823001

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R Curtis

OBSERVATIONS ON THE ENDURANCE, CLARENCE AND MONARCH ALLUVIAL AREAS - MOUNT CAMERON, TASMANIA.

MLs: 51m/73, 12m/76, 9m/76, 10m/76, 11M/76

R. Curtis,

December, 1977

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INTRODUCTION

The following observations were made during a four day visit to the area to check on the B.M.I. properties which are the subject of an Agreement, apparently about to be signed.

Ore reserve calculations were made from existing B.M.I. plans and in general are close to those outlined by Hughes and Mearing in their appraisal report. However, it was confirmed that the grade given for the Clarence is in error and is in ounces SnO_2 not Sn.

823004

ENDURANCE

The outline of reserves drawn from known drilling is shown in Fig. I. I have recalculated the reserves from this plan and come up with 10,920,626 cu yds of 5.69 ozs SnO_2 or 0.26 lbs Sn per cubic yard. The detailed calculations are set out in Appendix 1. The figures arrived at in the above calculations are approximately the same as those quoted in the B.M.I. report. B.M.I. calculated a 2.3:1 overburden/pay dirt ratio for these remaining reserves after ceasing mining at the western end of the Blue Lake where ground became too saturated to work. One further attempt at mining with an elevator (venturi tube action) failed.

A programme of check drill holes set out by B.M.I. and located on Fig. I was never undertaken.

CLARENCE

The reserves outlined from known drilling are shown on Figs 2 and 3. The calculation, details of which are given in Appendix II, amounted to 2,712,364 cu yds at 0.48 lbs SnO_2 or 0.35 lbs Sn per cubic yard. Again a planned check programme by B.M.I. was never carried out and subsequently the creek was dammed at the northern end of 6277M. This dam covers the major part of the deposit and the water extends back to the middle of 6285M. No attempt has ever been made to work the Clarence.

823005

MONARCH

While I could not obtain a copy of the working plan of the Monarch at the B.M.I. office in Mt. Cameron a cursory inspection of the office plan followed by a field inspection suggests that most of the better grade areas have been worked out. B.M.I. brought in a dragline in an effort to finish off this area but the water problem could not be solved and it proved a costly failure.

COMMENT

All ground inspected appears to be completely saturated. This is hardly surprising since the deposits accumulate the direct and immediate run off of three quarters of Mount Cameron. Tony Mearing, one of the authors of the B.M.I. report stated that one of the problems of the area was the run off during storms over Mount Cameron. Apparently within a very short period of time the creeks change from virtually no running water to torrents up to 14 feet deep. Any mining operation would have to have an in-built safety factor to account for such a sudden change.

Mearing's opinion is that the only possible way to mine the Endurance and the Clarence is by a Pioneer type operation with plant above flood level ~~and intake pump on a pontoon arrangement~~. At the Endurance the Blue Lake would have to be drained and in mining all the face would have to be sluiced down. With an average depth of around 90 ft the overburden would have an average thickness of 63 ft.

At the Clarence the lake would have to be drained, and although much shallower than the Endurance one could expect complete saturation throughout the major part of the deposit. Test work would certainly have to be done

823006

on the Clarence since the plans have figures which appear rounded off, such as ¼lb, ½lb, 1lb etc as if the values have been brought to the nearest quarter pound.

B.M.I.'s present operation consists of sweeping small gutters on the surface at the Endurance and no attempt is being made to recover tin from the main alluvials of these three leases.

It is obvious that the Endurance and Clarence leases could not be put into operation quickly or cheaply. Assuming that the drilling on the Endurance is valid, it would require the most detailed and painstaking feasibility studies to conclude whether or not the deposit can be worked economically, and if so, the pre-production costs.

The drilling on the Clarence is suspect and would require a check programme. Much of the deposit is in a channel defined by one or two samples and must consequently be narrow. Such channels are often boulder strewn. Check drilling on the major part of the deposit would require the draining of the lake.

If the philosophy behind an Agreement with B.M.I. on these leases is to obtain a quick cash flow from the Clarence then I would say this objective cannot be achieved.

APPENDIX I

ENDURANCE - Ore Reserve Calculation

ENDURANCE

SUMMARY OF ORE RESERVES

(i) Drill Indicated

6,582,502 cu yds at 4.96 ozs SnO_2 per cubic yd

(ii) Inferred

4,338,124 cu yds at 6.79 ozs SnO_2 per cubic yd

(iii) TOTAL

10,920,626 cu yds at 5.69 ozs SnO_2 per cubic yd

(at 74% Sn) = 4.21 ozs Sn or 0.26 lbs Sn per cu yd

ENDURANCE

Detailed Calculations

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Line 15E

2.55 x 81'	206.5
4.80 x 85'	408.0
5.74 x 86'	493.6
13.46 x 86'	1157.5
14.29 x 91'	1300.3
6.19 x 92'	569.4
8.23 x 90'	740.7
4.13 x 88'	363.4
3.29 x 95'	312.5
1.32 x 86'	113.5
5.23 x 96'	502.0
0.78 x 90'	70.2
11.25 x 90'	1012.5
6.27 1156	7250.1

$\frac{710 \text{ ft} \times 600 \text{ ft} \times 88 \text{ ft}}{27}$ = 1,388,444 cu yds

Av 88 ft @ 6.27 ozs SnO_2/cu yd for 1,388,444 cu yds

Line 7E

2.28 x 175'	399
0.00 x 80'	0
2.03 x 81'	164.4
3.88 x 81'	314.2
.38 x 85'	32.3
6.35 x 90'	571.5
9.94 x 88'	874.7
3.08 x 86'	264.8
28.81 x 86'	2477.6
18.63 x 95'	1769.8
1.01 x 90'	90.9
1.12 x 91'	101.9
2.58 x 91'	234.7
5.11 x 88'	449.6
1.58 x 85'	134.3
8.78 x 89'	781.4
5.84 1481	8661.1

$\frac{860 \text{ ft} \times 720 \text{ ft} \times 92 \text{ ft}}{27}$ = 2,109,866 cu yds

Av 92 ft at 5.84 ozs SnO_2/cu yd for 2,109,866 cu yds

Line 1E

2.04	x 86'	175.4
13.31	x 87'	1157.97
0.40	x 87'	34.8
24.10	x 96'	2265.4
2.60	x 94'	244.4
.35	x 93'	32.5
.69	x 91'	62.7
1.28	x 90'	115.2
2.52	x 93'	234.3
2.33	x 91'	212.0
3.13	x 101'	316.1
2.11	x 96'	202.5
7.54	x 90'	678.6
3.56	x 90'	320.4
3.60	x 86'	309.6
4.60	1371	6361.87

$$\frac{810 \text{ ft} \times 482 \text{ ft} \times 91 \text{ ft}}{27}$$

Av 91 ft @ 4.60 ozs SnO_2/cu yd for 1,315,860 cu yds

Line 2W

3.20	x 100'	320
10.01	x 103'	1031.3
.45	x 98 '	44.1
.46	x 97 '	44.6
3.65	x 100'	365
.98	x 95 '	93
.45	x 101'	45.4
.64	x 105'	67.2
.05	x 102'	5.1
.76	x 95 '	72.2
5.94	x 105'	623.7
6.0	x 101'	606
2.3	1202	2771.6

$$\left(\frac{570 \text{ ft} + 710 \text{ ft}}{2}\right) \times 390 \times 100 \times \frac{1}{27}$$

Av 100 ft @ 2.30 ozs SnO_2/cu yd for 924,444 cu yds.

Line 5W

1.16	x 105'	121.8
1.99	x 102'	202.9
17.63	x 110'	1939.3
4.85	x 105'	509.2
2.89	x 105'	303.4
.81	x 105'	85
.99	x 106'	104.9
2.43	x 105'	255.1
3.84	x 105'	403.2
4.14	948	3924.8

$$\left(\frac{660 \text{ ft} + 580 \text{ ft}}{2}\right) \times 350 \times 105 \times \frac{1}{27}$$

Av 105 ft @ 4.14 ozs SnO_2/cu yds for 843,888 cu yds

Summary of Drill Indicated Reserves

Line 15E to Line 5W

	Cu Yds	ozs SnO2 /Cu Yd	
Line 15E	1,388,444	6.27	8,705,543
Line 7E	2,109,866	5.84	12,321,161
Line 1E	1,315,860	4.60	6,052,956
Line 2W	924,444	2.30	2,126,221
Line 5W	843,888	4.14	3,493,696
	6,582,502	4.96	32,699,577

6,582,502 cu yds averaging 4.96 ozs SnO_2/cu yd

823012

Inferred Reserves

Line 10W to Line 25W

Line 10W

5.4)
9.0) Average Depth
19.8) 118 ft
15.4)
24.0) Average Grade
8.8) 10.7 ozs SnO_2/cu yd
.26)
3.21)

$$\frac{615 \times 420 \times 118}{27}$$

for 1,128,866 cu yds

Line 15W

5.70	x 121'	689.7	
9.25	x 172'	1591	$\frac{490 \times 500 \times 137}{27}$
(Est)2.60	x 135'	351	
6.14	428	2631.7	

Av depth 137 ft @ 6.14 ozs SnO_2/cu yd for 1,243,148 cu yds

Line 20W

(Est)4.65	x 137'	637.05	
6.30	x 166'	1045.80	$\frac{370 \times 500 \times 153}{27}$
2.00	x 156'	312.0	
4.34	459	1994.8	

Av Depth 153 ft @ 4.34 ozs SnO_2/cu yd for 1,048,333 cu yds

Line 25W

3.60	x 154'	554.4	
10.38	x 176'	1826.8	$\frac{295 \times 500 \times 168}{27}$
2.75	x 176'	484.0	
5.66	506	2865.2	

Av Depth 168 ft @ 5.66 ozs SnO_2/cu yd for 917,777 cu yds

Summary of Inferred Reserves

	Cu Yds	ozs SnO_2 /Cu Yd	
Line 10W	1,128,866	10.7	12,078,866
Line 15W	1,243,148	6.14	7,632,928
Line 20W	1,048,333	4.34	4,549,765
Line 25W	917,777	5.66	5,194,617
	4,338,124	6.79	29,456,176

APPENDIX II

CLARENCE - Ore Reserve Calculation

823015

CLARENCE

SUMMARY OF ORE RESERVES

			contained tons (tonnes)
6277M	346,012	cu yd at 0.49 lbs SnO2/cu yd	75
6279M	564,881	cu yd at 0.48 " " " "	121 297
6285M	420,167	cu yd at 0.54 " " " "	101
6286M	172,871	cu yd at 0.81 " " " "	62
6287M	173,937	cu yd at 0.50 " " " "	63
6320M	222,156	cu yd at 0.42 " " " "	41
6321M	392,455	cu yd at 0.37 " " " "	64
6322M	263,597	cu yd at 0.43 " " " "	51
6348M	156,288	cu yd at 0.51 " " " "	36
			614

TOTAL 2,712,364 cubic yards at 0.48 lbs SnO2 per cubic yard

(at 74% Sn 0.35 lbs Sn per cu. yd)

823016

CLARENCE

DETAILED CALCULATIONS

6277M

$$\frac{1023' \times 214' \times 11.9}{27'} = 96,487$$

11.9 feet average depth taken from 6278M line

96,487 cubic yards at 0.25 lbs SnO2 per cu yard

6278M

$$\frac{610' \times 1287' \times 11.9'}{27'} = 346,012$$

11.9 ft average depth of central drilling taken to cover entire width of tin bearing alluvials along tested line.

8 x	.81	6.48
8 x	.25	2.00
2 x	.50	1.00
1 x	Tr	
19	.49	9.48

346,012 cu yds at 0.49 lbs SnO2 per cu yard

6279 M = Average of 6278M and Line AB

8 x	.76	6.08
5 x	.25	1.25
1 x	.50	

3	x	Tr	
17		.46	7.83
19		.49	9.48
36		.48	17.31

Line AB

6278 M

Average Grade = .48 lbs Sn 02 per cubic yard

$$\frac{808' \times 1320' \times 14.3'}{27'} = 564,881$$

14.3 ft is average of 6278M and line AB

564,881 cubic yards at 0.48 lbs SnO2 per cu yard

6285M

(i) North margin to Powells check bores 1 to 6

$$\frac{775' \times 693' \times 17.4'}{27'} = 346,115$$

17.4 ft is the average of AB and Powells check bores.

17	x	.46	7.83	=	line AB
1	x	.55	.55	=	Powells bores
18	x	.46	8.38		

346,115 cubic yards at 0.46 lbs SnO2 per cubic yard

(ii) Powells check bores to South margin

$$\frac{594' \times 198 \times 17}{27} = 74,052 \text{ cu yards at .95 lbs SnO2 per cu yard}$$

1	x .55	.55	=	Powells bores
5	x 1.04	5.20	=	No 4 line + Powells check bores on No. 4
6	.95	5.75		

346,115	at	0.46	159,212
74,052	at	0.95	70,349
420,167		.54	229,561

TOTAL 420,167 cu yards at 0.54 lbs SnO2 per cubic yard

6286M

.75	x 1	.75	No 6 line of bores
.56	x 4	2.24	No 5 line of bores
1.04	x 5	5.20	No 4 line of bores
.81	10	8.19	

Average depth $\frac{16.5 + 15.9 + 19}{3}$ = 17 ft

$$\frac{825 \times 214 \times 17}{27} + \frac{198 \times 495 \times 17}{27}$$

111,161 + 61,710

172,871 cubic yards at .81 lbs SnO2 per cubic yard

6287M

1	x .75	.75	
4	x .44	1.76	=
5	.50	2.51	

Average Depth 17.25 ft
No 7 line of bores

$$\frac{165 \times 1650 \times 17.25}{27}$$

173,937 cubic yards at .51bs SnO2 per cubic yard

6320M

4	x .44	1.76	
3	x .41	1.23	=
7	.42	2.99	

Average depth
No 8 line of bores

$$\frac{198' \times 1122 \times 27}{27}$$

222,156 cubic yards at 0.42 lbs SnO2 per cubic yard

6321M

3	x .41	1.23	
5	x .35	1.75	=
8	x .37	2.98	

No 9 line of bores
Average Depth 32.5

$$\frac{247 \times 1320 \times 32.5}{27}$$

392,455 cubic yards at 0.37 lbs SnO2 per cubic yard

6322M

5	x .35	1.75	
6	x .5	3.00	No 10 line of bores
11	.5	4.75	Average depth 23 ft

No average depth given for No. 10, 11 and 12 line of bores. Guesstimate of 6 yards used in each case.

$$\frac{(231 \times 528) + (247 \times 759)}{27} \times 23$$

$$\frac{121{,}968 + 187{,}473}{27} \times 23$$

$$\frac{309{,}441 \times 23}{27}$$

263,597 cubic yards at 0.43 lbs SnO_2/cu yard

6348M

6	x .5	3.00	
3	x .25	.75	No. 12 line of bores
4	x .75	3.00	No. 11 line of bores
13	.51	6.75	

Average Depth (Guesstimate) 6 yards

$$\frac{222 \times 1056 \times 18}{27}$$

156,288 cubic yards at 0.51 lbs SnO_2 per cubic yard


DO NOT SCALE PRINTS. WHEN IN DOUBT, ASK.
REFERENCE DRAWINGS
DWG. No.
TITLE
577,000 yds E.
578000 yds
947,000 yds N.
946,000 yds N.
Traverse
Creek
Stream
Drain
Granite Slab
Ti Tree
G.I. Pump House
BLUE LAKE
Gully
LINE 7E
LINE 1E
LINE 15W
LINE 20W
LINE 25W
LINE 10W
LINE 5W
Approx. Position of Gravel Road
LEGEND
BORES R.L.
DEPTH OF BASEMENT
BORE LOCATION
95-3698 FIG. 1.
823021
BMI MINING PTY. LTD
Blue Metal Industries Ltd.
ENDURANCE MINE
WORKING PLAN.
5 cm
SCALE 200 FT = 1"
DRAWN
CHECKED
CHIEF DR.
APPRD.
SIZE B1
DRAWING NUMBER
BMI-X8 23
REV.

ADDITIONAL LINES OF BORES
6323 M
6276 M
6277 M
DAM
APPROX LOC'N
6278 M
APPROXIMATE CONTOUR TERRACES RT.
6279 M
B
A
ROAD BY HURST
6286 M
6287 M
GRANITE BLUFF
6320 M
6321 M
GRANITE
6322 M
6348 M
GRANITE
GRANITE
TERRACE APPLIED FOR BY Mr T. LYONS
SECTION A.B.
GENERAL CHARACTER LEAD
VERTICAL SCALE 1 INCH TO 10 FEET
RIVER SILT
DRIFT
PUG
GRANITE BOTTOM
FINE DRIFT
FINE SAND
LEGEND
ORIGINAL & ADDITIONAL LEAD
PROPOSED LINE OF BORE HOLES AT 30' INTERVALS.
95-36 98
5 cm
FIG. 2
B.M.I. MINING PTY. LTD.
(HASTIES)
CLARENCE TIN ORIGINAL AND ADDITIONAL LEAD
Blue Metal Industries Ltd.
SCALE: 1 INCH = 5 Ch
SIZE
DRAWING No
DRAWN K.A.L 19.4.74
CHECKED
CHIEF DR.
APPRD.
A
BMI-X8
22
Scale 1" rep 330'
24949
823022

823023

MONARCH

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