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INVESTIGATOR COAL EXPLORATION PTY LIMITED

EXPLORATION LICENCE 16/77 ROYAL GEORGE

REPORT FOR SIX MONTHS 23RD DECEMBER, 1977 TO 23RD JUNE, 1978

Author: D.D. Waters

Date: July, 1978

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1. SUMMARY

Exploration licence 16/77 was granted on the 23rd December, 1977 for a period of six months. During the initial six month licence period the area was geologically mapped.

Mapping has indicated a 300 metre thick section of the Upper Triassic Age, Upper Parmeener Super Group coal measure sequence in the Royal George/St.Pauls River Valley. Economically developed coal seams appear to be restricted to the upper 150-200 metre thick section of the coal measures. Four areas within the St.Pauls River Valley appear to hold some potential for coal. Exploratory drilling is required in each of these four areas to determine the presence of economically developed coal seams.

Calculated coal reserves are 790 000 tonnes insitu for a restricted area east/northeast of the old Merrywood Mine. Insufficient information and geological uncertainty precludes the calculation of reserves in other portions of the E.L., even in the inferred category.

The coal is of a low rank bituminous type with an Australian Classification Number of 501(5). Generally, the coal has a dull vitreous lustre and a low reactives content (vitrinite + exinite) of less than 20% by volume. The coal is unsuitable for coke making or as a coking coal blend fraction because of its poor coking properties and low reactives content. Ash content of washed coal is usually 18-22%, which restricts possible usage to steam raising or use in cement manufacture.

2. INTRODUCTION

The exploration programme within the initial six month licence period involved literature research, reconnaissance and detailed mapping in order to outline potential areas of interest for exploratory drilling. Mapping was essentially concentrated on the delineation of the Triassic Age Upper Parmeener Super Group coal measure sequence. A number of coal seams occur within these measures, one of which is currently mined northeast of the exploration licence (E.L.) at the Duncan Coal Mine at Fingal and one was previously worked within the E.L. at the Merrywood Mine.

The Lower Parmeener Super Group, Mathinna Beds, granite and dolerite were also mapped.

The topographic base for the geological map was prepared from the 1:100 000 St. Pauls and Break O Day topographic sheets. Field mapping was on a combination of 1:40 000 aerial photographs and 1:30 000 topographic base plans.

Previous workers on the coal measures within the E.L. were :-

Blake, P. (Snow Hill Quadrangle)
Hills, C.L. et al (1922)
Hughes, T.D. (1960)
Threader, V.M. (1968)
Western Mining Corporation (1977)

The Tasmanian Department of Mines have also drilled four diamond drillholes within the E.L. as part of their regional coal drilling programme. These holes are DDH18 (Merrywood), DDH22 (Lochaber), DDH28 (Base of Vertical 'Acre') and DDH29 (Top of Vertical 'Acre').

3. LICENCE DETAILS

On the 20th October, 1977 an area of 545 km^2 was pegged for consideration by the Director of Mines as an Exploration Licence (E.L.). Subsequently E.L. 16/77 was granted on the 23rd December, 1977 for a period of six months up to the 23rd June, 1978. The area granted was 545 km^2 less the Departmental Reserve Areas Numbers 167 and 196 in the northern portion of the E.L.

On the 7th April, 1978 the Mines Department advised that the Reserve Areas 167 and 196 would be revoked for a period of 48 hours from noon on Wednesday 26th April, 1978. Consequently, an area of 220 km^2 conforming to the portions of the reserve areas lying within the E.L. was pegged at 12.30 p.m. on the 26th April, 1978 for addition to E.L. 16/77.

On the 19th June, 1978 application was made to the Mines Department for a six month extension of the E.L.

4. CLIMATE

The climate is of a cold temperate type, with rainfall increasing from west to east. Rainfall ranges from 500 mm in the west up to 875 mm in the east of the E.L. In the higher plateau areas rainfall is generally in excess of these figures.

5. ACCESS

The licence area is located approximately 80 km southeast of Launceston. Road distances to Hobart and Launceston are 185 km and 98 km respectively from Royal George, via the Royal George-Avoca road, South Esk Highway and Midlands Highway.

The St. Marys-Conara Junction branch railway line passes through the northwestern portion of the E.L. Conara Junction lies on the main Hobart-Launceston railway. The closest accessible rail facilities to the Royal George area are located at Avoca, which lies 84 km from Launceston and 185 km from Hobart by rail.

Access within the licence area is via the Avoca-Royal George-Old Coach Road in the south and the South Esk Highway in the north. Other access is via the Merrywood-Mt. Foster Road and the Tasmanian Pulp and Forest Holdings (TPFH) MS and MG roads. Numerous other logging side tracks branch off the Mt. Foster and TPFH roads.

During periods of heavy rain flooding in the St. Pauls and Swan Rivers prevents access to Royal George. River crossings along the Avoca-Royal George Road, Old Coach Road (Waters Meeting), Merrywood Road and MS Road (Rajah crossing) are subject to flooding and were impassable three times during the initial 6 months licence period.

6. TOPOGRAPHY

The topographical units with the E.L. are from north to south, the South Esk River Valley, the Mt. Foster-Fingal Plateau, the St. Pauls River Valley and the Snow Hill/Lewis Hill/Reynolds Hill Plateau. The Swan River Valley lies in the southeast corner of the E.L. The three river systems have dissected the plateau areas.

Elevation within the E.L. ranges from 220 metres on the valley floors to in excess of 1000 metres on Mount Foster.

The South Esk and St. Pauls River Valleys have been cleared and are used for grazing and some cultivation. Tasmanian Pulp and Forest Holdings (TPFH) is currently cutting timber for woodchip on the plateaus within the E.L.

7. GEOLOGY

7.1 Regional

Exploration Licence 16/77 is located on the northeastern margin of the Permo-Triassic Tasmania Basin. Hale (1962) recognized Jurassic plant zones in specimens from Mt. Nicholas, indicating that sedimentation extended into the Jurassic within some parts of the basin.

The basin basement consists of the Lower Palaeozoic Mathinna Beds and the Devonian Age Ben Lomond Granite.

A generalised stratigraphic column for the area is as follows :-

Alluvium and Dolerite Scree		Quaternary
Basalt		Tertiary
Dolerite		Jurassic
Parmeener Super Group	Upper Parmeener Super Group (Disconformity)	Triassic
	Lower Parmeener Super Group (Unconformity)	Permian
Ben Lomond Granite		Devonian
Mathinna Beds		Lower Devonian - Early Ordovician

~48009A

The Parmeener Super-Group was set up to divorce the "Permian" and "Triassic" myths. The Permo-Triassic time boundary goes through the upper Parmeener somewhere towards the base. This time boundary is NOT DISCERNIBLE in the field.

We have two lithologic stratigraphic units — upper & lower Parmeener but these are not chronostratigraphic units

7.2 Mathinna Beds

The Mathinna Beds are Lower Palaeozoic Age (Cambrian or Early Ordovician-Lower Devonian) slates and phyllites overlain by a sequence of interbedded lithic sandstone and mudstone. The beds have been folded on a NW-SE axis, and are well exposed along the south Esk Highway in the N.W. corner of the E.L. between Tullochgorum Estate and Fingal. Other exposure of the beds within the E.L. is restricted to a small area of outcrop west of Royal George.

7.3 Parmeener Super Group

The Parmeener Super Group is divided into lower and upper sections of Permian and Triassic age respectively. The two sections are disconformable. The super group contains three coal measure sequences, two occurring in the Permian section and the third within the Triassic. Within the E.L., coal seams of economic potential are restricted to the Triassic Age coal measure sequence.

NOT SO.

7.3.1 Lower Parmeener Super Group

The Lower Parmeener Super Group unconformably overlies the Mathinna Beds. The contact is well exposed in Tullochgorum Creek and Iron Pot Gully in the N.W. of the E.L.. In the south, the contact is exposed in old tin workings west of Royal George at M.R. 697 678 (St. Paul's 1:100 000 sheet). The total Permian section within the E.L. is in the order of 100-150m thick. No complete exposed section is present within the licence.

The Permian Age Lower Parmeener Super Group within the Fingal-Royal George area is divided into basal conglomerate, Mersey Coal Measures, Cascades Group and Ferntree Group in ascending stratigraphic order. The Cygnet Coal Measures which lie at the top of the Permian sequence do not occur within the E.L..

The section commences with a basal conglomerate that varies in type and thickness throughout the area. The conglomerate appears to have been derived from the Mathinna Beds in the northeast of the E.L. and from both granite and the Mathinna Beds near Royal George. Thickness is variable, ranging from 1-15 metres.

The basal conglomerate is overlain in some parts of the area by a thin section of the Lower Permian Age Mersey Coal Measures which appear to have been deposited in small localised depressions. The measures were originally thought to be equivalent to the Artinskian Greta Coal Measures in N.S.W. However, they are now thought to be of Late Sakmarian-Early Artinskian age and thus pre-date the Greta Coal Measures. Thickness of the measures was difficult to determine from surface outcrop, but appears to range from 0-15 metres. The sediments consist of fine-medium grained quartz lithic sandstone, grey mudstone, carbonaceous mudstone and very minor shaley coal. The coal found in outcrop was only 0.10 metre thick. The measures have no economic potential within the E.L. They outcrop north of the licence near Fingal and then thin to the southwest, disappearing in the vicinity of Iron Pot Gully.

The overlying marine Cascades Group comprises a sequence of mudstone and siltstone overlain by limestone. The lower mudstone/siltstone unit is up to 40 metres thick and is often fossiliferous. The limestone is usually highly fossiliferous and ranges in thickness from 10-50 metres. The group outcrops in the St. Paul's River Valley near Royal George and in the northwest of the licence.

The Ferntree Group appears to conformably overlie the Cascades Group, although no contact was found outcropping within the licence. The Ferntree Group comprises the Risdon Sandstone in the lower section and a dark grey silty mudstone-siltstone with occasional quartz grains and pebbles in the upper section. The Risdon Sandstone was not recognized in outcrop. The upper mudstone-siltstone unit ranges in thickness from 25-50 metres. No marine or plant fossils were found within this group.

7.3.2 Upper Parmeener Super Group

Various sub-divisions of the Triassic sequence have been proposed but are now considered obsolete. Thus, the Triassic is now referred to as the Upper Parmeener Super Group with no further sub-division.

No drillholes within the exploration licence have intersected the complete Triassic coal measure sequence. However, Mines Department drilling to the northeast of the E.L. intersected an apparently complete section in the order of 320 metres thick. The section is in the order of 350 metres thick near the eastern margin of the E.L., in the vicinity of Coal Rivulet - Meadstone Saddle. South of Royal George, the section has thinned to approximately 300 metres and appears to continue thinning to the west. The westerly thinning of the coal measures appears to be a result of non-deposition (offlap) in the upper portion of the section, as evidenced by the presence of a cobble conglomerate 10-30 metres below the top of the measures east of Meadstone Saddle and its absence to the west. The conglomerate is a useful marker unit in the eastern portion of the E.L., and further to the east in the I.M.I./Shell E.L. Thickness of the measures intersected in Department of Mines drillholes DDH18 and DDH29 on the Mt. Foster - Fingal Plateau was 47m and 79m respectively. In these two holes, only the lower section of the coal measures is present because of the intrusion of dolerite sills.

Outcrop of the coal measures in the valley floors and upper valley slopes is generally poor, due to alluvium and

dolerite scree. However, good exposures of the coal measures and coal seams commonly occur within the various creek beds.

The Triassic coal measure sequence consists of quartz sandstone with interbedded mudstone, siltstone and rare coal in the lower section and lithic sandstone with interbedded mudstone, siltstone, carbonaceous mudstone and coal in the upper section. Coal seams are further discussed in Section 8 of this report.

The lithic sandstone in the upper section of the measures has been previously referred to as a feldspathic sandstone by Nye (1921), Hills (1922), Hills and Carey (1949), Banks (1958), Jennings (1955) and Threader (1968). Surface mapping and the four Mines Department drillholes within the area indicate that the thickest coal seams occur within the upper 200 metres of the coal measures, and that the lower 100 metre thick quartz sandstone section is usually barren of coal.

The quartz sandstone and interbeds in the lower section of the coal measures appear to thin to the east. South of Royal George the quartz sandstone appears to be up to 100m thick, whereas to the east at Red Rock it appears to be only in the order of 60-80m thick. In some parts of the area a thin pebble conglomerate/granular conglomerate occurs at the base of the Triassic. The Permian/Triassic contact (?) was observed in outcrop at only one locality within the licence in Rockhouse Creek at MR 774694 (1:100 000 St. Paul's sheet). At this locality a basal conglomerate approximately 1.0m thick disconformably overlies a dark grey silty mudstone (Upper Permian Age Ferntree Group?). The conglomerate consists of pebbles of quartz, quartzite, volcanic, mudstone and mudstone lenses in a sandy kaolinitic matrix.

7.4 Cainozoic

7.4.1 Tertiary

Tertiary sediments and basalts occur to the west of the licence in the St. Paul's and South Esk Valleys near Avoca as valley infillings. No Tertiary age sediments or basalt have been identified within the licence area.

7.4.2 Quaternary

Quaternary sediments are common within the licence and comprise alluvium on the St. Paul's and South Esk River Valley floors and dolerite scree on the valley slopes and plateaus.

The alluvium consists of silt and sand on the valley floors and swampy loam in the marshes on the plateaus. In the broader sections of the St. Paul's and South Esk River Valleys the alluvium is believed to be up to 85 m thick.

A borehole drilled in the bed of the South Esk River at Tullochgorum terminated in alluvium at a depth of 82.2 m (Krause 1890).

Dolerite scree is common along the edges of the tiers and valley slopes. The scree ranges in size from particles up to blocks in excess of 10 m in diameter. On the northern slopes of Mt. Foster some of the dolerite blocks are in the order of 10-15 m. The abundance of dolerite scree on the slopes and in creek beds masks the dolerite/sedimentary contacts and complicates mapping and location of coal seams. In some creek beds exposed weathered dolerite scree is similar in appearance to weathered lithic sandstone. Thickness of the dolerite scree appears to vary from a thin veneer up to an estimated thickness of 100 m on the northern slopes of Mount Foster.

7.5 Igneous Rocks

7.5.1 Devonian Granite

The Upper Devonian age Ben Lomond granite intrudes the Mathinna Beds in the vicinity of Royal George. The granite occurs in outcrop as low rounded hills and appears to have had some residual relief when the Permian age Lower Parmeener Super Group was being deposited.

Tin mineralisation was associated with the intrusion of the granite and a number of tin mines have operated near Royal George.

7.5.2 Jurassic Dolerite

The dolerite is of Upper Jurassic Age and intrudes the Parmeener Super Group as a complex of sills, transgressive sheets and dykes. Within the E.L. the dolerite usually intrudes the Upper Parmeener Super Group. North of Fingal the dolerite has been reported by Threader (1968) to intrude the Lower Palaeozoic Mathinna Beds. Dolerite outcrops over approximately 60% of licence area as plateau areas, due to its widespread intrusion and general resistance to weathering and erosion.

The dolerite sills range in thickness from 2 m in Hockeys Creek up to 371.50 intersected in Department of Mines drillhole DDH18 (north of Merrywood at MR792 765 St. Paul's 1:100 000 sheet). The sills generally appear to have a thickness in excess of 200 m, especially the main 'upper sill' which forms the Mt. Foster-Fingal plateau. This 'upper sill' which has been exposed by erosion and

caps the plateau appears to be a number of abutting sills formed from separate feeders. Some parts of the Mt. Foster-Fingal plateau dolerite appear to be transgressive sheets or dykes, such as the dyke(?) southeast of Fingal,and the transgressive sheets (?) at Pratts Hill, Dickies Ridges-Meadstone Saddle and Cut Off Hill-Mt. Misery. Other transgressive sheets(?) occur at Leipzig Bluff-Mt. Henry and south of Snow Hill homestead.

The intrusion of the dolerite at levels lower than the upper main coal bearing section of the Triassic Coal Measure sequence appears to have considerably reduced the economic coal potential over large portions of the E.L. Intrusion in the lower levels of the measures has resulted in the upper coal bearing portion being up-rafted and subsequently removed by erosion. In the north and northwest the dolerite appears to have been intruded at or near the base of the Upper Parmeener Super Group. This could not be directly confirmed by mapping in the northwest corner of the E.L. along the northern slopes of Mt. Foster because the lower dolerite contact was masked by dolerite scree. However, in Mines Department DDH18 and DDH29 on top of the Mt. Foster-Fingal Plateau, the thin lower barren coal measure section intersected, indicates intrusion near the base of the measures.

In the St. Paul's River Valley near Royal George, the dolerite has been intruded near the top of the coal measures and has an elevation of 600-700 m above sea level.

Contacts between dolerite and sedimentary rocks were observed at only two localities within the licence. These contacts were in Hockeys Creek at MR 775 743 St. Paul's 1:100 000 sheet and in Lucks Creek at MR 854 782 Break O'Day 1:100 000 sheet.

In Lucks Creek the contact occurred at an elevation of approximately 520 m. The contact consists of fine grained (chilled) dolerite with numerous vertical cooling joints (0.01-0.03 m spacing) conformable with a light grey baked claystone (or mudstone) 0.32 m thick which is underlain by a fawn coloured friable siltstone. The baked claystone is hard and brittle with conchoidal fractures and contains remnant carbonaceous plant fragments. The baked claystone is similar in appearance to a porcellanite. The dolerite at this locality forms part of the Mt. Foster-Fingal Plateau sill. The absence of coal seams exposed in the Lucks Creek outcrop section suggests that the dolerite sill intrudes toward the base of the upper lithic sandstone section of the coal measures.

In Hockeys Creek, a thin sill 2.0 m thick intrudes the middle section of the coal measures.

7.6 Structure

The Permo-Triassic sedimentary sequence within the E.L. lies on the northern margin of the Tasman Basin.

The basement consists of the Lower Palaeozoic Age Mathinna Beds which have been intruded by Upper Devonian Age Ben Lomond Granite. The basement surface is reported by Threader (1968) to be planar, with a 1^{o} or less southerly dip where the Mathinna Beds are exposed north of Fingal. In the northwestern corner of the E.L. the basement surface also generally appears to be planar with a dip of approximately 1^{o} to the southeast. In the vicinity of Royal George where the exposed basement is granite, the surface appears to have been irregular and had some residual relief during deposition of the Lower Parmeener Super Group. Estimated height of the granite 'hills' appears to have been in the order of 50-80 metres during deposition of the Lower Parmeener Super Group. However, some of this apparent relief could be due in part to Jurassic or Tertiary faulting.

The Permian sequence within the area appears to have a regional dip of $3-4^{o}$ to the southeast. The disconformably overlying Triassic sequence has a slightly steeper dip of $3-5^{o}$ to the southeast. Although the regional dip is $3-5^{o}$ to the southeast it is often variable and dip reversals occur, suggesting that the beds are possibly warped or undulating. This apparent warping or undulation of the beds possibly results from the intrusion of the dolerite. Steeper dips are common throughout the area, especially near Merrywood, Leipzig Bluff and Tullochgorum Creek.

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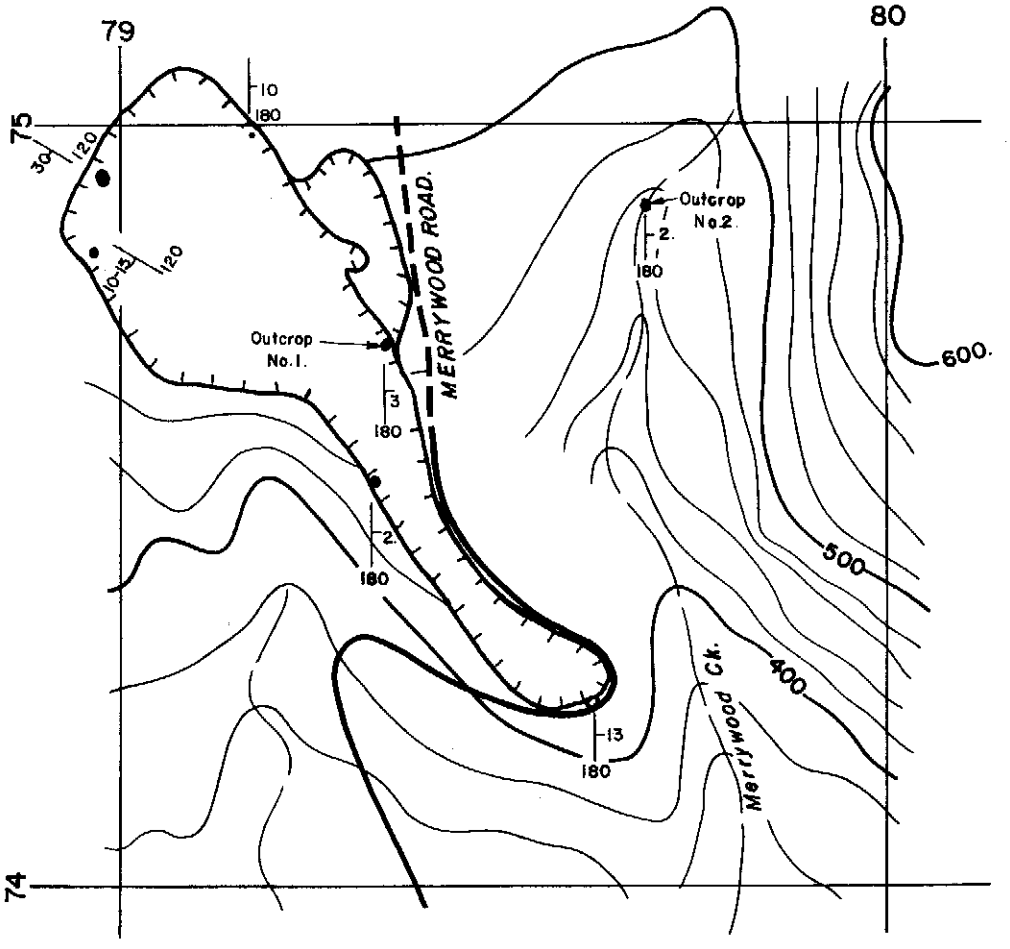


3
180
STRIKE & DIP
MERRYWOOD
COAL SEAM.

13
180
STRIKE & DIP
SANDSTONE
UNIT BELOW
MERRYWOOD
SEAM.

NOTE: GRAPHIC LOGS OF
OUTCROPS No1 & No2.
ARE GIVEN IN APPENDIX 2.

SCALE 1:10,000.

0 500 1000

Metres.

FOR LOCATION REFER TO PLATE 1.

FIG. 1.

INVESTIGATOR COAL EXPLORATION PTY, LIMITED.

DIPS - MERRYWOOD OPEN CUT.

GEOLOGIST: D. D. WATERS.	SCALE: 1:10,000
DRAWN: M. P. DONOVAN.	REPORT No: 985
DATE: 12-9-78.	

Dips of 10-15° are common along the edge of the tier west of Merrywood and in parts of the Old Merrywood open cut and underground workings.

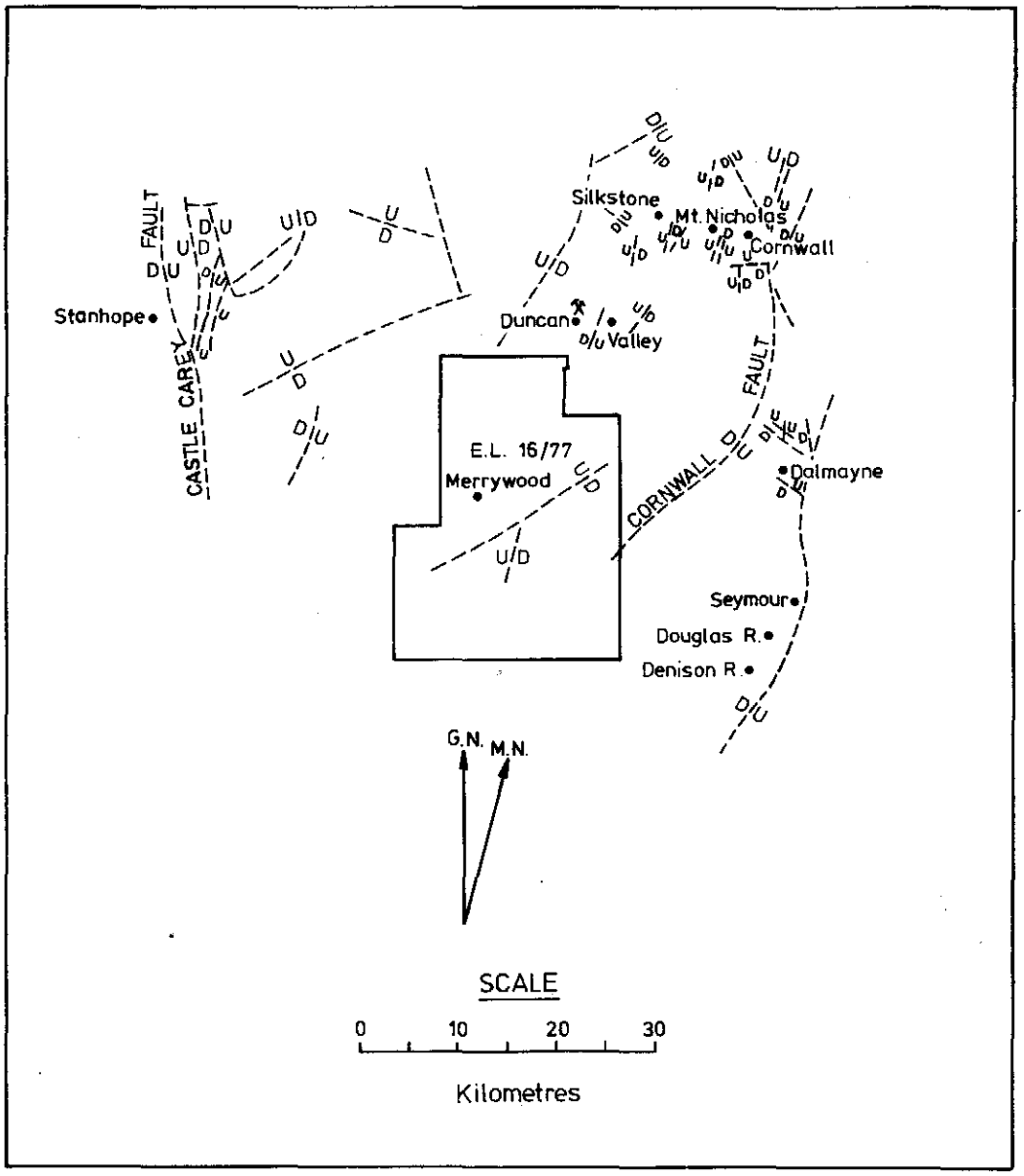
Within the open cut dips are variable, ranging from 2-30° (see Figure 1). The dip of 30° to the southwest in the northwest corner of the open cut appears to be a result of hill creep or slumping, rather than folding or faulting.

Near Leipzig Bluff, at MR 812 678 St. Paul's 1:100 000 sheet, dips of 68° to the east occur adjacent to the dolerite. The steep dips appear to be related to the intrusion of the dolerite. Similarly in Tullochgorum Creek, at MR 778828 St. Paul's 1:100 000 sheet, southerly dips of 85° occur near the dolerite contact.

No folding was observed in the Permo-Triassic sequence within the E.L., apart from minor warping of the beds possibly due to the intrusion of the dolerite.

Both minor and major faulting occurs within the area, though the full extent of faulting is masked by the extensive Jurassic Age dolerite sills and Quaternary dolerite scree. Faulting within the E.L. appears to have been associated with the intrusion of the Jurassic dolerite and Early Tertiary block movements. The E.L. is located midway between the Castle Carey Fault in the west and the Cornwall Fault in the east.Figure 2 shows the Tertiary Fault Systems on the northeastern margin of the Tasman Basin, modified after Threader (1968).

TERTIARY FAULT SYSTEM



(Modified After Threader 1968)

5 cm

FIG. 2

LEGEND

- Operating Coal Mine
- Closed Coal Mine

INVESTIGATOR COAL EXPLORATION PTY., LIMITED.

TERTIARY FAULT SYSTEM NORTHEAST COALFIELDS

GEOLOGIST: D. D. W.	SCALE:
DRAWN: M. P. D.	REPORT No: 985
DATE: JULY, 1978	

The main fault within the area is a northeast-southwest trending fault extending from Meadstone Saddle, through Red Rock and south of Royal George. The northwestern block is upthrown with respect to the southeastern block. The continuation of the northeast-southeast fault south of Fingal into the Mt. Foster Plateau by Threader (1968), does not appear necessary. The southern extension of the fault appears to be based on a series of cross sections by Threader (1968) assuming constant regional dip and presence of the Triassic coal measures on the northern slopes of Mt. Foster. Surface mapping has indicated variations in the regional dip and possible absence of the coal measures on the northern slopes of Mt. Foster.

Other smaller faults appear to be present within the area. Trend lines as interpreted from air photos of the area are shown on Plate 2. A number of these appear to be related to possible faults.

8. COAL SEAMS

8.1 General

Coal seams of economic potential within the E.L. are restricted to the Triassic Age Upper Parmeener Super Group coal measure sequence.

Coal has been previously worked within the E.L. at a small open cut and underground mine located at Merrywood. Total production was 423 475 tonnes up to closure of the mine in 1961.

Small amounts of coal were also mined in a prospect tunnel and adit located at Lewis Hill and south of Royal George respectively, prior to 1920. The prospect tunnel on Lewis Hill is located in Rockhouse Creek at MR 772 662 (St. Paul's 1:100 000 sheet) and was reported to have opened a seam 1.83 m (6') thick (Hills, 1922, page 215). The adit south of Royal George is located in Stable Creek at MR 735 638 (St. Paul's 1:100 000 sheet) where it is reported a 1.83 m (6') thick seam was exposed (Hills, 1922, Page 216).

Surface mapping, Mines Department drillholes and old tunnels and mine workings within the licence indicate that the thicker potentially economic coal seams occur within the lithic sandstone section in the upper 200 metres or less of the coal measures. Hills (1922) identified eight coal seams named the Alpha, Beta, Gamma, Delta, Eta, Theta, Iota and Kappa Seams in descending order within the 'feldspathic' sandstone (lithic sandstone). Hills correlated the seam worked at Merrywood as the Beta and indicated that the same seam was also exposed in the prospect tunnel at Lewis Hill and adit south of Royal George.

This correlation appears to have been on the basis of thickness, as Hills (1922) could not locate either the prospect tunnel or adit during field mapping.

The seam nomenclature of Hills (1922) is not in current use because of the difficulty in correlating the coal seams over short distances within the Fingal-Cornwall-Merrywood area. Seams are therefore given local names. The seams also appear to be lenticular, and have possibly formed within a number of sub-basins.

8.2 Coal Outcrops

Coal outcrops found during surface mapping were confined to the Royal George/St. Paul's River Valley portion of the licence. Thickness of the seams outcropping ranges from 0.06 metres up to 3.38 metres at Merrywood open cut.

The coal outcrops in the various creek beds are listed below :-

Merrywood Creek	-	1.52 m section of Merrywood Seam at MR 797749(A)
Cut Off Hill Creek	-	0.10 m at MR 890 776(B)
	-	0.42 m at MR 888 784(B)
Coal Rivulet	-	2.87 m at MR 907 766(B)
	-	0.65 m at MR 912 766(B) (Note: The Coal Rivulet outcrops are outside E.L. 16/77)
Barn Hill Creek	-	0.30-0.45 m Coal/shale at MR 878 737(B)
	-	0.20 m at MR 878 735(B)
	-	0.45 m Carb.mudstone at MR 878 733(B)
	-	0.45 m at MR 877 732(B)
	-	0.15 m at MR 876 731(B)
Woodheads Creek	-	0.60 m at MR 706 866(B)
	-	0.52 m at MR 708 865(B)
Leipzig Bluff Creek	-	0.17 m Coal/Carb. mudstone at MR 812 677(A)
Lewis Hill Creek	-	0.47 m at MR 787 668(A)
Rockhouse Creek	-	0.88 m at MR 776 666(A)
	-	0.13 m at MR 773 665(A)
	-	0.15 m at MR 773 665(A)
	-	1.83 m (Prospect Tunnel) at MR 772 662(A)
Stable Creek	-	0.57 m at MR 740 651(A)
	-	0.49 m at MR 735 638(A)
	-	0.20 m at MR 727 633(A)

Note: (A) designates the St. Paul's 1:100 000 topographic sheet.

(B) designates the Break O'Day 1:100 000 topographic sheet.

A log and description of each of the coal outcrops given above appears in Appendix I. Apart from the Merrywood Seam outcropping in Merrywood Creek and the 2.87 m thick seam in Coal Rivulet (located outside eastern boundary of E.L.) the outcrops were less than 1.00 metre thick.

In addition to the above coal outcrops, dull and dull banded coal fragments were also found in Brookstead and Hockeys Creeks west of the Merrywood Mine.

8.3 Drillhole Intersections

Of the four Mines Department Drillholes located in the E.L. coal was intersected in only DDH22 'Lochaber' at MR 863 734 'Break O'Day' 1:100 000 sheet and DDH28 at MR 822 868 St. Paul's 1:100 000 sheet. Graphic and written logs for holes D.M. DDH18, DDH22 and DDH28 are given in Appendices II and III respectively.

Coal intersections in holes DDH22 and DDH28 are given below:

	Roof Depth (m)	Floor Depth (m)	Thick. (m)	Recovery (m)
DDH22	79.28	79.83	0.55	0.46
	155.19	156.81	1.62	1.49
	169.90	170.48	0.58	0.56
	182.44	182.77	0.33	0.32
	188.59	189.32	0.73	0.68
	199.30	200.15	0.85	0.85
DDH28	213.26	43.66	0.40	0.39
	63.21	63.71	0.50	0.50

The thickest seam intersected was in hole DDH22 at a depth of 155.19 - 156.81 metres. Recovery for this 1.62 m thick section was only 1.49 m.

8.4 Merrywood Coal Seam

This seam has been mined by both open cut and underground mining operations at the Merrywood Mine. The seam has a maximum recorded thickness of 3.38 m, but has an effective working section of less than 2.74 m. The upper 0.64 metres of the seam consists of interbedded coal, carbonaceous mudstone, claystone and grey mudstone. The seam has a thick grey mudstone roof and floor. A section of the seam is given in Appendix I.

Mining conditions in the underground mine were difficult because of the incompetent mudstone roof and steep grades in the northern extremities of the workings. Underground mining was of a bord and pillar type, though no pillars were mined because of the poor roof conditions.

Extension of the seam under the dolerite to the north and east of the old workings appears doubtful on present information.

8.5 Lewis Hill Prospect Tunnel

This tunnel is located in the northwestern bank of Rockhouse Creek at MR 772 662 St. Paul's 1:100 000 sheet. The tunnel was mined in the 1910-1920 period by Crisp, a relative of the present owner of Lewis Hill Homestead. The roof of the seam is only slightly above creek level, and as a result the tunnel has been infilled by

creek wash. The seam was reported to be 1.83 m thick (6') and has a medium grained lithic sandstone roof in excess of 4.0 m thick. The coal and sandstone roof appear to be separated by 0.15 m of carbonaceous mudstone. Hills (1922) correlated the Lewis Hill prospect tunnel with the seam at the Merrywood Mine on the basis of thickness. However, on the basis of a thick grey mudstone roof at Merrywood and a thick sandstone roof at Lewis Hill, the correlation appears doubtful.

8.6 Stable Creek Adit - South of Royal George

This old adit is located in Stable Creek at MR 735 638 (St. Paul's 1:100 000 sheet). The seam was reported to be 1.83 m thick (6') by Hills (1922). The thickness could not be confirmed because the adit has collapsed. A seam outcropping in the creek bed at approximately the same level as the adit had a thickness of 0.49 metre, with a laminite of sandstone/mudstone for the roof and floor.

9. COAL QUALITY

The Triassic Age coal in the E.L. is low rank high volatile bituminous. Classification of the coal according to various authorities is as follows :-

Australian	International	NCB	ASTM No.	ASTM Descr.	Seyler's Descr.
501(5)	401	901	II3	High Vol A. Bitum	Sub hydrous

The coal is relatively hard and has a dull vitreous lustre and sub-conchoidal fracture. The seams outcropping in the creek beds within the area consist mainly of dull coal. For example, in the seam exposed in the open cut at Merrywood, the breakdown of the coal on a brightness basis is as follows :-

Dull coal	62%
Dull banded (minor bright)	36%
Bright coal	2%

The bright coal usually occurs in bands less than 0.05 m thick. The bright bands usually have well developed cleat and abundant talc coatings. In the dull banded coal the minor bright coal component occurs as thin laminations and lenticular bands.

The coal typically has a low reactives to inerts ratio, resulting from extremely low vitrinite and exinite contents. The reactives (vitrinite + exinite) generally total less than 20% by volume, similar to that of the Upper Triassic Age Callide Coal in Queensland. The low reactives content and poor caking indices deem the coal unsuitable for use as a coking coal or even as a fraction of a coking coal blend. The low reactives content also reduces the liquefaction potential of the coal, as the optimum reactives content for a coal regarded as suitable for liquefaction should be in excess of 60% by volume (Cudmore, 1978).

Table 1 compares the desirable properties of coal suitable for liquefaction with the properties of Tasmanian Triassic coal.

As mentioned, the caking indices of the coal are poor. That is, crucible swelling number ranges from 0-1, Gray-King coke type B and Roga Index 0.

TABLE 1

Desirable Properties of Coal for Liquefaction	Tasmanian Triassic Coal
a) Vitrinite Reflectance < 0.80%	0.67%
b) H/C atomic ratio (d.a.f.) > 0.75	0.69
c) Vitrinite plus exinite content > 60%	19.0 %
d) Volatile Matter (d.a.f.) > 35%	31.7 %
e) Relatively low concentration of heteroatoms (Nitrogen, oxygen and sulphur).	Oxygen concentration relatively high.

(Extract of Table 12 Cudmore 1978)

The coal has a high inherent ash content which cannot be appreciably reduced by washing at low specific gravities. The ash content of the coal usually ranges from 18-22% (dry basis) after beneficiation in a washing plant. The high ash content of the coal and poor coking properties essentially restricts usage of the coal to steam raising or for use in cement manufacture. The high coal ash content also makes the coal unsuitable for the manufacture of char.

Analyses for coal seams within the licence area are restricted to those for the Merrywood Seam and seams intersected in Department of Mines drillhole DDH22.

The Merrywood Seam analyses are as follows :-

From Hills (1922) Sample No. 693 Beta Coal Bed (Merrywood Seam)

Description	Thickness (m)	
Yellowish grey fireclay	2.44	
COAL, dull to bright, hard	0.66	
Clay, yellowish - grey	0.05	Seam Thick.
COAL, dense, bright laminae	0.56	1.95 m
Clay, yellowish - grey	0.05	
COAL, dense hard	0.63	
Undetermined		

Sample No. 693 was obtained from the outcrop in Merrywood Creek and does not represent a complete section of the seam.

Proximate				Ultimate(?)					S.E.	
Moisture	V.M.	F.C.	Ash	S	H	C	O	N	MJ/kg	S.G.
2.66%	25.10	53.88	18.36	0.44	4.59	57.76	17.69	1.62	5.34	1.44

1945 Analyses

In 1945 analyses were made of three portions of the seam on either side of the two bands, representing the working section of the seam. A generalised log of the seam is given below :-

Coal and shale	0.61 m
Coal	1.63 m
Shale band	0.05 m
Coal	0.56 m
Shale band	0.05 m
Coal	0.33 m

Sample Position	Thick. (m)	Proximate					
		Moist. (105°C)	Ash	V.M.	F.C.	S	S.E. MK/kg
Top	1.22	2.40	20.00	26.66	50.94	0.35	26.05
Middle	0.53	1.92	19.54	28.20	50.34	0.36	26.21
Lower	0.28	1.82	12.28	31.60	54.30	0.34	29.28
Calc Av.	2.03	2.19	18.82	27.74	51.24	0.35	26.54

Proximate analyses for seams intersected in D.M. DDH22 are given below. The seams intersected in this hole appear

to be stratigraphically below the Merrywood Seam.

Roof Depth (m)	Floor Depth (m)	Thick. (m)	Recovery (m)	Moist (%)	Ash (%)	V.M. (%)	F.C. (%)	Specific Energy (MJ/kg)
79.28	79.83	0.55	0.46	3.6	23.4	31.3	41.6	24.7
155.19	156.81	1.62	1.49	2.4	21.0	26.3	50.3	25.6
169.90	170.48	0.58	0.56	3.6	42.7	21.9	31.8	-
182.44	182.77	0.33	0.32	6.5	65.6	12.2	15.6	-
188.59	189.32	0.73	0.68	2.1	15.6	30.1	52.2	27.2
199.30	200.15	0.85	0.85	3.2	44.8	19.0	33.0	-

For an additional guide to the quality of the Triassic coal analytical data as given in the Joint Coal Board and Queensland Coal Board 'Australian Black Coals' publication is presented below for the Duncan Colliery near Fingal, to the northeast of the E.L.

Extract Table 3

Proximate Analysis - Coking Properties

		Proximate analysis %					Coking properties							
							Caking indices			Giesecler plastometer values				
Index No.	Seam name(s) Coal Measures Area or Colliery	Inherent moisture (a.d.)	Ash (d.b.)	Volatile matter (d.b.)	Volatile matter (d.a.f.)	Fixed carbon (d.b.)	Crucible Swelling Number	Gray-King coke type	Roga Index	Initial softening temp. (°C)	Max. fluidity, Dial divisions per minute (ddm)	Max. fluidity temp. (°C)	Solidification temp. (°C)	Temp. range soften to solidification (°C)
D10-1	Fingal.	6.0	20.2	25.3	31.7	54.5	0.5	B	0	. .	. .	. .	. .	. .

Coking properties											% Mean max. reflec.-tance of vitrinite		Specific gravity of air dried coal	Index No.	Seam name(s) Coal Measures, Area or Colliery
Audibert Arnu dilatometer values					Petrographic parameters										
					Maceral analysis % by volume										
Initial softening temp. (°C)	Temp. of maximum contraction (°C)	Temp. of maximum dilatation (°C)	Maximum contraction %	Maximum dilatation %	% Vitrinite	% Exinite	% Micrinite	% Semi fusinite	% Fusinite	% Mineral matter	Reactives: Inerts ratio	Vitrinite "A"	All vitrinite			
. .	. .	. .	. .	. .	13	6	11	59	1	10	0.27	. .	0.67	1.48	D10-1	Fingal

Extract Table 6

Classification and Chemical Properties

Index No.	Seam name(s) Coal measures Area or Colliery	Classification						Ultimate analysis %						
		Australian	International	N.C.B.	A.S.T.M. No.	A.S.T.M. description	Seyler's description	Carbon (d.a.f.)	Hydrogen (d.a.f.)	Nitrogen (d.a.f.)	Oxygen (d.a.f.)	Carbonates (a.d.)	Phosphorus (d.b.)	Chlorine (d.b.)
D10-1	Fingal.	501(2)	401	901	8 3	High Vol. A bitum.	Sub hydrous	83.5	4.79	1.5	10.0	0.1	0.035	Trace

*Denotes sample washed in laboratory.

Sulphur %				Gray-King carbonization assay at 600°C yield per 100 g of dry coal				Fischer assay				Index No.	Seam name(s) Coal measures Area or Colliery
Total (d.b.)	Pyritic (d.b.)	Sulphate (d.b.)	Organic (d.b.)	Coke g	Tar g	Liquor g	Gas ml	Coke %	Tar %	Water %	Gas %		
0.36	0.10	. .	0.26	80.67	7.36	5.30	9 200	86.9	5.7	3.0	4.4	D10-1	Fingal

*Denotes sample washed in laboratory.

Extract Table 9

Combustion and Ash Properties

Index No.	Seam name(s) Coal measures Area or Colliery	Hardgrove Grindability Index	Gross calorific values						Mineral matter %	Ash fusion temperature °C (reducing atmosphere)		
			Air dried		Dry		Dry ash free					
			Btu/lb	cal/g	Btu/lb	cal/g	Btu/lb	cal/g		Softening	Hemospheric	Flow
D10-1*	Fingal.	56	10 680	5 933	11 360	6 311	14 240	7 911	22.2	1 520	> 1 560	> 1 560

*Denotes sample washed in laboratory.

Analysis of ash constituents %												Index No.	Seam name(s) Coal Measures area or Colliery
SiO_2	Al_2O_3	Fe_2O_3	TiO_2	CaO	MgO	Na_2O	K_2O	P_2O_5	Mn_3O_4	SO_3	SiO_2:Al_2O_3 ratio		
62.9	28.2	5.48	0.78	0.17	1.02	0.60	0.67	0.02	0.08	0.10	2.23	D10-1	Fingal

10. COAL RESERVES

Calculation of coal reserves within the E.L. is not possible because of insufficient information being available on the continuity, extent and thickness of the seams. The absence of data and geological uncertainty is such that even estimation of reserves in the inferred category is in conflict with the parameters for the calculation of coal reserves recommended by various authorities.

A possible exception to the non-calculation of reserves is in a restricted area east and northeast of the old underground workings at Merrywood. The area lies between the old workings and the edge of the dolerite. Extension of the Merrywood seam under the dolerite is doubtful, because DDH18 located approximately 1000 metres north of the edge of the dolerite only intersected the lower 50 metres of the coal measures and is barren of coal. Therefore, reserves can only be calculated for an area which is approximately 500 X 400 m^2.

Indicated Reserves at Merrywood

Seam thickness = 2.74 m (effective working thickness)
S.G. of coal = 1.44
Area = 500 X 400 m^2
In situ raw coal = 500 X 400 X 2.74 X 1.44
= 789 120 tonnes
Say 790 000 tonnes

The pillars in the old Merrywood Mine also contain small reserves of coal. Some of the pillars could possibly be mined by open cut mining.

11. POTENTIAL

Surface mapping,coal outcrops and the four Department of Mines diamond drillholes within the licence have indicated that coal potential is restricted to the upper section of the coal measures in the St. Pauls River Valley - Royal George area. That is, the thicker potentially economic coal seams occur in the upper 150 - 200 metres section of the coal measures.

North of the St. Pauls River Valley surface mapping and three Department of Mines drillholes have indicated that the upper coal bearing section of the measures is not present.

The coal seams outcropping or intersected in drillholes within the area are less than 2.0 m thick, except for the seam at the old Merrywood Mine. Coal seams greater than 1.50 m thick within the area are as follows :-

Merrywood Seam - 3.38 m (effective working section 2.74 m)
Lewis Hill Prospect Tunnel - 1.83 m (Thickness as reported by Hills, 1922)
Prospect Adit Royal George - 1.83 m (Thickness as reported by Hills, 1922)
D.M. DDH22 'Lochaber' - 1.62 m (1.49 m recovered depth 155.19 - 156.81 m)

Additionally, a coal seam 2.87 m thick (of which 1.96 m is coal) outcrops in Coal Rivulet approximately 700 metres east of the E.L.

All of the seams in excess of 1.75 m thick occur within the upper 100 metres of the measures.

Four areas within the Royal George/St. Pauls River Valley appear to have some potential for limited open cut and underground coal reserves. However, the apparent lenticular nature and small areal extent of the coal seams could restrict exploitation to a number of very small mines, possibly only suitable for small operators.

The four potential areas are designated alphabetically A-D (See Plate 2 for locations) and are briefly discussed below.

Area A

This area extends from the old Merrywood Mine to the western margin of the licence. Some potential possibly exists for small open cuts if the Merrywood Coal Seam is present west of the old open cut. Coal fragments have been found in creek beds to the west of the old open cut. Area A conforms to the outcrop of the coal measures and does not appear to have any extension under the dolerite to the north or east. Dips of 10-15^{o} measured within the area reduce the potential of this area.

Area B

Area B is located on the eastern portion of the licence. A number of thin coals seams outcrop in the area. The thickest seam known to occur in Area B was intersected in D.M. DDH22 at a depth of 155.19 - 156.81 m. The indicated seam thickness was 1.62 m, although only 1.49 m of coal was recovered.

A banded coal seam 2.87 m thick also outcrops in Coal Rivulet, approximately 700 metres east of Area B, outside the E.L.

Potential for coal in this area appears to be restricted to the coal measure section lying above the collar level of hole D.M. DDH22. If coal seams with a mineable coal thickness exist in this section, then some potential for underground coal possibly occurs below the Little John - Mt. St. John Tier.

Area C

This area is located on the northern slopes of Lewis Hill. Two coal seams 0.88 m and 1.83 m (old prospect tunnel) thick outcrop in Rockhouse Creek. Some potential exists for limited open cut reserves with possible underground extensions under Lewis Hill if the 1.83 m thick seam is continuous and does not thin.

Area D

Area D is located south of Royal George and west of Area C. A prospect tunnel is reported to have opened a 1.83 m thick seam (Hills 1922). Drilling is required in this area to test the upper section of the coal measures for potential underground reserves.

12. RECOMMENDATIONS

That :-

- the upper 150-200 metres of the coal measures in each of the four areas A, B, C, D be drilled in order to determine the presence of coal seams with a thicknessand quality suitable for mining.

- initially one hole be drilled in each of the areas, with additional drillholes dependent on initial results.

- the holesbe fully cored diamond drillholes and that all core, especially coal core be logged in detail.

- coal seams greater than 0.50 metres thick be sampled and analysed.

- drilling operations be planned to commence in late October when surface conditions are expected to be drier and more suitable for vehicle access to the proposed drill sites.

13. CONCLUSIONS

Coal seams with possible economic potential appear to be restricted to the upper 150-200 metres or less of the Triassic Age coal measure section.

Four areas in the Royal George/St. Pauls River Valley portion of the E.L. appear to have some potential for coal. Exploratory drilling is required in each of these areas to determine the presence of economic coal seams.

There appears to be no potential for economic coal in the northern portion of the E.L., north of the St. Pauls River Valley.

Coal reserves can only be calculated for a small area near the old Merrywood Mine. Indicated in situ raw coal reserves are 790 000 tonnes. These reserves could possibly be increased slightly by open cut mining of some of the pillars in the old Merrywood Mine. In other portions of the E.L. insufficient information and geological uncertainty precludes calculation of reserves.

The coal within the licence is a low rank high volatile bituminous type. The coal is typically dull and has a low reactives (vitrinite + exinite) content. The coal is unsuitable for coking making or blending because of its poor caking indices and low reactives content. The high ash content of 18-22% for washed coal restricts possible use to steam raising and cement manufacture. Conversion potential for the coal also appears to be low.

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Western Mining Corporation (Tas) Pty Ltd.	1977	Exploration Licence No.16/76 Avoca, Tas. Report for six months 2nd August, 1976 to 21st February, 1977
Western Mining Corporation (Tas) Pty Ltd.	1978	Exploration Licence No. 16/77, Avoca, Tasmania. Terminal Report.

040

248041

APPENDIX I

GRAPHIC LOGS - COAL OUTCROPS

Contents

041

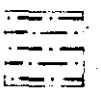
248042

LEGEND

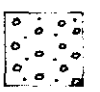
Limestone 

Claystone 

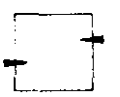
Shale / Mudstone 

Siltstone 

Sandstone 

Conglomerate 

Carbonaceous Mudstone 

Coal Lenses 

COAL , Bright 

Bright banded 

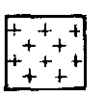
Bright and dull 

Dull banded 

Dull 

Marine Fossils 

Dolerite 

Granite 

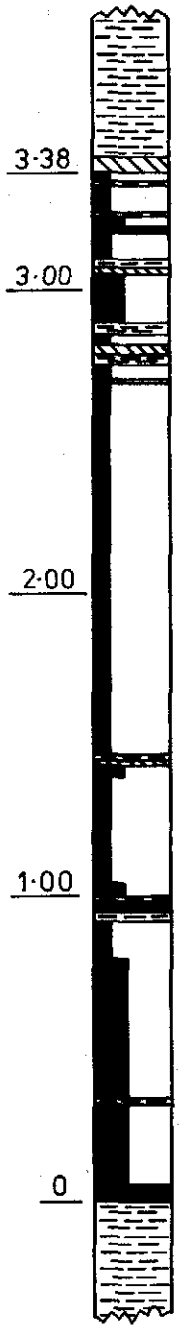
DRG.Nº TCG-22

042

248043

MERRYWOOD SEAM

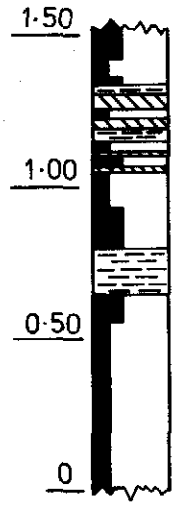
OUTCROP Nº 1
Open Cut Section



3°E
180°
Thickness 3·38 m.

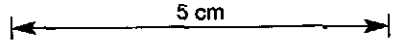
VERTICAL SCALE
0 0·5 1·0
Metres

OUTCROP Nº 2
Merrywood Creek Section



60°
5°S.E.

Visible Thickness 1·52 m.



INVESTIGATOR COAL EXPLORATION PTY., LIMITED.	
MERRYWOOD SEAM	
OPEN CUT AND MERRYWOOD CREEK SECTIONS	
GEOLOGIST: D.D.W.	SCALE: 1:25
DRAWN: M.P.D.	REPORT No: 985
DATE: JULY 1978	PLAN No: TCG-12

043

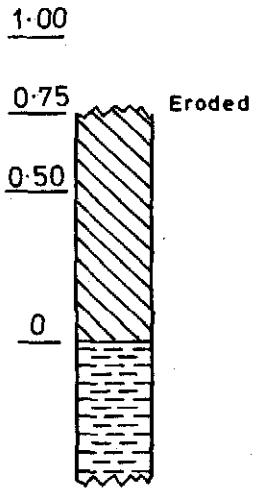
248044

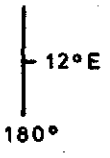
HOCKEY'S CREEK

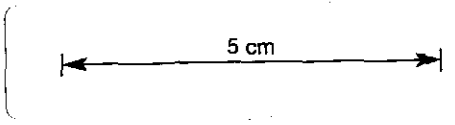
(In Creek S.W. of Little Baldy)

OUTCROP Nº3

ELEV. 695 m.
M.R. 776 764 St. Pauls Sheet

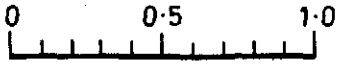






Comments : Fragments of Dull Banded Coal found in Creek below outcrop, but above 770 750 (M.R. St. Pauls Sheet)

VERTICAL SCALE



Metres

INVESTIGATOR COAL EXPLORATION PTY., LIMITED.	
OUTCROP Nº 3 HOCKEY'S CREEK	
GEOLOGIST: D.D.W.	SCALE: 1:25
DRAWN: M.P.D	REPORT No: 985
DATE: JULY 1978	PLAN No: TCG-13

044

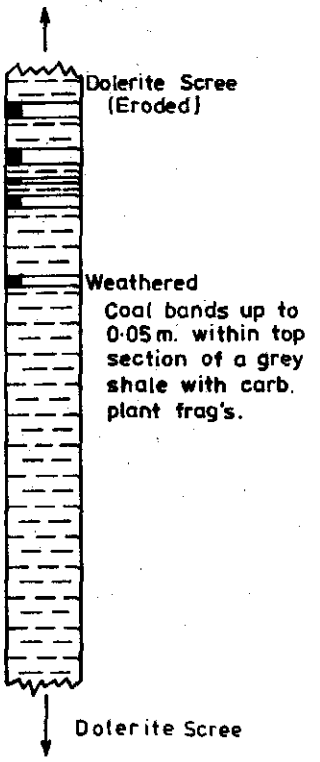
CUT OFF HILL CREEK

248045

OUTCROP N°4

ELEV. 410m.

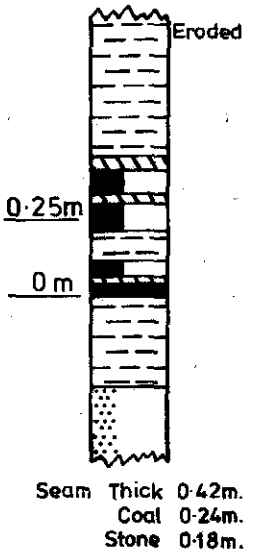
(Unmarked Eastern Trib.)



OUTCROP N°5

ELEV. 370m.

(Unmarked Eastern Trib.)

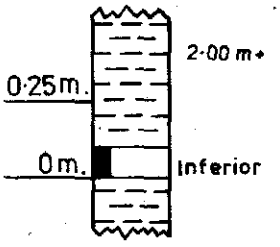


Seam Thick 0·42m.
Coal 0·24m.
Stone 0·18m.

OUTCROP N°6

ELEV. 300m.

(Main Portion of Creek.)



Inferior Coal 0·10m.

5 cm

VERTICAL SCALE

0 0·5 1·0

Metres

INVESTIGATOR COAL EXPLORATION PTY., LIMITED.	
CUT OFF HILL CREEK OUTCROP Nos. 4, 5, 6	
GEOLOGIST: D.D.W.	SCALE: 1:25
DRAWN: M.P.D.	REPORT No: 985
DATE: JULY, 1978	PLAN No: TCG-14

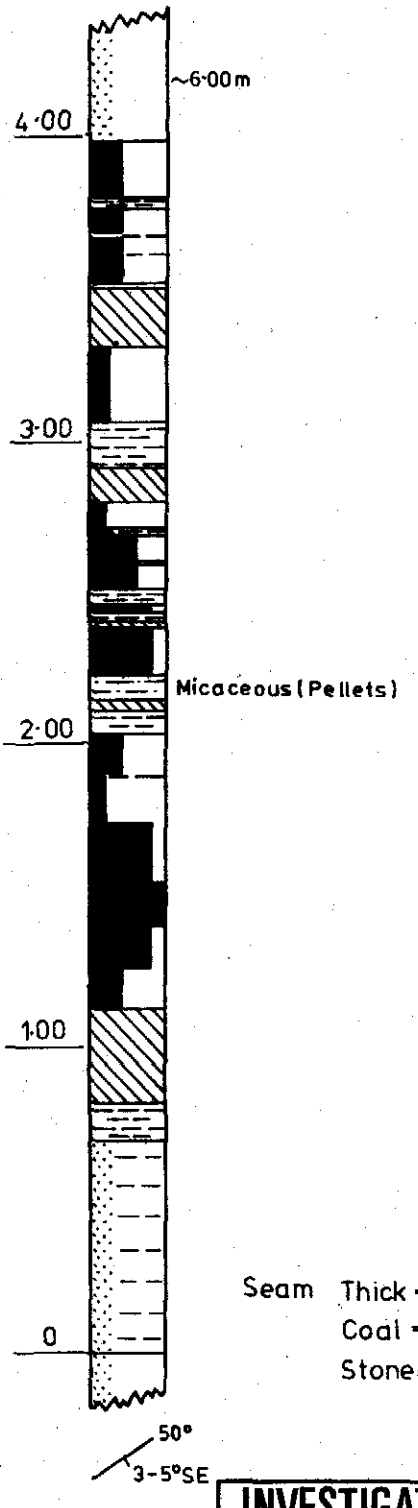
045

248046

COAL RIVULET

OUTCROP N°7

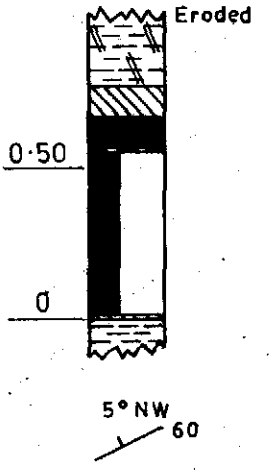
ELEV. 350 m



Seam Thick = 2·87m
Coal = 1·96m (68·3% of Seam)
Stone = 0·91m (31·2% of Seam)

OUTCROP N° 8

ELEV. 400 m



Seam Thick = 0·65 m
Coal = 0·63 m
Stone = 0·02 m

VERTICAL SCALE

0 0·5 1·0

Metres

5 cm

INVESTIGATOR COAL EXPLORATION PTY., LIMITED.

COAL RIVULET

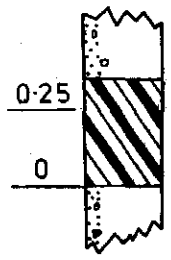
GEOLOGIST: D.D.W.	SCALE: 1:25
DRAWN: M.P.D.	REPORT No: 985
DATE: JULY, 1978	PLAN No: TCG-15

046

248047

BARN HILL CREEK

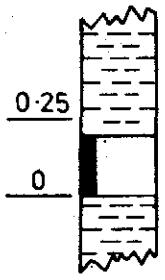
OUTCROP Nº9
ELEV. 380m



0·30—0·45 m
Coal/Shale
(Lenticular)

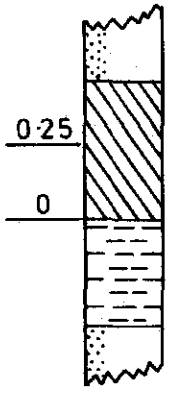
10° NW / 55°

OUTCROP Nº10
ELEV. 420 m



~ 0·20m Coal
Oxidised

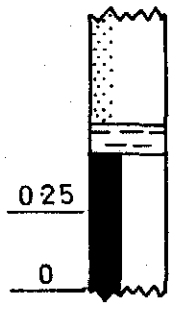
OUTCROP Nº11
ELEV. 480m



0·45 m
Carb. Shale

Dip
~Horiz.

OUTCROP Nº12
ELEV. 510m

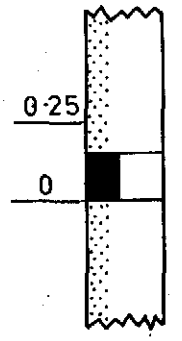


Obscured by Scree

0·45m Dull banded
Oxidised
Occasional thin Shale bands.

5° NW / 55°

OUTCROP Nº13
ELEV. 530m



0·15 m Coal

5-10° NW / 55-60°

Note: Elevation of seams estimated—Difficult to estimate position & hence elevation from air photo & map

VERTICAL SCALE
0 0·5 1·0
Metres

5 cm

INVESTIGATOR COAL EXPLORATION PTY., LIMITED.	
BARN HILL CREEK OUTCROPS	
GEOLOGIST: D.D.W.	SCALE: 1:25
DRAWN: M.P.D.	REPORT No: 985
DATE: JULY, 1978	PLAN No: TCG-16

047

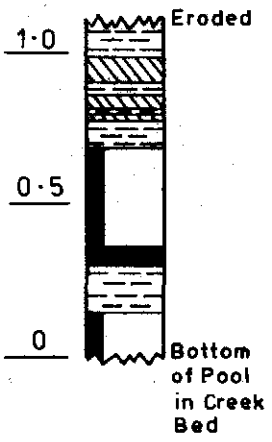
248048

WOODHEADS CREEK

OUTCROP Nº14

East Branch
of Main Creek
(Not on Topo. Map)
(Flowing)

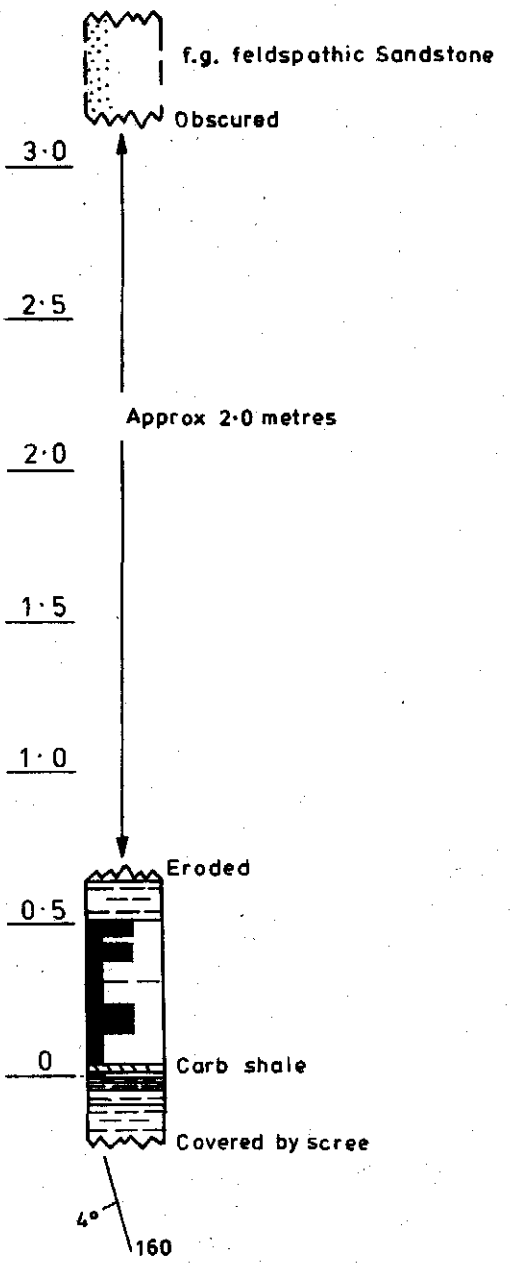
ELEV~430 m



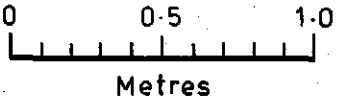
OUTCROP Nº15

West Branch
(Not Flowing)

ELEV~420 m



VERTICAL SCALE



Note: The coal seams in the East & West Branches of the upper portion of Woodheads Creek could possibly be the one and same seam

5 cm

INVESTIGATOR COAL EXPLORATION PTY., LIMITED.	
OUTCROP Nos. 14, 15 WOODHEADS CREEK	
GEOLOGIST: D.D.W.	SCALE: 1:25
DRAWN: M.P.D.	REPORT No: 985
DATE: JULY, 1978	PLAN No: TCG-17

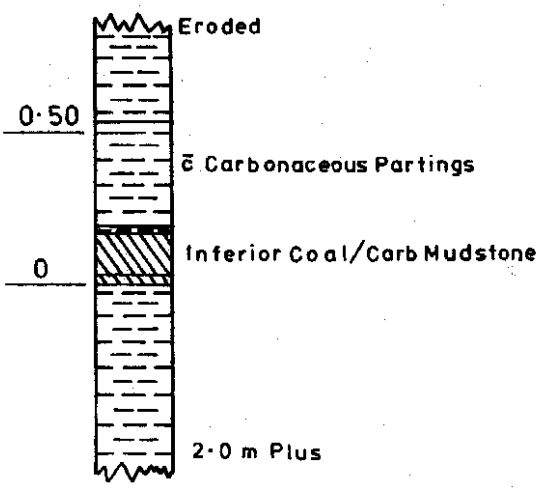
043

248049

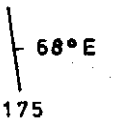
(Outcrop in Creek Bed
East of Leipzig Bluff)

OUTCROP Nº16

ELEV. 290 m
(In Creek Bed)
M.R. 812 677 St Pauls Sheet



(True Thickness)



Comments: Fragments of Dull banded Coal found in creek below this outcrop. Coal appears to be partly Coked.

VERTICAL SCALE
0 0·5 1·0
Metres

5 cm

INVESTIGATOR COAL EXPLORATION PTY., LIMITED.	
OUTCROP IN CREEK BED EAST OF LEIPZIG BLUFF	
GEOLOGIST: D.D.W.	SCALE: 1:25
DRAWN: M.P.D.	REPORT No: 985
DATE: JULY, 1978	PLAN No: TCG-18

049

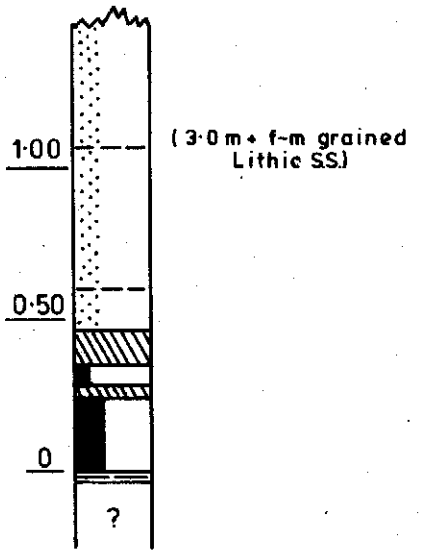
248050

LEWIS HILL CREEK

(West Branch)

OUTCROP Nº17

ELEV. 370 m



Note : This seam is possibly the same as that in Rockhouse Creek. (Nº 24) @ 370 m.

VERTICAL SCALE

0 0·5 1·0

Metres

5 cm

INVESTIGATOR COAL EXPLORATION PTY., LIMITED.	
OUTCROP Nº17 LEWIS HILL CREEK	
GEOLOGIST: D.D.W.	SCALE: 1:25
DRAWN: M.P.D.	REPORT No: 985
DATE: JULY, 1978	PLAN No: TCG-019

050

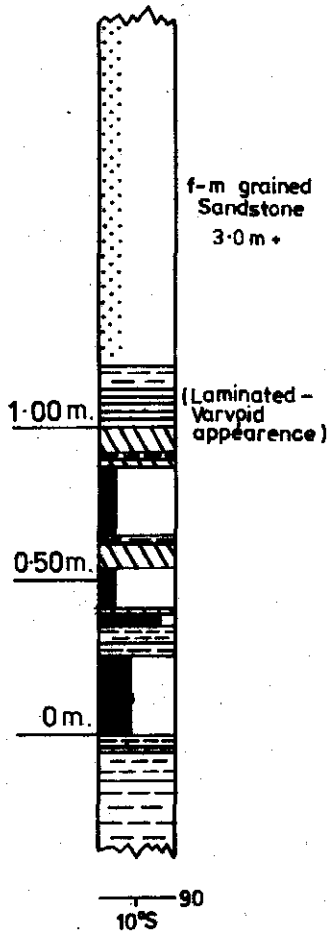
248051

ROCKHOUSE CREEK

OUTCROP N°18

ELEV. 370m.

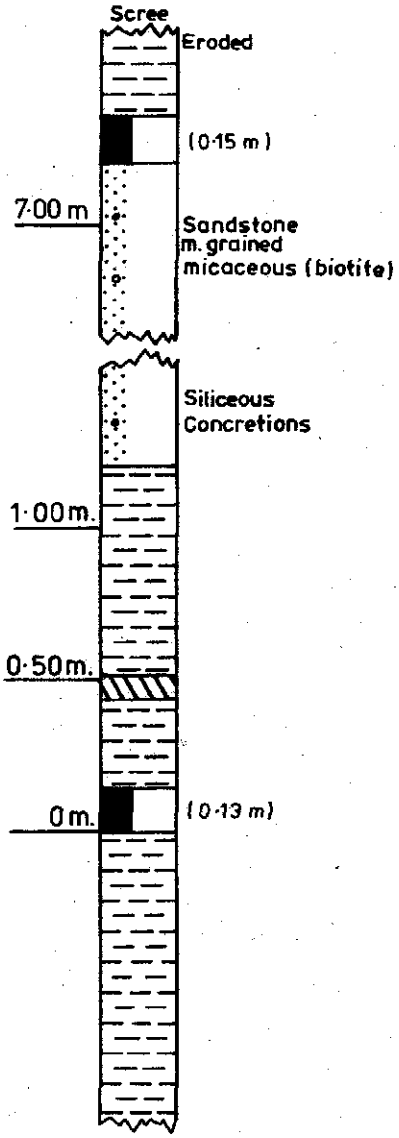
(O/C 6-7m. above creek approx. 50m. downstream from 1st. waterfall.) on R.H.S.



(Slumped in part?)
0·88 m Thick Seam

OUTCROP N°19

ELEV. 410m.



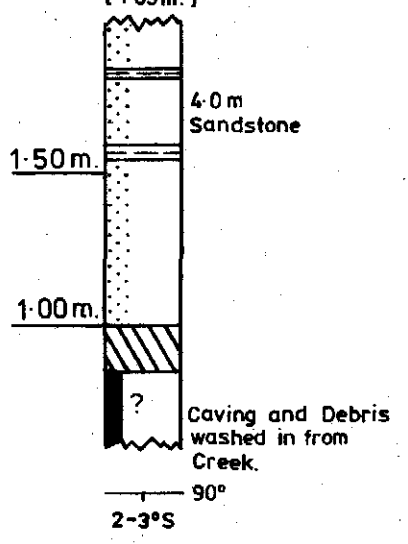
(Bedding is undulating)

OUTCROP N°20

ELEV. 480m.

(Above 2nd. waterfall.) OLD PROSPECT TUNNEL —LEWIS HILL

(Reported as being 6'thick) [1·83m.]



VERTICAL SCALE

0 0·5 1·0

Metres

5 cm

INVESTIGATOR COAL EXPLORATION PTY., LIMITED.

OUTCROP Nos. 18, 19, 20 ROCKHOUSE CREEK

GEOLOGIST: D.D.W.	SCALE: 1:25
DRAWN: M.P.D.	REPORT No: 985
DATE: JULY, 1978	PLAN No: TCG-20

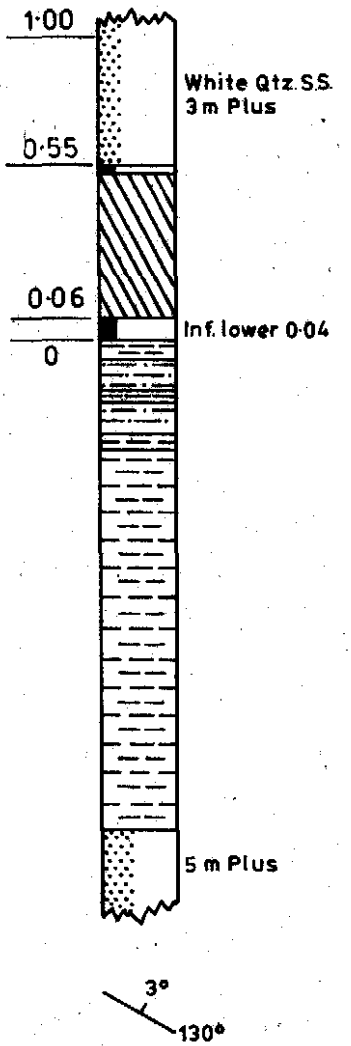
051

STABLE CREEK

248052

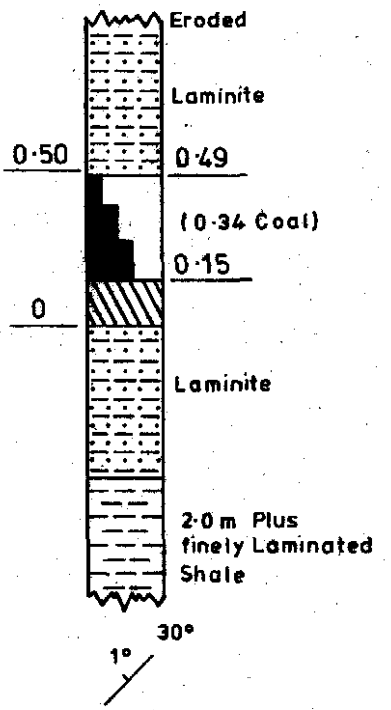
OUTCROP Nº 21

ELEV. 400m
(East Branch)



OUTCROP Nº 22

ELEV. 580m
'Old Adit'



OUTCROP Nº 23

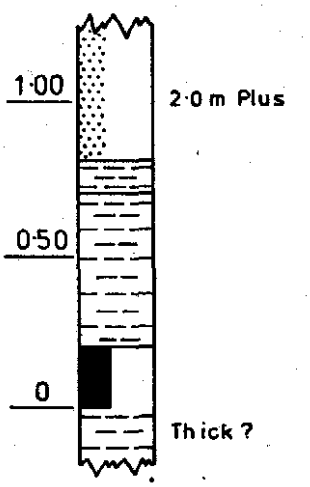
ELEV. 620m

Traces
Coal
Db

OUTCROP Nº 24

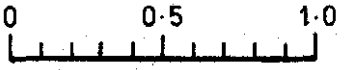
ELEV. 620m

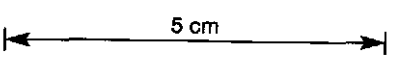
Estimated
Section
Bedding
Slumped due
to Hill Creep.



Dolerite
Contact
~40–50 Above

VERTICAL SCALE





INVESTIGATOR COAL EXPLORATION PTY., LIMITED.	
OUTCROP Nos. 21, 22, 23, 24 STABLE CREEK	
GEOLOGIST: D.D.W.	SCALE: 1:25
DRAWN: M.P.D.	REPORT No: 985
DATE: JULY, 1978	PLAN No: TCG-21

052

248053

APPENDIX II

GRAPHIC LOGS - DEPARTMENT OF MINES

DDH18, DDH22, DDH28

CONTENTS

053

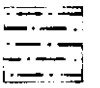
248054

LEGEND

Limestone 

Claystone 

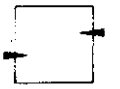
Shale / Mudstone 

Siltstone 

Sandstone 

Conglomerate 

Carbonaceous Mudstone 

Coal Lenses 

COAL , Bright 

Bright banded 

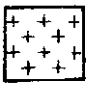
Bright and dull 

Dull banded 

Dull 

Marine Fossils 

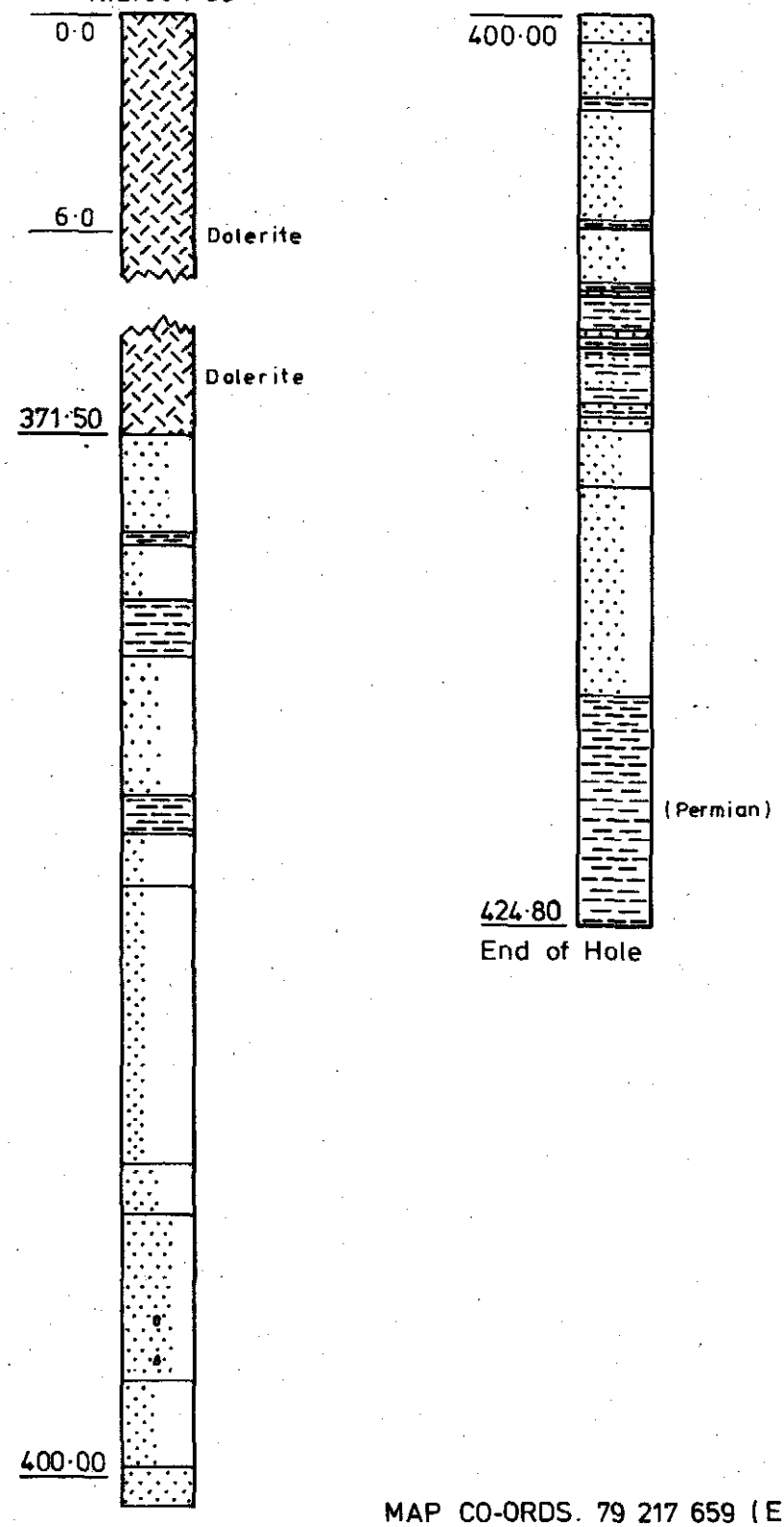
Dolerite 

Granite 

DRG.N° TCG-22

D.M. DDH18

R.L. 664·50



MAP CO-ORDS. 79 217 659 (E.P.)

VERTICAL SCALE

0 5 10

Metres

5 cm

INVESTIGATOR COAL EXPLORATION PTY., LIMITED.

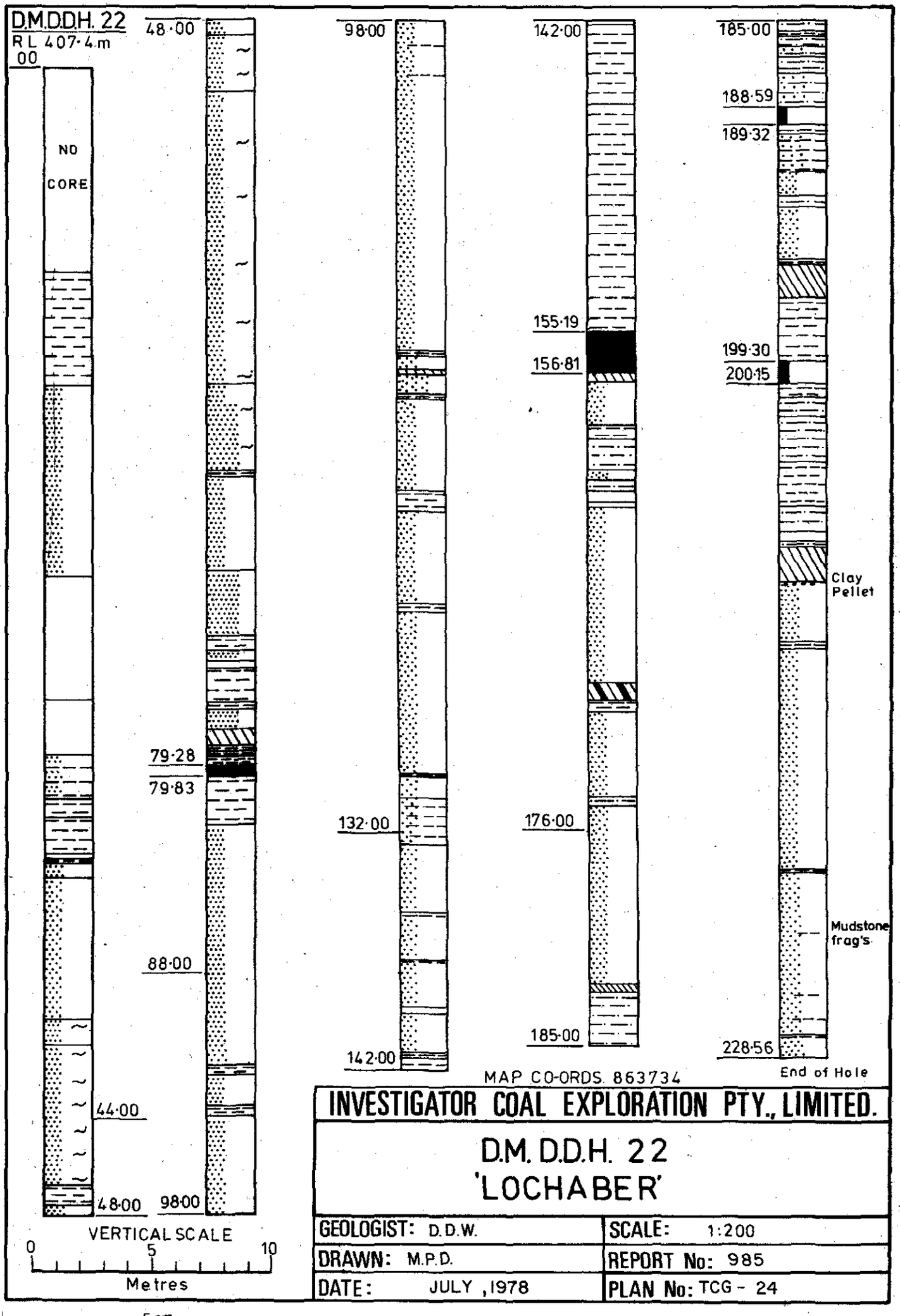
D.M. DDH18 'MERRYWOOD'

HOCKEY'S MARSH

GEOLOGIST: D.D.W.	SCALE: 1 : 200
DRAWN: M.P.D.	REPORT No: 985
DATE: JULY, 1978	PLAN No: TCG - 23

055

248056



INVESTIGATOR COAL EXPLORATION PTY., LIMITED.

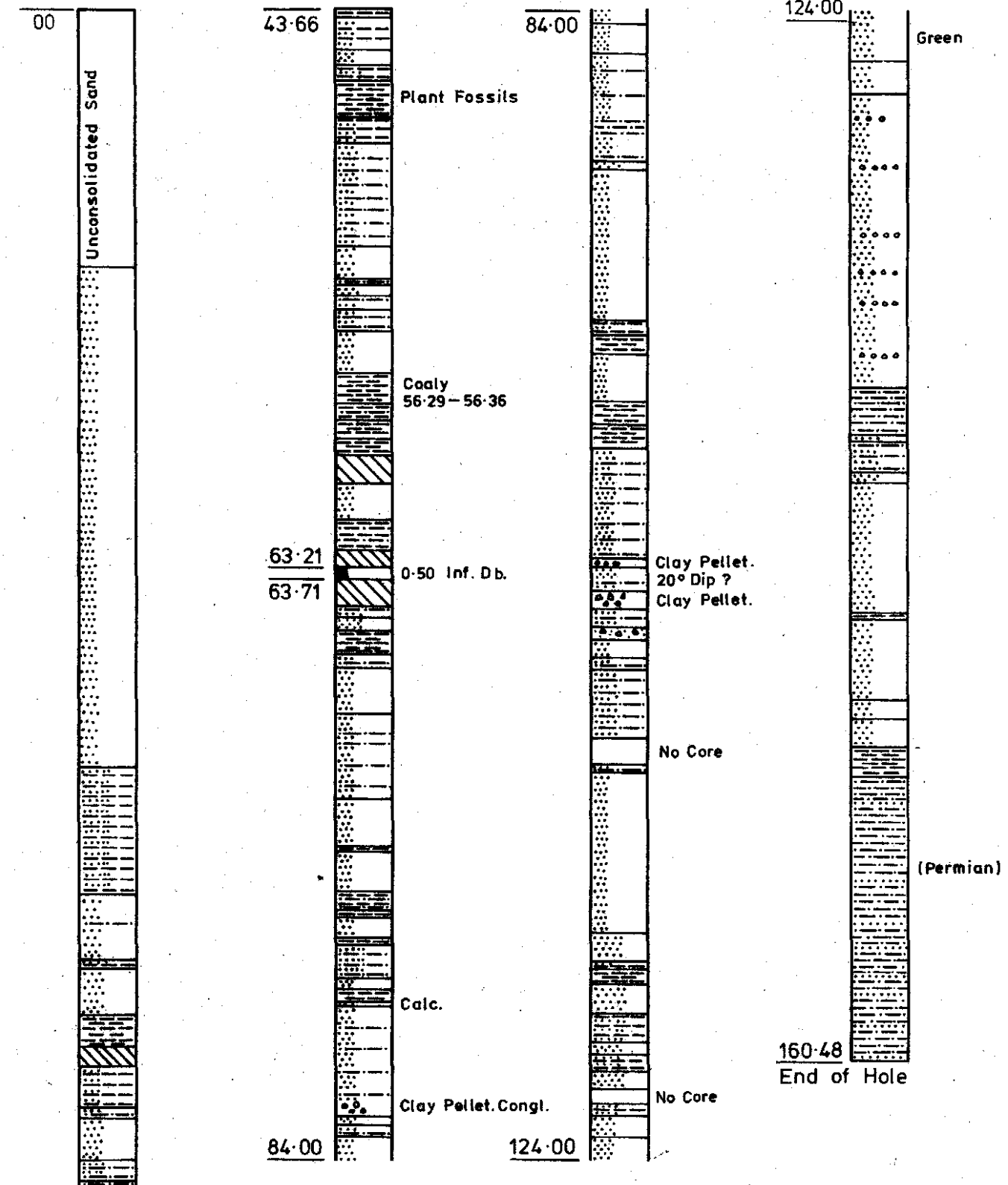
D.M. D.D.H. 22
'LOCHABER'

GEOLOGIST: D.D.W.	SCALE: 1:200
DRAWN: M.P.D.	REPORT No: 985
DATE: JULY, 1978	PLAN No: TCG - 24

248057

D.M. DDH 28

R.L. 442·0



MAP CO ORDS. 82 248 687 (E.P.)

INVESTIGATOR COAL EXPLORATION PTY., LIMITED.

D.M. DDH 28
BASE OF "VERTICAL ACRE"

GEOLOGIST: D.D.W.	SCALE: 1 : 200
DRAWN: M.P.D.	REPORT No: 985
DATE: JULY, 1978	PLAN No: TCG-25

APPENDIX III

WRITTEN LOGS DEPARTMENT OF MINES DDH18, DDH22, DDH28.

058

D M. DDH 18 'MERRYWOOD'

248059

DRILLING TARGET:—

REMARKS:—

SURVEY DATA			ASSAY DATA						ASSAY RESULTS					
DEPTH feet	Bearing mag.	Inclin. degs.	SAMPLE No.	FROM ft. ins.	TO ft. ins.	RECOVERY ft. ins.	RECOVERY %							

GEOLOGICAL LOG

Logged by:—

FROM ft. ins.	TO ft. ins.	RECOVERY ft. ins.	RECOVERY %	DESCRIPTION	SECTION Core	SECTION Sample
0	371.50			Dolerite		
371.50	374.33	1.77	62	Medium-coarse lithic sandstone		
374.33	374.65	0.20		Mudstone		
374.65	376.04	0.87		Medium lithic sandstone		
376.04	377.64	1.00		Mudstone, gradational bottom contact		
377.64	381.59	2.47	66	Medium coarse lithic sandstone		
381.59	382.45	0.57		Mudstone		
382.45	383.95	1.00		Medium-fine lithic sandstone		
383.95	391.61	5.08		Medium, micaceous lithic sandstone		
				Laminite current bedded sandstone/siltstone		
391.61	392.89	0.85		Medium-coarse siliceous sandstone		
392.89	397.42	3.00	86	Coarse (gritty) sandstone containing discontinuous bands of yellow sandstone fragments.		
397.42	399.79	2.34	99	Medium-fine lithic sandstone		
399.79	400.74	0.94		Coarse lithic sandstone		
400.74	402.26	1.50		Medium lithic sandstone		
402.26	402.50	0.24		Mudstone		
402.50	405.77	3.23		Medium-coarse lithic sandstone, light grey top 2.27 m.		
405.77	405.89	0.12		Mudstone		
				Continued over:—		

DEPARTMENT OF MINES — TASMANIA

DIAMOND DRILL CORE RECORD

HOLE No.:— 18	MAP SHEET No. 55	DISTRICT. ROYAL GEORGE	LOCATION OF SITE:—
Vicinity of Merrywood coal mine (see Fingal coalfield map)			
R.L. OF SITE:— 664.5	SITE SURVEY ON MAP No.:—		CORE SIZE:— NX to 15.30 m BQ to 424.80
BEARING OF HOLE:— -	AIR PHOTO No.:—		COMMENCED:— 4.10.73
INCLINATION OF HOLE:— Vertical	DRILL:— 30 HD		COMPLETED:— 2. 4.74
CO-ORDS. OF SITE:— EP 7921 7659	DRILLER:— G. Baker		FINAL DEPTH:— 424.80

B.P. 1412

Index Page:—

059

248060

BORE HOLE 18 — GEOLOGICAL LOG — Page:— 2

FROM ft. ins.	TO ft. ins.	RECOVERY ft. ins.	RECOVERY %	DESCRIPTION	SECTION Core	SECTION Sample
408-85	407.25	1.34	99	Medium-coarse lithic sandstone		
407.25	407.62	0.37		Mudstone		
407.62	407.72	0.10		Fine lithic sandstone		
407.72	408.53	0.80		Micaceous mudstone		
408.53	408.61	0.08		Medium-fine lithic sandstone		
408.61	408.81	0.20		Mudstone		
408.81	409.32	0.50		Medium-fine lithic sandstone		
409.32	409.36	0.04		Mudstone		
409.36	410.04	0.67		Medium-fine lithic sandstone		
410.04	410.39	0.35		Mudstone		
410.39	410.49	0.10		Medium-fine lithic sandstone		
410.49	410.59	0.10		Mudstone		
410.59	410.74	0.15		Medium-fine lithic sandstone		
410.74	410.87	0.13		Mudstone		
410.87	411.09	0.22		Medium fine lithic sandstone		
411.09	412.86	1.75		~~Medium lithic sandstone with subordinate interbedded mudstone~~		
412.86	418.67	5.74		Medium-coarse lithic sandstone		
418.67	424.80	6.04		Mudstone ↓ Permian?		

Continued over

ASSAY DATA

SAMPLE No.	FROM ft. ins.	TO ft. ins.	RECOVERY ft. ins.	RECOVERY %	ASSAY RESULTS

060

248061

DM DDH 22 'LOCHABER'

DRILLING TARGET:-

REMARKS:-

SURVEY DATA

DEPTH metres	Bearing mag.	Inclin. degs

SAMPLE No.	FROM metres	TO metres	RECOVERY metres	RECOVERY %
1	79.28	79.83	0.46	83
2	155.19	156.81	1.49	92
3	169.90	170.48	0.56	97
4	182.44	182.77	0.32	97
5	188.59	189.32	0.68	93
6	199.30	200.15	0.85	92

ASSAY DATA

ASSAY RESULTS (As Received)

	Moist	Vol.	F-C	Ash	CV
1	3.6	31.3	41.6	23.4	24.7
2	2.4	26.3	50.3	21.0	25.6
3	3.6	21.9	31.8	42.7	-
4	6.5	12.2	15.6	65.6	-
5	2.1	30.1	52.2	15.6	27.2
6	3.2	19.0	33.0	44.8	-

GEOLOGICAL LOG

Logged by:-

FROM metres	TO metres	RECOVERY metres	RECOVERY %	DESCRIPTION	SECTION Core	SECTION Sample
.00	8.50			Mudstone fragments and clay		
8.50	13.30	4.24	88	Mudstone		
13.30	21.25	7.02	88	Medium lithic sandstone		
21.25	26.35	5.02	98			
26.35	28.75	2.27	94			
28.75	30.54	1.65	92	Lithic sandstone with interbedded 1 cm mudstone bands. Bedding irregular		
30.54	31.48	.87	92	White mudstone grading into darker mudstone towards top		
31.48	33.32	1.69	91	Grey mudstone, carbonaceous 32.95 - 33.10		
33.32	33.93	.60	97	Fine sandstone		
33.93	39.88	5.83		Fine current bedded sandstone		
39.88	40.92	1.02		Medium lithic sandstone - coaly partings near top		
40.92	44.97	3.97		Medium lithic sandstone - fine black banding		
44.97	46.78	1.77		Medium lithic sandstone - coaly partings		
46.78	47.74	.94		Mudstone		
47.74	48.57	.83	100	Medium lithic sandstone		
48.60	51.00	2.40		Medium lithic sandstone - coaly bands		
51.00	53.65	2.65				
53.65	54.46	.81		coal fragments		
54.46	55.00	.54				
55.00	55.59	.59		coal fragments		
55.59	56.21	.62				
56.21	56.80	.59		coal bands		
56.80	57.65	.85		in part banded		
57.65	59.69	2.04				

Continued over:-

DEPARTMENT OF MINES—TASMANIA

DIAMOND DRILL CORE RECORD

HOLE No.:- 22	MAP SHEET No. 56	DISTRICT Royal George	LOCATION OF SITE:-
"Lochaber" near Royal George			
R.L. OF SITE:- 407.4 m	SITE SURVEY ON MAP No.:		CORE SIZE:- BQ
BEARING OF HOLE:-	AIR PHOTO No.:-		COMMENCED:- 20/6/75
INCLINATION OF HOLE:- Vertical	DRILL:- 12B		COMPLETED:- 2/12/75
CO-ORDS OF SITE:- 863734	DRILLER:- L. Newman		FINAL DEPTH (m):- 228.56

061

248062

GEOLOGICAL LOG Page:— 2

FROM ft. ins.	TO ft. ins.	RECOVERY ft. ins.	RECOVERY %	DESCRIPTION	SECTION Core	SECTION Sample
59.69	63.27	3.58		Medium lithic sandstone - coal bands in part calcareous		
63.27	63.69	.42		scattered clay pellets		
63.69	66.21	2.52		coarse coal partings		
66.21	66.91	.70				
66.91	66.97	.05	83	Mudstone		
66.97	67.09	.10		Medium lithic sandstone		
67.09	68.39	1.12	86	Banded sandstone		
68.39	71.10	2.32	86	Medium lithic sandstone		
71.10	73.92	2.57	91	Medium coarse lithic sandstone		
73.92	74.13	.19	89	Carbonaceous mudstone		
74.13	74.30	.15		Soft brown clay		
74.30	74.40	.09	83	Brown mudstone		
74.40	74.86	.38		Medium lithic sandstone		
74.86	75.28	.35		Black mudstone laminated at top		
75.28	75.84	.47		Laminite, siltstone/mudstone 1 mm bands		
75.84	76.62	.65		Medium lithic sandstone slightly carbonaceous at top		
76.62	76.82	.17		Banded mudstone		
76.82	77.84	.85		Medium lithic sandstone		
77.84	78.24	.33		Carbonaceous shale		
78.24	78.42	.15		Grey mudstone		
78.42	78.47	.04		Carbonaceous mudstone		
78.47	78.53	.05		Light brown clay		
78.53	78.56	.03		Grey mudstone		
78.56	78.85	.24		Fine grained lithic sandstone		
78.85	79.28	.34		Clay - in part carbonaceous		
79.28	79.83	.45		Coal		
79.83	81.86	1.71		Mudstone - .05 m band of lithic sandstone in middle		
81.86	91.79	8.29		Medium lithic sandstone in part calcareous		
91.79	92.06	.22		Mudstone		

Continued over

ASSAY DATA

SAMPLE No.	FROM ft. ins.	TO ft. ins.	RECOVERY ft. ins.	RECOVERY %	ASSAY RESULTS									

86874

062

248063

GEOLOGICAL LOG Page:— 3

FROM ft. ins.	TO ft. ins.	RECOVERY ft. ins.	RECOVERY %	DESCRIPTION	SECTION Core	SECTION Sample
92.06	93.41	1.13		Medium lithic sandstone		
93.41	93.81	.33		Mudstone		
93.81	111.95	15.15	83	Medium lithic sandstone - clay pellets: 94.20 - 94.45 and 100.22 - 100.28, calcareous: 96.20 - 96.50 and 99.09 - 99.20 mudstone bands: 99.02 - 99.09 and 100.16 - 100.22		
111.95	112.02	.06	83	Mudstone		
112.02	112.56	.45		Medium lithic sandstone with clay pellets and in part carbonaceous		
112.56	112.71	.13		Carbonaceous mudstone		
112.71	113.66	.79		Coarse lithic sandstone		
113.66	113.75	.08		Medium lithic sandstone		
113.75	113.90	.12		Mudstone		
113.90	117.94	3.37		Medium coarse lithic sandstone with occasional clay pellet and coal bands		
117.94	118.57	.53	83	Mudstone		
118.57	122.34	3.15		Medium lithic sandstone		
122.34	122.80	.38		Mudstone		
122.80	129.60	5.68		Medium lithic sandstone - coaly partings and clay pellets at bottom		
129.60	129.69	.08		Mudstone		
129.69	130.58	.74		Medium lithic sandstone		
130.58	132.44	1.55		Interbedded sandstone and banded mudstone .2 to .3 m units		
132.44	135.46	2.52		Medium lithic sandstone		
135.46	135.51	.05	84	Mudstone		
135.51	137.35	1.54		Medium lithic sandstone clay pellets 137.10 - 137.22		
137.35	137.47	.10		Mudstone		
137.47	139.43	1.64		Medium lithic sandstone		
139.43	139.67	.20		Coarse lithic sandstone with clay pellets and coal partings		
139.67	141.19	1.27		Medium lithic sandstone		

Continued over

ASSAY DATA

SAMPLE No.	FROM ft. ins.	TO ft. ins.	RECOVERY ft. ins.	RECOVERY %	ASSAY RESULTS									

Index Page:—

063

248064

GEOLOGICAL LOG

Page:— 4

FROM ft.	FROM ins.	TO ft.	TO ins.	RECOVERY ft.	RECOVERY ins.	RECOVERY %	DESCRIPTION	SECTION Core	SECTION Sample
141.	19	141.	50		.26		Mudstone		
141.	50	142.	22		.60		Medium lithic sandstone		
142.	22	145.	60	2.	43		Mudstone banded in part		
145.	60	155.	19	8.	82	91	Mudstone occasional coaly bands		
155.	19	156.	81	1.	49		Coal gradational bottom contact		2
156.	81	157.	35		.49		Mudstone carbonaceous at top		
157.	35	158.	88	1.	41		Medium lithic sandstone		
158.	88	159.	52		.58		Mudstone		
159.	52	160.	93	1.	35	95	Laminite sandstone/siltstone >1 cm units light grey at top		
160.	93	161.	35		.40		Medium lithic sandstone		
161.	35	161.	82		.46	97	Laminite sandstone/siltstone >1 cm units		
161.	82½	162.	15		.32		Medium lithic sandstone		
162.	15	162.	36		.20		Laminite, sandstone/current bedded siltstone >1 cm units		
162.	36	169.	90	7.	29		Medium lithic sandstone with coal laminae and sharp bottom contact		
169.	90	170.	48		.56		Shaly coal gradational bottom contact		3
170.	48	171.	00		.50		Mudstone " " "		
171.	00	174.	55	3.	44		Medium lithic sandstone		
174.	55	175.	11		.54		Current bedded siltstone gradational bottom contact		
175.	11	182.	44	7.	10		Medium fine lithic sandstone		
182.	44	182.	77		.32		Carbonaceous shale, irregular bottom contact		4
182.	77	185.	51	2.	65		Banded, current bedded siltstone containing plant fragments		
185.	51	185.	65		.14		Light brown claystone		
185.	65	186.	01		.35		Banded siltstone		
186.	01	186.	35		.33		Laminite sandstone/siltstone		
186.	35	187.	08		.71		Banded siltstone		
187.	08	188.	59	1.	40		Laminite sandstone/siltstone, carbonaceous at bottom		
188.	59	189.	32		.68		Dull coal		5
189.	17	189.	60		.42		Mudstone carbonaceous at top		

Continued over

ASSAY DATA

SAMPLE No.	FROM ft.	FROM ins.	TO ft.	TO ins.	RECOVERY ft.	RECOVERY ins.	RECOVERY %	ASSAY RESULTS

064

248065

GEOLOGICAL LOG Page:— 5

FROM ft.	FROM ins.	TO ft.	TO ins.	RECOVERY ft.	RECOVERY ins.	RECOVERY %	DESCRIPTION	SECTION Core	SECTION Sample
189	60	191	30	1	65		Laminite sandstone/mudstone		
191	30	192	37	1	03		Medium lithic sandstone with carbonaceous partings		
192	37	192	67		29	94	Laminite sandstone/carbonaceous siltstone		
192	67	195	09	2	28		Medium lithic sandstone with carbonaceous siltstone partings		
195	09	195	39		28		Mudstone		
195	39	196	62	1	16		Laminite, carbonaceous mudstone/sandstone, >1 cm urits		
196	62	197	45		79	92	Carbonaceous mudstone		
197	45	199	30	1	70		Mudstone		
199	30	200	15		85	100	Dull coal, gradational bottom contact		6
200	15	200	79		62	95	Mudstone		
200	79	201	73		90		Siltstone		
201	73	203	70	1	89		Laminite, sandstone/siltstone		
203	70	205	48	1	70		Brown claystone, gradational bottom contact		
205	48	205	91		41		Mudstone		
205	91	206	42		49		Siltstone		
206	42	206	84		40		Medium lithic sandstone		
206	84	207	18		33	96	Laminite sandstone/siltstone		
207	18	208	57	1	34		Carbonaceous mudstone gradational bottom contact		
208	57	208	64	0	07		Clay pellet conglomerate		
208	64	211	01	2	35	98	Medium lithic sandstone, coarser at base		
211	01	211	42		41		Mudstone		
211	42	220	29	8	77		Medium lithic sandstone		
220	29	220	41		12		Mudstone		
220	41	220	55		14		Medium lithic sandstone		
220	55	220	59		04		Mudstone		
220	59	227	65	6	99		Medium lithic sandstone containing mudstone fragments coaly fragments near bottom		
227	65	227	78		12		Mudstone with coaly partings		
227	78	228	56		75	96	Lithic sandstone		

Continued over

ASSAY DATA

SAMPLE No.	FROM ft.	FROM ins.	TO ft.	TO ins.	RECOVERY ft.	RECOVERY ins.	RECOVERY %	ASSAY RESULTS

085

248066

DM DDH 28 Base of Vertical 'Acre'

REMARKS:–

SURVEY DATA			ASSAY DATA										
DEPTH metres	Bearing mag.	Inclm. degs	SAMPLE No.	FROM – metres	TO metres	RECOVERY metres	RECOVERY %	ASSAY RESULTS					

GEOLOGICAL LOG

Logged by:–

FROM metres	TO metres	RECOVERY metres	RECOVERY %	DESCRIPTION	SECTION Core	SECTION Sample
0	9.00	0		Sand		
9.00	26.64	8.80	52	Weathered sandstone		
26.64	28.50	1.72	92	Laminite, sandstone-mudstone 60:40		
28.50	30.54	1.94	95	40:60		
30.54	31.11	0.57	100	70:30		
31.11	33.49	2.38		Lithic sandstone, medium with scattered fine siltstone bands		
33.49	33.71	0.22		Laminite, siltstone-sandstone, 70:30		
33.71	35.46	1.75		Lithic sandstone, medium		
35.46	36.29	0.82	100	Mudstone, banded at top		
36.29	37.07	0.78		" carbonaceous		
37.07	38.04	0.97		Laminite, carbonaceous mudstone/sandstone (50:50)		
38.04	38.61	0.44	77	" " " " (30:70)		
38.61	38.76	15	100	" sandstone/siltstone		
38.76	40.61	1.85		Medium lithic sandstone		
40.61	41.10	0.49		Interbedded sandstone and siltstone, slumped beddin-		
41.10	41.62	0.51	97	Sandstone with scattered siltstone bands		
41.62	42.24	0.61		Laminite, mudstone/current bedded siltstone		
42.24	43.26	1.00		Carbonaceous mudstone		

Continued over:–

DEPARTMENT OF MINES—TASMANIA

DIAMOND DRILL CORE RECORD

HOLE No.:– 28	MAP SHEET No. 48 ~~(B414E)~~	DISTRICT FINGAL	LOCATION OF SITE:–

Base of "Bare Rock" – *Base of Vertical 'Acre'.*

R.L. OF SITE:– 442.0	SITE SURVEY ON MAP No.:	CORE SIZE:– NQWL
BEARING OF HOLE:– –	AIR PHOTO No.:–	COMMENCED:– 21/7/77
INCLINATION OF HOLE:– Vertical	DRILL:– Longyear 38	COMPLETED:– 25/8/77
CO-ORDS OF SITE:– EP82248687	DRILLER:– L. Newman	FINAL DEPTH (m):– 100.4[illegible]

063

248067

FINGAL BH28 — GEOLOGICAL LOG — Page:- 2

FROM metres	TO metres	RECOVERY metres	RECOVERY %	DESCRIPTION	SECTION Core	SECTION Sample
43.26	43.66	0.39	98	Coal *Db.*		
43.66	43.82	0.15		Mudstone		
43.82	44.87	1.03		Interbedded sandstone and mudstone, laminite in part		
44.87	45.55	0.68	100	Fine lithic sandstone, gradational bottom contact		
45.55	46.04	0.49		Laminite, mudstone 1 sandstone (60:40)		
46.04	47.29	1.25		Mudstone with plant fossils		
47.29	48.17	0.87	98	Laminite, sandstone/mudstone		
48.17	51.96	3.73		" sandstone/current bedded siltstone		
51.96	52.94	0.96		Medium lithic sandstone with scattered siltstone bands		
52.94	53.10	0.15		Laminite sandstone/siltstone		
53.10	53.77	0.66		Medium lithic sandstone with scattered siltstone bands		
53.77	53.98	0.20		Laminite sandstone/siltstone		
53.98	54.09	0.11		Medium lithic sandstone with scattered bands and pellets of siltstone		
54.09	54.87	0.76		Laminite, sandstone/siltstone		
54.87	55.78	0.89		Medium lithic sandstone		
55.78	55.87	0.08		" " " clay pellets		
55.87	56.25	0.37		" " "		
56.25	56.29	0.04	100	Mudstone		
56.29	56.36	0.07		" carbonaceous, in part coal		
56.36	57.57	1.21		"		
57.57	58.00	0.43		Laminite, mudstone/siltstone		
58.00	58.69	0.69		Mudstone		
58.69	58.72	0.03		Sandstone		
58.72	59.36	0.64		Mudstone		
59.36	61.12	1.76		" carbonaceous		
61.12	61.63	0.51		Carbonaceous medium lithic sandstone		
61.63	62.51	0.88		Interbedded carbonaceous mudstone and carbonaceous siltstone		
62.51	63.21	0.70		Carbonaceous mudstone		
63.21	63.71	0.50		Coal *Db. Inferior*		
63.71	64.45	0.74		Carbonaceous mudstone		
64.45	64.64	0.19		Laminite, siltstone/carbonaceous sandstone		
64.64	65.34	0.70		Medium lithic sandstone with scattered siltstone bands.		

Continued over

ASSAY DATA

SAMPLE No.	FROM metres	TO metres	RECOVERY metres	RECOVERY %	ASSAY RESULTS

M 1446

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FINGAL BH28 — GEOLOGICAL LOG — Page:- 3

FROM metres	TO metres	RECOVERY metres	RECOVERY %	DESCRIPTION	SECTION Core	SECTION Sample
65.34	66.16	0.81	98	Mudstone		
66.16	66.72	0.55		Laminate, sandstone/current bedded siltstone		
66.72	68.26	1.51		Lithic sandstone, medium		
68.26	68.36	0.10		Laminate, sandstone/siltstone		
68.36	71.40	3.03		Lithic sandstone, medium, current bedded siltstone		
71.40	72.44	1.03		" " medium-fine	bands <10%	
72.44	73.02	0.57		" " medium		
73.02	73.10	0.08		Mudstone		
73.10	74.67	1.55		Very fine lithic sandstone		
74.67	75.33	0.66	100	Laminate, mudstone/siltstone		
75.33	75.56	0.23		Mudstone		
75.56	76.12	0.56		Fine lithic sandstone		
76.12	76.35	0.23		Mudstone		
76.35	77.71	1.36	98	Laminate sandstone/siltstone		
77.71	78.01	0.29		Medium lithic sandstone		
78.01	78.38	0.37		Mudstone		
78.38	78.44	0.06		Medium-coarse lithic sandstone, calcareous		
78.44	82.38	3.88		Laminate sandstone/current bedded siltstone (80:20) current bedded clay pellet conglomerate at ba.		
82.38	82.60	0.22		Medium lithic sandstone		
82.60	83.37	0.75		Laminate sandstone/current bedded siltstone current bedded clay pellet ~~coal~~, conglomerate at base		
83.37	84.46	1.04	95	Lithic sandstone, medium		
84.46	84.58	0.11		" " " clay pellets.		
84.58	85.28	0.68		" " "		
85.28	85.60	0.30		" " " " "		
85.60	85.73	0.13		" " "		
85.73	89.36	3.54		" " " siltstone bands <10%		
89.36	89.66	0.30		" " " carbonaceous lenses		
89.66	90.58	0.92		" " medium-fine		
90.58	91.65	1.06		" " medium		
91.65	92.58	0.92		" " " calcareous		
92.58	94.99	2.40	99	" " medium-fine		
94.99	95.79	0.79		Laminate, mudstone/sandstone		

Continued over

ASSAY DATA

SAMPLE No.	FROM metres	TO metres	RECOVERY metres	RECOVERY %	ASSAY RESULTS									

063

248069

FINGAL BH28 — GEOLOGICAL LOG — Page:- 4

FROM metres	TO metres	RECOVERY metres	RECOVERY %	DESCRIPTION	SECTION Core	SECTION Sample
95.79	96.04	0.25	99	Mudstone, gradational bottom contact		
96.04	97.87	1.82		Fine lithic sandstone, calcareous		
97.87	98.66	0.78		Mudstone, banded		
98.66	99.44	0.78		"		
99.44	103.44	3.98		Laminate sandstone/siltstone		
103.44	103.62	0.17		Clay pellet conglomerate		
103.62	104.46	0.83		Laminate sandstone/siltstone (20°dip)		
104.46	105.02	0.56		Clay pellet conglomerate		
105.02	105.23	0.21		Medium-fine lithic sandstone, few siltstone bands		
105.23	105.34	0.11		Siltstone, broken bedding		
105.34	105.89	0.55		Medium-fine lithic sandstone		
105.89	106.03	0.13		Siltstone pebble, conglomerate		
106.03	106.80	0.77		Medium-fine lithic sandstone, scattered rounded siltstone fragments		
106.80	107.19	0.39		Laminate, light grey sandstone/carbonaceous siltstone slumped bedding at base		
107.19	109.79	2.53	97	Laminate, sandstone/siltstone (15° dip)		
109.79	110.39	nil	nil	Lost core (0.60m)		
110.39	110.62	0.23	99	Laminate sandstone/siltstone		
110.62	116.26	6.91		Light grey sandstone		
116.26	117.55	1.28	98	Coarse quartz sandstone		
117.55	117.84	0.29		Laminate sandstone/dark green mudstone		
117.84	118.17	0.31		Dark grey mudstone		
118.17	118.71	0.53		Laminate sandstone/dark green mudstone		
118.71	119.32	0.59		Coarse quartz sandstone		
119.32	120.25	0.90		Interbedded quartz sandstone and dark grey mudstone		
120.25	120.77	0.50		Coarse quartz sandstone (70		
120.77	121.43	0.63		Interbedded quartz sandstone and dark green mudstone		
121.43	121.95	0.50		Quartz sandstone		
121.95	122.26	nil	nil	Lost core (0.31m)		
122.26	122.72	0.46	100	Interbedded quartz sandstone and dark grey mudstone (60:		
122.72	123.72	1.00		Dark grey sandstone, carbonaceous at top		
123.72	125.41	1.68	99	Green (ferrous) sandstone.		

Continued over

ASSAY DATA

SAMPLE No.	FROM metres	TO metres	RECOVERY metres	RECOVERY %	ASSAY RESULTS

069

248070

FINGAL BH28 — GEOLOGICAL LOG — Page:- 5

FROM metres	TO metres	RECOVERY metres	RECOVERY %	DESCRIPTION	SECTION Core	SECTION Sample
125.41	126.37	0.86	90	Coarse quartz sandstone		
126.37	136.87	10.23	99	" " " with green banding pebbles		
136.87	138.41	1.50		Green siltstone		
138.41	138.59	0.18		Quartz sandstone containing green siltstone		
138.59	139.93	1.31		Interbedded green siltstone and quartz sandstone		
139.93	140.19	0.25		Quartz sandstone		
140.19	142.95	2.74		" " with green siltstone bands (90:10)		
142.95	144.81	1.75		" "		
144.81	144.88	0.07		Mudstone		
144.88	147.94	3.01		Quartz Sandstone		
147.94	148.54	0.03	5	Brown micaceous sandstone		
148.54	149.77	1.23	100	Quartz Sandstone		
149.77	150.57	0.80		Light grey mottled claystone, gradational bottom contact		
150.57	160.48	9.91		Dark grey siltstone with scattered grits (Permian)		

Continued over

ASSAY DATA

SAMPLE No.	FROM metres	TO metres	RECOVERY metres	RECOVERY %	ASSAY RESULTS

1221 78-1278 248071 1221

INVESTIGATOR COAL EXPLORATION PTY., LIMITED.

PLATE 1
GEOLOGICAL MAP
EL16/77.

GEOLOGIST: D. D. WATERS
DRAWN: M.P.D.
DATE: JULY 1978.
SCALE 1:30,000.
REPORT No: 985.
PLAN No: TCG-9.

SEDIMENTARY DEPOSITS

QUATERNARY.

Qa. Alluvium.

Qds. Dolerite Scree.

TRIASSIC.

Rp. Upper Parmeener Super Group Coal Measures.

PERMIAN

Pp. Plc. Marine Mersey Coal Measures. — Lower Parmeener Super Group.

EARLY ORDOVICIAN — LOWER DEVONIAN.

O-Dm. Mathinna Beds.

IGNEOUS ROCKS.

JURASSIC.

Jd. Dolerite.

DEVONIAN.

Dg. Granite.

Dip & Strike.

?—— ——? Fault Inferred.

D.M.D.D.H.22. Department of Mines Diamond Drill Hole No. D.M.D.D.H.22.

Coal Outcrop Location No.1. (See Appendix I For Graphic Logs.)

Sn. Tin Mine.

C. Coal Mine

5 cm

SCALE 1:30,000.

Metres 1000 500 0 1000 2000

Base taken from Survey Branch, Lands Dept. Hobart 1975, 1:100,000 Sheets St. Pauls 8414 & Break O'Day 8514.

CORNWALL COAL CO. N/L.

DEPARTMENT OF MINES TASMANIA FINGAL VALLEY EXEMPT AREA.

1221

5 cm

INVESTIGATOR COAL EXPLORATION PTY., LIMITED.

PLATE 2.
GEOLOGICAL MAP
EL16/77.

GEOLOGIST: D. D. WATERS
DRAWN: M.P.D.
DATE: JULY 1978.
SCALE 1:30,000.
REPORT No: 985.
PLAN No: TCG-10.

SCALE 1:30,000.

Metres 1000 500 0 1000 2000

Base taken from Survey Branch, Lands Dept. Hobart 1975,
1:100,000 Sheets St. Pauls 8414 & Break O'Day 8514.

SEDIMENTARY DEPOSITS

QUATERNARY.

Qa.	Alluvium.
Qds.	Dolerite Scree.

TRIASSIC.

Rp.	Upper Parmeener Super Group Coal Measures.

PERMIAN

Pp.	Marine	Lower Parmeener Super Group.
Plp.	Mersey Coal Measures.	

EARLY ORDOVICIAN – LOWER DEVONIAN.

O-Dm.	Mathinna Beds.

IGNEOUS ROCKS.

JURASSIC.

Jd.	Dolerite.

DEVONIAN.

Dg.	Granite.

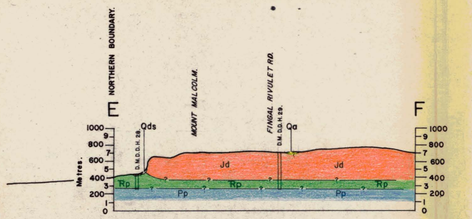
⊢3 180	Dip & Strike.
?—— ——?	Fault Inferred.
◆ D.M.D.D.H.22.	Department of Mines Diamond Drill Hole No. D.M.D.D.H.22.
● 1.	Coal Outcrop Location No.1. (See Appendix I For Graphic Logs.)
⚒Sn	Tin Mine.
⚒C.	Coal Mine
—— ——	Trend Line (Air Photo Lineation)
1.	Potential Coal Area No.1.
🟥	Proposed Diamond Drill Hole.

1222

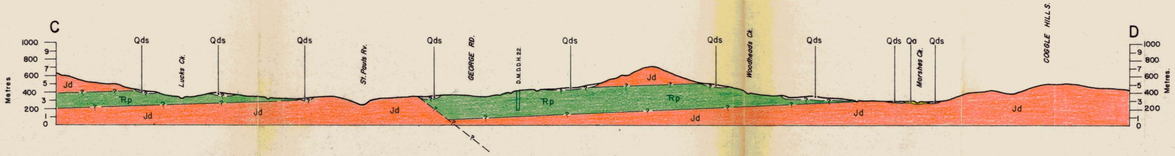
248073 1223

78-1278

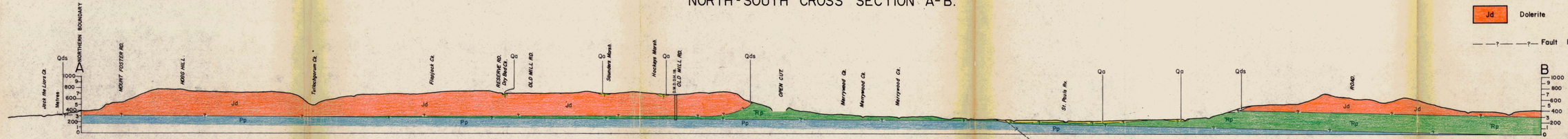
NORTH-SOUTH CROSS SECTION E-F.



NORTH-SOUTH CROSS SECTION C-D.



NORTH-SOUTH CROSS SECTION A-B.



LEGEND

SEDIMENTARY DEPOSITS

QUATERNARY

- Qa — Alluvium.
- Qds — Dolerite Scree.

TRIASSIC

- Rp — Upper Parmeener Super Group Coal Measures.

PERMIAN

- Pp — Marine — Lower Parmeener Super Group

IGNEOUS ROCKS

JURASSIC

- Jd — Dolerite

— — ? — — ? — Fault Inferred

5 cm

SCALE: 1:30,000 HORIZONTAL & VERTICAL.

1000 500 0 1000 2000

1:250,000 TOPOGRAPHIC MAP SHEETS SK-55-4, SK-55-8.

INVESTIGATOR COAL EXPLORATION PTY, LIMITED.

EL 16/77
CROSS SECTIONS
A-B, C-D & E-F. PLATE. 3.

GEOLOGIST: D.D.W.	SCALE: 1:30000 H/V
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