.B./R.L./T.S.  
LOCATION: 482,490 M.E./5,290,584 M.N.      COMMENCED: 19/5/82      CORE LOGGED: K. Morrison  
COLLAR ELEVATION: 168.40      FINISHED: 19/5/82      GEOLOGIST: K. Morrison

METRES DRILLED	% RECOVERY	LITHOLOGY	ROCK DESCRIPTION	REMARKS
0.00 - 3.20	OPEN HOLE		PRE COLLAR	
3.20 - 28.81	98	Sandstone	Medium lithic arenite. Some 2° CO <sub>3</sub> on core breaks in upper oxidized zone. 21.71-21.83 : pebble conglomerate.	Core loss all in first run.
28.81 - 29.36			21.94-22.05 : band of alternating carbonaceous/grey mudstone. Generally a massive, uniform grain size sst.	
	100	Conglomerate	Fining-up, matrix-supported pebble conglomerate in sst. Upper clasts are flasers of dull coal.	
29.36 - 32.44	100	Sandstone	Massive medium grained lithic arenite. Band of pebbly sst - very open conglomerate at 29.79-30.06. Pebbles are flattened, but not well sorted.	
32.44 - 32.90	100	Conglomerate	Fining-up, with mudstone (approx 5cm) clasts at base, up to coal flasers. More clast supported at base and open framework towards top of unit.	
32.90 - 33.40	100	Sandstone	Medium massive lithic arenite.	
33.40 - 33.40	100	Conglomerate	Fining-up from basal mudstone, coal clast conglomerate up to pebbly sst. Greenish diagenetic colouring.	
34.23 - 34.48	100	Sandstone	Massive medium grained lithic arenite.	
34.48 - 34.48	100	Conglomerate	Matrix - supported mudstone pebble conglomerate	

PROJECT / E.L.:RIG / METHOD:TOTAL DEPTH:HOLE NO.: H-16CORE SIZE:DRILLER / ASSISTANT:LOCATION:COMMENCED:CORE LOGGED:COLLAR ELEVATION:FINISHED:GEOLOGIST:

METRES DRILLED	% RECOVERY	LITHOLOGY	ROCK DESCRIPTION	REMARKS
34.78 - 34.90	100	Sandstone	Massive medium grained lithic arenite.	
34.90 - 35.35	100	Conglomerate	Matrix-supported mudstone pebble conglomerate.	
35.35-35.75	100	Sandstone	Massive medium lithic arenite.	
35.75- 35.90	100	Mudstone	Black carbonaceous mudstone with lithic sst. interbeds. Abrupt but very irregular, erosional top contact. Slickensided - like structure on breaks in the mudstone.	
35.90-36.22	100	Sandstone	Massive medium grained lithic sst.	
36.22-36.55	100	Conglomerate	Mudstone pebble clasts in lithic sst. matrix. Green diagenetic colouration.	
36.55-45.37	100	Sandstone	Medium lithic arenite. Frequent cross bed foreset surfaces defined by carbonaceous material. 2° pyrite on core break surface.	
45.37-45.40	100	Conglomerate	Well rounded flattened clasts of mudstone and flattened flasers of coal. Minor plant fragments.	
45.40-47.10	100	Coal	Dull, medium density, minor bright bands (1-5cm). Minor dirt bands (1-2cm). 2° CO <sub>2</sub> in cleats in bright coal.	
47.10-47.22	100	Mudstone	Grey clayey mudstone grading down to more carbonaceous. Finescale deformation and undulating bedding structures. Abundant carbonaceous debris.	



PETRECON AUSTRALIA PTY LTD

706050

COAL DRILLING LOG SHEET

PROJECT/E.L.: Langloh/E.L. 27/79RIG/METHOD: Fox B80/DiamondTOTAL DEPTH: 26.1 MetresHOLE NO.: H-17CORE SIZE: NQDRILLER/ASSISTANT: W.B./R.L./T.S.LOCATION: 482,838 M.E./5,290,284 M.N.COMMENCED: 20/5/82CORE LOGGED: K. MorrisonCOLLAR ELEVATION: 166.40FINISHED: 20/5/82GEOLOGIST: K. Morrison

METRES DRILLED	% RECOVERY	LITHOLOGY	ROCK DESCRIPTION	REMARKS
0.00 - 3.30	OPEN HOLE		PRE COLLAR	
3.30 - 14.92	99	Sandstone	Medium lithic arenite. Mainly massive with some cross bedding, zones enriched in flattened carbonaceous fragments. Alternating oxidized-non-oxidized bands down to 8.30. Carbonaceous mudstone band : 7.82-7.87	Base oxidation = 8.30
			Mudstone pebble conglomerate : 8.07-8.24	
			Green colouration, 2° pyrite associated with mudstone band. Sst. is grey/white mottled below oxidation base.	
14.92 - 15.32	100	Conglomerate	Basal pebble (Mudstone, coal, siltstone) conglomerate matrix supported in lithic sandstone. Erosional bottom contact.	
15.32 - 15.40	100	Mudstone	Black carbonaceous, shiny, greasy break surfaces. Gradational change over approx 3cm down to coal.	
15.40 - 16.62	100	Coal	Dull, medium - heavy, abundant cleating, small bright bands, some 2° CO <sub>3</sub> vein fill and horizontal replacement. Pyrite and slickensided - like structures on core break surfaces. Basal 10cm = heavy coal - carbonaceous mudstone.	
16.62 - 16.98	100	Mudstone	Grey brittle mudstone (when dry) with abundant carbonaceous material, especially towards top.	





PROJECT/E.L.: Langloh E.L. 27/79RIG/METHOD: Fox B80/DiamondTOTAL DEPTH: 20.95 MetresHOLE NO.: H.08CORE SIZE: NQDRILLER/ASSISTANT: W.Ball/R. Lethborg/  
T. Szolomiak.LOCATION: 484,214 M.E./5,290,833 M.N.COMMENCED: 5/5/82CORE LOGGED: K. MorrisonCOLLAR ELEVATION: 165.48FINISHED: 6/5/82GEOLOGIST: K. Morrison

METRES DRILLED	CORE LENGTH	*RECOVERY	LITHOLOGY	ROCK DESCRIPTION	REMARKS
0.00 - 6.00			Pre Collar	Soil, basalt, dolerite, sandstone, talus	Very slow drilling
6.00 - 6.80	0.80	100	Siltstone	Khaki-olive, clay matrix, plane bedding Macroflora (Dicroidium?) on bedding plane at 6.70. Vertical joint with MnO <sub>2</sub> ? dendrites.	
6.80 - 6.95	0.15	100	Sandstone	Medium grained lithic arenite. Erosional "scour and fill" contacts top and bottom.	
6.95 - 7.55	0.60	100	Mudstone	Khaki-olive. Flat white micas parallel to bedding. In places a siltstone.	
7.55 - 8.19	0.64	100	Siltstone	Interbedded with fine sandstone. Smallscale trough cross bedding defines interbeds. Discordant "dyke" of medium grained lithic sandstone.	
8.19 - 15.08	6.89	100	Sandstone	Lithic, medium grained arenite. Black minerals defining some trough cross beds. Abundant white felds. white mica. rock frags. black minerals. At 9.20 - black mudstone pellet conglomerate = basal bed in fining up SST. (Course to medium) "Redox mottling" common.	

PROJECT/E.L.:RIG/METHOD:TOTAL DEPTH:HOLE NO.: H.08CORE SIZE:DRILLER/ASSISTANT:LOCATION:COMMENCED:CORE LOGGED:COLLAR ELEVATION:FINISHED:GEOLOGIST:

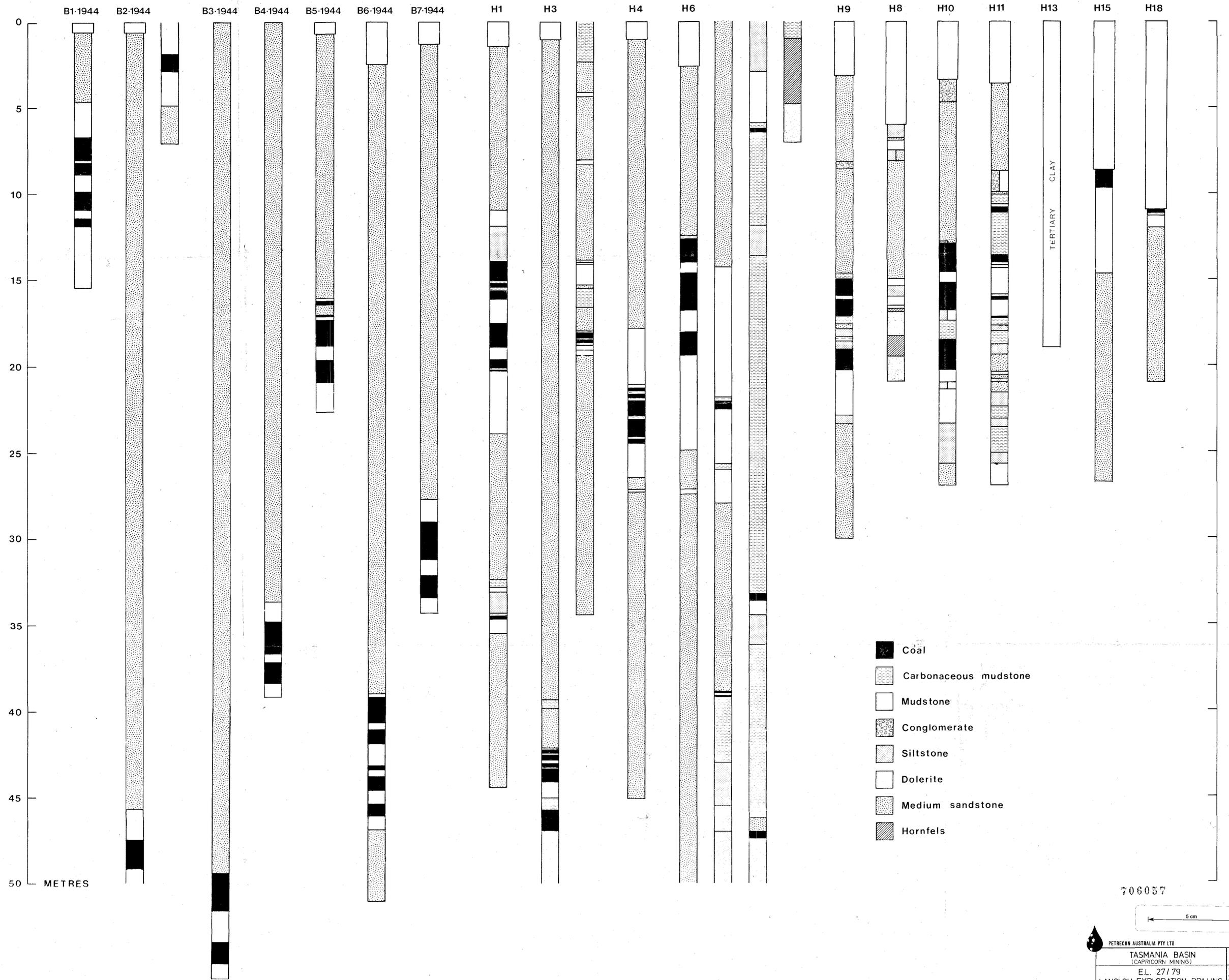
METRES DRILLED	CORE LENGTH	*RECOVERY	LITHOLOGY	ROCK DESCRIPTION	REMARKS
				10cm unit of wacke (10.40-10.50) oxidation mottling	
				finishes at 14.1.	Oxidation zone
15.08-15.43	0.35	100	Mudstone	Grey/green, brittle, indurated, fractured, calcite? abundant on joints and as veinlets.	interface at 14.1
15.43-16.01	0.58	100	Siltstone	Grey, calcite? on joints. Grading to fine sst in places	
16.01-16.13	0.12	100	Sandstone	Grey fined lithic.	
16.13-16.58	0.45	100	Mudstone	Laminated, interbedded with siltstones, more muddy downwards.	
16.58-16.70	0.12	100	Mudstone	Black, carbonaceous, very irregular bottom contact.	
16.70-16.85	0.15	100	Hornfels	Green, siliceous, spotted with blebs of black mineral.	
16.85-18.35	1.50	100	Dolerite	Fine grained, subophitic texture. Secondary calcite? on abundant fracture surfaces.	
18.35-18.55	0.20	100	Hornfels	Green/grey siliceous, spotted with blebs of black mineral.	



## APPENDIX 3

GRAPHIC LOGS

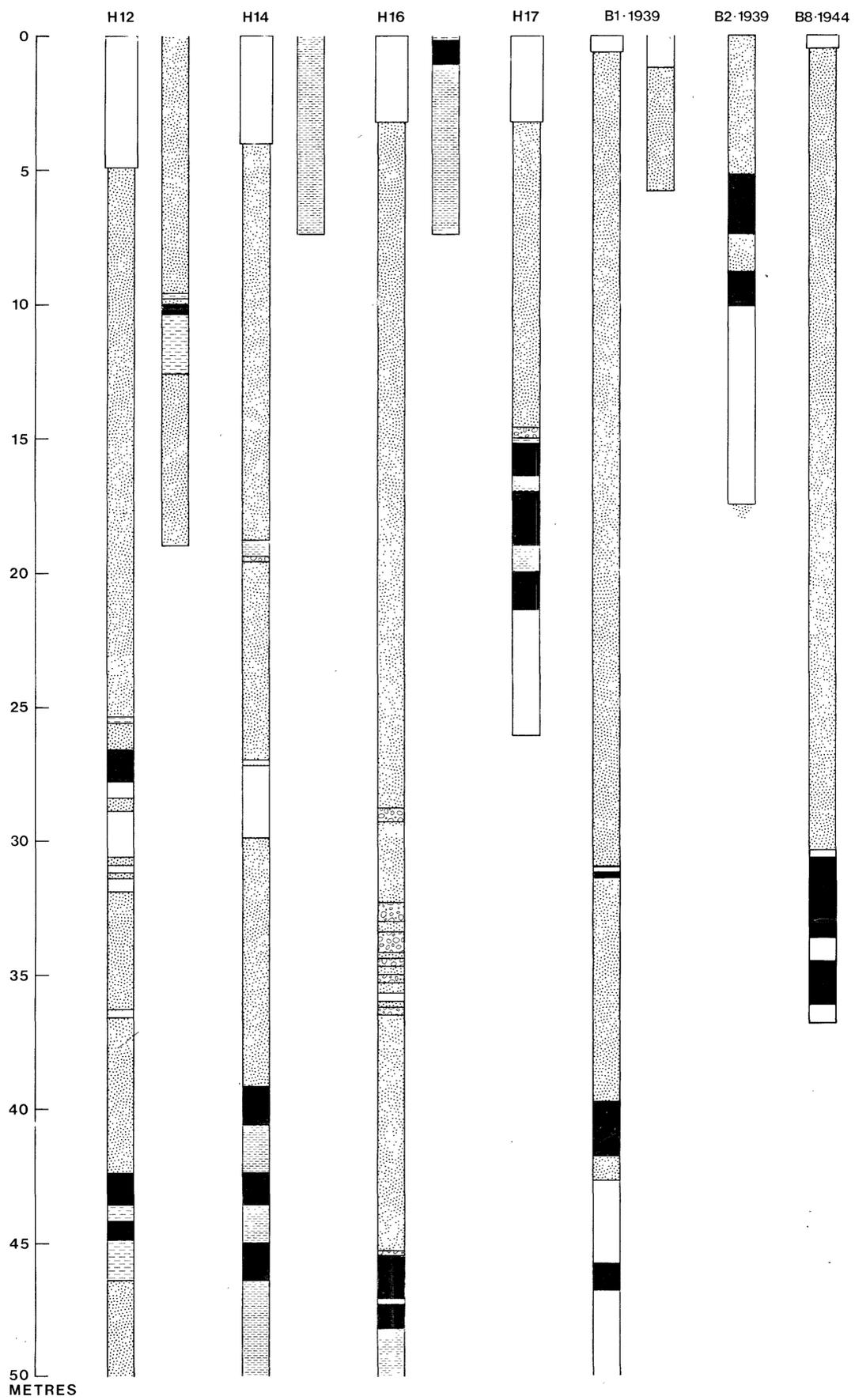
SEE FICHE NUMBER SIX



706057



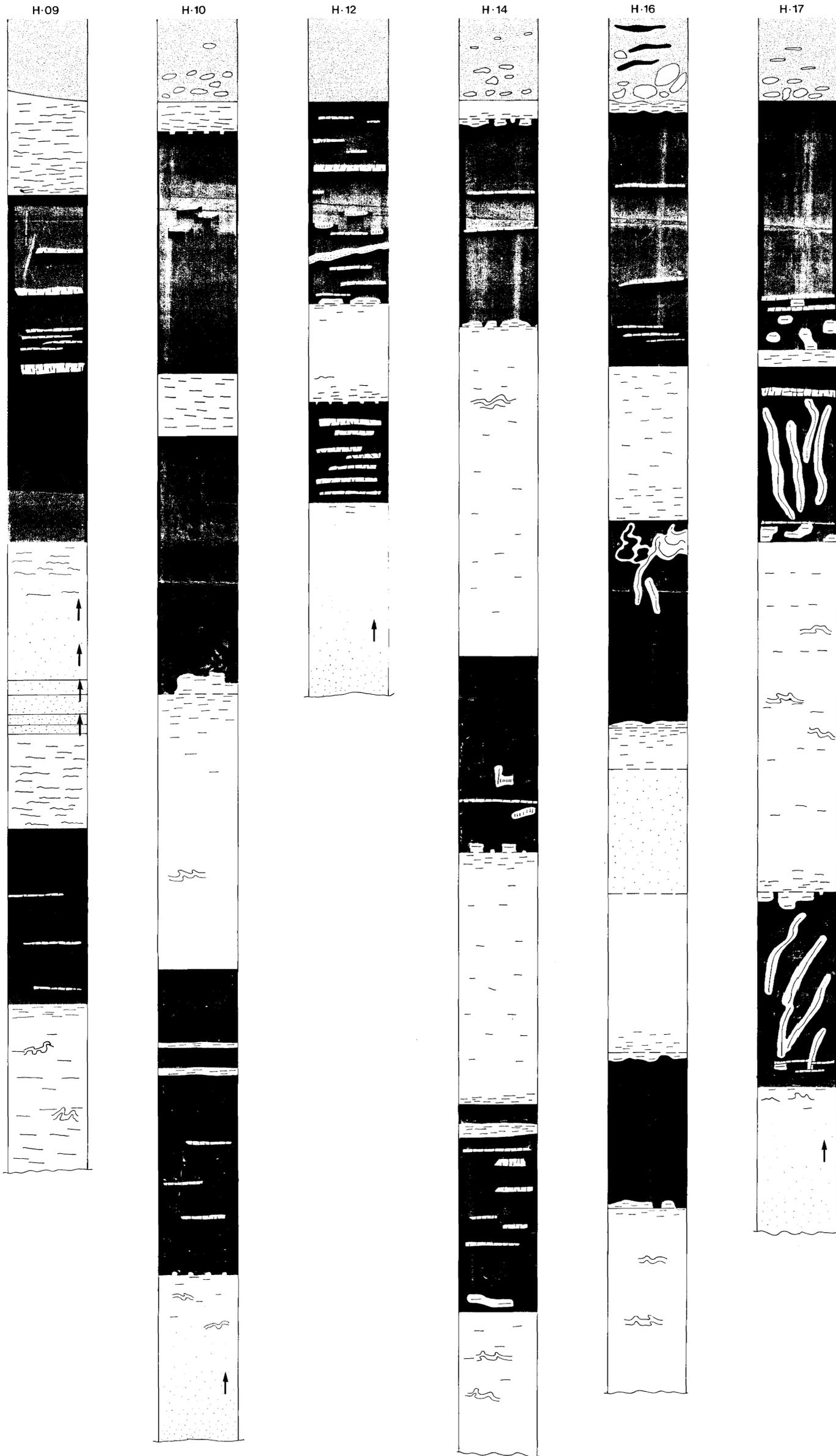
PETROBRON AUSTRALIA PTY LTD	
TASMANIA BASIN (CAPRICORN MINING)	82/5
E.L. 27179	K.M.
LANGLOH EXPLORATION DRILLING	J.P.
GRAPHIC LOGS	9.82
	1:100
	1



706058

5 cm

 PETROBRON AUSTRALIA PTY LTD	
TASMANIA BASIN (CAPRICORN MINING)	82/6
EL 27/79	DRAWN: KM
LANGLOH EXPLORATION DRILLING	DATE: 9-9-82
GRAPHIC LOGS	SCALE: 1:100
	PAGE: 2



- LEGEND**
-  PEBBLE CONGLOMERATE WITH COAL
  -  SANDSTONE
  -  SILTSTONE
  -  GREY MUDSTONE
  -  CARBONACEOUS MUDSTONE WITH CARBONACEOUS WISPS
  -  DULL COAL WITH BRIGHT COAL BANDS INCLUDING CLEATS
  -  CARBONATE NODULES AND FRACTURE FILL IN DULL COAL
  -  DIRT BAND MUD AND SAND BODIES IN DULL COAL
  -  SHARP CONTACT
  -  GRADATIONAL CONTACT
  -  FINING-UPWARDS TREND
  -  SOFT SEDIMENT DEFORMATION STRUCTURES

VERTICAL SCALE - 1:10



PETRECON AUSTRALIA PTY LTD		706059
TASMANIA BASIN (CAPX-CORN MINING)		82/3
LANGLOH COAL SECTIONS GRAPHIC LOGS		COMPLD - K.M.
		DRAWN - M.R.D.
		DATE - 7-9-82
		SCALE - 1" & 1/10
		FIGURE



APPENDIX 4

GEOPHYSICAL LOGS.

SEE FICHE NUMBERS 2 & 3





BOREHOLE H 01  
 CLIENT Capricorn

AREA Hamilton DEPTH SCALE 1:20  
 COUNTRY Aust.  
 DATE LOGGED 11.7.62 3 OF 2 LOGS

**SEAM THICKNESS LOG**

SONDE TYPE  
 COAL COMBINATION SONDE

LOG SUITE  
 CALIPER  
 B R DENSITY

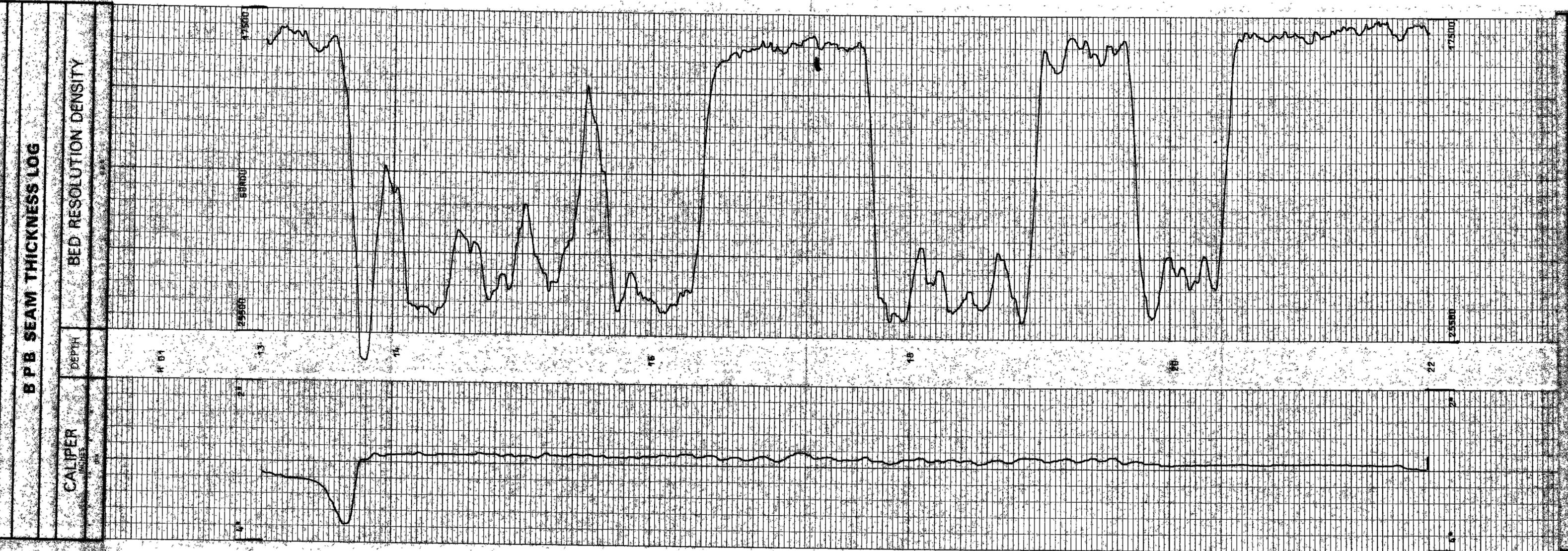
BOREHOLE DATA REFER TO LITHOLOGY LOG  
 OPERATION DATA REFER TO LITHOLOGY LOG  
 EQUIPMENT AND RECORDING DATA  
 COAL COMBINATION SONDE  
 LOG TAPING SIDEWALL POSITION  

LOG	OF	RECORDING	TAPING	PANEL	COEFF.
		SPEED	REPL. AY	SECS	NORM
CALIPER	2	2	2	1	
B R DENSITY				1/3	6.42

 SOURCE SONDE AND CALIBRATION REFER TO LITHOLOGY LOG  
 SEAM THICKNESS LOG INTERVALS  

FROM	22	INTERVAL	
TO	13	INTERVAL	
FROM		INTERVAL	
TO		INTERVAL	

 REMARKS



**B P B SEAM THICKNESS LOG**

BOREHOLE H 01  
 CLIENT Capricorn

AREA Hamilton DEPTH SCALE 1:20  
 COUNTRY Aust.  
 DATE LOGGED 11.7.62 3 OF 2 LOGS

SONDE TYPE  
 COAL COMBINATION SONDE

LOG SUITE  
 CALIPER  
 B R DENSITY



MT 8002 R





BOREHOLE # 45  
 CLIENT Leppicore  
 AREA Hamilton, Tas. DEPTH SCALE 1:100  
 COUNTRY Australia  
 DATE LOGGED 16 July 82 1 OF 3 LOGS

**COAL LITHOLOGY LOG**

**BOREHOLE DATA**  
 PERMANENT DATUM Ground level  
 ELEVATION OF PD  
 MEASUREMENTS FROM 8PB DRILLER  
 DEPTH REACHED 53.1 152m  
 CASING SHOE  
 BITSIZES 1 N TO 2 TO  
 3 TO 4 TO  
 CASING SIZES 1 TO 2 TO

**SONDE TYPE  
 COAL COMBINATION  
 SONDE**

**FLUID DATA**  
 NATURE Air/water  
 LEVEL 1.8m  
 VISCOSITY  
 Rm at meas temp  
 BHT

**LOG SUITE  
 GAMMA RAY  
 LS DENSITY  
 CALIPER**

**OPERATION DATA**  
 FIRST READING 51  
 LAST READING 7  
 INTERVAL LOGGED 51  
 UNIT-TRUCK No 54/V318  
 ENGINEER A.J. NICHOLS  
 WITNESS

**EQUIPMENT AND RECORDING DATA**

COAL COMBINATION SONDE	LOG	EQUIPMENT	SONDE	SOURCE	CALIBRATOR	LOG TATED	TAPING RECORD DIRECT SPEED REPLAY	PANEL	CAL COBEI	DEPTH		SEAM LOG-RUN
										FROM	TO	
	GAMMA RAY			393		Y	7.2				0	51
	LS DENSITY		116B							1.76	51	
	CALIPER		5854	water						5.45		

COAL QUALITY/SEAM THICKNESS LOG INTERVALS (Refer to relevant log)  
 FROM 21 TO 12 INTERVAL 9

**ADDITIONAL SONDES RUN**

SONDE	LOG	GENERAL SCALE LOG	DETAIL LOG	REFER TO	ADDITIONAL HEADINGS

REMARKS

**B P B COAL LITHOLOGY LOG**

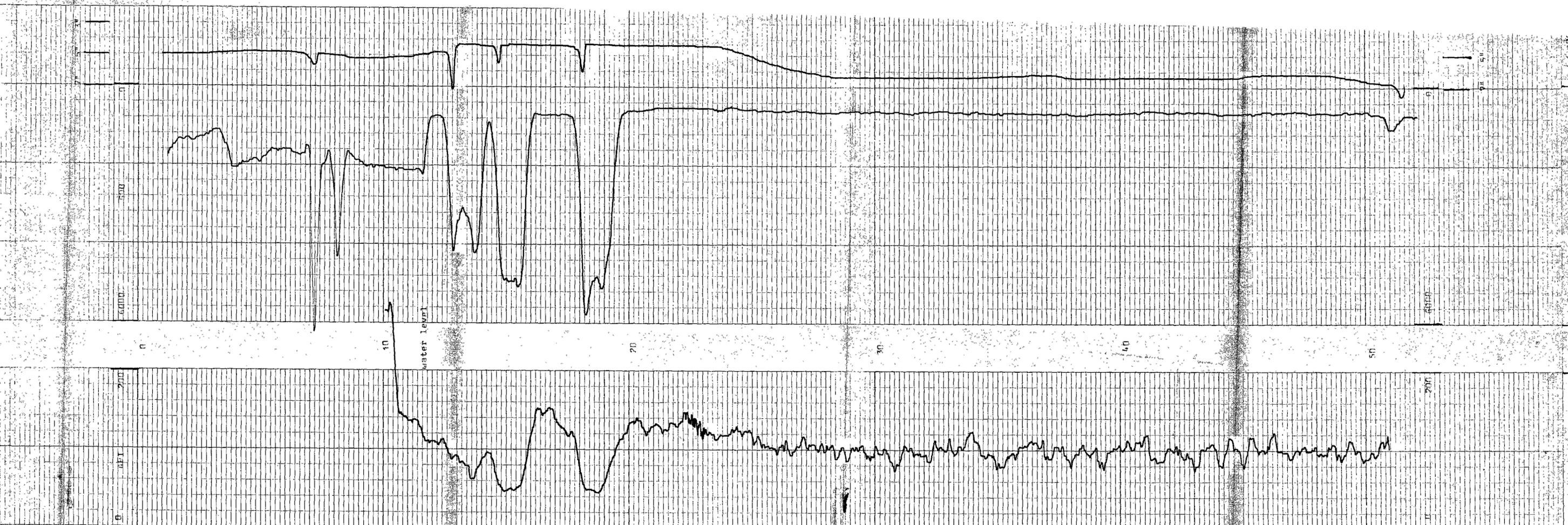
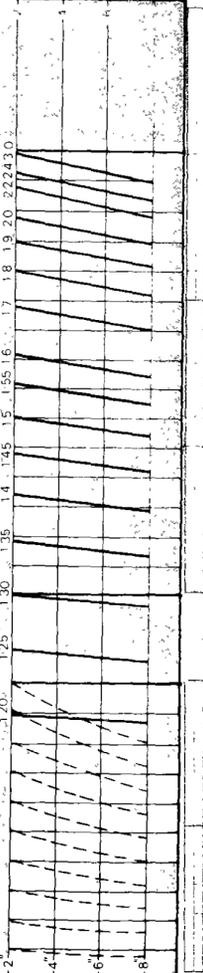
**CALIBRATION DATA**

JIG No 393 VALUES @ 2" DIAM  
 JIG MARK SHOWN AT ABOVE VALUE -  
 JIG CAL DATE 14/7/82 BPG VALUE @ 300 SDU @ 1.1 g/cm<sup>3</sup> 3 ms 498 cp  
 JIG No 11418T SPAN NORM CPS = 5.44 7 ms 721 cps

**GAMMA RAY**

**COAL BULK DENSITY**

**CALIPER**



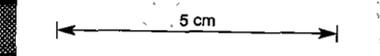
**GAMMA RAY**

**COAL BULK DENSITY**

**CALIPER**

706064





BOREHOLE H-06  
CLIENT Capricorn

AREA Hamilton DEPTH SCALE 1:20  
COUNTRY \_\_\_\_\_  
DATE LOGGED 16/7/82 2 OF 3 LOGS

**SEAM THICKNESS LOG**

BOREHOLE DATA REFER TO LITHOLOGY LOG  
OPERATION DATA REFER TO LITHOLOGY LOG  
EQUIPMENT AND RECORDING DATA

COAL COMBINATION SONDE

LOG	TAPING			PANEL		CAL COEFF
	LOG TAPED	RECORD SPEED	DIRECT REPLAY	SPEED	TC SECS	
CALIPER	<u>Y</u>	<u>2</u>	<u>R</u>	<u>2</u>	<u>1</u>	
BR DENSITY	"	"	"	"	<u>1/3</u>	<u>6.42</u>

SOURCE SONDE AND CALIBRATION REFER TO LITHOLOGY LOG

SEAM THICKNESS LOG INTERVALS

FROM	<u>21</u>
TO	<u>12</u>
INTERVAL	<u>9</u>

FROM		INTERVAL
TO		TOTAL
INTERVAL		

REMARKS

SONDE TYPE  
COAL COMBINATION SONDE

LOG SUITE  
CALIPER  
BR DENSITY

**B P B SEAM THICKNESS LOG**





BOREHOLE H 09

CLIENT Capricorn

AREA Hamilton

COUNTRY Australia

DATE LOGGED 15 July 82

DEPTH SCALE 1:100

1 OF 3 LOGS

BOREHOLE DATA			
PERMANENT DATUM <u>Ground level</u>			
ELEVATION OF PD			
MEASUREMENTS FROM <u>G.L.</u>		DRILLER	
DEPTH REACHED <u>29.85</u>		<u>G.L.</u>	
CASING SHOE			
BIT SIZES	1 <u>NQ</u> TO <u>TD</u>	2	TO
	3 TO 4	4	TO
CASING SIZES	1 TO 2	2	TO

FLUID DATA	
NATURE	<u>air/water</u>
SG	
LEVEL	<u>3.6m</u>
VISCOSITY	
Rm at meas temp	
BHT	

OPERATION DATA	
FIRST READING	<u>28</u>
LAST READING	<u>0</u>
INTERVAL LOGGED	<u>28</u>
UNIT-TRUCK No	<u>94/V318</u>
ENGINEER	<u>A.J. NICHOLS</u>
WITNESS	

EQUIPMENT AND RECORDING DATA

LOG	EQUIPMENT	SOURCE	CALIBRATOR	LOG RECORDED	TAPING RECORD	T.C. SECS	CAL COEFF	DEPTHS		SEAM LOG RUN
								FROM	TO	
GAMMA RAY										
LS DENSITY										
CALIPER										

COAL QUALITY / SEAM THICKNESS LOG INTERVALS (Refer to relevant log)	
FROM	<u>21</u>
TO	<u>14</u>
INTERVAL	<u>7</u>

ADDITIONAL SONDES RUN	
SONDE	LOG
GENERAL SCALE LOG	REFER TO ADDITIONAL HEADINGS

REMARKS	

B P B COAL LITHOLOGY LOG

CALIBRATION DATA

JIG No	<u>33</u>	VALUE	<u>552 @ 2" DIAM</u>
JIG CAL DATE	<u>14/7/82</u>	JIG VALUE	<u>10300</u>
JIG MARK SHOWN AT ABOVE VALUE		NORM	<u>5.46</u>
		SPAN	<u>7</u>
		SOU @	<u>1.1</u>
		CPS	<u>3</u>
		INS	<u>498</u>
		CPS	<u>7</u>
		INS	<u>721</u>

COAL BULK DENSITY

HOLE SIZE CORRECTION DATA

GAMMA RAY	DEPTH	COAL BULK DENSITY	CALIPER
			INCHES



GAMMA RAY

DEPTH

COAL BULK DENSITY

CALIPER

INCHES



BOREHOLE H 09

CLIENT Capricorn

AREA Hamilton

COUNTRY

COAL LITHOLOGY LOG



# SEAM THICKNESS LOG

SONDE TYPE  
COAL COMBINATION SONDE

LOG SUITE  
CALIPER  
BR DENSITY

BOREHOLE H 09  
CLIENT Carricorr

AREA Hamilton  
COUNTRY Aust.  
DATE LOGGED 15.7.82  
DEPTH SCALE 1:20  
3 OF 3 LOGS

BOREHOLE DATA REFER TO LITHOLOGY LOG

OPERATION DATA REFER TO LITHOLOGY LOG

EQUIPMENT AND RECORDING DATA

COAL COMBINATION SONDE

LOG	TAPING				SIDEWALL POSITION			CAL COEFF
	LOG TAPED	RECORD SPEED	DIRECT REPLAY	SPEED	PANEL	TC SECS	NORM	
CALIPER	Y	2	R	2	1	-		
BR DENSITY	"	"	"	"	1/8	6.42		

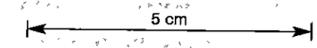
SOURCE SONDE AND CALIBRATION REFER TO LITHOLOGY LOG

SEAM THICKNESS LOG INTERVALS

FROM	TO	INTERVAL
21	14	7

FROM	TO	INTERVAL	TOTAL

REMARKS



## B P B SEAM THICKNESS LOG



## BED RESOLUTION DENSITY

DEPTH

CALIPER INCHES

BOREHOLE H 09  
CLIENT Carricorr  
AREA Hamilton  
COUNTRY



## SEAM THICKNESS LOG



BOREHOLE H 10  
 CLIENT Petropo

AREA Hamilton DEPTH SCALE 1:20  
 COUNTRY Aust.  
 DATE LOGGED 24/6/82 3 OF 3 LOGS

**SEAM THICKNESS LOG**

BOREHOLE DATA REFER TO LITHOLOGY LOG

OPERATION DATA REFER TO LITHOLOGY LOG

EQUIPMENT AND RECORDING DATA

COAL COMBINATION SONDE

LOG	TAPING		PANEL		CAL COEFF
	LOG TAPED	RECORD SPEED	DIRECT REPLAY	SPEED SECS	
CALIPER	✓	2	R	3	1
BR DENSITY	"	"	"	"	1/3 6.27

SOURCE SONDE AND CALIBRATION REFER TO LITHOLOGY LOG

SEAM THICKNESS LOG INTERVALS

FROM	22	
TO	12	
INTERVAL	10	
FROM		INTERVAL TOTAL
TO		
INTERVAL		

REMARKS

SONDE TYPE  
COAL COMBINATION SONDE

LOG SUITE  
CALIPER  
BR DENSITY

**B P B SEAM THICKNESS LOG**





# COAL LITHOLOGY LOG

SONDE TYPE  
COAL COMBINATION SONDE

LOG SUITE  
GAMMA RAY  
L.S. DENSITY  
CALIPER

BOREHOLE H 10  
 CLIENT PETRECON  
 AREA HAMILTON, Tasmania DEPTH SCALE 1:50 @ 10  
 COUNTRY AUSTRALIA  
 DATE LOGGED 24 JUNE 1982 1 OF 6 LOGS

**BOREHOLE DATA**

PERMANENT DATUM GROUND LEVEL  
 ELEVATION OF PD \_\_\_\_\_  
 MEASUREMENTS FROM B.P.B. DRILLER G.L.  
 DEPTH REACHED 26.8 27  
 CASING SHOE \_\_\_\_\_  
 BIT SIZES 1 NQ TO TD 2 \_\_\_\_\_ TO \_\_\_\_\_  
 CASING SIZES 1 \_\_\_\_\_ TO \_\_\_\_\_ 2 \_\_\_\_\_ TO \_\_\_\_\_

**FLUID DATA**

NATURE Oil/water  
 LEVEL 13.8m  
 VISCOSITY \_\_\_\_\_  
 Rm at meas temp \_\_\_\_\_  
 BHT \_\_\_\_\_

**OPERATION DATA**

FIRST READING 25  
 LAST READING 0  
 INTERVAL LOGGED 25  
 UNIT - TRUCK No 94/V318  
 ENGINEER A.J. NICHOLS  
 WITNESS \_\_\_\_\_

706069

## EQUIPMENT AND RECORDING DATA

LOG	EQUIPMENT	SONDE	SOURCE	CALIBRATOR	LOG TAPED	RECORD SPEED	TAPING DIRECT REPLAY	SPEED	T.C. SECS	INORM	CAL COEFF	DEPTH		SEAM LOG RUN	
												FROM	TO		
GAMMA RAY	1168	5854	Water	393	Y	9.2	D	9.2	1.5		1.76	25	0	25	Y
L.S. DENSITY					N				12.1	5.23					N
CALIPER					2				17.3						N

COAL QUALITY / SEAM THICKNESS LOG INTERVALS (Refer to relevant log)

FROM	TO	INTERVAL	REMARKS
22	12	10	

## ADDITIONAL SONDES RUN

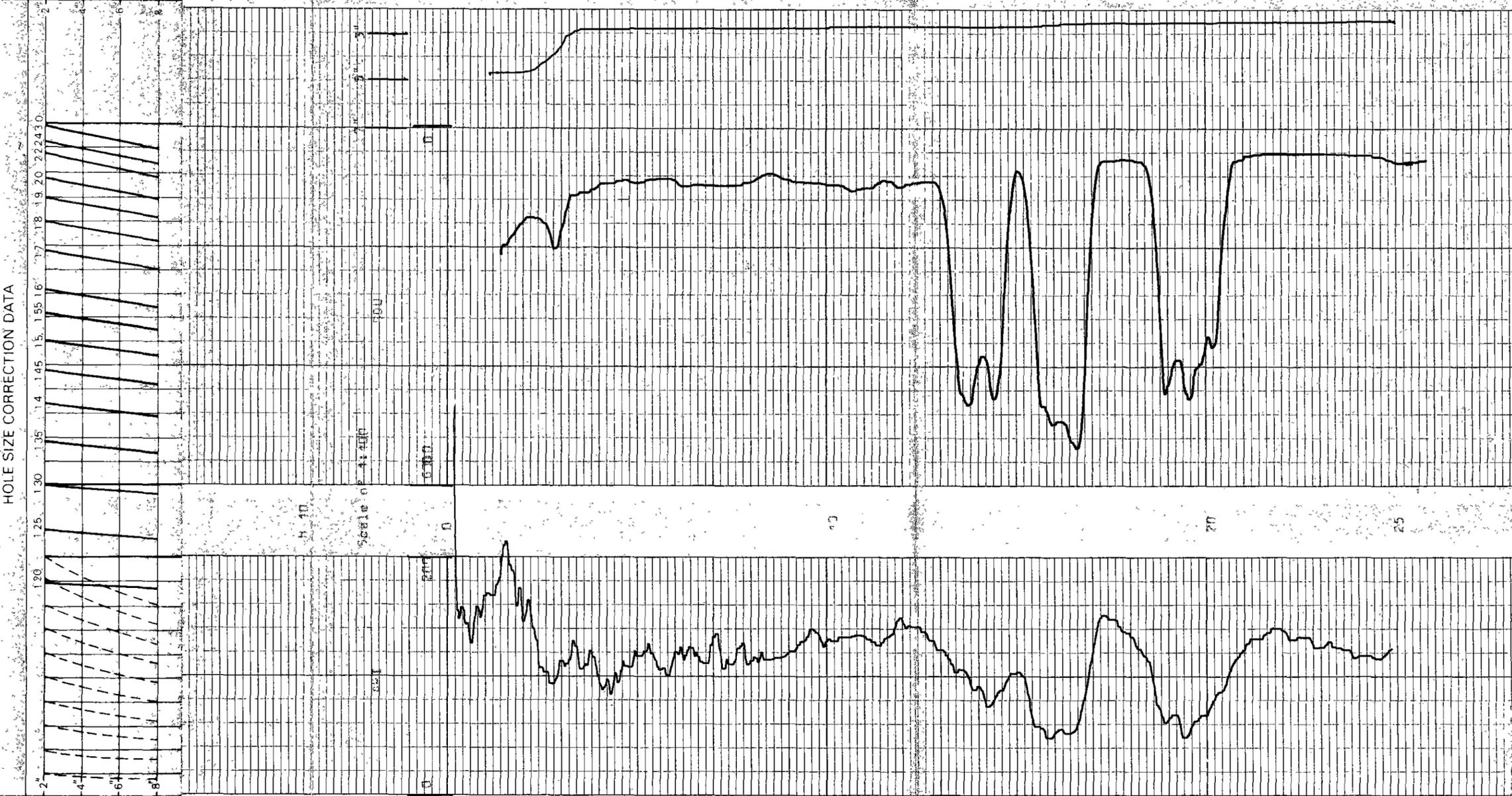
SONDE	LOG	RECS	GENERAL SCALE LOG	DETAIL SCALE LOG	REFER TO ADDITIONAL HEADINGS
103	3800	Y	Y	N	
103	1.500	Y	Y	N	

## B P B COAL LITHOLOGY LOG

### CALIBRATION DATA

JIG No 393 VALUE 53 @ 2" DIAM  
 JIG CAL DATE 24/6/82 VALUE 1100 SOU @ 1.9 g/cm<sup>3</sup>  
 JIG MARK SHOWN AT ABOVE VALUE - 3 ms 496 cps  
 JIG No 393 SPAN 10 NORM 5.23 CPS

GAMMA RAY DEPTH COAL BULK DENSITY CALIPER INCHES





BOREHOLE H 11  
CLIENT Capricorn

AREA Hamilton DEPTH SCALE 1:20  
COUNTRY Aust.  
DATE LOGGED 15/7/82 3 OF 3 LOGS

**SEAM THICKNESS LOG**

SONDE TYPE  
COAL COMBINATION SONDE

LOG SUITE  
CALIPER  
B R DENSITY

BOREHOLE DATA REFER TO LITHOLOGY LOG

OPERATION DATA REFER TO LITHOLOGY LOG

EQUIPMENT AND RECORDING DATA

COAL COMBINATION SONDE

LOG	TAPING			PANEL			CAL COEFF
	LOG TAPED	RECORD SPEED	DIRECT or REPLAY	SPEED	TC SECS	NORM	
CALIPER	Y	2	R	2	1	-	
B R DENSITY	"	"	"	"	1/3	6.42	

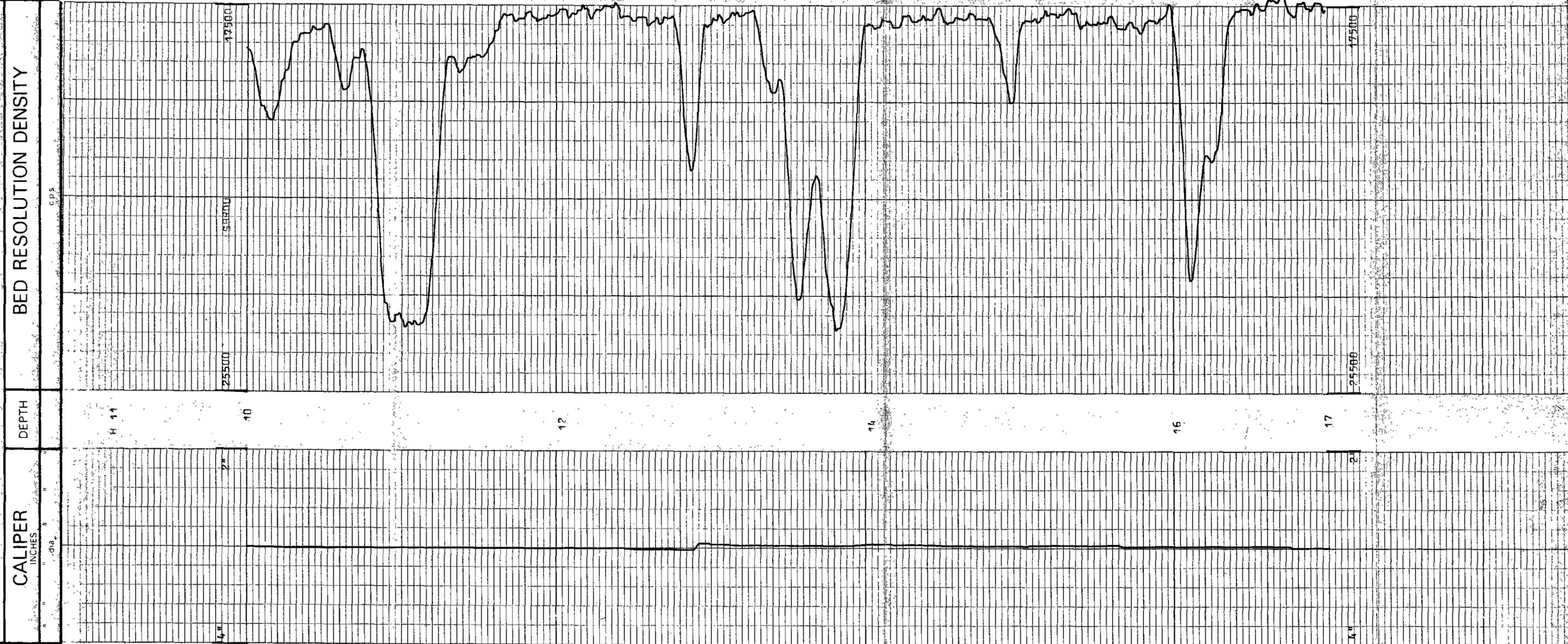
SOURCE SONDE AND CALIBRATION REFER TO LITHOLOGY LOG

SEAM THICKNESS LOG INTERVALS

FROM	TO	INTERVAL	INTERVAL TOTAL
17	10	7	

REMARKS

**B P B SEAM THICKNESS LOG**



BOREHOLE H 11 AREA Hamilton  
CLIENT Capricorn COUNTRY \_\_\_\_\_



**SEAM THICKNESS LOG**



BOREHOLE H 11  
 CLIENT Capricorn

AREA Hamilton, TAS DEPTH SCALE 1:100  
 COUNTRY Australia  
 DATE LOGGED 15 July 82 1 OF 3 LOGS

**COAL LITHOLOGY LOG**

SONDE TYPE  
 COAL COMBINATION SONDE

LOG SUITE  
 GAMMA RAY  
 L S DENSITY  
 CALIPER

BOREHOLE DATA	
PERMANENT DATUM	Ground level
ELEVATION OF PD	
MEASUREMENTS FROM	B.P.B. DRILLER G.L.
DEPTH REACHED	26.2 27.0
CASING SHOE	
BIT SIZES	1 NO TO TO 2 TO
CASING SIZES	3 TO 4 TO
1 TO 2 TO	
FLUID DATA	
NATURE	Air/water
SG	
LEVEL	2.2m
VISCOSITY	
Rm at meas temp	
BHT	
OPERATION DATA	
FIRST READING	24
LAST READING	0
INTERVAL LOGGED	24
UNIT-TRUCK No	94/V31B
ENGINEER	A.J. NICHOLS
WITNESS	

EQUIPMENT AND RECORDING DATA																					
COAL COMBINATION SONDE	LOG	EQUIPMENT	SONDE	SOURCE	CALIBRATOR	LOG TAPED	RECORD DIRECT OR REPLAY	TAPING SPEED	T.C SECS	PANEL	CAL COEFF	DEPTH		SEAM LOG RUN							
												FROM	TO		INTERVAL						
GAMMA RAY																					
L S DENSITY																					
CALIPER																					
COAL QUALITY/SEAM THICKNESS LOG INTERVALS: (Refer to relevant log)															INTERVAL TOTAL						
FROM 17																					
TO 10																					
INTERVAL 7																					
ADDITIONAL SONDES RUN															REMARKS						
SONDE	LOG	GENERAL SCALE LOG	SCALE LOG	REFER TO ADDITIONAL HEADINGS																	

**B P B COAL LITHOLOGY LOG**

**CALIBRATION DATA**

JIG No 393	VALUE 5.53 @ 2" DIAM	JIG CAL DATE 14/7/82	JIG VALUE 10.30 @ 1.1 d/c m <sup>3</sup>	3 ins 498 cps
JIG MARK SHOWN AT ABOVE VALUE -		JIG No 498	NORM CPS = 5.46	7 ins 721 cps

GAMMA RAY	DEPTH	COAL BULK DENSITY	CALIPER
			INCHES



GAMMA RAY	DEPTH	COAL BULK DENSITY	CALIPER
			INCHES



BOREHOLE H 11 AREA Hamilton  
 CLIENT Capricorn COUNTRY Australia

**COAL LITHOLOGY LOG**



BOREHOLE H 12  
 CLIENT Capricorn  
 AREA Hamilton TAS  
 COUNTRY Australia  
 DATE LOGGED 16 July 82

DEPTH SCALE 1:100  
 1 OF 3 LOGS

**COAL LITHOLOGY LOG**

**BOREHOLE DATA**

PERMANENT DATUM Ground level  
 ELEVATION OF PD  
 MEASUREMENTS FROM B.P.B. DRILLER B.L.  
 DEPTH REACHED 67.2 69m  
 CASING SHOE  
 BITSIZES 1 NO TO TD 2 TO  
 3 TO 4 TO  
 CASING SIZES 1 TO 2 TO

**SONDE TYPE**  
**COAL COMBINATION SONDE**

**FLUID DATA**

NATURE Air/water  
 SG  
 LEVEL  
 VISCOSITY  
 Rm at meas temp  
 BHT

**LOG SUITE**  
**GAMMA RAY**  
**L S DENSITY**  
**CALIPER**

**OPERATION DATA**

FIRST READING 65  
 LAST READING 0  
 INTERVAL LOGGED 65  
 UNIT-TRUCK No 94/V318  
 ENGINEER A.J. NICHOLS  
 WITNESS

**EQUIPMENT AND RECORDING DATA**

LOG	COAL COMBINATION SONDE	EQUIPMENT	SONDE	SOURCE	CALIBRATOR	LOG TAPED	RECORD DIRECT SPEED	RECORD REPLAY	TAPING	PANEL	CAL COEFF	DEPTHS		SEAM LOG RUN	
												FROM	TO		INTERVAL
	GAMMA RAY	116 B	193	5854	Water	Y	9.2	D	9.2	1.5	1.06	65	0	65	Y
	L S DENSITY	116 B				"	"	"	"	3.1	5.46	65	0	65	Y
	CALIPER					"	"	"	"	1.5		65	0	65	Y

COAL QUALITY/SEAM THICKNESS LOG INTERVALS (Refer to relevant log)

FROM	TO	INTERVAL	TOTAL
4.6	29		9
4.1	25		
5	4		

**ADDITIONAL SONDES RUN**

SONDE	LOG	GENERAL SCALE LOG	DETAIL SCALE LOG	REFER TO	ADDITIONAL HEADINGS

**B P B COAL LITHOLOGY LOG**

**CALIBRATION DATA**

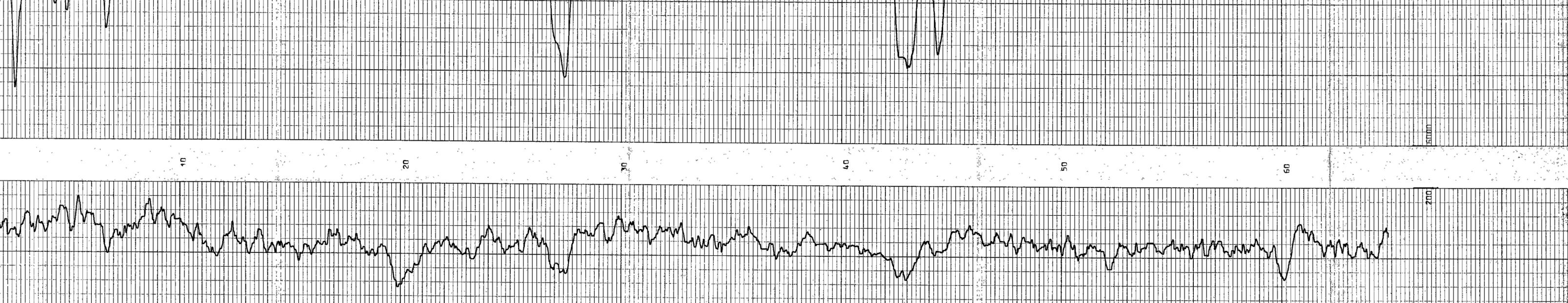
JIG CAL DATE 14/7/82 JIG CAL VALUE 10300 SDU @ 1.1 g/cm<sup>3</sup> CPS 3 ms 498  
 JIG MARK SHOWN AT ABOVE VALUE JIG No 10187 SPAN 5.46 NORM CPS 7 ms 721

**GAMMA RAY**

DEPTH 0 10 20 30 40 50 60

**COAL BULK DENSITY**

HOLE SIZE CORRECTION DATA



**GAMMA RAY**

DEPTH 0 10 20 30 40 50 60

**COAL BULK DENSITY**

CALIPER INCHES

**CALIPER**

CALIPER INCHES



BOREHOLE H 12  
 CLIENT Capricorn  
 AREA Hamilton  
 COUNTRY Australia



BOREHOLE H. 12  
CLIENT BPB

AREA Hamilton DEPTH SCALE 1:20  
COUNTRY Aug.  
DATE LOGGED 10/7/82 3 of 3 LOGS

**SEAM THICKNESS LOG**

BOREHOLE DATA REFER TO LITHOLOGY LOG

OPERATION DATA REFER TO LITHOLOGY LOG

EQUIPMENT AND RECORDING DATA

COAL COMBINATION SONDE

LOG	TAPING		SPEED		PANEL		CAL. COEFF.
	LOG TAPED	RECORD DIRECT OR SPEED REPLAY	TC SECS	NORM	1	2	
CALIPER	Y	2	9	2	1		
B.R. DENSITY	"	"	"	"	1/3	4/2	

SOURCE SONDE AND CALIBRATION REFER TO LITHOLOGY LOG

SEAM THICKNESS LOG INTERVALS

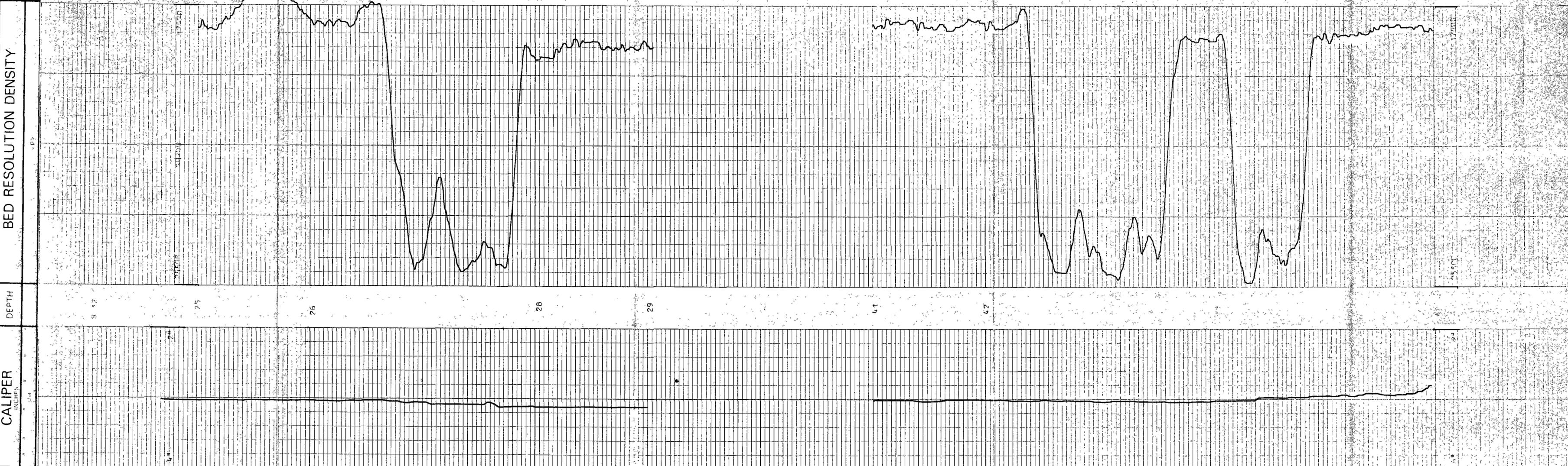
FROM	TO	INTERVAL	INTERVAL TOTAL
46	25	5	4
41	25		

REMARKS

SONDE TYPE  
COAL COMBINATION SONDE

LOG SUITE  
CALIPER  
B.R. DENSITY

**B P B SEAM THICKNESS LOG**



BED RESOLUTION DENSITY

DEPTH

CALIPER INCHES

BED RESOLUTION DENSITY

DEPTH

CALIPER INCHES

BOREHOLE H. 12 AREA Hamilton  
CLIENT BPB COUNTRY Aug.





5m

BOREHOLE H 14  
CLIENT Enbridge

AREA Hamilton  
COUNTRY Iraq  
DATE LOGGED 16 July 82

DEPTH SCALE 1:100  
1 OF 3 LOGS

COAL LITHOLOGY LOG

SONDE TYPE COAL COMBINATION SONDE  
LOG SUITE GAMMA RAY L S DENSITY CALIPER

**BOREHOLE DATA**

PERMANENT DATUM	Ground level
ELEVATION OF #10	8 P 8
MEASUREMENTS FROM	G.L.
DEPTH REACHED	57.1
CASING SHOE	57.0
BIT SIZES	1 1 1/2 TO 2 2 TO 4 3 TO 4 2 TO 4
CASING SIZES	1 TO 2 2 TO 4
FLUID DATA	
NATURE	Air/Water
SG	
LEVEL	0
VISCOSITY	
From at meas temp	
BHT	

**OPERATION DATA**

FIRST READING	55
LAST READING	55
INTERVAL LOGGED	55
UNIT - TRUCK NO	94/7318
ENGINEER	A.J. NICHOLS
WITNESS	

**EQUIPMENT AND RECORDING DATA**

LOG	EQUIPMENT			TAPING			PANEL		CAL COEFF	DEPTHS			SEAM LOG RUN
	SONDE	SOURCE	CALIBRATOR	LOG TAPED	RECORD SPEED	DIRECT or REPLAY	SPEED	TC SECS		NORM	FROM	TO	
GAMMA RAY	116 B		393	Y	9.2	D	9.2	1.5	1.76	55	0	55	Y
L S DENSITY		5854	Water	"	"	"	"	3.1	5.46	55	0	55	Y
CALIPER	SIDEWALL POSITION			"	"	"	"	1.5	-	55	0	55	Y

COAL QUALITY / SEAM THICKNESS LOG INTERVALS (Refer to relevant log)

FROM	47	INTERVAL TOTAL
TO	38	
INTERVAL	9	

**ADDITIONAL SONDES RUN**

SONDE	LOG	GENERAL SCALE LOG	DETAIL SCALE LOG

REFER TO ADDITIONAL HEADINGS

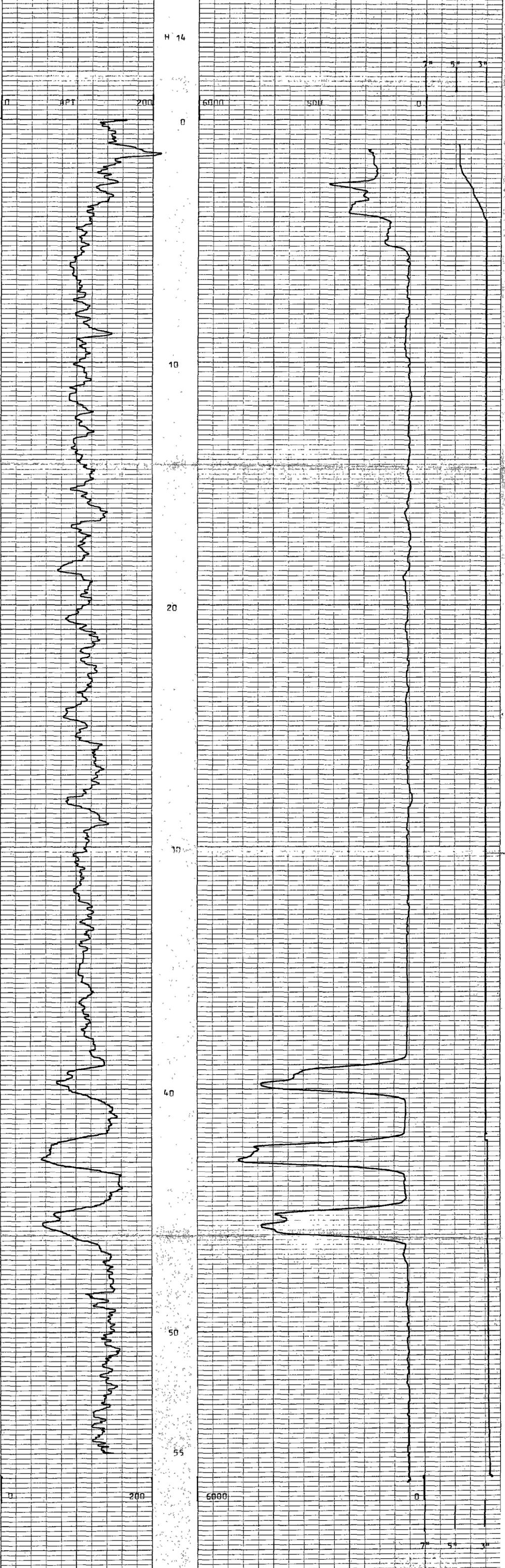
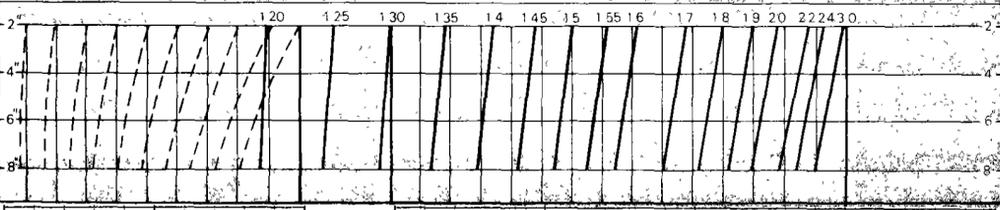
**REMARKS**

**B P B COAL LITHOLOGY LOG**

**CALIBRATION DATA**

JIG No 393	VALU 553 @ 2" DIAM	JIG CAL DATE 14/7/82	JIG VALU 0.300	SDU @ 1.4 g/cm <sup>3</sup>	3 ins 498 cps
JIG MARK SHOWN AT ABOVE VALUE		JIG No Water	SPAN	NORM SDU CPS = 5.46	7 ins 721 cps

GAMMA RAY	DEPTH	COAL BULK DENSITY g/cm <sup>3</sup>	CALIPER INCHES
-----------	-------	-------------------------------------	----------------





5 cm

BOREHOLE H 14

CLIENT Capricorn

AREA Hamilton

DEPTH SCALE  
1:20

COUNTRY Aust.

DATE LOGGED 16/7/82

2 OF 3 LOGS

**SEAM THICKNESS LOG**

BOREHOLE DATA REFER TO LITHOLOGY LOG

OPERATION DATA REFER TO LITHOLOGY LOG

EQUIPMENT AND RECORDING DATA

COAL COMBINATION SONDE

SIDEWALL POSITION

LOG	TAPING		PANEL		CAL COEFF
	LOG TAPED	RECORD SPEED	DIRECT REPLAY	SPEED SECS	
CALIPER	Y	2	B	2	1
BR DENSITY	"	"	"	"	1/3

SOURCE SONDE AND CALIBRATION REFER TO LITHOLOGY LOG

SEAM THICKNESS LOG INTERVALS

FROM	47
TO	38
INTERVAL	9

FROM		INTERVAL
TO		TOTAL
INTERVAL		

REMARKS

SONDE TYPE  
COAL COMBINATION SONDE

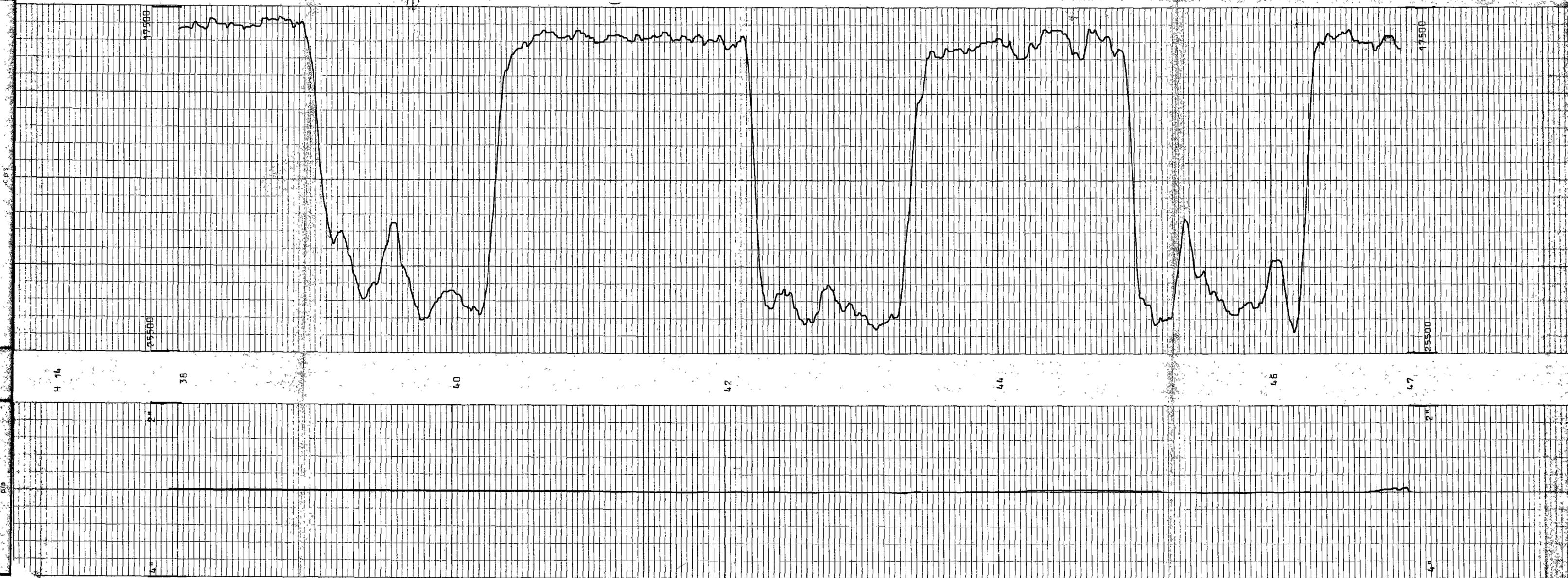
LOG SUITE  
CALIPER  
BR DENSITY

**B P B SEAM THICKNESS LOG**

BED RESOLUTION DENSITY

DEPTH

CALIPER INCHES





BOREHOLE H 16  
 CLIENT Capricorn  
 AREA Hamilton, TAS  
 COUNTRY AUSTRALIA  
 DATE LOGGED 16 July 1982  
 DEPTH SCALE 1:100  
1 OF 3 LOGS

**COAL LITHOLOGY LOG**

SONDE TYPE  
 COAL COMBINATION  
 SONDE

LOG SUITE  
 GAMMA RAY  
 LS DENSITY  
 CALIPER

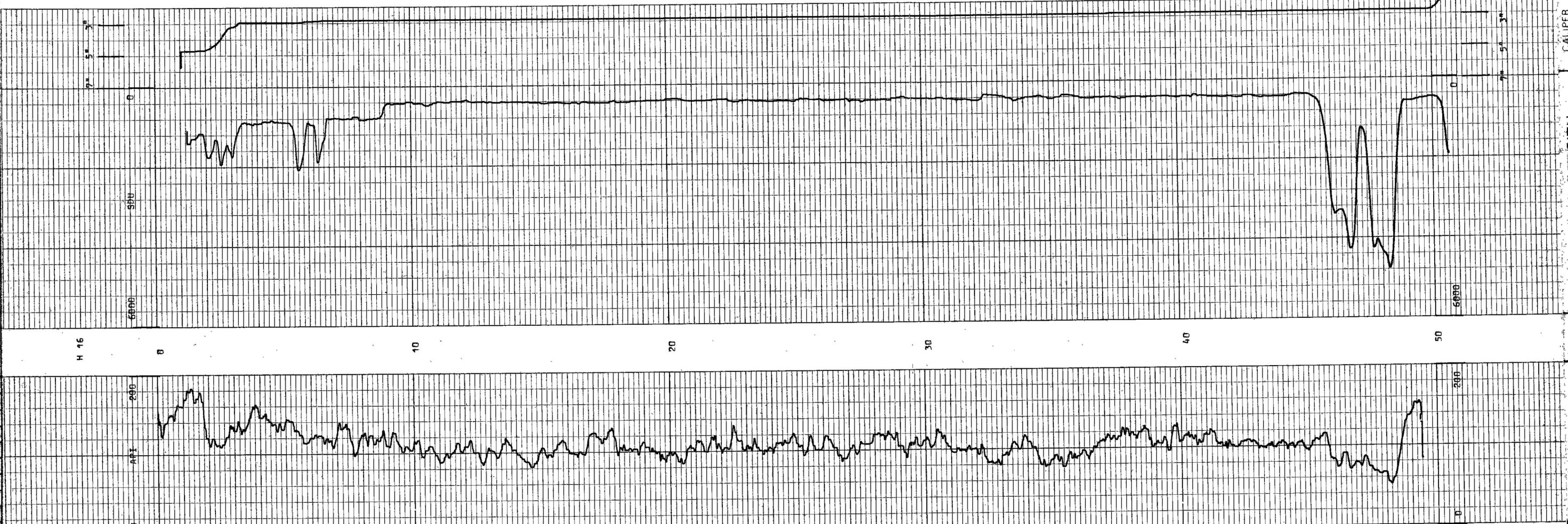
BOREHOLE DATA			
PERMANENT DATUM	Ground level		
ELEVATION OF P.D.			
MEASUREMENTS FROM	B.P.B.	DRILLER	
DEPTH REACHED	50.7	57m	
CASING SHOE			
BIT SIZES	1 NO TO TD	2 TO	
CASING SIZES	1 TO	2 TO	
FLUID DATA			
NATURE	Air/water		
SG			
LEVEL	3.4m		
VISCOSITY			
Rm at meas temp			
B.H.T.			
OPERATION DATA			
FIRST READING	50		
LAST READING	0		
INTERVAL LOGGED	50		
UNIT-TRUCK No	94/V318		
ENGINEER	A.J. NICHOLS		
WITNESS			

EQUIPMENT AND RECORDING DATA														
COAL COMBINATION SONDE	LOG	EQUIPMENT	SONDE	SOURCE	CALIBRATOR	LOG TAPED	RECORD DIRECT SPEED	REPLAY SPEED	T.C. SECS	PANEL	CAL COEFF	DEPTH FROM	DEPTH TO	SEAM LOG RUN
GAMMA RAY	118B	393	5854	MARKET	MARKET	Y	9.2	0	9.2	1.5	1.76	50	50	Y
LS DENSITY						"	"	"	"	1.1	5.45	"	"	"
CALIPER						"	"	"	"	1.5	-	"	"	"
COAL QUALITY/SEAM THICKNESS LOG INTERVALS (Refer to relevant log)														
FROM 50 TO 55 INTERVAL 5														
INTERVAL TOTAL														
ADDITIONAL SONDES RUN										REMARKS				
SONDE	LOG	GENERAL SCALE	DETAIL LOG	SCALE LOG	REFER TO	ADDITIONAL HEADINGS								

**B P B COAL LITHOLOGY LOG**

CALIBRATION DATA			
JIG CAL DATE	14/7/82	JIG VALUE	90300
JIG NO	Water	SOU	300
JIG MARK SHOWN AT ABOVE VALUE		NORM	5.46
JIG CAL DATE		JIG VALUE	498
JIG NO		SOU	3
JIG MARK SHOWN AT ABOVE VALUE		NORM	7.21

GAMMA RAY		COAL BULK DENSITY		CALIPER	
DEPTH	HOLE SIZE CORRECTION DATA	DEPTH	COAL BULK DENSITY	DEPTH	CALIPER
0		0		0	
5		5		5	
10		10		10	
15		15		15	
20		20		20	
25		25		25	
30		30		30	
35		35		35	
40		40		40	
45		45		45	
50		50		50	
55		55		55	



**GAMMA RAY**      **COAL BULK DENSITY**      **CALIPER**

BOREHOLE H 16      AREA Hamilton  
 CLIENT Capricorn      COUNTRY

**COAL LITHOLOGY LOG**





5 cm

BOREHOLE H 46  
CLIENT Carrigorn

AREA Hamilton DEPTH SCALE 1:20  
COUNTRY Aust.  
DATE LOGGED 16/7/82 2 OF 3 LOGS

**SEAM THICKNESS LOG**

BOREHOLE DATA REFER TO LITHOLOGY LOG  
OPERATION DATA REFER TO LITHOLOGY LOG

EQUIPMENT AND RECORDING DATA

COAL COMBINATION SONDE						
SIDEWALL POSITION						
LOG	TAPING		PANEL		CAL COEFF	
	LOG TAPED	RECORD SPEED	DIRECT or REPLAY	SPEED	SECS	NORM
CALIPER	V	2	R	2	1	-
BR DENSITY	"	"	"	"	1.73	5.42

SOURCE SONDE AND CALIBRATION REFER TO LITHOLOGY LOG

SEAM THICKNESS LOG INTERVALS

FROM	TO	INTERVAL	INTERVAL TOTAL
	50		
	45	5	

REMARKS

SONDE TYPE  
COAL COMBINATION SONDE

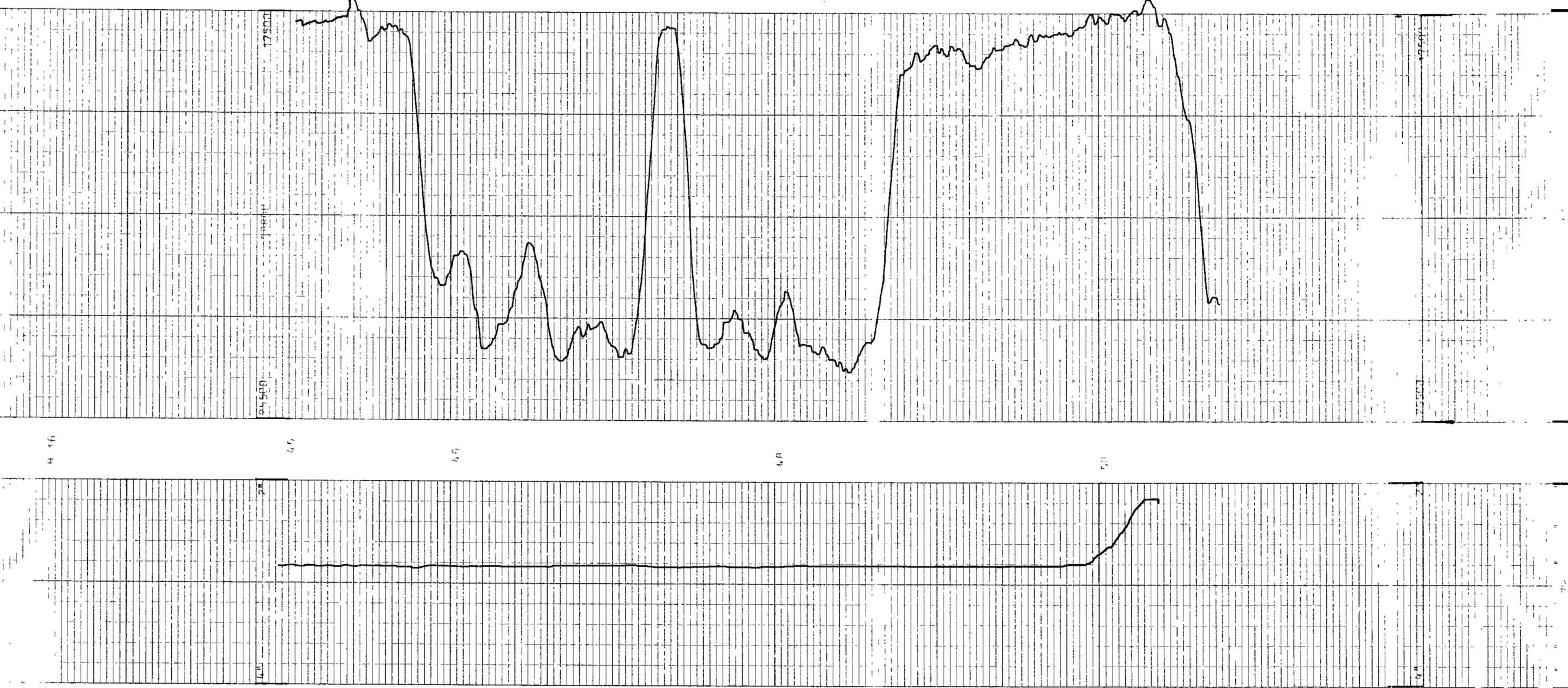
LOG SUITE  
CALIPER  
BR DENSITY

**B P B SEAM THICKNESS LOG**

**BED RESOLUTION DENSITY**

**DEPTH**

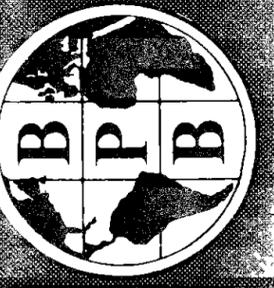
**CALIPER INCHES**



**BED RESOLUTION DENSITY**

**DEPTH**

**CALIPER INCHES**



BOREHOLE H 46 AREA Hamilton  
CLIENT Carrigorn COUNTRY Aust.  
**SEAM THICKNESS LOG**



BOREHOLE H 17  
 CLIENT Capricorn

AREA Hamilton TAG DEPTH SCALE 1:100  
 COUNTRY Australia  
 DATE LOGGED 15 July 82 1 of 3 LOGS

**COAL LITHOLOGY LOG**

SONDE TYPE  
 COAL COMBINATION  
 SONDE

LOG SUITE  
 GAMMA RAY  
 LS DENSITY  
 CALIPER

**BOREHOLE DATA**

PERMANENT DATUM Ground level  
 ELEVATION OF PD \_\_\_\_\_

MEASUREMENTS FROM \_\_\_\_\_ DRILLER \_\_\_\_\_  
 DEPTH REACHED 26 \_\_\_\_\_  
 CASING SHOE \_\_\_\_\_

BIT SIZES: 1 1 1/2 TO 2 \_\_\_\_\_  
 3 \_\_\_\_\_ TO 4 \_\_\_\_\_

CASING SIZES: 1 \_\_\_\_\_ TO 2 \_\_\_\_\_

**FLUID DATA**

NATURE Air/water  
 SG \_\_\_\_\_  
 LEVEL 2.5m  
 VISCOSITY \_\_\_\_\_  
 Rm at meas temp \_\_\_\_\_  
 BHT \_\_\_\_\_

**OPERATION DATA**

FIRST READING 24  
 LAST READING \_\_\_\_\_  
 INTERVAL LOGGED 24  
 UNIT-TRUCK No 94/31B  
 ENGINEER S. MICHELS  
 WITNESS \_\_\_\_\_

EQUIPMENT AND RECORDING DATA

COAL COMBINATION SONDE	LOG	EQUIPMENT	SOURCE	SONDE	LOG TAPED	CALIBRATOR	RECORD DIRECT REPLAY	TAPING SPEED	RECORD SPEED	T.C SECS	PANEL	CAL COEFF	DEPTHS		SEAM LOG RUN	
													FROM	TO		
GAMMA RAY																
LS DENSITY																
CALIPER																

COAL QUALITY/SEAM THICKNESS LOG INTERVALS (Refer to relevant log)  
 FROM 22 TO 14 INTERVAL 8

MARKS

ADDITIONAL SONDES RUN

SONDE	LOG	GENERAL SCALE LOG	DETAIL SCALE LOG	REFER TO	ADDITIONAL HEADINGS

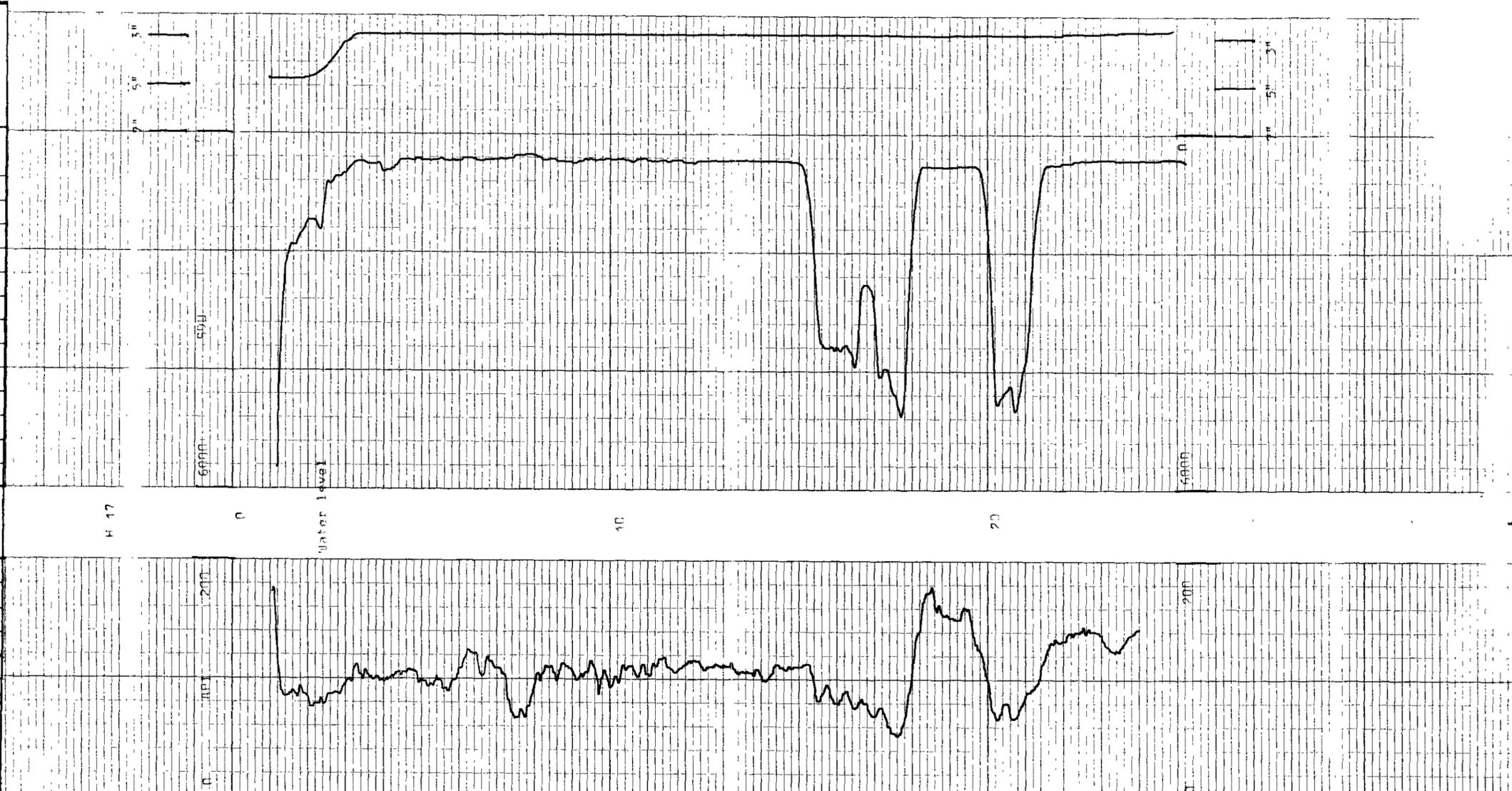
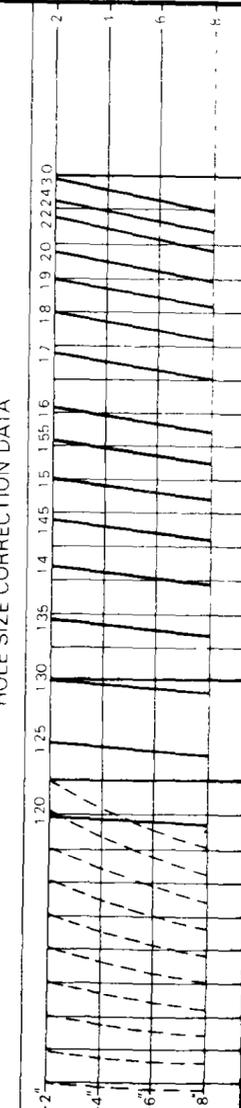
**B P B COAL LITHOLOGY LOG**

**CALIBRATION DATA**

JIG No 393 VALUE 53 @ 2" DIAM  
 JIG MARK SHOWN AT ABOVE VALUE -

JIG CAL DATE 14/7/82 JIG VALUE @ 300 SIDU @ 1.4 g/cm<sup>3</sup>  
 JIG No 54187 SPAN NORM EPS = 5.45 3" = 4.96 7" = 7.21

GAMMA RAY	DEPTH	COAL BULK DENSITY	CALIPER
		g/cm <sup>3</sup>	INCHES



GAMMA RAY	DEPTH	COAL BULK DENSITY
		g/cm <sup>3</sup>



BOREHOLE H 17 AREA Hamilton  
 CLIENT Capricorn COUNTRY \_\_\_\_\_

**COAL LITHOLOGY LOG**



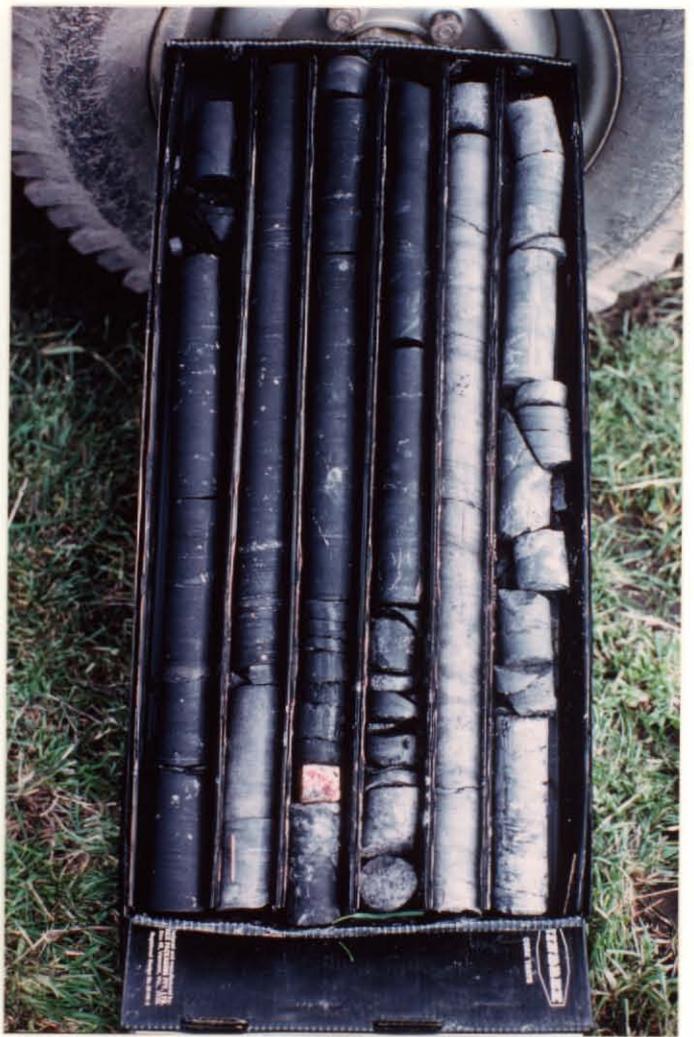
APPENDIX 5

PHOTOGRAPHS OF COAL BEARING CORES.  
SEE FICHE NUMBER 1



H - 16 #10 42.29m. - 46.55m.

H - 16 #12 50.95m. - 55.33m.

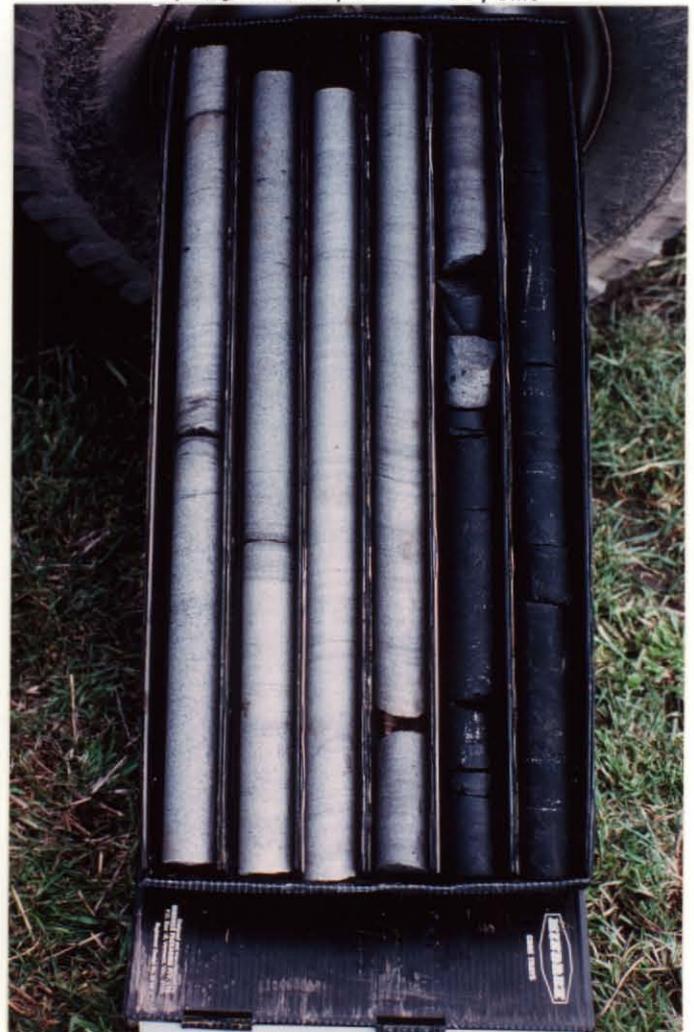


H - 16 #11 46.55m. - 50.95m.

H - 17 #3 12.27m. - 16.70m.



H-16 #11 46.55 - 50.95



706082



H - 17 #4 16.70m. - 21.20m.

H - 17 #5 21.20m. - 25.58m.



706083



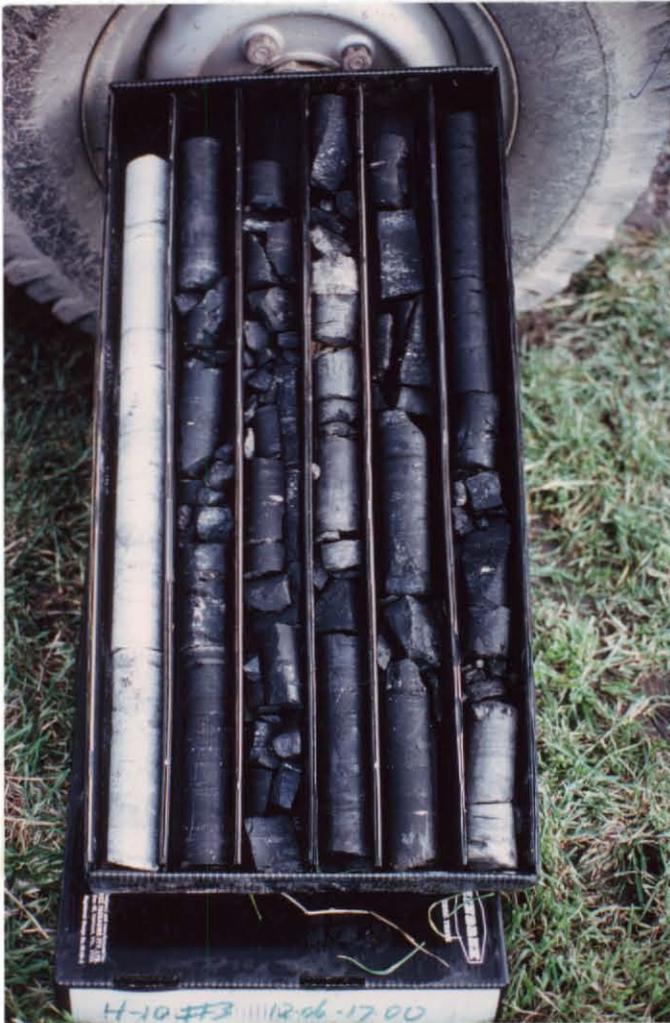
H - 09 #3 12.10m. - 16.51m.



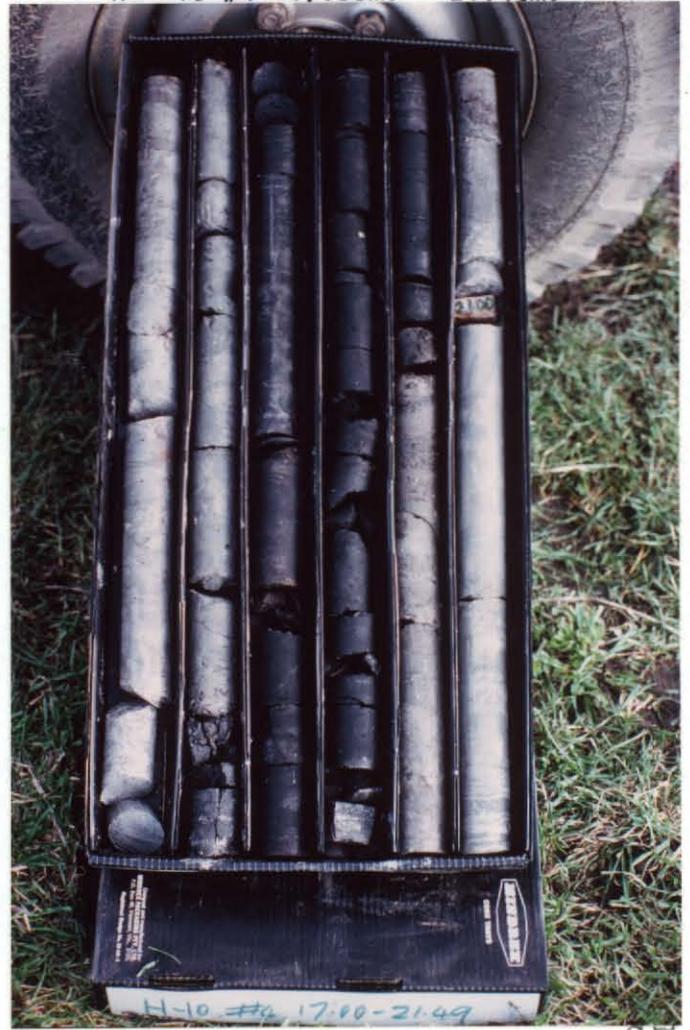
H - 09 #4 16.51m. - 21.07m.

H - 10 #3 12.06m. - 17.00m.

H - 10 #4 17.00m. - 21.49m.



H-10 #3 12.06-17.00



H-10 #4 17.00-21.49

706084



H - 12 #9 40.17m. - 44.50m.



H - 12 #10 44.50m. - 48.84m.

H - 14 #9 38.99m. - 43.45m.



H-14 #9 38.99 - 43.45



H - 14 #10 43.45m. - 47.95m.

APPENDIX 6

COAL ASSAY RESULTS.

**SGS Australia Pty. Ltd.****Sydney**

74 McEvoy Street,  
Alexandria, N.S.W.,  
P.O. Box 163, Redfern, 2016  
Tel.: 699-7625  
Telex: AA 22395  
Cables: Supervise

Petrecon Australia Pty Ltd  
19 Goulburn Street  
HOBART TASMANIA 7000

---

**ATTENTION: Mr Ken Morrison****July 14, 1982**

Your ref.:

Our ref.: **SL 1895**

Dear Ken,

**Coal Analysis Results - Boreholes H 09, 10, 12, 14, 16, 17**

Our report SL 1895 is attached with ply results for above bores.

Composite samples are being prepared for raw coal and float/sink testing as discussed by telephone 13.7.82 and outlined in my telex 13.7.82.

Results will be forwarded as soon as possible.

In order to open an account with SGS, our finance manager has requested that new clients supply us with two trade references. He would therefore appreciate it if you could supply this information before we complete the next analytical stage.

Yours faithfully,

HAROLD READ  
MANAGER - COAL EXPLORATION SERVICES

Encl.



Laboratories Division

Page 1 of 10 pages

COAL ANALYSIS REPORT

REPORT No.: SL 1895

DATE IN: 21.6.82

DATE OUT: 12.7.82

CLIENT: Petrecon Australia Pty Ltd

CLIENT REFERENCE:

ADDRESS: 19 Goulburn Street, HOBART, TASMANIA 7000

RESULTS TO: Ken Morrison

COPY TO:

SAMPLE REFERENCE: Borehole H 09

SGS Ref Nos: S2161 S2162 S2163 S2164 S2165 S2166

ANALYSIS	1 Shale	2 Coal	3 Coal	4 Coal	5 Shale	6 Coal	
Total Moisture %							
Moisture %	-	3.2	3.3	3.8	-	2.7	
Ash %	93.1	40.4	23.7	31.7	91.8	22.5	
Volatile Matter %	-	10.1	11.6	9.6	-	13.7	
Fixed Carbon %							
Crucible Swelling No.							
Specific Energy Mj/kg							
Total Sulphur %							
Carbon %							
Hydrogen %							
Nitrogen %							
Oxygen %							
Carbon Dioxide %							
Mass rec. (kg)	0.540	1.804	1.592	1.648	0.430	2.264	

DETERMINED IN ACCORDANCE WITH: AS 1038 /3

BASIS RESULTS REPORTED ON Air dried

*H. Read*  
Harold Read - Manager  
Coal Exploration Services



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Laboratories Division  
COAL ANALYSIS REPORT

REPORT No.: SL 1895

DATE IN: 21.6.82

DATE OUT: 12.7.82

CLIENT: Petrecon Australia Pty Ltd

CLIENT REFERENCE:

ADDRESS: 19 Goulburn Street, HOBART, TASMANIA 7000

RESULTS TO: Ken Morrison

COPY TO:

SAMPLE REFERENCE: Borehole H 10

SGS Ref Nos:	S2167	S2168	S2169	S2170	S2171	S2172	S2173
ANALYSIS	1 Shale	2 Coal	3 Coal	4 Shale	5 Coal	6 Coal	7 Shale
Total Moisture %							
Moisture %	-	4.7	4.1	-	3.9	4.2	-
Ash %	66.6	31.1	19.3	80.7	14.8	13.3	91.6
Volatile Matter %	-	19.7	23.1	-	23.1	26.0	-
Fixed Carbon %							
Crucible Swelling No.							
Specific Energy Mj/kg							
Total Sulphur %							
Carbon %							
Hydrogen %							
Nitrogen %							
Oxygen %							
Carbon Dioxide %							
Mass rec. (kg)	0.476	1.510	1.042	0.930	1.424	1.410	0.400

DETERMINED IN ACCORDANCE WITH: AS1038/3

BASIS RESULTS REPORTED ON Air dried

*H. Read*  
.....  
Harold Read - Manager  
Coal Exploration Services



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Laboratories Division  
COAL ANALYSIS REPORT

REPORT No.: SL 1895

DATE IN: 21.6.82

DATE OUT: 12.7.82

CLIENT: Petrecon Australia Pty Ltd

CLIENT REFERENCE:

ADDRESS: 19 Goulburn Street, HOBART, TASMANIA 7000

RESULTS TO: Ken Morrison

COPY TO:

SAMPLE REFERENCE: Borehole H 10

SGS Ref Nos: S2174 S2175 S2176

ANALYSIS	8 Coal	9 Shale	10 Coal				
Total Moisture %							
Moisture %	4.0	-	3.7				
Ash %	13.9	72.2	20.6				
Volatile Matter %	28.2	-	27.4				
Fixed Carbon %							
Crucible Swelling No.							
Specific Energy Mj/kg							
Total Sulphur %							
Carbon %							
Hydrogen %							
Nitrogen %							
Oxygen %							
Carbon Dioxide %							
Mass rec. (kg)	1.790	0.072	1.726				

DETERMINED IN ACCORDANCE WITH: AS1038/3

BASIS RESULTS REPORTED ON Air dried

*H. Read*  
Harold Read - Manager  
Coal Exploration Services



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Laboratories Division  
COAL ANALYSIS REPORT

REPORT No.: SL1895      DATE IN: 21.6.82      DATE OUT: 12.7.82  
CLIENT: Petrecon Australia Pty Ltd      CLIENT REFERENCE:  
ADDRESS: 19 Goulburn Street, HOBART, TASMANIA 7000  
RESULTS TO: Ken Morrison      COPY TO:  
SAMPLE REFERENCE: Borehole H 12

SGS Ref Nos:      S2177      S2178      S2179

ANALYSIS	1 Coal	2 Shale	3 Coal				
Total Moisture %							
Moisture %	2.8	-	3.2				
Ash %	24.3	92.7	24.0				
Volatile Matter %	16.4	-	15.8				
Fixed Carbon %							
Crucible Swelling No.							
Specific Energy MJ/kg							
Total Sulphur %							
Carbon %							
Hydrogen %							
Nitrogen %							
Oxygen %							
Carbon Dioxide %							
Mass rec. (kg)	2.626	0.584	1.204				

DETERMINED IN ACCORDANCE WITH: AS1038/ 3  
BASIS RESULTS REPORTED ON: Air dried

*H. Read*  
.....  
Harold Read - Manager  
Coal Exploration Services



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Laboratories Division

COAL ANALYSIS REPORT

REPORT No.: SL 1895

DATE IN: 21.6.82

DATE OUT: 12.7.82

CLIENT: Petrecon Australia Pty Ltd

CLIENT REFERENCE:

ADDRESS: 19 Goulburn Street, HOBART, TASMANIA 7000

RESULTS TO: Ken Morrison

COPY TO:

SAMPLE REFERENCE: Borehole H 16

SGS Ref Nos:	S2186	S2187	S2188	S2190	S2191	S2192	S2193
ANALYSIS	1 Shale	2 Coal	3 Coal	4 Shale	5 Coal	6 Coal	7 Shale
Total Moisture %							
Moisture %	-	4.8	3.8	-	2.9	2.0	-
Ash %	60.5	37.6	28.1	88.3	22.1	20.8	92.8
Volatle Matter %	-	15.1	16.7	-	18.2	20.2	-
Fixed Carbon %							
Crucible Swelling No.							
Specific Energy Mj/kg							
Total Sulphur %							
Carbon %							
Hydrogen %							
Nitrogen %							
Oxygen %							
Carbon Dioxide %							
Mass rec. (kg)	0.136	1.418	1.664	0.828	1.310	1.348	0.380

DETERMINED IN ACCORDANCE WITH: AS1038/3

BASIS RESULTS REPORTED ON: Air dried

H. Read  
Harold Read - Manager  
Coal Exploration Services



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Laboratories Division

COAL ANALYSIS REPORT

REPORT No.: SL 1895

DATE IN: 21.6.82

DATE OUT: 12.7.82

CLIENT: Petrecon Australia Pty Ltd

CLIENT REFERENCE:

ADDRESS: 19 Goulburn Street, HOBART, TASMANIA 7000

RESULTS TO: Ken Morrison

COPY TO:

SAMPLE REFERENCE: Borehole H 16

SGS Ref Nos: S2194

ANALYSIS	8 Coal					
Total Moisture %						
Moisture %	1.7					
Ash %	18.4					
Volatile Matter %	21.1					
Fixed Carbon %						
Crucible Swelling No.						
Specific Energy Mj/kg						
Total Sulphur %						
Carbon %						
Hydrogen %						
Nitrogen %						
Oxygen %						
Carbon Dioxide %						
Mass rec. (kg)	1.588					

DETERMINED IN ACCORDANCE WITH: AS1038 /3  
BASIS RESULTS REPORTED ON Air dried

*H. Read*  
Harold Read - Manager  
Coal Exploration Servi



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Laboratories Division  
COAL ANALYSIS REPORT

REPORT No.: SL 1895      DATE IN: 21.6.82      DATE OUT: 12.7.82

CLIENT: Petrecon Australia Pty Ltd      CLIENT REFERENCE:

ADDRESS: 19 Goulburn Street, HOBART, TASMANIA 7000

RESULTS TO: Ken Morrison      COPY TO:

SAMPLE REFERENCE: Borehole H 17

SGS Ref Nos:      S2195      S2196      S2197      S2198      S2199      S2200

ANALYSIS	1 Coal	2 Coal	3 Shale	4 Coal	5 Shale	6 Coal	
Total Moisture %							
Moisture %	3.1	2.6	-	2.2	-	2.0	
Ash %	40.5	35.4	87.1	22.8	91.0	23.3	
Volatile Matter %	9.9	11.5	-	12.8	-	18.2	
Fixed Carbon %							
Crucible Swelling No.							
Specific Energy MJ/kg							
Total Sulphur %							
Carbon %							
Hydrogen %							
Nitrogen %							
Oxygen %							
Carbon Dioxide %							
Mass Rec. (kg)	1.692	1.758	0.318	2.232	0.528	2.226	

DETERMINED IN ACCORDANCE WITH: AS1038/3  
BASIS RESULTS REPORTED ON: Air dried

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Harold Read - Manager  
Coal Exploration Services

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Report No: SL1895

Date in: 21/6/82 Date out: 12/7/82

Client: Petrecon Australia Pty Ltd

Address: 19 Goulburn Street, HOBART, TASMANIA 7000

Results to: Mr. Ken Morrison

Sample ref: Boreholes: H 09, H 10, H 12, H 14, H16, H 17

<u>Borehole:</u>	<u>Sample:</u>	<u>Relative density</u>
H 09	1 Shale	2.61
	2 Coal	1.76
	3 Coal	1.57
	4 Coal	1.66
	5 Shale	2.58
	6 Coal	1.55
H 10	1 Shale	2.09
	2 Coal	1.66
	3 Coal	1.54
	4 Shale	2.33
	5 Coal	1.49
	6 Coal	1.46
	7 Shale	2.60
	8 Coal	1.47
	9 Shale	2.35
	10 Coal	1.52
H 12	1 Coal	1.56
	2 Shale	2.62
	3 Coal	1.55
H 14	1 Coal	1.61
	2 Shale	2.54
	3 Coal	1.53 ✓
	4 Shale	2.64
	5 Coal	1.58 ✓

Method used DRAFT AS 1038-21

*H. Read*  
 .....  
 Harold Read - Manager  
 Coal Exploration Services


**SGS Australia Pty. Ltd.**

Page 10 of 10 pages

Report No: SL1895

Date in: 21/6/82 Date out: 12/7/82

Client: Petrecon Australia Pty Ltd

Address: 19 Goulburn Street, HOBART, TASMANIA 7000

Results to: Mr. Ken Morrison

Sample ref: Boreholes: H 09, H 10, H 12, H 14, H 16, H 17

<u>Borehole:</u>	<u>Sample:</u>	<u>Relative density</u>
H 16	1 Shale	1.98
	2 Coal	1.69
	3 Coal	1.60
	4 Shale	2.52
	5 Coal	1.57
	6 Coal	1.53
	7 Shale	2.68
	8 Coal	1.50
H 17	1 Coal	1.77
	2 Coal	1.73
	3 Shale	2.51
	4 Coal	1.60
	5 Shale	2.58
	6 Coal	1.55

Method used DRAFT AS1038-21

*H. Read*  
 .....  
 Harold Read - Manager  
 Coal Exploration Services

APPENDIX 7

SINK-FLOAT ANALYSIS



**SGS Australia Pty. Ltd.**

**Sydney**

74 McEvoy Street,  
Alexandria, N.S.W.,  
P.O. Box 163, Redfern, 2016  
Tel.: 699-7625  
Telex: AA 22395  
Cables: Supervise

Petrecon Australia Pty. Ltd.,  
19 Goulburn Street,  
HOBART. TASMANIA. 7000

ATTENTION: MR. KEN MORRISON

Your ref.:

Our ref.: HR/1b

30th July, 1982.

Dear Ken,

COAL ANALYSIS RESULTS - BOREHOLES H09,10,12,14,16,17

Our second report on the above borehole coal samples is attached, covering the requested specific energy, sulphur and float/sink results for your nominated sixteen seam composite samples.

You will note that separating at 1.60 results in high yields and, in most cases ash content of less than 20%.

Please advise if you require further testing, either on these individual 16 float 1.60 composites or on a composite representing each borehole.

If you consider the results encouraging and that your coal deposit has economic potential, further testing of simulated product (say floats 1.60 material) should include ash fusion, specific energy and Hardgrove grindability.

If required, we can assist with assessment of the analytical results.

Yours faithfully,

HAROLD READ  
MANAGER - EXPLORATION SERVICES



# SGS Australia Pty. Ltd.

Page 1 of 28

## REPORT SL1895

CLIENT: Petrecon Australia Pty. Ltd.,  
19 Goulburn Street,  
HOBART. TASMANIA. 7000

ATTENTION: MR. K. MORRISON

JOB: Sample and analyse coal seams from Petrecon boreholes  
H09, H10, H12, H14, H16 and H17.

### SAMPLE TREATMENT

Eleven boxes of core from the above boreholes was received at SGS Sydney laboratory. As requested by Mr. K. Morrison, the coal cores were examined, checked against the supplied graphic logs and sampled in the nominated intervals.

Each coal sample weighed, crushed minus 11.2mm (minimum fines), sub-sampled and analysed for relative density and proximate analysis, shale samples were analysed for relative density and ash only. These results were telexed 12/7/82.

Sixteen (A - O incl) Composite seam samples were prepared from the -11.2mm reserves, on length x RD basis.

	<u>Bore</u>	<u>Seam (approximate depths)</u>	<u>Composite plies</u>
A	H09	15.35m - 17.43m	2 + 3 + 4
B	H09	19.13m - 20.18m	6
C	H10	12.93m - 14.40m	2 + 3
D	H10	14.77m - 16.31m	5 + 6
E	H10	17.90m - 19.80m	8 + 9 + 10
F	H12	42.45m - 43.66m	1
G	H12	44.24m - 44.84m	3
H	H14	39.30m - 40.55m	1
I	H14	42.52m - 43.69m	3
J	H14	45.20m - 46.44m	5
K	H16	46.48m - 47.98m	2 + 3
L	H16	48.20m - 49.42m	5 + 6
M	H16	51.37m - 52.30m	8



	<u>Bore</u>	<u>Seam (approximate depths)</u>	<u>Composite plies</u>
N	H17	15.46m - 16.96m	1 + 2
O	H17	17.06m - 18.16m	4
P	H17	20.24m - 21.42m	6

Each composite sample was float/sink separated at three or four gravities ranging from 1.40 to 1.80. The float and sink fractions were analysed for ash. Raw coal composites were prepared and analysed for moisture, ash, specific energy and sulphur.

Results are detailed on following pages:

Raw coal data	Pages	<u>Page 3 to 8</u>
Float/sink data	Pages	<u>page 9 to 18</u>
Ply data	Pages	<u>page 19 to 28</u>



Laboratories Division

COAL ANALYSIS REPORT

REPORT No.: SL1895

DATE IN: 21/6/82

DATE OUT: 29/7/82

CLIENT: Petrecon Australia Pty Ltd

CLIENT REFERENCE:

ADDRESS: 19 Goulburn St., Hobart, TASMANIA 7000

RESULTS TO Mr. Ken Morrison

COPY TO:

SAMPLE REFERENCE:

Borehole H-09 - RAW COAL RESULTS

ANALYSIS		Composite A (plies 2, 3 and 4)		Composite B plies (6)			
		*	**	*	**		
Total Moisture	%						
Moisture	%	5.1	-	4.0	-		
Ash	%	33.5	33.4	19.8	23.1		
Volatile Matter	%	-	10.8	-	14.1		
Fixed Carbon	%	-	55.8	-	62.8		
Crucible Swelling No.							
Specific Energy	Mj/kg	20.54	-	26.28	-		
"	"	d.a.f + 33.46	-	34.46	-		
Total Sulphur	%	0.23	-	0.29	-		
Carbon	%						
Hydrogen	%						
Nitrogen	%						
Oxygen	%						
Carbon Dioxide	%						

DETERMINED IN ACCORDANCE WITH: AS1038 part 3,5,11

BASIS RESULTS REPORTED ON \*as analysed  
\*\*calculated dry basis from ply results  
+calculated dry ash free

*H. Read*  
Harold Read - Manager  
Coal Exploration Service

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COAL ANALYSIS REPORT

REPORT No.: SL1895

DATE IN: 21/6/82

DATE OUT: 29/7/82

CLIENT: Petrecon Australia Pty Ltd

CLIENT REFERENCE:

ADDRESS: 19 Goulburn St., Hobart TASMANIA 7000

RESULTS TO: Mr. Ken Morrison

COPY TO:

SAMPLE REFERENCE:

Borehole H-10 - RAW COAL RESULTS

ANALYSIS		Composite C		Composite D		Composite E	
		(plies 2 and 3)		(plies 5 and 6)		(plies 8,9 and 10)	
		*	**	*	**	*	**
Total Moisture	%						
Moisture	%	6.9	-	7.4	-	6.8	-
Ash	%	24.6	26.7	13.6	14.7	18.6	21.6
Volatile Matter	%	-	22.3	-	25.5	-	27.7
Fixed Carbon	%	-	51.0	-	59.8	-	50.7
Crucible Swelling No.							
Specific Energy Mj/kg		21.72	-	25.86	-	23.82	-
" "	d.a.f.+	31.72	-	32.74	-	31.94	-
Total Sulphur	%	0.26	-	0.26	-	0.32	-
Carbon	%						
Hydrogen	%						
Nitrogen	%						
Oxygen	%						
Carbon Dioxide	%						

DETERMINED IN ACCORDANCE WITH: AS1038 part 3,5,11

BASIS RESULTS REPORTED ON \*as analysed

\*\*calculated dry basis from ply results

+calculated dry ash free

.....H. Read.....  
Harold Read - Manager  
Coal Exploration Services



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COAL ANALYSIS REPORT

REPORT No.: SL1895

DATE IN: 21/6/82

DATE OUT: 29/7/82

CLIENT: Petrecon Australia Pty Ltd

CLIENT REFERENCE:

ADDRESS: 19 Goulburn St., Hobart, TASMANIA 7000

RESULTS TO: Mr. Ken Morrison

COPY TO:

SAMPLE REFERENCE:

Borehole H-12 - RAW COAL RESULTS

ANALYSIS		Composite F		Composite G	
		(plies *)	1) **	(plies *)	3) **
Total Moisture	%				
Moisture	%	4.3	-	4.5	-
Ash	%	24.5	25.0	22.5	24.8
Volatile Matter	%	-	16.9	-	16.3
Fixed Carbon	%	-	58.1	-	58.9
Crucible Swelling No.					
Specific Energy MJ/kg		23.44	-	24.52	-
" "	d.a.f.+	32.92	-	33.60	-
Total Sulphur	%	0.43	-	0.40	-
Carbon	%				
Hydrogen	%				
Nitrogen	%				
Oxygen	%				
Carbon Dioxide	%				

DETERMINED IN ACCORDANCE WITH: AS1038 part 3,5,11

BASIS RESULTS REPORTED ON \*as analysed  
\*\*calculated dry basis fromply results  
+calculated dry ash free



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H. Read  
Harold Read-Manager  
Coal Exploration  
Services



Laboratories Division

COAL ANALYSIS REPORT

REPORT No.: SL1895

DATE IN: 21/6/82

DATE OUT: 29/7/82

CLIENT: Petrecon Australia Pty Ltd

CLIENT REFERENCE:

ADDRESS: 19 Goulburn St., Hobart, TASMANIA 7000

RESULTS TO: Mr. Ken Morrison

COPY TO:

SAMPLE REFERENCE:

Borehole H-14 - RAW COAL RESULTS

ANALYSIS		Composite H		Composite I		Composite J	
		(plies *)	(1) **	(plies *)	(3) **	(plies *)	(5) **
Total Moisture	%						
Moisture	%	5.4	-	4.4	-	4.5	-
Ash	%	30.5	30.9	19.5	20.5	23.6	26.2
Volatile Matter	%	-	16.6	-	17.7	-	18.7
Fixed Carbon	%	-	52.5	-	61.8	-	55.1
Crucible Swelling No.							
Specific Energy Mj/kg		21.04	-	25.62	-	23.74	
" "	d.a.f.+	32.82	-	33.68	-	33.02	
Total Sulphur	%	0.22	-	0.33	-	0.34	
Carbon	%						
Hydrogen	%						
Nitrogen	%						
Oxygen	%						
Carbon Dioxide	%						

DETERMINED IN ACCORDANCE WITH: AS1038 part 3,5,11

BASIS RESULTS REPORTED ON \*as analysed  
\*\*calculated dry basis from ply results.  
+calculated dry ash free



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Harold Read - Manager  
Coal Exploration  
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Page 7 of 28

COAL ANALYSIS REPORT

REPORT No.: SL1895

DATE IN: 21/6/82

DATE OUT: 29/7/82

CLIENT: Petrecon Australia Pty Ltd

CLIENT REFERENCE:

ADDRESS: 19 Goulburn St., Hobart, TASMANIA 7000

RESULTS TO: Mr. Ken Morrison

COPY TO:

SAMPLE REFERENCE: Borehole H-16 - RAW COAL RESULTS

ANALYSIS		Composite K		Composite L		Composite M	
		(plies 2 *)	and 3 **	(plies 5 *)	and 6 **	(plies *)	8) **
Total Moisture	%						
Moisture	%	5.8	-	3.9	-	3.6	-
Ash	%	32.6	34.5	19.6	22.1	19.0	18.7
Volatile Matter	%	-	16.6	-	19.7	-	21.5
Fixed Carbon	%	-	48.9	-	58.2	-	59.8
Crucible Swelling No.							
Specific Energy	Mj/kg	19.76	-	25.62	-	25.68	-
" "	d.a.f.+	32.08	-	33.50	-	33.18	-
Total Sulphur	%	0.22	-	0.41	-	0.37	-
Carbon	%						
Hydrogen	%						
Nitrogen	%						
Oxygen	%						
Carbon Dioxide	%						

DETERMINED IN ACCORDANCE WITH: AS1038 part 3,5,11

BASIS RESULTS REPORTED ON \*as analysed

\*\*calculated dry basis from ply results  
+calculated dry ash free



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Harold Read - Manager  
Coal Exploration Services



Laboratories Division

COAL ANALYSIS REPORT

REPORT No.: SL1895

DATE IN: 21/6/82

DATE OUT: 29/7/82

CLIENT: Petrecon Australia Pty Ltd

CLIENT REFERENCE:

ADDRESS: 19 Goulburn St., Hobart, TASMANIA 7000

RESULTS TO: Mr. Ken Morrison

COPY TO:

SAMPLE REFERENCE: Borehole H-17 - RAW COAL RESULTS

ANALYSIS		Composite N		Composite O		Composite P	
		(plies 1 *)	and 2) **	(plies 4) *	**	(plies 6) *	**
Total Moisture	%						
Moisture	%	4.7	-	3.9	-	3.6	-
Ash	%	34.2	39.1	22.9	23.3	22.6	23.8
Volatile Matter	%	-	11.0	-	13.1	-	18.6
Fixed Carbon	%	-	49.8	-	63.6	-	57.7
Crucible Swelling No.							
Specific Energy	Mj/kg	19.96	-	24.12	-	24.68	-
" "	d.a.f +	32.68	-	32.96	-	33.44	-
Total Sulphur	%	0.19	-	0.24	-	0.32	-
Carbon	%						
Hydrogen	%						
Nitrogen	%						
Oxygen	%						
Carbon Dioxide	%						

DETERMINED IN ACCORDANCE WITH: AS1038 part 3,5,11

BASIS RESULTS REPORTED ON \*as analysed

\*\*calculated dry basis from ply results

+calculated dry ash free



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H. Read  
Harold Read - Manager  
Coal Exploration Services



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COAL ANALYSIS REPORT

REPORT No.: SL1895

DATE IN: 21/6/82

DATE OUT: 29/7/82

CLIENT: Petrecon Australia Pty Ltd

CLIENT REFERENCE:

ADDRESS: 19 Goulburn ST., Hobart, TASMANIA 7000

RESULTS TO: Mr. K. Morrison

COPY TO:

SAMPLE REFERENCE:

Borehole H-09

Float/Sink Separation - Composite A (plies 2,3,4)

	Fractional		Cumulative	
	Mass %	Ash %	Mass %	Ash %
F 1.40	12.9	13.2	12.9	13.2
S 1.40-F 1.50	43.0	21.1	55.9	19.3
S 1.50-F 1.60	18.1	29.3	74.0	21.7
S 1.60-F 1.80	8.2	44.4	82.2	24.0
S 1.80	17.8	78.6	100.0	33.7

Float/Sink Separation - Composite B (Ply 6)

	Fractional		Cumulative	
	Mass %	Ash %	Mass %	Ash %
F 1.40	46.0	11.6	46.0	11.6
S 1.40-F 1.50	34.9	19.1	80.9	14.8
S 1.50-F 1.60	7.9	28.4	88.8	16.0
S 1.60	11.2	46.3	100.0	19.4

Determined in accordance with AS1661, AS1038 part 3

*H. Read*  
.....  
Harold Read - Manager  
Coal Exploration Services





Laboratories Division

COAL ANALYSIS REPORT

REPORT No.: SL1895

DATE IN: 21/6/82

DATE OUT: 29/7/82

CLIENT: Petrecon Australia Pty Ltd

CLIENT REFERENCE:

ADDRESS: 19 Goulburn St. , Hobart, TASMANIA 7000

RESULTS TO: Mr. K. Morrison

COPY TO:

SAMPLE REFERENCE:

Borehole H-10

Float/Sink Separation - Composite C (plies 2,3)

	<u>Fractional</u>		<u>Cumulative</u>	
	<u>Mass %</u>	<u>Ash %</u>	<u>Mass %</u>	<u>Ash %</u>
F 1.40	42.5	14.3	42.5	14.3
S 1.40-F 1.50	20.8	21.2	63.3	16.6
S 1.50-F 1.60	17.6	28.8	80.9	19.2
S 1.60	19.1	46.7	100.0	24.5

Float/Sink Separation - Composite D (plies 5,6)

	<u>Fractional</u>		<u>Cumulative</u>	
	<u>Mass %</u>	<u>Ash %</u>	<u>Mass %</u>	<u>Ash %</u>
F 1.40	78.1	10.6	78.1	10.6
S 1.40-F 1.50	13.8	19.4	91.9	11.9
S 1.50-F 1.60	3.9	30.6	95.8	12.7
S 1.60	4.2	43.0	100.0	13.9

Determined in accordance with AS1661 , AS1038 part 3

*H. Read*  
.....  
Harold Read - Manager  
Coal Exploration Services





SGS Australia Pty. Ltd.

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Laboratories Division

## COAL ANALYSIS REPORT

REPORT No.: SL1895

DATE IN: 21/6/82

DATE OUT: 29/7/82

CLIENT: Petrecon Australia Pty Ltd

CLIENT REFERENCE:

ADDRESS: 19 Goulburn St., Hobart, TASMANIA 7000

RESULTS TO: Mr. K. Morrison

COPY TO:

SAMPLE REFERENCE:

Borehole H-10Float/Sink Separation - Composite E (plies 8,9,10)

	Fractional		Cumulative	
	Mass %	Ash %	Mass %	Ash %
F 1.40	68.5	10.7	68.5	10.7
S 1.40-F 1.50	15.3	20.5	83.8	12.5
S 1.50-F 1.60	4.4	28.9	88.2	13.3
S 1.60	11.8	56.2	100.0	18.4

Determined in accordance with AS1661 , AS1038 part 3

*H. Read*  
 .....  
 Harold Read - Manager  
 Coal Exploration Services



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COAL ANALYSIS REPORT

REPORT No.: SL1895

DATE IN: 21/6/82

DATE OUT: 29/7/82

CLIENT: Petrecon Australia Pty Ltd

CLIENT REFERENCE:

ADDRESS: 19 Goulburn ST., Hobart, TASMANIA 7000

RESULTS TO: Mr. K. Morrison

COPY TO:

SAMPLE REFERENCE:

Borehole H-12

Float/Sink Separation - Composite F (ply 1)

	Fractional		Cumulative	
	Mass %	Ash %	Mass %	Ash %
F 1.40	17.5	9.7	17.5	9.7
S 1.40-F 1.50	43.1	16.8	60.6	14.7
S 1.50-F 1.60	15.4	26.5	76.0	17.1
S 1.60	24.0	46.7	100.0	24.2

Float/Sink Separation - Composite G (ply 3)

	Fractional		Cumulative	
	Mass %	Ash %	Mass %	Ash %
F 1.40	6.9	11.2	6.9	11.2
S 1.40-F 1.50	51.1	16.3	58.0	15.7
S 1.50-F 1.60	27.4	24.5	85.4	18.5
S 1.60	14.6	45.0	100.0	22.4

Determined in accordance with AS1661 ,AS1038 part 3

*H. Read*  
Harold Read - Manager  
Coal Exploration Services





Laboratories Division

COAL ANALYSIS REPORT

REPORT No.: SL1895

DATE IN: 21/6/82

DATE OUT: 29/7/82

CLIENT: Petrecon Australia Pty Ltd

CLIENT REFERENCE:

ADDRESS: 19 Goulburn St., Hobart, TASMANIA 7000

RESULTS TO: Mr. K. Morrison

COPY TO:

SAMPLE REFERENCE:

Borehole H-14

Float/Sink Separation - Composite H(ply 1)

	<u>Fractional</u>		<u>Cumulative</u>	
	Mass %	Ash %	Mass %	Ash %
F 1.40	22.5	13.6	22.5	13.6
S 1.40-F 1.50	25.7	20.8	48.2	17.4
S 1.50-F 1.60	17.2	28.2	65.4	20.3
S 1.60-F 1.80	22.8	43.1	88.2	26.2
S 1.80	11.8	59.8	100.0	30.1

Float/Sink Separation - Composite I (ply 3)

	<u>Fractional</u>		<u>Cumulative</u>	
	Mass %	Ash %	Mass %	Ash %
F 1.40	42.1	11.6	42.1	11.6
S 1.40-F 1.50	41.2	18.8	83.3	15.2
S 1.50-F 1.60	7.0	30.2	90.3	16.3
S 1.60	9.7	46.8	100.0	19.3

Determined in accordance with AS1661 , AS1038 part 3



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Coal Exploration Services



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Borehole H-14

Float/Sink Separation - Composite J (ply 5)

	Fractional		Cumulative	
	Mass %	Ash %	Mass %	Ash %
F 1.40	24.4	12.3	24.4	12.3
S 1.40-F 1.50	44.9	18.1	69.3	16.1
S 1.50-F 1.60	10.7	32.2	80.0	18.2
S 1.60	20.0	57.2	100.0	26.0

Determined in accordance with AS1661, AS1038 part 3

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SAMPLE REFERENCE:

Borehole H-16

Float/Sink Separation - Composite K (plies 2,3)

	Fractional		Cumulative	
	Mass %	Ash %	Mass %	Ash %
F 1.50	48.9	21.9	48.9	21.9
S 1.50-F 1.60	20.4	33.1	69.3	25.2
S 1.60-F 1.80	21.8	40.6	91.1	28.9
S 1.80	8.9	59.0	100.0	31.6

Float/Sink Separation - Composite L (plies 5,6)

	Fractional		Cumulative	
	Mass %	Ash %	Mass %	Ash %
F 1.40	41.2	10.9	41.2	10.9
S 1.40-F 1.50	38.1	18.5	79.3	14.6
S 1.50-F 1.60	9.3	28.2	88.6	16.0
S 1.60	11.4	46.1	100.0	19.4

Determined in accordance with AS 1661, AS1038 part 3

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Coal Exploration Services





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Borehole H-16

Float/Sink Separation - Composite M (Ply 8)

	Fractional		Cumulative	
	Mass %	Ash %	Mass %	Ash %
F 1.40	38.5	10.2	38.5	10.2
S 1.40-F 1.50	39.9	17.4	78.4	13.9
S 1.50-F 1.60	9.7	26.8	88.1	15.3
S 1.60	11.9	43.7	100.0	18.7

Determined in accordance with AS1661 , AS1038 part 3

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Harold Read - Manager  
Coal Exploration Services





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SAMPLE REFERENCE:

Borehole H-17

Float/Sink Separation - Composite N (plies 1,2)

	<u>Fractional</u>		<u>Cumulative</u>	
	Mass %	Ash %	Mass %	Ash %
F 1.50	48.9	22.3	48.9	22.3
S 1.50-F 1.60	23.3	32.1	72.2	25.5
S 1.60-F 1.80	12.2	43.1	84.4	28.0
S 1.80	15.6	65.3	100.0	33.8

Float/Sink Separation - Composite 0 (ply 4)

	<u>Fractional</u>		<u>Cumulative</u>	
	Mass %	Ash %	Mass %	Ash %
F 1.40	12.6	10.4	12.6	10.4
S 1.40-F 1.50	51.3	19.5	63.9	17.7
S 1.50-F 1.60	23.2	28.5	87.1	20.6
S 1.60	12.9	38.2	100.0	22.9

Determined in accordance with AS 1661, AS1038 part 3

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Harold Read - Manager  
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Borehole H-17

Float/Sink Separation - Composite P (ply 6)

F 1.40	32.6	11.1	32.6	11.1
S 1.40-F 1.50	36.5	19.5	69.1	15.5
S 1.50-F 1.60	12.4	30.2	81.5	17.8
S 1.60	18.5	44.2	100.0	22.7

Determined in accordance with AS1661 , AS1038 part 3

*H. Read*  
 .....  
 Harold Read - Manager  
 Coal Exploration Services





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COAL ANALYSIS REPORT

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ADDRESS: 19 Goulburn Street, HOBART TASMANIA 7000  
RESULTS TO: Ken Morrison      COPY TO:  
SAMPLE REFERENCE: Borehole H 09

SGS Ref Nos:	S2161	S2162	S2163	S2164	S2165	S2166	
ANALYSIS	1 Shale	2 Coal	3 Coal	4 Coal	5 Shale	6 Coal	
Total Moisture %							
Moisture %	-	3.2	3.3	3.8	-	2.7	
Ash %	93.1	40.4	23.7	31.7	91.8	22.5	
Volatile Matter %	-	10.1	11.6	9.6	-	13.7	
Fixed Carbon %		46.3	61.4	54.9		61.1	
Crucible Swelling No.							
Specific Energy Mj/kg							
Total Sulphur %							
Carbon %							
Hydrogen %							
Nitrogen %							
Oxygen %							
Carbon Dioxide %							
Mass rec. (kg)	0.540	1.804	1.592	1.648	0.430	2.264	

DETERMINED IN ACCORDANCE WITH: AS 1038 part 3  
BASIS RESULTS REPORTED ON Air dried

*H. Read*  
.....  
HAROLD READ  
MANAGER  
COAL EXPLORATION  
SERVICES

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SAMPLE REFERENCE: Borehole H 10

SGS Ref Nos:	S2167	S2168	S2169	S2170	S2171	S2172	S2173
ANALYSIS	1 Shale	2 Coal	3 Coal	4 Shale	5 Coal	6 Coal	7 Shale
Total Moisture %							
Moisture %	-	4.7	4.1	-	3.9	4.2	-
Ash %	66.6	31.1	19.3	80.7	14.8	13.3	91.6
Volatile Matter %	-	19.7	23.1	-	23.1	26.0	-
Fixed Carbon %		44.5	53.5		58.2	56.5	
Crucible Swelling No.							
Specific Energy Mj/kg							
Total Sulphur %							
Carbon %							
Hydrogen %							
Nitrogen %							
Oxygen %							
Carbon Dioxide %							
Mass rec. (kg)	0.476	1.510	1.042	0.930	1.424	1.410	0.400

DETERMINED IN ACCORDANCE WITH: AS 1038 part 3

BASIS RESULTS REPORTED ON Air dried

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RESULTS TO: Ken Morrison

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SAMPLE REFERENCE: Borehole H10

ANALYSIS	SGS Ref Nos: S2174	S2175	S2176				
	8	9	10				
	Coal	Shale	Coal				
Total Moisture %							
Moisture %	4.0	-	3.7				
Ash %	13.9	72.2	20.6				
Volatile Matter %	28.2	-	27.4				
Fixed Carbon %	53.9	-	48.3				
Crucible Swelling No.							
Specific Energy MJ/kg							
Total Sulphur %							
Carbon %							
Hydrogen %							
Nitrogen %							
Oxygen %							
Carbon Dioxide %							
Mass rec. (kg)	1.790	0.072	1.726				

DETERMINED IN ACCORDANCE WITH: AS 1038 part 3  
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SAMPLE REFERENCE: Borehole H 12

SGS Ref Nos: S2177 S2178 S2179

ANALYSIS	1 Coal	2 Shale	3 Coal				
Total Moisture %							
Moisture %	2.8	-	3.2				
Ash %	24.3	92.7	24.0				
Volatile Matter %	16.4	-	15.8				
Fixed Carbon %	56.5	-	57.0				
Crucible Swelling No.							
Specific Energy MJ/kg							
Total Sulphur %							
Carbon %							
Hydrogen %							
Nitrogen %							
Oxygen %							
Carbon Dioxide %							
Mass rec. (kg)	2.626	0.584	1.204				

DETERMINED IN ACCORDANCE WITH: AS 1038 part 3  
BASIS RESULTS REPORTED ON Air dried

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RESULTS TO: Ken Morrison

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SAMPLE REFERENCE: Borehole H 16

SGS Ref Nos:	S2186	S2187	S2188	S2190	S2191	S2192	S2193
ANALYSIS	1 Shale	2 Coal	3 Coal	4 Shale	5 Coal	6 Coal	7 Shale
Total Moisture %							
Moisture %	-	4.8	3.8	-	2.9	2.0	-
Ash %	60.5	37.6	28.1	88.3	22.1	20.8	92.8
Volatile Matter %	-	15.1	16.7	-	18.2	20.2	-
Fixed Carbon %	-	42.5	51.4	-	56.8	57.0	-
Crucible Swelling No.							
Specific Energy MJ/kg							
Total Sulphur %							
Carbon %							
Hydrogen %							
Nitrogen %							
Oxygen %							
Carbon Dioxide %							
Mass rec. (kg)	0.136	1.418	1.664	0.828	1.310	1.348	0.380

DETERMINED IN ACCORDANCE WITH: AS 1038 part 3

BASIS RESULTS REPORTED ON Air dried

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RESULTS TO: Ken Morrison      COPY TO:  
SAMPLE REFERENCE: Borehole H 17

SGS Ref Nos:	S2195	S2196	S2197	S2198	S2199	S2200	
ANALYSIS	Coal	Coal	Shale	Coal	Shale	Coal	
Total Moisture %							
Moisture %	3.1	2.6	-	2.2	-	2.0	
Ash %	40.5	35.4	87.1	22.8	91.0	23.3	
Volatile Matter %	9.9	11.5	-	12.8	-	18.2	
Fixed Carbon %	46.5	50.5	-	62.2	-	56.5	
Crucible Swelling No.							
Specific Energy Mj/kg				24.76		24.92	
Total Sulphur %							
Carbon %							
Hydrogen %							
Nitrogen %							
Oxygen %							
Carbon Dioxide %							
Mass Rec. (kg)	1.692	1.758	0.318	2.232	0.528	2.226	

DETERMINED IN ACCORDANCE WITH: AS 1038 part 3  
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SAMPLE REFERENCE: Boreholes H 09, H 10, H 12, H 14, H 16, H 17

<u>Borehole</u>	<u>Sample</u>	<u>Relative Density</u>
H 09	1 Shale	2.61
	2 Coal	1.76
	3 Coal	1.57
	4 Coal	1.66
	5 Shale	2.58
	6 Coal	1.55
H 10	1 Shale	2.09
	2 Coal	1.66
	3 Coal	1.54
	4 Shale	2.33
	5 Coal	1.49
	6 Coal	1.46
	7 Shale	2.60
	8 Coal	1.47
	9 Shale	2.35
	10 Coal	1.52
H 12	1 Coal	1.56
	2 Shale	2.62
	3 Coal	1.55
H 14	1 Coal	1.61
	2 Shale	2.54
	3 Coal	1.53
	4 Shale	2.64
	5 Coal	1.58

Method used DRAFT AS 1038-21

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SAMPLE REFERENCE: Boreholes H 09, H 10, H 12, H 14, H 16, H 17

<u>Borehole</u>	<u>Sample</u>	<u>Relative Density</u>
H 16	1 Shale	1.98
	2 Coal	1.69
	3 Coal	1.60
	4 Shale	2.52
	5 Coal	1.57
	6 Coal	1.53
	7 Shale	2.68
	8 Coal	1.50
H 17	1 Coal	1.77
	2 Coal	1.73
	3 Shale	2.51
	4 Coal	1.60
	5 Shale	2.58
	6 Coal	1.55

Method used DRAFT AS 1038-21

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