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INDUSTRIAL & MINING INVESTIGATIONS PTY. LTD.

AND

THE SHELL COMPANY OF AUSTRALIA LIMITED



**SIX MONTHLY PROGRESS REPORT
FOR PERIOD ENDING
23 AUGUST, 1978
E.L. 5/61, GRAY.**

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**THE SHELL COMPANY OF AUSTRALIA LIMITED
COAL EXPLORATION & PRODUCTION DEPARTMENT**

AUGUST 1978

CEPR 21/78

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EXPLORATION LICENCE 5/61, GRAY

SIX MONTHLY PROGRESS REPORT FOR PERIOD ENDED 23rd AUGUST, 1978

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August, 1978

C.E.P.R. 21/78

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SIX MONTHLY PROGRESS REPORT FOR PERIOD ENDED 23RD AUGUST, 1978

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INTRODUCTION

1.1 SCOPE

This report details the results of exploration conducted in E.L.5/61 Gray during the six month period ended 23rd August, 1978. All exploration activity has been confined to the Dalmyne area of the Licence (Encl. 1).

During the period 4 fully cored diamond drillholes (GY1, GY2, GY3, GY4) have been completed and two others (GY5, GY6) are in progress. The total metreage drilled to 20th August, 1978 was 2156.7 metres. (Table 1).

Table 1: Drilling Statistics

HOLE NO.	DEPTH (m)	STATUS
GY 1	335.0	Completed
GY 2	510.5	Completed
GY 3	487.2	Completed
GY 4	461.0	Completed
GY 5	363.0	Drilling Ahead
GY 6	-	Spudding In.
	2156.7	

Borehole lithological logs will be submitted with later reports. All previous exploration was reviewed in the light of the recently obtained data and a preliminary review of the area undertaken.

1.2 TENURE DETAILS

Exploration Licence 5/61 Gray was granted to Industrial & Mining Investigations Pty. Ltd. (I.M.I.), on the 23rd February, 1961. Renewal of the Licence for a further six month period is pending.

The Exploration Licence is exclusive of four mining leases (total area 450 ha approximately) which are held by the Cornwall Coal Mining Company, and SR 1964/167 held by the Department of Mines (Encl. 1).

1.3 LOCATION AND ACCESS

Exploration Licence 5/61 Gray is situated on the east coast of Tasmania, north from Cranbrook. The main part of the licence covering some 732 square kilometres lies within A.M.G. co-ordinates 5405000-5354000m N and 590000 - 605000m E, while a small area (43 square kilometres) lies to the south within A.M.G. co-ordinates 5349000 - 5341000m N and 601000 - 607000m E (Encl. 1).

The area is served by the Esk Highway from the west and the Tasman (East Coast) Highway from the south. The North East railway line runs from Launceston via Conara to St. Marys a distance of 130km (Encl. 1).

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The lease area conveniently can be divided into five areas:

- Mt. Nicholas Range Area
- Dalmayne Area
- Western Area
- East Coast Area (South from Seymour)
- Mt. Paul Area

All exploration to date has been confined to the Dalmayne area, therefore reference to other areas will be minimal.

The Dalmayne area is situated between the east coast and the eastern margin of the Fingal Tier; and extends from the township of Gray in the north to the township of Seymour in the south. The area comprises some 100 square kilometres (Encl. 1).

The Dalmayne coalfield is some 24 km by track and road from the rail-head at St. Marys, and the lack of adequate access has been the main factor retarding exploration in this area. An unsealed narrow road leads from Gray to the old Dalmayne Mine a distance of about 10 km, and then a 2 km dozed bush track connects this mine road to a 7 km unsealed formed road which joins the Tasman Highway near Piccaninny Point (Encl. 1).

During the operation of the mine (1939-54) an aerial ropeway was maintained from the mine to the coast at Piccaninny Point, a distance of about 5 km.

1.4 TOPOGRAPHY AND CLIMATE

The area is the most rugged in the east coast district, and with the exception of the narrow coastal plain and the upper part of the Break 'O Day Plain, is of strong relief. Mt. Elephant is the highest point, rising from sea level to 720 m above sea level: and the hills west of the coastal plain rise to over 600 m.

Great variations occur in the topography of the area and the geomorphological units can be classified as:

- Dolerite Plateau & Monadnocks
- East Coast Ranges
- Coastal Plain & Lowlands

In the east coast region, many small creeks and rivers descend rapidly through deep gorges with steep slopes, to the coast. In the Plateau region many creeks and rivers flow through marshes (eg. Thompsons Marsh, near Dalmayne), which occur in the depressions of the dolerite.

The climate is classified as temperate marine. On the coast daily temperature range, averages about 8°C rising to about 12°C further inland.

Summers are mild and characterised by greatly lengthened days with about 15 hours daylight in mid-summer. In mid-winter, the shortest day consists of about 9 hours daylight.

There is a strong gradation in rainfall from west coast to east coast because of topography, with a distinct rain shadow east of the Central Plateau. In winter the rainfall is greatest but is fairly evenly distributed averaging 800mm (30 inches) per annum in the Dalmayne area.

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Average rainfall in the area varies from 1038 mm (100 rain days) at St. Marys and 1278mm (138 rain days) at Gray on the East Coast Range to 680mm (not avail.) at Bicheno on the coast.

The South Esk River system is the most affected by flooding in Tasmania. The Esk catchment includes most of the north-eastern highlands where annual rainfall averages about 1300mm. As many rivers in the South Esk system flow through flat country, flooding is widespread, disruptive and frequent (eg. Fingal Valley).

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2. PREVIOUS INVESTIGATIONS (Dalmayne Area)

The area has been mapped by McNeil (1965) and part of the area had previously been mapped by Keid (1922), Voisey (1938) and Everard (1957).

In 1915 the Dalmayne Coal Company drove a tunnel into a seam outcrop which was about 4m thick at an elevation of 325m above sea level. The amount of coal produced at this time was insignificant.

In 1949-52 the Mines Department drilled 8 holes in the Dalmayne area to intersect the main working seam. None of these holes penetrated the full coal measure sequence. (Encl. 2).

During 1939-1954, the Transport Commission reopened the old workings and extracted some 35,000 tonnes of coal. The coal was trucked to the railhead at St. Marys. The mine was closed in 1954 due to a lack of markets and technical problems associated with faulting. The mining had been carried out on the bord and pillar system in a faulted wedged shaped block. (Encl. 3).

In 1974, Industrial and Mining Investigations Pty. Ltd., (I.M.I.) drilled a further 2 holes to penetrate the overlying dolerite and coal measure sequence. A seam, thought to be equivalent to the seam at Mt. Nicholas in the north, was intersected 150-200m below the surface. (Encl. 2).

Five boreholes were drilled in the Seymour area in 1888 and indicate the similarity in this area of the Lower Triassic-Permian section to that observed in holes drilled in the Dalmayne area (Encls. 1 & 2). No complete record exists of previous mining operations in the Seymour area, however Twelvetrees (in Hill et al, 1922) refers to workings opened up by the Douglas River Coal Company between 1850-1860. Twelvetrees states on the authority of the Company's reports, that in the inner mine, seams were struck at 92 feet (28m) and 165 feet (50m) being 4 feet (1.22m) and 5 feet (1.52m) thick respectively. The lower seam was reported as yielding good quality coal. Some 800 tons of coal were won from the area. The eastern and western limits of the Seymour area are denoted by faults. The Lagoon Fault passes through Long Point and into Maclean's Bay while to the west the mine workings were reported as having encountered a fault.

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3. GEOLOGY OF THE AREA

The geology of the Dalmayne Area is outlined in Enclosure 4 (McNeil 1965). At this time the geology and stratigraphy is based on published and unpublished work, although some observations are noted on Shell's drilling in the area.

3.1 STRATIGRAPHY

The rock types of the area are briefly described below, chronologically, from oldest to youngest.

The basement rocks of the area are strongly folded Silurian sediments known as the Mathinna Beds. These sediments are folded along a general NNE-SSW axis and consist of sandstones, mudstones, siltstones, slates and phyllites. These sediments are intruded by Devonian granites which have no bearing on the coal prospects of the area. The Silurian is overlain unconformably by Permian sediments. Very broadly, these sediments are freshwater and marine, and consist of sandstones, arkoses, siltstones, conglomerates and limestones. No complete sections of the Permian have been observed in boreholes drilled in this area. In 1878, 427 feet (130 m) of Permian sediments were observed in the Harefield bore, 500 feet (152.40 m) in the Killymoon bore, and approximately 525 feet (160 m) in Seymour No. 4 bore (Encl. 2).

Conformably overlying the Permian sediments are the Triassic Coal Measures consisting of lithic and quartzose sandstones, mudstones, carbonaceous mudstones, shales and coal seams. Up to 8 seams have been encountered in the coal measure section, which has an apparent maximum thickness so far of 360 m (Shell borehole GY 4). This compares with a maximum measured thickness of 321.5 m in Mines Department hole DDH 6 drilled near Fingal (Threader, 1968).

A dolerite sheet of Jurassic Age, which may be over 300 m thick in parts, overlies the Triassic sediments. It is roughly conformable with the sediments and has acted as a vast protective covering, preventing their removal by erosion. Dolerite scree is widespread and generally covers the contact between the dolerite and the underlying sediments. This scree causes difficulty in interpreting the form of the dolerite intrusion and in locating coal outcrops.

Recent (Cainozoic) fluviatiles overlie the Triassic sediments within valleys and areas lacking dolerite.

3.2 STRUCTURE

The Permian sediments rest unconformably on the Silurian. The contact is nearly planar and dips at 1° or less to the south. The Permian-Triassic contact is thought to be conformable within the area of interest. Where the Permian and Triassic are disconformable, they are separated by a conglomerate of a few cm which grades upwards into a clean creamy sandstone (GY 1).

The general dip of the Triassic is thought to be 2° to 4° to the south-east. However, rolls and faults increase this dip in some areas.

Regionally the main dolerite sheet transgresses to the west with respect to the Triassic beds. East of Fingal, the dolerite is in contact with Triassic beds above the economic coal workings. Overall, the sheet has a dip to the southeast roughly conformable with the sediments.

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3.2 STRUCTURE (Cont'd)

It is presumed that coal is present beneath the dolerite, if the dolerite is a roughly concordant sheet. This main sheet of dolerite is in the form of a plateau, almost unbroken from St. Marys to the Tasman Peninsula and fringed by old coal workings. Dolerite also occurs as a capping to the Mt. Nicholas Range, Mt. Peter and Mt. Paul, (Encl. 1) and as isolated outcrops on the flanks of the ranges and in valley floors. The relationship of these occurrences to the main dolerite mass is unknown.

According to Keid (in Hills et al., 1922) the major faults, namely the Cornwall and Dalmayne Faults occur mainly to the east of the coal bearing country. McNeil (1965) places the Cornwall Fault west of the Dalmayne Coalfield, a separate fault, the Lagoon Fault, following the eastern coastline. McNeil omits the Douglas and Siltstone Faults of Keid on the basis that they were formulated upon dubious coal seam correlations.

It is thought that the Cornwall Fault passes approximately 3 to 4 kms west of the Dalmayne Mine, where the throw becomes less as the fault is traced south. The throw in the vicinity of Dalmayne is about 120 m to the west. Any coal seams west of this fault would have to be worked from the northern slopes of the Fingal Tier.

The Lagoon Fault has a maximum throw of some 150 m to the west. This fault runs in close proximity to the eastern coastline.

The Dalmayne Mine workings occur within a wedge-shaped faulted block (Encls. 3 & 4). Mines Department drilling around the workings suggest a maximum throw on these faults of less than 10 metres.

There is little information available that would indicate the density of faulting that might be encountered in any new mine workings. Fault throws of up to 8 m are known to have occurred in the workings at Mt. Nicholas and Cornwall, therefore it is not unlikely that faults of this magnitude would occur within any new workings.

4. RESULTS OF EXPLORATION

4.1 DRILLING

Drilling in the Licence area commenced on May 8th when the first of two diamond rigs arrived. A second rig commenced operations on August 8th. Associated Diamond Drillers are carrying out the first stage of drilling using an F66 and an F52 diamond rig. It is planned to drill 18 holes in the Licence area and to date (20/8/78) 4 holes have been completed and two others are in progress.

The locations of these holes are shown in Enclosure 1.

Weather conditions during the period have been severe with above average rainfall contributing to constant access problems. Continuous dozing and bridge making has been necessary to maintain access to drill sites.

Hills (1922) refers to seven coal seams in the Dalmayne area, and these seams have been referred to as Alpha, Beta Gamma Kappa and Dalmayne working seam by various writers.

To avoid further confusion in seam nomenclature, it is proposed at this time to refer to seams intersected in holes drilled in the Dalmayne area as Dalmayne A, Dalmayne B, Dalmayne G (Encl. 2).

Eight of the nine Mines Department holes drilled around the old mine workings penetrated the working seam (Dalmayne B). The other hole, MD4, was not drilled deep enough to intersect the Dalmayne B seam (Encl. 2).

Recent drilling by Shell in the Dalmayne area has indicated the presence of eight recognisable seams in a coal measure section which reaches an apparent maximum thickness of 360 m (Table 2). Typically the coal measures consist of lithic sandstones in the upper part, which become more quartzose towards the base, siltstones, mudstones, carbonaceous mudstones, shales, carbonaceous shales, and coal. The coal typically is the dull-heavy dull (inferior) type.

The coal seams are readily correlated from drillhole to drillhole (Encl. 2) and so far have shown reasonable lateral continuity in terms of thickness.

The Dalmayne A seam is by far the poorest quality coal in the section, and typically consists of carbonaceous mudstone and shale, with minor dull-heavy dull coal bands.

The Dalmayne B seam is considered equivalent to the seam mined at the old Dalmayne Mine and intersected in the eight Mines Department holes (Encl. 2). The seam is banded dull-heavy dull coal, mudstone, carbonaceous mudstone and shale (Encl. 5). The lower metre or so of the seam is of better quality. (Edyvean, 1977).

The Dalmayne C seam is a poor quality banded seam and containing little good quality coal (Encl. 5). The seam averages 3.78 m thick over the area drilled.

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The Dalmayne D seam contains by far the best quality coal in the area, and the seam averages 2.20 m thick. It is split by a stone band some 0.23 m thick, which occurs some 0.20 to 0.50 m from the top of the seam. The upper and lower part typically consist predominantly of dull-heavy dull coal with a few thin mudstone partings. (Encl. 5). The lower section of the seam averages 1.80 m in thickness over the drilled area.

A carbonaceous interval has been recognised in GY1 and GY2 some 10 m above the Dalmayne D seam. In GY3 and GY4 this interval has developed into a 2-4m coal seam split by a stone band some 0.50 m thick. When developed this seam will be referred to as the Unnamed Seam Above the D (Encls. 2 & 5).

The Dalmayne E seam shows rapid lateral variation ranging from 2.20 m in GY1 to only 0.38 m in GY4. The coal is typically of the heavy dull type.

The Dalmayne F and G seams are less than a metre thick and are of little interest at this stage. In GY4 these seams have deteriorated to carbonaceous mudstone and shale intervals, not easily correlated to previous holes (Encl. 2).

Overlying the coal measures in all holes is dolerite scree or dolerite (Table 2). The dolerite generally is grey fine-medium grained very hard and widely jointed, except for occasional "fracture zones" which exhibit very closely spaced, steeply dipping joints, with abundant calcite, talc and chlorite infillings. In GY2 the underlying coal measures have been noticeably affected by the dolerite. The sediments appear baked for about 20 m below the contact, and exhibit ferruginous staining, secondary mineral formation, silica remobilization, and increased hardness. In the other holes the baked zone is less than 5 m wide.

A thin dolerite sill has intruded the coal measures above the Dalmayne B seam in GY1 (Encl. 2). The surrounding sediments are baked and closely jointed, while the seam is broken and burnt.

The Permian has been recognised in GY1, GY2, GY3, GY4 and I.M.I./DDH2 (Table 2). The thickest section penetrated was 40m (131ft) of Ferntree Group in GY2.

This section consisted of 35m of dark grey siltstone with scattered quartz pebbles and + 5m of a glauconitic sandstone containing some thin limestone beds. This sandstone has been equated to the Risdon Sandstone (Threader, 1968). Overlying the Ferntree Group in GY1 was a thin cream coloured quartz grit.

Permian and Triassic sediments are recognised in the Harefield bore, Killymoon bore and Seymour No. 4 bore. On the basis of the correlation of these formations with the formations recognised in the Shell/I.M.I. holes at Dalmayne, the thin coal seams intersected in these old bores would be equivalents of the Dalmayne E, F and G seams (Encl. 2).

Table 2: Approximate Thickness, Jurassic - Permian
Section, Dalmayne Area

DRILL HOLE NO.	R.L. (m) Surface	THICKNESS (m)		DEPTH TOP OF PERMIAN (m)	B.O.H. (m)
		Dolerite	Coal Measures		
I.M.I. No. 1	416	16 (scree)	258	274.0	284.0
I.M.I. No. 2	412	14 (scree)	Incomplete	NDE	199.5
SHELL GY 1	450	2 (scree)	315	317.0	335.0
" GY 2	475	145	326	470.5	510.5
" GY 3	480	135	350	487.7	487.2
" GY 4	550	78	360	438.0	461.0
" GY 5	470	101	Drilling Ahead		

4.2 PHOTOGEOLOGICAL PLANS AND MAPPING

During the period, consultants Layton & Associates, compiled a geological map of the Licence Area from air photographs and Landsat Imagery, with lithological subdivisions taken from 1:250,000 Geological Survey of Tasmania Sheets SK55-4 and SK55-6 and to a lesser extent from Hills, L., 1922, "The Coal Resources of Tasmania, Geological Survey of Tasmania Mineral Resources No. 7".

The structural parameters were divided into geological contacts and bedding features and major lineaments and faults together with undifferentiated structural features such as those observed in the vicinity of Cranbrook (Shell, CEPR 20/78), and a possible volcanic vent (Encl. 6). A simplified pattern of major lineaments is outlined, with particular emphasis on those showing evidence of faulting. In most cases some displacement of photogeoological boundaries was recognised across the major lineaments, and displacement of lineament by lineament was common. Field mapping commenced during the period with initial activity on the eastern slope of the tier around Dalmayne-Piccaninny Point. Coal outcrops and several coal exposures (the result of recent road making in the area) have been recorded. These will be correlated to seam intersections from boreholes drilled nearby. Permian Cascade Group has been indentified in the area.

Field mapping will continue during the coming six month period, and the base map (Encl. 6) updated in the light of these results.

4.3 LABORATORY TESTING OF COAL SAMPLES

Each seam was logged in detail and sampled (subsectionally when necessary) on the basis of coal lithotypes (Encl. 5). Roof and floor material was sampled when necessary and will be analysed separately for ash and relative density. This will allow later calculation of mining seam intervals. Attractive seams, i.e. ones considered suitable for underground development, will be analysed in detail according to the flow sheets of Enclosures 7 & 8. Significant seams (1-1.5m thick) will be analysed according to Enclosure 9.

Results of laboratory testing of coal samples from GY 1 and GY 2 are listed in tables 3-7. The second stage testing of these samples is in progress.

Ø 13
100 mm Cores

ATTRACTIVE SEAMS (> 1.5 m)

Samples (a B C D e)

Crush (- 38 mm)

• S.G. (raw)

Raw coal
• Ash

a, e

100% BCD

Pre Treatment and
Size at 25 mm, 12.7 mm, 6.3 mm,
3.2 mm, 0.5 mm w/w
0.1 mm

• Raw Ash on each Size
(1 CORE ONLY)

Combine + 0.5 mm.
0.5 - 0.1 mm.
- 0.1 mm.

Reconstitute F/S

→ Raw Coal

• PA

• TS

• SE

* HGI

* AFT

* AA

* UA

* Selected

(+ 0.5 mm)
F/S 1.35 - 1.60 (0.05)
1.60 - 2.00 (0.10)

• ash
• Mass
• calc. cumulatives

shell advises composites

PA
Sulp (Total, form)
SE
AFT (Red ; 1 oxid.)
UA
AA
HGI
FSI
Petrographic / Reflectance (1 sample)
HGI, P, As Ba

(0.5 - 0.1 mm)
on F/S at 1.50
• Mass
• ash
• T.S.

(- 0.1 mm)
• Raw Ash
Mass

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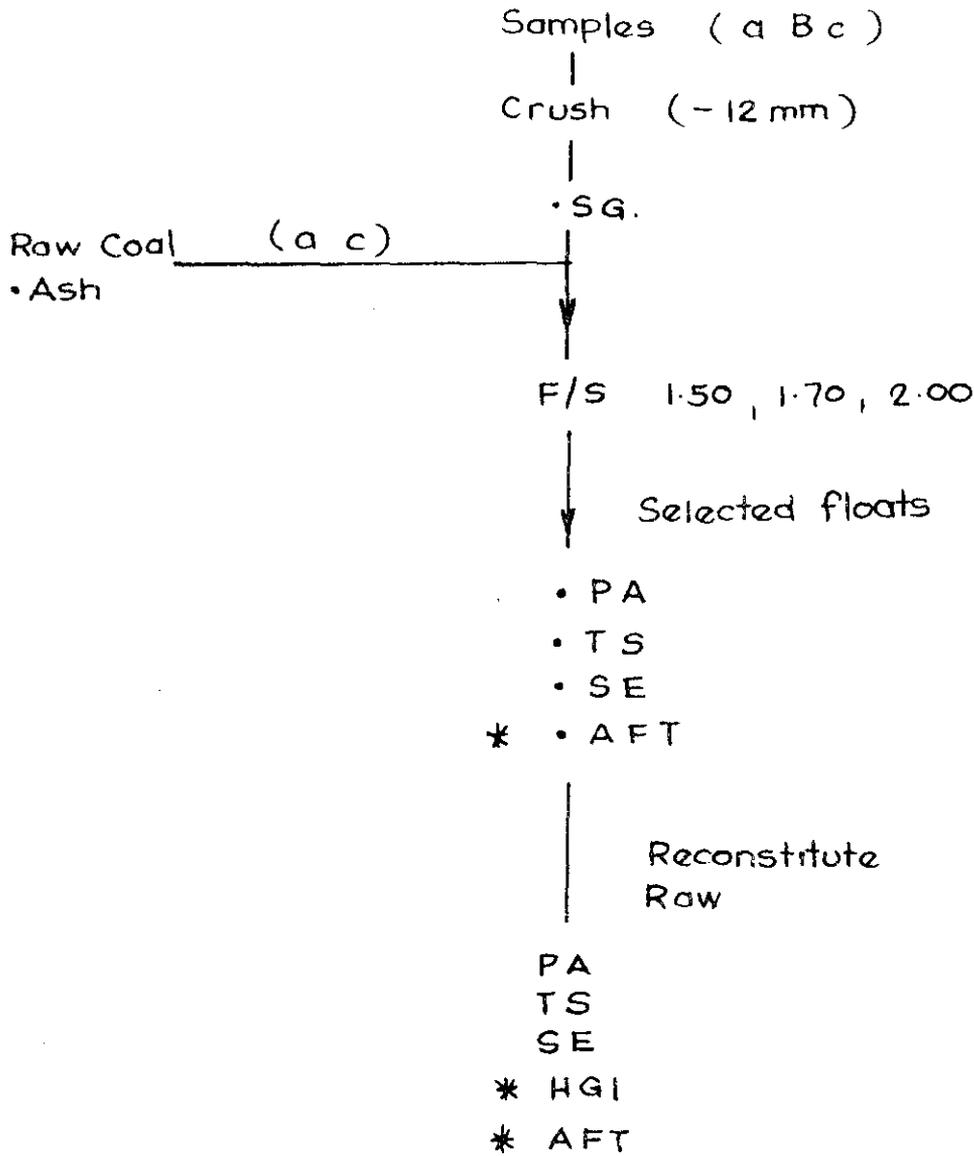
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100 mm | 50 mm
CORES

SIGNIFICANT SEAMS

(1.0 m - 1.5 m)



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TABLE 3

Dalmayne B seam. Preliminary coal analyses

Sample No.	Thickness (m)	Rel. Density (Raw.)	Ash % (Raw)	Cumulative F/S Analysis		
				R.D.	Mass %	Ash %
GY2/1	0.07	2.37	83.5	Roof Material		
GY2/2	0.64	1.58	35.2	F1.50	31.0	17.4
				F1.60	62.4	23.4
				F1.70	74.8	26.0
				F1.80	80.7	27.4
				Raw	100.0	35.4
GY2/3	1.53	2.1	69.0	F1.50	2.3	24.2
				F1.60	5.1	27.8
				F1.70	11.3	34.9
				F1.80	19.7	40.8
				Raw	100.0	69.9
GY2/4	0.99	1.68	42.0	F1.50	31.5	11.8
				F1.60	43.2	16.3
				F1.70	53.7	20.5
				F1.80	62.4	24.0
				Raw	100.0	42.7
GY2/5	1.40	1.65	40.7	F1.50	35.8	11.4
				F1.60	43.6	15.1
				F1.70	53.6	19.6
				F1.80	62.1	23.3
				Raw	100.0	40.5

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TABLE 4

Dalmayne C Seam. Preliminary Coal Analyses

Sample No.	Thickness (M)	Rel Density (Raw)	Ash % (Raw)	Cumulative F/S Analysis		
				R.D.	Mass %	Ash %
GY2/6	0.91	2.12	71.5	Roof Material		
GY2/7	1.54	1.67	41.9	F1.50	40.6	9.0
				F1.60	45.4	11.0
				F1.70	52.4	14.9
				F1.80	58.6	18.3
				Raw	100.0	41.9
GY2/8	0.90	1.94	58.4	F1.50	21.2	15.2
				F1.60	27.2	18.4
				F1.70	33.1	22.2
				F1.80	37.0	24.8
				Raw	100.0	57.6

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TABLE 5

Dalmyne D Seam. Preliminary Coal Analyses

Sample No.	Thickness (M)	Rel. Density (Raw)	Ash % (Raw)	Cumulative F/S Analysis		
				R.W.	Mass %	Ash %
GY1/1	1.68	1.46	22.9	F1.50	77.0	16.9
				F1.60	86.6	18.2
				F1.70	90.9	19.0
				F1.80	92.9	19.6
				Raw	100.0	23.4
GY1/2	0.14	1.64	41.4	Floor Material		
GY2/9	0.78	1.65	39.3	F1.50	44.2	16.1
				F1.60	52.4	18.5
				F1.70	65.5	22.2
				F1.80	72.1	24.4
				Raw	100.0	39.1
GY2/10	2.02	1.48	24.3		68.1	14.7
					81.5	17.2
					87.2	18.6
					89.8	19.4
					100.0	24.6
GY2/11	0.80	1.83	55.7	Floor Material		

TABLE 6

Dalmayne E Seam. Preliminary Coal Analyses

Sample No.	Thickness (M)	Rel. Density (Raw)	Ash % (Raw)	Cumulative F/S Analysis		
				R.D.	Mass %	Ash %
GY1/3	0.10	2.09	71.2	Roof Material		
GY1/4	2.20	1.57	33.6	F1.50	40.4	13.9
				F1.60	51.9	17.2
				F1.70	66.2	21.5
				F1.80	78.6	25.3
				Raw	100.0	33.9
GY1/5	0.16	1.93	65.8	Floor Material		
GY2/12	0.51	1.97	63.1	Roof Material		
GY2/13	0.76	1.66	43.5	F1.50	38.0	17.4
				F1.60		
				F1.70	56.3	22.0
				F2.00	65.9	26.5
				Raw	100.0	43.1

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TABLE 7

Dalmayne F Seam. Preliminary Coal Analyses

Sample No.	Thickness (M)	Rel. Density (M)	Ash % (RAW)	Cumulative F/S Analysis		
				R.D.	Mass %	Ash %
GY1/6	0.44	1.95	65.8	F1.50	0.8	10.7
				F1.70	1.5	18.7
				F2.00	23.8	52.0
				Raw	100.0	66.3
GY1/7	0.88	1.59	35.3	F1.50	39.9	14.4
				F1.70	59.4	19.00
				F2.00	83.4	28.8
				Raw	100.0	36.0
GY2/14	0.50	1.73	41.8	F1.50	20.1	14.2
				F1.70	46.8	21.8
				F2.00	73.8	30.9
				Raw	100.0	41.5

Five mine samples (411-415) and the Dalmayne B & D seams from DDH 1 and DDH 2 have been analysed (Table 8). The exact locations of the mine samples are not available, nor are the descriptions of the sections sampled. The seams from DDH 1 and 2 are exclusive of dirt bands over 7 mm thick (Edyvean, 1977).

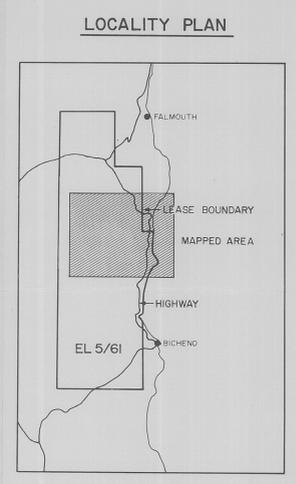
TABLE 8

Coal Analyses, Mine Samples and I.M.I. Samples

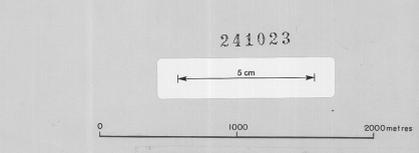
Hole Location	Seam	Thick- ness (m)	Proximate Analysis (% a.d.)				Ultimate Analysis (% a.d.)					C.V. BTU/lb	S.G.
			M	MV/A	FC	ASH	S	H	C	O	N		
MINE	'B'	-	4.5	22.2	55.3	18.0	0.69						
MINE	'B'	-	3.6	21.1	54.8	20.5	0.41	4.17	52.50	21.47	0.91	9431	1.68
MINE	'B'	-	4.8	20.5	50.5	24.2	0.41						
MINE	'B'	-	4.5	18.7	51.4	25.4	0.33						
MINE	'B'	-	5.1	18.5	49.0	27.4	0.34	3.94	49.06	18.42	0.90	9243	
DDH1	'B'	1.25	5.4	28.8	40.1	27.7	0.42					10193	1.47
DDH2	'B'	1.09	3.1	26.9	41.1	28.9	0.54					9290	1.49
DDH1	'D'	(1.55	3.9	21.7	43.4	31.0	0.23					-	1.56
	(3.1	(4.56-	3.3	23.3	38.4	35.0	0.30					-	1.56
		(1.56	3.5	24.1	47.1	25.3	0.33					10753	1.49
DDH2	'D'	(0.92	3.2	25.6	52.0	19.2	0.46					10882	1.42
		(0.90	2.3	28.0	49.7	20.0	0.28					10968	1.43

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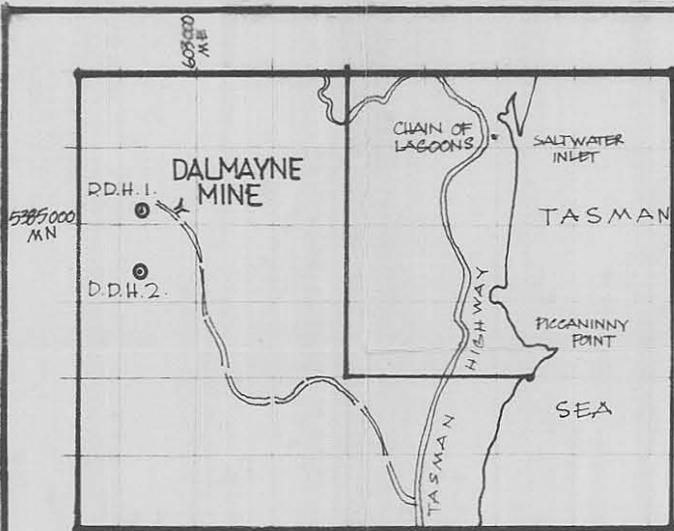


- LEGEND**
- Geological boundary
 - - - Geological boundary position approximate
 - Fault, position known
 - - - Fault, position known, limits unknown
 - - - Fault, inferred
 - Dolerite boundary, transgressive
 - - - Field traverse line showing G (Geology) and M (Magnetometer) interpretation
- | | | |
|------------|----|--|
| QUATERNARY | qd | Alluvium |
| | q1 | Dolerite talus on sediments |
| JURASSIC | jd | Dolerite |
| TRIASSIC | t | Undifferentiated |
| PERMIAN | p | Undifferentiated |
| DEVONIAN | dg | Granite |
| SILURIAN | s | Slates, phyllites, schists, quartzites |

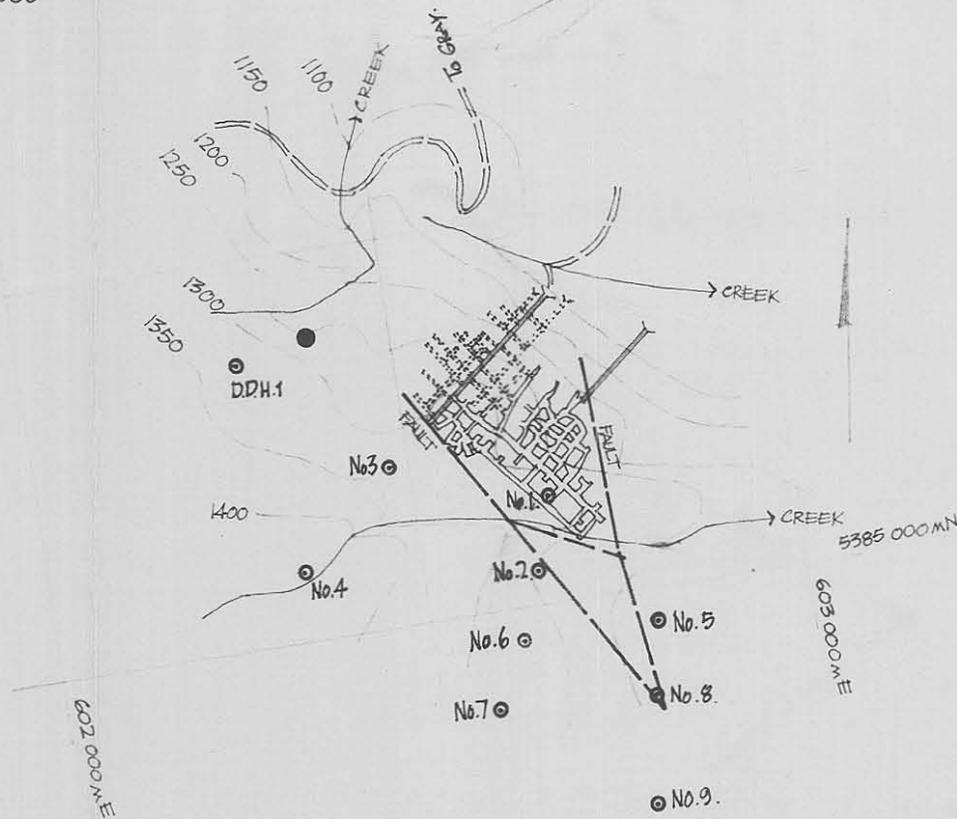


THE SHELL COMPANY OF AUSTRALIA LTD.
 N.E. TASMANIA
 SHELL-1M1 - EL 5/61 GRAY
 GEOLOGICAL MAP

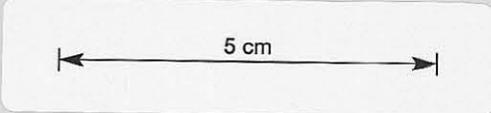
Scale 1:20,000
 Author: J.K. Ivett Date: Feb. 79
 Report No. CEPR 10/79 Drawing No. C-1432 Encl. 1



LOCALITY PLAN
SCALE: 1:100,000



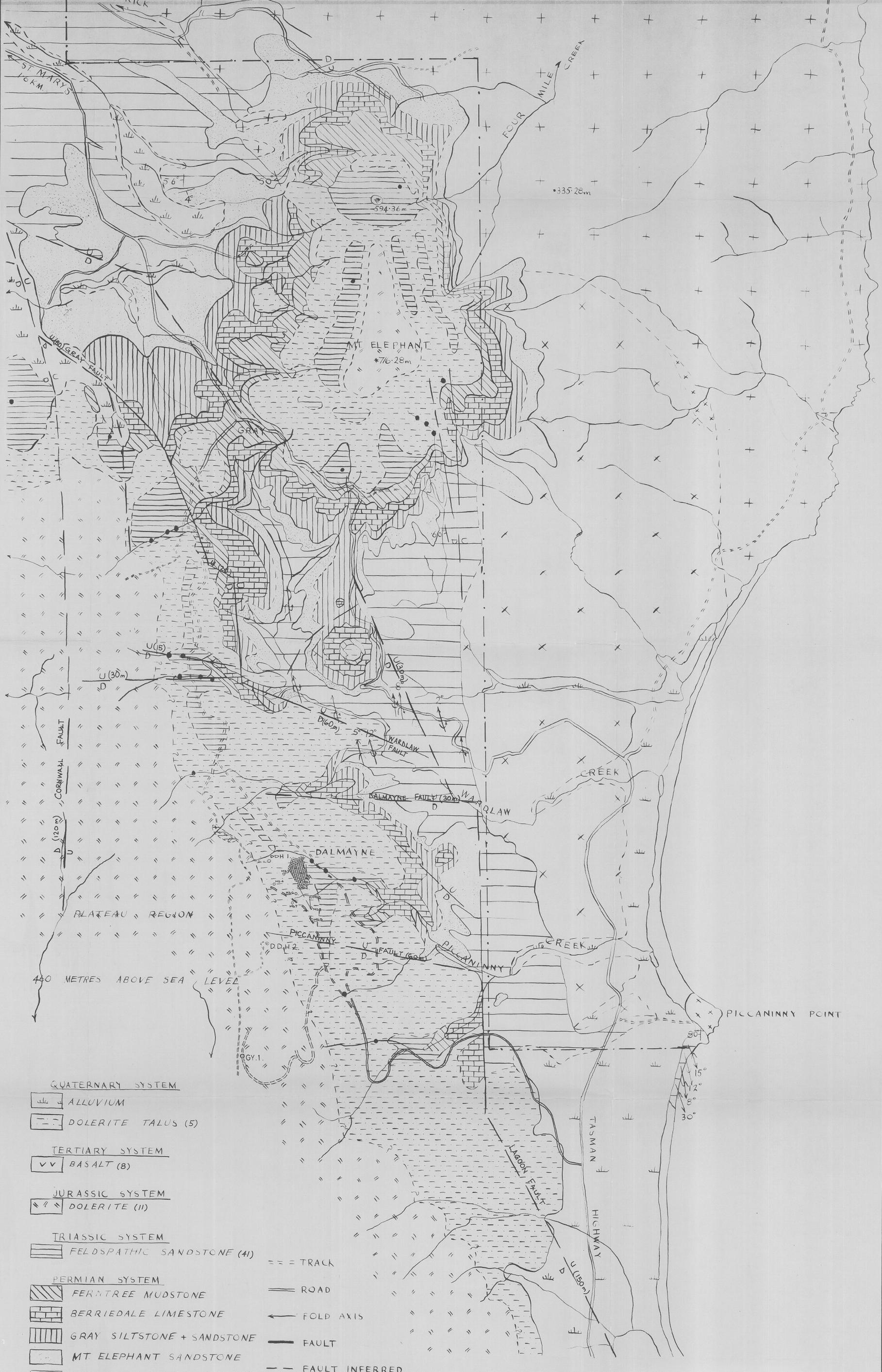
241025



LEGEND

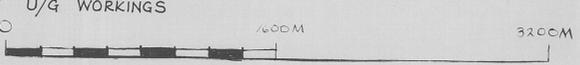
- TOPOGRAPHIC CONTOUR (FT. ASL)
- DRILL HOLE LOCATION
- FAULT LINE
- TRACK
- MINE TUNNEL
- MINE WORKINGS
- PROPOSED MINE WORKINGS
- COAL OUTCROP

THE SHELL COMPANY OF AUSTRALIA LTD.		
TASMANIA BASIN TASMANIA SHELL I.M.I. E L 5/61 GRAY ABANDONED UNDERGROUND MINE WORKINGS DALMAYNE COALFIELD Scale 1:10,000		
Author: DAT	Date: MAY 1978	Encl. 3.
Report No: CEPR 16/78	Drawing No: C-1184	



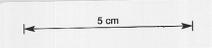
- QUATERNARY SYSTEM**
 - ALLUVIUM
 - DOLERITE TALUS (5)
- TERTIARY SYSTEM**
 - BASALT (8)
- JURASSIC SYSTEM**
 - DOLERITE (11)
- TRIASSIC SYSTEM**
 - FELDSPATHIC SANDSTONE (41)
- PERMIAN SYSTEM**
 - FERN TREE MUDSTONE
 - BERRIEDALE LIMESTONE
 - GRAY SILTSTONE + SANDSTONE
 - MT ELEPHANT SANDSTONE
 - UNDIFFERENTIATED
- SILURIAN SYSTEM**
 - MATHINNA BEDS (26)
- DEVONIAN SYSTEM**
 - ST MARYS PORPHYRY (21)
 - ADAMELLITE
 - GRANODIORITE

- TRACK
- ROAD
- FOLD AXIS
- FAULT
- FAULT INFERRED
- BOUNDARY
- BOUNDARY INFERRED
- STRIKE AND DIP
- COAL OUTCROP
- U/G WORKINGS
- DRILLHOLE

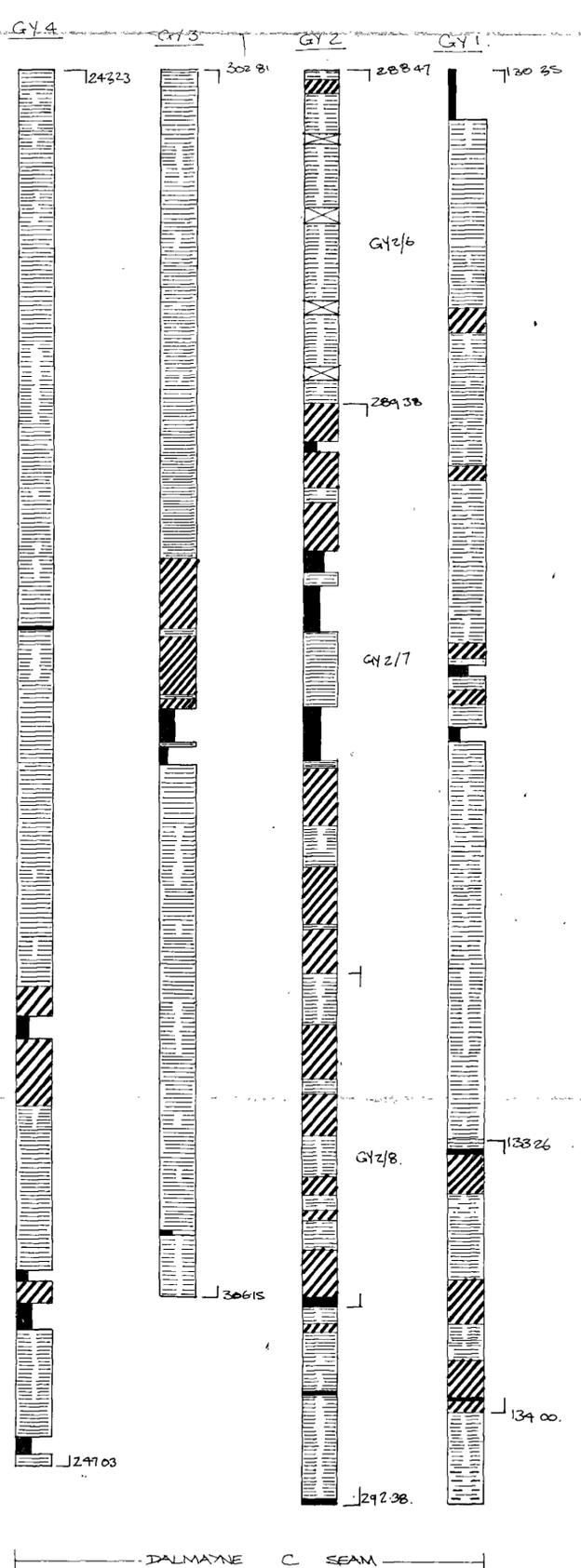
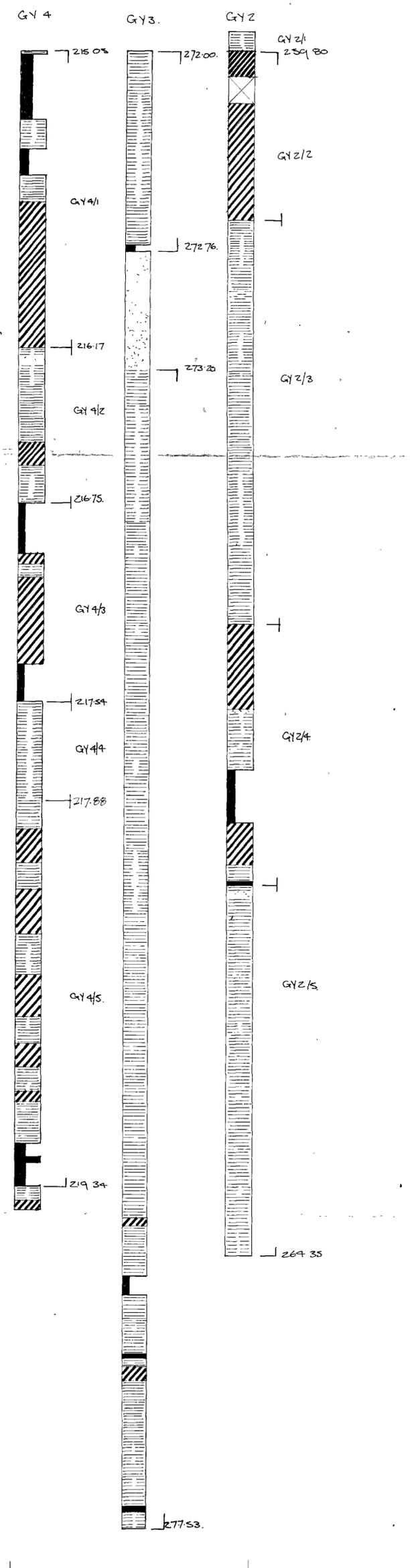


1:20,000

241026

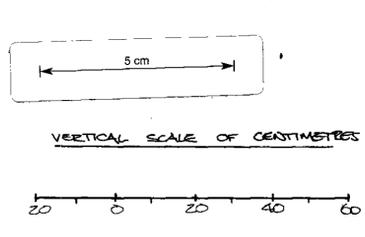


THE SHELL COMPANY OF AUSTRALIA LTD.
 TASMANIA BASIN, TASMANIA
 SHELL I.M.1 EL 5/G1 GRAY
**GEOLOGICAL MAP OF MT ELEPHANT
 PICCANINNY POINT (DALMAYNE) AREA**
 Scale 1:20,000
 Author: M. ... Date: APRIL '78
 Report No. CEPR 16/78 Drawing No. C.118.2 Encl. 4.



- ALLUVIUM TOP SOIL.
- CONGLOMERATE, REBELY SANDSTONE.
- SANDSTONE.
- SILTSTONE.
- MUDSTONE, CLAY.
- SHALE.
- MUDSTONE & COAL BANDS.
- CARBONACEOUS SHALE.
- LIMESTONE.
- BRECCIA.
- ORE LOSS.

- BRIGHT-DETAILED LOG, UNDIFFERENTIATED-GENERAL LOG.
- BANDED BRIGHT.
- INTERBANDED.
- BANDED DULL.
- DULL.
- DULL-HEAVY DULL.
- HEAVY DULL (INFERRED).
- BURNT (COOKED).
- DOLERITE - JURASSIC.
- GRANITE - DEVONIAN.



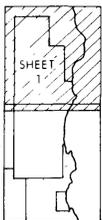
78-1285 241027

THE SHELL COMPANY OF AUSTRALIA LTD.

TASMANIA BASIN, TASMANIA.
EXPLORATION LICENCE 5/61 GRAY.

DETAILED SEAM SECTIONS.
Scale 1:10.

Author J.S.B./D.A.T.	Date AUG. 78
Report No. G.M.P.R.	Drawing No.



241028
 5 cm
LEGEND
 Drainage
 Major road
 Minor road
 Railway line
 Photo corner
 Photo corner showing run & photo numbers
 EL boundary is approximate only
 Base compiled from aerial photos and is uncontrolled

GEOLOGICAL LEGEND

- Alluvium
- Tertiary (undifferentiated)
- Dolomite & related rock types (Jurassic)
- Sandstone, mudstone, & limestone with coal measure (Permian Super Group) (Triassic-Permian-U Carb)
- Granite & porphyry (L Carb - U Devonian)
- Micaceous quartzite turbidite sequences (Mathinna Beds) (L Dev - Tremadocian - Camb ?)
- Undifferentiated rocks
- Geological contacts & bedding features
- Major lineaments & faults
- Undifferentiated structures

