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REF. No. 4056/84				

FINAL REPORT ON EL 30/80

MOBIL ENERGY MINERALS AUSTRALIA INC.

MICROFILMED

March 84

Andrew Williams

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1.0 INTRODUCTION

Exploration Licence 30/80 was originally granted to the Broken Hill Proprietary Company (B.H.P.) on April 15, 1981 for 12 months and consisted of an area of 12,900 square kilometres. This area was reduced to 2,480 square kilometres in four parts on April 15, 1983. This report covers Mobil Energy Minerals Australia's (MEMA) work on the EL for the period April 15, 1983 to April 15, 1984.

The Exploration Licence is located within the Tasmania Basin, in central southern Tasmania and lies approximately 20 kilometres to the north of the city of Hobart. Access to most parts of the Licence is by major sealed and unsealed roads, navigable by ordinary on-road vehicles.

Work carried out by MEMA entailed an initial, extensive literature research followed by field mapping in numerous, isolated areas within the Licence. The literature studies indicated that a great deal was still unknown regarding the coal potential over much of the central Tasmanian Basin and it was, in effect, relatively poorly explored. This was due in part to the lack of fully cored stratigraphic bores and the presence of extensive and thick dolerites over much of the basin. Additional aims of the field mapping programme were to enable a ready identification of Permian Strata to be made for future drilling operations and to assist in the selection of drill hole locations. Mapping exercises were undertaken during the months of May, June and July, the results of which are outlined in Section 4.0.

Drilling operations, preceded by a ground magnetics survey, commenced on October 2, 1983 and consisted of five holes totalling 987.75 metres, 814.19 metres of which was cored. There were two target horizons in the Permian sequence:

- (i) Cygnet Coal Measures equivalents
- (ii) Faulkner Group containing the Mersey Coal Measures equivalents

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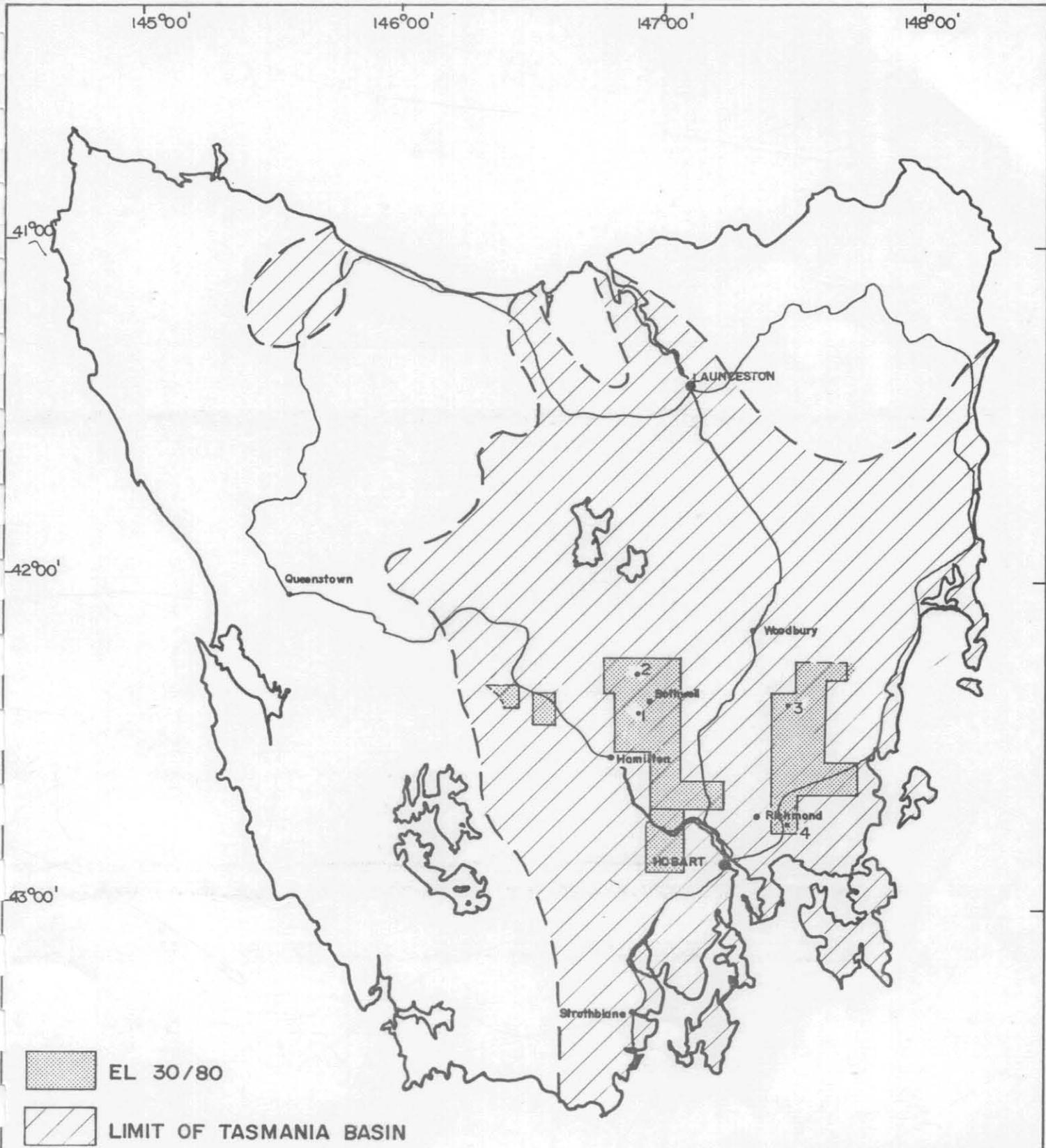
(N.B.: The only known coal occurrences of the groups lie considerably to the south and north of the E.L. boundaries).

Results of both the magnetics and drilling programmes are detailed in Section 5.0

Prior to Christmas, a ten day sedimentological study was also undertaken to enable, in conjunction with the additional stratigraphic information, an environmental map of the Permian to be drawn and to make recommendations on future drilling. Both Mines Department and MEMA core were inspected with type localities at Cygnet and Bruny Island. Within the EL, Elderslie and Bothwell were visited. A helicopter trip was taken into Part II of the EL to ascertain the feasibility of field mapping and/or drilling in this area.

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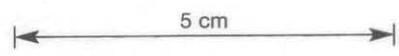


 EL 30/80

 LIMIT OF TASMANIA BASIN

- AREAS MAPPED**
1. S.W. BOTHWELL
 2. N.W. BOTHWELL
 3. STONEHENGE
 4. PAWLEENA

5 cm



0 20 40 60 80 100 km



Scale 1: 2,000,000

FIGURE I. O. 1

MOBIL ENERGY MINERALS AUSTRALIA					
PROJECT TASMANIAN JOINT VENTURE					
LOCALITY MAP					
COMPILED	DATE	BY	ADDNS	DATE	BY
DRAWN	7-83	AW			
SCALE	1:2,000,000	H.S.	DWG No	1,6033	257

2.0 PHYSIOGRAPHY

The physiography of EL 30/80 is generally mountainous and hilly with occasional deeply dissected valleys. The Central Plateau dominates the western area of the central region of the Licence and is of varying relief.

North of Hobart, the physiography is characterised by undulating topography of essentially moderate relief. The isolated deeply dissected valleys occur within the Coal, Jordan and Derwent rivers near Kempton, Pontville and Brighton and Tea Tree areas, through the central region of the EL. Terraces are common in many valleys with older terraces up to 30 metres above the present river level.

Faulting is a prominent mechanism as regards land style within the EL. Much of the higher land is characterised by resistant dolerite masses and Triassic Ross Sandstone outcrops. These occur at all levels and cliff formation is very pronounced. Faulting often causes escarpments and straight narrow valleys. These valleys largely control the courses of the Coal, Jordan and Derwent Rivers.

Pleistocene glaciation sculpted many landforms on the Central Plateau and cirques, tarns, morainal ridges and periglacial rock-fields are numerous. Graben induced valleys with step faulting occur around the Hobart area producing linear blocks at various elevations. The topography in this area remains generally north-south.

3.0 STRATIGRAPHY

3.1 Permian (see Plates 3.1.2 - 3.1.5)

Throughout Tasmania the Permian sequence is considered to be as follows:

- Wynyard Tillite
- Quamby Group
- Golden Valley Group
- Faulkner Group
- Cascades Group
- Malbina Formation
- Ferntree Group
- Cygnets Coal Measures

All units other than the Quamby Group and Wynyard Tillite will be described below. Neither the Quamby Group nor the Wynyard Tillite are of any interest either economically or stratigraphically.

Golden Valley Group

Base of unit is considered to be the last appearance of fossils.

This unit consists of 75 metres of fossiliferous, pebbly mudstone and siltstone with calcareous mudstones and limestone units. Distinctive units include many rock fragments and pebbles. Upper members of the formation are olive grey siltstone and fine sandstone showing an alternation of fissile/non-fissile units when weathered. The unit may show a decreasing fossil content up the sequence with the upper beds devoid of fossils.

This Group comprises the Darlington limestone and Bundella mudstone in SE Tasmania. Richly fossiliferous limestone occurs at the base of the group in SE Tasmania (represented elsewhere by very fossiliferous calcareous siltstone with limestone lenses), overlain by fossiliferous siltstone becoming less fossiliferous up sequence.

CYGNET COAL MEASURES		JACKY SHALES			CYGNET COAL MEASURES		
FERNTREE GROUP	FERNTREE MUDSTONE	FERNTREE GROUP	EDEN FM BLACKWOOD FM	BOGAN GAP GROUP	FERNTREE MUDSTONE		
			DRYS FORMATION				
			PALMER FM				
			SPRINGMOUNT FORMATION				
			GARCIA FM				
MALBINA FORMATION	RISDON S'S	WOODBRIDGE GROUP	WESTON FORMATION	POATINA GROUP	RISDON S'S	MISTLETOE S'S	
	MALBINA MEMBER E				MINNIE POINT FORMATION	WOODBRIDGE GLACIAL FORMATION	
	MALBINA MEMBER D						
	MEMBER C						
	MALBINA MEMBER B						
MALBINA MEMBER A	DABOOL FORMATION						
CASCADES GROUP	GRANGE MUDSTONE	WOODBRIDGE GROUP	MEANDER FORMATION		DEEP BAY FORMATION	MARLBOROUGH GROUP FLOWERDALE STAGE UPPER LATROBE STAGE CASTLE GREY MUDSTONE BURNT GULLY LIMESTONE BINNS GULLY MUDSTONE ENSTONE PARK LIMESTONE LOHREYS GULLY MUDSTONE PETER LIMESTONE PRODUCTUS ZONE CRINOIDAL ZONE	
	BERRIEDALE LIMESTONE						
	NASSAU SILTSTONE						
	RAYNER S'S						
FAULKNER GROUP	FAULKNER GROUP	LIFFEY GROUP	CREEKTON FM	LIFFEY GROUP	HICKMAN FORMATION (SNUG STAGE)	PREOLENNA COAL MEASURES MERSEY COAL MEASURES MT ELEPHANT COAL HORIZON RELAPSE SANDSTONE DON VALLEY BLACK SHALE ISSACS CONGLOMERATE RAYS HILL ARKOSE, LIFFEY S'S	
			WOODSIDE FM				
			KOPANCIA FM				
			FLAT TOP FM				
BUNDELLA MUDSTONE	BUNDELLA MUDSTONE	GOLDEN VALLEY GROUP	McRAE FORMATION	GOLDEN VALLEY GROUP	BUNDELLA MUDSTONE	ERRATIC ZONE	
			BILLOP FM				GLENCOE FORMATION
			BRUMBY FORMATION				
						DARLINGTON LIMESTONE	

FIG. 3.1.1

MOBIL ENERGY MINERALS AUSTRALIA
PROJECT BHP TASMANIA J/V

CORRELATION OF STRATIGRAPHIC UNITS (Permian) IN TASMANIA

COMPILED	DATE	BY	DATE	BY
DRAWN	MAY '83	H. S.		
SCALE			DWG No	60332.002

NOT ALTHO OR B/D CORRELATE OF CASCADES GROUP

NOT A CORRELATE OF FAULKNER GROUP

011

The Darlington Limestone is generally an alternation of Eurydesma calcirudite and polyzoal siltstone near the base and Eurydesma calcirudite and spiriferid calcirudite higher up.

Limestone becomes thinner to the west, north and south of Darlington. The Bundella mudstone is predominant above the Darlington limestone, is poorly sorted in most places and contain pebbles and occasional large rock fragments. Polyzoa (stenoporids/paristella) are the most common fossils in the siltstone but become fewer and often absent at the top of the formation.

N.B.: Between the Golden Valley Group and the bottom of the Faulkner Group lies a unit called the Basal Conglomerates, this unit is restricted to mainly the NE part of the state and there is little to no occurrence of it within the EL.

Faulkner Group

This unit has variable thickness and lithology (0 - 40 m) and consist of sandstone, mudstone and conglomerate. The sediments are thickest in the NE of the state and exclusively fluvial but in the central and southern area, only thinner sequences exist which are often marine or marginal marine.

by usage here only

The Faulkner Group contains the 'Mersey Coal Measures' which have been mined commercially at Mt. Devonport in the NE. The non-marine units are typically well sorted, siliceous and micaceous, cross bedded/ripple marked sandstones with worm costs/plant fragments and/or coaly partings. Usually associated with well sorted siliceous micaceous siltstones.

The Faulkner Group is a thin sheet of predominantly well sorted siliceous sands covering earlier Permian highs and the earlier Permian sea floor. Generally thickness increases W, S, and E from Devonport, but local areas of greater thickness occur near Avoca, Wyld's Crag (part II of EL) and Hobart. The sequence is thin or absent south and west of Hobart.

present at Magdalena Ra.

012

Cascades Group

The Cascades Group includes the Nassau Siltstone and Berriedale Limestone - Grange Mudstone (facies variants) and in the Hobart area has the Raynor Sandstone at the base.

not as originally defined.

The Raynor Sandstone is pebbly, grey, feldspathic sandstone with thick massive beds, and its thickness is 3 metres. The Nassau Siltstone is a fossiliferous grey-black calcareous siltstone, with rare erratics but conspicuous bioturbation throughout and a maximum thickness of 30 metres. The Grange Mudstone/Berriedale Limestone, occur as facies variants over southern Tasmania (around Hobart) with the total thickness being 58 - 76 metres. The limestone underlies the mudstone and is interbedded with thin siltstone units. The limestone thins rapidly south of Hobart.

The Berriedale Limestone consists of thickly bedded calcarenites/calcilutites. The limestone beds show pinch and swell effects (ripple-making). Pebbles up to 5 cm in diameter are common and the clastic content increases upward. Montmorillonite horizons occur in the limestone which is richly fossiliferous and ranges in thickness from 0 to 76 metres.

The Grange Mudstone is a fossiliferous association of mudstone and siltstone which is often very pebbly. Bedding is not distinct and pseudo lenses produced by fenestellids and brachiopods. The siltstone is grey yellow and contains pebbles/boulders up to 30 cm across. The limestone may contain some pyrite. Thickness 0 - 90 metres.

In summary the Cascades Group represents a facies (change) from limestone and calcareous siltstone in the east of Tasmania to siltstone, calcareous siltstone and sandstones in west and north Tasmania. Fossils in the Cascades group include rare leaves (Glossopteris), protozoans (including calcitornella), sponges, rugose corals, tabulate corals (including Thamnopora and Cladochorus), polyzoans both Stenoporid and fenestellid, brachiopods (especially productids and spiriferids) free swimming, fixed and burrowing

pelecypods, gastropods, ostracodes, rare triobites, blastoids, crinoids and cidaroids. The fauna is dominated by benthonic forms.

Malbina Formation

The Malbinas consists of approximately 80 metres of alternating sandstone and siltstone in 5 members. Basal member 'A' is a coarse pebbly fossiliferous sandstone often interbedded with calcareous siltstone. Concentrations of pebbles and/or fossils occur near the base of the sandstone beds and decrease in size up the bed. The thickness is 4 - 10 metres with only a low fossil content. Fenestellids are generally common.

Members B & D are poorly sorted, unfossiliferous pebbly siltstone and are not normally separable if member C is absent.

Member C is a thin (1 - 2 metres) very pebbly sandstone.

Member E is 5 - 10 metres of fossiliferous mudstone, siltstone and intermittent sandstones (maybe calcareous), lithologically comparable to the Grange Mudstone.

Fossils contained in Member A are predominantly spiriferids with (stenoporids, fenestellids) gastropods and pelecypods. The fossils content of member E is generally abundant, complete and many occur in living positions, the fossils include spiriferids, fenestellids, pelecypods and gastropods.

Ferntree Group

At base of this group is a characteristics sandstone called the 'Risdon' sandstone and above this the group consists predominantly of an alternation of fissile/non-fissile siltstone with three thin beds of sandstone or conglomerate in many sections. Erratics occur throughout with worm tubes (bioturbation) common and fossil logs/leaves common in areas (e.g. Bothwell).

014

The Risdon Sandstone is a thin 30' (approximately 9 metres) thick formation of poorly sorted, pebbly feldspathic sandstone with rare marine fossils. Sandstones similar to this occur on at least two higher horizons in the Ferntree group in certain areas and in others only one other occurs.

The zone of maximum thickness trends south from Beaconsfield thinning to the NE and NW. The Mudstone could be estuarine or a littoral/sublittoral deposit, it is pyritic usually, especially at the top.

The Ferntree Group is 165 - 180 metres thick with variable lithology. A reliable marker horizon is a formation known as the Blackwood Conglomeration occurring approximately 30 - 40 metres below the top of the formation. This conglomerate is variable from a medium to coarse to granule sized unit with a medium grey mudstone matrix (often matrix supported) to a reasonably well sorted, very coarse unit with moderate matrix content.

Cygnet Coal Measures

The top of the Ferntree siltstone darkens upwards to a black almost pebble free mudstone with convolute lamination and a carbonaceous appearance. This is the horizon joining the Ferntree Group and Cygnet Coal Measures.

The formation is widely distributed in Tasmania but appears to be discontinuous probably due to pre-Triassic erosion (?). Predominantly the unit is a well sorted siliceous, cross-bedded, ripple marked sandstone, but feldspathic and 'fontainbleau' sandstone occur on at last one horizon (in places). The sandstones are pebbly in many places. Carbonaceous/siliceous siltstones are common and many are micaceous.

A coal seam occurs in the south at Cygnet and on Bruny Island with the best intersection being a one metre seam at Mt. Cygnet worked in the early part of the century. Where intruded, the coals may reach subanthracite grade. Plant remains are common including Glossopteris.

The typical thickness is around 50 - 70 metres in the central and south central area.

It generally consists of massive, well sorted, current bedded, poorly cemented, feldspathic arenite layers with subordinate beds of mudstone and carbonaceous mudstone and, in places, thin workable coals. It lies unconformably over the Ferntree Formation.

It typically forms low rounded cliff outcrops with low joint frequency contrasting with the blocky nature of overlying Triassic. In some areas erosion produces intricate outcrop forms including broadening upward pillars and overhangs in cavernous cliffs. Changes in degree of calcite cementation and other lithological changes partially determine outcrop formation. Concretions (cemented by calcite) up to 30 metres in diameter occurs in areas, usually though they are much smaller.

The most distinctive rock type is a medium grained quartzose sandstone with feldspathic/lithic grains and carbonaceous fragments. A characteristic mottled appearance is caused by weathering of optically continuous calcitic cement.

Conglomerate beds are strongly lenticular and have erosional bases.

3.2 Lower Triassic Ross Sandstone

The unit is relatively homogenous and consists predominantly of cross bedded quartzose sandstone with minor micaceous siltstone overlying the Cygnet Coal Measures. Glistering appearance. Composition is largely of grains of strained quartz and quartzite, feldspars and minor amounts of muscovite.

The contact between the Ross and the Cygnet is disconformable/erosional with clasts of Cygnet siltstone often found in the basal Triassic. Sandstone is cyclic with low amplitude cross beds. A typical cycle begins with massive/tabular cross beds of med-coarse sandstone and commonly lenticular mud pellet, pebble sized conglomerate.

Figure 3.2.1



5 cm

017

Above this occurs cosets of planar erosive cross beds or festoons several metres across of fine to medium grain sandstone. Overturning of cross bed is a common feature at this level - direction of overturning is down current with a fold hinge-line perpendicular to current flow (see fig 3.2.1).

A fluviatile environment with little overbank deposition though gives a low sinuosity environment. The strong dominance of cross bedded sandstone compared with lutites indicates a possible sandy braided stream.

Massive cross bedded medium to coarse grained quartzose sandstone overlies the Cygnets. The thickness is 120 - 200 metres, usually well sorted. Mudstone is subordinate and the unit contains no coal.

The basal beds are conglomerate/coarse, angular quartzose sandstone generally clay cemented. They are generally thick, but the grainsize, structures and lithology of basal beds are extremely variable.

3.3 Jurassic Dolerites

The dolerites are associated with faulting and may take the form of concordant or near concordant sill like sheets, up to 500 metres thick. The dolerites almost everywhere intrude into flat-lying Permo-Triassic sediments paralleling the bedding (generally) although steep intrusion are known (broad and narrow dykes).

Contacts are sharp - while contact metamorphism may be intensive, it does not extend far, usually only a few metres.

Being resistant, the dolerites form much of the high ground within the region and often dominate the landscape.

018

4.0 MAPPING

During the period May 15, 1983 - June 17, 1983 field mapping of various areas within EL 30/80 was undertaken to aid in defining the Permian Coal potential of the EL on a regional basis, enable a ready identification of Permian strata to be made for future drilling operations and assist in the selection of drill hole locations.

Three areas were selected for mapping (as listed below), while a fourth area (NW Bothwell) had previously been mapped by H. Seitlinger. The three areas were:

- (a) SW Bothwell - approximately 6 kilometres SW of Bothwell, centred on Horse Gully Hill.
- (b) Whitefoord - Stonehenge - approximately 20 kilometres SE of Oatlands
- (c) Pawleena - approximately 5.5 kilometres NNE of Sorell.

4.1. SW Bothwell

(see Fig. 4.1.3, Plates 4.1.4 - 4.1.5)

SW Bothwell is an area of outcrop of the Cygnet Coal Measures and the aim of the exercise in this region was to map the thickness, areal extent and occurrences of coal and carbonaceous material within the unit. This locality exposes the full sequence of Cygnet Coal Measures and partial sequences of the Ferntree Group (underlying) and the Triassic Ross Sandstone (overlying). Mapping was carried out using an airphoto base of approximately 1:20,000 scale (Lands and Survey Department).

4.1.A Ferntree Group

The Ferntree Group, exposed in this area, is an alternation of fissile and non-fissile beds of siltstone and mudstone with occasional beds of a fine to medium grained sandstone and coarse conglomerate. The unit displays abundant bioturbation and rare dropstones indicating a marine origin. The Group was found to be marine throughout the entire area.

019

Distinct jointing was displayed, the joints being vertical to sub-vertical.

Joint directions	145° - 325°
	115° - 295°

(NB a variation of up to 10° occurs in these readings).

Individual beds are of the order of one metre thick and often appear calcareous, however, they are unreactive to acid.

In the western portion of the mapping area, a unit identified as the 'Blackwood Conglomerate' outcrops along the road cut. This unit varies in lithology throughout the area from being a medium to very coarse to granule sized (quartz fragments) aggregate supported in a medium grey mudstone matrix, to a unit that is reasonably well sorted, very coarse with a moderate matrix content. The Blackwood Conglomerate is positioned approximately 40 metres stratigraphically below the top of the Ferntree Group and is a distinctive and reliable marker horizon.

To the SW of the area, the outcrop becomes relatively sparse and it appears as though the Triassic Ross Sandstone directly overlies the Ferntree Group. The Cygnet Coal Measures sandstones do not outcrop in this locality. The extensive cover of Tertiary basalt in the SW and southern portion of the area hinders recognition of field relations.

probably faulted out

4.1.B Cygnet Coal Measures

This main unit of concern was found to be almost devoid of coal except for a few small areas in outcrop. Coal and carbonaceous material attained a maximum thickness of 8-10cm and lensed rapidly to coaly stringers within a metre. Numerous, thin, coarse sandstones (granule sized) or thin conglomerate bands were present throughout the unit indicating times of high energy influxes to the system. It was thought that a pebbly horizon could be used as a stratigraphic marker within the Cygnet Coal Measures, however, due to the abundance of pebble beds and the discontinuous nature of the beds, no marker

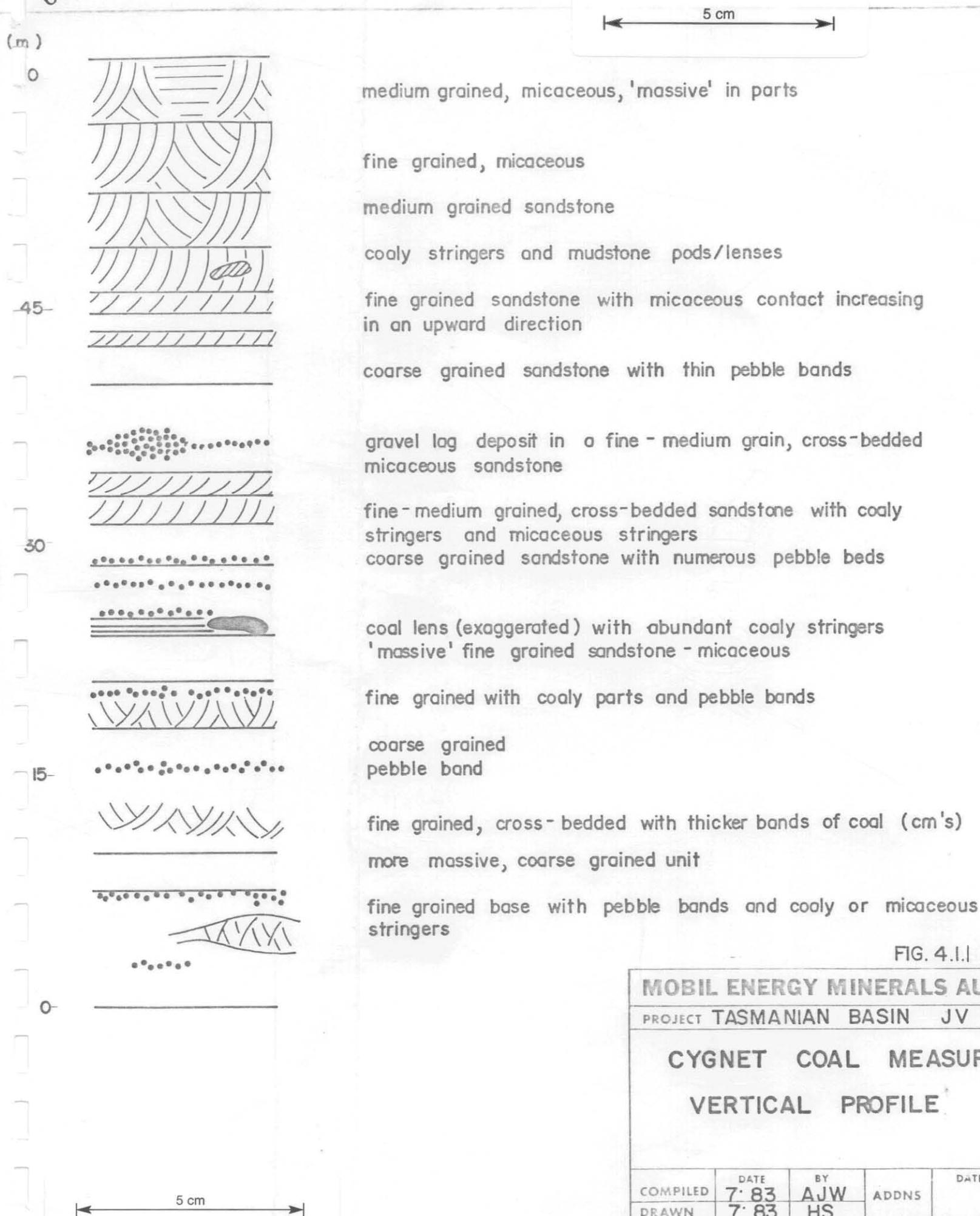


FIG. 4.1.1

MOBIL ENERGY MINERALS AUSTRALIA

PROJECT TASMANIAN BASIN JV

CYGNET COAL MEASURES

VERTICAL PROFILE

COMPILED	DATE	BY	ADDNS	DATE	BY
	7-83	AJW			
DRAWN	7-83	HS			
SCALE	approx. 1:200		DWG No	1-6033-2-47	

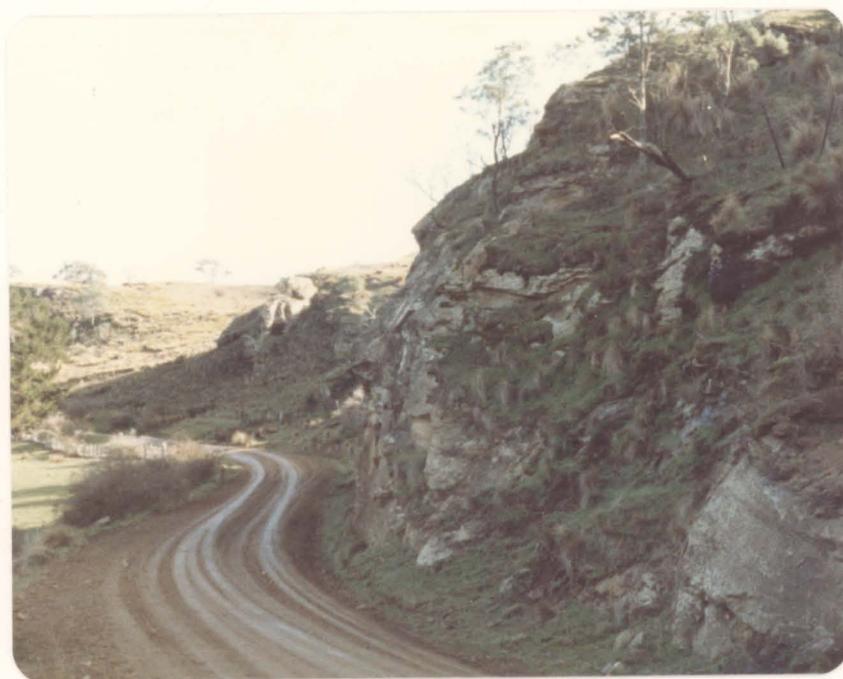


Fig. 4.1.2 Cygnet Outcrop - SW Bothwell



LEGEND

- Tb Tertiary Basalts
- Tr Triassic Ross Sandstone
- Pc Permian Cygnet Coal Measures
- Pf Permian Ferntree Group
- Pbc Permian Blackwood Conglomerate
- ?--- Inferred, concealed geological contact
- 10° Dip and Dip direction
- Concealed geological contact
- ?— Inferred concealed fault

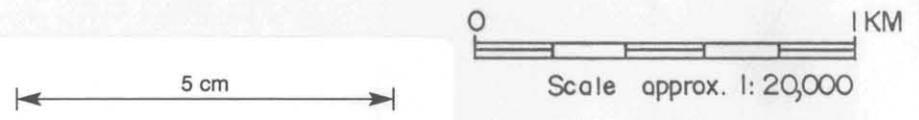
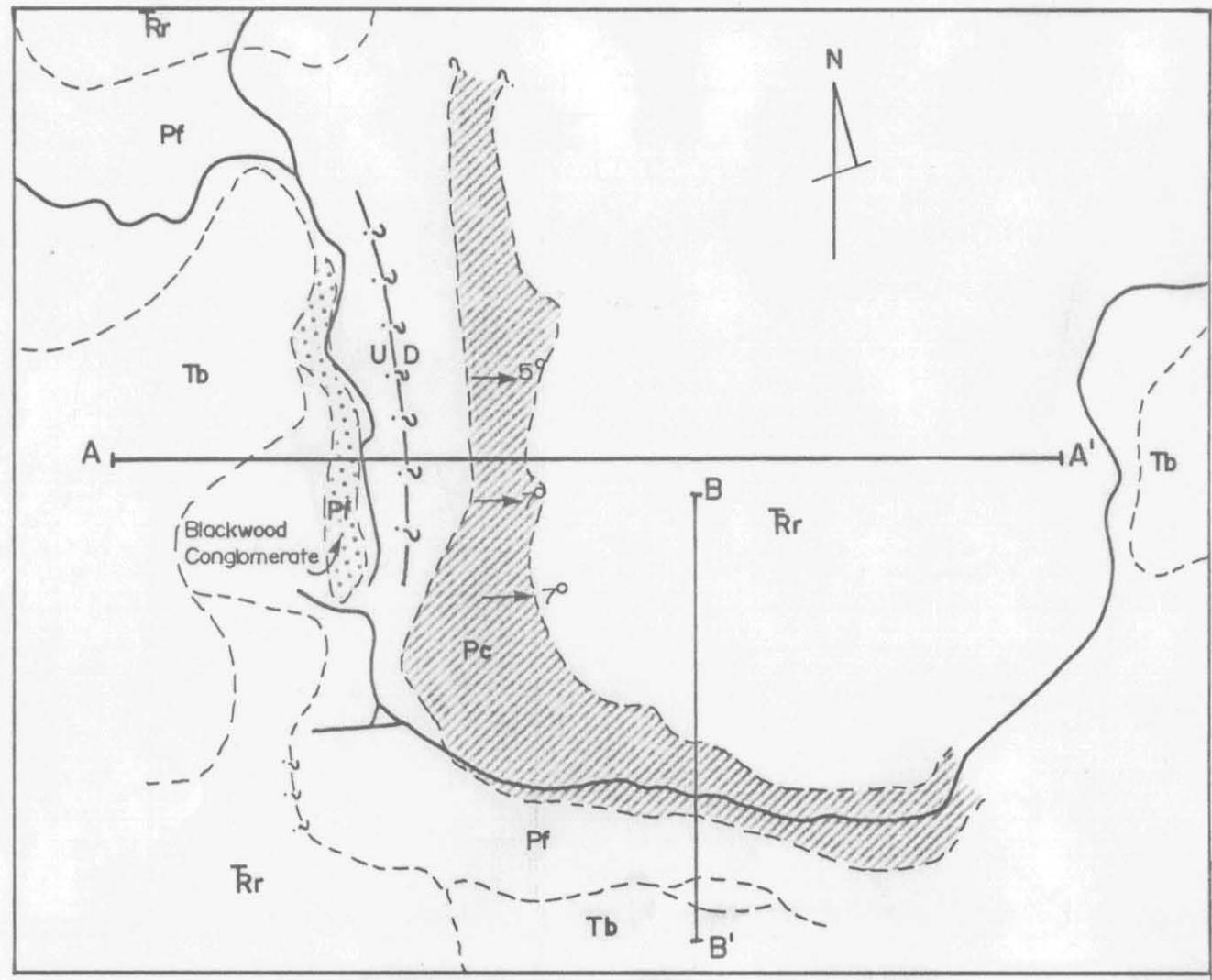


FIG. 4-13

MOBIL ENERGY MINERALS AUSTRALIA
 PROJECT EL 30/80 TASMANIAN BASIN

S-W BOTHWELL
 SOLID GEOLOGY

COMPILED	DATE	BY	ADDNS	DATE	BY
	1-84	AJW			
DRAWN	1-84	HS			
SCALE	1:20,000		DWG No	1:6033	2:78

023

horizon could be selected. No other feature was found in the unit that could be used as a marker horizon.

The unit dips from 5° - 7° to the east.

On the western side of Horse Gully Hill, a small bench in the topography of limited areal extent, marks the Permo-Triassic boundary. This bench is interpreted as an eroded shale or mudstone unit at the top of the Cygnet Coal Measures. It is not a continuous feature. Along the creek running north-south through the centre of the mapping area, approximate boundaries can be discerned in the outcrops. These boundaries indicate a thinning of the Cygnet unit to the north, to about 30 metres thickness.

The Cygnet Coal Measures reach a maximum thickness of approximately 60 metres in this region and is the only unit fully exposed within the mapped area (Figure 4.1.2). Lithologically the Cygnet Coal Measures are a fine to medium grained, cross-bedded micaceous, often pebbly sandstone with associated coal and carbonaceous lenses.

4.1.C Triassic Ross Sandstone

The Ross Sandstone, overlying the Cygnet Coal Measures, was at times difficult to distinguish from the Permian. In the eastern section of the area, outcrop was sparse, and in these areas the Triassic was mapped on its soil occurrence. (Ref. Heale). Lithologically the Ross Sandstone is medium grained, quartzose sandstone with little to no mica and no carbonaceous or fine material. In places it is strongly cross-bedded and in others appears massive. Sorting varied throughout the unit and no carbonaceous material was evident in this locality.

Overlays of airphoto interpretation show a fair correlation with the geology as mapped and outlines a fault bounded block containing the Permian outcrop of some 30 kilometres square. The field work did not corroborate the presence of a fault through the middle of the mapping area although it occurs within the same unit and could be hard to detect in outcrop.

024

4.2 WHITEFOORD-STONEHENGE (See Fig 4.2.1, Plates 4.2.2 - 4.2.5)

This area has been previously mapped and identified as an undefined Permian sequence. The aim of mapping in this area was to determine what portion of the Permian sequence outcropped and the likelihood of coal bearing horizons being proximal. The mapped area is dominated by Ferntree Group siltstone and mudstone and quartzose Ross sandstone. Dolerite occurs extensively to the North and South of the area and restricted portions also occur within the mapping locality. Mapping was hampered by sparcity of outcrop with most of the lithologies being identified through scree occurrences and boundaries marked by slope breaks. Sandstones were not abundant in outcrop but the boundaries of 'sandy' lithology were often delineated by the occurrence of changes in vegetation.

4.2.A Ferntree Group

The Ferntree Group occurs throughout the lower topographic areas and within the area boundaries is an alternation of fissile and non-fissile beds of siltstone and mudstone, often intensely bioturbated, becoming a sandy siltstone in places. It is heavily jointed, flat lying in the southern half of the area but dipping at up to 30° in the far north. Dropstones are common in the unit. A two to three metre, dark grey shale is present approximately 25-30m from the top of the unit, it contains no carbonaceous matter. The Ferntree Group is exposed in a number of quarries throughout the area and in the SW corner is found to be very hard, siliceous and fine grained due to the proximity of a dolerite intrusion. Throughout the mapped area, the Ferntree Group was found to be entirely marine.

In hard specimen, the Ferntree Group shows a variation in colour from yellowy grey to medium grey to dark grey with corresponding lithologic variations from sandy siltstone to siltstone to shale. Scale of bioturbation ranged from numerous small traces (mm's in size) to large, solitary worm burrows (cm's in diameter). Some specimens exhibit a calcareous colouration and feel, towards the top of the unit, but field tests showed no calcareous matter was present.



- Jdl Jurassic Dolorite
- Tr Triassic Ross Sandstone (includes some Rising Sandstone + Pbc)
- Pf Permian Ferntree Group + older units?
- Pbc Blackwood Conglomerate + Rising Sandstone?

- Dip and Dip direction
- Inferred, concealed fault
- Concealed geological boundary
- Inferred, concealed geological boundary

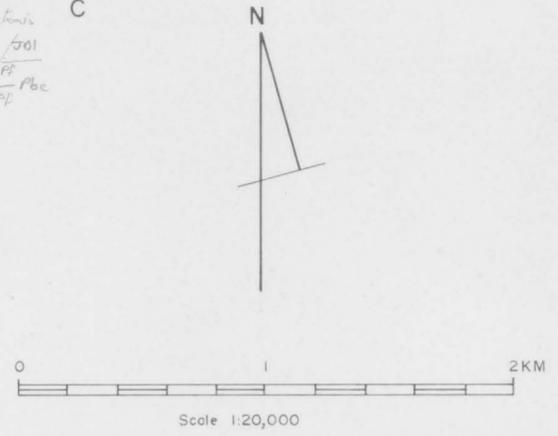


FIG. 4-2-1

MOBIL ENERGY MINERALS AUSTRALIA					
PROJECT TASMANIAN JOINT VENTURE					
WHITEFOORD - STONEHENGE					
654026					
SOLID GEOLOGY					
001					
COMPILED	DATE	BY	ADDNS	DATE	BY
DRAWN	1 '84	AW			
SCALE	1:20,000	HS	DWG No	1:6033:2:042	

025

Occasional coarse to granule sized quartz fragments were included in the specimen.

Outcrops of Blackwood Conglomerate occur in the northern half of the mapping area. This unit in this area is a very coarse to granule sized quartzose sandstone, fairly clean with little matrix. It outcrops extensively and at times is difficult to distinguish from the Triassic.

TABLE 4.2.1- JOINT MEASUREMENTS, FERNTREE GROUP,
WHITEFOORD-STONEHENGE AREA

100°	10°	355°	88°	46°
115°	7°	360°	85°	55°
113°	7°	360°	83°	36°
118°	26°	350°	80°	65°
106°	32°	351°	115°	62°
100°	30°	10°	112°	78°
114°	27°	2°	115°	82°
112°	12°	5°	118°	60°
111°	10°	358°	114°	38°
114°	16°	345°	112°	78°
109°	6°	9°	120°	326°

The Cygnet Coal Measures were not identified in outcrop within the mapped area. A possible occurrence, due to scree, of approximately 5 metres (at the maximum) can be considered, however, it is thought to be absent in this area (see figs 4.2.2 - 4.2.5) ^{+ Blackwood Congl.}

This may be so but as Risdun Sandstone has been confused with Ross Sandstone little confidence is placed on the apparent absence of the Cygnet Coal Measure

4.2.B Triassic Ross Sandstone

Along the southern boundary of the mapping area, only a relatively thin Triassic unit exists. The Triassic is a coarse-grained to medium-grained, angular to sub-angular, moderately well sorted, well cemented, quartzose sandstone with little to no matrix, low visible porosity and rare mica flakes. It is coloured very light grey to grey and dips about 10-15° under the dolerite in the southern part of the

mapped area. In this locality outcrop also exhibits cross-bedding. It contains no coal or carbonaceous material throughout the locality.

4.3 NW BOTHWELL (See Fig 4.3.1, Plates 4.3.2 - 4.3.3)

In the area NW of Bothwell, mapped in January and February, 1983, the dominant lithology was determined to be the Ferntree Group. A field check of the area showed the possible existence of a thin wedge or sliver, possible fault controlled of Middle Permian Malbina Formation in the eastern section of the area. If faulting occurs it shows no surface expression, nor is it evident on air photos. Fossils from the Malbina Formation rocks were positively identified by M. Clarke of the Tasmanian Department of Mines.

Sandstones noted previously as being Triassic in the eastern area, have now been identified as Cygnet Coal Measure sandstone although lacking in mica the sandstones are dirty n show a characteristic 'mottled' appearance. Outcrop is small and widely distributed, not lending to easy or ready identification.

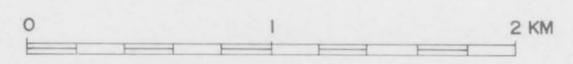
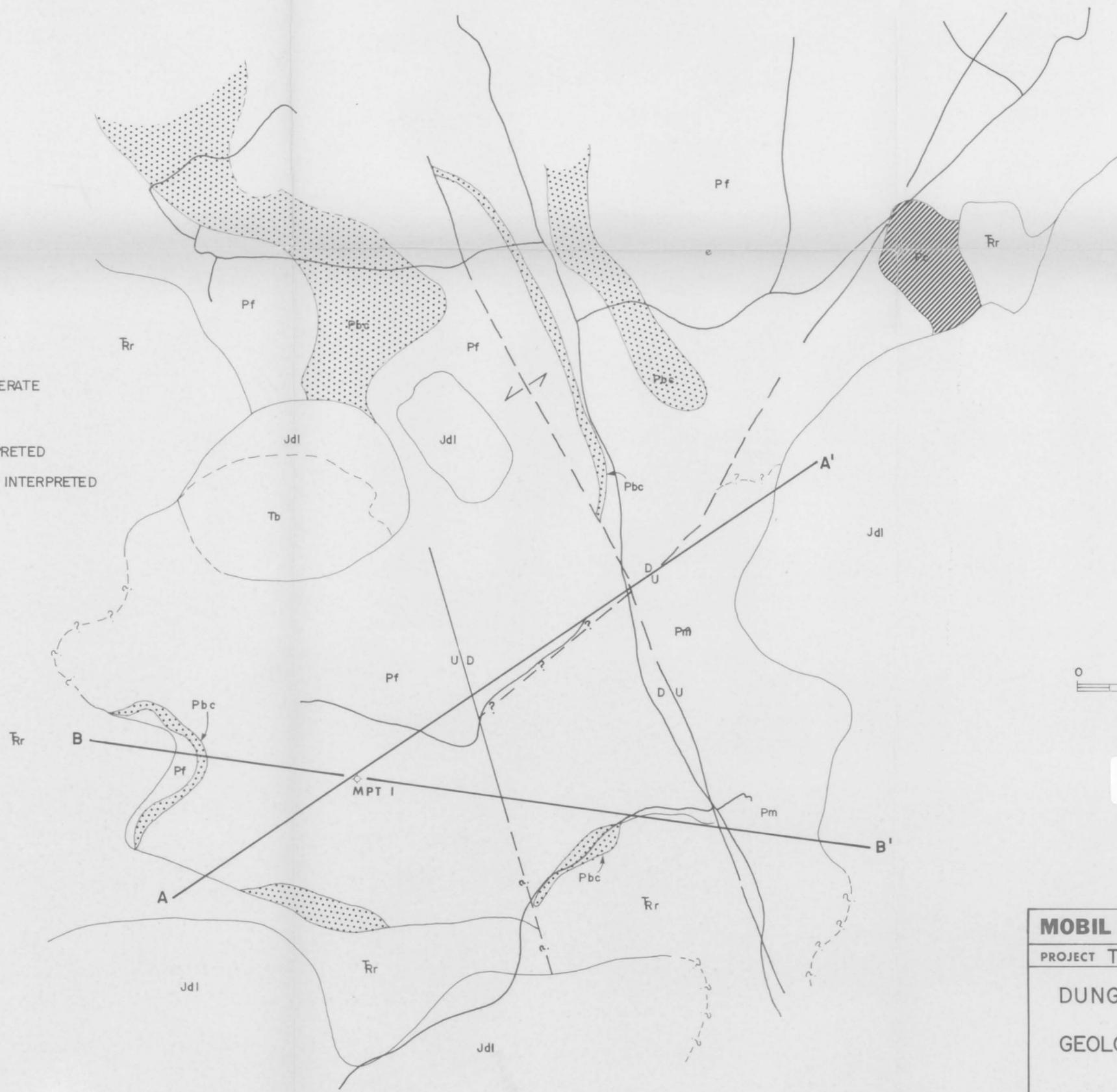
In the western area, minor scree occurrences of fissile semi-micaceous shales identified as belonging to the Cygnet Coal Measures were found, they could not be traced back to source area. Field checking showed that within the area, there was only the possibility of a thin Cygnet section (i.e. 10 metres thick).

4.3.A Fossil Descriptions NW Bothwell

Fossil descriptions from Malbina Formation mudstones, NW Bothwell. Identification carried out by M. Clarke of the Tasmanian Mines Department:

"The fauna includes the strophalosiid Wyndhamia dalwoodensis Booker, the spiriferids Trigonotreta cf. wairakiensis (Waterhouse) and Sulciplica sp., the pelecypod Streblopteria sp., the gastropod Peruvispira sp., together with ostracodes and fenestellid and stenoporid bryozoans. Although limited, the fauna is a typical Mid Lymingtonian assemblage (Zone 7 or 8) characteristic of the main part

- Tb TERTIARY BASALT
- Jdl JURASSIC DOLERITE
- Tr TRIASSIC ROSS SANDSTONE
- PERMIAN CYGNET COAL MEASURES
- Pf PERMIAN FERNTREE GROUP
- PERMIAN BLACKWOOD CONGLOMERATE
- Pm PERMIAN MALBINA FORMATION
- U FAULT, CONCEALED, PHOTO INTERPRETED
- U FAULT, CONCEALED, GEOPHYSICAL INTERPRETED
- ◇ MEMA DRILL HOLE



Scale approx. 1:20,000



4.3.1.

MOBIL ENERGY MINERALS AUSTRALIA					
PROJECT TASMANIA BASIN EL 30/80					
DUNGROVE				654029	
GEOLOGY					
002					
COMPILED	2 '84	DATE	AJW	BY	
DRAWN	2 '84	DATE	HS	BY	
SCALE	1:20,000	DWG No	1.6033.2.87		

027

of the Poatina Group of central Tasmania. The horizon indicated is at least 200 metres stratigraphically below the top of the Lower Parmeener Super-Group."

4.4 PAWLEENA

This area was selected as a site to be field checked to confirm the previous mapping carried out by Blake in 1957. The mapping was found to be correct and confirmed the absence of the Cygnet Coal Measures in the area.

The lower Permian Grange Mudstone (Cascades Group) is faulted against the upper Permian Ferntree Group in this area and the Grange Mudstone is found to be very fossiliferous along its entire outcrop. No exact fossil identification has been undertaken, but on visual inspection, Mike Clarke of the Tasmanian Department of Mines, confirmed they occurred in the lower Permian.

The Ferntree Group also outcrops adjacent to the Triassic Ross Sandstone and no evidence of faulted contact is apparent between these two units. The boundary between the Ferntree Group and the Ross Sandstone appears to be erosional as no outcrop of Cygnet Coal Measures is evident. No coal or carbonaceous material was found within this area.

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5.0 MAGNETIC AND DRILLING

In August 1983, prior to the commencement of drilling and as an aid in site selection, a ground magnetics survey was conducted over a number of previously determined localities. The aim was to determine whether any dolerite intrusions or deep seated faults would interfere with the drilling and if so where alternative sites could be located to avoid these features.

Locations covered by ground magnetics were 'Dungrove', NW of Bothwell, 'Meadsfield', SW of Bothwell, Dromedary, Lachlan and Elderslie. Due to access difficulties experienced during the drilling programme, the Dromedary and Elderslie sites were abandoned and alternative sites selected. Only Pelham, the Elderslie alternative, was covered by ground magnetics prior to drilling.

Lines were positioned using compass and chain and airphoto location. Readings were taken at 25 metres intervals along the lines using a Geometrics G856 magnetometer. The results were downloaded and partially processed using an Apple II computer.

The drilling programme commenced on October 3, 1983 and was completed on November 20, 1983 totalling 987.75 metres in five holes, 814.19 metres of which was cored. The drilling was carried out by Action Core Drillers of South Australia using a free standing Longyear 44 drilling rig. Three of the five holes were targeted on the Cygnet Coal Measures with the remaining two hole targeted on the lower Permian Faulkner Group containing the Mersey Coal Measures equivalents.

5.1 Ground Magnetics - Results

(I) DUNGROVE (See Plates 5.1.1 - 5.1.5)

This area was proposed as the site for two drill holes to depths of 100 metres and 350 metres, based on previous 1:20,000 scale mapping. The shallow hole was to be sited to intersect the Cygnet Coal Measures equivalents while the deep hole was to intersect the Faulkner Group. However, during the drilling

029

programme additional field checking led to the abandonment of the 100 metre hole.

A three kilometre base line bearing approximately NS and four EW lines extending 600 metres either side of the base line, were laid out using a compass and chain (see Fig. 5.1.1).

Interpretation of the data was complicated by the presence of basalts as flows and a plug which acted to distort depth to magnetic basement calculations. The major feature in the area is a fault trending slightly west of north across the eastern section of the grid area (see Fig. 5.1.1). The fault is also clearly visible on the BMR 1:250,000 Bouguer gravity map, striking approximately at 330°. It is up thrown on the eastern side, bringing dolerite close the surface. Dolerite also occurs in the southern area of the map and is indicated by a 400 gamma increase in the magnetics. The basalt plus is also located to the south and gives a strong magnetic effect, it is supported by a deep seated feeder.

Dolerite dykes occur at 1250S on the baseline, this is indicated on both the baseline and 1250 S profiles. These dykes come to within 30 metres of the surface. The remainder of the area shows a generally flat magnetic response with a low gradient. This indicates that the magnetic basement is likely to be deeper than 350 metres and should not interfere with drilling.

(II) MEADSFIELD, Horse Gully Hill (See Plates 5.1.6 - 5.1.7)

This is the area for a proposed 100 metre hole to intersect the Cygnet Coal Measures. Two lines bearing approximately EW were laid out across the top of the southern extension of Horse Gully Hill, (see Fig. 5.1.6) using a compass and chain.

The lines were 200 metres apart and joined at their mid point by a tie line. Only on the eastern 250 metres of these lines is there any change in magnetic response. This is due to a change in the rocks at depth. Given the limitations of the survey, it

030

is probably a dolerite sill lying greater than 200 metres deep. In order to maximise the amount of Permian sediments intersected, the hole was positioned as shown on Fig. 5.1.6, away from the eastern end of the lines.

(III) LACHLAN (See Plates 5.1.8 - 5.1.9)

Lachlan is the site where a 100 - 150 metres deep hole is to be drilled to test the Faulkner Group. Two lines, bearing approximately EW were located using a compass and chain in the valley between Upper Swamp Road and Millers Road.

The southern line is 800 metres long, the northern line is 900 metres long and they are separated at the mid point by a 200 metre tie line. Shallow dolerite occurs in the northern line between 225E and 550E. It is at a depth of less than 75 metres. On the southern line this dolerite occurs between 250E and 750E at a depth of approximately 120 metres.

The hole position was designated as the 800E mark on the northern line where depth to magnetic basement is estimated to be greater than 300 metres.

(IV) PELHAM (See Plates 5.1.10 - 5.1.13)

This site was selected as an alternative to Elderslie and ground magnetics were carried out along an EW and a NS line crossing at a common centre point. The survey located only one feature shallow enough to be likely to effect the planned drilling programme. This was the 100 gamma magnetic low on line EW(1). The low is associated with a displacement in the regional magnetic curve and indicates a fault. Depth and dip estimates cannot be accurately estimated due to the effects of cultural features but the fault appears to occur within 50 metres of the surface. The regional trend decreases to the SW and is produced by changes in the basement at depths greater than 500 metres.

5.2 DRILLING RESULTS

TABLE 5.2.1

DRILLING INFORMATION

<u>Hole</u>	<u>Easting</u>	<u>Northing</u>	<u>Total Depth (m)</u>	<u>Metres Cored</u>
MPT 1	494550	5315000	344.80 m	245.80
MPT 2	502650	5258100	122.65 m	104.65
MPT 3	507280	5266450	169.80 m	160.10
MPT 4	494150	5205100	159.50 m	119.14
MPT 5	500000	5286300	<u>191.00 m</u>	<u>184.50</u>
			987.75 m	814.19 m

Hole MPT 1 - Dungrove (Figure 5.2.3)

MPT 1 was commenced on October 3, 1983 and completed on October 13, 1983 at a final depth of 344.80 metres, in dolerite. This hole was sited to test the Faulkner Group (containing the Mersey Coal Measure equivalents)) and take a stratigraphic section through the Upper Marine interval of the Permian.

The section through the marines was taken to confirm that there was no freshwater intervals of any kind at all within the unit. The Faulkner Group was penetrated at approximately 282 metres and was approximately 33 metres thick. The interval showed no evidence of extensive freshwater sequences and was often bioturbated or fossiliferous. The Liffey Sandstone (the Mersey Coal Measures equivalent) was identified as being non-marine but was only approximately 2 metres thick (no coal or carbonaceous material was identified within this hole). The hole was stopped after drilling 7 metres of dolerite.

The proposed 100 metre hole to test the Cygnet Coal Measures equivalents was abandoned after subsequent field checking indicated that what was previously mapped as Triassic Ross Sandstone, was in fact lower Permian sandstone.

The Faulkner Group in this region was not considered prospective enough to encourage further intersections.

Figure 5.2.1, 5.2.2 Drilling Rig at MPT 1, MPT 3



5 cm

034

Hole MPT 2 - Lachlan (Fig. 5.2.4)

This hole was drilled to intersect the Faulkner Group in the southern half of the lease area to test the Mersey Coal Measures equivalents. Although the sequence showed a slight increase in the thickness of the Faulkner Group, most of this sequence was bioturbated with only a very thin (less than 2 metre thick) freshwater sandstone sequence. No coal or carbonaceous material was present.

The Faulkner Group in this region was not considered prospective enough to warrant further investigation. The hole was terminated at 122.65 metres after penetrating 75 metres of lower marine sequence which showed no non-marine or marginal marine intervals.

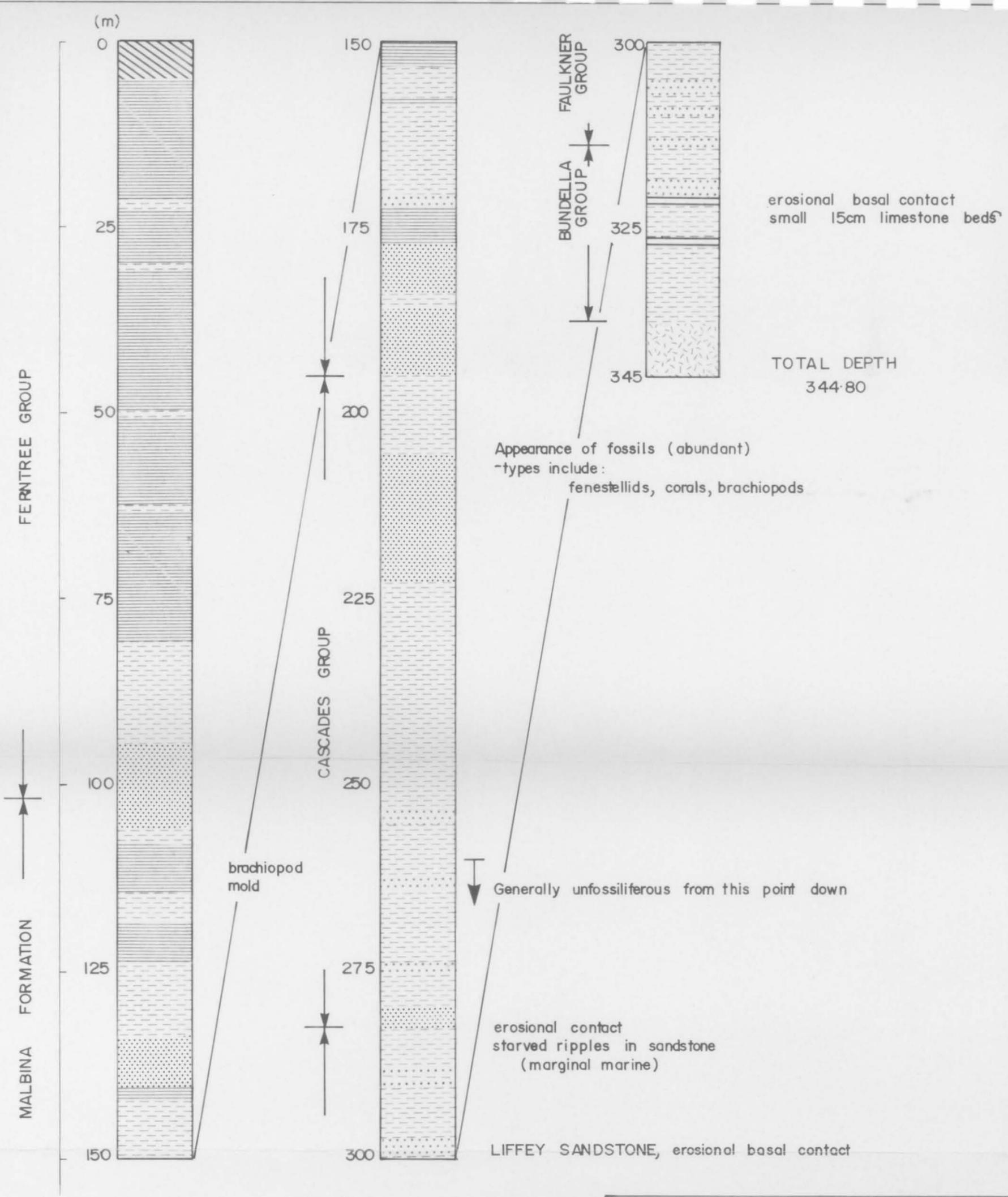
Hole MPT 3 - Dromedary (Fig. 5.2.5)

The Dromedary site was selected as a site for a 150 metre hole to test the Cygnet Coal Measures equivalents. The Cygnet equivalent horizon was penetrated at 77 metres and was existed at approximately 155 metres making the unit 78 metres thick. The unit was found to be completely non-marine throughout with minor occurrences of coal possibly resulting from branches or twigs deposited within the channel system. The thickest coal intersection was approximately 5 cm thick and irregularly shaped. Numerous fining upwards cycles could be discerned in the unit but there was a lack of overbank deposits present (i.e. a complete lack of muds and silt sized sediment).

Occasional zones of reworking were present in the sequence indicating a fairly high energy environment, not conducive to coal formation. Occasional green coloured mudstones were noticed in the hole, but formation due to marine or weathering influences has not yet been determined. The hole finished at 169.80 metres after entering the marine Ferntree Formation.

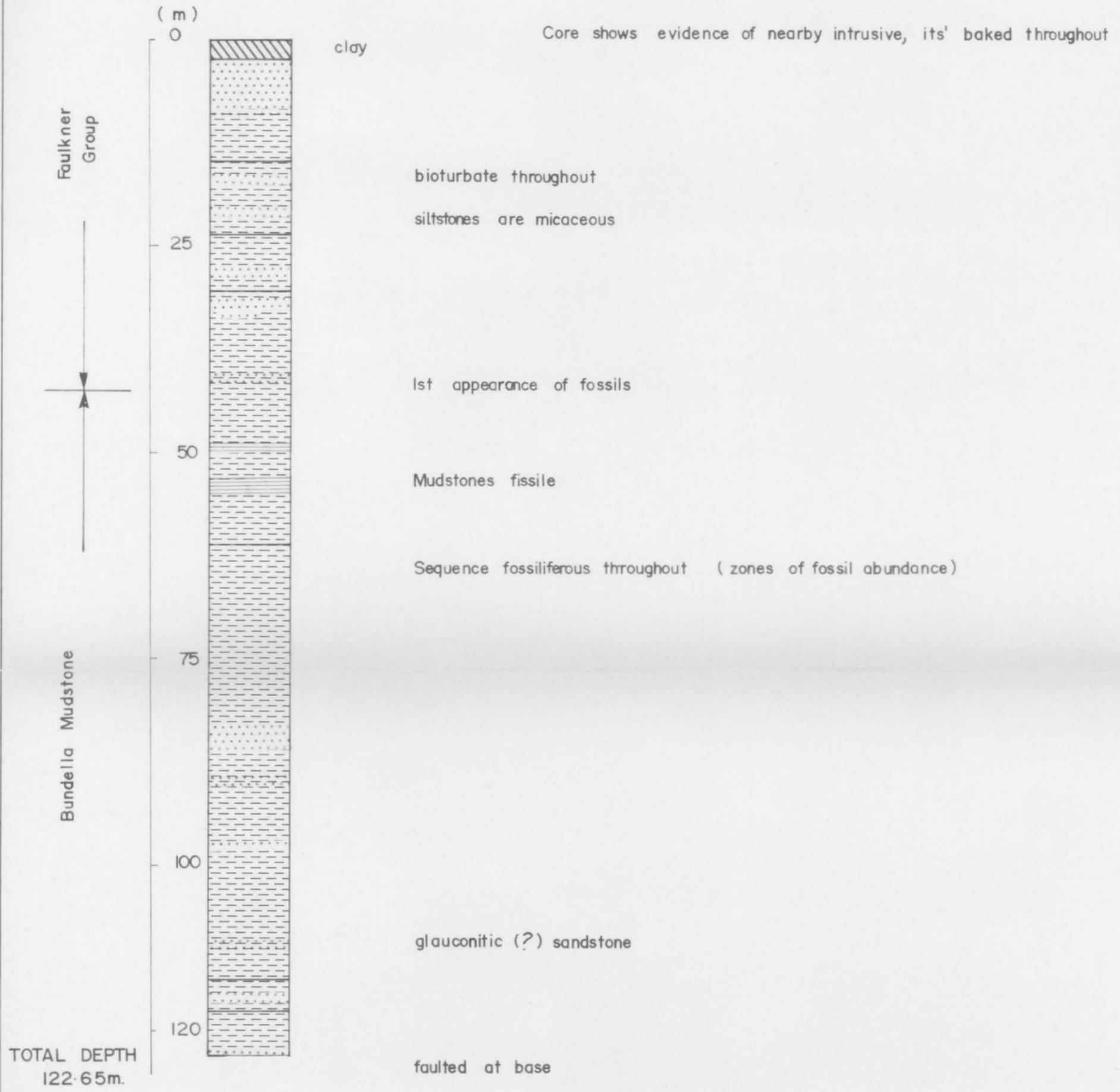
MPT 4 - Meadsfield (Fig. 5.2.6)

The Meadsfield site is a very similar to the Dromedary site in terms of depth target for the Cygnet Coal Measures equivalents and overall



TOPOGRAPHIC SHEET 1:100,000
SHANNON

MOBIL ENERGY MINERALS AUSTRALIA					
PROJECT TASMANIAN BASIN EL 30/80					
MPT 1 DUNGROVE					
5315000 N, 494550E					
654037 Fig. 5.2.3					
COMPILED	DATE	BY	ADDNS	DATE	BY
DRAWN	1.84	AJW			
SCALE	1:500	HS	DWG No	1.6033.2.86	

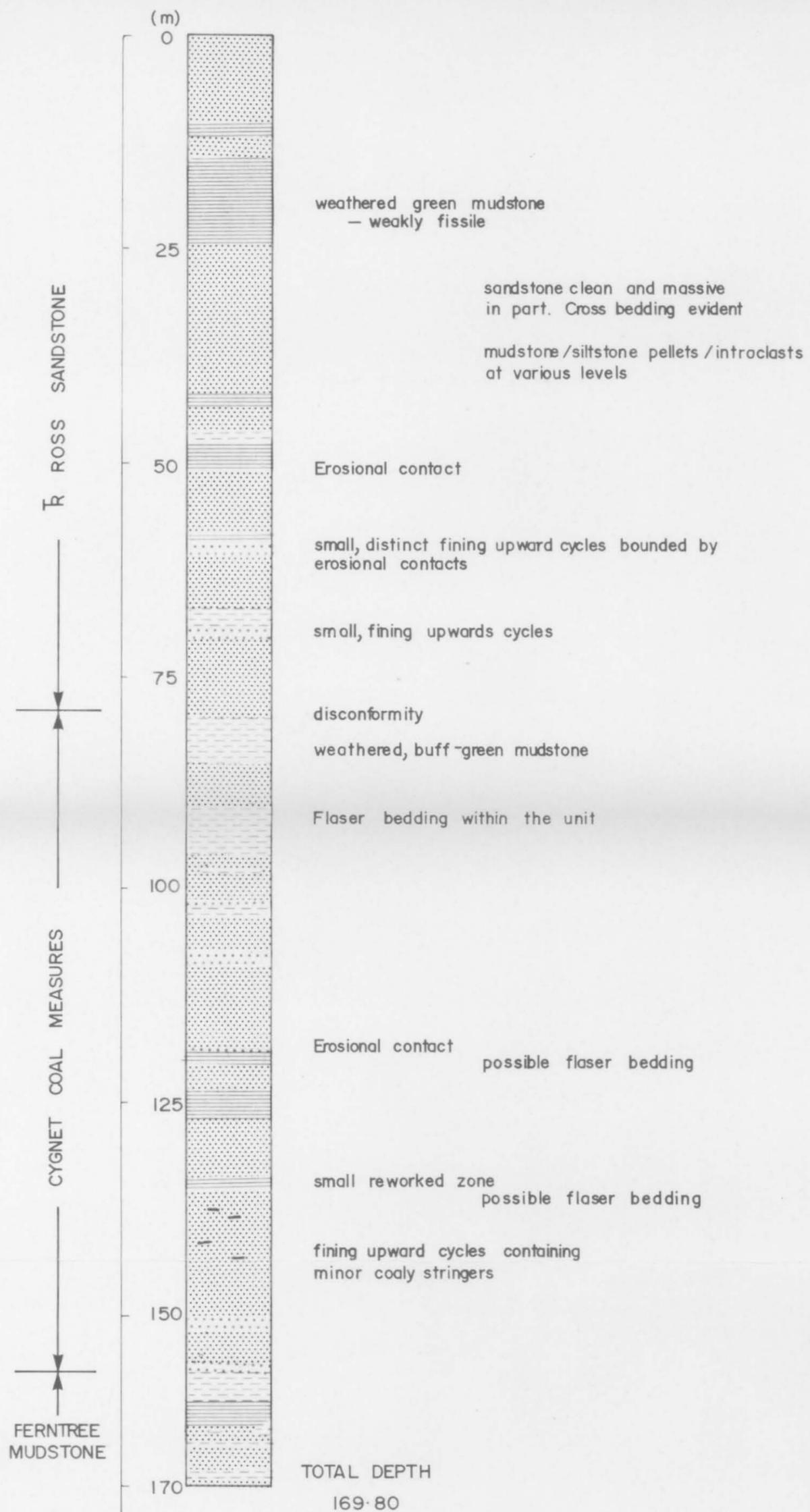


TOPOGRAPHIC SHEET 1:100,000
DERWENT



MOBIL ENERGY MINERALS AUSTRALIA					
PROJECT TASMANIAN BASIN EL 30/80					
MPT 2		LACHLAN		654038	
5258,100 N, 502650 E.					
FIG 5.2.4					
COMPILED	DATE	BY	ADDNS	DATE	BY
	1.84	AJW			
DRAWN	1.84	HS			
SCALE	1:500		DWG No	1.6033.2.82	

036A



036 B

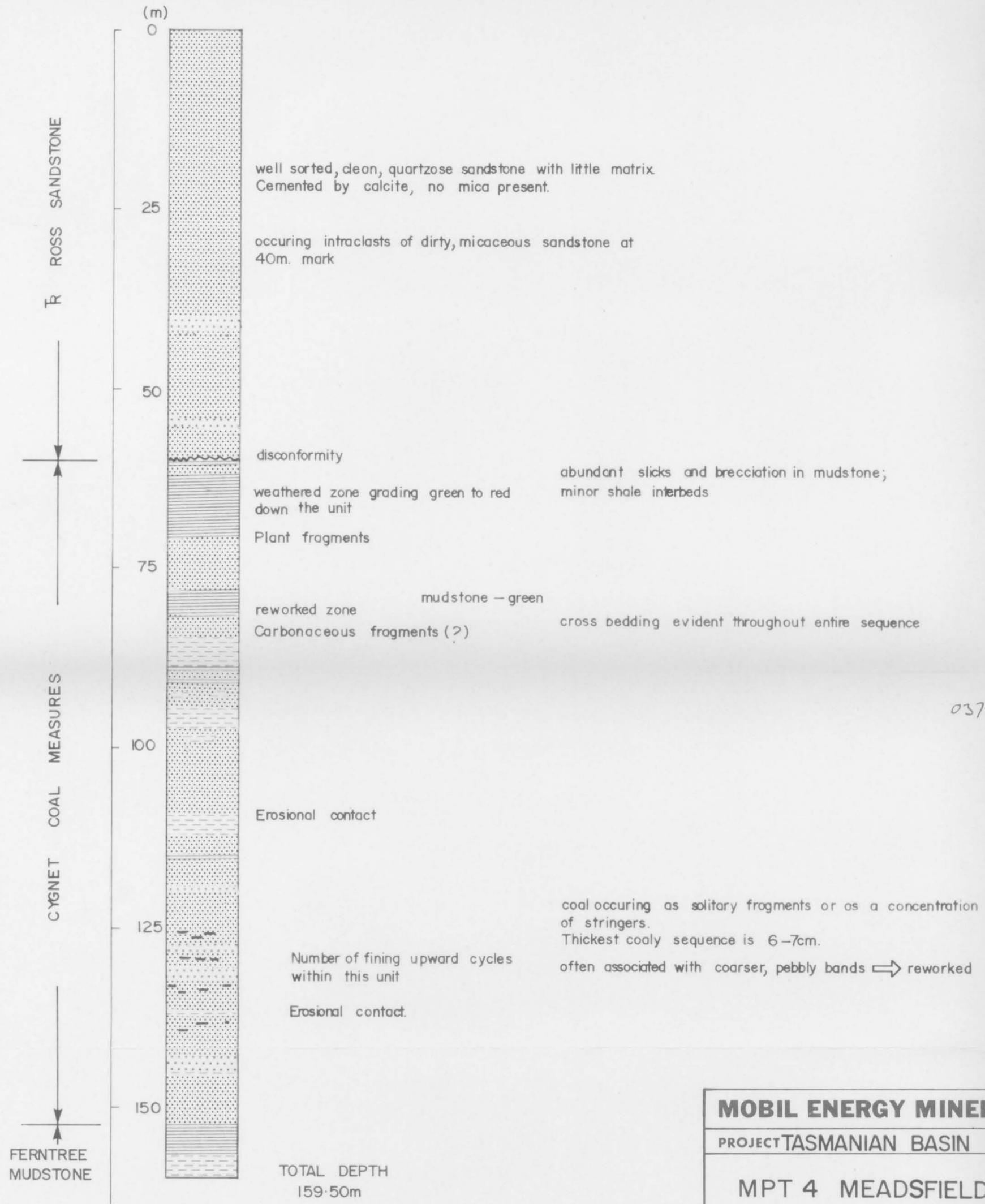
036 C

MOBIL ENERGY MINERALS AUSTRALIA					
PROJECT TASMANIAN BASIN EL 30/80					
MPT 3 DROMEDARY					
507280 E, 5266450 N					
654039					
Fig. 5.2.5					
COMPILED	DATE	BY	ADDNS	DATE	BY
	1.84	AJW			
DRAWN	1.84	HS			
SCALE	1:500		DWG No	1.6033.2.85	

TOPOGRAPHIC SHEET 1:100,000
 DERWENT



037
A



037B

TOPOGRAPHIC SHEET 1:100,000
SHANNON



MOBIL ENERGY MINERALS AUSTRALIA					
PROJECT TASMANIAN BASIN EL 30/80					
MPT 4 MEADSFIELD					
5205100N, 494150E					
FIG. 5.2.6				654040	
COMPILED	DATE	BY	ADDNS	DATE	BY
	1.84	AJW			
DRAWN	1.84	HS			
SCALE	1:500		DWG No	1.6033.2.84	

038

results. The thickness of the Cygnet equivalents was measured as approximately 90 metres with a number of fining upwards cycles and reworked zones. The thickest coal intersection was 6 - 7 cm and was probably derived from a captured branch or sapling in the main river channel.

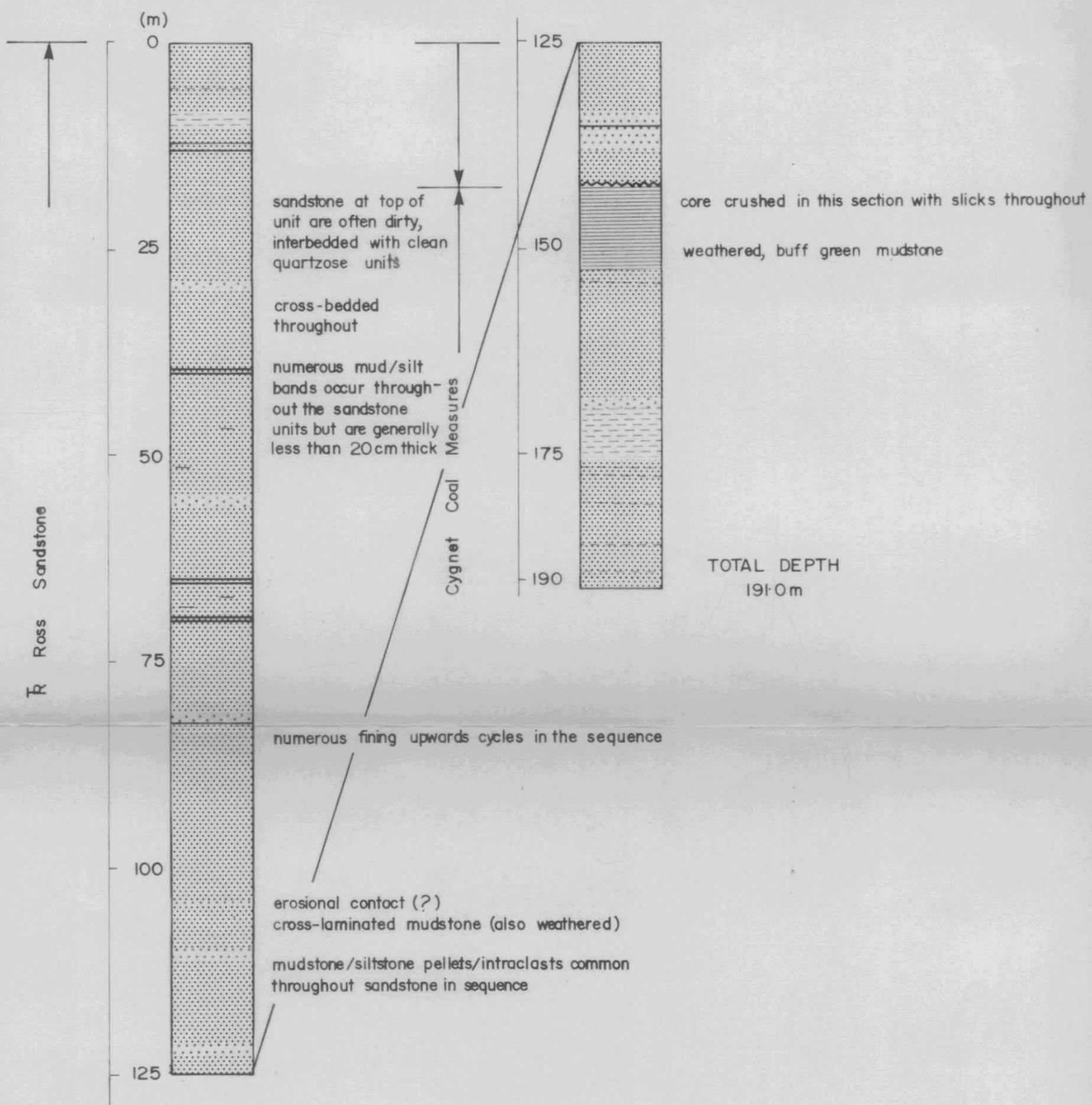
The hole was terminated at 159.50 m after entering the Ferntree Formation.

MPT 5 - Pelham (Fig. 5.2.7)

This site was picked as an alternative to Elderslie because of the access problems associated with the latter. The hole reached a depth of 191.00 metres when drilling difficulties occurred due to a fault and the hole had to be abandoned.

Only approximately 50 metres of Cygnet Coal Measures equivalents were intersected but in that interval, no coal or carbonaceous material of any kind was found. The buff green coloured sandstone found in the Cygnet intersections of Dromedary and Meadsfield was also discerned in the Pelham hole.

In conclusion, the five holes drilled in EL 30/80 by MEMA intersected no coal or carbonaceous material of any significance. The Mersey Coal Measures equivalents of the Faulkner Group was considered to be exhibiting a strong marine influence and non prospective through the licence. The Cygnet Coal Measures equivalents, although showing significant thicknesses, failed to indicate that economic sequences of coal exist in this horizon within the Exploration Licence.



TOPOGRAPHIC SHEET 1:100,000
DERWENT

MOBIL ENERGY MINERALS AUSTRALIA					
PROJECT TASMANIAN BASIN EL 30/80					
MPT 5 PELHAM			654042		
500000E, 5286300N					
FIG. 5.2.7					
COMPILED	DATE	BY	ADDNS	DATE	BY
DRAWN	1·84	AJW			
SCALE	1:500	HS	DWG No	1·6033·2·83	

6.0 DEPOSITIONAL ENVIRONMENT STUDY

This study was undertaken over ten days from the 6th to 16th December. The specific objectives of the study were as follows:

1. Re-logging of five Mobil/BHP drill holes and relevant Mines Department drill holes with specific emphasis on non-marine coal measure units. Purpose of this logging is to identify sedimentary environments with a view to coal formation.
2. To examine field outcrops and using field relationships to generate a sedimentary environment framework that incorporates sub-surface information gained from the drilling above. This work is primarily aimed at examining likely coal formation environments.
3. From the above work, to generate a framework that can be used to develop a sedimentary environment map for the Joint Venture area.
4. To carry out field inspection of the northwest area and incorporate into the framework mentioned above.
5. Ultimate aim of points 1 - 4 is to provide drill hole targets for coal exploration. Fundamental to this is the possible location of coal swamp facies as a result of above work.

For details of the Permian stratigraphy of Tasmania and the type lithologies of the Cygnet and Mersey Coal measures sequences, (see Section 2.0).

6.1 DEPOSITIONAL ENVIRONMENT: CYGNET COAL MEASURES

The application of genetic stratigraphy and facies concepts to coal exploration, evaluation, and development is gaining acceptance as a tool which can be used to predict the relationships of seam thickness, geometry and continuity of depositional environment. Facies associations usually characterise specific depositional systems which

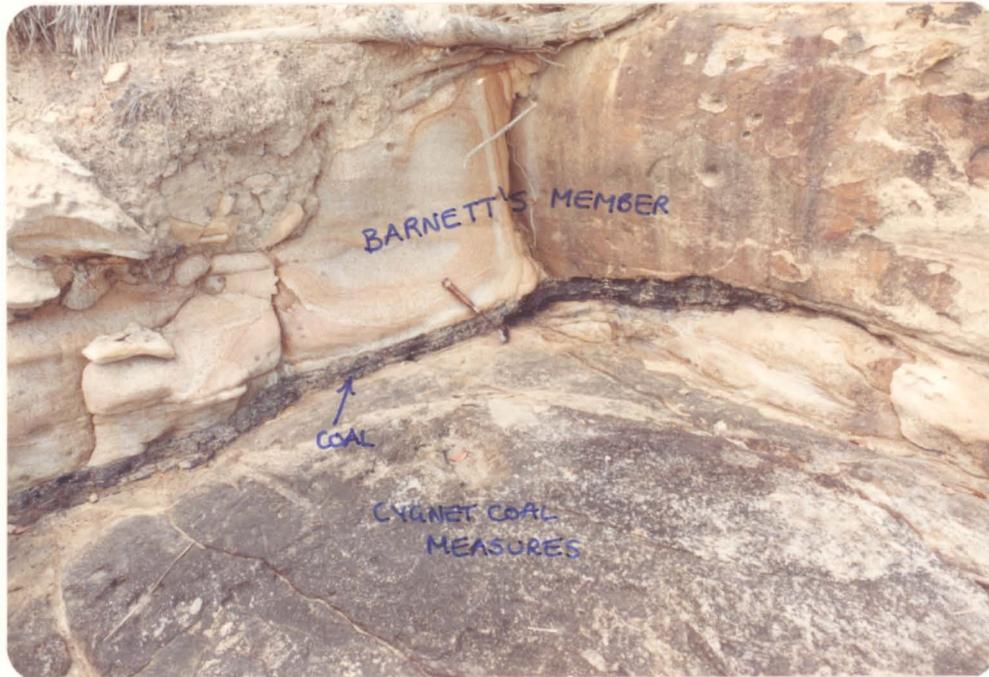


Fig. 6.1.1. Type Section - Cygnet Coal Measures

5 cm

042

in terms reflect the palaeoenvironment of the time of sedimentation and coal accumulation.

Cant (1982) has provided an excellent introduction to the concept of fluvial facies models (summaries of sedimentary environments and their deposits) based on sediment composition, sedimentary structures, and grain size trends.

The sediments and sedimentary structures of the late Permian Cygnet Coal Measures indicate deposition in a multi-channel low-sinuosity (braided) alluvial channel system. The occurrence of stacked planar cross beds sets is diagnostic of braided river deposits.

Miall (1977, 1978) and Rust (1978) have devised a letter code for the sedimentary facies deposited within braided river systems (see Table 6.1). This code has been used in the logging of the core from the drill holes. Examples of these codes are shown in Appendix 2.

The Cygnet Coal measures were examined in six drill hole, five from within EL 30/80, namely MPT 3 Dromedary, MPT 4 Meadsfield, MPT 5 Pelham, TDM Bothwell East and TDM Bothwell West, in addition TDM Mt Cygnet was examined and a detailed inspection made of the coal measure exposures at Adventure Bay. Graphic logs of all the holes are produced herein (see Figs 6.1.2 - 6.1.8).

Depositional Model

The depositional model which best explains the distribution and composition of the Cygnet Coal Measures is the low sinuosity (braided) sandy river system of the South Saskatchewan type (Cant and Walker 1978; Miall, 1978) (see Fig 6.1.9).

This figure demonstrates the 3-D relationship of the major morphological elements, associated bedforms and stratification.

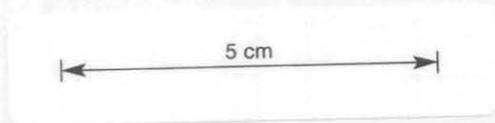
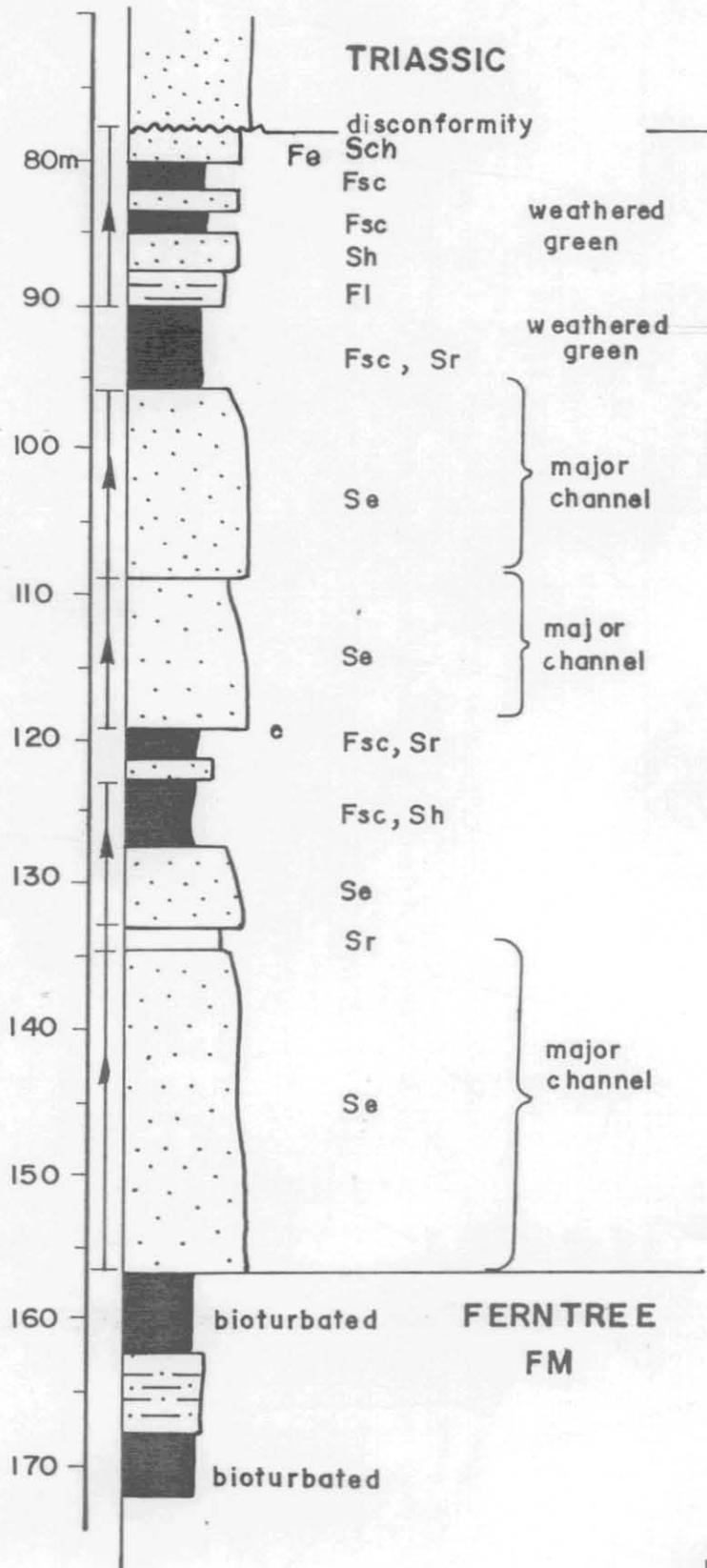
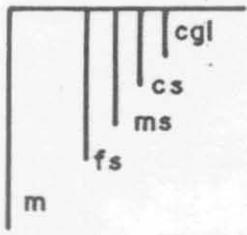
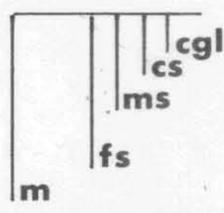
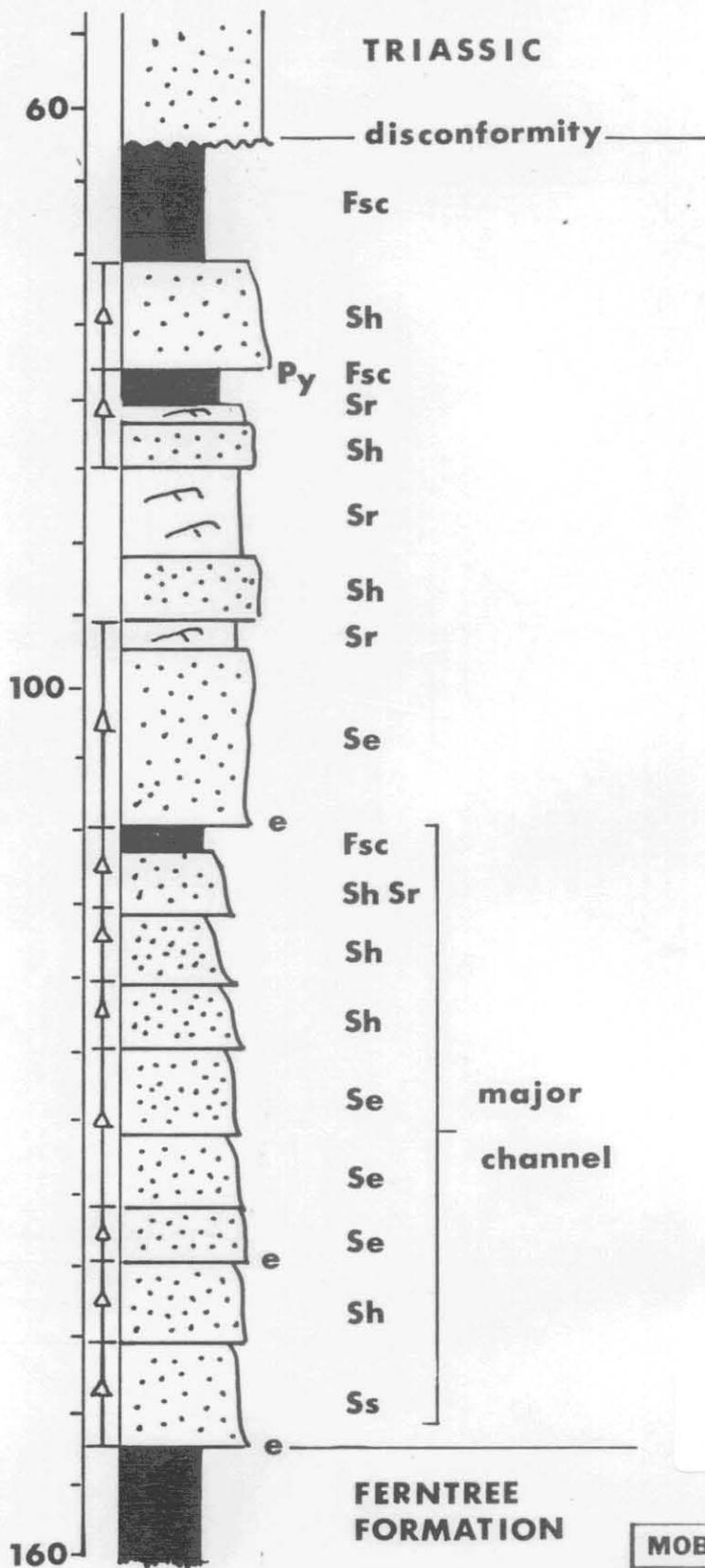


FIG 6-1-2



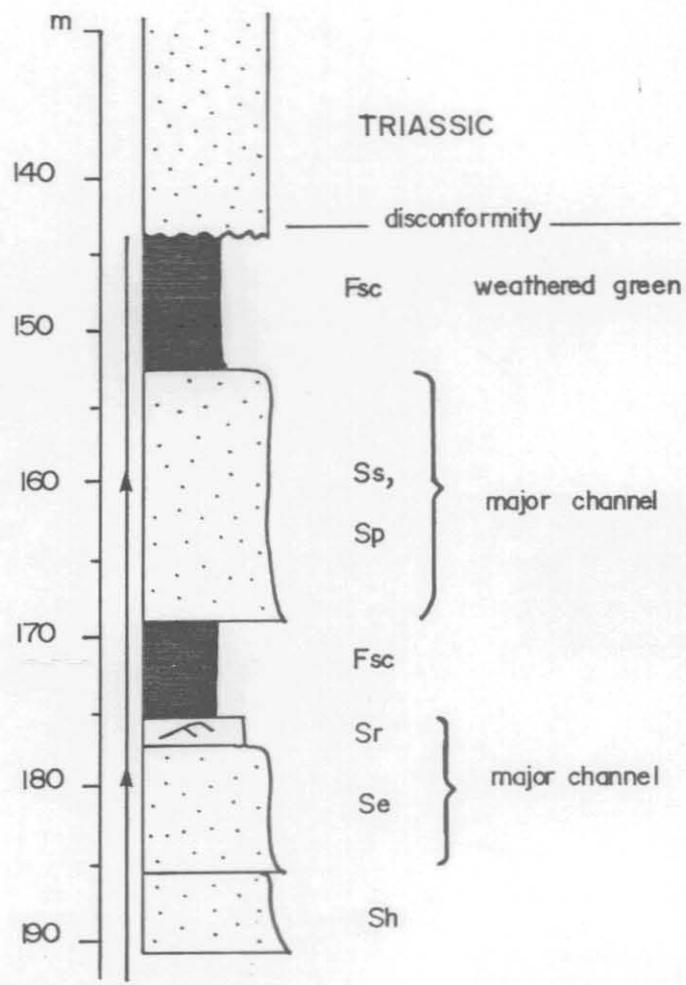
MOBIL ENERGY MINERALS AUSTRALIA					
PROJECT EL 30/80 TASMANIA BASIN					
MPT # 3 DROMEDARY					
COMPILED	DATE	BY	ADDNS	DATE	BY
	3-84	A.W.			
DRAWN	DATE	BY			
	3-84	A.H.			
SCALE	AS SHOWN		DWG No.	1-6033-2-96	



5 cm

Fig. 6.1.3.

MOBIL ENERGY MINERALS AUSTRALIA					
PROJECT EL 30/80 TASMANIA BASIN					
GRAPHIC LOG MPT 4					
'MEADSFIELD'					
COMPILED	DATE	BY	ADDNS	DATE	BY
DRAWN					
SCALE			DWG No		



TOTAL DEPTH 191m

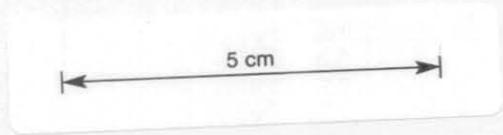
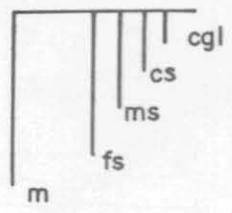


FIG. 6-1-4

MOBIL ENERGY MINERALS AUSTRALIA					
PROJECT TASMANIA BASIN JV					
GRAPHIC LOG					
MPT 5 PELHAM					
COMPILED	DATE	BY	ADDNS	DATE	BY
DRAWN	3 · 84	AJW			
SCALE	as shown		DWG No	1-6033-2-93	

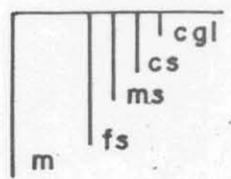
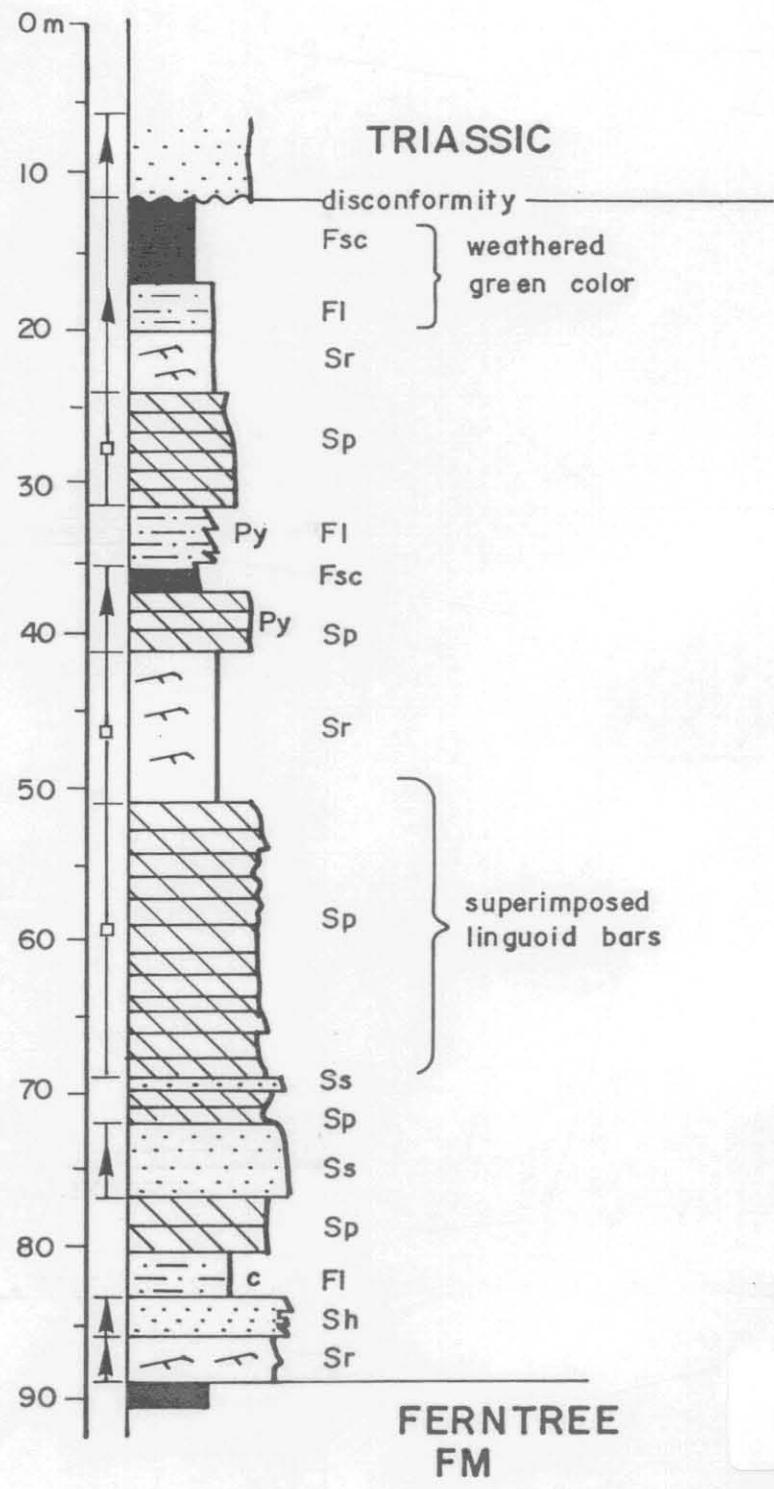


FIG 6-1-5

MOBIL ENERGY MINERALS AUSTRALIA					
PROJECT EL 30/80 TASMANIA BASIN					
GRAPHIC LOG					
TDM BOTHWELL EAST					
COMPILED	DATE	BY	ADDNS	DATE	BY
DRAWN	3-84	A.J.W.			
SCALE	AS SHOWN	DWG No	1.6033-2 95		

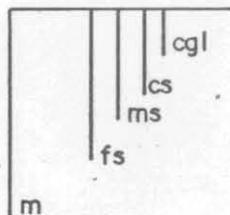
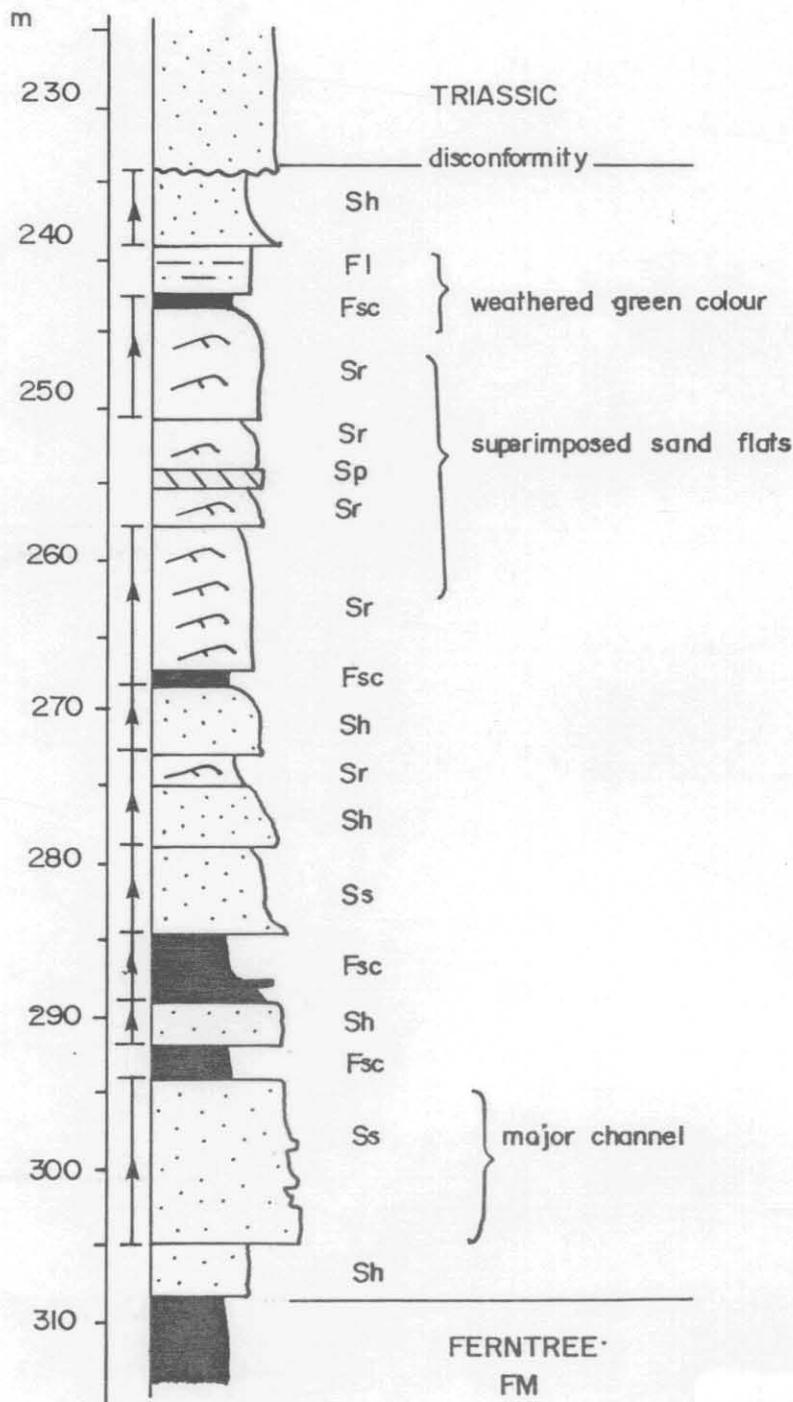
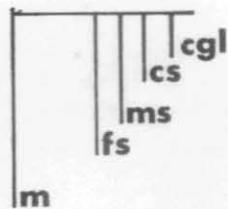
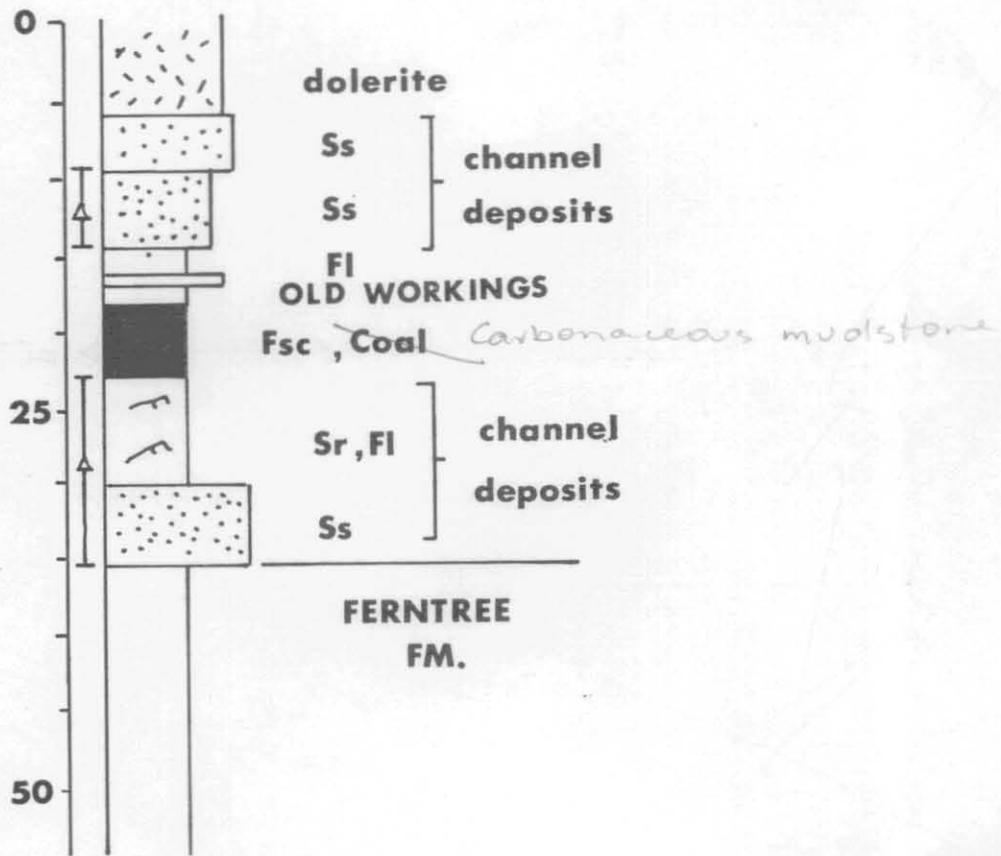


FIG 6-1-6

MOBIL ENERGY MINERALS AUSTRALIA					
PROJECT TASMANIAN BASIN JV					
GRAPHIC LOG TDM BOTHWELL WEST					
COMPILED	DATE	BY	ADDNS	DATE	BY
DRAWN	3-84	AJW			
SCALE	as shown	HS	DWG No	16033-2-94	



5 cm

Fig 6.1.7

MOBIL ENERGY MINERALS AUSTRALIA					
PROJECT EL 30/80 TASMANIA BASIN					
GRAPHIC LOG					
TDM Mt.CYGNET 2					
COMPILED	DATE	BY	ADDNS	DATE	BY
DRAWN					
SCALE			DWG No		

049

004052

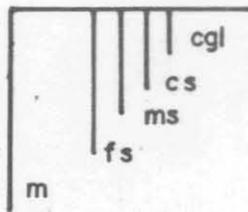
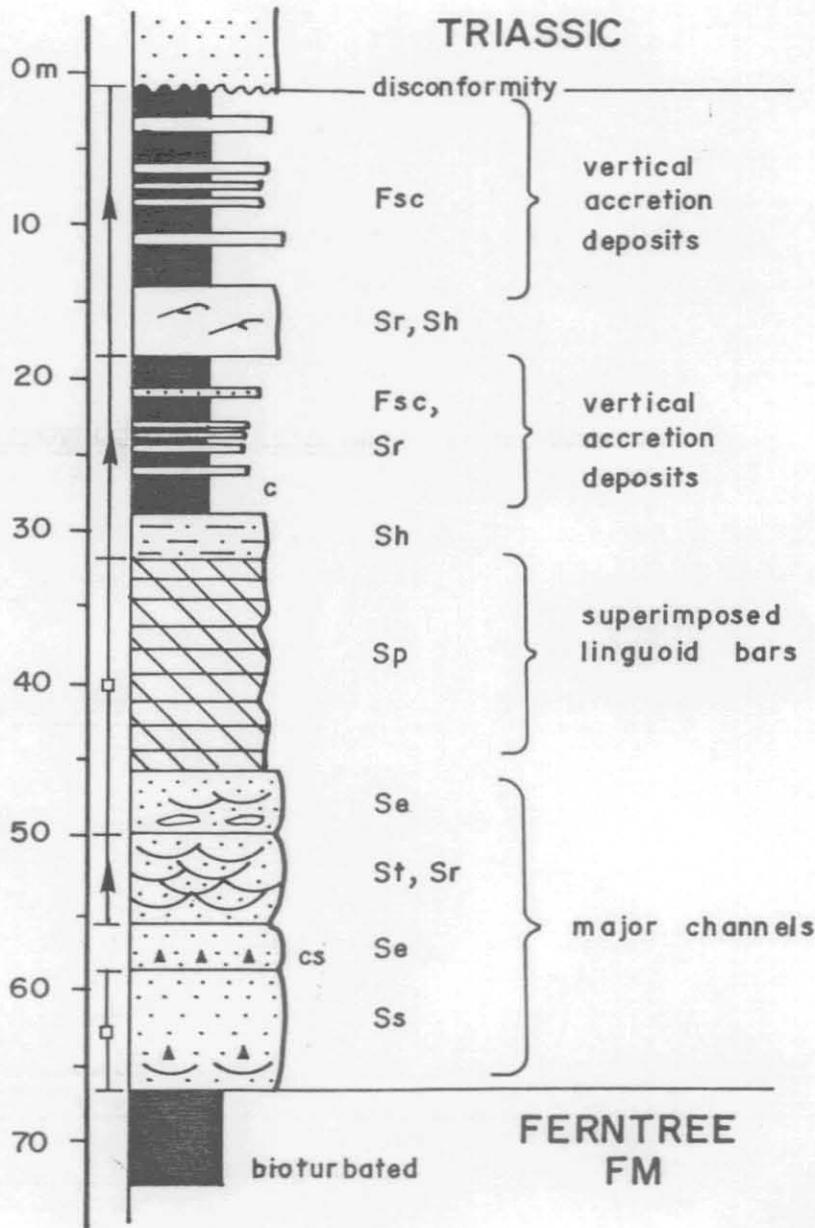


FIG 6.1-8

MOBIL ENERGY MINERALS AUSTRALIA					
PROJECT EL 30/80 TASMANIA BASIN					
COASTAL SECTION ADVENTURE BAY STH BRUNY ISLAND					
COMPILED	DATE	BY	ADDNS	DATE	BY
	3.84	A.J.W.			
DRAWN	DATE	BY			
	3.84	A.H.			
SCALE	AS SHOWN		DWG No	1-6033-2-97	

TABLE 6.1.1 : Lithofacies and sedimentary structures of modern and ancient braided stream deposits (modified from Miall, 1977, Table III).

Facies Code	Lithofacies	Sedimentary structures	Interpretation
Gms	massive, matrix supported gravel	none	debris flow deposits
Gm	massive or crudely bedded gravel	horizontal bedding, imbrication	longitudinal bars, lag deposits, sieve deposits
Gt	gravel, stratified	trough crossbeds	minor channel fills
Gp	gravel, stratified	planar crossbeds	linguoid bars or deltaic growths from older bar remnants
St	sand, medium to v. coarse, may be pebbly	solitary (theta) or grouped (pi) trough crossbeds	dunes (lower flow regime)
Sp	sand, medium to v. coarse, may be pebbly	solitary (alpha) or grouped (omikron) planar crossbeds	linguoid, transverse bars, sand waves (lower flow regime)
Sr	sand, very fine to coarse	ripple marks of all types	ripples (lower flow regime)
Sh	sand, very fine to very coarse, may be pebbly	horizontal lamination, parting or streaming lineation	planar bed flow (l. and u. flow regime)
Sl	sand, fine	low angle (<10°) crossbeds	scour fills, crevasse splays, antidunes
Se	erosional scours with intraclasts	crude crossbedding	scour fills
Ss	sand, fine to coarse, may be pebbly	broad, shallow scours including eta cross-stratification	scour fills
Sse, She, Spe	sand	analogous to Ss, Sh, Sp	eolian deposits
Fl	sand, silt, mud	fine lamination, very small ripples	overbank or waning flood deposits
Fsc	silt, mud	laminated to massive	backswamp deposits
Fcf	mud	massive, with freshwater molluscs	backswamp pond deposits
Fm	mud, silt	massive, desiccation cracks	overbank or drape deposits
Fr	silt, mud	rootlets	seatearth
C	coal, carbonaceous mud	plants, mud films	swamp deposits
P	carbonate	pedogenic features	soil

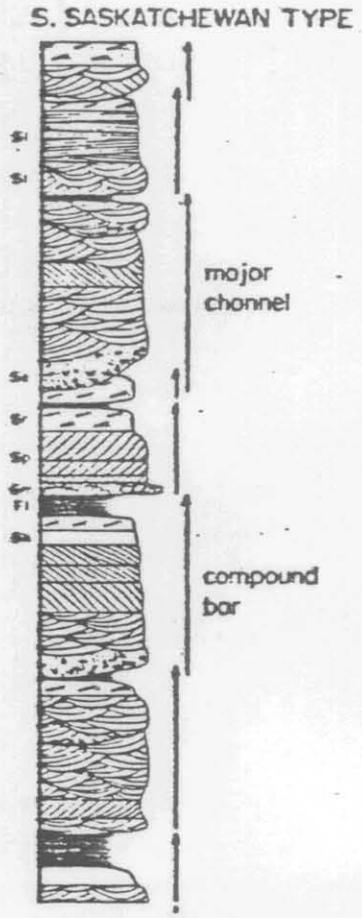
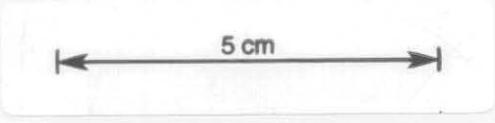
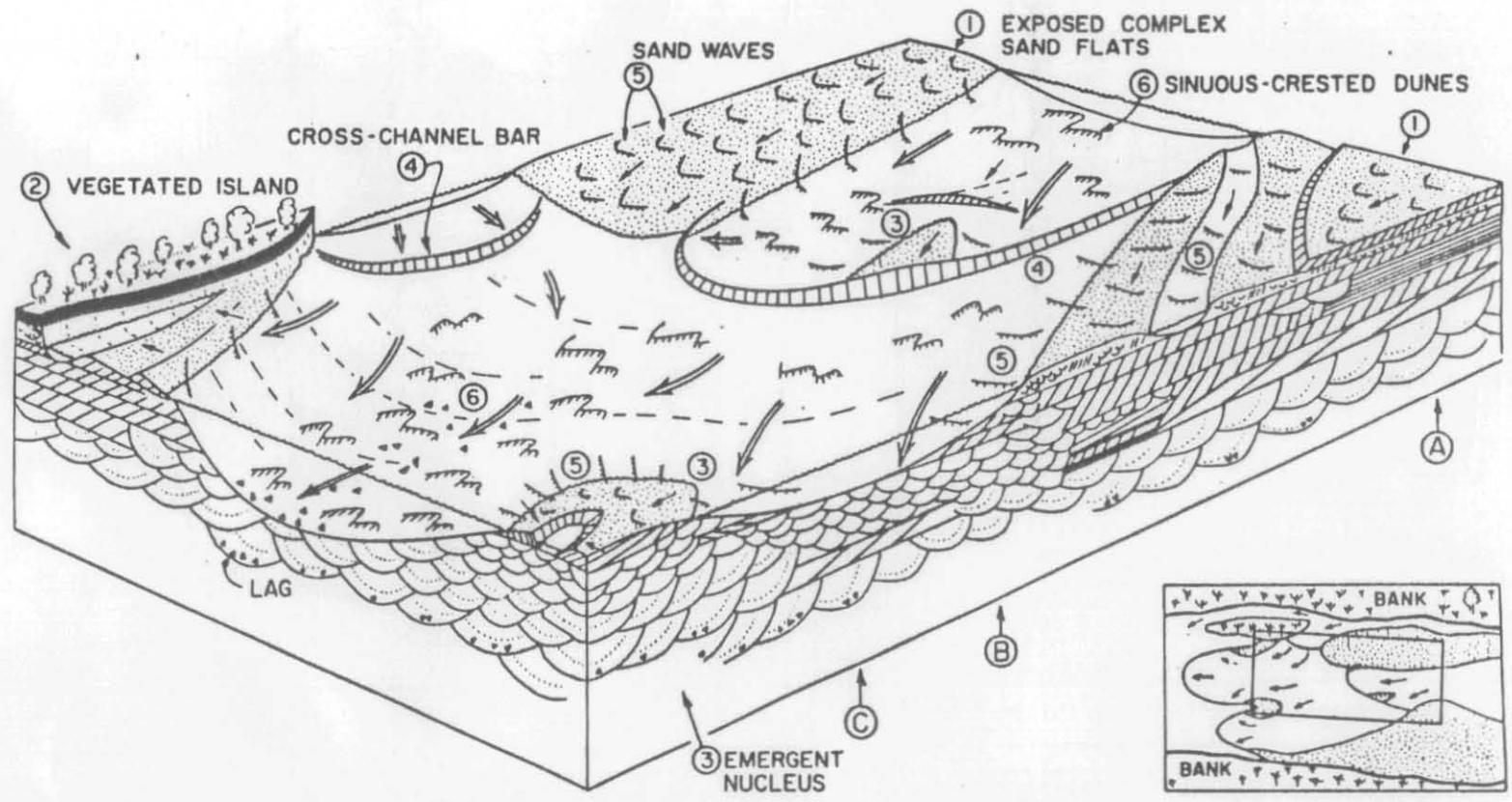
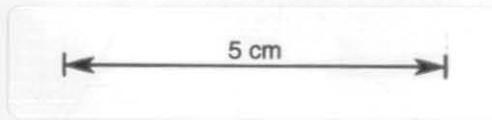


Fig 6.1.9a Typical Profile, sandy braided stream, South Saskatchewan type.





6-1-96 Block diagram summarizing the major morphological elements, and their associated bedforms and stratification. The hypothetical reach is outlined by a rectangle in the inset, lower right. Stippled areas are emergent. Single shafted arrows indicate directions of bedform movement, and double-shafted arrows indicate flow directions. A locates stratigraphic sequence dominated by sand flat development (Fig. 15), B has mixed sand flat and channel influence, and C is dominated by channel aggradation.

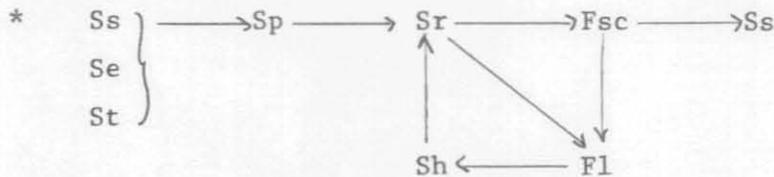


053

6.2 MARKOV ANALYSIS

Facies relationships based on a data array from the six drill holes and the cliff exposures at Adventure Bay suggest the following relationship (see Reading 1978(Chap. 2) for the technique). Markov chain analysis was used to achieve this relationship.

FACIES TRANSITIONS (see Tables 6.2.1 to 6.2.3)

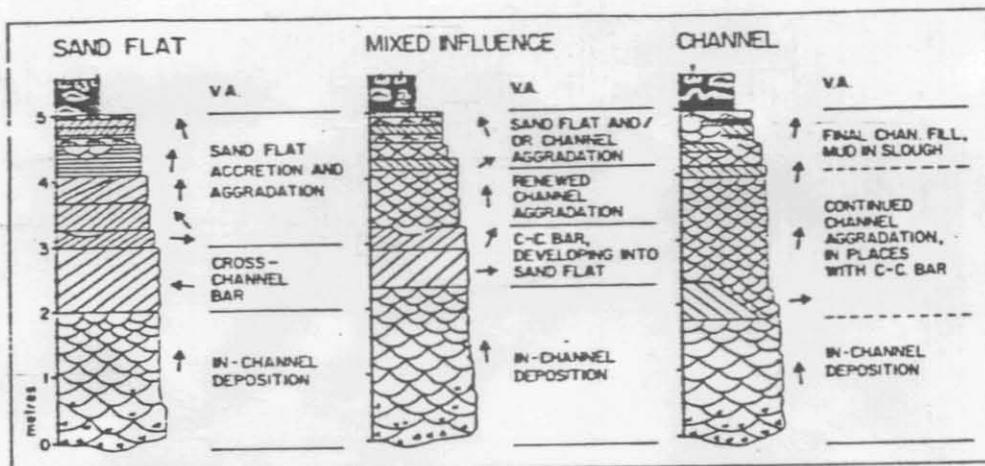


PROCESS - RESPONSE



This facies relationship display a predictable sequence of channel scour and fill (facies, Ss, Se, St) followed by low water accretion processes (facies Sr, Sh, F1) and possible sedimentation in overbank areas (facies Fsc).

* N.B.: In drill core it is difficult to distinguish between these facies.



Summary stratigraphic sequences characterizing areas dominated by sand flat development, areas of mixed sand flat and channel influence, and areas of channel aggradation. Arrows indicate in a general way the degree of expected paleoflow variability.



054

TABLE 6.2.1

DATA ARRAY, LITHOLOGIES AT TOP

OVERLIE THOSE IN ROWS

data insufficient so results meaningless.

	St	Sp	Sh	Sr	Fl	Fsc	Total
Ss	6	3	4	5	0	2	19
Se	2	3	1	3	0	2	11
St	3	0	1	6	1	6	17
Sp	3	0	1	6	1	6	17
Sh	1	2	2	0	0	1	6
Sr	4	0	4	1	4	0	13
Fl							
Fsc							
Totals	19	10	16	18	8	18	<u>88</u>

OBSERVED

NOT ENOUGH COUNTS

TABLE 6.2.2

DATA ARRAY CALCULATED BY CROSS MULTIPLYING THE ROW AND COLUMN TOTALS OF DATA ARRAY AND DIVIDING BY SAMPLE TOTAL (88)

	St	Sp	Sh	Sr	Fl	Fsc
Ss	5	2	4	5	2	5
Se	2	1	2	2	1	2
St	4	2	3	4	1	4
Sp	5	2	4	4	2	4
Sh	1	1	1	1	1	1
Sr	3	1	2	3	1	3
Fl						
Fsc						

PREDICTED RANDOM

055

TABLE 6.2.3 DIFFERENCES BETWEEN OBSERVED NUMBER OF TRANSITIONS
AND THE PREDICTED NUMBER, ASSUMING RANDOM ARRANGEMENT

			Ss					
			Se					
			St	Sp	Sh	Sr	Fl	Fsc
Ss	Se	St	+1	+1	0	0	-4	-4
		Sp	0	+2	-1	+1	-1	0
		Sh	-1	-2	-2	+2	0	+2
		Sr	-2	0	0	-1	+1	+4
		Fl	0	+1	+1	-1	-1	0
		Fsc	+1	-1	+2	-2	+3	-3

DIFFERENCE

6.3 PALAEOENVIRONMENTAL RECONSTRUCTION

The distribution pattern of the Cygnet Coal Measures as shown on the geological maps appears to be a random pattern of thin linear bodies. This pattern is more likely to be the result of discrete sediment accumulations rather than from a basin-wide layer cake type of stratigraphy unit. This idea of discrete, disjointed sediment accumulations is further supported by the fact that Triassic units in places rest disconformably on the Ferntree Mudstone.

The evidence suggests that the most if not all of the known outcrops of the Cygnet Coal Measures have been identified. Field examination of the outcrops at Meadsfield, SW of Bothwell show that the Cygnet Coal Measures are in fact a channel deposit which have been deposited on top of the Ferntree Mudstone and that relief of several metres existed between the base of the channel and the adjacent area. Clearly the coal measures are erosive into the underlying stratigraphic units (see Fig 6.3.1).

In the area of the Jordan River, to the north of Elderslie, the Coal Measures are predominantly channel facies with no overbank deposits to be observed.

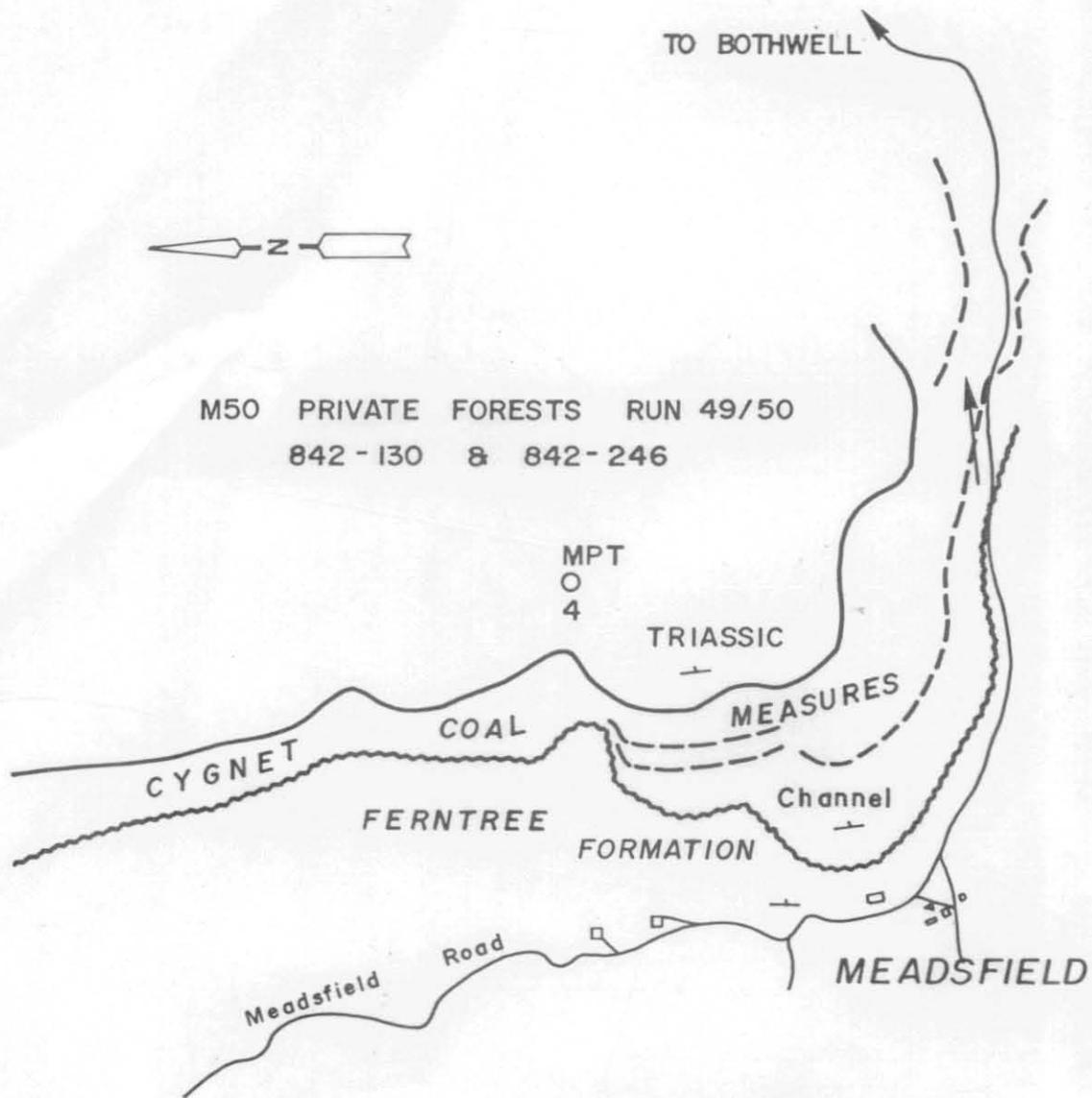


Fig. 6.3.1

MOBIL ENERGY MINERALS AUSTRALIA

PROJECT EL 30/80 TASMANIA BASIN

AIRPHOTO INTERPRETATION
SW BOTHWELL-MEADSFIELD

5 cm

COMPILED	DATE	BY	ADDNS	DATE	BY
DRAWN	3-84	A.J.W.			
SCALE	N.T.S.	A.H.	DWG No		

057

654060



Fig. 6.3.2. Outcrop pattern at Meadsfield

5 cm

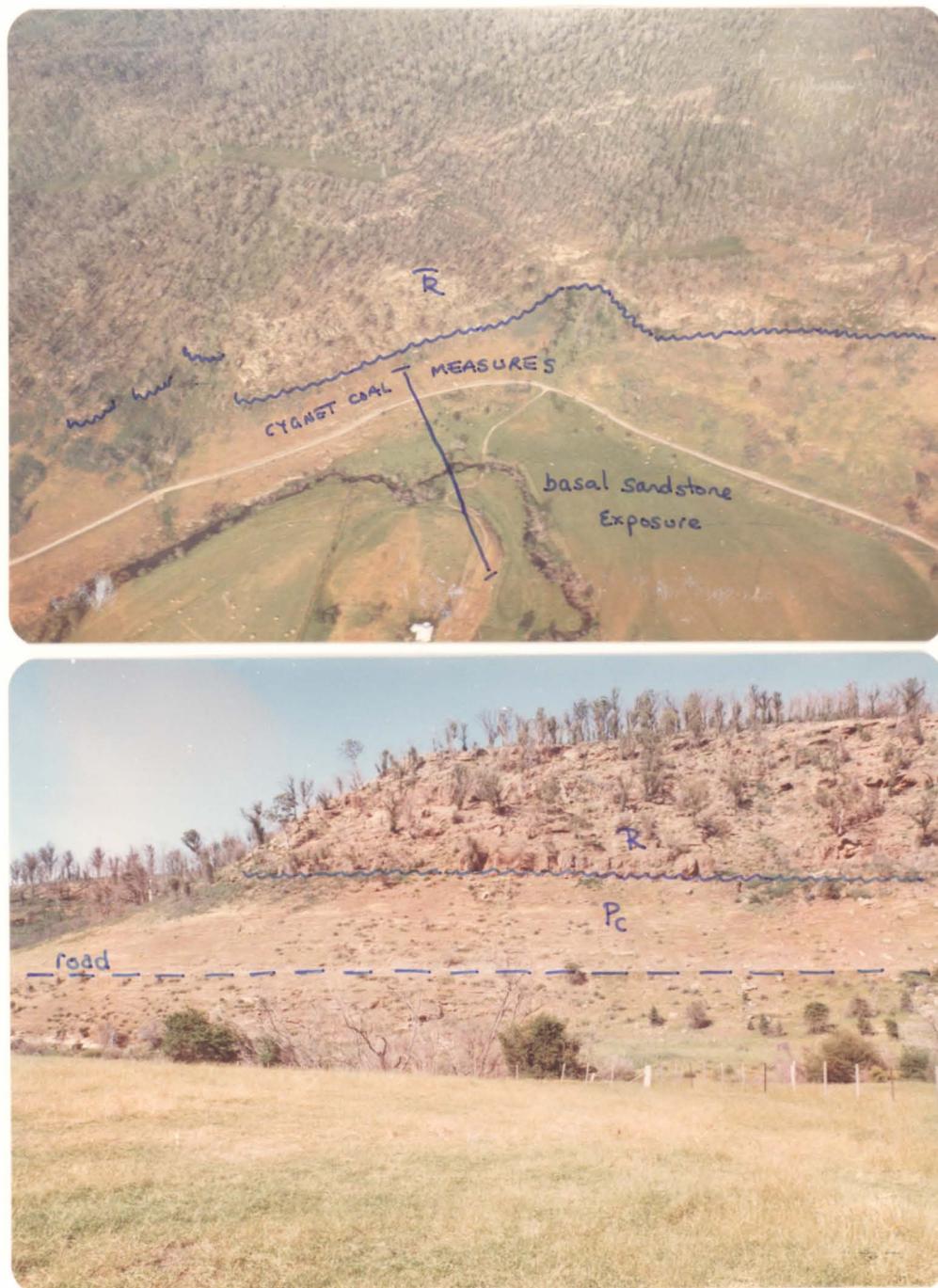
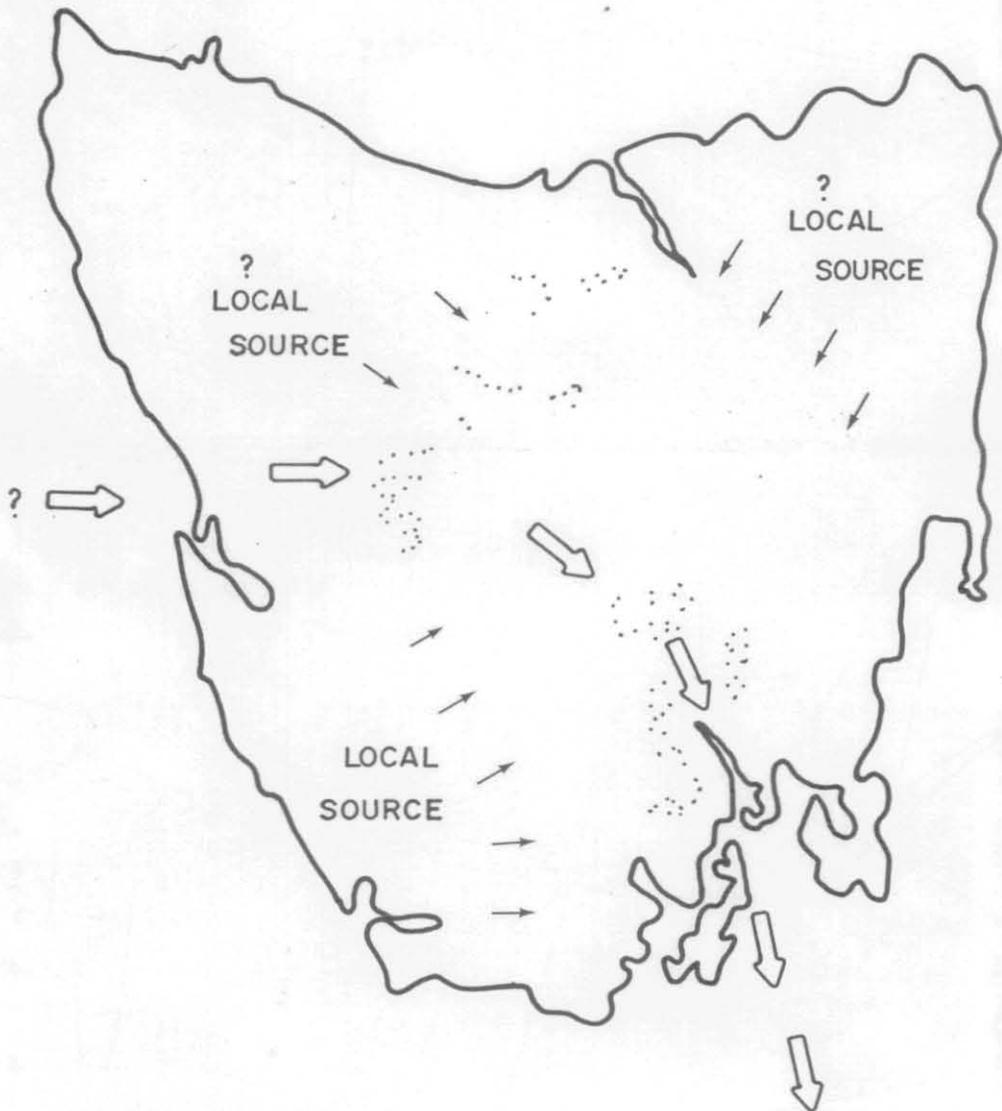


Fig. 6.3.3 Unconformity, as seen on photographs, between the Triassic and Permian

5 cm

059

WESTERN CONTINENTAL SOURCE



 LATE PERMIAN
 BRAIDED SANDY
 FLUVIAL SYSTEM

0 100 Kilometres

Fig. 6.3.4

MOBIL ENERGY MINERALS AUSTRALIA					
PROJECT EL 30/80 TASMANIA BASIN					
SEDIMENT SOURCE MAP					
COMPILED	DATE	BY	ADDNS	DATE	BY
DRAWN	3.84	A.J.W.			
SCALE	AS SHOWN		DWG No		

5 cm

030

These outcrops, together with the outcrops at Bruny Island, on the coast near Gordon, and near New Norfolk all show palaeocurrent direction in the channel sandstones and current rippled sandstones to be towards the East to South. This palaeocurrent direction, together with the unusual outcrop distribution of the coal measures indicates deposition in a braided fluvial river system which had its main source as a quartz rich continental land mass (?Antarctica) somewhere to the west of Tasmania with local course areas from the SW and NE (see Fig 6.3.4).

The deposits of sandy braided rivers vary depending upon the variability of discharge. Those having highly variable discharge consist of sandstones deposited during upper flow regime and comprise parallel-laminated sands which may include cobbles concentrated mainly at the base, with a few isolated individual cobbles scattered throughout the sandy bed, followed by minor cross beds and sandy climbing ripples. No vertical segregation of grain size occurs.

With more steady discharge the sandy rivers develop large linguoid, sinuous or straight crested tabular bars at high stage of discharge which are transverse to the flow direction. Planar cross beds are deposited by these bars. Even where floodplains are developed, they are inundated at high stages with tabular sand or mud sheets. Such floodplain deposits are rarely preserved and commonly they are ripped up to make cohesive mud intraclasts which form mud-clast conglomerates at some channel bases.

Other braided rivers show a steady discharge and a high degree of differentiation of flow between normal and flood states. Large depositional braid bars called sand flats and well developed floodplains may be developed. These sand flats are distinct from the bars and consist of staked planar cross beds which may in places display minor amounts of vertical accretion parallel laminated sands. In the topographically high areas of the river minor sandy cross beds result from migration of sand waves (ripples) and muddy rippled sands are deposited (these resemble flaser bedding).

Muddy floodplain deposits may be present but are not usually as thick or as extensive as those of the meandering river system. The lack of fine grained cohesive sediment allows the braided river to migrate laterally across wide areas leaving sheet like or wedge shaped deposits of channel and bar complexes with only minor amount of floodplain deposits being preserved.

6.4 THE NW AREA (Part II of EL 30/80)

A one day helicopter and ground reconnaissance inspection was made in Part II of EL 30/80. The geology as shown on the Queenstown 1:250,000 sheet indicates an area of undifferentiated Parmeener Super Group. Several set-downs were made (see Fig. 6.4.1), two on planar cross-stratified quartz rich sandstones which are considered to be the ridge forming Triassic sandstones, two to the east (one on the airstrip - see TAS LANDS PHOTO SOUTH WEST RUN 11E PHOTO 008) and one in the Gordon River showed outcrop of glacial sediments. One other locality within the bed of the Gordon River (locality 5) showed abundant fossiliferous float which was subsequently identified by Dr. M. Clarke as being from both lower and upper marines.

The helicopter flight was extended to cover the area to the north of Mt. King William to as far as Mt. Rufus and Mt. Olympus where the geological map and reports (Voisey, 1983; Davidson, 1969) have indicated the occurrence of Cygnet Coal Measure equivalents.

This part of the flight was most instructive because the sill like nature of the Jurassic dolerites is clearly evident at Mt. King William. There is potential for the sediments in the NW area to extend towards the Derwent River (to the south of Tarraleah - see Queenstown 1:250,000 geological map).

Although no outcrops of the Cygnet Coal Measures were observed, mapping to the northwest and to the south (Corbett, 1964) has shown that Cygnet Coal Measures can be expected to occur within the area of interest.

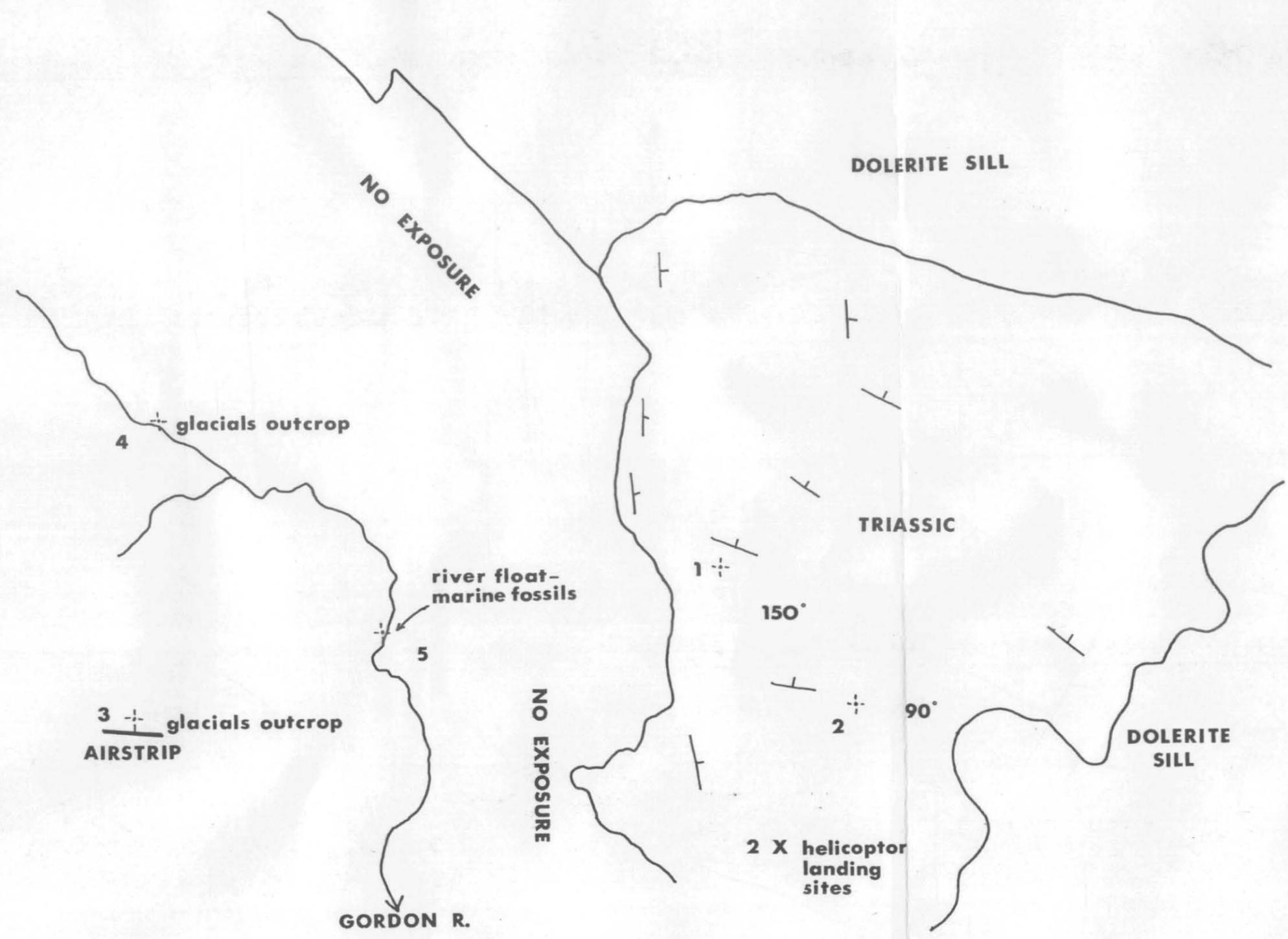


Fig 6.4.1

MOBIL ENERGY MINERALS AUSTRALIA					
PROJECT					
PHOTO INTERPRETATION					
NW AREA					
COMPILED	DATE	BY	ADDNS	DATE	BY
DRAWN					
SCALE			DWG No		

063

On the basis of this brief inspection it is not possible to suggest the likelihood or otherwise of intersecting coal measures below the cliff forming sandstones.

6.5 MERSEY COAL MEASURE EQUIVALENTS

The stratigraphic interval corresponding to the Faulkner Group was inspected in two MPT holes namely MPT 1 Dungleve and MPT 2 Lachlan and in three Mines Department holes namely Ross No. 1 (Quoin), Granton No. 1 (Mt. Nassau), and Bothwell West.

Detailed lithological descriptions of the two MPT holes are contained in Appendix 1 and only graphic lithological logs are provided in the Section (see Figs. 6.5.1, 6.5.2). Geological logs of the two TDM holes have been prepared by Clarke and Farmer of the Geological Survey and are reproduced in Appendix 2. The interval 687 - 691.5 metres in Bothwell West consisted of interbedded sandstone and siltstone (unfossiliferous) and is considered to be the Faulkner Group lithologies.

No indications of coal measure lithologies were to be seen in any of the five holes. The lithologies in all five holes are similar (see Fig. 6.5.3 of interval in Granton No. 1) and could be explained by either an oversupply of sediment which made conditions unfavourable for marine faunas or by a slight lowering of sea level producing a restricted lake environment. The former explanation appears the more likely.

066

654067

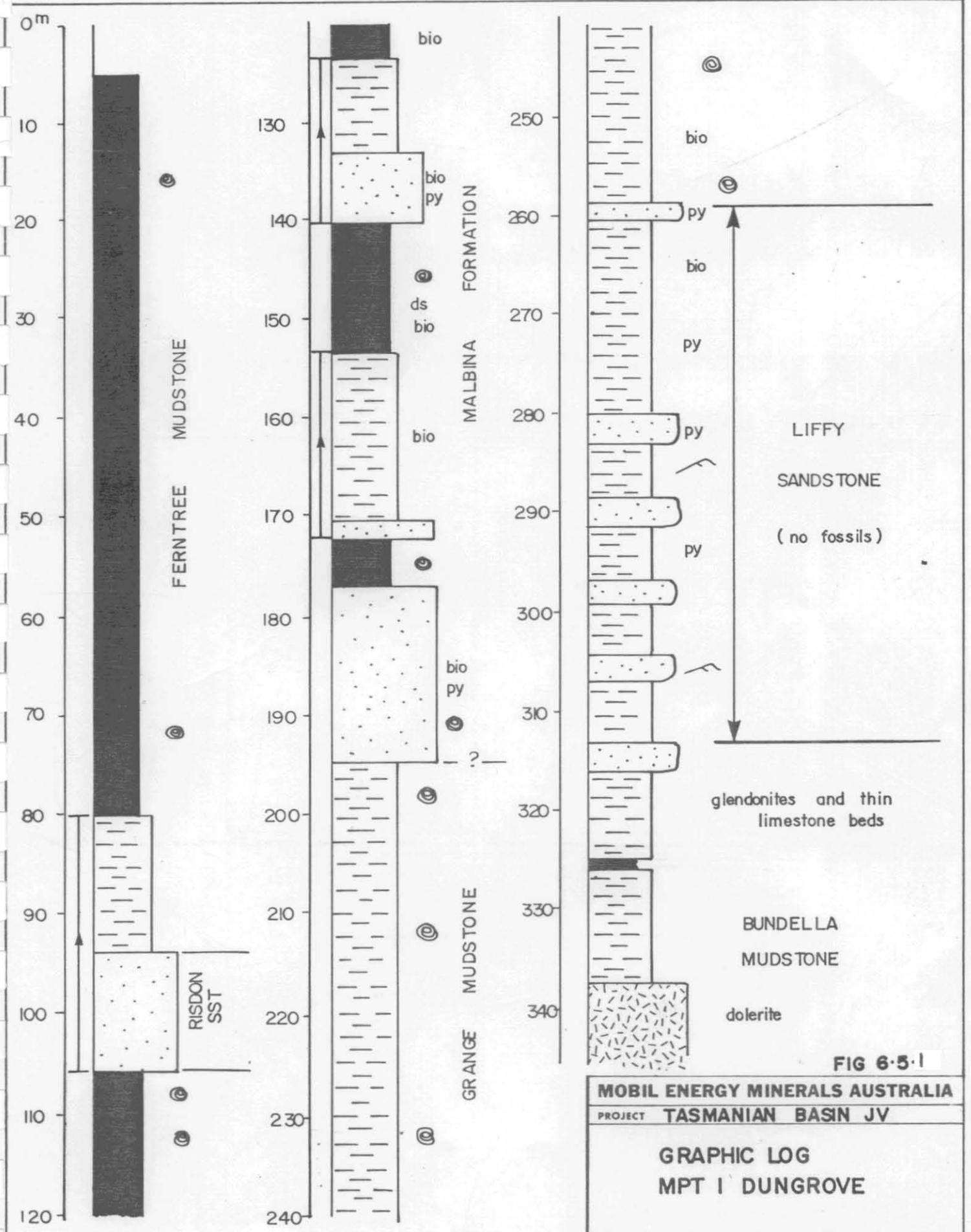


FIG 6-5-1

MOBIL ENERGY MINERALS AUSTRALIA					
PROJECT TASMANIAN BASIN JV					
GRAPHIC LOG					
MPT 1 DUNGROVE					
COMPILED	DATE	BY	ADDNS	DATE	BY
DRAWN	3-84	AJW			
SCALE	as shown	HS	DWG No	1-6033-2-99	

065

054068

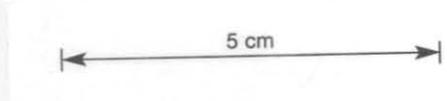
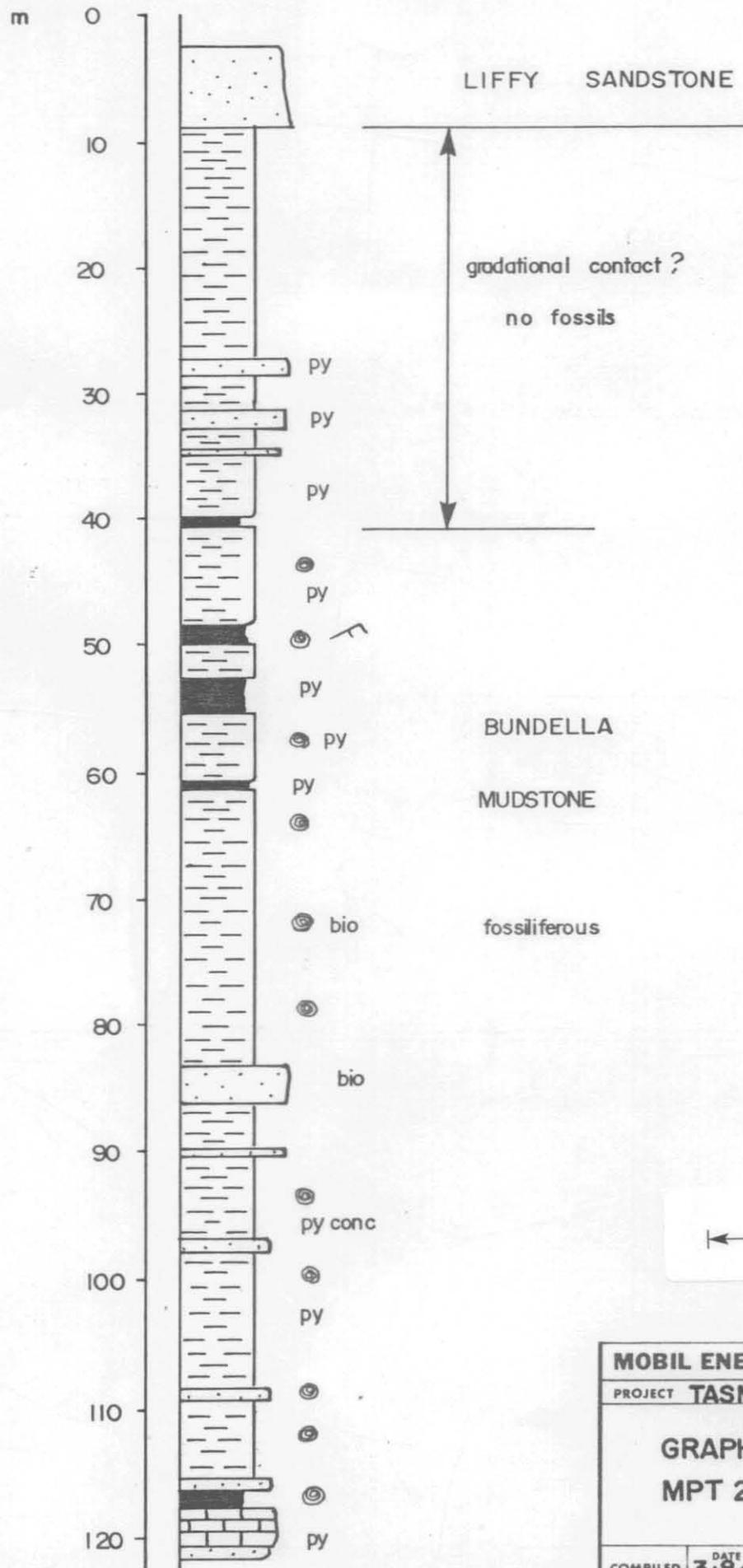


FIG 6.5.2

MOBIL ENERGY MINERALS AUSTRALIA					
PROJECT TASMANIAN BASIN JV					
GRAPHIC LOG					
MPT 2 LACHLAN					
COMPILED	DATE	BY	ADDNS	DATE	BY
	3.84	AJW			
DRAWN	3.84	HS			
SCALE	as shown		DWG No	1.6033.2.98	

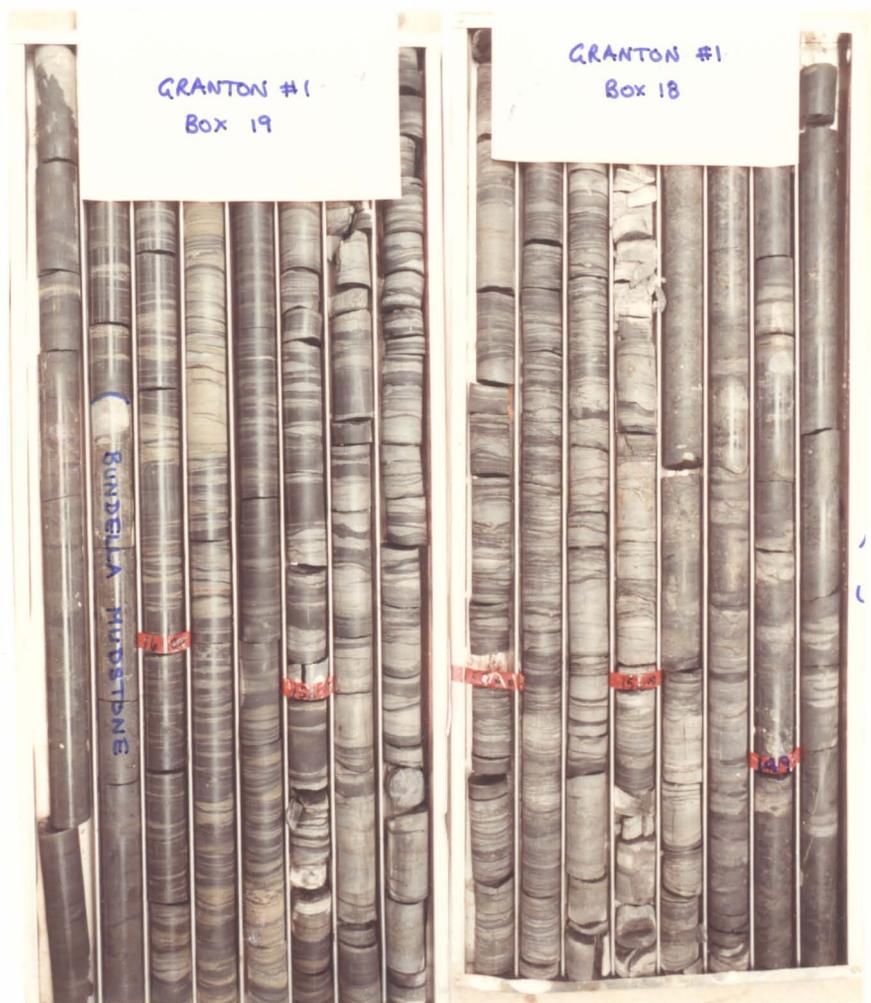


Fig. 6.5.3 Faulkner Group - TDM Granton #1

5 cm

7.0 CONCLUSIONS

The field work, drilling and environmental studies carried out by MEMA on the Permian coal sequences of Tasmania indicates that:

- (1) The Mersey Coal Measures equivalents, within EL 30/80 and in Southern Tasmania as a whole, did not appear to contain any coal measure lithologies. In fact it appears as though in this area of Tasmania Marine conditions prevailed. Intersections in MPT 1, MPT 2, TDM Granton, Ross and Bothwell West indicate non-fluvial deposition.

This interval does not constitute an exploration target.

- (2) The Cygnet Coal Measures equivalents are a non laterally continuous unit and represents deposition of sandy braided river systems. This particular depositional environment is not conducive for the formation and preservation of thick or laterally extensive flood plain deposits.

Field mapping shows that the Triassic Ross Sandstone directly overlies the Permian Ferntree Group away from known outcrops of Cygnet Sandstone. This indicates that it is unlikely that extensive floodplain deposits exist.

- (3) Inspection of the relatively inaccessible NW area (part II) failed to reveal outcrops of Cygnet Coal Measures lithology. The known presence of Cygnets to the NW and SE of this area seems to suggest that they occur although they would be thin. The low relief of the area, with lower marines in the river and Triassic sandstone on the ridges, allows for a thin Cygnet interval only in a greatly 'telescoped' Permian sequence.
- (4) In view of the fact that all holes drilled through the Cygnet Coal Measures interval within and around EL 30/80 failed to intersect any coal, and that knowledge that this interval was deposited in a sandy, braided stream environment, it seems highly unlikely that extensive, thick coals occur within the area of the licence.

068

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APPENDIX 1

1982/29. A diamond drill hole at Mt Nassau, near Granton

M.J. Clarke

N. Farmer

Abstract

A fully cored drill hole at Mt Nassau [EN51562665], near Granton has proved an unusually thick sequence of Lower Parmeener Super-Group strata. The succession is as follows: Malbina Formation, Member A (32 m); Berriedale Limestone (60.30 m) and Nassau Formation (30.30 m), the two units together comprising the Cascades Group (90.60 m); Rayner Sandstone (2.55 m); Faulkner Group (36.60 m); Bundella Formation (117.50 m); and Woody Island Formation (254.50 m). Three minor dolerite bodies were encountered in the Bundella and Woody Island Formations, and the hole terminated at a depth of 563 metres in coarse- to very coarse-grained layered dolerite which is thought to represent the upper portion of a very substantial sill-like body.

INTRODUCTION

The Mt Nassau area has long been known for its excellent development of Lower Parmeener Super-Group rocks, and it has served as the standard reference section for the Hobart region for many of the individual stratigraphic units* (Banks and Hale, 1957). The sequence recognised by Banks and Hale was:

Ferntree Group	
* Malbina Formation	
)	Grange Mudstone
* Cascades Group)	Berriedale Limestone
)	Nassau Siltstone
* Rayner Sandstone	
* Faulkner Group	
Bundella Formation	
[Woody Island Formation]	

Like most natural sections, however, exposure is far from complete, and doubts exist concerning the detailed character of parts of the sequence, principally the Cascades Group and the Bundella Formation. The Woody Island Formation was proved to be abnormally thick and the basal tillite absent in the Chapel Street, Glenorchy drill hole.

The Cascades Group is now proved in its type section to consist only of two distinct units, the Nassau Siltstone and the Berriedale Limestone. Rather surprisingly there is no basis for the recognition of a third unit, the 'Grange Mudstone'. The details of the southward facies change of the Berriedale Limestone and the 'Grange Mudstone' between Granton and Margate remain to be elucidated. The Nassau Formation maintains its essential characters as the Hickman Formation in the Margate area (Farmer, 1981). The Bundella Formation is now known in its entirety for the first time in the Hobart area, but differs little from other developments in south-eastern Tasmania. The Woody Island Formation continues its northerly thickening and reaches its greatest known thickness of 254.50 m (with base unseen).

In the light of the Mt Nassau and Chapel Street drill holes, future attempts to drill to pre-Parmeener Super-Group basement rocks in the Hobart

area will have to allow for the almost certain intersection of substantial thicknesses of dolerite close to the unconformity.

Details analyses of petrography, sedimentary structures, macro-palaeontology and palynology (by Dr E.M. Truswell, B.M.R., Canberra) will continue.

GEOLOGICAL LOG OF GRANTON NO. 1 (MT NASSAU) DIAMOND DRILL HOLE

Collar height 190.45 m A.S.L. Located on a spur south-east of Rathbones Quarry, west of Granton, Hobart Quadrangle. Hole drilled vertically and fully cored. Dips are negligible. All thicknesses are down-hole depths in metres.

Malbina Formation 32 m

- 0 -17.5 Coarse sandstone and calcareous sandstone with much shelly debris and erratics. Spiriferids predominate but *Stenopora*, *Wyndhamia dalwoodensis* and *Ptychompalina* also occur. Some very coarse patches until 10.5 m; thin, more silty, fenestellid-rich at 16.0 m.
- 17.5-26.0 Deeply weathered sandy bryozoal siltstone with erratics.
- 26.0-32.0 Sandstone and siltstone with many small erratics.

Cascades Group 90.60 m

Berriedale Limestone 60.30 m

- 32.0-35.0 Highly calcareous sandstone and sandy limestone with abundant erratics. Calcite veins along joints. Richly fossiliferous.
- 35.0-49.7 Interbedded light-grey, fine-grained argillaceous limestone and subordinate siltstone and sandstone. Erratics common, richly fossiliferous.
- 49.7-72.8 Massive-bedded alternations of pale-grey argillaceous and bioclastic limestone with occasional more silty bands. Strophalosiids in growth position. Erratics rare. Fifty centimetres of dark-grey siltstone at 63.0 m.
- 72.8-86.3 Dark-grey calcareous siltstone with some minor limestone beds. Fossiliferous throughout; both as more or less complete shells, and comminuted debris. Erratics rare.
- 86.3-92.3 Light-grey argillaceous limestone with very minor dark-grey shale. Richly fossiliferous.

Nassau Formation 30.30 m

- 92.3-122.6 Richly fossiliferous, dark-grey, calcareous, bryozoal and productid siltstone. Fossils mostly complete and in undisturbed growth position, but some shell debris. Erratics rare, but bioturbation conspicuous throughout. *Deltopecten* and spiriferids present. The last metre darkens downwards and has rare scattered fossils and shell debris.

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Rayner Sandstone 2.55 m

122.6-125.15 Massive-bedded, coarse-grained, light-grey, highly-bioturbated sandstone and granule conglomerate with wispy-bedded inclusions of dark shale. Much shell debris, but only a few larger shells. Base has many pebbles but transitional.

Faulkner Group 36.60 m

125.15-134.50 Dark-grey to black micaceous siltstone with thin granule patches. Small scale bioturbation abundant.

134.50-134.85 Highly bioturbated granule conglomerate with sharp but irregular base.

134.85-137.10 Dark-grey, highly bioturbated siltstone with dispersed granules throughout. Irregular bedding due to bioturbation. Ten centimetres of sand and siltstone with pebbles at base.

137.10-143.10 Dark-grey carbonaceous, and lighter-coloured, more quartzose siltstone with irregular zones of hydroplastic structures deforming bedding. Ten centimetres of granule conglomerate at 142.00 m.

143.10-143.30 Highly bioturbated, irregularly-bedded granule conglomerate with irregular wispy siltstone layers near top. Pebbles at base larger than average. Base abrupt and irregular.

143.30-151.00 Dark-grey, heavily-bioturbated siltstone with granule patches. Granule patches commoner below 148.50 m. Rolled umbonal fragment of *Eurydesma* at 148.60 m with other shelly debris. Base sharp and irregular.

151.00-161.75 Light- and dark-grey, flaser-bedded carbonaceous and micaceous quartzose siltstone and sandstone. Some worm burrows and hydroplastic structures. Small-scale cross-bedding in more quartzose layers and pods. Some disseminated pyrite. Darker carbonaceous siltstone becomes more predominant below 158.00 m. Thin coal streak at 158.20 m.

Bundella Formation 117.50 m

161.75-162.00 Granule conglomerate with siltstone matrix coarsening upwards and with large pebbles (4 cm) at top. Top abrupt.

162.00-172.90 Medium- to dark-grey, heavily bioturbated siltstone with granule patches. A few scattered fossils and some shelly debris.

172.90-267.00 Medium-grey, bioturbated siltstone with some granule patches with fine laminations. Macrofossils increasingly abundant. Erratics and disseminated pyrite abundant. Richly fossiliferous below 205.00 m *Stenopora*, *Trigonetreta stokesi*, *Eurydesma*, *Deltopecten illawarensis*, *Ambikella*, *Strophalosia*. Rather less shelly below

245.00 and fossils more comminuted. Fifteen centimetres of bioclastic limestone at 251.00 m. Erratics common. *Stenopora* and some crinoid debris predominate. Pyrite disseminated throughout. Five centimetres of bioclastic limestone at 254.05 m. Less fossiliferous and highly baked below 262.00 m.

- [267.00-275.83] Fine-grained dolerite, both contacts diffuse and somewhat irregular, but essentially flat.
- 275.83-279.25 Pale-grey and glassy and substantial pyrrhotite for about 2 m below contact, then dark-grey fossiliferous siltstone and some erratics.
- Woody Island Formation* 254.50 m
- 279.25-393.00 Dark-grey, finely bioturbated siltstone with very rare erratics. Pyrite and pyrrhotite lessening downwards. Rare patches of fossil debris between 287-292 m. Not obviously baked below 294 m. Flat lenticular sedimentary structures outlined by darker colour. First glendonite at 296 m, increasingly common and some in rosettes. Erratics very rare, one at 330 m. Glendonites less common below 341 m. A few strophalosiids and *Ambikella* at 359.50 m. Metamorphism increasingly marked. Glendonites disappear at 382 m. Pyrrhotite becoming more common. Last two metres increasingly flinty.
- [393.00-397.00] Fine-grained, mottled, much-brecciated dolerite with calcite and chlorite. Both contacts dip at 45-50°.
- 397.00-463.50 Dark pyritic siltstone with rare glendonites and some calcite veining; moderately baked throughout. Glendonites commoner below 430.00 m; more pyritic and more baked. Glendonites disappear below 443.00 m.
- [463.50-469.50] Fine-grained, massive dolerite. Both contacts sharp and irregular, essentially horizontal.
- 469.50-542.50 Dark pyritic siltstone with 4 cm erratic at 473.30 m. Pyrite abundant, increasingly baked and spotted downwards. From 538.00 m highly baked, much pyrite and pyrrhotite; pebbles becoming common.
- [542.50-563.00] Dolerite; contact sharp and flat. Very fine-grained at first, but coarsens from 548.00 m. Thereafter layered coarse- and very coarse-grained dolerite, with all layering essentially flat.

END OF HOLE

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[20 August 1982]

GEOLOGICAL LOG OF CYGNET NO. 2 (MT CYGNET) DIAMOND DRILL HOLE

Depth (m)	Description	Formation
0.00 - 3.20	Soil and clay, buff in colour.	SUPERFICIAL DEPOSITS
3.20 - 4.00	Dolerite black, fresh dark grey.	
4.00 - 4.27	Brown clay.	
4.27 - 6.24	Dolerite blocks and fragments and clay.	
6.24 - 9.21	Soft medium-grained sandstone with some feldspar and some highly micaceous bands.	
9.21 - 9.90	White cross-bedded medium-grained sandstone.	
9.90 - 13.61	Wispy-bedded, fine-grained micaceous quartz sandstone.	
13.61 - 14.92	Coarse-grained, cross-bedded, micaceous, carbonaceous quartz sandstone.	
14.92 - 16.18	Siltstone, dark-grey, laminated and irregularly laminated, micaceous, sandy towards the base.	
16.18 - 16.76	Sandstone, coarse-grained - carbonaceous and micaceous.	
16.76 - 17.77	No core - OLD WORKINGS IN MAIN SEAM	
17.77 - 18.10	Mudstone, black, carbonaceous, plant fragments throughout.	
18.10 - 18.21	Grey siltstone, massive - featureless.	
18.21 - 18.65	Hard fine-grained silty sandstone.	
18.65 - 19.10	Black carbonaceous mudstone, full of plant fragments.	
19.10 - 19.30	Black carbonaceous mudstone with plant fragments.	
19.30 - 19.35	COAL	
19.35 - 19.45	Black carbonaceous mudstone, full of plant fragments.	
19.45 - 20.13	Black carbonaceous mudstone with much plant debris.	
20.13 - 20.18	COAL - shattered and fragmented in core box.	
20.18 - 20.67	Black carbonaceous mudstone and fragmented mudstone.	
20.67 - 20.92	Fine laminated sandstone.	
20.92 - 21.76	Black highly carbonaceous mudstone.	
21.76 - 21.94	COAL and fragmented coal.	
21.94 - 23.02	Dark grey siltstone, micaceous and carbonaceous.	
23.02 - 24.32	Ripple-drifted-cross laminated, wispy bedded rapidly alternating fine sandstones and black siltstones.	

* INSPECTION OF OLD WORKINGS SUGGEST THAT THE ORIGINAL SEAM WAS APPROXIMATELY 1.7 M THICK - P.G. FLOOD NOT SO. DETAILED INSPECTION OF OUTCROPS, WORKINGS, RECORDS OF MINING SHOW NO SEAM TO BE 71.0M THICK. G.M.S.

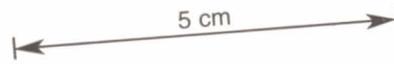
APPENDIX 2

Appendix 2 : FIGURES

- A2.1 Facies Sr & Ss
- A2.2 Facies St
- A2.3 Facies Sp, Triassic Sandstone, NW area
- A2.4 Facies Sr
- A2.5 Facies Fsc; below Gordon
- A2.6 Facies Sr, Fsc, Se, Sh. MPT#4
- A2.7 Facies Sh & Se. MPT#4
- A2.8 Facies Sr, Fsc, Sh. MPT#4
- A2.9 Facies Ss above Fsc. MPT#4
- A2.10 Facies Sr, Fsc, Sr. MPT#3
- A2.11 Facies Sr. TDM Bothwell East
- A2.12 Facies Sr, Fsc. TDM Bothwell East
- A2.13 Facies Sr, Ss, F1. TDM Bothwell East
- A2.14 Contact between the Cygnet Coal Measures on the Triassic Sandstone in MPT #3.
- A2.15 Contact of Triassic upon weathered Cygnet Coal Measures in TDM Bothwell West.
- A2.16 Core from TDM Cygnet #2. Coal Measures from 16.76 – 23.02m. Facies as indicated.



Figure A2.1 Facies Sr and Ss



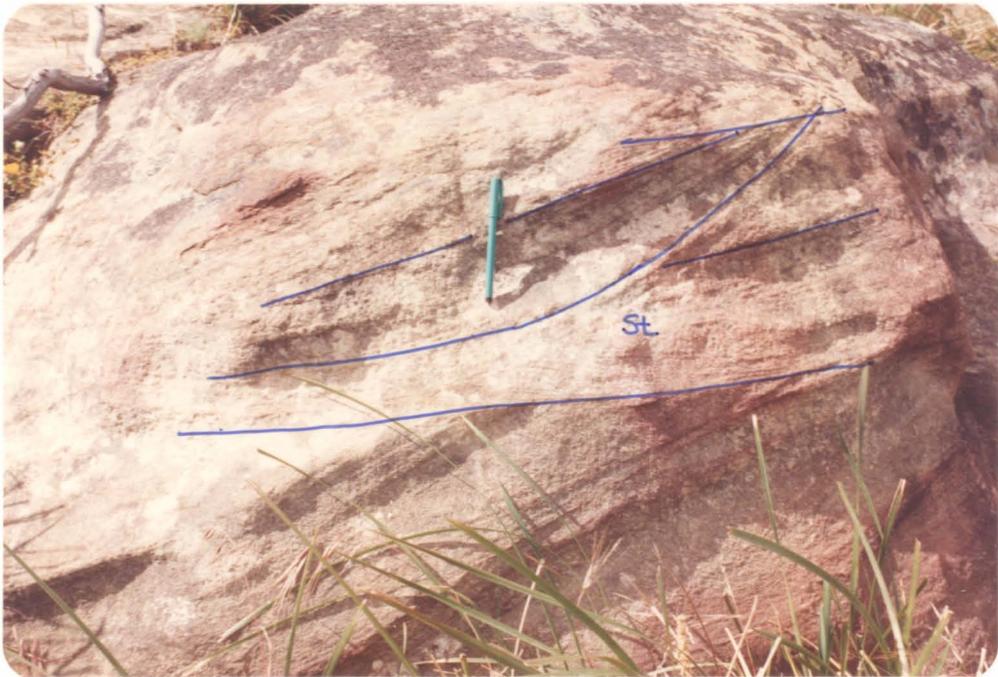


Figure A2.2 Facies St

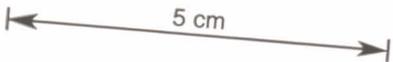
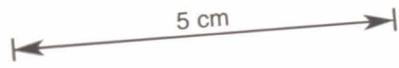




Figure A2.3 Facies Sp, Triassic Sandstone, NW area



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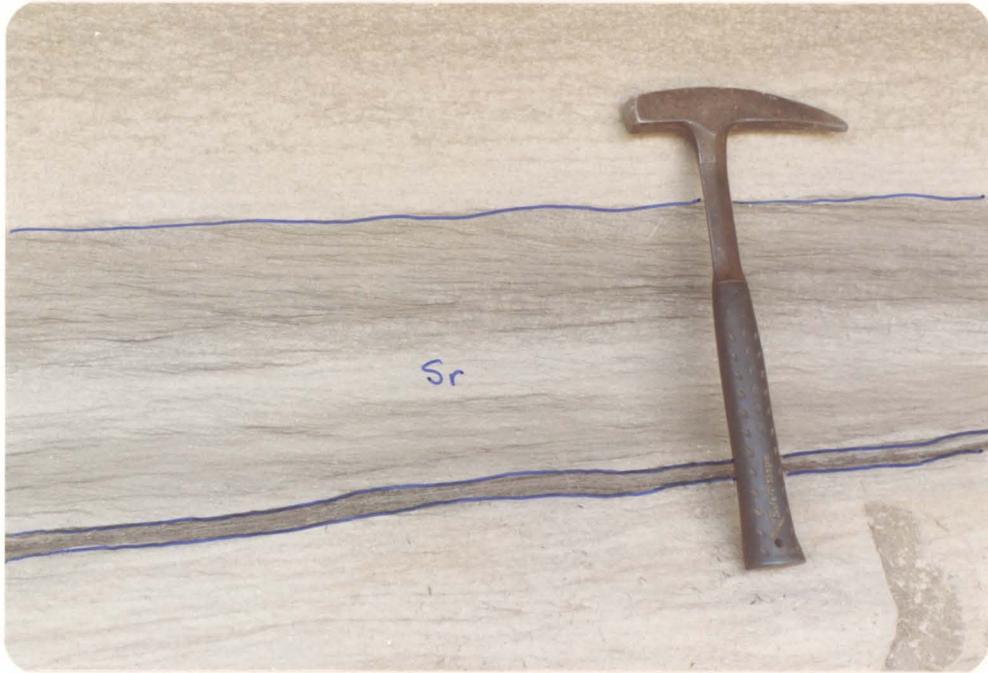


Figure A2.4 Facies Sr

5 cm



Figure A2.5 Facies Fsc; below Gordon



5 cm

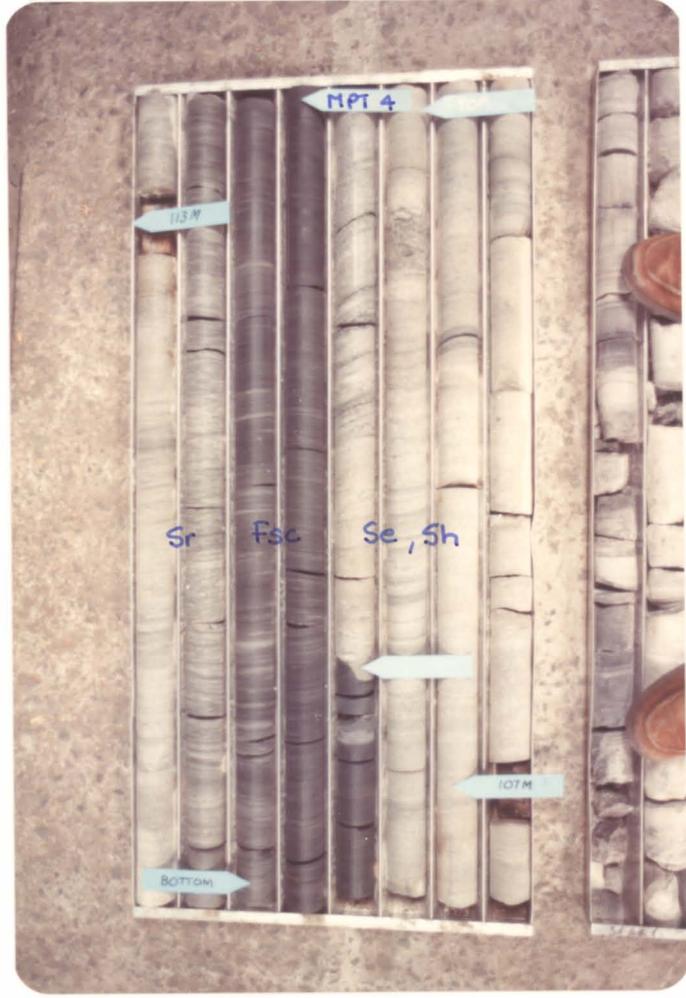


Figure A2.6 Facies Sr, Fsc, Se, Sh MPT#4

5 cm



Figure A2.7 Facies Sh and Se. MPT#4

5 cm



Figure A2.8 Facies Sr, Fsc, Sh. MPT#4

5 cm

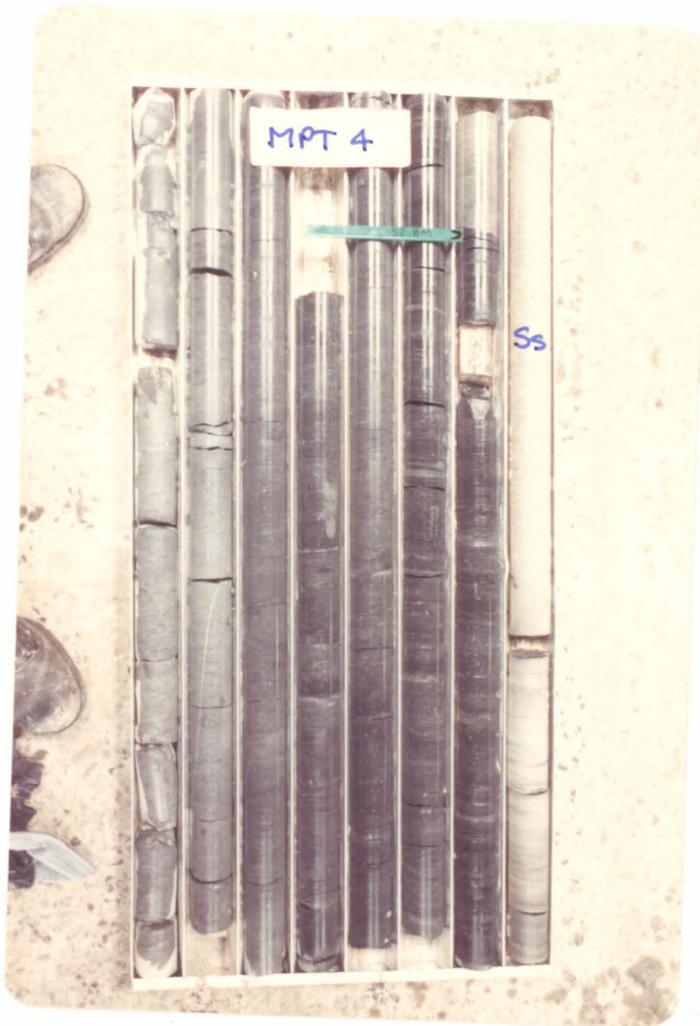


Figure A2.9 Facies Ss above Fsc MPT#4

5 cm

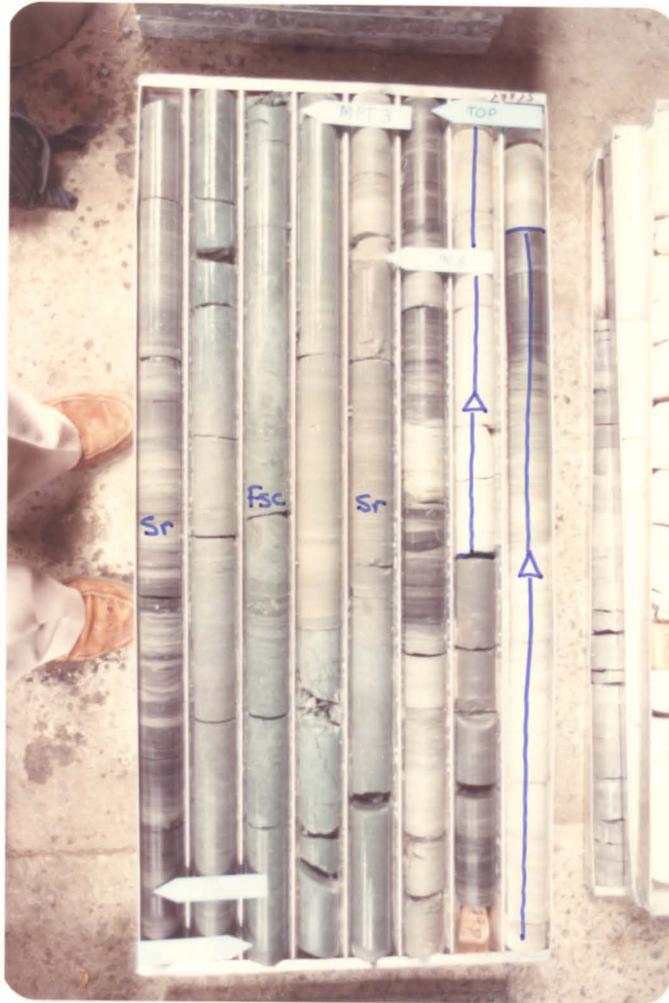


Figure A2.10 Facies Sr, Fsc, Sr. MPT#3

5 cm



Figure A2.11 Facies Sr. TDM Bothwell East

5 cm



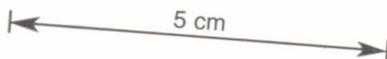
Figure A2.12 Facies Sr, Fsc. TDM.Bothwell West

5 cm



Figure A2.13 Facies Sr, Ss, F1 TDM Bothwell East

Contact between the Cygnet Coal Measures and the Ferntree Formation.



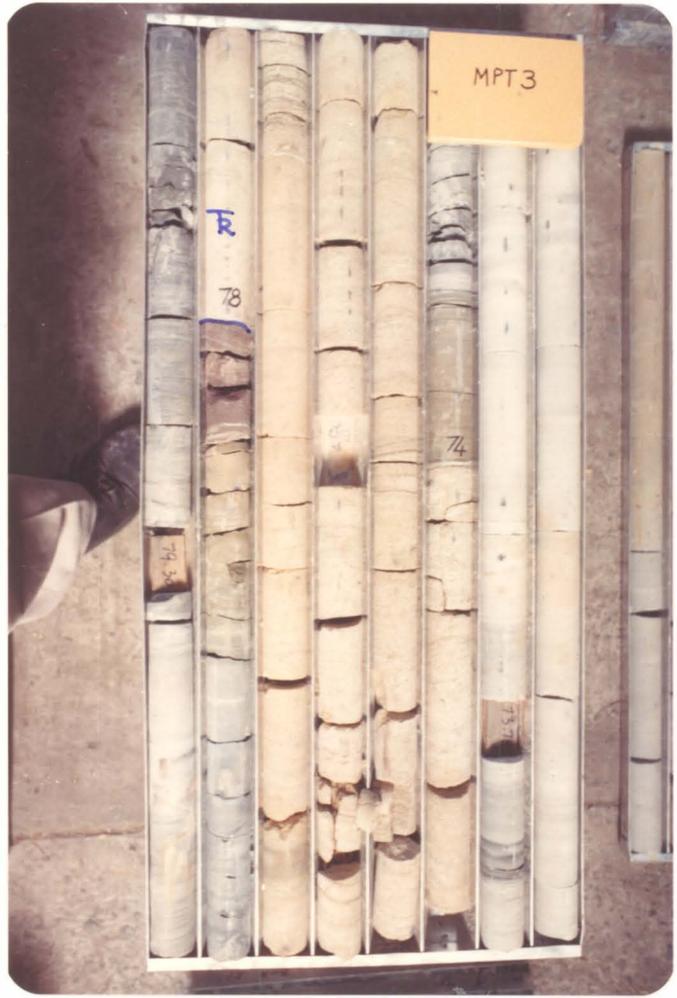
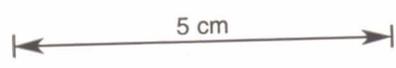


Figure A2.14 Contact between the Cygnet Coal Measures on the Triassic Sandstone in MPT#3



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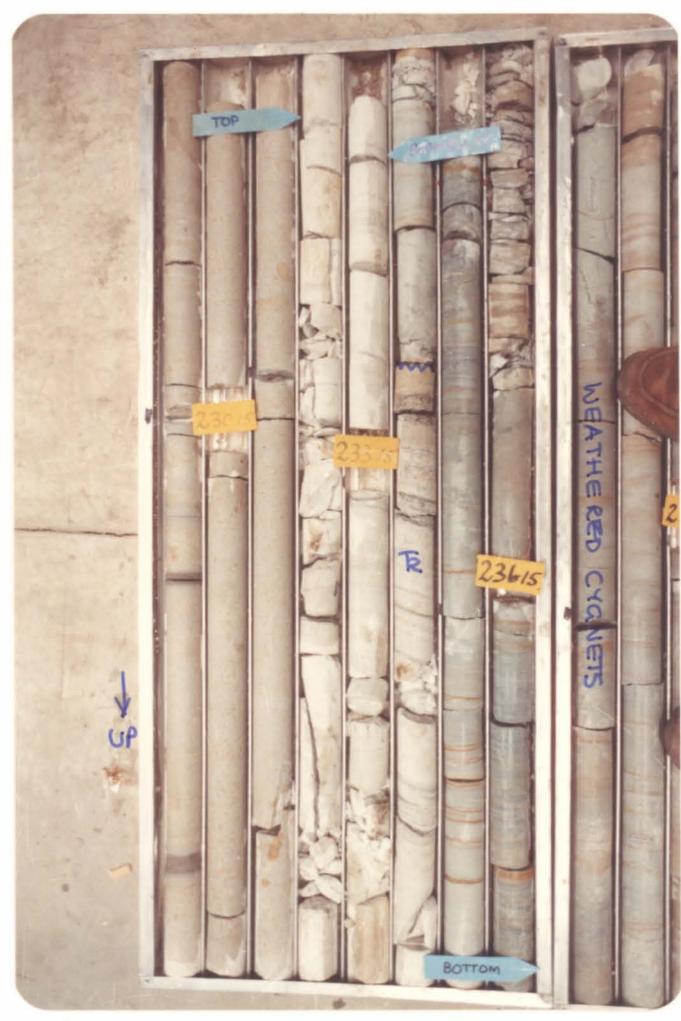


Figure A2.15 Contact of Triassic upon weathered Cygnet Coal Measures in TDM Bothwell west.





Figure A2.16 Core from TDM Cygnet #2. Coal Measures from 16.76-23.02m. Facies as indicated.



APPENDIX 3

MOBIL ENERGY MINERALS AUSTRALIA

DRILL HOLE: MPT 1

LOCATION: DUNGROVE

TOTAL DEPTH: 344.80

DRILLED BY: A.C.D.

PROJECT: TASMANIA BASIN

DRILLING FLUID: WATER

LOGGED BY: MJM/AJW

TENEMENT: EL 30/80

DATE: STARTED 3.10.83

COMPLETED 13.10.83

Depth to Base (m)	Thickness (m)	Lithology
0.0	0.0	
0.5	0.5	<u>clay</u> ; dark greyish brown; heavily weathered
3.0	2.5	<u>clay</u> ; light brown, sandy; heavily weathered
5.0	2.0	<u>clay</u> ; light greyish brown (10%) and mudstone, grey brown - heavily weathered
9.0	4.0	<u>mudstone</u> ; dark greyish brown; slightly weathered
		BASE OF WEATHERING 9.0 m
21.0	12.0	<u>mudstone</u> ; grey, silty in parts
22.0	1.0	<u>siltstone</u> ; light grey muddy in parts
37.0	15.0	<u>mudstone</u> ; grey, silty in parts
41.0	4.0	<u>mudstone</u> ; medium grey
52.0	11.0	<u>mudstone</u> ; dark grey; silty in parts
59.0	7.0	<u>mudstone</u> ; medium grey; quartz fragment at the base of unit; silty
68.0	9.0	<u>mudstone</u> ; dark grey, silty
		minor cored section
76.0	7.0	<u>mudstone</u> ; medium grey; silty with quartz fragments
77.0	1.0	<u>mudstone</u> ; pyrite nodules abundant; moderately strong, very thickly bedded; bioturbated; containing widely spaced joints dipping at 85° with calcite mineralisation on the joint planes
80.0	3.0	<u>mudstone</u> ; dark grey
85.0	5.0	<u>siltstone</u> ; medium grey; muddy in part; pyrite nodules throughout; sporadic pebbles throughout; moderately strong; very thinly bedded with bioturbation; widely spaced joints dipping at 85° with calcite mineralisation on the joint planes.
		end of cored section

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MOBIL ENERGY MINERALS AUSTRALIA

DRILL HOLE: MPT 1

LOCATION: DUNGROVE

TOTAL DEPTH: 344.80

DRILLED BY: A.C.D.

PROJECT: TASMANIA BASIN

DRILLING FLUID: WATER

LOGGED BY: MJM/AJW

TENEMENT: EL 30/80

DATE: STARTED 3.10.83

COMPLETED 13.10.83

Depth to Base (m)	Thickness (m)	Lithology
		end of cored section
94.0	9.0	<u>siltstone</u> ; medium grey; muddy in parts; quartz at the base of unit
99.0	5.0	<u>sandstone</u> ; light grey; silty
END OPEN HOLE SECTION		
102.84	3.84	SANDSTONE; light grey, fine/medium grained; silty and shaley wisps and stringers throughout; bioturbated zones throughout; irregular subvertical fractures; sporadic dropstones; calcite veins 15 mm thick at top of unit (joint controlled); rare pyrite on joint faces; core broken
106.37	3.53	SANDSTONE; grey to light grey; silty throughout; silty wisps and stringers, bioturbated zones; rare dropstones; minor irregular sub vertical fractures; calcite vein - 20 mm thick, joint bounded - approx. 2 metres from top of unit; pyrite on joint surfaces; core broken in part.
107.34	0.97	SILTSTONE; grey to light grey; sandy throughout; with sandy/shaley wisps and stringers throughout; bioturbated in part; minor, small dropstones.
114.29	6.95	MUDSTONE; medium grey; silty in parts; minor sandy/silty wisps and stringers; minor bioturbation; subvertical to 45° fractures throughout; rare small dropstones; pyrite on joint surfaces; calcite veins 3 mm thick, approx. 0.5 metres from base of unit; brachiopod mould approx. middle of unit; core broken in part.
118.09	3.80	SILTSTONE; medium grey, sandy/muddy in parts; muddy wisps and stringers; abundant dropstones throughout (varying in size); minor irregular fractures in the central zone; calcite crystals in this zone; rare pyrite nodules; core broken in part.
122.20	2.11	MUDSTONE; silty in parts; medium grey; minor small dropstones throughout; subvertical fractures; pyrite mineralisation on fracture zones.
123.53	1.33	MUDSTONE; grey; silty in parts; minor bioturbation; minor calcite veining.

MOBIL ENERGY MINERALS AUSTRALIA

DRILL HOLE: MPT 1

LOCATION: DUNGROVE

TOTAL DEPTH: 344.80

DRILLED BY: A.C.D.

PROJECT: TASMANIA BASIN

DRILLING FLUID: WATER

LOGGED BY: MJM/AJW

TENEMENT: EL 30/80

DATE: STARTED 3.10.83

COMPLETED 13.10.83

Depth to Base (m)	Thickness (m)	Lithology
133.25	9.72	SILTSTONE; grey to light grey; muddy in parts; small dropstones scattered throughout; subvertical fractures throughout upper ½ of unit; calcite veins - joint controlled - in lower half of unit; rare pyrite on joint surfaces; minor bioturbated zones; core broken in part.
136.36	3.11	SANDSTONE; grey to light grey; fine grained; silty; silty/muddy wisps and stringers throughout; small dropstones throughout the unit; minor calcite veining; rare pyrite nodules; minor bioturbation.
140.74	4.38	SANDSTONE; fine medium grained; muddy in parts; muddy wisps and stringers; occasional dropstones becoming more frequent towards the base; minor calcite veining; minor zones of bioturbation.
141.90	1.16	MUDSTONE; medium to dark grey; subvertical fracture at top of unit; calcite veining along fractures; rare dropstones; massive.
142.67	0.77	SILTSTONE; medium grey; muddy/sandy in parts with silty/muddy wisps; dropstones throughout; occasional pyrite flecks; bioturbated throughout.
146.17	3.50	SILTSTONE; medium-dark grey; muddy/sandy in parts; with sandy/muddy wisps; rare dropstones, subvertical jointing middle of unit; calcite infilling with associated pyrite; weakly bioturbated zones present; generally massive; becoming muddier towards the base.
150.54	4.37	SILTSTONE; grey to light grey; sandy in parts; muddy in parts; muddy wisps and stringers; large dropstones present; numerous dropstones throughout; minor calcite veins; (near base of unit); bioturbated throughout; rare pyrite; becoming muddier towards the base.
153.58	3.04	MUDSTONE; medium-dark grey; silty wisps and sandy/silty zones; occasional dropstones; subvertical fractures; calcite in filling in fractures; numerous calcite veins; minor zones of bioturbation; becoming silkier towards base.
157.56	3.95	SILTSTONE; medium grey; muddy in parts with muddy wisps and stringers; occasional dropstones, vary in size throughout the unit; bioturbated zones.

MOBIL ENERGY MINERALS AUSTRALIA

DRILL HOLE: MPT 1

LOCATION: DUNGROVE

TOTAL DEPTH: 344.80

DRILLED BY: A.C.D.

PROJECT: TASMANIA BASIN

DRILLING FLUID: WATER

LOGGED BY: MJM/AJW

TENEMENT: EL 30/80

DATE: STARTED 3.10.83

COMPLETED 13.10.83

Depth to Base (m)	Thickness (m)	Lithology
157.98	0.42	MUDSTONE; dark grey with silty stringers; slightly bioturbated; rare dropstones.
167.81	9.83	SILTSTONE; medium grey; muddy in parts with mud stringers and wisps; dropstones throughout but concentrations occur in certain zones; occasional muddy silt to silty mudstone beds in the unit up to 15 cm thick; bioturbated zones common; minor irregular calcite veins in muddier units; core broken in part.
170.55	2.74	SILTSTONE; medium-grey to light grey; muddy in part (particularly towards the base) muddy stringers more common in the centre of the unit; extensive calcite veins up to 25 mm thick; pyrite on joint faces; minor bioturbated zones; occasional small dropstones; core broken in part; pyrite nodules in lower 30 cm of unit.
172.03	1.48	SANDSTONE AND MUDSTONE interbedded Sandstone - fine-medium grained; muddy; light grey; silty/muddy wisps and stringers Mudstone - dark grey; sandy in part with sandy wisps and stringers. Dropstones common throughout; minor bioturbated zones, rare pyrite cystals.
176.45	4.92	MUDSTONE; dark grey; sandy in part with sandy/silty stringers and wisps; core fractured extensively; minor calcite veining and minor pyrite mineralisation; jointing irregular; bioturbated zones occurring above small sandstone interbeds; dropstones more common in the sandstones; pyrite mineralisation common; unit becoming sandier towards base. Sandstone - fine-medium grained; abundant muddy stringers; pyrite vein common.
183.45	6.50	SANDSTONE; grey to light grey; fine-medium grained; muddy in parts; silty throughout with abundant muddy wisps in zones; some minor irregular calcite veins; subvertical in upper part of unit; pyrite mineralisation associated with calcite veins; occasional coarse quartz grains throughout and feldspars evident throughout; minor bioturbated zones; occasional dropstones occurring in the lower 1/2 of the unit; pyrite vein 2 - 3 mm thick at 182.354 metres, core broken in part.

MOBIL ENERGY MINERALS AUSTRALIA

DRILL HOLE: MPT 1

LOCATION: DUNGROVE

TOTAL DEPTH: 344.80

DRILLED BY: A.C.D.

PROJECT: TASMANIA BASIN

DRILLING FLUID: WATER

LOGGED BY: MJM/AJW

TENEMENT: EL 30/80

DATE: STARTED 3.10.83

COMPLETED 13.10.83

Depth to Base (m)	Thickness (m)	Lithology
185.32	1.87	SILTSTONE; medium grey; sandy n part with mud/sand stringers and wisps; minor bioturbated zones; minor subvertical calcite veins; unit becoming sandier towards base; core broken in part.
186.59	1.27	SANDSTONE; grey to light grey; silty in part; minor silty stringers; occasional dropstones in upper part of unit; feldspars evident throughout; fine-medium grained.
194.24	5.65	SANDSTONE; grey to light grey; silty in parts; fine-medium grained; numerous muddy/silty stringers and wisps; occasional dropstones in upper part of unit; bioturbated zones; abundant limestone/calclitic lenses; abundantly fossiliferous throughout; Fossil types include - corals; fenes tellids, brachiopod shells. All calcified; rare pyrite mineralisation associated with the fossils.
230.94	36.70	SILTSTONE AND SANDSTONE - interbedded & interlaminated. Siltstone - light grey; muddy zones; numerous muddy stringers Sandstone - medium grey; medium grained; silty in part Abundantly fossiliferous; rare pyrite associated with the fossils. Fossil types as denoted previously; occasional calcitic lenses; minor irregular fractures at the 200 metre and 212 metre marks with calcite veins and pyrite on joint faces; bioturbated zones; brachiopod casts can be seen in zones; occasional pyrite nodules; zones of crushed core; occasional zones of unfossiliferous siltstone.
252.58	21.64	SILTSTONE: light grey to grey with muddy zones; sparsely fossiliferous; muddy stringers and wisps; calcite veins - subvertical, irregular; bioturbated zones; calcareous fossils; crush zone from 239.58 - 242.07 (core puggy, muddy with abundant calcite veins and pyrite common); core massive in part.

MOBIL ENERGY MINERALS AUSTRALIA

DRILL HOLE: MPT 1

LOCATION: DUNGROVE

TOTAL DEPTH: 344.80

DRILLED BY: A.C.D.

PROJECT: TASMANIA BASIN

DRILLING FLUID: WATER

LOGGED BY: MJM/AJW

TENEMENT: EL 30/80

DATE: STARTED 3.10.83

COMPLETED 13.10.83

Depth to Base (m)	Thickness (m)	Lithology
258.59	6.01	SANDSTONE AND SILTSTONE - interbedded Sandstone - fine-medium grained; massive; silty in parts; minor irregular calcite veins; sparsely fossiliferous Siltstone - dark grey; unfossiliferous; muddy stringers and wisps Minor dropstones; minor bioturbation; siltstone/sandstone contacts are well defined; sandstone beds in the order of 30 cm thick and siltstone beds in the order of 40 cm thick.
259.88	1.29	SANDSTONE; grey to medium grey; fine to medium grained; rare fossils; silty in parts; numerous small dropstones; rare subvertical calcite fractures; occasional pyrite nodules and veins; poorly sorted; numerous coarse to granule sized quartz fragments.
274.27	14.39	SILTSTONE with occasional SANDSTONE interbeds Siltstone - grey to light grey; muddy in part; muddy stringers and wisps; rare small fossils; small irregular fractures; massive in part; bioturbated in part Sandstone - grey; silty in part; fossils common - small with associated pyrite; rare dropstones; fine-medium grained; occasional coarse to granule sized fragments. Calcite veining; subvertical to 45°; lithological contacts occasionally distinct; crushed zone with calcite veins up to 5 mm thick at 271.90 metres; rare associated pyrite.
280.64	6.37	SILTSTONE; grey to light grey; muddy wisps and stringers; occasional dropstones; rare 45° fractures; mudstone lens at 277.06 metres (25 mm thick); scattered pyrite throughout; sandy in part; calcite veining; subvertical at 279.0 metres with abundant pyrite; core broken in part; unfossiliferous.
282.57	1.93	SANDSTONE; medium grained; light grey; matrix supported; occasional granule to pebble sized quartz fragments throughout; generally massive; occasional subvertical calcite veining with pyrite nodules; rare dropstones; irregular muddy zones throughout.

MOBIL ENERGY MINERALS AUSTRALIA

DRILL HOLE: MPT 1

LOCATION: DUNGROVE

TOTAL DEPTH: 344.80

DRILLED BY: A.C.D.

PROJECT: TASMANIA BASIN

DRILLING FLUID: WATER

LOGGED BY: MJM/AJW

TENEMENT: EL 30/80

DATE: STARTED 3.10.83

COMPLETED 13.10.83

Depth to Base (m)	Thickness (m)	Lithology
288.41	5.84	SILTSTONE; medium to light grey; massive, occasional muddy wisps throughout; smooth surfaced 45° fractures and irregular subvertical fractures; minor pyrite/calcite veining; rare dropstones; sandy zone around 286.50 metres.
288.51	0.10	SANDSTONE; coarse grained; light grey; thin, irregular beds of siltstone; numerous granule sized fragments; silica cemented with possible dropstones; irregular upper and lower contacts; poorly sorted; numerous small fragments; no grading apparent; irregular subvertical calcite vein.
288.88	0.37	SILTSTONE; medium grey; sandy throughout; generally massive; irregular calcite fracture at top of unit; coarse grain d patches at base of unit; gradational lower contact.
289.41	0.53	SANDSTONE; medium to coarse grained; medium-light grey; muddy; matrix supported; poorly sorted; numerous granule sized fractions present; irregular silty/muddy zones throughout; subvertical calcite veining; rare pebbles; sharp lower contact.
289.73	0.32	SILTSTONE; medium grey to grey; sandy, muddy wisps; starved ripples (?); irregular calcite veining with associated pyrite; occasional coarse sand nodules in upper part of unit.
290.45	0.73	SANDSTONE; grey to light grey; fine-medium grained; numerous coarse granule fragments throughout; matrix supported with irregular interlaminations of silt; poorly sorted; occasional dropstones; irregular calcite/ pyrite veining with disseminated pyrite in zones.
290.96	0.51	SANDSTONE; light grey; medium grain d; quartzose; becoming more pebbly towards the base; large pebbles at base; irregular lower contact; well sorted; muddy zone at base; irregular calcite/pyrite veining with disseminated pyrite in zones.

MOBIL ENERGY MINERALS AUSTRALIA

DRILL HOLE: MPT 1

LOCATION: DUNGROVE

TOTAL DEPTH: 344.80

DRILLED BY: A.C.D.

PROJECT: TASMANIA BASIN

DRILLING FLUID: WATER

LOGGED BY: MJM/AJW

TENEMENT: EL 30/80

DATE: STARTED 3.10.83

COMPLETED 13.10.83

Depth to Base (m)	Thickness (m)	Lithology
297.03	6.07	SILTSTONE; light grey-grey; sandy in parts, particularly at the top of the unit; sand as ripples in top 1 metre of unit; generally massive; fractures with calcite/pyrite veining; occasional sand nodules and rare pyrite nodules; small 5 cm thick zone of fine grained sand in lower metre of unit with 10 cm of sandy ripples in the siltstone above and below.
299.53	2.50	SANDSTONE; light grey; fine-medium grained; numerous silty wisps throughout; and as concentrations in zones throughout the unit; rare pebbles in upper ½ of unit; well sorted; silt content increasing down the unit with wisps becoming interlaminae; bottom 15 cm of unit pebbly with sharp irregular basal contact; occasional pyrite nodules; disseminated pyrite throughout.
304.65	5.12	SILTSTONE; light-medium grey; sandy zones; sandy/muddy wisps and laminae; occasional dropstones; thin sandstone interbeds in middle of unit; irregular fractures with associated pyrite; core broken in part; gradational lower contact; occasional pyrite nodules near upper contact.
306.40	1.75	SANDSTONE; grey to light grey; fine-medium grained; matrix supported; mudstone matrix; minor dropstones; rare coarse quartz fragments; rare pyrite.
307.04	0.64	SANDSTONE; light grey; fine-medium grained; silty wisps and laminae throughout; rare pyrite; minor cross-bedded laminae.
308.13	1.09	SILTSTONE; grey; sandy laminae at top; minor sandy wisps; minor 45° fractures; pyrite on fracture surfaces; minor calcite on fracture surfaces; generally massive.
310.92	2.79	SANDSTONE AND SILTSTONE finely interbedded (40/60) Sandstone - fine-medium grained; grey-light grey Siltstone - grey; muddy in part Disturbed irregular bedding; fracture surfaces with calcite and occasional pyrite nodules; fracture zone approx. one metre from top of unit with abundant pyrite.

MOBIL ENERGY MINERALS AUSTRALIA

DRILL HOLE: MPT 1

LOCATION: DUNGROVE

TOTAL DEPTH: 344.80

DRILLED BY: A.C.D.

PROJECT: TASMANIA BASIN

DRILLING FLUID: WATER

LOGGED BY: MJM/AJW

TENEMENT: EL 30/80

DATE: STARTED 3.10.83

COMPLETED 13.10.83

Depth to Base (m)	Thickness (m)	Lithology
312.84	1.92	SILTSTONE; grey; sandy in part; minor sandy bands and laminae; core broken approx. ½ metre from top of unit; subvertical jointing; calcite and pyrite infilling; minor bioturbated zones.
313.16	0.32	SANDSTONE; fine-medium grained; light grey; matrix supported; mudstone matrix; irregular fractures with calcite and pyrite infilling.
313.97	0.81	SILTSTONE; grey; generally massive; rare dropstones; subvertical fractures; calcite veining at top.
316.85	2.88	SANDSTONES; fine-grained; silty; light grey; silty wisps and stringers; rare glendonites (?); irregular sub vertical fracturing with pyrite and calcite veining; numerous pyrite nodules.
316.98	0.13	LIMESTONE; light grey-white; bioclastic; numerous pyrite nodules throughout; abrupt lower contact.
325.52	8.54	SILTSTONE; light grey-grey; muddy wisps and stringers in parts; generally massive; rare dropstones; subvertical fractures with pyrite and calcite in filling.
326.06	0.54	MUDSTONE; very soft and puggy; light grey; breaks down and swells on contact with water.
326.78	0.72	SILTSTONE; grey-light grey; muddy in part; generally massive; small zone of muddy wisps in lower 20 cm of unit; irregular fractures; calcite veining; with pyrite nodules.
326.96	0.18	LIMESTONE; white-light grey; extremely silty in part; abrupt upper and lower contacts; no obvious fossils.
329.68	2.72	SILTSTONE; grey-light grey; irregular fractures; generally massive with small dark grey mudstone beds (5 cm thick) in the middle of the unit; calcite/pyrite veining; occasional dropstones.
337.43	7.65	SILTSTONE; medium grey-grey; muddy/clayey throughout; core crushed in part; abundant calcite veining; occasional sandy zones; distinct talcy feel; rare quartz fragments; rare pyrite; lower contact gradational over 20 cm; core baked throughout.

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MOBIL ENERGY MINERALS AUSTRALIA

DRILL HOLE: MPT 1

LOCATION: DUNGROVE

TOTAL DEPTH: 344.80

DRILLED BY: A.C.D.

PROJECT: TASMANIA BASIN

DRILLING FLUID: WATER

LOGGED BY: MJM/AJW

TENEMENT: EL 30/80

DATE: STARTED 3.10.83

COMPLETED 13.10.83

Depth to Base (m)	Thickness (m)	Lithology
344.80	7.37	DOLERITE; extremely fine grained at top becoming coarser towards the base; occasional thin calcite veins; numerous regular fractures; subvertical to 45°.

END OF HOLE AT 344.80 METRES

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MOBIL ENERGY MINERALS AUSTRALIA

DRILL HOLE: MPT 2

LOCATION: LACHLAN

TOTAL DEPTH: 122.65

DRILLED BY: A.C.D.

PROJECT: TASMANIA BASIN

DRILLING FLUID: WATER

LOGGED BY: AJW

TENEMENT: EL 30/80

DATE: STARTED 18.10.83

COMPLETED 27.10.83

Depth to Base (m)	Thickness (m)	Lithology
1.5	1.5	<u>clay</u> ; yellow orange, heavily weathered; minor sand fraction.
3.0	1.5	<u>clay</u> ; yellowish brown, approx. 30-40% sand.
7.5	4.5	<u>sandstone</u> ; fine-medium grained; yellow orange; quartzose; minor amounts of 'shaley' material; 25% clay.
9.0	1.5	<u>siltstone</u> ; medium grey with subordinate amounts of quartz fragments (possible contamination from above).
13.0	4.0	<u>siltstone</u> ; dark grey; large mud fraction.
18.0	5.0	<u>siltstone</u> ; medium grey to grey; muddy zones.
END OPEN HOLE		
27.29	9.29	<u>siltstone</u> ; medium grey to grey; muddy in part; thin interbeds of mudstone near top of unit becoming less frequent towards base; occasional sandy zones with granule sized fragments; bedding becoming disturbed down the sequence (turbulent or bioturbated zones); numerous pyrite veins and subvertical fractures with calcite; core broken in part; where core shows turbulence - sand content is greatest; pyrite nodules in zones; occasional solution cavities in core where calcite has been removed or dissolved; rare dropstones; crushed zone near base of unit.
28.07	0.78	SANDSTONE; fine-medium grained; grey to light grey; muddy, silty in parts silty wisps and stringers throughout; irregular subvertical fractures with pyrite and calcite veining; rare pyrite nodules; core broken/crushed; matrix supported.
31.81	3.74	SILTSTONE; light grey; sandy in parts; numerous interlaminated and thinly interbedded mudstones; area disseminated pyrite and pyrite layers in mud beds; mica abundant on mud faces; wavy bedding apparent; core broken in part; sharp erosional base; pebbles and granule fragments at base of unit; pyrite nodules; small solution cavities at base.

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MOBIL ENERGY MINERALS AUSTRALIA

DRILL HOLE: MPT 2

LOCATION: LACHLAN

TOTAL DEPTH: 122.65

DRILLED BY: A.C.D.

PROJECT: TASMANIA BASIN

DRILLING FLUID: WATER

LOGGED BY: AJW

TENEMENT: EL 30/80

DATE: STARTED 18.10.83

COMPLETED 27.10.83

Depth to Base (m)	Thickness (m)	Lithology
33.30	1.49	SANDSTONE; medium-fine grained; medium grey; silty throughout with silty wisps and stringers; occasional dropstones; pebbly horizon $\frac{1}{2}$ metre below the top of the unit; occasional pyrite veining; numerous coarse granule sized fragments throughout; coarser texture and feel than overlying sandstone; poorly sorted.
35.92	2.62	SILTSTONE; medium grey to grey, sandy at top of unit; core broken in part; pyrite veining, bioturbated in part particularly towards the base; occasional drop stones or pebbles; rare pyrite nodules; @ 35.30 metres sandstone/siltstone ratio is approx 50:50 with no distinct bedding; heavily bioturbate, sandstones are fine-medium grained and light grey.
40.27	4.35	SILTSTONE; grey to light grey; muddy in part; muddy stringers and wisps; pyrite veins common; calcite veins common; sand/zones in middle of unit; bioturbate in part; occasional pyrite nodules; rare mud pellets; 11 cm mudstone bed at 38.55 metres; silty in part with silty wisps.
40.89	0.62	SILTSTONE; medium grey to grey; sandy in part with sandy/muddy wisps and stringers; bioturbate, pebbly band at level 20 cm below the top of unit; numerous coarse-granule sized fragments; calcite nodules common in lower 15 cm of the unit; occasional pyrite nodules throughout; sandy areas are fine-medium grained.
42.70	1.81	MUDSTONE AND SILTSTONE interbedded mudstone - dark grey; silty in part; disseminated pyrite; occasional sandy wisps siltstone - grey to light grey; muddy in part; occasional sandy wisps

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MOBIL ENERGY MINERALS AUSTRALIA

DRILL HOLE: MPT 2

LOCATION: LACHLAN

TOTAL DEPTH: 122.65

DRILLED BY: A.C.D.

PROJECT: TASMANIA BASIN

DRILLING FLUID: WATER

LOGGED BY: AJW

TENEMENT: EL 30/80

DATE: STARTED 18.10.83

COMPLETED 27.10.83

Depth to Base (m)	Thickness (m)	Lithology
48.19	5.49	SILTSTONE; first appearance of fossils; grey to light grey; silty in part; muddy and sandy wisps and stringers; rare dropstones; rare calcite nodules; distorted bands of mud (hydroplastic) throughout; occasional brachiopods; solution cavities in lower part of the unit; occasional pyrite grains; occasional sandstone bands; fossils casts and molds; generally brachiopods; occasional jointing, subvertical in lower ½ of unit with calcite granules on the surface; mud content generally consistent throughout the unit; sandstones in this unit are - fine to medium grained; light grey and silty.
49.30	1.11	MUDSTONE; dark grey; sandy in part; silty throughout; silty wisps; numerous fossils preserved including solitary corals as casts; rare dropstones; sandy zone in the middle of the unit; rare pyrite; becoming silkier towards the base; bottom 20 cm generally massive.
52.44	3.14	SILTSTONE; grey to light grey; sandy throughout; muddy zones; very fossiliferous; bivalve molds and numerous smaller fossils; sand grains fine-medium size present throughout; core crushed at top of unit; muddy wisps and stringers in zones throughout; sand ripples in the middle of the unit; abundant pyrite and calcite veining in the middle of the unit and near the base; fossil content decreasing towards the base of unit; rare fenestella.
55.37	2.93	MUDSTONE; dark grey to grey; silty/sandy throughout; core crushed in part; abundant pyrite and occasional calcite veining; rare dropstones; occasional fossils (molds and casts) fenestella and brachiopods; semi-fissile unit; numerous sandy zones.
60.33	4.96	SILTSTONE; grey to light grey; sandy throughout; muddy in part; occasional fossils; calcite veining with associated pyrite; sandy zone approx ½ metre from the top of the unit with abundant pyrite nodules; fossils occur as solitary items; further zones of sandy siltstone with numerous pyrite nodules approx. middle of unit (about 20 cm thick); muddy wisps increasing towards bottom of unit.
60.94	0.61	SILTSTONE AND MUDSTONE; interbedded and interlaminated; sandy in part; fossils becoming more abundant towards the base of the unit; disseminated pyrite throughout.

MOBIL ENERGY MINERALS AUSTRALIA

DRILL HOLE: MPT 2

LOCATION: LÁCHLAN

TOTAL DEPTH: 122.65

DRILLED BY: A.C.D.

PROJECT: TASMANIA BASIN

DRILLING FLUID: WATER

LOGGED BY: AJW

TENEMENT: EL 30/80

DATE: STARTED 18.10.83

COMPLETED 27.10.83

Depth to Base (m)	Thickness (m)	Lithology
68.30	7.36	SILTSTONE; grey to light grey; occasional dropstones; occasional fossils; muddy in part with occasional muddy wisps; generally massive; rare pyrite nodules; occasional calcite veining; becoming muddier towards the base; thin sandstone bed-fine to medium grained quartz grains - 10 cm thick in the middle of the unit.
83.02	14.72	SILTSTONE; grey to light grey; sandy and muddy in part; numerous fossils becoming more abundant down the unit; fossils of various sizes; occasional calcite veins throughout; dropstones common, concentrated in zones; sand/mud/silt intermixed in areas; sand sized generally medium to fine grained with occasional coarse arid granule sized fragments; fossil types include - fenestella, corals, brachiopods; rare pyrite nodules are associated with fossils; bottom 2 metres of unit is sparsely fossiliferous and shows muddy wisps with little sand content; bioturbated in part.
86.27	3.25	SANDSTONE; grey to greeny grey; fine to medium grained; matrix supported; highly fossiliferous; highly bioturbated; occasional fossils containing mud in fillings; occasional coarser grains and fragments throughout; rare dropstones at top of unit; calcareous zones in middle of unit; disseminated pyrite common; rare, very thin calcite veining.
87.06	0.79	SILTSTONE; dark grey-grey; muddy throughout; numerous fossils (small) bioturbated in part; occasional disseminated pyrite; minor sandy zones.
101.11	14.05	SILTSTONE; grey to light grey; sandy throughout; highly fossiliferous; minor muddy zones; rare pyrite nodules; bioturbated in part; fossil distribution generally even throughout; calcite bed approx 3 cm thick - 1.3 metres from top of unit; disseminated pyrite more abundant in lower 1/3 of the unit; minor calcite veins.
102.13	1.02	SILTSTONE; grey to light grey; sandy in part; sparsely fossiliferous; becoming sandier towards the base; pyrite associated with fossils; minor calcific veining; generally massive.

MOBIL ENERGY MINERALS AUSTRALIA

DRILL HOLE: MPT 2

LOCATION: LACHLAN

TOTAL DEPTH: 122.65

DRILLED BY: A.C.D.

PROJECT: TASMANIA BASIN

DRILLING FLUID: WATER

LOGGED BY: AJW

TENEMENT: EL 30/80

DATE: STARTED 18.10.83

COMPLETED 27.10.83

Depth to Base (m)	Thickness (m)	Lithology
108.50	6.37	SILTSTONE; medium grey to grey; muddy throughout; sandy zones; highly fossiliferous; pyrite commonly associated with fossils; unit becoming increasingly sandier in lower ½ of unit; fossils occur as molds and casts; occasional coarse sand fragments in parts; fossils tend to occur in concentrations in sandier zones.
109.95	1.45	SANDSTONE; grey to green grey; fossiliferous; silty throughout; matrix supported in part; muddy zones; minor calcite veining; minor pyrite associated with fossils; mudstone interbanded in zones towards the base of unit; fossil concentration at base of unit.
116.90	6.95	SILTSTONE; grey; sandy in part; muddy zones common; 2 cm mudstone band at top of unit; fossiliferous; muddy and sandy areas throughout with no apparent beddings; Mudstone and sandstone are interbanded and interbedded also towards the base of the unit; fossil concentrations in sandy areas in middle of unit; minor calcite veining in upper part of the unit; minor pyrite (disseminated and associated with fossils); coarse sand in zones; siltstone zones sparsely fossiliferous in middle of unit; bioturbated throughout; siltstone almost quartzitic due to baking effects.
117.31	0.41	MUDSTONE; dark grey to grey; silty/sandy in part; sparsely fossiliferous, minor calcite veining; minor bioturbation, becoming siltier towards bottom of the unit; minor calcite throughout.
118.23	0.92	SILTSTONE; grey; fossiliferous; sandy throughout; minor calcite veining; grading into very sandy siltstone in zones; numerous coarse granules.
122.30	4.07	SILTSTONE; dark grey to medium grey; muddy in part; sandy in part; sparsely fossiliferous; core crushed from 118.60 metres downwards; minor calcite veining; probable fault zone; fossil content decreasing downwards; rare pyrite.
122.65	0.35	SANDSTONE; fine-medium grained; silty in part; core crushed; puggy texture in core.

END OF HOLE AT 122.65 M

MOBIL ENERGY MINERALS AUSTRALIA

DRILL HOLE: MPT 3

LOCATION: DROMEDARY

TOTAL DEPTH: 169.80

DRILLED BY: A.C.D.

PROJECT: TASMANIA BASIN

DRILLING FLUID: WATER

LOGGED BY: AJW

TENEMENT: EL 30/80

DATE: STARTED 29.10.83

COMPLETED 04.11.83

Depth to Base (m)	Thickness (m)	Lithology
9.70	9.70	sand; fine to medium grained; quartzose yellow orange at top grading to grey brown at base; silty/muddy in parts.
11.27	1.57	MUDSTONE: dark grey to grey; sandy zones throughout; minor sandy lens' becoming interbeds at base; poorly sorted zones at base.
14.24	2.97	SANDSTONE; grey to light grey; yellow white at base; fine to medium grained; muddy/silty in parts; muddy/silty stringers and wisps; micaceous in parts; small scale cross laminations in parts; massive zones towards base; high matrix % in parts; occasional coarser fragments at base.
15.50	1.26	MUDSTONE; brown at top to greeny grey at base; weakly fissile throughout with fissility running subparallel at top to 40° at base; micaceous in part; minor slickensides near base; generally massive; minor sandy zones in top 15 cm and bottom 10 cm; core broken in part.
16.24	0.74	SANDSTONE; fine-medium grained; light grey; silty in part; silty wisps and stringers; minor cross-laminations and wavy bedding near the base of the unit; core broken in part; micaceous; rippling; moderate matrix content; abundant grain to grain contact.
18.47	2.23	MUDSTONE: greeny grey at top to grey at base; sandy zones near top of unit; weakly fissile throughout running at right angles to the core; micaceous; mica more prominent in lower ½ of unit; sand content increasing towards base of unit; generally massive; occasional sandy stringers near the base.
19.68	1.21	SANDSTONE AND MUDSTONE interbedded and thinly interbedded; proportion 60:40; light grey at top to brownish grey at base; cross laminations throughout unit; micaceous (particularly the mudstone); weakly fissile; towards the base; both planar and trough cross-laminations present; thin mudstone beds more prevalent towards base; possible starved ripples near base.
22.97	3.29	MUDSTONE: dark grey with minor brown grey areas; shaley in part; fissile throughout running perpendicular to the core with possible joint planes (secondary fissility) parallel to core; core broken throughout; minor sandy zones; micaceous; massive; becoming interlaminations and thinly interbedded in lower 30 cm; small scale cross laminations and ripples; areas of turbulent deposition (convoluted bedding).

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MOBIL ENERGY MINERALS AUSTRALIA

DRILL HOLE: MPT 3

LOCATION: DROMEDARY

TOTAL DEPTH: 169.80

DRILLED BY: A.C.D.

PROJECT: TASMANIA BASIN

DRILLING FLUID: WATER

LOGGED BY: AJW

TENEMENT: EL 30/80

DATE: STARTED 29.10.83

COMPLETED 04.11.83

Depth to Base (m)	Thickness (m)	Lithology
23.68	0.71	SANDSTONE; brown to grey brown throughout; top 20 cm is interlaminated with mudstone as above; fine-medium grained; core broken; high matrix content; occasional coarser grained material near base of unit; thin mudstone beds at base of unit; micaceous; bedding running 40° to core near base of unit.
24.14	0.46	MUDSTONE; brown at top and base; minor dark grey unit between; as for previous mudstone without parallel fissility.
25.89	1.75	SANDSTONE; brown at top to white grey at base; fine to medium grained; very fine grained at top; muddy in part; numerous stringers and wisps at top of unit; small scale cross laminations throughout unit; abundantly micaceous at top of unit; mud content decreasing towards base; crush zone 7 cm thick, 40 cm from top of unit; high matrix % in part; high visible porosity in parts; minor subvertical, irregular fractures towards the base of unit; friable in part; extremely puggy at base of unit; occasional coarser fragments base of unit; clayey at base.
27.66	1.77	SANDSTONE; light grey to white-grey; fine to medium grained; massive; friable in parts; minor, irregular, perpendicular fractures throughout; high matrix content; micaceous in part; poorly sorted; occasional purple oxidation stains towards the base of unit.
24.39	6.63	SANDSTONE; light grey; purple grey; brown grey; yellowy grey from top to bottom; fine to medium grained; high matrix %; oxidation stains and colours throughout; occasional muddy and mica wisps and stringers; matrix supported in part; stringers and wisps run sub horizontal; oxidation patterns at various angles to core; friable in part; mottled in part; high visible porosity in zones; minor irregular fractures, subvertical at the base of the unit; sharp, planar, lower contact.
37.09	2.80	SANDSTONE; light grey; fine to medium grained; generally massive; mica stringers and wisps; occasionally at various angles to the core; high matrix %; rare oxidation stains at top of unit.

MOBIL ENERGY MINERALS AUSTRALIA

DRILL HOLE: MPT 3

LOCATION: DROMEDARY

TOTAL DEPTH: 169.80

DRILLED BY: A.C.D.

PROJECT: TASMANIA BASIN

DRILLING FLUID: WATER

LOGGED BY: AJW

TENEMENT: EL 30/80

DATE: STARTED 29.10.83

COMPLETED 04.11.83

Depth to Base (m)	Thickness (m)	Lithology
41.80	4.71	SANDSTONE; yellowy brown to white brown throughout; fine to medium grained; mottled appearance; numerous oxidation bands throughout running sub horizontal to 45° to core; occasional mica; high matrix % friable in part; heavily weathered in part; minor mudstone interlaminations at base of unit; mica more abundant in bottom 20 cm of unit; occasional coarser fragments at base of unit; high visible porosity in zones.
43.40	1.60	MUDSTONE: brown at immediate top of unit; grey to dark grey; sandy throughout; numerous sandstone beds and laminations (thin) throughout; shaley in part; fissile throughout running horizontal to core with weather planes vertical to core; (minor slickensides present); occasional mica; zones of interlaminations with sandstone; minor crosslaminations present; rare pyrite grains associated with slickensided areas; minor pyrite mineralisation in sandstone bands at base of unit.
44.57	1.17	SANDSTONE: grey to light grey; fine to medium grained; high matrix %; occasional mica stringers in the top 20 cm; abundant interlaminations of siltstone/mica/mudstone with occasional thin mudstone beds; contorted bedding parts; small scale cross laminations evident in middle of unit; micaceous in part.
46.18	1.61	SANDSTONE; light grey; fine to medium grained; occasional mica stringers and wisps at top of unit; massive; core broken in part.
47.64	1.64	SANDSTONE AND SILTSTONE; interlaminated and thinly interbedded. Sandstone - light grey; fine to medium grained; high matrix % in parts; abundant micaceous material Siltstone - grey to medium grey; abundantly micaceous. Small scale cross laminations evident; occasional mudstone pellets throughout unit; bedding generally wavy; thin beds of mudstone in unit; weakly fissile.
50.13	2.49	MUDSTONE; medium grey to grey; sandy in part; sandy stringers and wisps; weakly fissile in part; micaceous throughout; zones of turbulent deposition - distorted/recumbent bedding; possible starved ripples; sandy zones prominent towards base of unit; minor reworking at base of unit; possible erosional contact.

MOBIL ENERGY MINERALS AUSTRALIA

DRILL HOLE: MPT 3

LOCATION: DROMEDARY

TOTAL DEPTH: 169.80

DRILLED BY: A.C.D.

PROJECT: TASMANIA BASIN

DRILLING FLUID: WATER

LOGGED BY: AJW

TENEMENT: EL 30/80

DATE: STARTED 29.10.83

COMPLETED 04.11.83

Depth to Base (m)	Thickness (m)	Lithology
52.65	2.52	SANDSTONE; light grey to grey fine-medium grained; core broken in part in middle of unit; area of reworking (3 cm thick - 20 cm from the top of the unit) giving irregular mudstone fragments of various zones; micaceous, particularly towards the base of the unit; abundant muddy and mica stringers and wisps throughout; bottom 1 cm of unit is extremely muddy; sandstone contains a high matrix content; the lower 1 metre is approximately 50:50 (ss:ms); mudstones give and unit weak fissility; possible occasional rippling in bottom metre.
57.61	4.96	SANDSTONE: yellow to brownish orange; small mudstone bands in part; numerous oxidation stains throughout; fine grained; occasional coarse to granule sized fragments more prevalent towards the base of the unit; high matrix content; muddy stringers and wisps in zones; mica abundant on stringer intervals; mud nodules common towards the base of the unit up to 3 cm in diameter; occasional irregular subvertical fractures; core broken in part.
58.39	0.78	SANDSTONE; light grey; fine to medium grained; occasional mica wisps throughout; coarser fragments present becoming common towards the base of the unit; (up to granule sized); high matrix per cent throughout; mudstone nodules toward the base of the unit; core broken in part; poorly sorted in part; occasional mica flakes throughout the unit; core crushed at base; sharp erosional contact.
58.74	0.35	MUDSTONE; with interbeds of sandstone towards the base; minor interlamination at the top of the unit; small scale cross laminations; proportion 70:30; micaceous throughout; pinch and swell effects on sandstone interbeds (irregular shape - non-planar); sandstone is fine to medium grained, light grey, micaceous, little matrix.
60.00	1.16	SANDSTONE; light grey; coarse to granule sized unit containing numerous small mudstone nodules; bedding lies approximately 30° to the horizontal; irregular subvertical fractures throughout; poorly sorted; high matrix content; base of unit marked by appearance of micaceous stringers and wisps; sharp basal contact.

MOBIL ENERGY MINERALS AUSTRALIA

DRILL HOLE: MPT 3

LOCATION: DROMEDARY

TOTAL DEPTH: 169.80

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Depth to Base (m)	Thickness (m)	Lithology
67.10	3.27	SANDSTONE; yellowy brown to orange; medium grained; occasional mica stringers and wisps throughout; high matrix percentage; friable in part; core broken in part; numerous oxidation stains throughout; occasional mud pellets (small); generally massive throughout; occasional coarser fragments throughout.
68.77	1.67	MUDSTONE: SILTSTONE: SANDSTONE; interlaminated and thinly interbedded. Mudstone - medium grey; weakly fissile with occasional sandy stringers and wisps; sharp irregular contacts onto sandstone Sandstone - light grey; fine to medium grained; abundant wisps and stringers throughout (micaceous and muddy); small scale cross laminations towards base of unit Siltstone - medium grey; sandy in part; hard; occasional sandy wisps and stringers; massive in lower section
70.89	2.12	SANDSTONE: brownly orange; medium grained; micaceous stringers and wisps common; high matrix content; occasional siltstone and mudstone pellets in lower half of unit; coarse/granule sized fragments common throughout; matrix milky white; friable in part; thin - matrix supported coarse grained unit at the base with abundant small nodules and mica bordering the pellets and nodules.
74.36	3.47	SANDSTONE; yellowy orange to light grey; fine to very fine grained; quartzose; occasional muddy zones; clean; well sorted; massive up to 73.75 metres; minor mudstone and siltstone interbeds near the base of the unit; thin (3 cm thick) coarser bands with reworked mudstone fragments; mudstones exhibit slight slickensides sharp basal contact.
76.82	2.46	SANDSTONE; high matrix in part (matrix supported); irregular subvertical to horizontal fractures at the top of the unit; core broken in part; numerous stringers and wisps at the base of the unit; rare mudstone nodules; yellowy brown; medium grained.

MOBIL ENERGY MINERALS AUSTRALIA

DRILL HOLE: MPT 3

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DRILLING FLUID: WATER

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Depth to Base (m)	Thickness (m)	Lithology
78.02	1.20	SANDSTONE; yellowy brown to orange; fine to medium grained; high matrix content in parts; occasional muddy and micaceous stringers and wisps; rare mudstone nodules; massive; well sorted; bottom 10 cm is red brown with mudstone fragments at the base; (fragments are elongate and irregularly shaped); occasional subvertical fractures; fissile.
80.37	2.35	MUDSTONE: SILTSTONE: SANDSTONE; thinly interbedded Mudstone - top unit - brown; weakly fissile; oxidation stains throughout; mica common throughout; occasional sandstone stringers and wisps; dark grey otherwise Siltstone - medium grey sandy in part; hard; occasional sandy stringers and wisps; massive in lower section Sandstone - light grey; minor component; silty wisps Overall ratio 30:60:10; minor zones of mudstone and siltstone interlaminations; occasional wavy bedding.
81.97	1.60	SILTSTONE; medium grey to grey; occasional sandy/muddy patches; massive.
83.89	1.92	SANDSTONE: light grey; fine to medium grained; silty and micaceous wisps and stringers; massive; wisps tending towards vertical near the base of the unit; occasional patches of high matrix content.
84.80	0.91	SILTSTONE; massive in top 40 cm; medium grey to grey; sandy and muddy stringers throughout rest of unit; minor small scale cross laminations at the base of the unit; minor small scale cross laminations at the base of the unit; pinch and swell effects.
87.69	2.89	SANDSTONE; light grey; fine to medium grained; silty and muddy in parts; silty and muddy stringers and wisps; micaceous wisps common; occasional coarse grained fragments in lower metre of unit; thin mudstone bands within unit; occasional irregular subvertical fractures at the base of unit; sharp lower contact.

MOBIL ENERGY MINERALS AUSTRALIA

DRILL HOLE: MPT 3

LOCATION: DROMEDARY

TOTAL DEPTH: 169.80

DRILLED BY: A.C.D.

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DRILLING FLUID: WATER

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DATE: STARTED 29.10.83

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Depth to Base (m)	Thickness (m)	Lithology
90.10	2.41	<p>MUDSTONE: SILTSTONE: SANDSTONE; inter bedded Mudstone - sandy/silty with sandy/silty stringers and wisps; occasional mica; dark grey Siltstone - grey to medium grey; sandy and muddy in part; sandy and muddy stringers and wisps; wavy bedding in zones; erosional contacts with sandstone units. Sandstone - light grey; fine to medium grained; silty throughout micaceous stringers and wisps; occasional muddy pellets towards the base of the unit. Bedding twisted/contorted in the middle of unit; minor pinch and swell effects.</p>
95.91	5.81	<p>SILTSTONE; grey; sandy and muddy in parts; sandy and muddy wisps and stringers in zones; core crushed in part; minor poorly developed slickensides towards the base of the unit; massive in part; zones of turbulent deposition; occasional sandy zones (starved ripples) throughout; small, rare, irregular fractures associated with slickensided areas; thin sandstone interbeds and mudstone interbeds becoming common towards the base of unit; bottom 20 cm of unit shows siltstone grading into sandstone.</p>
119.57	23.96	<p>SANDSTONE: light grey; generally fine to medium grained with occasional beds of coarser grained material; commonly containing micaceous and muddy stringers and wisps; occasional areas of massive sandstone up to 3.5 metres thick; high matrix percentage in part; occasional matrix support in coarser bands; 20 cm siltstone unit occurs 1 metre from the top of the unit (medium grey; sandy; wisps at the base of the unit: mica common); occasional distorted wisps and stringers; generally running subhorizontal; occasional thin siltstone bands throughout; contains a number of fining upwards sequences with the cycle generally being a very fine (massive) sandstone to fine to medium grained sandstone with stringers and wisps common to a medium to coarse grained sandstone with occasional granule sized fragments and high matrix content at the base of the cycle; sharp erosional contacts occur at the base of each cycle; occasional oxidation stains throughout the unit.</p>

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MOBIL ENERGY MINERALS AUSTRALIA

DRILL HOLE: MPT 3

LOCATION: DROMEDARY

TOTAL DEPTH: 169.80

DRILLED BY: A.C.D.

PROJECT: TASMANIA BASIN

DRILLING FLUID: WATER

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Depth to Base (m)	Thickness (m)	Lithology
120.99	1.42	MUDSTONE: dark grey; sandy and silty in part (particularly towards the base of the unit); weakly fissile; occasional irregular sandstone bodies in the upper 20 cm of the unit (up to 3 cm thick); generally massive in the upper half of the unit; thin siltstone beds in the lower half of the unit; minor, poorly developed slickensides at the base of the unit.
123.39	2.40	SANDSTONE: MUDSTONE: SILTSTONE; interbedded and interlaminated Sandstone - light grey; fine to medium grained; matrix visible (milky white) throughout; silty in part Siltstone - grey; sandy in part Mudstone - medium grey to dark grey; sandy and silty in part Unit becomes more arenaceous towards the base; common cross laminations evident throughout the unit; mica common; ratio 40:20:40; weakly fissile in part; pinch and swell effects on some bedding; sandy and silty stringers and wisps visible in mudstones in the middle of the unit.
127.34	3.95	MUDSTONE; dark grey; sandy and silty throughout; sandy and silty stringers and wisps common; weakly fissile with fissility running horizontal across the core with the bedding; minor well defined slickensides; small fault at 126.50 metres transcurrent across the bedding at 45° to the core; occasional mica flakes throughout; small scale rare cross laminations near the base of the unit; slickensides become more prominent below 126.60 metres to the base of the unit; wavy bedding in part; occasional starved ripples near the base of the unit.
129.52	2.18	SANDSTONE; top 30 cm is interlaminated with mudstone (50:50) showing cross bedding; more starved ripples occurring below this mudstone becoming increasingly arenaceous towards the base; light grey; fine to medium grained; abundant silty and muddy and micaceous stringers and wisps; wavy bedding; stringers becoming less frequent towards the base; matrix content increasing towards the base of unit.
133.13	3.61	SANDSTONE; light grey; fine to medium grained; massive; dirty; rarely micaceous; matrix content high but all grain to grain contacts; becoming silty towards the base; minor stringers and wisps appearing towards the base of unit; core broken in part.

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MOBIL ENERGY MINERALS AUSTRALIA

DRILL HOLE: MPT 3

LOCATION: DROMEDARY

TOTAL DEPTH: 169.80

DRILLED BY: A.C.D.

PROJECT: TASMANIA BASIN

DRILLING FLUID: WATER

LOGGED BY: AJW

TENEMENT: EL 30/80

DATE: STARTED 29.10.83

COMPLETED 04.11.83

Depth to Base (m)	Thickness (m)	Lithology
134.40	1.17	SANDSTONE: MUDSTONE; interbedded Sandstone - light grey; fine to medium grained; high matrix content in part; occasional mica stringers and wisps; occasional mudstone pellets Mudstone - dark grey; sandy and silty; occasional wisps and stringers Sandstone contains irregular fragments/lenses of mudstone in reworked zones; erosional contacts; minor slickensides in mudstones throughout the unit; minor mudstone fragments showing stringers and wisps.
156.57	22.27	SANDSTONE; light grey; fine to medium grained; silty and muddy and micaceous wisps and stringers in part; <u>occasional coal stringers throughout the unit</u> ; occasional coarser fragments throughout; minor coarse bands at the base of the unit; core broken in part; mottled appearance in part; massive in part; occasional thin mudstone bands towards the base; occasional mudstone and siltstone pellets towards the base; high matrix content in part; matrix supported in part towards the base (coarse basal band); stringers more prevalent towards the base; sharp erosional lower contact; minor slickensides in mudstone towards the base; pyrite nodules in lower half of unit; coarse, 10 cm thick, band at base.
159.53	2.96	MUDSTONE: SANDSTONE: SILTSTONE; interlaminated and thinly interbedded large pyrite lens near top of unit; unit micaceous throughout; sandstone; light grey; fine to medium grained; silty and muddy stringers and wisps; beds intertwined throughout unit; minor cross laminations; siltstone and mudstone as for unit at depth to base 134.30 metres.
160.96	1.43	MUDSTONE; dark grey; sandy and silty throughout; abundant stringers and wisps; micaceous throughout; starved ripples throughout; zones of siltstone with sandy wisps and muddy wisps towards the base.
162.47	1.51	MUDSTONE; dark grey; sandy and silty throughout; abundant wisps and stringers; zones of sandstone with silt and mud wisps in the middle of the unit showing wavy bedding (nearly recumbent - minoclinal in parts); minor mica content.

MOBIL ENERGY MINERALS AUSTRALIA

DRILL HOLE: MPT 3

LOCATION: DROMEDARY

TOTAL DEPTH: 169.80

DRILLED BY: A.C.D.

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Depth to Base (m)	Thickness (m)	Lithology
167.47	5.27	MUDSTONE: SILTSTONE: SANDSTONE; interbedded and inter-laminated; description as for unit at 159.53 metres depth to base possible some bioturbation towards the base of the unit; zones of mudstone (massive).
169.80	2.06	SILTSTONE; grey; muddy/sandy in part; muddy and sandy wisps and stringers; foran tubes towards the base; bioturbated throughout; massive; sandy zones; mud content & creases towards the base.

END OF HOLE AT 169.80 METRES

MOBIL ENERGY MINERALS AUSTRALIA

DRILL HOLE: MPT 4

LOCATION: MEADSFIELD

TOTAL DEPTH: 159.50

DRILLED BY: A.C.D.

PROJECT: TASMANIA BASIN

DRILLING FLUID: WATER

LOGGED BY: AJW

TENEMENT: EL 30/80

DATE: STARTED 07.11.83

COMPLETED 12.11.83

Depth to Base (m)	Thickness (m)	Lithology
0.7	7.0	SAND; yellowy brown; medium to fine grained; occasional coarser grains throughout; quartzose; small clays zones at top of unit; uniform throughout; heavily weathered.
14.0	7.0	SAND; dark yellowish orange; medium to fine grained with occasional coarser grains throughout; occasional coarse siltstone pebbles; generally clayey throughout; heavily weathered.
15.0	1.0	SAND; orange; as above with little clay content
17.0	2.0	SAND; dark yellowish orange; medium to fine grained with occasional coarser grains throughout; clayey in top ½ metr of unit with small clay lens in top ½.
29.0	12.0	SAND; fine to medium grained; quartzose; small clay pellets throughout; clayey texture; occasional coarser grained fragments; siltstone fragments; white at top of unit/base of unit; orangey white in between.
36.0	7.0	SAND; pale orangey white; fine to medium grained; very clayey; abundant coarser grained material both quartz and siltstone fragments; frequent dark brown patches in unit; possible contamination from above.
40.36	4.36	SAND; orangey brown; fine to medium grained; less clay than unit above; patches of coarser grained material; quartzose throughout.
END OF OPEN HOLE SECTION		
40.89	0.53	SANDSTONE; white with patches of brownish/brown orange colouration; quartzose; fine to medium grained; well grained; milky coloured matrix and cement; soft/friable; coarse fragments at the bottom of the unit; heavily weathered; cavities in lower part of the unit either from former dropstones or clay pellets; lower half highly porous/permeable; generally massive.

MOBIL ENERGY MINERALS AUSTRALIA

DRILL HOLE: MPT 4

LOCATION: MEADSFIELD

TOTAL DEPTH: 159.50

DRILLED BY: A.C.D.

PROJECT: TASMANIA BASIN

DRILLING FLUID: WATER

LOGGED BY: AJW

TENEMENT: EL 30/80

DATE: STARTED 07.11.83

COMPLETED 12.11.83

Depth to Base (m)	Thickness (m)	Lithology
41.35	0.46	SANDSTONE; brown orange to yellow orange with occasional bands of both lighter and darker sandstones; possible section of interbedding and reworking; top 30 cm poorly sorted; generally fine to medium grained with abundant coarser fragments throughout; abundant milky coloured matrix and cement; soft and friable; clay nodules at the base; cavities at the top; distinct contorted bedding (reworked?) at base; occasional mica at the base; highly porous.
41.60	0.25	SANDSTONE: brown orange to white; fine to medium grained; highly micaceous; very soft and friable; extremely high matrix content in parts; matrix supported in part; moderately porous; extremely poorly sorted; mica concentrated in upper half of unit; little to no mica at the base; mottled (?) appearance; occasional darker minerals (other than biotite).
44.59	2.99	SANDSTONE; orangey brown to orangey white patches; fine to medium grained; matrix supported in part; extremely clayey; heavily weathered; extremely soft and friable; abundant mica in zones (both biotite and muscovite); occasional small red oxidation zones.
55.41	10.82	SANDSTONE; white to whitish grey; fine to medium grained; top 10 cm heavily weathered - rest of unit moderately to slightly weathered; occasional clay nodules throughout; high porosity zones; puggy and clayey zones (up to 5 cm thick); high matrix content; matrix supported in part; small zones of clay laminae towards the base; zones of coarse to granule sized fragments up to 5 cm thick throughout mica occasional in zones; extremely coarse bed, 3 - 5 cm thick at approximately 53.75 metres; yellowy brown colouration becoming more prevalent towards the base of the unit; bottom part of the unit contains little or no mica; core broken extensively in lower 3.5 metres of unit.
56.30	0.89	SANDSTONE; extremely clayey; matrix supported; orange white at the top to yellowy brown at the base; extremely heavily weathered; generally fine to medium grained with coarse to granule sized fragments throughout; sections are extremely puggy; small mudstone nodules; occasional mica towards the base of the unit; small clay nodules in zones.

MOBIL ENERGY MINERALS AUSTRALIA

DRILL HOLE: MPT 4

LOCATION: MEADSFIELD

TOTAL DEPTH: 159.50

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PROJECT: TASMANIA BASIN

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Depth to Base (m)	Thickness (m)	Lithology
57.30	1.00	SANDSTONE; light yellow grey to white; fine to medium grained; high matrix content; small 7 cm clayey zone in middle of unit; occasional mica towards the middle of the unit; high surface porosity.
58.05	0.75	SANDSTONE; yellow brown to yellow orange with light grey to white zones; extremely clayey; fine to medium grained; matrix supported; very soft and friable; occasional mica (more prevalent towards the base); extremely high matrix content; occasional coarse quartz fragments throughout (more so on lower ½ of unit); extremely dirty.
60.53	2.48	SANDSTONE; light grey to white grey; fine to medium grained; calcitic cement; clean and well cemented; uniform - massive; occasional small black, hard nodules; slightly weathered; fairly hard.
62.22	1.69	MUDSTONE: SANDSTONE; interbedded Mudstone - orange brown to whitish grey; minor sand content; micaceous; very soft; extremely weathered; fairly uniform; beds up to 20 cm thick (2 b ds); transitional basal contacts; distorted bedding at contacts; rippling in part. Sandstone - brown orange; fine to medium grained; extremely dirty; matrix supported zones; small, thin beds of mud and clay; micaceous; (not abundantly); small reddy brown oxidation patched; clay minor in lower sandstone beds; occasional coarser fragments; little to no mica in lower sandstones; abundant dark grey nodules in lower 10 cm of unit; abrupt but planar lower contact.
68.08	5.84	MUDSTONE; yellowy orange at top of distinct red coloured clays to green grey to the base of the unit; extremely brecciated; possibly close to a fault or fault zone; upper 20 cm shows no brecciation; abundant slickensiding throughout; little to no sand throughout; (except in brecciated areas); brecciated zone from 62.43 - 66.80 metres but effects noticeable to base of unit; small shale band (5 cm) at 67.05 metres also slickensided; sandstone unit approximately 15 cm thick overlying the shale (fine to medium grained; grey; micaceous with minor slickensides); plant fossil (?) 0.56 metres above the base of the unit (3 - 4 cm thick zone); core crushed in part; generally broken throughout.

MOBIL ENERGY MINERALS AUSTRALIA

DRILL HOLE: MPT 4

LOCATION: MEADSFIELD

TOTAL DEPTH: 159.50

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DRILLING FLUID: WATER

LOGGED BY: AJW

TENEMENT: EL 30/80

DATE: STARTED 07.11.83

COMPLETED 12.11.83

Depth to Base (m)	Thickness (m)	Lithology
70.41	2.13	MUDSTONE; green grey to medium grey; massive; slickensides in upper half of unit; sandy in part; commonly micaceous.
70.99	0.58	SANDSTONE; light grey; fine to medium grained; silty wisps throughout; micaceous (generally associated with the wisps); uniform; muddy in part; small scale crossbedding in lower part of unit(?); wavy bedding in part; high matrix content; friable in part.
75.75	4.76	SANDSTONE; light grey to white grey; fine to medium grained; muddy zones; high matrix content; matrix supported in parts; minor micaceous stringers; micaceous throughout; occasional coarser grains in the unit; generally massive; oxidized in part in lower 1/2 of unit.
78.19	2.44	SANDSTONE; light grey to white grey; fine to medium grained; top 90 cm of unit contains abundant mica stringers becoming less numerous down the unit; occasional coarser grained fragments throughout; high matrix content; small muddy zones in part; bottom 13 cm is brown orange; unit is hard.
81.08	2.89	MUDSTONE; medium grey (greenish); sandy in part; top 1/2 of unit shows brecciation and minor slickensiding; weak fissility throughout; minor clay pellets in lower 1/2 of unit; minor calcite veining in lower 30 cm of unit; little mica; minor sandstone interlamination in lower 1/2 of unit.
81.82	0.74	SANDSTONE: MUDSTONE: SILTSTONE; interbedded and interlaminated; unit is light to medium grey. Sandstone - fine to medium grained Mudstone - weak fissility Siltstone - minor component Top 20 cm of unit predominantly mudstone; bottom 30 cm of unit predominantly sandstone; areas of reworking evident; no regular bedding (all distorted and wavy); micaceous in lower part of unit.
84.02	2.20	SANDSTONE; light grey; fine to medium grained; muddy in lower half of unit; abundant micaceous stringers; high matrix content; abundant mica throughout; 15 cm mudstone bed near base also micaceous with possible carbonaceous fragments; small clay bands in sandstone at the base.

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MOBIL ENERGY MINERALS AUSTRALIA

DRILL HOLE: MPT 4

LOCATION: MEADSFIELD

TOTAL DEPTH: 159.50

DRILLED BY: A.C.D.

PROJECT: TASMANIA BASIN

DRILLING FLUID: WATER

LOGGED BY: AJW

TENEMENT: EL 30/80

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Depth to Base (m)	Thickness (m)	Lithology
84.78	0.76	SANDSTONE; light grey to white grey; fine to medium grained; high matrix content; massive; minor micaceous stringers at the base; minor calcite veining at the base; minor mica throughout; quartzose; saccharoidal texture on break surfaces.
85.36	0.58	SILTSTONE; medium grey; sandy in part particularly in the lower half of the unit; silt sized quartz fragments throughout; bottom 30 cm is a poorly ordered mixture of mudstone; siltstone and sandstone; possible zone of slumped sediments (hydroplastic deformation).
86.60	1.24	MUDSTONE: SANDSTONE: SILTSTONE; interbedded and interlaminated; light grey to darkish medium grey; fairly regular bedding; minor slump structures throughout; weak fissility throughout unit due to mudstone Sandstone - fine to medium grained with minor mica content; predominantly sandstone (50%); often truncating mudstone and siltstone beds and has vertical continuation.
88.25	1.65	SANDSTONE; light grey; fine to medium grained; muddy and shaley in part; abundantly micaceous with numerous micaceous stringers throughout; relatively high matrix content; 10 cm mudstone and shale bed at 87.35 m (weakly fissile; no mica in upper beds; minor siltstone stringers); wavy bedding throughout; basal contact in crush zone; minor coarse grained fragments throughout.
89.30	0.85	MUDSTONE; medium grey; sandy in part (particularly towards the base of the unit); shaley in part at the top of the unit; core crushed in part at the top and base; minor calcite veining at the base; silty in part particularly towards the base of the unit; minor slickensides; no mica at top of unit but increasing towards the base; moderate fissility in shaley parts; irregular fractures towards the base.
90.31	1.01	SANDSTONE; light grey; fine to medium grained; core broken at the top of the unit; mica and mica stringers throughout; silty stringers in part; small mud stringers towards the base; high matrix content in parts; small scale cross laminations.

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MOBIL ENERGY MINERALS AUSTRALIA

DRILL HOLE: MPT 4

LOCATION: MEADSFIELD

TOTAL DEPTH: 159.50

DRILLED BY: A.C.D.

PROJECT: TASMANIA BASIN

DRILLING FLUID: WATER

LOGGED BY: AJW

TENEMENT: EL 30/80

DATE: STARTED 07.11.83

COMPLETED 12.11.83

Depth to Base (m)	Thickness (m)	Lithology
90.81	0.50	MUDSTONE; darkish medium grey; shaley in part (top 10 cm); sandy in part particularly towards the base; generally micaceous; small scale disturbed bedding near the top (recumbent) - due to loading (?); numerous sandstone laminations near the base of the unit.
92.92	2.01	SANDSTONE; light grey to grey; fine to medium grained; micaceous with mica stringers throughout; moderate matrix content; small scale cross-laminations in parts; non-micaceous, 20 cm thick unit in middle of section; becoming silty towards the base; matrix becoming muddier down the unit; rare pyrite.
94.30	1.38	SANDSTONE; medium grey to grey; fine to medium grained; abundantly micaceous; silty wisps and stringers throughout; zone of contorted bedding; highly turbulent deposition; minor matrix throughout; lower part of unit bedding - regular; cement/matrix becoming more visible down the unit; 10 cm siltstone bed with sandy stringers/micaceous in lower half of unit; hard unit throughout.
94.88	0.58	SANDSTONE; light grey; fine to medium grained; minor silty zone at top; small siltstone and mudstone nodules throughout; matrix supported in part; minor mica throughout; generally massive.
95.46	0.58	SANDSTONE: SILTSTONE; interlaminated; medium grey to light grey; micaceous throughout; possible minor crossbedding in zones Sandstone - medium to fine grained; matrix supported in lower half of unit; erosional, irregular lower contact; pyrite nodules in lower half of unit; mica laminae and wisps abundant throughout Siltstone - sandy in part; micaceous wisps; fairly massive.
96.34	0.88	SILTSTONE; light medium grey; muddy in part; steeply dipping - subvertical sandstone wisps in lower 20 cm of unit; little to no mica; generally massive.
96.63	0.29	SANDSTONE: SILTSTONE; interlaminated; medium grey to light grey; fine to medium grained; cross bedded throughout; distorted basal contact; micaceous throughout; irregular siltstone lens in the middle of the unit; minor mica wisps; rare pyrite nodules.

MOBIL ENERGY MINERALS AUSTRALIA

DRILL HOLE: MPT 4

LOCATION: MEADSFIELD

TOTAL DEPTH: 159.50

DRILLED BY: A.C.D.

PROJECT: TASMANIA BASIN

DRILLING FLUID: WATER

LOGGED BY: AJW

TENEMENT: EL 30/80

DATE: STARTED 07.11.83

COMPLETED 12.11.83

Depth to Base (m)	Thickness (m)	Lithology
99.07	2.44	SANDSTONE; light grey to white grey; fine to medium grained; generally massive; oxidation spots in the upper 0.5 metres of the unit; rare mudstone nodules (small); matrix supported in part; mica common; occasional coarser grained fragments; rare pyrite nodules.
99.71	0.64	SANDSTONE: light grey; fine to medium grained; massive; muddy in part; abundant (vari-sized) siltstone/mudstone nodules throughout; (no regular shape); larger sized nodules towards top of unit; possible reworked section; mica common; siltstone/mudstone; nodules contain sandy wisps with a contorted appearance.
108.96	9.25	SANDSTONE; light grey; fine to medium grained; micaceous stringers common; high matrix content in parts; matrix supported in part; zones of minor muddy/shaley content; occasional coarser grains throughout; zones of mica stringers; coarse/pebble band at 0.5 metres from base; 3 - 5 cm thick; matrix supported entirely.
109.62	0.66	SANDSTONE; light grey to white grey; extremely coarse grained but generally medium to coarse grained; poorly sorted; matrix supported throughout; little to no mica; occasional mudstone nodules; upper contact transitional; lower contact irregular and erosional.
111.72	2.10	SILTSTONE; light medium grey; sandy in part; sandy stringers and wisps; micaceous; sand content increasing towards the base; generally massive.
112.59	0.87	SANDSTONE; light grey; fine to medium grained; abundant mica and silt stringers; rare coarse grains; small muddy zones scattered throughout; small cross-laminations in upper part of unit.
120.75	8.16	SANDSTONE; light grey to white grey; fine to medium grained; silty in part; occasional mica stringers; muddy in part; matrix supported in parts; matrix - milky colour, clayey texture; minor pebble bands; (20 cm micaceous mudstone bed at 115 metres approximately - weakly fissile; slightly sandy in parts; generally massive); zones up to 35 cm thick occur with no mica stringers and are generally matrix supported.

MOBIL ENERGY MINERALS AUSTRALIA

DRILL HOLE: MPT 4

LOCATION: MEADSFIELD

TOTAL DEPTH: 159.50

DRILLED BY: A.C.D.

PROJECT: TASMANIA BASIN

DRILLING FLUID: WATER

LOGGED BY: AJW

TENEMENT: EL 30/80

DATE: STARTED 07.11.83

COMPLETED 12.11.83

Depth to Base (m)	Thickness (m)	Lithology
121.91	1.16	SANDSTONE; light grey to grey; fine to medium grains; coarser fragments common; <u>minor coal fragments</u> ; muddy zones and nodules; micaceous in muddy zones; zones of coaly/muddy wisps at a level 0.5 metres from the top, approximately 10 cm thick; lower 40 cm of unit contains large, irregular carbonaceous mudstone lenses up to 5 cm thick; coaly wisps and bands near the base show structures outlined by calcite; coal stringers not extensive throughout the unit; isolated.
126.18	4.27	SANDSTONE; grey to light grey; fine to medium grained; poorly sorted; mottled appearance; matrix supported in part; rare carbonaceous fragments rare coarse to granule sized fragments; occasionally micaceous; massive.
129.51	3.33	SANDSTONE; grey to medium grey; fine to medium grained; coarse to granule sized fragments present as bands at immediate top of unit; matrix supported in part; numerous coal fragments and wisps; calcite nodules present at the top of the unit; carbonaceous mudstone lenses throughout; calcite associated with the coaly pieces; pebble band 5 cm thick 1.5 metres from the top of the unit (pebbles 2 - 3 cm thick present); section of medium to coarse sandstone approximately 35 m thick at 128.30 metres to base; sparsely micaceous; unit contains a number of fining upwards cycles up to 1 metre thick with coal fragments situated within or just above the coarser fragments; above the coarse bands the coal is present as wisps only; gradational contacts; lower 1 metre of the unit is medium grey; very quartzose; fairly coarse sandstone with little to no mica; core broken in part.
130.35	0.86	SANDSTONE; light grey; fine-medium grained; massive; muddy in part; occasional mica flakes.
133.48	3.15	SANDSTONE; light grey to medium grey; fine to medium and medium to coarse grained in zones (generally medium to coarse); coaly wisps and stringers common; core broken in part; extremely quartzose; very abrasive; extremely friable in places; 10 cm thick fine to medium sandstone with coal bands and stringers approximately 2 metres from the top of the unit with erosive top contact; occasional granule sized fragments and crushed pebble band below the fine-medium unit; poorly sorted with occasional carbonaceous mudstone nodules; unit becoming increasingly pebbly towards the base; matrix supported in part in lower 1/2 of unit; well defined by planar lower contact.

MOBIL ENERGY MINERALS AUSTRALIA

DRILL HOLE: MPT 4

LOCATION: MEADSFIELD

TOTAL DEPTH: 159.50

DRILLED BY: A.C.D.

PROJECT: TASMANIA BASIN

DRILLING FLUID: WATER

LOGGED BY: AJW

TENEMENT: EL 30/80

DATE: STARTED 07.11.83

COMPLETED 12.11.83

Depth to Base (m)	Thickness (m)	Lithology
135.20	1.72	SANDSTONE; grey; fine to medium grained; calcareous nodules at the top; occasional coarser grains throughout; rare pyrite near base.
136.01	0.81	SANDSTONE: grey; medium-coarse grained; abundant granule sized fragments throughout; numerous; irregular siltstone pods up to 7 cm in diameter; (siltstone is medium grey and micaceous; sandy in part; some minor coaly wisps present; possibly a reworked section); sandstone is quite coarse at the base; basal contact erosional; matrix supported in part.
136.48	0.47	SILTSTONE; medium grey; micaceous; sandy in part; sandy stringers and wisps; bottom contact erosional; wisps oriented at a steep angle to the core; fairly uniform throughout; coarse sandstone at the base; light grey.
140.34	3.86	SANDSTONE; light grey; silty and coaly in part; fine to medium grained; coaly stringers and wisps concentrated at the top (10 cm thick); occasional siltstone nodules; silty wisps towards the base; mica associated with the coal and silt; small scoured contact between sandstone and small 2 cm thick siltstone band; (0.5 metres from the top); 20 cm of sandstone follows the siltstone band and is massive, fine to medium grained, no coal or siltstone stringers; coaly stringers in zones at times displaying contorted bedding; minor calcite associated with some of the coaly fragments; coaly zones are interspersed with zones of massive sandstone; sandstone becoming 'whiter' down the unit due to an increase in cement/matrix; matrix supported in part particularly towards the base; coal content decreases towards the base.
143.07	2.63	SANDSTONE; light grey; fine to medium grained; high matrix content; numerous coarser bands throughout; core broken in part; minor silty patches throughout; grain size increasing towards the base; matrix supported in part.
145.00	1.93	SANDSTONE; medium to coarse grained; coaly/silty in parts; light grey to grey; matrix supported in part; abundant coaly wisps and stringers zones of very silty sandstone; coal associated with discordant calcite veining; veining is joint controlled; wavy bedding apparent in zones; abundant mica associated with siltstone wisps; minor pyrite associated with calcite; sandstone extremely coarse at the base; (15 cm siltstone bed immediately above the base - micaceous; medium grey); core broken in part and at the base; erosional contacts associated with the siltstone layers.

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MOBIL ENERGY MINERALS AUSTRALIA

DRILL HOLE: MPT 4

LOCATION: MEADSFIELD

TOTAL DEPTH: 159.50

DRILLED BY: A.C.D.

PROJECT: TASMANIA BASIN

DRILLING FLUID: WATER

LOGGED BY: AJW

TENEMENT: EL 30/80

DATE: STARTED 07.11.83

COMPLETED 12.11.83

Depth to Base (m)	Thickness (m)	Lithology
152.90	7.90	SANDSTONE; light grey to grey; fine to medium grains; occasional coarse fragments; silty in part; minor siltstone bands; micaceous - particularly in the siltstone bands; generally massive; siltstone wisps in zones; planar lower contact; mottled in places.
157.30	4.40	MUDSTONE; dark grey; sandy and silty in parts; minor sandstone bed near the top; starved ripples throughout; weakly fissile in part; minor crosslaminations; micaceous; bioturbated in part; non-carbonaceous.
159.50	2.20	SILTSTONE; grey to medium grey; sandy in part; minor sandstone wisps; foran tubes common; bioturbated; muddy in part; minor calcite veining.

END OF HOLE AT 159.50 METRES

MOBIL ENERGY MINERALS AUSTRALIA

DRILL HOLE: MPT 5

LOCATION: PELHAM

TOTAL DEPTH: 191.00

DRILLED BY: A.C.D.

PROJECT: TASMANIA BASIN

DRILLING FLUID: WATER

LOGGED BY: AJW

TENEMENT: EL 30/80

DATE: STARTED 14.11.83

COMPLETED 18.11.83

Depth to Base (m)	Thickness (m)	Lithology
1.0	1.0	<u>Soil</u> ; black with minor fraction of sand; sandy is orangey yellow; unit extremely puggy.
5.0	4.0	<u>Sand</u> ; yellow brown to grey brown; clayey/muddy in the top ½ metre; fine to medium grained; minor dark (heavy mineral) fraction; puggy zones throughout.
6.5	1.5	<u>Sand</u> ; blueish grey to medium grey; muddy; fine to medium grained.
END OF OPEN HOLE SECTION		
8.33	1.83	SANDSTONE; with minor interbeds of siltstone and clay; orange grey to light grey; numerous oxidation stains throughout; minor mica content; fine to medium grained; weathered; minor muddy wisps increasing towards the base; core broken in part. Siltstone - medium grey; muddy bands in parts; sandy wisps throughout; 10 cm clay band just above base - very puggy.
9.33	1.00	SILTSTONE; with minor interbeds of mudstone; muddy/sand throughout with mudstone and sandstone wisps; wisps more prominent in upper half of unit; cross laminations present in zones; minor irregular subvertical fractures in lower 30 cm of unit; fractures closed.
11.90	2.57	SANDSTONE; light to medium grey to yellowy brown to orangey grey; oxidation zones common; fine to medium grains; micaceous; minor muddy wisps; weathered; core extremely broken in upper ½ of unit.
13.43	1.53	MUDSTONE: SILTSTONE; interbedded; shaley in parts; weakly fissile throughout; sandy in part; sandy wisps; mudstone nodules throughout; small scale rippling in lower half of unit; extremely soft in sections.
16.55	3.12	SANDSTONE; light grey; fine to medium grained; massive; minor mica content; pyrite nodule at the top of the unit; core crushed in part; minor oxidized zones in lower part of unit; cavities in bottom 30 cm of unit; rare muddy wisps in middle of unit; pyrite nodules common in lower 30 cm of the unit; small crush zone just above the base of the unit.

MOBIL ENERGY MINERALS AUSTRALIA

DRILL HOLE: MPT 5

LOCATION: PELHAM

TOTAL DEPTH: 191.00

DRILLED BY: A.C.D.

PROJECT: TASMANIA BASIN

DRILLING FLUID: WATER

LOGGED BY: AJW

TENEMENT: EL 30/80

DATE: STARTED 14.11.83

COMPLETED 18.11.83

Depth to Base (m)	Thickness (m)	Lithology
23.23	6.68	SANDSTONE; orange yellow to orange grey to yellow brown; oxidized throughout; oxidation patterns appear concentric; cast structure is top of unit; minor pyrite nodules (small) in upper ½ of unit; fine to medium grained; minor mica content; zone of mica stringers in middle of the unit; mudstone nodules towards the base; top and bottom of the unit shows sharp, distinct contacts.
29.51	6.28	SANDSTONE: core crushed at the top; minor puggy zone below this crush zone; light grey to grey fine to medium grained; micaceous throughout; massive in part; mica (minor) stringers at top of unit; occasional nodules of pyrite; occasional molds; occasional oxidation zones with associated pyrite; muddy wisps becoming prevalent at the 25.50 metres mark; minor crush zones throughout the unit; irregular fractures in lower ½ of unit with minor associated disseminated pyrite; basal 7 cm is fairly coarse grained with abundant mud nodules.
37.45	7.96	SANDSTONE; brown grey to brown yellow; fine to medium grained; micaceous; muddy in part; zones of muddy wisps; occasional, thin (1 cm) puggy bands and shaley bands (highly micaceous and fissile); numerous mica wisps in zones; occasional coarser grains throughout; soft and weathered in part; (20 cm) crush zone at 33.50 metres; slickensides evident in mudstones; small puggy units and fragments of mudstone throughout; sandstone and mudstone intermixed throughout; bottom of unit - massive.
42.66	4.79	SANDSTONE; bluey grey to light grey; fine to medium grained; high matrix content; minor discordant muddy wisps in upper 30 cm of unit minor mudstone nodules and molds in upper 30 cm; commonly micaceous throughout; minor carbonaceous stringers (?) near top of unit; occasional coarse fragments at top; massive below top 30 cm.
52.30	9.67	SANDSTONE; light to medium grey; medium - fine grained; massive in upper half; minor mud content; minor stringers in zones; core broken in part particularly at the base; micaceous throughout; occasional thin mudstone bands; oxidation spots throughout; matrix supported in part; mudstone nodules common in zones particularly towards the base of the unit.

MOBIL ENERGY MINERALS AUSTRALIA

DRILL HOLE: MPT 5

LOCATION: PELHAM

TOTAL DEPTH: 191.00

DRILLED BY: A.C.D.

PROJECT: TASMANIA BASIN

DRILLING FLUID: WATER

LOGGED BY: AJW

TENEMENT: EL 30/80

DATE: STARTED 14.11.83

COMPLETED 18.11.83

Depth to Base (m)	Thickness (m)	Lithology
52.89	0.59	SANDSTONE; yellow grey to white grey; fine-medium grained; micaceous muddy; numerous wisps throughout; minor mudstone band in the middle of the unit; high matrix content in parts.
55.88	2.99	SANDSTONE; medium grey to light grey; medium-fine grained; muddy in parts; muddy wisps throughout; mudstone nodules (small) throughout; mica common but concentrated in areas; occasional mica wisps; zones where wisps are contorted/recumbent; oxidation stains throughout; coarse to granule sized quartz fragments at the base of the unit; 7 - 10 cm thick coarser band with numerous small mudstone nodules; very dirty in patches; matrix supported in part.
64.92	9.03	SANDSTONE; as above with the coarse band at the base; at 60.20 metres the colour changes to a deep purple - very oxidized sandstone; massive in parts; zones of concentration of mica wisps above massive sections.
65.80	0.88	MUDSTONE; brown to grey brown; sandy throughout; weakly fissile; fissility running at approximately 45° to the core; minor sandy bands throughout - commonly micaceous; sandy wisps particularly at the base; sandstone and mudstone interbedded in a 15 cm unit at the base; sandstone bands contain numerous coarse fragments and mudstone nodules; core broken in part.
72.53	6.73	SANDSTONE; fine-medium grained; massive in part; muddy in part; muddy wisps in zones; micaceous in part; mica stringers in zones; mud nodules throughout; occasional matrix supported areas; occasional thin mudstone/clayey bands - micaceous (brown grey to brown yellow); core broken in part; mud content increasing towards the base.
72.85	0.32	MUDSTONE; brown to yellow brown to brown grey; minor weak fissility; sandy in part; sandy wisps; micaceous; soft; puggy in places; weathered.
75.80	2.95	SANDSTONE; fine - medium grained; yellow to brown grey at top to light grey; muddy zones particularly at the top; minor stringers throughout; (20 cm zone at approximately the middle of the unit - reworked; showing deformed wisps; numerous mudstone nodules; occasional coarse grains; minor irregular fractures); mica common; core broken in parts; minor pyrite crystals in lower 1/2 of unit; core broken at base.

MOBIL ENERGY MINERALS AUSTRALIA

DRILL HOLE: MPT 5

LOCATION: PELHAM

TOTAL DEPTH: 191.00

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DRILLING FLUID: WATER

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COMPLETED 18.11.83

Depth to Base (m)	Thickness (m)	Lithology
79.08	3.28	SANDSTONE; yellow brown to light grey to brown grey; fine to medium grained; muddy in part; muddy wisps common particularly at the top of the unit; commonly micaceous; minor cross laminations near the top of the unit; occasional mudstone laminae/bands; minor small mudstone nodules; 1 cm thick coarse band at the base of the unit with abundant mudstone nodules and fragments.
80.89	1.81	SANDSTONE; yellowy grey; fine to medium grained; coarser fragments common; abundant mudstone fragments; muddy in part; numerous muddy wisps; silty in parts; siltstone nodules common; core broken in part.
84.61	3.72	SANDSTONE: light grey to yellow grey to brown grey; oxidized throughout; fine to medium grained; muddy zones in the middle of the unit; coarser fragments throughout (especially above the mudstone bed); oxidation staining throughout; minor irregular subvertical fractures in the lower ½ of the unit; mica/mudstone wisps throughout; rare mudstone nodules; mudstone is weakly fissile; fissility runs approximately at 90° to the core; wisps are contorted at the base of the unit; wavy bedding; friable in parts.
86.17	1.56	SANDSTONE; white to yellow grey; fine to medium grained; rare mudstone nodules at the top; occasional wisps at the top; massive; minor mica content.
91.30	5.13	SANDSTONE; light grey in parts; white grey in parts; yellow grey; light brown grey; fine-medium grained; occasional coarser fragments; mica and siltstone wisps common; oxidation nodules (stains) common; occasional mudstone fragments; core broken in part; friable in part; micaceous in part; thin soft mudstone bands common; occasional subvertical, irregular fractures in lower ½ of unit; wisps angled up to 45° to core in places; matrix supported in part.
93.27	1.97	SANDSTONE; light grey; matrix supported at base; fine-medium grained; (coarsening towards the base); numerous thin mudstone (siltstone pellets); core broken in part; irregular fractures running 60° to the horizontal at the base; 40 cm section 25 cm from the top - massive with minor wisps in lower 5 cm; poorly sorted; fragments up to granule sized at base; sharp, angular contact at base.

MOBIL ENERGY MINERALS AUSTRALIA

DRILL HOLE: MPT 5

LOCATION: PELHAM

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DRILLING FLUID: WATER

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TENEMENT: EL 30/80

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COMPLETED 18.11.83

Depth to Base (m)	Thickness (m)	Lithology
104.79	11.52	SANDSTONE; multicoloured (as for sandstone at 86.17 metres); fine-medium grained; occasional coarse fragments; muddy and silty in part; occasional muddy and silty wisps; massive in parts; rare mudstone pellets and molds; occasional mica stringers at the top; friable in part; pinch and swell effects near base; small muddy bands at the top.
105.05	0.26	sandstone; grey; medium-coarse grained; matrix supported in part; core broken; occasional granule sized fragments; numerous mudstone pellets; subvertical vein of weathered material in middle of unit; broken lower contact.
107.40	2.35	MUDSTONE; brown to green; sandy in parts; abundant sandy wisps near top showing cross laminations and cross beds; soft throughout; weathered throughout; micaceous throughout; massive below 106.20 metres; weakly fissile throughout; minor sandy bands at the base; oxidized throughout.
109.32	1.92	SANDSTONE; yellow grey to light grey; fine-medium grained; friable in part; core broken in part; pyrite crystals occasional in lower half of unit; occasional coarser fragments in lower half; occasional muddy stringers in middle of the unit; rare mudstone nodules; 3 cm medium - coarse sandstone at the base with mudstone pellets; mudstone pellets are extremely micaceous; grubby, dirty.
114.09	4.77	SANDSTONE; white grey to brown grey to light grey; fine to medium grained; occasional coarser fragments throughout; muddy in part; muddy/mica wisps common (abundant in zones); occasional mudstone and siltstone pellets; oxidation stains common; friable in parts; thin mudstone bands towards the base.
121.22	7.13	SANDSTONE; yellow grey; fine to medium grained; occasional coarser fragments throughout more so towards the base; massive; friable in part; minor irregular 30° fractures in lower ½ of unit; pyrite associated with fractures; minor siltstone wisps towards the base; core broken in zones towards the base.

MOBIL ENERGY MINERALS AUSTRALIA

DRILL HOLE: MPT 5

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TOTAL DEPTH: 191.00

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Depth to Base (m)	Thickness (m)	Lithology
125.42	4.20	SANDSTONE; yellow grey to green grey in parts; fine to medium grained; numerous silty and mica wisps; core broken in part; occasional sub vertical fractures; 22 cm coarse band at the top; wisps run at various orientations to the core; matrix supported in part; muddy in part towards the base; thin mudstone bands occur towards the base; inter laminations of mudstone below 124.0 metres wavy bedding; mudstone weakly fissile; rare pyrite crystals; rare mudstone pellets/nodules.
134.70	9.28	SANDSTONE; light grey in part; muddy wisps in lower 2 metres of unit; lower 23 cm of unit is a coarse grained sandstone with numerous mudstone pellets; siltstone pellets and stringers are common; core crushed at base; high matrix content.
137.86	3.16	SANDSTONE; light grey; fine - medium grained; coarser fragments common; occasional mudstone stringers; occasional mudstone/siltstone nodules; pyrite common at the top; milky white matrix/cement visible throughout; (12 cm mudstone bed in the middle of the unit; core crushed; weakly fissile; mica common; minor poorly developed slickensides at the base of the mudstone); minor subvertical fractures throughout; massive for lower 1.3 metres.
142.25	4.39	SANDSTONE: reddy grey at the top to light grey to yellow grey at the base; coarsening upward cycle; extremely coarse grained for the top 2 metres gradually fining downwards to a fine to medium grained sandstone at the base; matrix supported in part; pebbles throughout; high surface porosity; occasional mudstone nodules; subvertical fractures in the upper 2 metres of the unit; core broken throughout; change at 139.76 metres into a medium - coarse sandstone with large mudstone pellets in parts; 2 minor cycles within the unit, (1) at 140.26 metres and (2) at the base proper; the top cycle displays the coarsest lithology; contact between the cycles is broken; but a banded coarse to medium grained unit is the top section; core crushed in part.
152.55	10.30	MUDSTONE; minor thin beds (0.5 metres thick) of sandstone; core extensively crushed in this section; core loss in this section; multi-coloured from greeny grey to yellow grey to medium grey at the base; top 2 metres is fairly massive with minor 45° fractures and small irregular subvertical fractures; minor, poorly developed slickensides occur in this section; weakly fissile in zones; (sandstone units are

MOBIL ENERGY MINERALS AUSTRALIA

DRILL HOLE: MPT 5

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Depth to Base (m)	Thickness (m)	Lithology
		are yellow grey, fine to medium grained, crushed throughout); definite green tinge in the middle of the unit; minor sandstone interlamination and interbeds at the middle; mudstones become massive towards the base; at the base there is an intermix of mudstone, siltstone and sandstone that is ill defined; numerous siltstone fragments throughout; minor slickensides at the base; abundant micaceous stringers at the base.
167.73	15.18	SANDSTONE; light grey to white grey; fine to medium grained; occasional coarser grains throughout; silty and muddy throughout; numerous wisps throughout; small 22 cm siltstone bed one metre from the top (grey with sandy wisps common; occasionally micaceous); mica stringers throughout; irregular subvertical fractures at the top; wisps orientation is up to 45° to the core; matrix supported in part; core broken in part; zones of abundant silty stringers up to 20 cm thick.
169.53	1.80	SANDSTONE; light grey; fine-medium grained at the top; massive; rare wisps near base; bottom 19 cm is very coarse grained; matrix supported at base; numerous mudstone/siltstone nodules at the base; occasional pebbles throughout with long axes horizontal to the core and graded with the smaller fragments at the top with pebbles at the base.
175.32	5.79	SILTSTONE; grey; sandy and muddy in part; sandy/muddy bands with minor wisps; weakly micaceous in parts; minor subvertical fractures with poorly developed slickensides at the top; starved ripples near the base (?) at the base if a minor mudstone band (dark grey; irregular shape/contact with upper and lower sections).
175.93	0.61	SANDSTONE; light grey; fine to medium grained; two small zones of muddy fragments at the top and the base; occasional muddy wisps associated with muddy zones; turbulent bedding; mica associated with muddier units.
177.33	1.40	SANDSTONE: SILTSTONE; interlaminated and thinly interbedded Sandstone - light grey; fine-medium grained Siltstone - grey; sandy in parts Occasional wavy bedding but generally planer; sandier in top 1/2 of the unit; overall ratio approximately 50:50; siltstone commonly micaceous.

138

MOBIL ENERGY MINERALS AUSTRALIA

DRILL HOLE: MPT 5

LOCATION: PELHAM

TOTAL DEPTH: 191.00

DRILLED BY: A.C.D.

PROJECT: TASMANIA BASIN

DRILLING FLUID: WATER

LOGGED BY: AJW

TENEMENT: EL 30/80

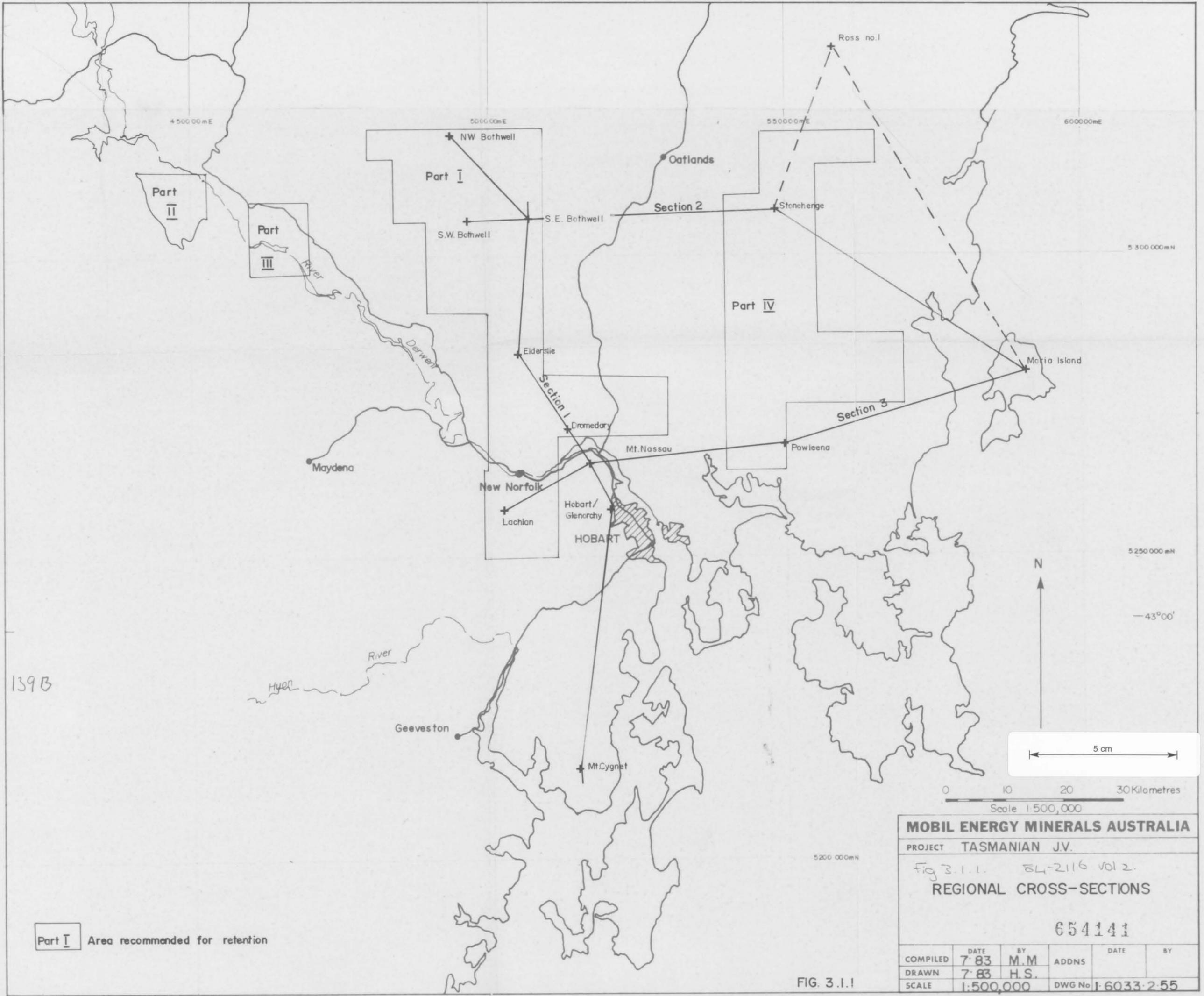
DATE: STARTED 14.11.83

COMPLETED 18.11.83

Depth to Base (m)	Thickness (m)	Lithology
178.57	1.24	SANDSTONE; exactly as for unit at 175.93 metres depth to base.
191.00	12.43	SANDSTONE; light grey; medium-fine grained; occasional coarser fragments; massive in part; silty/micaceous wisps in zones; core crushed in part; occasional subvertical fractures; thin siltstone bands (micaceous) common; irregular siltstone pellets towards the base; occasional small mudstone nodules; wisps oriented up to 15° from the horizontal.

END OF HOLE AT 191.00 METRES

139A



MOBIL ENERGY MINERALS AUSTRALIA

PROJECT **TASMANIAN J.V.**

Fig 3.1.1. 84-2116 vol 2.
REGIONAL CROSS-SECTIONS

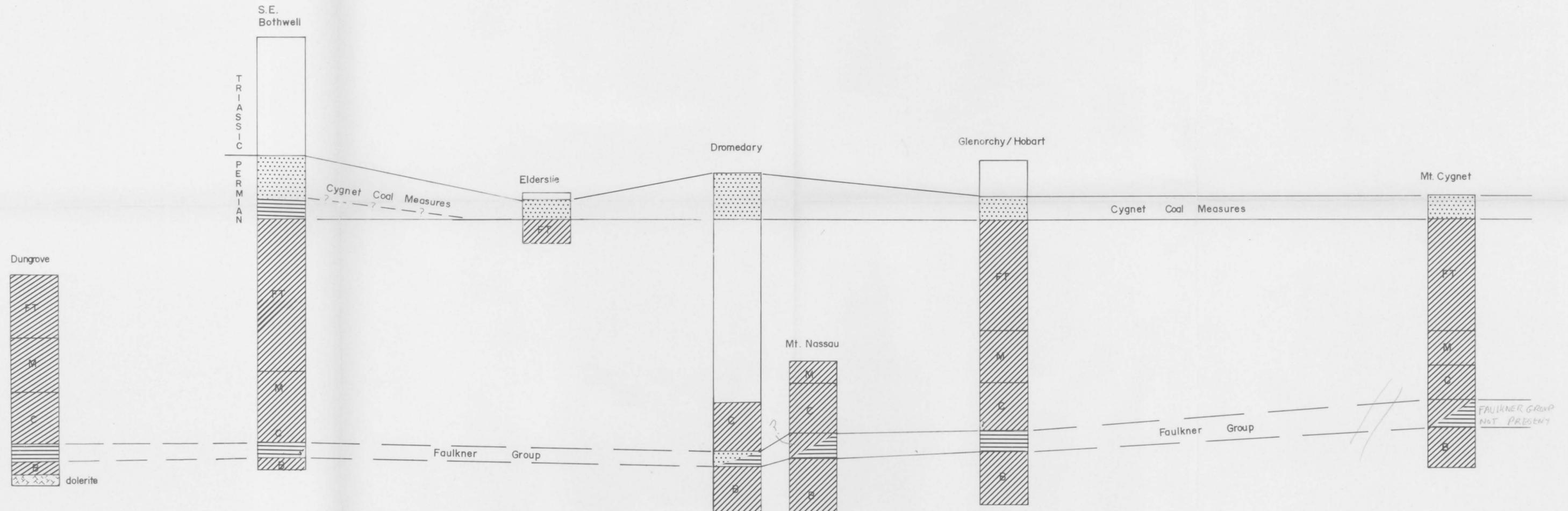
654141

COMPILED	DATE	BY	ADDNS	DATE	BY
	7'83	M.M			
DRAWN	7'83	H.S.			
SCALE	1:500,000		DWG No	1:6033-2-55	

FIG. 3.1.1

North

South



- FT — Ferntree Group (or equivalent)
 - M — Malbina Formation (or equivalent)
 - C — Cascades Group (or equivalent)
 - B — Bundella Mudstone (or equivalent)
- All Marine Facies
- Cygnet Coal Measures
 - Faulkner Group (Mersey Coal Measure equivalent)
- Marine and Terrestrial Facies or Terrestrial Facies

NOTE:
Vertical Scale 1:4,000

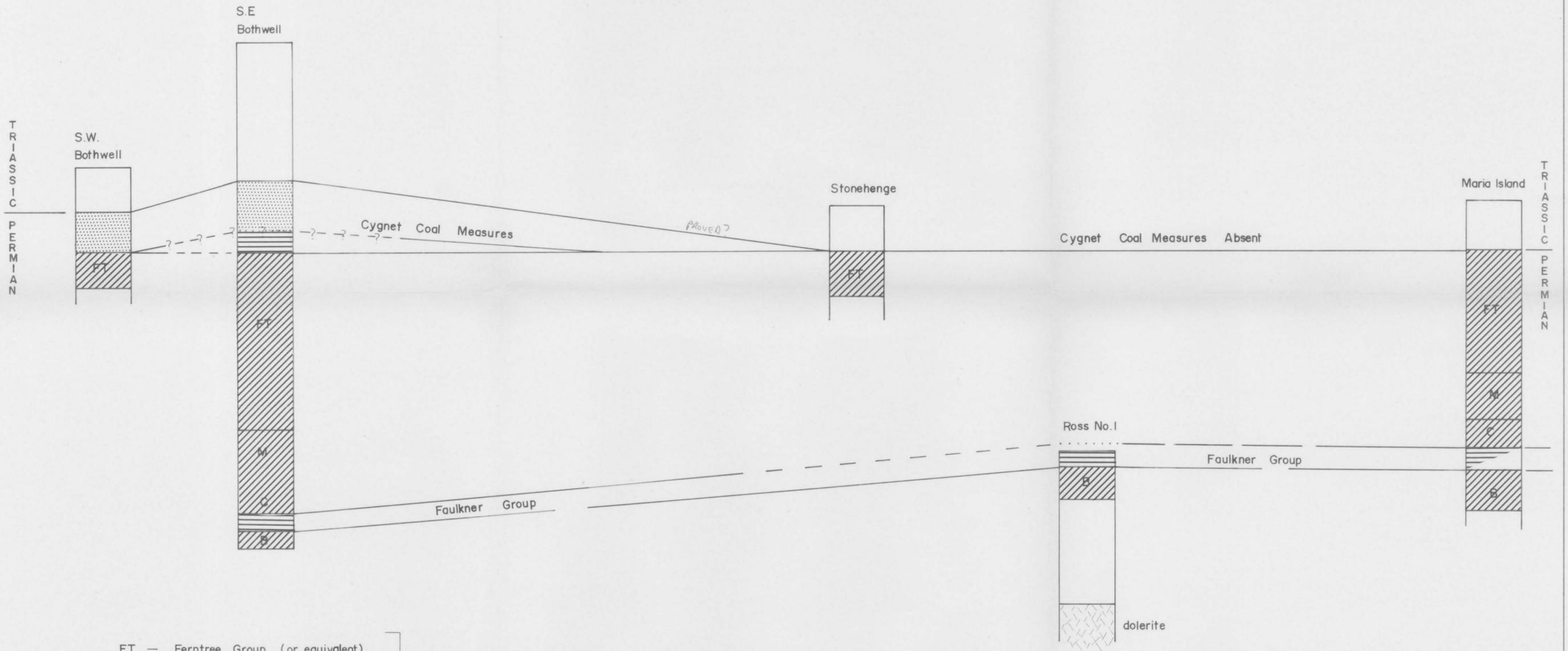


FIG. 3.1.2

MOBIL ENERGY MINERALS AUSTRALIA					
PROJECT TASMANIAN JOINT VENTURE					
EL 30/80		84-2116 vol 2			
STRATIGRAPHIC SECTIONS					
Section I		654142 003			
COMPILED	DATE 7'83	BY MM	ADDNS	DATE	BY
DRAWN	7'83	H.S			
SCALE	as shown		DWG No	1-6033-2-044	

West

East



- FT — Ferntree Group (or equivalent)
 - M — Malbina Formation (or equivalent)
 - C — Cascades Group (or equivalent)
 - B — Bundella Mudstone (or equivalent)
- All Marine Facies
- Cygnet Coal Measures
 - Faulkner Group (Mersey Coal Measure equivalent)
- Marine and Terrestrial Facies or Terrestrial Facies

NOTE:
Vertical Scale 1:4,000

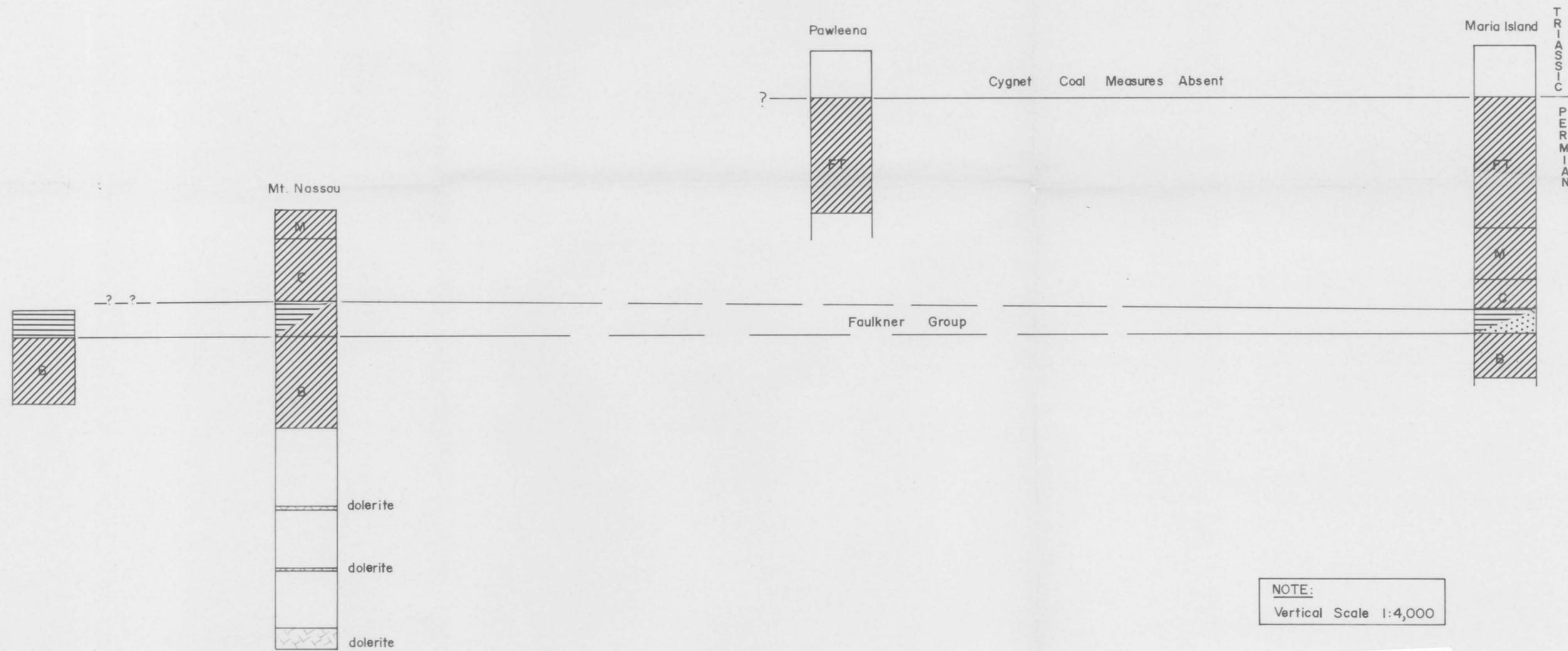


FIG. 3.1.3

MOBIL ENERGY MINERALS AUSTRALIA					
PROJECT TASMANIAN JOINT VENTURE					
EL 30/80		84-2116 vol 2.			
STRATIGRAPHIC SECTIONS					
Section 2		654143		004	
COMPILED	DATE	BY	ADDNS	DATE	BY
	7'83	MM			
DRAWN	7'83	HS			
SCALE	as shown		DWG No	160332 046	

West

East



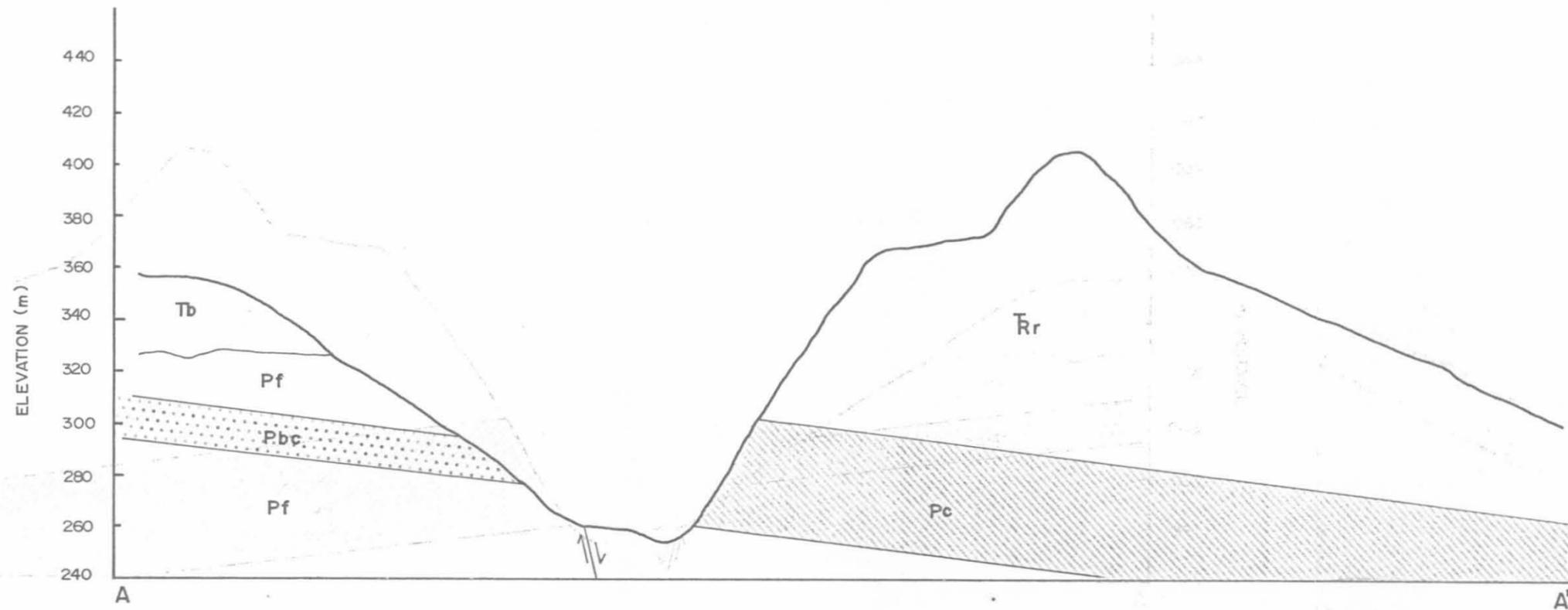
NOTE:
Vertical Scale 1:4,000



- FT — Ferntree Group (or equivalent)
 - M — Malbina Formation (or equivalent)
 - C — Cascades Group (or equivalent)
 - B — Bundella Mudstone (or equivalent)
- All Marine Facies
- Cygnet Coal Measures
 - Faulkner Group (Mersey Coal Measure equivalent)
- Marine and Terrestrial Facies or Terrestrial Facies
-

FIG. 3.14.

MOBIL ENERGY MINERALS AUSTRALIA					
PROJECT TASMANIAN JOINT VENTURE					
EL 30/80		84-2116 vol 2.			
STRATIGRAPHIC SECTIONS					
Section 3			654144		005
COMPILED	DATE	BY	ADDNS	DATE	BY
DRAWN	7 '83	MM			
SCALE	AS SHOWN	HS	DWG No	1-6033-2045	



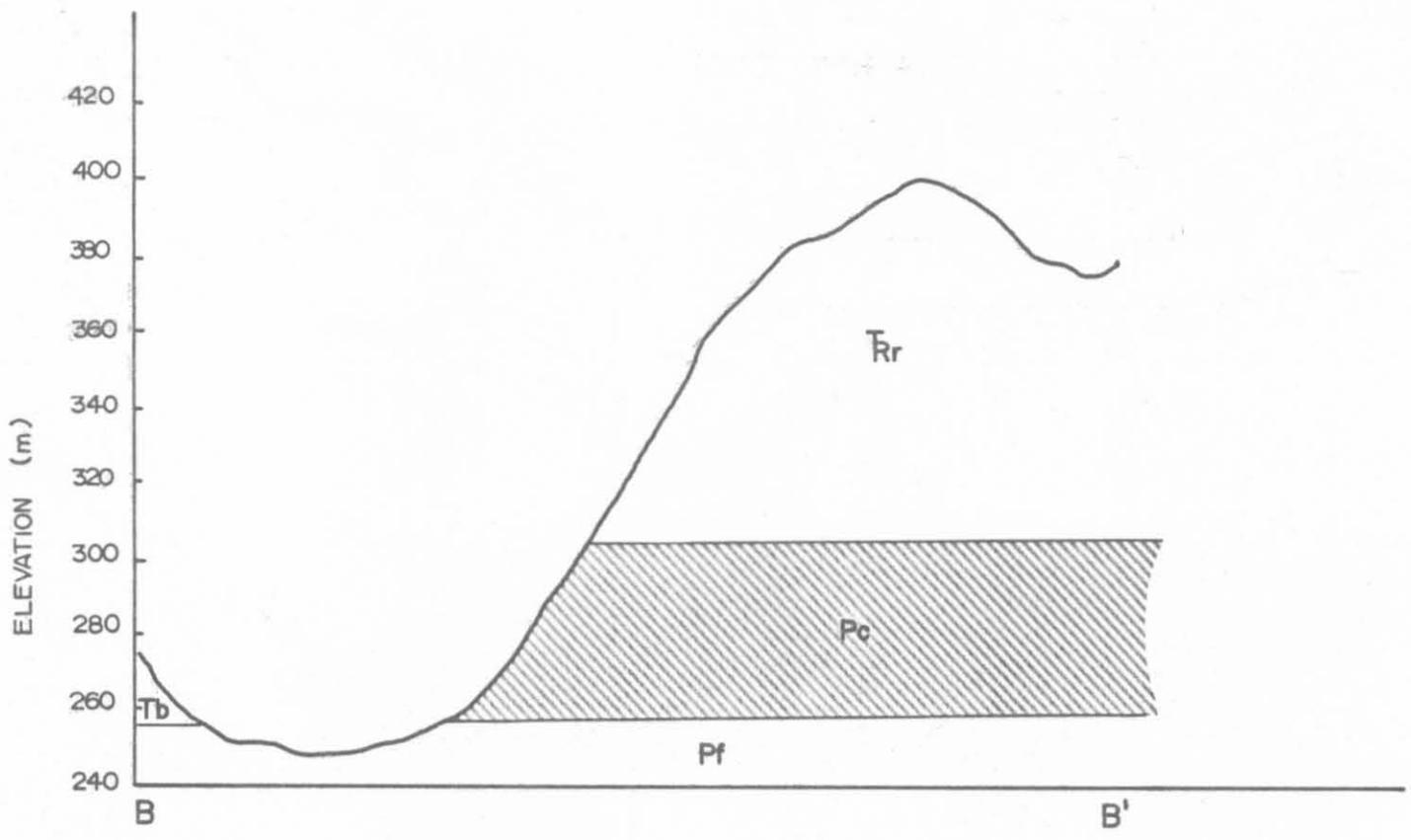
NOTE:
 Vertical Scale 1:2,000
 Horizontal Scale approx. 1:10,000
 Vertical Exaggeration 5:1

- Tb** Tertiary Basalt
- Tr** Triassic Ross Sandstone
- Pc** Permian Cygnet Coal Measures
- Pf** Permian Ferntree Group
- Pbc** Permian Blackwood Conglomerate

5 cm

FIG. 4.1.4

MOBIL ENERGY MINERALS AUSTRALIA					
PROJECT TASMANIAN BASIN EL 30/80					
SW BOTHWELL 84-2116 vol 2					
CROSS-SECTION A-A'					
654145			006		
COMPILED	DATE	BY	ADDNS	DATE	BY
DRAWN	1-84	HS			
SCALE	as shown		DWG No	1-6033-2-74	



NOTE:
 Vertical Scale 1:2,000
 Horizontal Scale approx 1:10,000
 Vertical Exaggeration 5:1

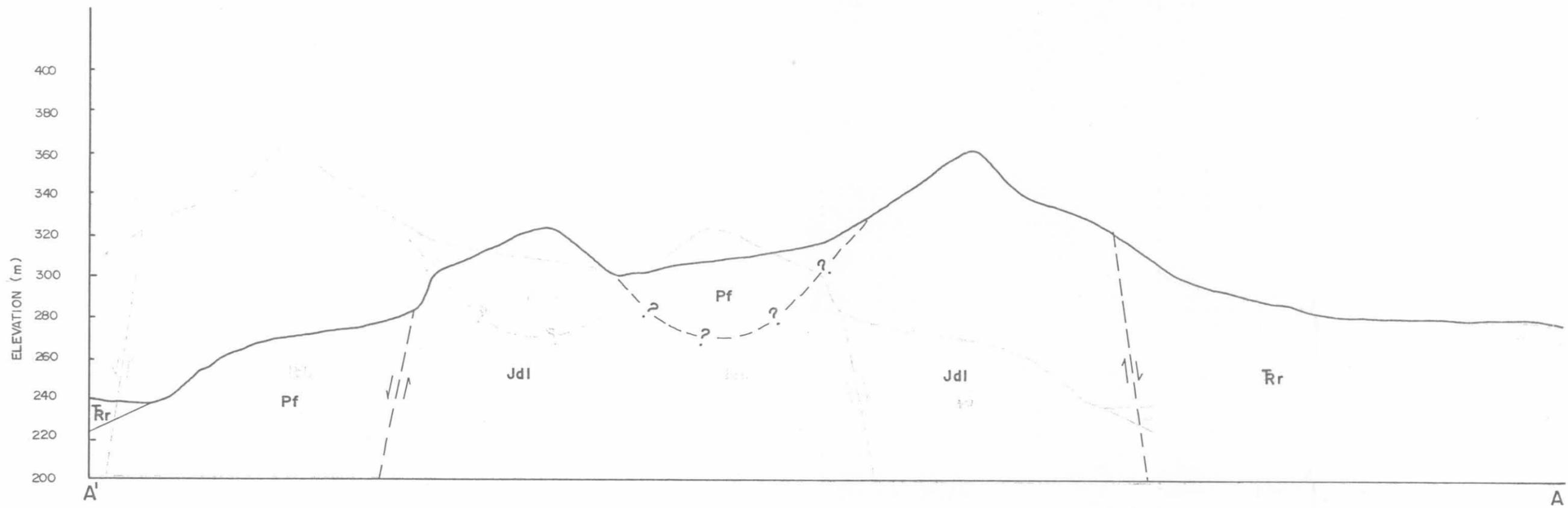
- Tb Tertiary Basalt
- Tr Triassic Ross Sandstone
- Permian Cygnet Coal Measures
- Pf Permian Ferntree Group

← 5 cm →

FIG. 4.1.5

MOBIL ENERGY MINERALS AUSTRALIA					
PROJECT EL 30/80 TASMANIA BASIN					
SW BOTHWELL					
CROSS-SECTION B-B'					
654146					
COMPILED	DATE	BY	ADDNS	DATE	BY
	1-84	AJW			
DRAWN	DATE	BY			
	1-84	HS			
SCALE	as shown		DWG No	1-6033-277	

84-2116 vol 2



NOTE:
 Vertical Scale 1:2000
 Horizontal Scale approx. 1:10,000
 Vertical Exaggeration 5:1

5 cm

- Jdl Jurassic Dolerite
- Rr Triassic Ross Sandstone
- Pf Permian Ferntree Group
- ?--- Inferred, concealed geological contact

654147

FIG.4-2-2

MOBIL ENERGY MINERALS AUSTRALIA

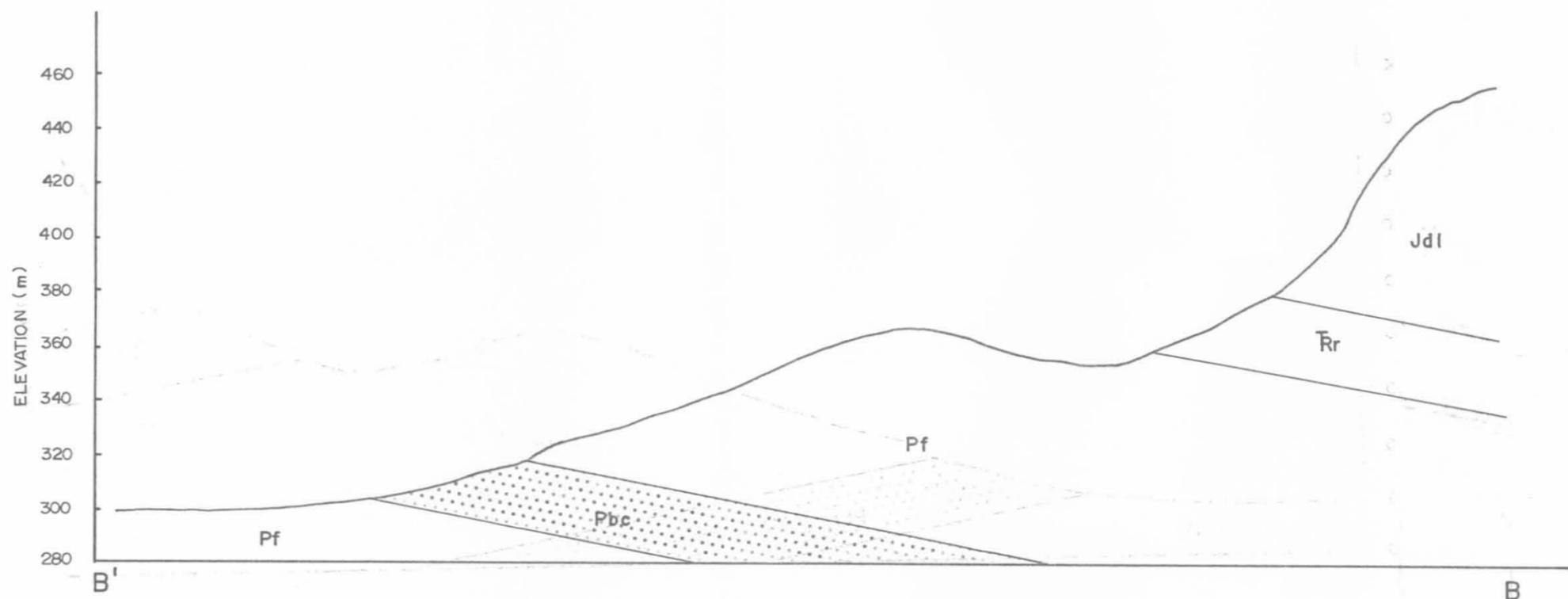
PROJECT EL 30/80 TASMANIAN BASIN

WHITEFOORD - STONEHENGE
 CROSS-SECTION A' - A

84-2116 vol 2.

007

COMPILED	DATE	BY	ADDNS	DATE	BY
	1 '84	AJW			
DRAWN	DATE	BY			
	1 '84	HS			
SCALE	as shown		DWG No	1:6033 273	



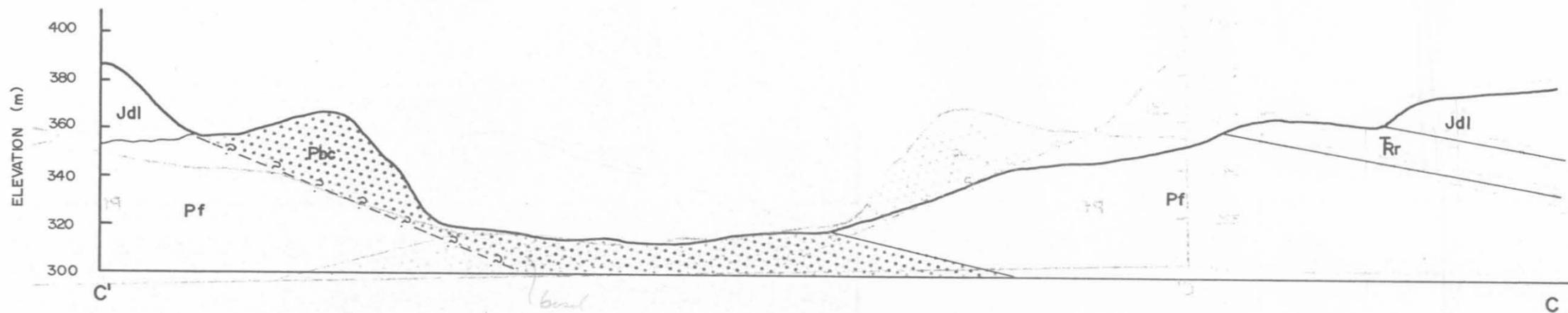
NOTE:
 Vertical Scale 1:2,000
 Horizontal Scale approx. 1:10,000
 Vertical Exaggeration 5:1

5 cm

- Jdl Jurassic Dolerite
- Tr Triassic Ross Sandstone
- Pf Permian Fernfree Group
- Pbc Permian Blackwood Conglomerate

654148 FIG. 4-2-3

MOBIL ENERGY MINERALS AUSTRALIA					
PROJECT EL30/80 TASMANIAN BASIN					
WHITEFOORD - STONEHENGE CROSS-SECTION B'-B					
84-2116 vol 2. 008					
COMPILED	DATE	BY	ADDNS	DATE	BY
DRAWN	1-84	AJW			
SCALE	as shown	HS	DWG No	1-6033-2-075	



NOTE:
 Vertical Scale 1:2000
 Horizontal Scale approx. 1:10,000
 Vertical Exaggeration 5:1

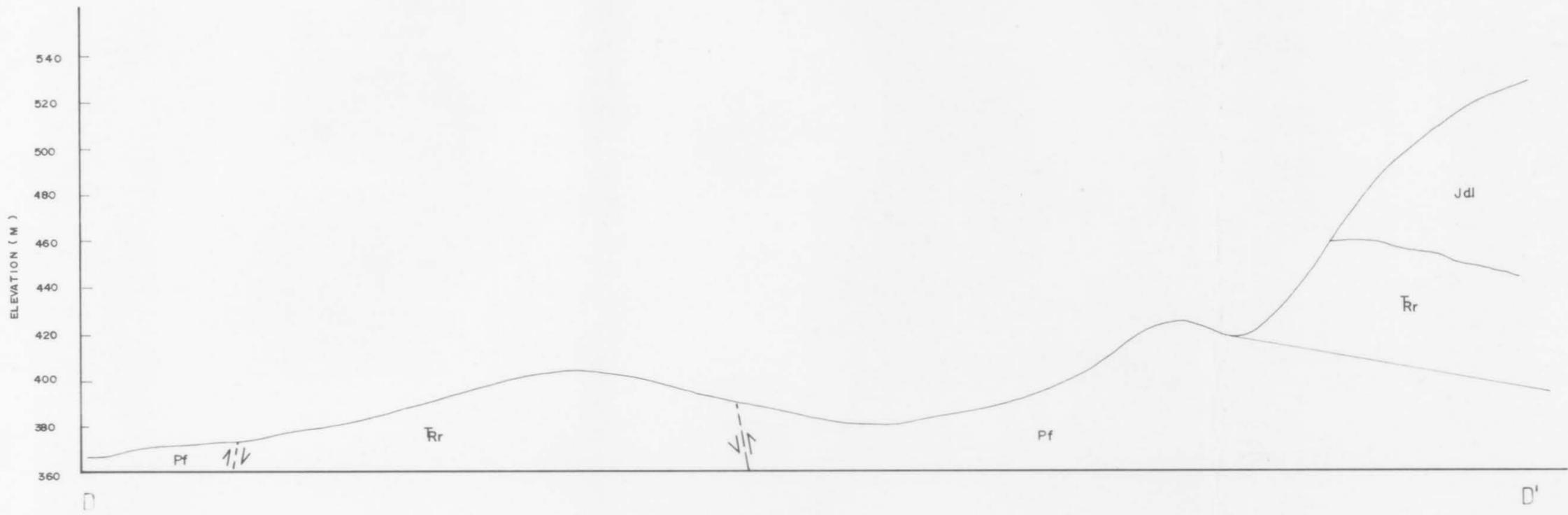
5 cm

- Jdl Jurassic Dolerite
- Tr Triassic Ross Sandstone
- Pf Permian Ferntree Group
- Pbc Permian Blackwood Conglomerate

---?---?--- Inferred, Concealed geological contact

654149 FIG. 4.2.4

MOBIL ENERGY MINERALS AUSTRALIA					
PROJECT EL30/80 TASMANIAN BASIN					
WHITEFOORD — STONEHENGE					
CROSS-SECTION C'-C					
009					
SH-2116 vol 2					
COMPILED	DATE	BY	ADDNS	DATE	BY
DRAWN	1'84	AJW			
SCALE	as shown	HS	DWG No	1.6033.2.76	



NOTE:
 Vertical Scale 1:2,000
 Horizontal Scale approx. 1:10,000
 Vertical Exaggeration 5:1



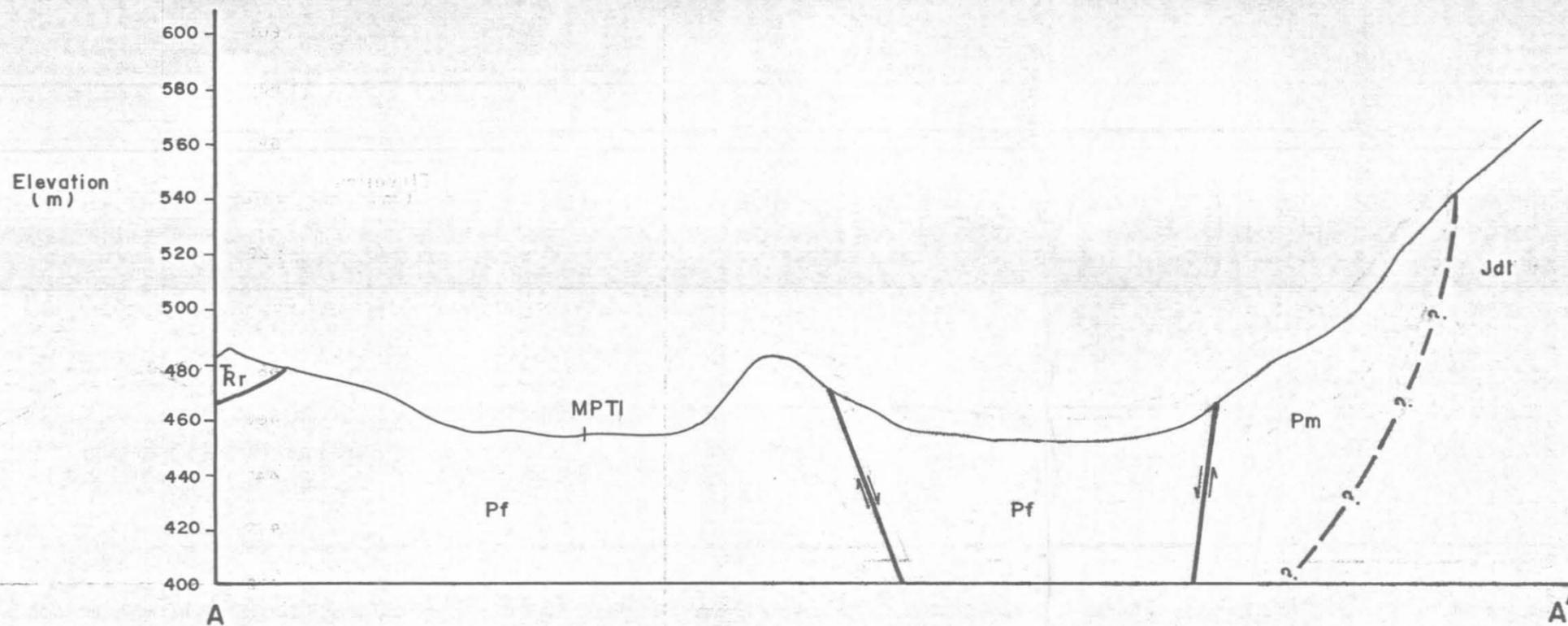
- JURASSIC
- Jdl DOLERITE
- TRIASSIC
- Fr ROSS SANDSTONE
- PERMIAN
- Pf FERNTREE GROUP

654150
 PLATE 9.

Fig 4-2.5

MOBIL ENERGY MINERALS AUSTRALIA					
PROJECT TASMANIAN JOINT VENTURE					
WHITEFOORD - STONEHENGE					
D - D' 010					
CROSS SECTION					
COMPILED	DATE	BY	ADDNS	DATE	BY
	8 '83	AW			
DRAWN	8 '83	HS			
SCALE	as shown		DWG No	1-6033-2-054	

84-2116 vol 2.



NOTE:

Vertical Scale 1:2,000
 Horizontal Scale approx. 1:20,000
 Vertical Exaggeration 10:1

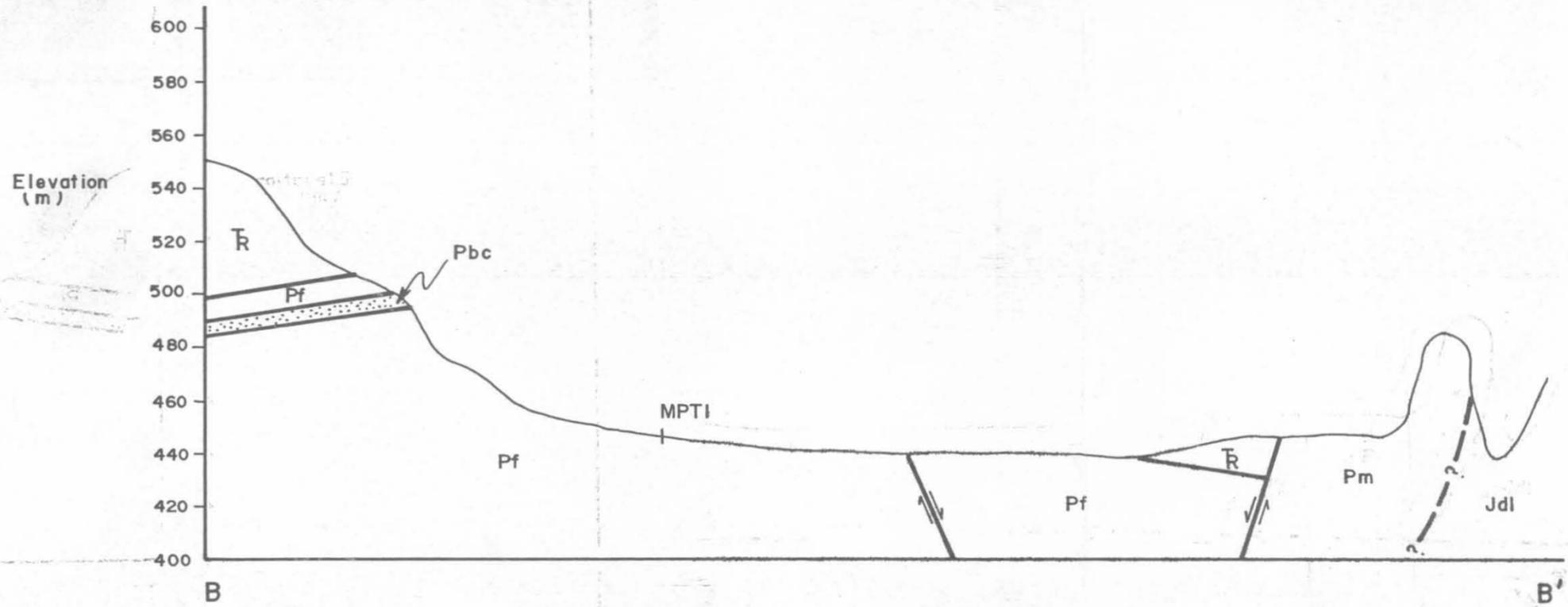


- Jdl Jurassic Dolerite
- Rr Triassic Ross Sandstone
- Pf Permian Ferntree Group
- Pm Permian Malbina Formation

--- ? --- Inferred, concealed geological contact

654151 Plate 4-3-2

MOBIL ENERGY MINERALS AUSTRALIA					
PROJECT EL 30/80 TASMANIA BASIN					
84-216 vol 2					
DUNGROVE - NW BOTHWELL CROSS-SECTION A-A'					
011					
COMPILED	DATE	BY	ADDNS	DATE	BY
DRAWN	3 · 84	A · J · W.			
SCALE	AS SHOWN	DWG No			



Vertical Scale 1:2,000
 Horizontal Scale approx. 1:20,000
 Vertical Exaggeration 10:1

NOTE :
 Vertical Scale 1:2,000
 Horizontal Scale approx. 1:20,000
 Vertical Exaggeration 10:1



- Jdl Jurassic Dolerite
- R Triassic Ross Sandstone
- Pf Permian Ferntree Group
- Pbc Permian Blackwood Conglomerate
- Pm Permian Malbina Formation
- ? --- Inferred, concealed geological contact

654152 Plate 4.3.3

MOBIL ENERGY MINERALS AUSTRALIA
 PROJECT EL 30/80 TASMANIA BASIN

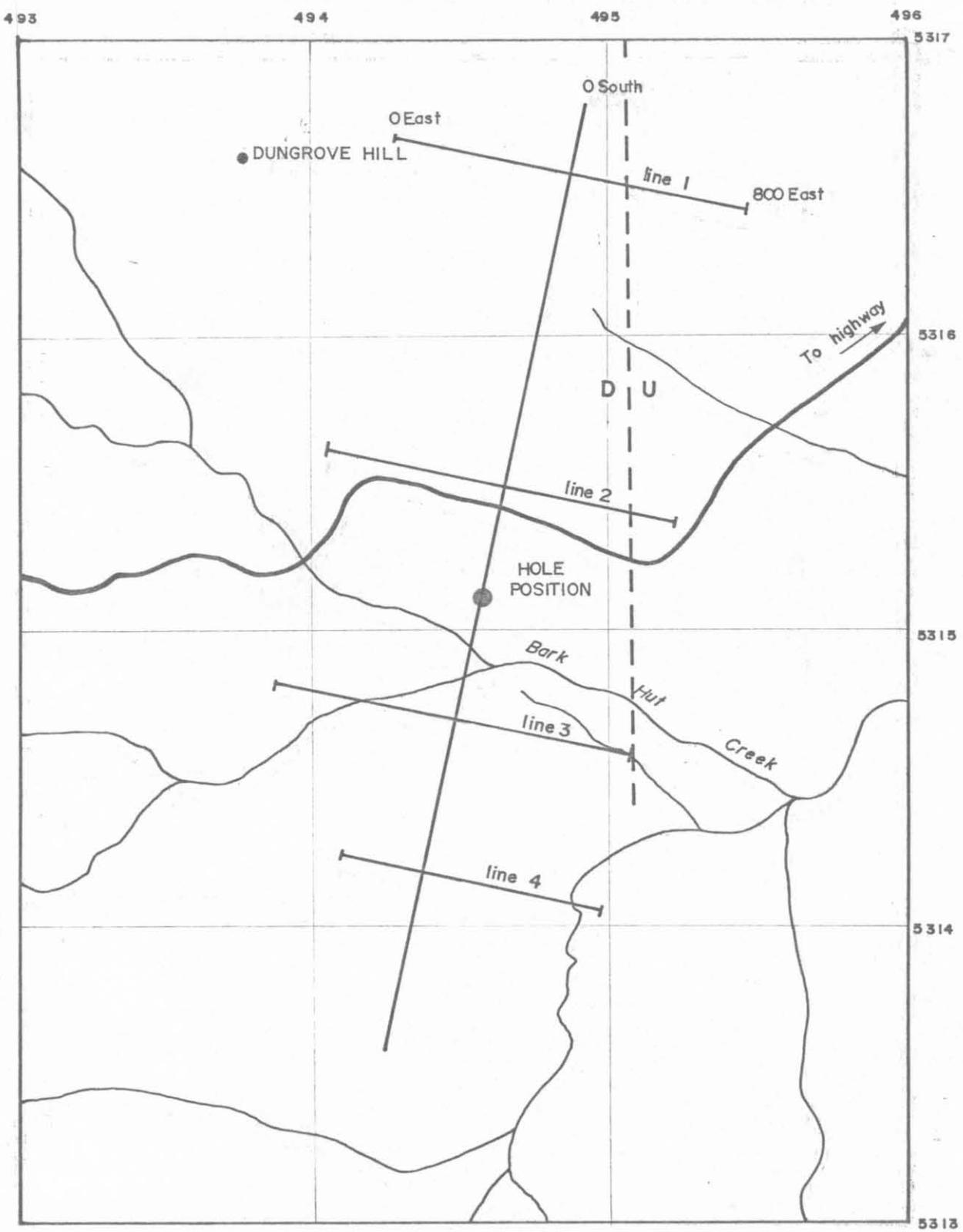
84-2116 vol 2.
DUNGROVE - NW BOTHWELL
CROSS-SECTION B-B'
 012

	DATE	BY	ADDNS	DATE	BY
COMPILED	3 · 84	A.J.W.			
DRAWN	3 · 84	A.H.			
SCALE	AS	SHOWN	DWG No		

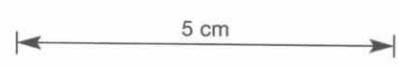
141

Fig 5.1.1

84-2116
vol 2



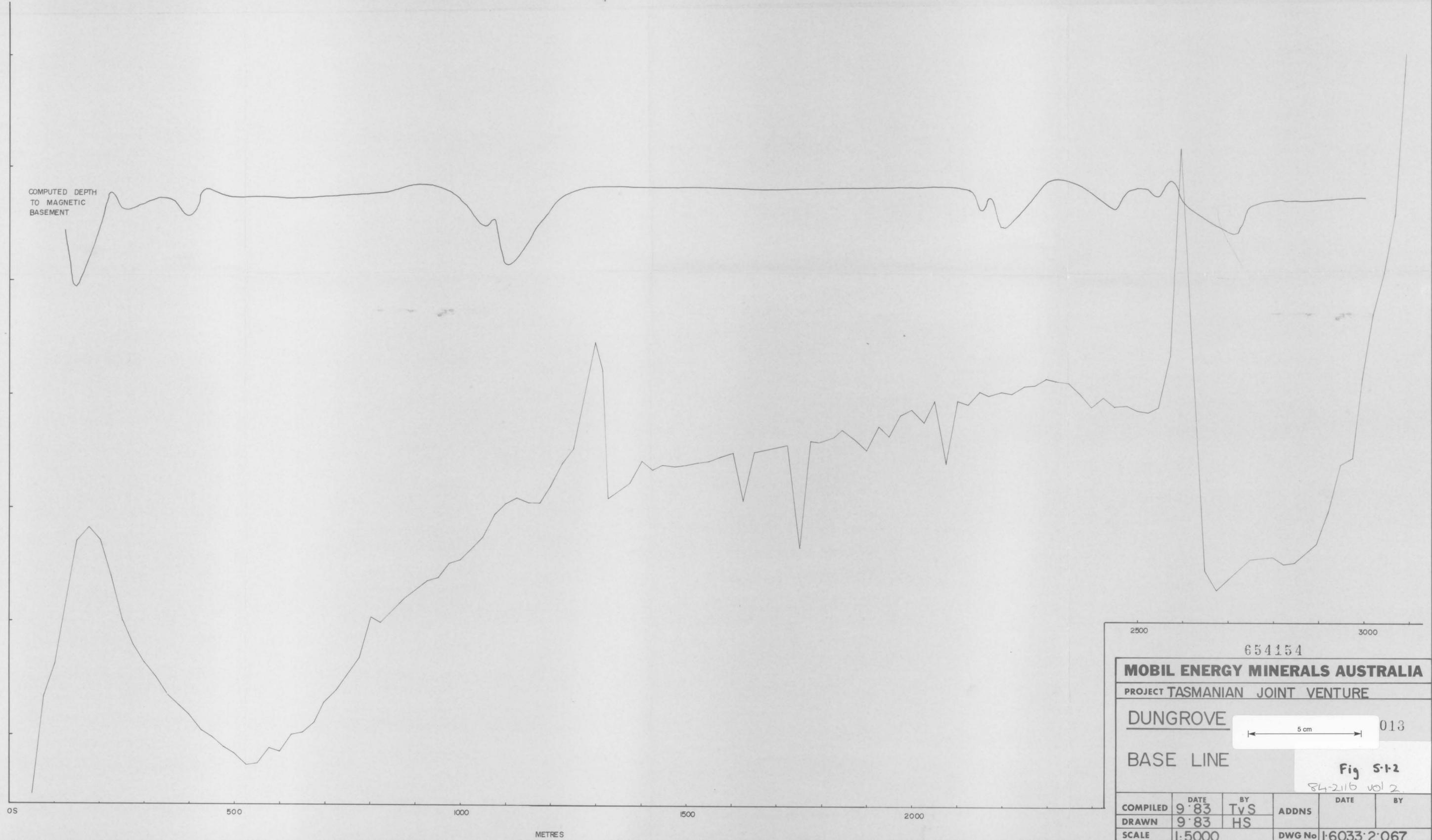
654153



MOBIL ENERGY MINERALS AUSTRALIA					
PROJECT TASMANIAN JOINT VENTURE					
DUNGROVE					
MAGNETIC SURVEY GRID					
LOCATION MAP					
COMPILED	DATE	BY	ADDNS	DATE	BY
	9 '83	TvS		1 '83	AJW
DRAWN	9 '83	HS			
SCALE	1:20,000		DWG No	1.60332.59	

GAMMAS
62200
62100
62000
61900
61800
61700
61600

COMPUTED DEPTH
TO MAGNETIC
BASEMENT

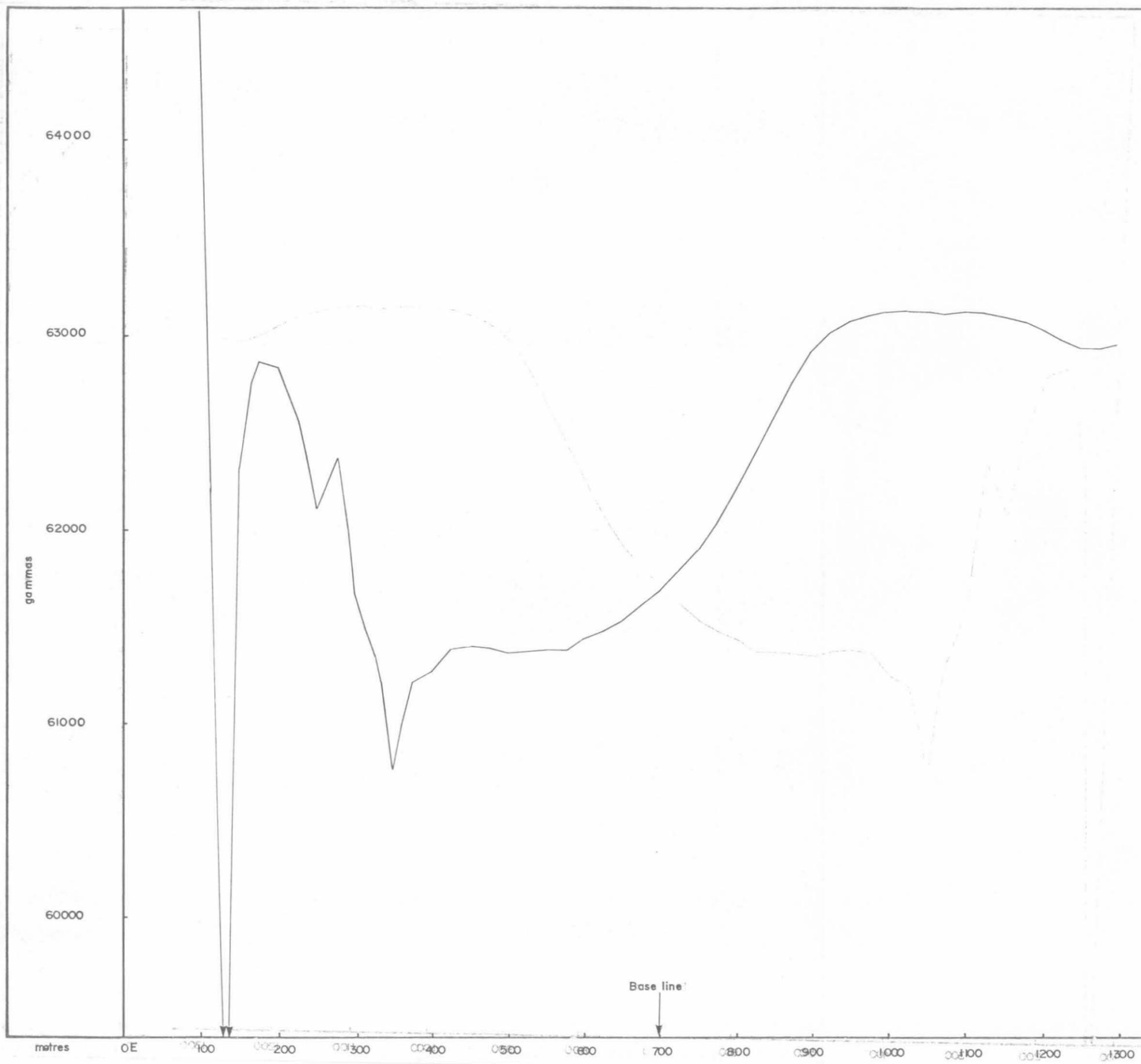


2500 3000
654154
MOBIL ENERGY MINERALS AUSTRALIA
PROJECT TASMANIAN JOINT VENTURE
DUNGROVE 013
BASE LINE
5 cm
Fig 5-1-2
84-2116 vol 2

COMPILED	DATE 9·83	BY Tvs	ADDNS	DATE	BY
DRAWN	9·83	HS			
SCALE	1:5000		DWG No	1:6033·2·067	

Fig 5-1-3

84-2116 vol 2.

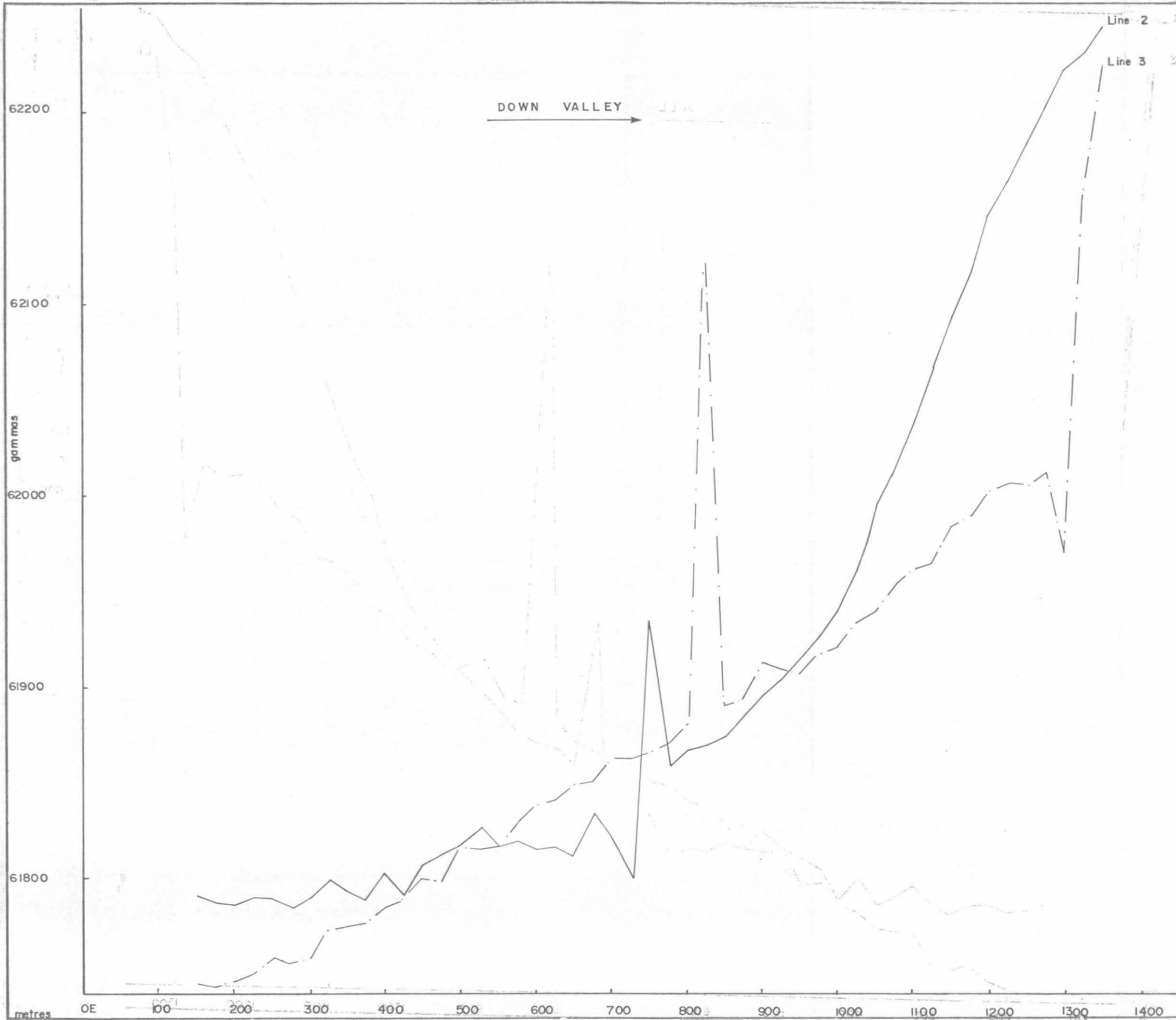


654155

5 cm

MOBIL ENERGY MINERALS AUSTRALIA					
PROJECT TASMANIAN JOINT VENTURE					
<u>DUNGROVE</u>					
LINE I			014		
COMPILED	DATE	BY	ADDNS	DATE	BY
DRAWN	9-83	TvS			
SCALE	1:5000	HS	DWG No	1-6033'2-060	

Fig 5.1.4 84-2116 vol 2

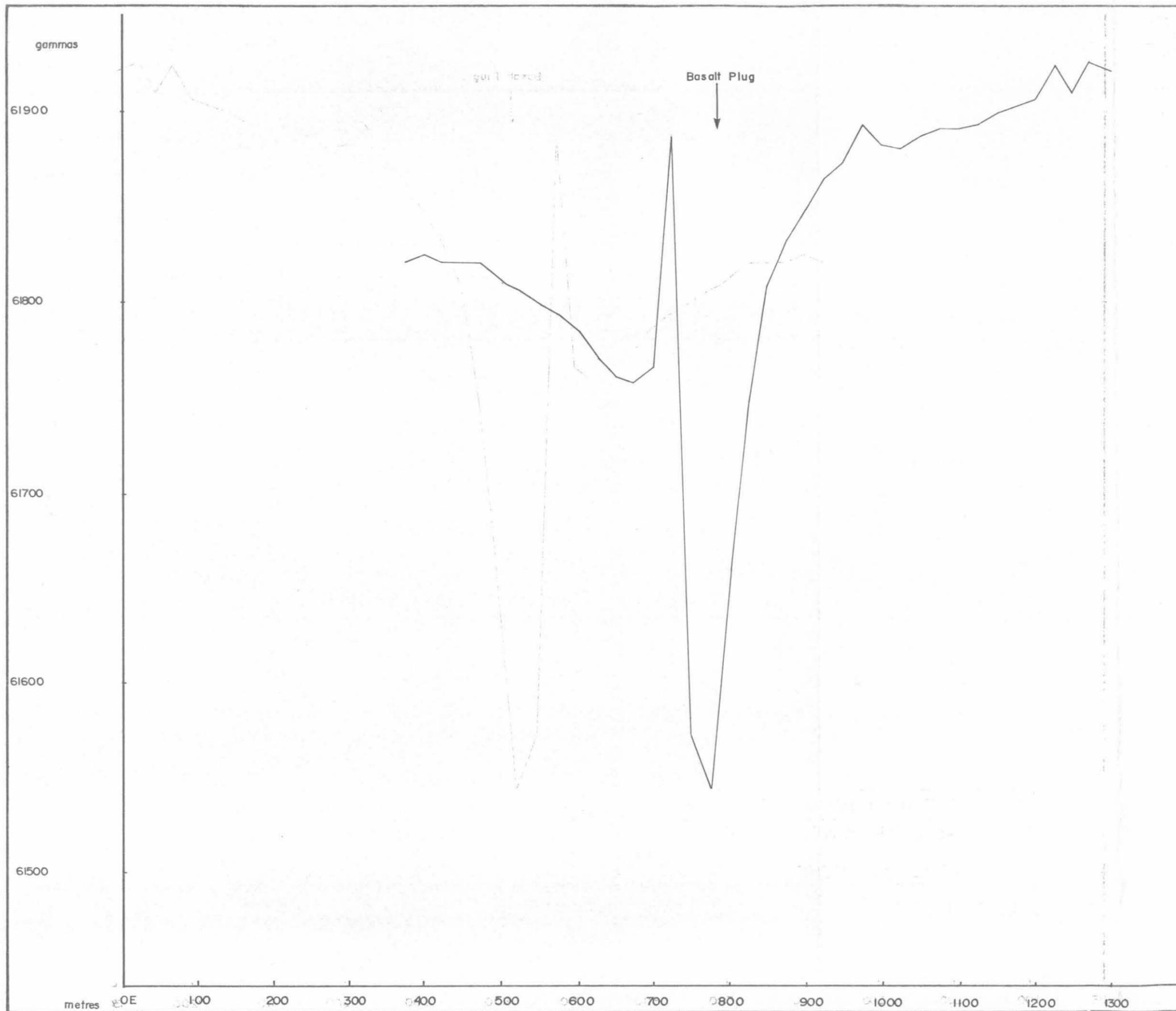


654156



MOBIL ENERGY MINERALS AUSTRALIA				
PROJECT TASMANIAN JOINT VENTURE				
<u>DUNGROVE MAGNETICS</u>				
LINES 2 AND 3				
COMPILED	DATE	BY	ADDNS	DATE
DRAWN	9'83	TvS HS		015
SCALE	1:5000		DWG No	1-6033-2-061

Fig 5.1.5 84-2116 vol 2.



654157

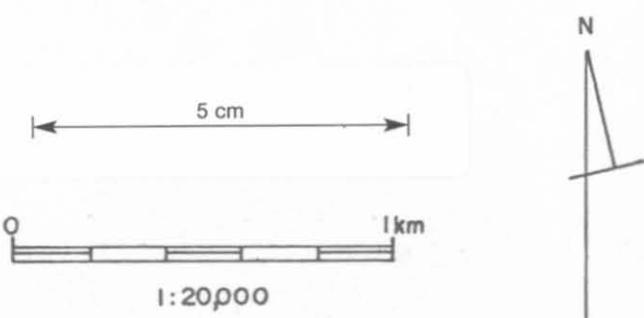
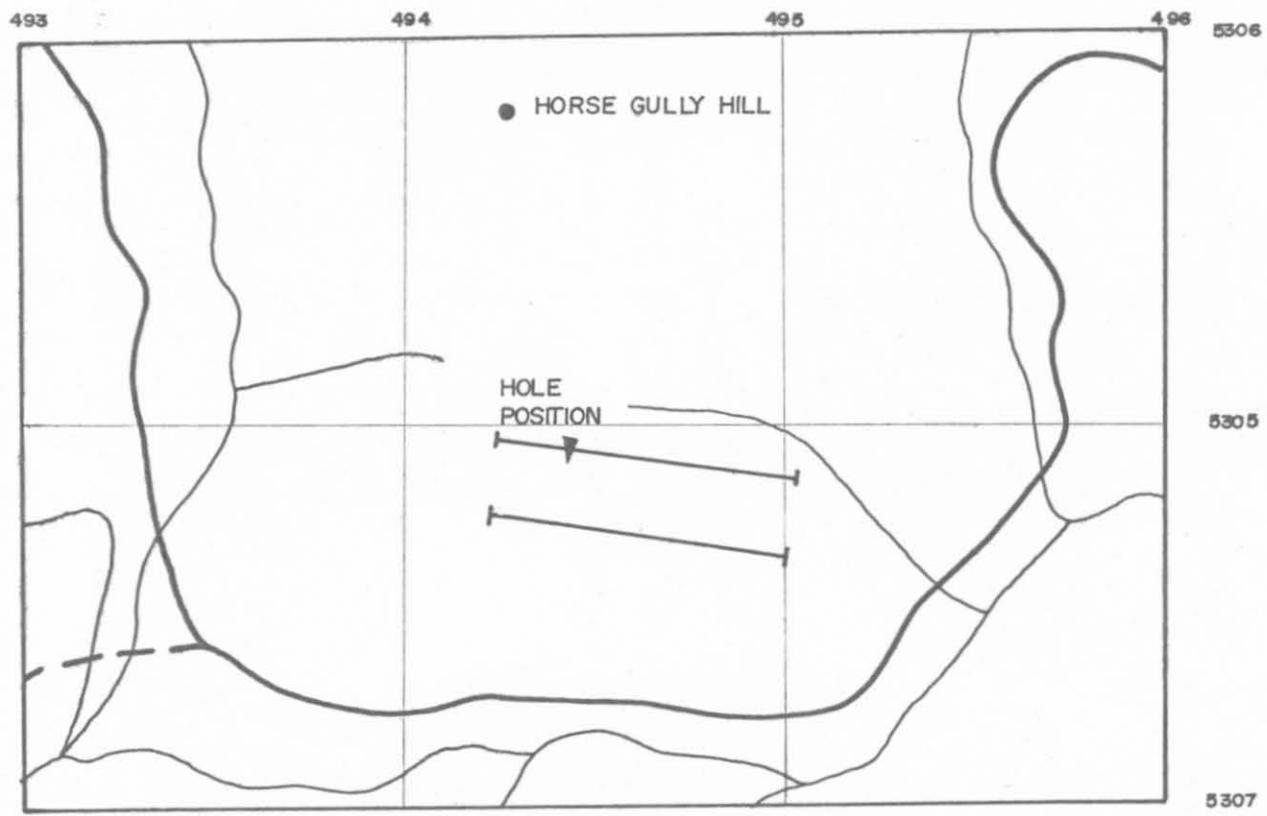
5 cm

MOBIL ENERGY MINERALS AUSTRALIA					
PROJECT TASMANIAN JOINT VENTURE					
DUNGROVE MAGNETICS					
LINE 4				016	
COMPILED	DATE	BY	ADDNS	DATE	BY
DRAWN	9.83	TvS			
SCALE	1:5000		DWG No	1.6033.2.062	

142

Fig 5-16

84-2116 vol2

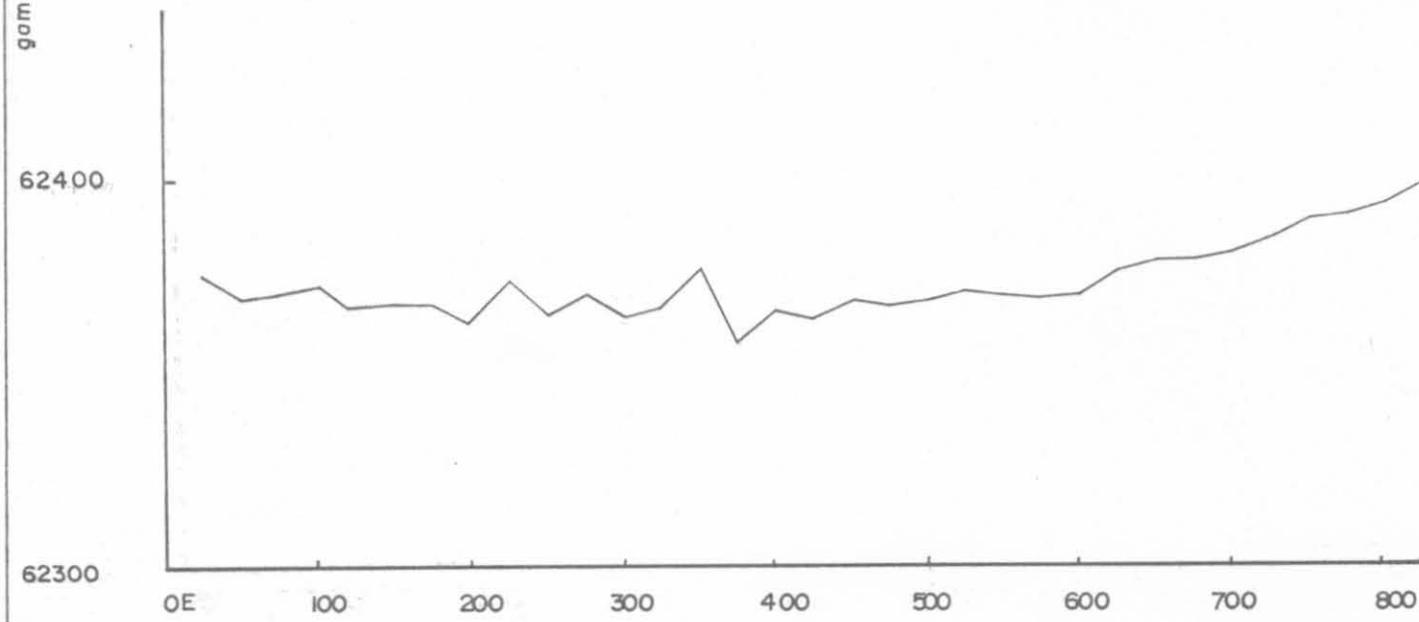
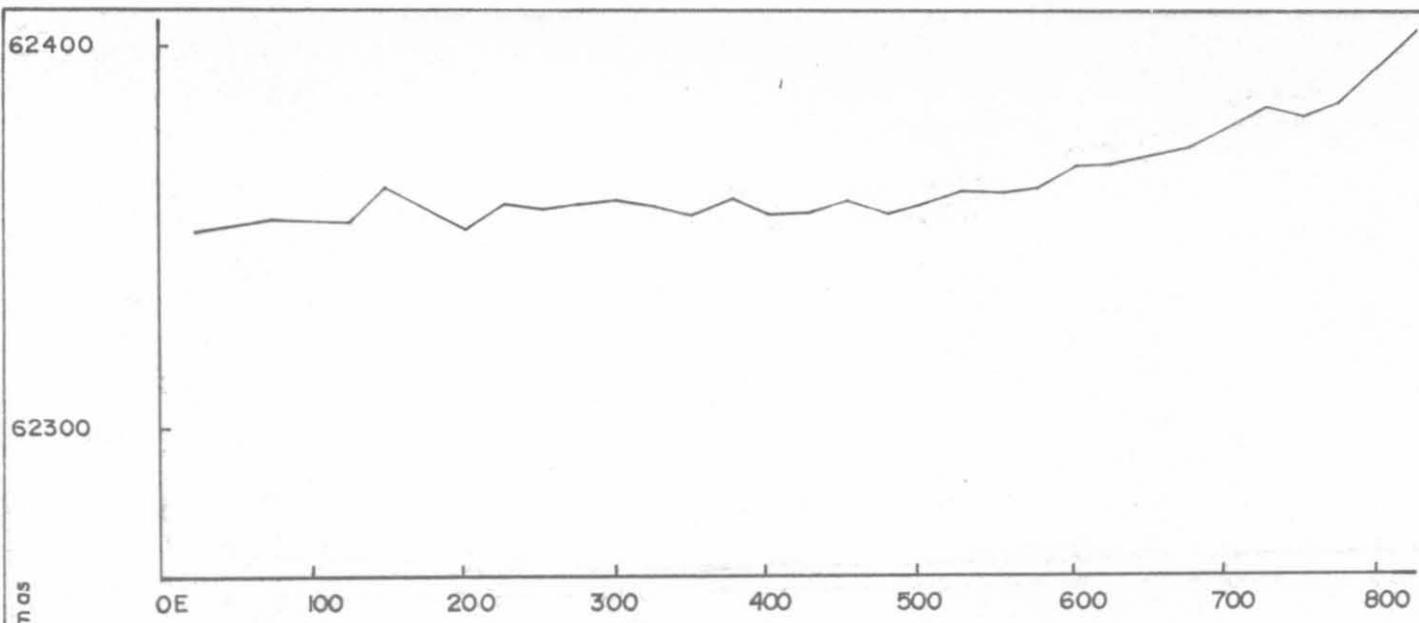


654158

MOBIL ENERGY MINERALS AUSTRALIA						
PROJECT TASMANIAN JOINT VENTURE						
SW BOTHWELL						
MAGNETIC SURVEY GRID						
LOCATION MAP						
COMPILED	DATE	BY	ADDNS	DATE	BY	
DRAWN	9-83	TVS				
SCALE	1:20,000	HS				
			DWG No	1-6033	2-67	

Fig 5.1.7

84-2116 vol 2



654159

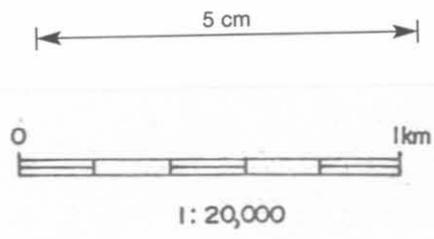
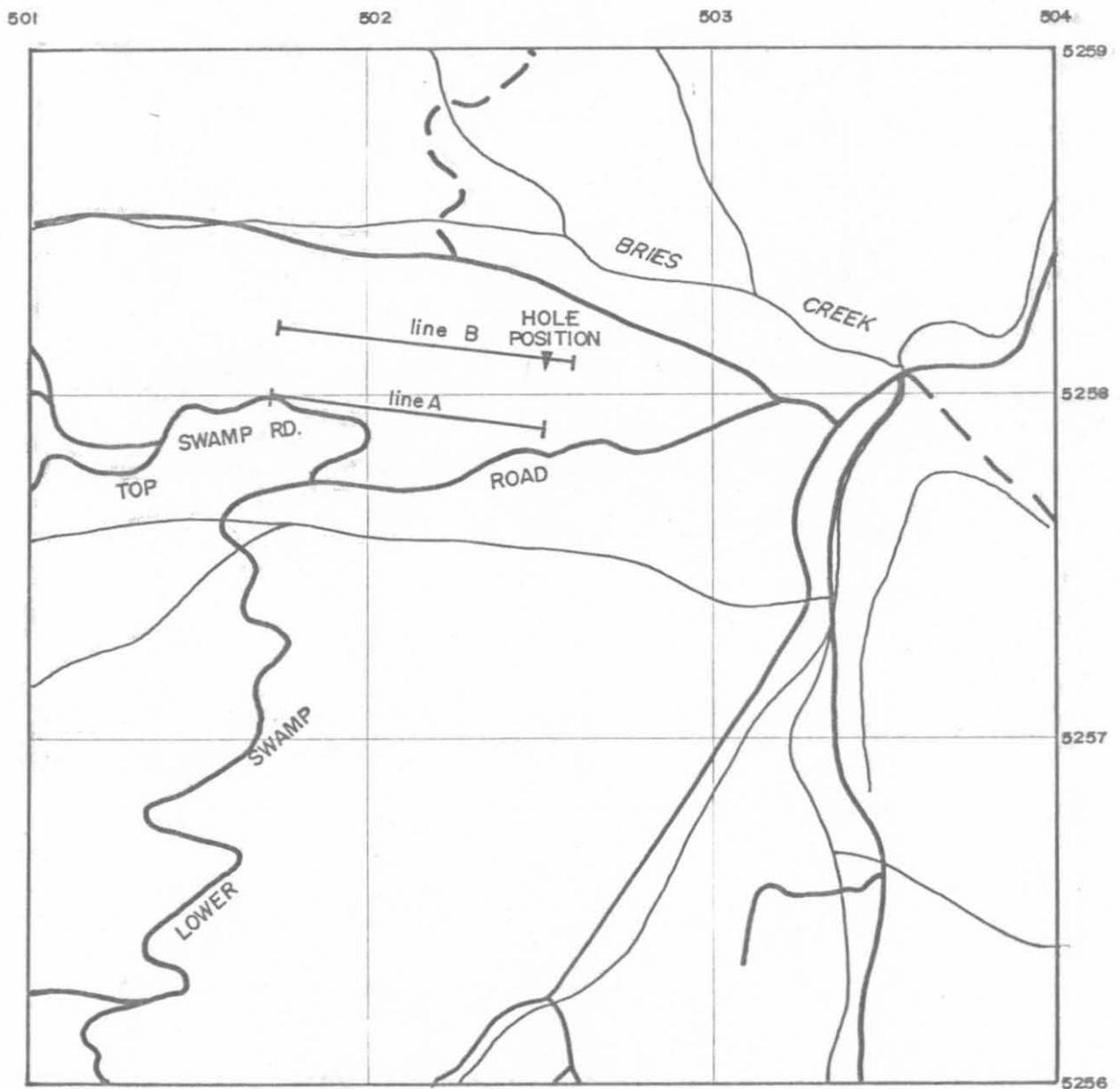
MOBIL ENERGY MINERALS AUSTRALIA					
PROJECT TASMANIAN JOINT VENTURE					
SW BOTHWELL MAGNETICS					
NTH. LINE					
COMPILED	DATE	BY	ADDNS	DATE	BY
	9.83	TVS			
DRAWN	DATE	BY			
	9.83	HS			
SCALE	1:5000	DWG No		1.6033.2.065	



144

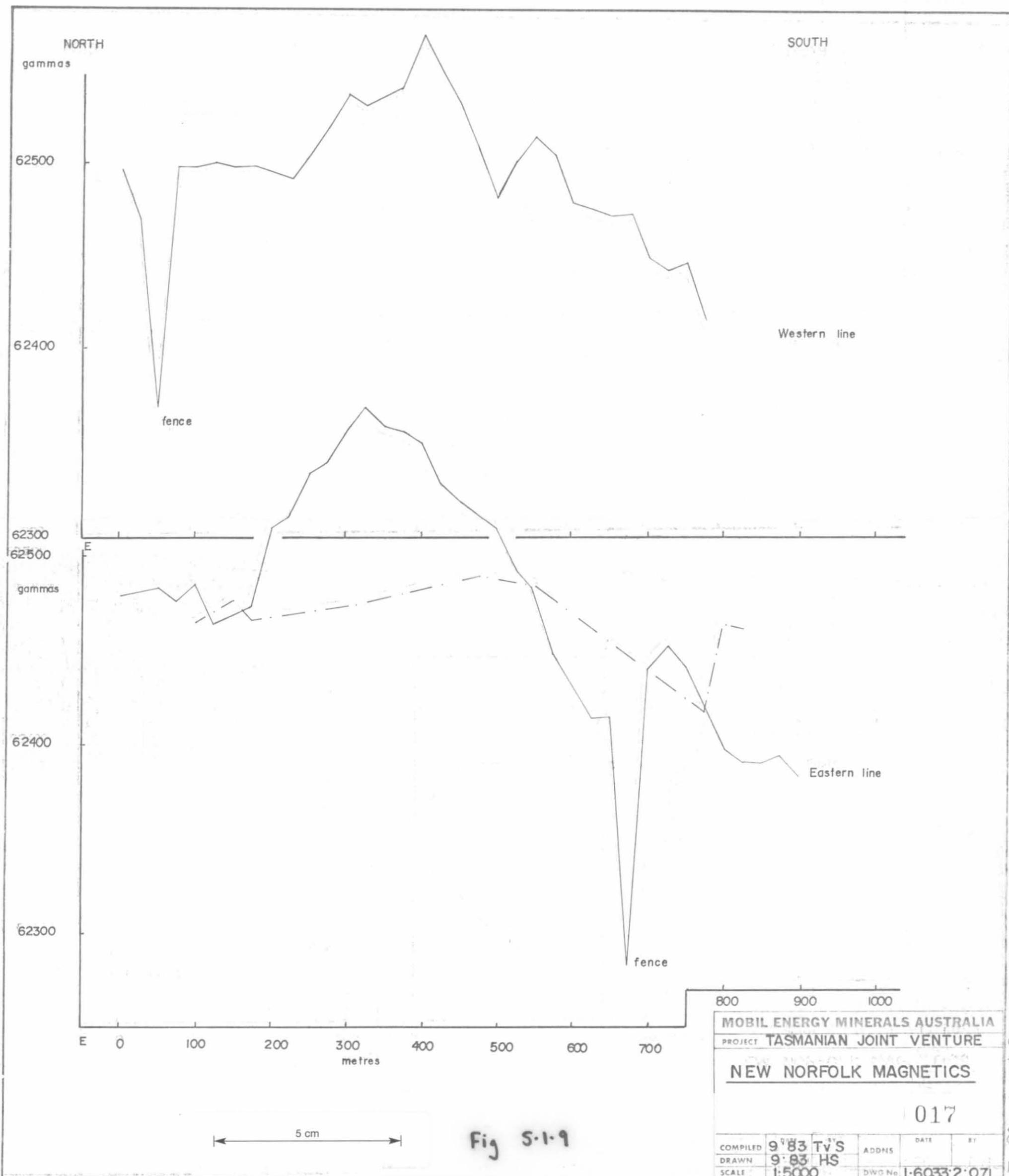
84-2116 vol 2.

Fig 5.1.8



654160

MOBIL ENERGY MINERALS AUSTRALIA					
PROJECT TASMANIAN JOINT VENTURE					
NEW NORFOLK					
MAGNETIC SURVEY GRID					
LOCATION MAP					
COMPILED	DATE	BY	ADDNS	DATE	BY
DRAWN	9.83	TYS			
SCALE	1:20,000		DWG No	160332	68



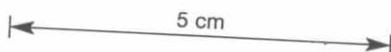
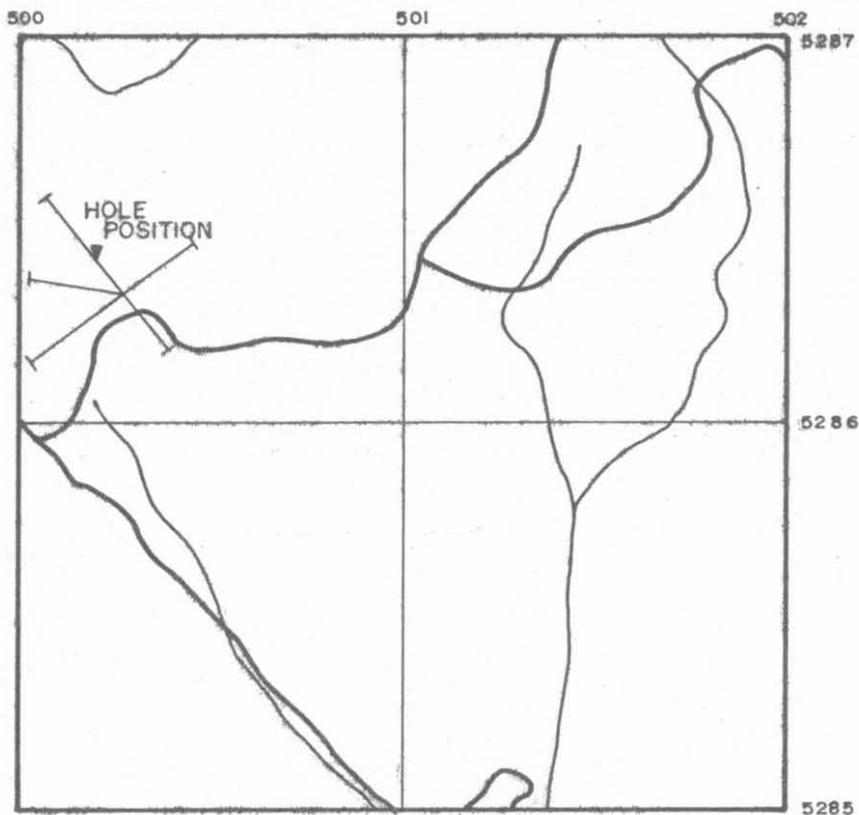
654161

84-2116 vol 2

145

84-2116 vol 2.

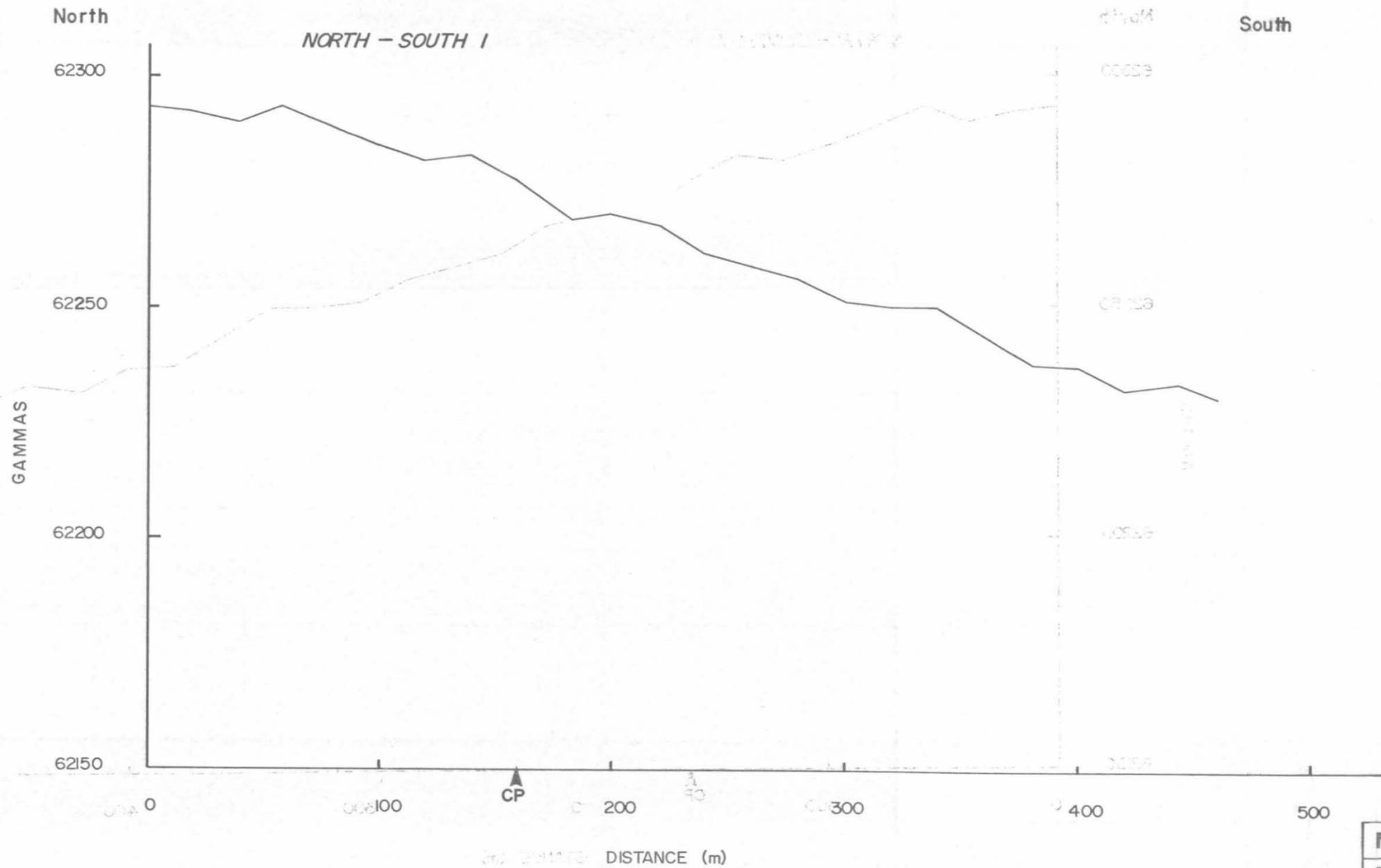
Fig 5.1.10



654162

MOBIL ENERGY MINERALS AUSTRALIA					
PROJECT EL 30/80 TASMANIA BASIN					
PELHAM					
MAGNETIC SURVEY GRID					
LOCATION MAP					
COMPILED	DATE	BY	ADDNS	DATE	BY
	3-84	A.J.W.			
DRAWN	DATE	BY			
	3-84	A.H.			
SCALE	1: 20,000		DWG No		

Fig 5-1-11



654163

5 cm

MOBIL ENERGY MINERALS AUSTRALIA

PROJECT TASMANIAN BASIN JV EL 30/80

PELHAM, NORTH - SOUTH I.

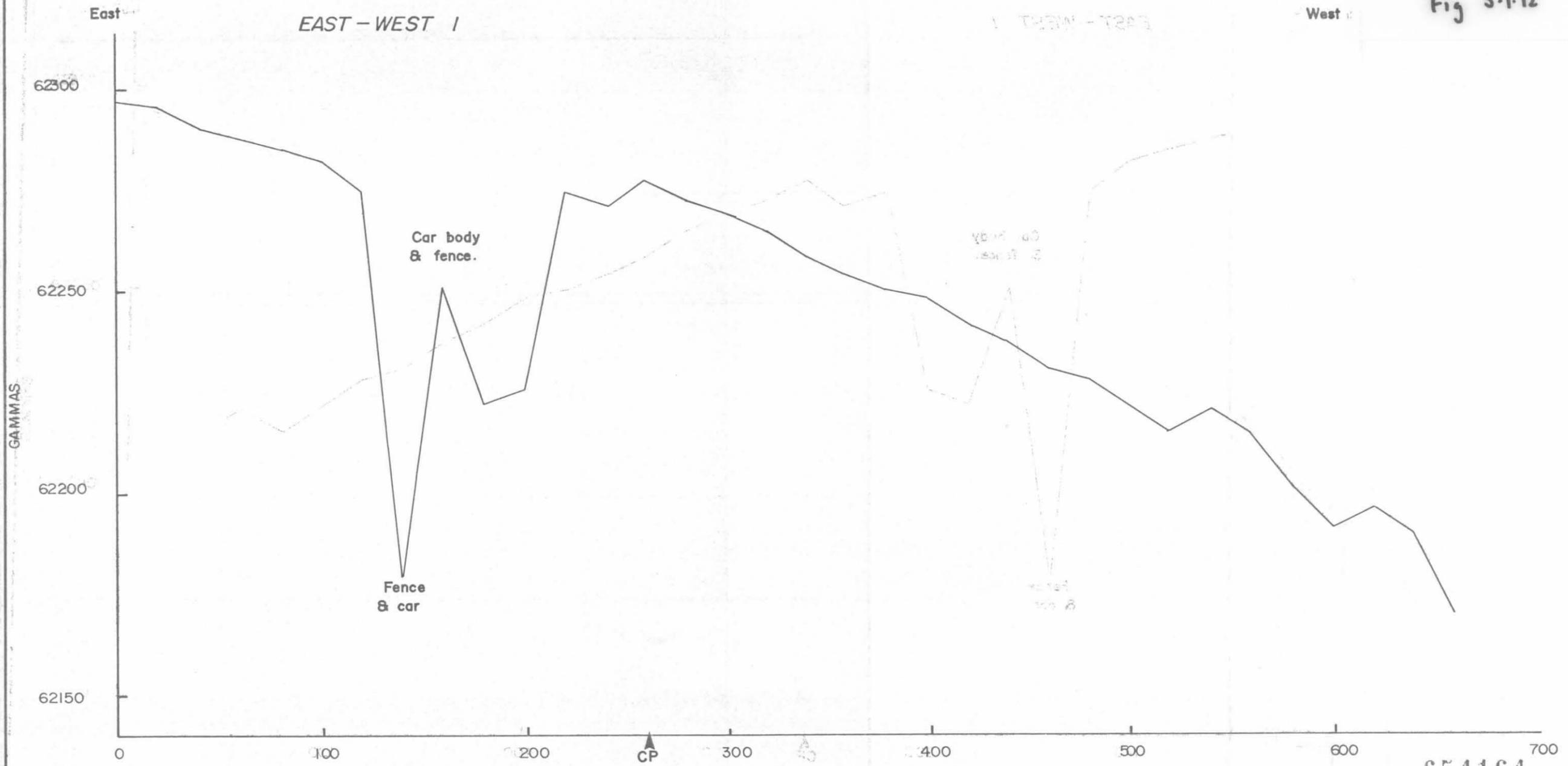
MAGNETIC PROFILE

COMPILED	DATE	BY	ADDNS	DATE	BY
	1-84	AJW			
DRAWN	1-84	HS			
SCALE	1:2000		DWG No	16033-2-79	

147

84-2116 Vol 2.

Fig 5.1.12



GAMMAS

East

EAST - WEST I

West

62300

62250

62200

62150

0

100

200

CP

300

400

500

600

700

(m) DISTANCE (m)

654164

MOBIL ENERGY MINERALS AUSTRALIA

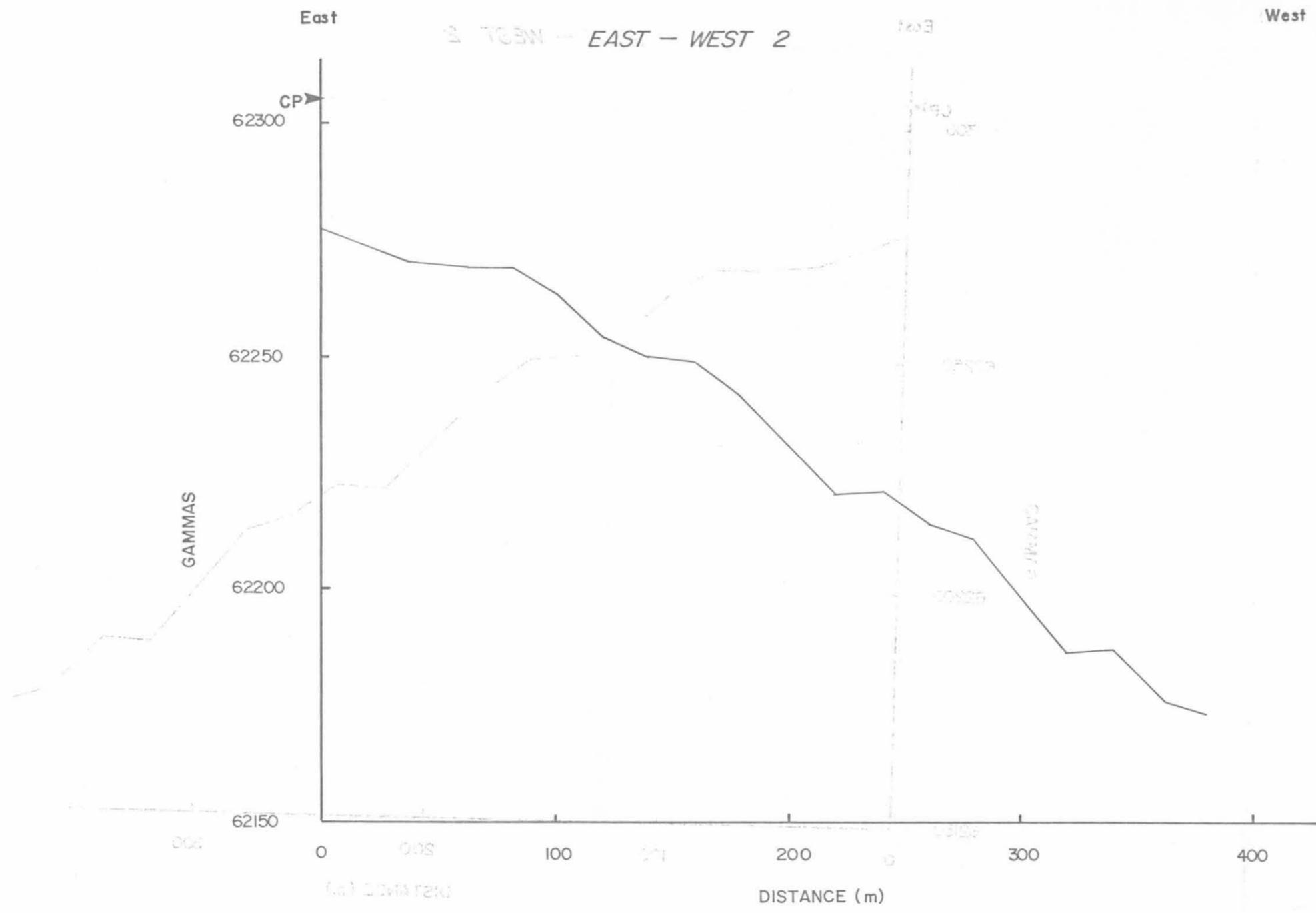
PROJECT TASMANIAN BASIN JV EL 30/80

PELHAM EAST - WEST I.

MAGNETIC PROFILE

COMPILED	DATE	BY	ADDNS	DATE	BY
	1'84	AJW			
DRAWN	1'84	HS			
SCALE	1:2000		DWG No	1-6033-2-80	

5 cm



654165



MOBIL ENERGY MINERALS AUSTRALIA					
PROJECT TASMANIAN BASIN JV EL30/80					
PELHAM, EAST-WEST MAGNETIC PROFILE					
COMPILED	DATE	BY	ADDNS	DATE	BY
DRAWN	1·84	HS			
SCALE	1:20,000		DWG No	1-6033-2-81	