

1983/33. Coal intersections in a drill hole near Kempton

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Abstract

A seam of Triassic coal 2.3 m thick was intersected in hole DOM Mount Vernon DDH 1. The coal has a raw ash content of 14.5% and a specific energy of 28 MJ/kg.

INTRODUCTION

Coal was sampled from a hole drilled by the Department of Mines near Mount Vernon during the course of a gravity survey. Details of the hole location and coal intersections are given below:

AMG grid co-ordinates : 513 024 mE
5 296 375 mN

Collar elevation : 222.0 above sea level

Date of drilling : October 1982

Depth to base of hole : 500 m

DETAILS OF COAL INTERSECTIONS

<i>From (m)</i>	<i>To (m)</i>	<i>Recovery (m)</i>	<i>(%)</i>	<i>Description</i>
137.00	137.51	0.51	100	Green mudstone, slickensided. Gradational bottom contact (GBC).
137.51	137.70	0.19		Sandy, laminated grey mudstone; clayey; core broken.
<i>COAL SECTION - MINOR</i>				
137.70	137.77	0.07		Shaly carbonaceous mudstone.
137.77	137.96	0.19		Dull coal, no bright bands; muddy; verging on being classed as carbonaceous mudstone although has low SG; core broken.
137.96	138.055	0.095		Dull coal, as above, core slightly broken; many subvertical fissures filled with calcite.
138.055	138.06	0.005		Sandy mudstone band with sharp top and bottom contacts.
138.06	138.30	0.24		Dull coal, 5-10% bright bands (Dmb); GBC.
<i>BASE OF COAL SECTION</i>				
138.30	140.00	1.70		Mudstone, grey, broken, clayey, minor FLSS laminae; interval of FLSS (fine-grained lithic sandstone) from 139.75-139.85 m.
158.00	159.15	1.15		FMLSS (fine to medium-grained lithic sandstone); grey; GBC.
159.15	159.17	0.02		Mudstone, carbonaceous, dark grey. GBC.
159.17	159.25	0.08	100	Shaly mudstone, core broken.

<i>From (m)</i>	<i>To (m)</i>	<i>Recovery</i>		<i>Description</i>
		<i>(m)</i>	<i>(%)</i>	
<i>COAL SECTION - MINOR</i>				
159.25	159.51	0.13	50	Dull coal with minor bright bands (Dmb); core badly broken; crumbled in parts.
159.51	159.75	0.18	75	Mudstone, carbonaceous; dark grey; core broken.
159.75	159.97	0.16	75	Dull coal, minor bright bands (Dmb); core broken and crumbled. GBC.
159.97	159.98	0.01	100	Carbonaceous mudstone.
<i>BASE OF COAL SECTION</i>				
159.98	160.64	0.59		Grey mudstone, sandy, core broken. GBC.
160.64	161.00	0.36		FLSS, core broken.
203.00	204.30	1.30		Fine to medium-grained lithic sandstone, sharp bottom contact (SBC).
<i>COAL SECTION</i>				
204.30	204.71	0.41		Grey mudstone with wispy carbonaceous laminae; carbonaceous over basal 50 mm.
204.71	204.79	0.08		Dull coal, no bright bands; muddy; verging on carbonaceous mudstone.
204.79	204.792	0.002		Bright coal.
204.792	204.837	0.045		Dull coal, shiny; verging on carbonaceous mudstone as above; light (low SG).
204.837	204.87	0.033		Carbonaceous mudstone.
204.87	205.60	0.34	50	Dull coal, no bright bands; mud laminae common at 45° to core axis, grey in colour, broken over top 90 mm and broken into crumbs from 30-120 mm above base of unit, gradational bottom contact (GBC). Beige mudstone chips in broken basal 90 mm; this means one mudstone band missing from core.
205.60	205.72	0.12		Dull coal, no bright bands.
205.720	205.723	0.003		Bright coal with vertical wisps of calcite.
205.723	205.846	0.123		Dull coal. GBC.
205.846	205.900	0.054		Dull coal with minor grey mudstone bands interlaminated with coal; bands 5 mm wide. GBC.
205.900	205.940	0.040		Dull coal, no bright bands. GBC.
205.940	206.045	0.105		Dull coal, slickenside at 45° to core axis at top of unit; calcite 2 mm thick on slickenside; minor bright bands.
206.045	206.235	0.190		Dull coal, minor bright bands, 1%.
206.235	206.240	0.005		Bright coal, vertical wisps of calcite.
206.240	206.300	0.060		Dull coal, minor bright bands, 1%.
206.300	206.301	0.001		Bright coal.
206.301	206.311	0.010		Dull coal, minor bright bands, 1%.
206.311	206.313	0.002		Bright coal.
206.313	206.358	0.045		Dull coal, minor bright bands; wispy calcite streaks throughout unit.
206.358	206.365	0.007	100	Dull and bright coal, interlaminated (50:50).

<i>From</i> (m)	<i>To</i> (m)	<i>Recovery</i> (m) (%)		<i>Description</i>
206.365	206.535	0.170	100	Dull coal, wispy subvertical calcite streaks on poorly developed cleat.
206.535	206.548	0.013		Dull coal, minor bright bands (Dmb), subvertical poorly developed cleat with calcite on cleat faces.
206.548	206.558	0.010		Dull coal with small clay pellets 1 mm in diameter throughout.
206.558	206.628	0.070		Interlaminated dull and bright coal (Db) with subvertical cleat.
206.628	206.773	0.145		Dull coal with minor bright bands (Dmb) and grey mudstone streaks; core broken at base.
206.773	206.780	0.007		Bright coal.
206.780	206.955	0.175		Dull coal with minor bright bands (Dmb); core broken over basal 60 mm.
206.955	207.025	0.070		Shale, brown, cracked, clayey.
207.025	207.090	0.065		Dull coal, slightly broken, pyrite grains (0.01 mm in diameter) on fractures in coal.
<i>BASE OF COAL SECTION</i>				
207.09	209.01	1.92	100	Mudstone, wispy convoluted laminae over top 400 mm; laminated; some rheomorphic slumping from 208.06-208.08 m; small scale cross bedding; worm burrow from 208.68-208.72 m.

ANALYSES

The following analyses were obtained from a sample of coal from 204.79-207.09 m in DOM Mount Vernon DDH 1.

Proximate analysis

Seam thickness (m)	2.3
APPT specific gravity	1.37
Air-dried moisture (%)	7.1
Ash (%)	14.5
Volatile matter (%)	27.2
Fixed carbon (%)	58.3
Total Sulphur (%)	0.43
Specific energy (MJ/kg)	
- dry basis	28.16
- dry ash-free basis	32.94

Ultimate analysis (d.a.f.)

Carbon	82.7%
Hydrogen	4.50%
Nitrogen	1.47%
Sulphur	0.51%
Oxygen	10.82%
Carbonates (CO ₂) a.d.	0.82%

Maceral analysis (%)

Vitrinite	22	Fusinite	2
Exinite	7	Sclerotinite	-
Micrinite	1	Clay	3
Macrinite	3	Carbonates	1
Inertodetrinite	18	Pyrite	-
Semi-fusinite	42	Quartz	1

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Mean maximum reflectance 0.69

Float-sink analysis

Density of separation		Mass (%)	Ash (%)	Cumulative	
				Mass (%)	Ash (%)
	F 1.40	59.6	7.6	59.6	7.6
S 1.40	F 1.60	36.3	17.4	95.9	11.3
S 1.60	F 1.70	1.5	40.1	97.4	11.8
S 1.70	F 1.80	0.5	48.0	97.9	11.9
S 1.80		2.1	65.2	100	13.0

Note:

1. Density analyses carried out on 12.7 mm x 0 material.
2. Ash percentages reported on an 'air-dried' basis.

CONCLUSIONS

Coal has been noted in the area previously, as Hills *et al.* (1922) recorded outcrops of thin coal seams and carbonaceous shale around Kempton and north of Melton Mowbray.

The quality of the 2.3 m coal seam intersected in DOM Mount Vernon DDH 1 is very good, with a raw ash content of only 14.5% and a specific energy of 28 MJ/kg. Most Tasmanian coals have a raw ash content approaching 30% and a lower specific energy of around 22-24 MJ/kg.

The lateral extent of the 2.3 m seam is not known. Every square kilometre covered by the seam, if 2.3 m thick, would contain 3.2×10^6 tonnes of coal (at SG 1.4).

Whilst the seam is deep, the quality is surprisingly good and the occurrence worthy of mention for any future interest which may occur in the area.

REFERENCE

HILLS, C.L.; REID, A.M.; NYE, P.B.; KEID, H.G.W.; REID, W.D. 1922.
The coal resources of Tasmania. *Miner.Resour.geol.Surv.Tasm.* 7.

[21 July 1983]