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AUSMALIAN CONSOLIDATED INDUSTRIES LTD.

MINERAL RESOURCES DIVISION

TASMANIAN EXPLORATION E.L.16/68, BALFOUR — March, 1972

REPORT ON D.D.H.25 - MURRAYS REWARD PROSPECT — E.H. Mc Intyre

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SUMMARY

D.D.H. 25, which passed beneath and approximately parallel to D.D.H. 13 at Murrays Reward Prospect, was successfully completed at a depth of 250.2 metres.

A thick zone of anomalous but sub-economic copper mineralisation was intersected between 202.90 and 242.04 metres, this interval averaging about 2450 ppm Cu over an estimated true thickness of about 29.2 metres.

The mineralized zone, which dips about 85° towards the west, may be sub-divided into three sub-zones on the basis of copper distribution.

(a) 202.90 to 212.46 metres (3590 ppm Cu over an estimated true thickness of 6.9 metres).

Chalcopyrite is associated with quartz and quartz-dolomite veins, segregations and bands in carbonaceous and graphitic slate and siltstone.

(b) 212.46 to 228.33 metres (400 ppm Cu over an estimated true thickness of 11.4 metres).

Relatively barren zone coinciding approximately with the boundary between carbonaceous (west) and chloritic (east) slates and sediments.

(c) 228.33 to 242.04 metres (4025 ppm Cu over an estimated true thickness of 10.9 metres).

Chalcopyrite occurs in quartz and quartz-dolomite veins, segregations and bands in chlorite slate and siltstone.

The thickness of the mineralised zone in the vicinity of D.D.H.25 and D.D.H.13 appears to increase with increasing depth between the D.D.H. 13 intersection (estimated true thickness 22.5 metres) and the D.D.H. 25 intersection (estimated true thickness 29.2 metres). The D.D.H. 25 intersection is approximately 140 metres down dip from the D.D.H. 13 intersection.

The drilling costs directly attributable to D.D.H.25 were about $6,800 (average cost of $27.20 per metre) excluding the cost of drilling muds and additives.

Final cost = $6916 average $27.80/metre

D.D.H.25 - MURRAYS REWARD PROSPECT

Grid Reference	434 600 N 319 600 E
Elevation	197.5 metres
Angle	65°
Bearing	N 62° E (true)
Date drilled	5.2.72 to 12.2.72
Drilling rate	17.8 metres per shift
Air drilling	0 to 42.67 metres
Diamond drilling	42.67 to 250.20 metres.

1. OPERATIONAL DETAILS:

1.1 Drilling details

The drilling of D.D.H. 25 was commenced on February 5th, 1972.

BW casing was seated at 1.5 metres and the hole advanced rapidly to 42.67 metres with the airmast attachment. At this depth the hole was cased with NW casing and the drillhole was continued with NQWL diamond coring equipment with a triple tube core barrel.

NQWL diamond drilling advanced rapidly (average rate greater than 23 metres per shift) to about 112.8 metres at which depth the hole partially collapsed and the rods became bogged. The drillhole was then cased with BW casing and mud was used to lift the sludge and caved material from the bottom of the hole. Drilling was then continued with NQWL equipment.

The drillhole advanced rapidly (average rate about 22 metres per shift) to about 201.5 metres but from this depth to the end of the hole at 250.2 metres progress was slowed considerably (average rate about 8.1 metres per shift) by soft ground and the generation of excessive amounts of sludge.

D.D.H.25 was completed at 250.2 metres and an unsuccessful attempt was made to recover the 112.78 metres of BW casing. All the NW and HW casing was recovered.

Although about 42.67 metres of BW casing could be recovered by backing off it was decided to leave all BW casing down the hole until gelignite and detonators were obtained and the casing could be broken off near the bottom.

The drilling was then moved to the site of D.D.H.26.

On March 14, 1972 the rig was moved back over D.D.H.25 and 103.63 metres of BW casing were recovered by blasting above the area where the casing was jammed in the hole. About 9.14 metres of casing and a BW casing shoe could not be recovered.

1.2 Drilling conditions

Drill runs and core recovery are tabulated in Appendix A.

Air drilling advanced to 42.67 metres without incident.

NQWL diamond drilling advanced rapidly and without incident to 112.78 metres and core recovery to this depth was almost invariably 100 per cent with drill runs averaging 1.25 metres.

The NQWL drilling was slowed considerably by soft and broken ground and the generation of excessive amounts of sludge from a brecciated and semi-friable carbonaceous and graphitic fault zone. Core recovery between 112.78 metres and the end of the hole averaged about 95 per cent with minor intermittent core loss throughout. Drill runs in this interval were generally short and averaged about 1.0 metres.

1.3 Drillhole Deviation

The results of the drillhole surveys were as follows:

Collar		65° at N 50° E magnetic
30.5	metres	65° acid-tube;
61.0	"	64° " "
91.4	"	63° at N 83° E magnetic - Tropari
121.9	"	62.5° acid-tube; 60° at N 85° E magnetic-Tropari
152.4	"	58.5° - acid tube
182.9	"	46° " "
213.4	"	44° " "
243.8	"	38° " "

A gradual flattening or shallowing of the drillhole took place between the surface and about 150 metres and also between about 180 metres and the end of the hole. Between about 150 and 180 metres however, a dramatic shallowing of about 12 degrees occurred in slightly sheared carbonaceous siltstone.

A significant deviation towards the south occurred between the surface and about 100 metres and may have continued with increasing depth.

2. GEOLOGY

The complete drill log is presented in Appendix B and may be summarized as follows:-

AIR DRILLING

0 to 42.67 Metres

Carbonaceous and chloritic slate and siltstone.

DIAMOND DRILLING

42.67 to 48.01 Metres

Massive grey, carbonaceous siltstone.

48.01 to 78.63 Metres

Grey, carbonaceous shale and siltstone.

78.63 to 106.51 Metres

Slightly chloritic carbonaceous shale and shattered, slightly chloritic siltstone and slaty siltstone.

106.51 to 131.80 Metres

Grey and grey-green carbonaceous shale and siltstone. Common fragmentary fracture/breccia zones.

131.80 to 136.22 Metres

Finely laminated, slightly chloritic shale and siltstone.

136.22 to 146.89 Metres

Pale to medium green, slaty chloritic tuff (?) or siltstone.

146.89 to 154.23 Metres

Dark grey and black carbonaceous and graphitic slaty siltstone. Common leucoxene porphyroblasts.

154.23 to 163.67 Metres

Pale grey siltstone and medium to dark grey carbonaceous siltstone occurring in graded beds and in finely to coarsely laminated intervals. Minor chalcopyrite in quartz and quartz-dolomite veins and segregations about 159.0 metres.

163.67 to 177.24 Metres

Similar to the interval 154.23 to 163.67 metres, but is commonly disrupted by microfaults and small shear zones.

177.24 to 201.49 Metres

Dark grey to black, soft, friable, sheared and deformed carbonaceous and graphitic siltstone which appears to represent a fault zone.

201.49 to 202.90 Metres

Carbonaceous and graphitic slate. Rare chalcopyrite is associated with quartz segregations at the top of the unit.

202.90 to 203.62 Metres

Mineralized Quartz and Quartz-Dolomite

Mottled (white and brown) quartz and quartz-dolomite with numerous thin chloritic and carbonaceous partings and common thin sub-parallel bands of fine grained pyrite and chalcopyrite.

203.62 to 205.90 Metres

Grey and grey-green slightly chloritic carbonaceous slate with a few thin pyritic quartz veins containing minor chalcopyrite.

205.90 to 208.06 Metres

Dark grey to black deformed graphitic slate with common irregular quartz and quartz-dolomite veins and segregations containing rare chalcopyrite.

208.06 to 209.18 Metres

Mineralized Quartzose Breccia Zone

Bands and fragments of carbonaceous siltstone in matrix of quartz and quartz-dolomite containing minor chalcopyrite. Pyrite and chalcopyrite also occur in a central 30 cm quartz band.

209.18 to 217.51 Metres

Dark grey to black graphitic slate with numerous pyritic quartz veins and segregations containing rare chalcopyrite.

217.51 to 221.88 Metres

Pale to medium grey slightly carbonaceous slate. Rare chalcopyrite occurs in pyritic quartz segregations.

221.88 to 228.33 Metres

Chloritic slate and phyllite. Few quartz-dolomite veins and segregations containing rare chalcopyrite.

228.33 to 231.31 Metres

Mineralized Quartz

White and grey quartz containing common pyrite and minor chalcopyrite.

231.31 to 232.85 Metres
Mineralized Quartz-Dolomite

Quartz and dolomite containing minor chalcopyrite.

232.85 to 234.53 Metres

Anomalously dark green slaty chloritic sediment. Minor amounts of chalcopyrite occurs in quartz and quartz-dolomite veins and segregations.

234.53 to 240.53 Metres

Chloritic slate and phyllite. A few irregular quartz and quartz-dolomite bands contain rare chalcopyrite.

240.53 to 242.04 Metres

Quartz and quartz-dolomite with several fragments and disrupted bands of chloritic siltstone. Rare chalcopyrite.

242.04 to 250.20 Metres

Chloritic slate.

3. SAMPLE AND ASSAY RESULTS

A total of 32 core samples were collected from between 146.89 and 250.2 metres and assayed for copper with the following results:

Intersection (Metres)	Interval (Metres)	Sample No. DAL	Assay Value ppm/% Cu.
146.89 to 151.00	4.11	1726	59 ppm
151.00 to 154.23	3.23	1727	38
154.23 to 159.10	4.87	1728	208
159.10 to 163.67	4.57	1729	38
163.67 to 168.20	4.53	1730	42
168.20 to 172.67	4.47	1731	22
172.67 to 177.24	4.57	1732	42
177.24 to 181.39	4.15	1733	15
181.39 to 185.50	4.11	1734	56
185.50 to 189.64	4.14	1735	16
189.64 to 193.56	3.92	1736	13
193.56 to 197.60	4.04	1737	58
197.60 to 201.49	3.89	1738	72
201.49 to 202.90	1.41	1739	275
202.90 to 203.62	0.72	1740	1.52 percent
203.62 to 205.90	2.28	1741	1975 ppm
205.90 to 208.08	2.18	1742	320
208.08 to 209.18	1.10	1743	1.13 percent
209.18 to 212.46	3.28	1744	1750 ppm
212.46 to 215.66	3.20	1745	380
215.66 to 217.51	1.85	1746	69
217.51 to 221.88	4.37	1747	448
221.88 to 224.98	3.10	1748	432
224.98 to 228.33	3.35	1749	514
228.33 to 231.31	2.98	1750	1.26 percent
231.31 to 232.85	1.54	1751	0.37 "
232.85 to 234.53	1.68	1752	1575 ppm
234.53 to 237.64	3.11	1753	510
237.64 to 240.53	2.89	1754	1300
240.53 to 242.04	1.51	1755	2750
242.04 to 245.93	3.89	1756	123
245.93 to 250.20	4.27	1757	220

Between 146.69 and 202.90 metres, only background copper values were reported and these averaged about 68 ppm Cu with a range from 15 to 275 ppm Cu.

The mineralized zone was intersected between 202.90 and 242.04 metres, this interval containing an average of about 2450 ppm Cu over an estimated true thickness of about 29.2 metres.

The individual assay values of the 16 samples collected from the mineralized zone range from 69 ppm Cu to 1.52 per cent Cu and on the basis of copper distribution, the mineralized zone may be subdivided into three sub-zones as follows:

(a) Upper Mineralized Zone; 202.90 to 212.46 metres.

This sub-zone contains an average of about 3590 ppm Cu over an estimated true thickness of about 6.9 metres. Individual sample assay values range from 320 ppm Cu to 1.52 per cent Cu.

The copper occurs exclusively as chalcopyrite which is associated with quartz and quartz-dolomite in carbonaceous and graphitic slate and siltstone.

This sub-zone contributes about 35.6 per cent of the total copper from about 23.5 per cent of the estimated true thickness of the overall mineralized zone.

(b) Central Barren Zone; 212.46 to 228.33 metres.

This sub-zone, of comparatively low grade, contains an average of about 400 ppm Cu (range from 69 to 514 ppm Cu) over an estimated true thickness of about 11.4 metres, and contributes about 6.6 per cent of the total copper from about 39.1 per cent of the estimated true thickness of the overall mineralized zone. This sub-zone includes the boundary between the dominantly carbonaceous material (to the west) and the dominantly chloritic material (to the east).

(c) Lower Mineralized Zone; 228.33 to 242.04 metres.

This sub-zone contains an average of about 4025 ppm Cu (range from 510 ppm Cu to 1.26 per cent Cu) over an estimated true thickness of about 10.9 metres and contributes 57.6 per cent of the total copper from 37.5 per cent of the estimated true thickness of the overall mineralized zone.

The copper occurs as chalcopyrite in quartz and quartz-dolomite veins, bands and segregations within chloritic slate and siltstone.

The mineralized zone intersected by D.D.H.25 is about 140 metres down-dip from the D.D.H.13 intersection of the same zone and the distribution of copper within the two intersections shows marked similarities. In particular, both intersections consist essentially of relatively high grade upper and lower intervals separated by a relatively barren central interval.

The mineralized zone intersected by D.D.H.25 is obviously of sub-economic grade but the appreciable thickness of this zone, the presence of sporadic intervals of potential ore grade mineralization and the apparent increase in thickness of the mineralized zone with increasing depth all combine to suggest that this section of the Murrays Reward mineralized zone warrants further testing by drilling at depth.

4. CONCLUSION

D.D.H.25 at Murrays Reward Prospect intersected a significant thickness of anomalous but sub-economic chalcopyritic copper mineralization some 140 metres down dip from a similar intersection made by D.D.H.13.

The copper is present exclusively as chalcopyrite occurring within quartz or quartz-dolomite veins, segregations and thin bands.

The overall mineralized zone, which dips about 85° towards the west, is situated between a hanging wall of carbonaceous and graphitic slate and siltstone and a footwall of chloritic slate and siltstone.

This part of the Murrays Reward mineralized zone warrants further testing by deeper drilling.

A.H. McIntyre.

APPENDIX A

DDH.25 DRILL RUNS AND CORE RECOVERY

INTERSECTION (METRES)			INTERVAL (METRES)	CORE RECOVERY	
				METRES	PER CENT
42.67	to	43.13	0.46	0.46	100
43.13	"	44.65	1.52	1.52	100
44.65	"	46.18	1.53	1.53	100
46.18	"	47.40	1.22	1.22	100
47.40	"	48.01	0.61	0.61	100
48.01	"	49.38	1.37	1.37	100
49.38	"	50.90	1.52	1.52	100
50.90	"	52.43	1.53	1.53	100
52.43	"	53.95	1.52	1.52	100
53.95	"	55.47	1.52	1.52	100
55.47	"	56.99	1.52	1.52	100
56.99	"	58.52	1.53	1.53	100
58.52	"	59.43	0.91	0.91	100
59.43	"	60.66	1.23	1.23	100
60.66	"	62.18	1.52	1.52	100
62.18	"	63.71	1.53	1.53	100
63.71	"	65.33	1.62	1.62	100
65.33	"	66.95	1.62	1.62	100
66.95	"	67.97	1.02	1.02	100
67.97	"	69.49	1.52	1.52	100
69.49	"	70.71	1.22	1.14	93
70.71	"	72.23	1.52	1.52	100
72.23	"	73.75	1.52	1.52	100
73.75	"	74.97	1.22	1.22	100
74.97	"	76.50	1.53	1.53	100
76.50	"	78.02	1.52	1.52	100
78.02	"	78.63	0.61	0.61	100
78.63	"	79.70	1.07	1.07	100
79.70	"	81.08	1.38	1.38	100
81.08	"	82.60	1.52	1.52	100
82.60	"	83.52	0.92	0.92	100
83.52	"	84.58	1.06	1.06	100
84.58	"	85.34	0.76	0.76	100
85.34	"	86.10	0.76	0.76	100
86.10	"	86.86	0.76	0.76	100
86.86	"	88.08	1.22	1.22	100
88.08	"	88.99	0.91	0.91	100
88.99	"	90.14	1.15	1.15	100
90.14	"	91.67	1.53	1.53	100
91.67	"	93.19	1.52	1.52	100
93.19	"	94.72	1.53	1.53	100
94.72	"	96.24	1.52	1.52	100
96.24	"	97.16	0.92	0.77	84
97.16	"	97.84	0.68	0.68	100
97.84	"	99.06	1.22	1.22	100
99.06	"	100.58	1.52	1.52	100
100.58	"	102.10	1.52	1.52	100
102.10	"	103.62	1.52	1.52	100
103.62	"	104.99	1.37	1.37	100
104.99	"	106.51	1.52	1.52	100
106.51	"	108.04	1.53	1.53	100
108.04	"	109.12	1.08	1.08	100
109.12	"	110.18	1.06	1.06	100
110.18	"	110.79	0.61	0.61	100
110.79	"	112.01	1.22	1.07	88
112.01	"	112.47	0.46	0.38	83
112.47	"	113.08	0.61	0.15	25
113.08	"	113.84	0.76	0.76	100
113.84	"	115.21	1.37	1.22	89
115.21	"	117.49	2.28	2.28	100

INTERSECTION (METRES)			INTERVAL (METRES)	CORE RECOVERY	
				METRES	PER CENT
117.49	to	118.26	0.77	0.77	100
118.26	"	118.87	0.61	0.61	100
118.87	"	119.48	0.61	0.61	100
119.48	"	120.09	0.61	0.61	100
120.09	"	121.00	0.91	0.61	67
121.00	"	123.12	2.12	0.90	42
123.12	"	124.03	0.91	0.91	100
124.03	"	125.70	1.67	1.67	100
125.70	"	127.69	1.99	1.99	100
127.69	"	129.52	1.83	1.68	92
129.52	"	130.74	1.22	1.22	100
130.74	"	131.80	1.06	1.06	100
131.80	"	133.02	1.22	1.22	100
133.02	"	133.78	0.76	0.76	100
133.78	"	134.39	0.61	0.61	100
134.39	"	135.15	0.76	0.76	100
135.15	"	136.22	1.07	1.07	100
136.22	"	139.27	3.05	3.05	100
139.27	"	140.65	1.38	1.38	100
140.65	"	141.56	0.91	0.91	100
141.56	"	142.17	0.61	0.46	75
142.17	"	143.54	1.37	1.37	100
143.54	"	144.45	0.91	0.91	100
144.45	"	144.76	0.31	0.31	100
144.76	"	146.89	2.13	2.13	100
146.89	"	148.41	1.52	1.52	100
148.41	"	149.32	0.91	0.91	100
149.32	"	150.08	0.76	0.76	100
150.08	"	151.30	1.22	1.22	100
151.30	"	152.06	0.76	0.76	100
152.06	"	152.86	0.80	0.80	100
152.86	"	154.23	1.37	1.37	100
154.23	"	154.99	0.76	0.76	100
154.99	"	156.51	1.52	1.52	100
156.51	"	157.73	1.22	1.22	100
157.73	"	159.10	1.37	1.37	100
159.10	"	160.01	0.91	0.91	100
160.01	"	160.78	0.77	0.77	100
160.78	"	163.67	2.89	2.89	100
163.67	"	164.13	0.46	0.46	100
164.13	"	164.58	0.45	0.45	100
164.58	"	165.50	0.92	0.92	100
165.50	"	166.72	1.22	1.22	100
166.72	"	168.10	1.38	1.38	100
168.10	"	169.55	1.45	1.45	100
169.55	"	172.67	3.12	3.12	100
172.67	"	174.65	1.98	1.98	100
174.67	"	175.56	0.89	0.89	100
175.56	"	176.02	0.46	0.46	100
176.02	"	177.24	1.22	1.22	100
177.24	"	178.61	1.37	1.37	100
178.61	"	178.91	0.30	0.30	100
178.91	"	180.89	1.98	1.98	100
180.89	"	181.95	1.06	1.06	100
181.95	"	182.90	0.95	0.95	100
182.90	"	184.88	1.98	1.98	100
184.88	"	186.25	1.37	1.37	100
186.25	"	187.62	1.37	1.37	100
187.62	"	190.06	2.44	2.44	100
190.06	"	192.04	1.98	1.98	100
192.04	"	193.11	1.07	1.07	100
193.11	"	193.56	0.45	0.45	100
193.56	"	195.09	1.53	1.53	100

INTERSECTION (METRES)	INTERVAL (METRES)	CORE RECOVERY	
		METRES	PER CENT
195.09 to 196.61	1.52	1.52	100
196.61 " 197.86	1.25	1.25	100
197.86 " 199.05	1.19	1.11	93
199.05 " 200.27	1.22	1.22	100
200.27 " 201.49	1.22	1.22	100
201.49 " 201.93	0.44	0.44	100
201.93 " 202.25	0.32	0.24	75
202.25 " 203.16	0.91	0.38	42
203.16 " 203.62	0.46	0.46	100
203.62 " 205.38	1.76	1.38	78
205.38 " 206.52	1.14	1.14	100
206.52 " 207.58	1.06	1.06	100
207.58 " 208.19	0.61	0.61	100
208.19 " 209.41	1.22	1.22	100
209.41 " 210.32	0.91	0.91	100
210.32 " 210.93	0.61	0.61	100
210.93 " 211.54	0.61	0.31	50
211.54 " 212.46	0.92	0.92	100
212.46 " 212.77	0.31	0.15	50
212.77 " 213.83	1.06	1.06	100
213.83 " 215.21	1.38	0.62	45
215.21 " 215.66	0.45	0.45	100
215.66 " 216.14	0.48	0.48	100
216.14 " 217.51	1.37	0.31	23
217.51 " 217.66	0.15	0.15	100
217.66 " 218.27	0.61	0.61	100
218.27 " 218.88	0.61	0.61	100
218.88 " 219.96	1.08	1.08	100
219.96 " 220.49	0.53	0.53	100
220.49 " 221.33	0.84	0.84	100
221.33 " 222.54	1.21	1.21	100
222.54 " 222.84	0.30	0.30	100
222.84 " 223.76	0.92	0.62	67
223.76 " 224.98	1.22	1.22	100
224.98 " 225.59	0.61	0.61	100
225.59 " 226.20	0.61	0.61	100
226.20 " 227.11	0.91	0.53	58
227.11 " 228.03	0.92	0.92	100
228.03 " 228.56	0.53	0.53	100
228.56 " 228.94	0.38	0.38	100
228.94 " 229.17	0.23	0.23	100
229.17 " 229.78	0.61	0.61	100
229.78 " 230.16	0.38	0.38	100
230.16 " 230.46	0.30	0.30	100
230.46 " 230.85	0.39	0.39	100
230.85 " 232.07	1.22	1.22	100
232.07 " 234.28	2.21	2.21	100
234.28 " 235.50	1.22	1.22	100
235.50 " 236.19	0.69	0.69	100
236.19 " 236.87	0.68	0.68	100
236.87 " 237.94	1.07	1.07	100
237.94 " 239.00	1.06	1.06	100
239.00 " 239.91	0.91	0.91	100
239.91 " 240.83	0.92	0.92	100
240.83 " 240.98	0.15	0.08	50
240.98 " 241.06	0.08	0.03	37
241.06 " 241.97	0.91	0.91	100
241.97 " 242.27	0.30	0.30	100
242.27 " 242.96	0.69	0.69	100
242.96 " 243.27	0.31	0.31	100
243.27 " 243.80	0.53	0.53	100
243.80 " 244.10	0.30	0.30	100

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INTERSECTION (METRES)	INTERVAL (METRES)	CORE RECOVERY	
		METRES	PER CENT
244.10 to 244.71	0,61	0.61	100
244.71 " 245.32	0.61	0.46	75
245.32 " 245.93	0,61	0.61	100
245.93 " 247.15	1.22	1.22	100
247.15 " 248.37	1.22	0.92	75
248.37 " 248.98	0.61	0.61	100
248.98 " 249.59	0,61	0.53	87
249.59 " 250.20	0.61	0.61	100

APPENDIX B

DDH 25 MURPAY'S REWARD PROSPECT

DRILL LOG

Grid reference	434600N, 319600E
Elevation	197.5 metres
Angle	65°
Bearing	N 62° E true
Date drilled	5/2/72 to 12/2/72
Drilling rate	17.8 metres per shift

INTERSECTION METRES	DESCRIPTION
0 to 42.67	AIR DRILLING
42.67 to approx. 48.01	Pale and medium grey massive carbonaceous siltstone. Few bedding planes, dipping about 20°. Slight greenish (chloritic?) tinge in parts. Minor disseminated pyrite. Few thin (≤ 2mm) straight, but generally discontinuous quartz veins. Rare quartz-carbonate veins (≤ 2mm). Between about 44.8 and 45.05 metres is an irregular band of chloritic and pyritic, slightly quartzose brown carbonate apparently occurring in a minor breccia zone. At the base of this unit is a 2cm band of white quartz with 50% sulphides (dominantly pyrite with minor chalcocite?).
48.01 to approx. 78.63	Pale to medium grey carbonaceous shale and siltstone, finely laminated in parts and apparently massive in a few short intervals. Few thin (≤ 3mm) pyritic quartz veins. Rare quartz-pyrite blebs (≤ 2cm). Few pale grey beds and laminae appear to be coarser grained members (fine sandstone or coarse siltstone) of graded beds. Bedding planes slightly deformed and irregular in parts. At about 59.0 metres is a 10 to 15 cm band of fragmentary carbonaceous siltstone containing a thin (≤ 2cm) cavernous quartz-pyrite-chlorite vein. At about 63.2 metres is a thin (≤ 15mm) band of pyritic and quartzose carbonate immediately adjacent and parallel to a thin (≤ 10mm) black graphitic bed. The pyrite in the carbonate has in parts, a thin (≤ 1mm) quartz rim. The carbonate contains a few small (≤ 5mm) siltstone fragments. Rare thin (≤ 2mm) carbonate laminae parallel to bedding. Rare thin (≤ 1cm) very pale grey quartzose basal members of graded beds. Laminated sections usually fissile, parting readily parallel to bedding planes.

At about 75.3 metres is a 2cm fragmentary quartz vein containing minor carbonate and minor black wolframite(?).

Bedding (S_o) and cleavage (S_1) dips;
S_o = 10° to 15° at 48.4m, S_o = 10°, S_1 = 25° at 49.1m, S_o = 15°, S_1 = 25° at 51.7m, S_o = 10° to 15° at 56.1m, S_o = 15° at 58.0m, S_o = 15° at 59.7m, S_o = 15° at 62.2m, S_o = 10°, S_1 = 25° at 63.2m, S_o = 10°, S_1 = 20° to 25° at 65.0m, S_o = 10°, S_1 = 20° at 67.2m, S_o = 10° to 15°, S_1 = 20° to 25° at 70.4m, S_o = 10° to 15° at 73.0m, S_o = 10° to 15°, S_1(?) = 35° at 76.8m.

78.63 to approx. 106.51

Similar to the interval 48.01 to 78.63 metres.

Pale to medium grey and grey-green, slightly chloritic carbonaceous shale and pale to medium green shattered (extremely so in parts), apparently massive slightly chloritic siltstone and slaty siltstone.

Sporadic thin (generally $\leq$ 1mm) brown pyritic carbonate and quartz-carbonate veins, sporadic quartz-pyrite blebs or segregations. Irregular pyritic, quartz-carbonate segregations between about 90.65 and 90.8 metres.

Few minor microfaults commonly defined by discontinuous quartz-pyrite infillings.

Between about 101.5 and 101.8 metres is a breccia zone containing a few discontinuous quartz, carbonate and quartz-carbonate blebs and segregations (generally $\leq$ 4mm).

Between about 105.5 and 106.5 metres is a fault breccia zone (dipping 0 to 10°) which, at 105.75 metres, contains a fine framework of brown carbonate.

Minor microfaults are common in the basal 3 metres, the fault planes commonly being defined by thin ($\leq$ 2mm) quartz-carbonate fillings.

Bedding (S_o) and cleavage (S_1) dips;
S_o = 10° at 81.3m, S_o = 25° at 92.3m, S_o = 35° at 95.2m, S_o = 25° at 96.0m, S_o = 15° at 98.1m, S_o = 15° to 20° at 99.4m, S_o = 10° to 15° at 102.8m, S_o = 10°, S_1 = 25° at 104.7m.

06.51 to approx. 131.80

The breccia zone between 105.5 and 106.6 metres forms the upper boundary of a transition zone between the grey, green and grey-green rocks (to the west) and the dark carbonaceous rocks (to the east).

Grey and grey-green carbonaceous shale and siltstone. Graded bedding in parts, the coarser basal members commonly with pale green chloritic tinge.

Common fragmentary fracture/breccia zones.

Few elongate lensoid quartz-pyrite blebs with long axis parallel to cleavage(?)

	Bedding (S_o) and cleavage (S_1) dips; S_o = 20° at 107.7m, S_o = 20° to 25° at 109.9m, S_o = 20° to 25° at 111.6m, S_o = 20° at 114.2m, S_o = 15° to 20° 115.2m, S_o = 25° to 30° at 121.1m, S_o = 25° at 123.1m, S_1 = 40° to 45° at 124.3m, S_1 (?) = 40° at 125.7m, S_o = 15° to 20° at 126.9m, S_o = 15° at 128.7m, S_o = 20° at 129.7m, S_o = 20° at 130.2m, S_o = 20° to 25° at 131.2m.
131.80 to approx. 136.22	Pale green finely laminated, slightly chloritic shale and siltstone containing rare pyritic quartz and quartz-carbonate veins and segregations, a few of which are parallel to bedding. Chlorite porphyroblasts ($\lesssim$ 1mm) common and occur parallel to cleavage. This unit contains a band of very pale green to off-white, bleached chloritic phyllitic slate between about 133.1 and 134.1 metres. This sub-unit contains common disseminated euhedral pyrite which is commonly aligned parallel to cleavage. Also contains a number of pyrite-quartz and pyritic quartz-carbonate blebs and segregations. $S_o = S_1$ = 20° to 25° at 135.5m.
136.22 to approx 146.89	Similar to the interval 131.80 to 136.22 metres. Pale to medium green chloritic slaty tuff (?) or siltstone, mainly massive but finely to coarsely laminated in parts. Few thin pyritic carbonate veins and stringers ($\lesssim$ 3mm), most common in upper 2 metres. Rare bands ($\lesssim$ 15cm.) containing abundant brown carbonate porphyroblasts ($\lesssim$ 1mm) and irregular and discontinuous carbonate segregations. Common chlorite porphyroblasts. Rare disseminated pyrite. At about 145.7 metres is a thin (1cm.) vein of slightly cavernous pyritic carbonate which dips 40°. S_o = 30°, S_1 = 45° to 50°.
146.89 to approx 154.23	Dark grey and black carbonaceous and graphitic slaty siltstone, laminated in parts, but generally massive. Contains abundant pale grey leucoxene porphyroblast, which are preferentially aligned parallel to cleavage. Rare small quartz-pyrite blebs ($\lesssim$ 5mm). Rare thin ($\lesssim$ 1mm) brown carbonate veinlets. S_o = 25° to 30°, S_1 = 40° to 45°.
154.23 to approx 163.67	Similar to the interval 146.89 to 154.23 metres. Pale grey siltstone (or fine grained sandstone) and medium to dark grey carbonaceous siltstone occurring in graded beds ($\lesssim$ 3cm.) and in finely to coarsely laminated intervals. Few dark grey to black massive siltstone intervals containing numerous leucoxene porphyroblasts. Few irregular brown carbonate and quartz-carbonate veins ($\lesssim$ 3mm). Rare, apparently conformable, mottled (white and brown) quartz-carbonate beds ($\lesssim$ 5cm). Few minor microfaults. Between about 158.5 and 159.0 metres is a thin ($\lesssim$ 1cm) pyritic and slightly chalcopyritic conformable quartz-carbonate vein dipping about 40°. Associated with this vein are a few thin ($\lesssim$ 1mm) irregular and discontinuous chalcopyrite stringers and quartz-chalcopyrite stringers and segregations, some conformable, some normal to bedding.

Few thin graphitic shear zones commonly containing irregular white and brown quartz-carbonate segregations.

Sporadic irregular (ptygmatic in parts) quartz veins, veinlets and segregations.

Bedding dips; 25° at 154.8 metres, 30° to 35° at 156.9m, 30° to 35° at 159.2m, 35° to 40° at 160.9m. A complex dragfold at 160.2 metres has an axial plane dip of 40°.

163.67 to approx 177.24

Similar to the interval 154.23 to 163.67 metres.

Pale grey siltstone (or fine grained sandstone) and medium to dark grey and black carbonaceous and graphitic siltstone occurring in graded beds and in finely to coarsely laminated intervals.

Commonly deformed by microfaults and small shear zones.

Few irregular and disrupted quartz and quartz-carbonate segregations, usually slightly pyritic. Few irregular and discontinuous quartz veinlets and segregations.

Sporadic disseminated pyrite in pale grey basal beds.

At about 176.2 metres is an 8cm mottled (green, brown and black) heterogeneous band of chloritic sediment, carbonaceous sediment fragments, carbonate, quartz and pyrite.

The original bedding is generally irregular, disrupted and deformed but bedding dips include:
40° to 45° at 165.8 metres, 20° to 25° at 166.5m, 20° at 167.9m, 30° to 35° at 169.5m, 40° at 173.6m, 35° at 175.35m, 20° at 176.8m.

177.24 to approx 201.49

Dark grey to black, soft, friable, sheared and deformed carbonaceous and graphitic siltstone.

Original bedding is preserved in a few short intervals, consisting of graded beds of pale grey siltstone or fine grained sandstone (at base) and dark grey carbonaceous siltstone (at top). Also finely to coarsely laminated in parts.

The core is crumbly and rough surfaced where fragments have been washed out during drilling. Soft and semi-plastic in parts.

Few irregular, deformed and discontinuous, slightly cavernous chloritic and pyritic quartz-carbonate veins and segregations.

Short, irregular and discontinuous quartz veinlets and vein-like segregations are common.

Microfaults commonly observed where original bedding has been preserved.

A 5cm white quartz vein containing minor brown carbonate occurs at 199.75 metres.

Bedding (S_o) and cleavage (or shear planes) (S_1) dips; S_1 = 35° to 40° at 179.1 metres, S_o = 40° to 45° at 181.7m, S_1 = 70° at 185.0m, S_o = S_1 = 35° at 186.7m, S_o = 25° at 188.5m, S_o = 30° at 189.4m, S_o = 10° at 190.4m, S_o = S_1 = 25° (dragfold axial plane dip) at 191.1m, S_o = 45° at 192.9m, S_o = S_1 = 45° at 194.5m,

	S_1 = 45° to 50° at 198.0m, S_1 (dragfold defined by quartz-carbonate vein) = 50° at 199.6m.
201.49 to approx. 202.90	Medium to dark grey and black carbonaceous and graphitic slate containing sporadic disseminated pyrite and rare quartz and quartz-carbonate veins. Rare chalcopyrite is associated with irregular quartz segregations (2cm) at top of unit. $S_o = S_1 = 70°$.
202.90 to approx. 203.62	MINERALIZED ZONE Mottled (white and brown) quartz and quartz-carbonate with numerous thin chloritic and carbonaceous partings and common sub-parallel thin irregular bands of fine grained pyrite and chalcopyrite which dip 50°. Incipient fractures and common. The chalocpyrite occurs within the quartz and quartz-carbonate and also commonly occurs as irregular stringers along the incipient fracture planes and parallel to the chloritic and carbonaceous bands.
203.62 to approx. 205.90	This unit consists dominantly of pale to medium grey and grey-green slightly chloritic carbonaceous slate with a few thin ($\lesssim$ 3cm) pyritic quartz veins containing rare chalcopyrite. At the top of this unit is a 20 to 25cm shear zone consisting of black brecciated graphitic sediment with minor slickensided pyrite along fault plane. Towards the top of the unit is a 25cm band of mottled (white and brown) quartz-carbonate containing minor pyrite and rare chalcopyrite. S_o dips 45°.
205.90 to approx. 208.08	Dark grey to black deformed graphitic slate containing common irregular and deformed quartz and quartz-carbonate veins and segregations some of which have diffuse boundaries. Fragments and disrupted bands of graphitic slate occur in a thicker quartzose segregation at about 206.8 metres. Minor chalcopyrite occurs in the quartz and quartz-carbonate. Numerous, thin ($\lesssim$ 2mm) complexly deformed and discontinuous quartzose veins.
208.08 to approx. 209.18	MINERALIZED ZONE This unit consists of three sulphide bearing sub-zones. (i) upper 47 cm: breccia zone consisting of pale to dark grey carbonaceous siltstone fragments and deformed bands in a matrix of white and brown, heavily pyritic quartz and minor quartz-carbonate, containing traces of disseminated chalcopyrite. (ii) central 30 cm: white and grey quartz with minor carbonate. Contains 30% sulphides, dominantly pyrite but with common chalcopyrite. The sulphides are concentrated in irregular bands ($\lesssim$ 5cm) which dip 45° to 50°. (iii) basal 32 cm: similar to the upper sub-zone and contains a few sulphide- (py + cpy) quartz bands.

209.18 to 217.51

Dark grey to black graphitic slate containing numerous deformed pyritic quartz veins and segregations ($\lesssim$ 15cm) particularly in the upper half of the interval.

A brecciated zone between about 209.4 and 210.0 metres contains common pyrite and minor chalcopyrite in irregular quartzose segregations and veins.

The thicker quartz segregations contain rare small ($\lesssim$ 2mm) blebs of chalcopyrite.

Dragfolds, defined by quartz veins, have axial planes dipping 25° at 212.2 metres and 20° at 213.5 metres.

Massive and slightly porphyroblastic (leucoxene?) in lower 5 metres.

7.51 to approx. 221.88

Pale to medium grey, slightly carbonaceous evenly foliated slate containing a few straight and regular thin ($\lesssim$ 4mm) quartz veins parallel to S_1. Rare irregular pyritic quartz segregations containing rare chalcopyrite blebs.

A rounded (3.5cm) white quartz pebble occurs at about 220.25 metres.

Small ($\lesssim$ 1mm) brown carbonate(?) porphyroblasts are common.

Bedding (S_o) and cleavage (S_1) dips;

40° at 219.2m, 40° at 220.4m, 55° at 220.75m, 40° at 221.2m.

88 to 228.33

Off-white to pale and medium green and grey-green chloritic slate and phyllite containing a few slightly pyritic quartz-carbonate (carbonate $<$ 20%) bands ($\lesssim$ 11cm) and irregular segregations and veins ($\lesssim$ 1cm).

Minor blebs of chalcopyrite occur in the quartz, particularly towards the base of the unit (sample BAL 1749).

Few carbonate veins and veinlets ($\lesssim$ 3mm) parallel to cleavage. $S_o = S_1 = 40°$.

3 to 231.31

MINERALIZED QUARTZ ZONE

White and grey quartz containing common pyrite and chalcopyrite. Fragmentary in parts and slightly to moderately cavernous after sulphides (and carbonate?)

The chalcopyrite occurs as irregular disseminated blebs and in irregular and disrupted bands which dip between 30° and 60°. The chalcpyrite is commonly intimately associated with pyrite.

Rare traces of red/pink hematitic quartz towards base. Rare traces of talc at about 228.9 metres. Rare cream carbonate.

to 232.85

MINERALIZED QUARTZ-CARBONATE ZONE

White quartz and cream to pale brown carbonate and grey-white quartz-carbonate containing minor chalcopyrite. Also contains several thin, anomalously dark green, pyritic chloritic sediment or tuff bands (up to 8cm thick but generally $\lesssim$ 3 cm) which are either irregular

	and disrupted and contain common pyritic quartz-carbonate (as at 231.8 metres) or are relatively regular and dip 35° (as at 232.75 metres).
	The quartz (probably < 25% but difficult to estimate) occurs as irregular blebs and irregular vein-like segregations commonly with diffuse boundaries.
	The carbonate and quartz-carbonate matrix contains relatively regular but generally discontinuous vein-like pale orange-brown and cream carbonate segregations.
	A few thin (≤ 2mm) irregular, sinuous and discontinuous chloritic partings dip about 60°.
	Minor disseminated pyrite, commonly aligned in crude bands or trains.
	Minor disseminated chalcopyrite occurs as irregular blebs which commonly appear to be concentrated along incipient fractures.
	Rare traces of red/pink hematitic quartz in parts.
232.85 to approx. 234.53	Anomalously dark green slaty chloritic sediment or tuff with common quartz and quartz-carbonate segregation and veins containing sporadic chalcopyrite blebs.
	At the base of the unit is a 17cm band of quartz-carbonate containing rare chalcopyrite and minor disseminated pyrite and irregular relict beds of the chloritic sediment dipping 50°.
234.53 to 240.53	Pale to medium-dark anomalously green chloritic slate, phyllitic and finely foliated in parts and containing a few irregular quartz and quartz-carbonate bands (hematitic in parts) containing rare chalcopyrite blebs.
240. to 242.04	White to cream-grey quartz and quartz-carbonate incorporating several fragments and irregular disrupted bands of anomalously green chloritic siltstone and a 15 to 20 cm band of chloritic siltstone. The quartz-carbonate is very fragmental in parts and contains sporadic chalcopyrite blebs.
242.04 to 250.2	Very pale to dark green chloritic slate, generally evenly and finely to coarsely foliated, and containing rare quartz veins and bands (≤ 8cm) and rare carbonate and quartz-carbonate veins.
	Bedding and cleavage dip;
	35° at 242.9m, 40° at 243.7m, 50° at 245.3m, 50° at 246.9m, 50° at 248.7m, $S_0 = 35^{\circ}$ to 40°, $S_1 = 60^{\circ}$ (axial plane cleavage) at 250.0m.
	DDH.25 COMPLETED AT 250.2 METRES.