NOTES ON POINT COUNTING SAMPLING PROGRAMME.

BY
D.J. CASEY

77/SYD/13
AUGUST, 1977.

B.R.G.M. AUSTRALIA
GEOLOGICAL CONSULTANTS
55 CLARENCE STREET SYDNEY N.S.W. 000
G.P.O. BOX 3314 SYDEY 2001
TELEPHONE 29 5721
TELEX AA 23047

TABLE OF CONTENTS

LIST OF TABLES

LIST OF PLATES

INTRODUCTION.

The Mt. Pelion prospect was visited for two weeks from the 4th to 17th July to undertake systematic sampling of the adit. The method of sampling used was governed by the fact that results had to be available by the exercise option date of the 26th July. As the Tasmanian Mines Department in Launceston required 7-10 days to process samples, material had to be submitted to them by the 15th July to meet the deadline. It was decided to use a point count method at one metre intervals along the adit, together with channel sampling at 5 metre intervals. In addition, the quartz veins in the adit were mapped.

POINT COUNT SAMPLING.

Mineralisation in the Mt. Pelion Tunnel Lode consists of blades, plugs, splashes and blebs of wolfram in a quartz vein. Needles of tourmaline are common but are fairly readily distinguished from the wolfram. Because of the nature of the mineralisation, point counting was considered a reasonable sampling procedure. It is successfully used at the Storey's Creek wolfram mine.

One metre intervals were measured along the vein and marked with paint. Point counting was then carried out at right angles to the strike of the vein. Where the vein had split, both segments were counted. In places the vein was present in the wall rather than the back and no reliable measurements could be taken.

Table 1 lists the following data:

* the sample location numbers (also plotted on Plate 1). They commenced at 8m from the 240m adit portal and occur at 1m intervals along the adit roof.

* the aggregate width (cm) of wolframite observed along the sample location marker line through the vein (S.G. was taken as 7.25- from Dana, 1966).

* the remaining width (cm) of barren quartz gangue along the same section of the vein (S.G. was taken as 2.65- from Dana, 1966).

* the % wolframite was calculated by comparing masses of the two constituent minerals present using the widths obtained, unit length and depth, and chosen S.G.'s.

* the % WO_3 was calculated using the fact that wolframite contains about 76% WO_3 (Reid, 1919).

Table 2, therefore, summarizes the results obtained. It is relevant that where the main vein split into two or more veins (6 occasions in the 1m interval sampling program), their aggregate width roughly remained the same as if it had remained one vein (35cm, 31cm, 31cm, 44.5cm, 33cm, 44cm). Hence, the average vein width over the 154m long adit was 35.3cm (14").

It is obvious that the erratic nature of the mineralisation was ineffectively sampled when a 5m interval was used. The average grade from the 30 samples was overestimated at 3.39% WO_3, compared with 2.96% WO_3 for the 1m interval sampling. Seven samples, where the whole vein could not be measured or sampled because it was either wholly or partly in the western wall (foot wall), were excluded from all calculations. Where partially measured, they appeared to be barren.

If it is assumed that these barren, partly measured widths (including one where no width could be measured), are also unmineralised in their unmeasured portions, then the average ore grade calculation after including them would be 2.90% WO_3 - a further down grading. In the 5m interval sample group, 60% or 18 of the 30 samples, were mineralised; whereas only 44% or 62 out of the 140 samples were mineralised in the 1m interval sampling group.

CHANNEL SAMPLING.

Channel samples were taken every 5m using a scutch chisel with a 2" (5cm) blade perpendicular to the strike of the vein. The channel was cut the width of the blade and 1" (2.5cm) deep, although it was difficult if not impossible to achieve uniform channels. Fracturing of the quartz vein caused large irregular pieces to break off and this combined with an originally uneven surface made even sampling difficult.

Samples were caught in a cardboard carton held by someone other than the sampler. In some cases it was difficult for the catcher to position himself well to collect all of the chips. Following the channel sampling, a point count was made along the channel for comparison with the assay results from the samples. This comparison is shown in Table 3 . It can be seen that there is very little agreement between the two sets of values. Further bulk sampling is required to determine which of the two methods is the more accurate.

COMPARISON POINT COUNTING WITH PREVIOUS SURVEY.

In 1971, a point count survey was carried out for SCAMANDER MINING CORPORATION between 220' and 360'. No details were given of the interval between points. The average grade over the adit width was 0.68% WO_3 which is equivalent to grade in the vein of 4.39% WO_3. This interval corresponds to that from 67-109m in the recent survey. Grade of WO_3 in the vein from that survey is 3.88% which is 88% of the value obtained from the 1971 work. Given the different sampling intervals and the fact that no line would have been sampled in both programmes, the reasonable agreement between the two gives some confidence in the method. On the other hand, assay results from samples taken every 5 metres give an average of 0.9%.

TABLE 1.

RECONNAISSANCE SAMPLING - POINT COUNTING.

SAMPLE NO. & POSITION	VEIN WIDTH (cm)	WOLFRAMITE WIDTH (cm)	QUARTZ WIDTH (cm)	% WOLFRAMITE	% WO_3
1	30	-	-	-	-
2	35	-	-	-	-
3	25	-	-	-	-
4	31	1.2	29.9	8.77/87.94=9.89	7.52
5	30	0.1	29.9	0.73/79.97=0.91	0.69
6	24.5	-	-	-	-
7	31	-	-	-	-
8	21	0.2	20.8	1.45/56.57=2.56	1.95
9	23	-	-	-	-
10 *	8+	-	-	-	-
11 *	12+	-	-	-	-
12 *	18+	-	-	-	-
13 #	35	3.7	31.3	26.83/109.78=24.44	18.58
14	19	-	-	-	-
15	16	-	-	-	-
16	23	0.2	22.8	1.45/61.87=2.34	1.78
17	23	-	-	-	-
18	27	-	-	-	-
19	26	1.7	24.3	12.33/76.73=16.07	12.21
20	28	-	-	-	-
21	27	-	-	-	-
22	24	-	-	-	-
23	29.5	0.2	29.3	1.45/79.1=1.83	1.39
24	30	-	-	-	-
25	33	0.5	32.5	3.63/89.76=4.04	3.07
26	30.5	0.5	30.0	3.63/83.13=4.36	3.31
27	29.5	-	-	-	-
28	32	-	-	-	-
29	32	-	-	-	-
30 *	in wall	-	-	-	-
31	25	-	-	-	-
32	25	-	-	-	-
33	28	-	-	-	-
34	26	2.5	23.5	18.13/80.41=22.55	17.14
35	34	0.5	33.4	3.63/92.41=3.93	2.99
36	30	-	-	-	-
37	31	-	-	-	-
38	32	-	-	-	-
39	35	3.0	32.0	21.75/106.55=20.41	15.51

* not used in calculations

\# 2 veins included in width; not used in determining average width.

005

RECONNAISSANCE SAMPLING - POINT COUNTING

296007

SAMPLE NO. & POSITION	VEIN WIDTH (cm)	WOLFRAMITE WIDTH (cm)	QUARTZ WIDTH (cm)	% WOLFRAMITE	% WO_3
40	26	1.0	25.0	7.25/ 73.5=9.86	7.50
41	37	0.3	36.7	2.18/ 99.44=2.19	1.67
42	33	1.0	32.0	7.25/ 92.05=7.88	5.99
43	30	0.2	29.8	1.45/ 80.42=1.80	1.37
44	37	-	-	-	-
45	39	-	-	-	-
46	43	0.5	42.5	3.63/ 116.26=3.12	2.37
47	30	-	-	-	-
48	30	0.5	29.5	3.63/ 81.81=4.44	3.37
49	30	0.5	29.5	3.63/ 81.81=4.44	3.37
50	31	3.0	28.0	21.75/ 95.25=22.67	17.23
51	37	-	-	-	-
52	37	-	-	-	-
53	38	0.2	37.8	1.45/ 101.62=1.43	1.08
54	39	2.5	36.5	18.13/ 114.86=15.79	12.00
55	33.5	-	-	-	-
56	39	1.5	38.5	10.88/ 112.91=9.64	7.32
57	30	-	-	-	-
58 #	31	-	-	-	-
59	36	1.0	35.0	7.25/ 100.00=7.25	5.51
60	36	-	-	-	-
61	37	-	-	-	-
62	39	-	-	-	-
63	29	0.2	28.8	1.45/ 77.77=1.86	1.42
64	39	-	-	-	-
65	39	-	-	-	-
66	38	-	-	-	-
67	40	1.0	39.0	7.25/ 110.6=6.56	4.99
68	33	-	-	-	-
69	31	-	-	-	-
70	29.5	-	-	-	-
71	24.5	-	-	-	-
72	27	-	-	-	-
73 #	31	-	-	-	-
74	30	-	-	-	-
75	30	-	-	-	-
76	25	-	-	-	-
77	26	0.5	25.5	3.63/ 71.21=5.10	3.87
78	26	0.5	25.5	3.63/ 71.21=5.10	3.87

2 veins included in width; not used in determining average width.

RECONNAISSANCE SAMPLING - POINT COUNTING

SAMPLE NO. & POSITION	VEIN WIDTH (cm)	WOLFRAMITE WIDTH (cm)	QUARTZ WIDTH (cm)	% WOLFRAMITE	% WO_3
79	24	-	-	-	-
80	18.5	2.1	16.4	15.23/58.69=25.95	19.72
81 *	17.5+	-	-	-	-
82 *	16.5+	-	-	-	-
83 #	44.5	1.5	43.0	10.88/124.83=8.72	6.62
84	41	-	-	-	-
85	40	0.5	39.5	3.63/108.3=3.35	2.55
86	52	-	-	-	-
87	43	0.5	42.5	3.63/116.26=3.12	2.37
88	40	8.0	32.0	58/142.8=40.62	30.87
89	39	-	-	-	-
90	31	0.5	30.5	3.63/84.46=4.30	3.27
91	41	6.0	35.0	43.5/36.25=31.93	24.26
92	36	0.5	35.5	3.63/97.71=3.72	2.82
93	41	0.5	40.5	3.63/110.96=3.27	2.49
94	46	1.0	45.0	7.25/126.5=5.73	4.36
95	45	0.2	44.8	1.45/120.17=1.21	0.92
96	40	-	-	-	-
97	49	0.2	48.8	1.45/130.77=1.11	0.84
98	43	0.1	42.9	0.73/114.42=0.64	0.49
99	49	0.5	48.5	3.63/132.15=2.74	2.08
100	45	-	-	-	-
101	42	-	-	-	-
102	43	2.5	40.5	18.13/125.46=14.45	10.98
103	40	0.5	39.5	3.63/108.31=3.35	2.55
104	27	-	-	-	-
105	49	-	-	-	-
106	32	-	-	-	-
107 *	33+	-	-	-	-
108	40	0.5	39.5	3.63/108.31=3.35	2.55
109	39	-	-	-	-
110	31	-	-	-	-
111	39	-	-	-	-
112	35	0.2	34.8	1.45/93.67=1.55	1.18
113	26	-	-	-	-
114	37	-	-	-	-
115	40	-	-	-	-
116	38	0.5	37.5	3.63/103.00=3.52	2.68
117	40	-	-	-	-

* not used in calculations

\# 2 veins included in width; not used in determining average width.

B.R.G.M. AUSTRALIA

007

RECONNAISSANCE SAMPLING - POINT COUNTING

296009

SAMPLE NO. & POSITION	VEIN WIDTH (cm)	WOLFRAMITE WIDTH (cm)	QUARTZ WIDTH (cm)	% WOLFRAMITE	% WO_3
118	30	1.0	29.0	7.25/84.1=8.62	6.55
119	40	-	-	-	-
120	42	3.0	39.0	21.75/125.1=17.39	13.21
121	38	-	-	-	-
122	41	0.5	40.5	3.63/110.96=3.27	2.49
123	38.5	-	-	-	-
124	48	0.5	47.5	3.63/129.51=2.80	2.13
125	35	1.0	34.0	7.25/97.35=7.45	5.66
126	52	-	-	-	-
127	37	2.0	35.0	14.5/107.25=13.29	10.10
128 #	33	1.0	32.0	7.25/92.05=7.88	5.99
129	45	4.7	40.3	34.08/140.87=24.19	18.38
130	39	1.0	38.0	7.25/107.95=6.72	5.10
131	48	2.5	45.5	18.13/138.71=13.07	9.93
132	44	1.5	42.5	10.88/123.51=8.81	6.70
133	23	-	-	-	-
134	42	-	-	-	-
135	40	-	-	-	-
136	40	0.2	39.8	1.45/106.92=1.36	1.03
137	43	0.5	42.5	3.63/116.26=3.12	2.37
138	34	0.2	33.8	1.45/91.02=1.59	1.21
139	46	-	-	-	-
140	47	-	-	-	-
141	52	5.0	47.0	36.25/160.8=22.54	17.13
142	57	-	-	-	-
143 #	44	0.5	43.5	3.63/118.91=3.05	2.32
144	44	-	-	-	-
145	50	-	-	-	-
146	52	1.0	51.0	7.25/142.4=5.09	3.87
147	35	-	-	-	-

2 veins included in width; not used in determining average width.

S.G. quartz = 2.65

S.G. wolframite = 7.25

Wolframite = 76% WO_3

d_q = vein width of quartz

d_w = vein width of wolframite

$$\% \text{ Wolframite} = \frac{(S.G.w \times dw)}{(SG_q \times d_q) + (SG_w \times d_w)}$$

53.73

3.82 % W

2.94 % WO_3

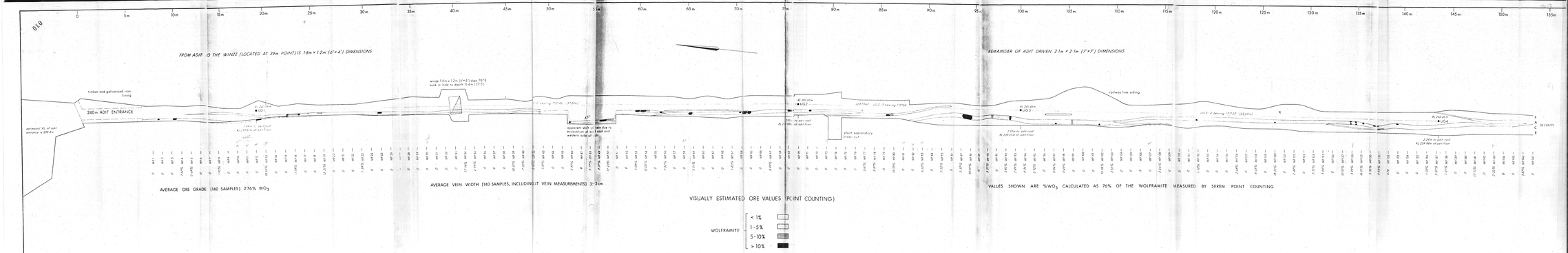
TABLE 2.
SUMMARY OF RESULTS.

Vein width (30 samples, 5m interval)	33.42cm
Vein width (140 samples, 1m interval) - ignored 7 samples, as vein in wall.	35.30cm
Vein width (134 samples, 1m interval) - as above, but also ignored 6 others as they were aggregate of 2 veins.	35.33cm
Average Ore Grade (30 samples, 5m interval) 4.46% wolframite	3.39% WO_3
Average Ore Grade (140 samples, 1m interval) 3.90% wolframite	2.96% WO_3

TABLE 3.

COMPARISON, POINT COUNT AND ASSAY METHODS.

SAMPLE NO.	% WO_3 ASSAY	% WO_3 POINT COUNTING
3	0.19	0
8	0.04	1.85
13	3.9	17.78
18	0.07	0
23	0.16	1.33
28	0.35	0
33	0.10	0
38	0.53	0
43	0.07	1.30
46	0.40	2.25
53	0.11	1.02
58	0.05	0
63	0.02	1.35
68	0.01	0
73	0.02	0
77	0.47	3.40
83	0.16	6.33
88	6.4	29.9
93	1.1	2.4
98	0.54	0.45
103	0.18	2.42
108	0.02	2.43
113	0.03	0
118	0.82	6.2
123	0.02	0
128	5.2	5.7
133	0.01	0
138	0.16	1.16
143	0.01	3.56
147	0.09	0
Average:	0.72	3.03



SEREM – BUKA – TRIAKO JOINT VENTURE

UNDERGROUND MAP 240m (780') ADIT

MT PELION WOLFRAMITE PROJECT

SCALE 1:100

0 1 2 3 4 5 6 7 8 metres

8cm

PREPARED BY B.R.G.M. AUSTRALIA

77-1229 Q

296012

Report No : 77/51D/13
Date : AUGUST 1977

Plate 1