MBD·36

DEPTH	INTERVAL	DEPTH from-to : ROCK UNIT (capital letters, underlined) Depth : Description and notes (indented about 10mm)	POINTER	GRAPHIC LOG	POINTER	MINERALISATION	ASSAYS AVAILABLE	BULKED ASSAYS

FOR ABBREVIATIONS SEE "FIELD GEOLOGIST'S MANUAL", D.A. BERKMAN & W.R. RYALL (ED), MONOGRAPH NO.9 AUSTRALAS. INST. MIN METALL. - 1976

028491

0-3·0 (3·0)	TRICONE TO 3 m - NO CORE			
3·0-176·5 (173·5m)	3·0 - 176·5 THINLY BEDDED SILTSTONES AND SHALES ALTERNATING WITH QUARTZITES. Medium grey clay rich or quartzose siltstones with thin silty shale beds, sometimes sericitic. Well bedded. Scale of individual beds < 5 cm with brecciated intervals and some folding and contortion. The quartzites range from small fine-grained beds interleaved with the siltstones etc as above to massive, rather featureless brown or greyish, medium grained, often well fractured and broken; intervals from 50 cm to 20 metres, with very minor siltstones. 3 - 87·0 Thinly bedded siltstones, well fractured in upper 30 m. Gradually become more sericitic with depth; the quartzose beds are hard and silicified. Minor quartzites (< 2m) towards bottom of interval. 87 - 109·3 Massive quartzites as above 109·3 - 132·8 As for 3 - 87·0, some 'quartzose' siltstones faintly brownish grey, others bluish grey and very hard (silicified); shales are greenish and sericitic. 132·8 - 140·8 Massive brownish grey quartzites 140·8 - 176·5 As for 109·3 - 132·8, brownish 'quartzose' siltstones not common - mostly bluish grey fine grained quartzites (coarse gr. siltstones) with thin greenish silty shale beds etc.	10/9/11	3·0 - 37·0 py, qtz, po as thin veinlets and stringers, some with cassiterite, 1%. 37·0 - 38·0, 0·5 m py - qtz - CO_3^{2-} - gr. fluorite - arsen - sl vein, 40° 38·0 - 73·0 Thin bedded laminae py, po in siltstones, dissem in qtzites and rare qtz - carbonate - py - cassit. - veins. 2 - 3% 73·0 - 132·6 py, po, dissem in quartzites, veinlets etc with qtz, fluorite, muscovite, cl. 5 - 7%. Some small stockwork-type fracture zones to 10 cm with blebby py, qtz etc 132·6 - 140·8 py > po, dissem py in qtzites, po as veinlets with qtz, carbonates, 7 - 10%. 140·8 - 176·5 py, thin bedded laminae, fairly dissem, veinlets etc with qtz 3 - 5%
176·5 - 194·5 (18·0m)	176·5 - 194·5 QUARTZ FELDSPAR PORPHYRY. Matrix: fine grained, pinkish cream. Rock is well fractured and pitted by weathering. Phenocrysts: fine rounded to subhedral grains to 6mm, 15 - 20%. Feldspar - after 186·5 m, soft white weathered grains, 3% irregular, 75%	1		pitted py as discrete grains to 4mm, trace remnant cassiterite, weak trace of sl 7% (most removed by weathering, originally > 10%)
194·5 - 206·9 (12·4m)	194·5 - 206·9 THINLY BEDDED SILTSTONES + SHALES, MINOR QUARTZITES. As for 3·0 - 87·0, weakly sericitic.	10/9/11	py, thin bedded laminae, and in small irregular veinlets with qtz, 5%.
	END OF HOLE 206·90		

5 cm

AFTER TYPING THIS SIZED FORM WILL BE PHOTO-REDUCED TO A4 SIZE

FIELD COPY - COPY TO BE SENT TO MELBOURNE FOR TYPING

METALS EXPLORATION LTD. EXPLORATION DEPARTMENT

SUMMARY DRILL LOG

Scale (1:1000), 1:500, 1:250 (when plotted to A4)

Prepared by: G BROADBENT

Date: 26·3·80

HOLE NO. MBD 36

Sheet of

028492

REPORT No.

METALS EXPLORATION LTD.
& SUBSIDIARY COMPANIES

MINERAL EXPLORATION
DIAMOND DRILL LOG

MBD-36

Prospect, area, project or mine. MOUNT BISCHOFF

HOLE No. MBD 36

COLLAR LOCATION

Grid name	Rectangular space co-ordinates – Planar co-ordinates		Elevation
(1) MBJV	2117.21 N	1179.82 E	685.92
(2)	N	E	
(3) Aust. Map Grid PRECISE / APPROX.	mE	mN	m A.H.D.

W.C. Bearing from collar: magnetic ___; grid (1) 180°; grid (2) ___; grid (3) ___; true ___

1:250 000 Sheet No. BURNIE SK 55-3 | 1:100 000 Sheet No. HELLYER 8015 | State TASMANIA

Inclination at collar 70°

Mineral Tenement EL 13/79 Holder METALS EXPLORATION LTD

Total length 206.9 m

Cadastral location and details
CROWN LAND/ PRIVATE

Commenced: 2 / 3 / 80
Completed: 12 / 3 / 80

Drilling contractor: LONGYEAR AUST PTY LTD

Rig type: LONGYEAR 38

Details of down hole location-survey methods.
TROPARI every 40 m.

Purpose of drilling and anticipated lengths to targets.
To investigate tin mineralisation in 'Stock (?)' porphyry dyke 160-195 m. Planned depth of hole 200 m.

Core size and non-coring (NC)

TRICONE	0	TO 3.0 m
NQ	3.0	TO 71.0 m
BQ	71.0	TO 206.9 m

Results of down hole location-survey.

LENGTH FROM COLLAR	W.C. BEARING type (12 mult.)	DIP
37.1	133	71
73.1	152	75
106.0	212°	73
136.0	153°30'	71
168.0	155°	71°
204.0 m	152°	71°

Comments on drilling.

Legend for graphic log column (see drill log for Hole No. ___)
'DERWENT' PENCIL NO. — FIELD ROCK NAME, ETC

Symbols and abbreviations for drilling notes column.

LOGGED BY G. BROADBENT FROM 0 TO 206.9 m DATE 21.3.80 | LOGGED BY ___ FROM ___ TO ___ DATE ___ | LOGGED BY ___ FROM ___ TO ___ DATE ___

Company managing exploration programme.
METALS EXPLORATION LTD

HOLE No. MBD 36
Log sheet 1 of 4

028493

MINERAL EXPLORATION DRILL LOG

TRICONE TO 3.0 m – NO CORE.

3.0 – 13.7 THINLY BEDDED SILTSTONES, SILTYSHALES

Pale grey (bleached) thinly bedded quartzose and clay rich siltstones, with sparse grey quartzite beds to 20 cm. Scale of bedding 1-2 cm individual beds. Minor disruption and folding/contortion, with later fracturing. The rock is permeated by fine yellow clay filled fractures at a high angle to LCA.

Structural and vein information (10/9):
- ← 5.0 Bedding 30°
- ← 7.2 Bedding 70°
- ← 10.4 Bedding 45°
- ← 11.2 Small fold – axis 35°, plane 55°
- ← Contact broken

Mineralisation: 3.0 – 13.7 py, qtz as thin veinlets and stringers, porous and pitted by weathering. Percent mineralisation: <1%

13.7 – 19.3 QUARTZITES minor SILTSTONES.

Massive hard bluish grey or faintly brownish grey (tourmaline rich?) fine grained quartzites divided by thin pale grey clay rich siltstone beds < 5 cm, in intervals to 20-30 cm.

Structural and vein information (11/(10)):
- ← Gradual Change to

Mineralisation: 13.7 – 19.3 py, qtz, rare cassiterite in thin veinlets and stringers. Percent mineralisation: 1%

19.3 – 73.0 THINLY BEDDED SILTSTONES AND SILTYSHALES with minor QUARTZITES.

19.3 – 32.0 Pale grey thinly bedded quartzose siltstones, clay rich siltstones and thin shale beds, gradually becoming darker colours with depth. Faintly greenish and sericitic, medium hard with some thin fine grained very hard bluish grey quartzite beds to 30 cm. The Quartzite beds are slightly coarser grained, brownish grey and up to 2 m thick – Soft-sediment disruption and brecciation, poorly bedded.
Overall, soft-sediment disruption and brecciation in zones to 5 m, separated by well bedded, only slightly deformed, intervals.

32.0 – 73.0 As for 19.3 – 32.0, but becoming more and more greenish and ?sericitic (clay rich beds) and darker in colour to medium greenish greys. After 38.0 m some bedded laminae pyrite/po appears.

Structural and vein information (10/9/11):
- ← 21.4 Bedding 55°
- ← 23.8 Bedding 70°
- ← 25.9 Small fold – axis 75°, plane 70°
- ← 26.2 Bedding 25°
- ← 28.5 Bedding 45°
- ← 30.2 Bedding 60°
- ← 33.0 Bedding 70°
- ← 34.3 100 mm qtz-py-arseno vein, 80°
- ← 35.9 10 mm qtz-py-fluorite-sp-cassiterite vein, 25°
- ← 40° / ← 40° } py-qtz-carbonate-fluorite-galena-arseno-sp vein. (9V)
- ← 38.4 Bedding 70° (10/9/11)
- ← 41.1 Bedding 75°
- ← 41.9 20 mm vuggy qtz-py-sp-cassiterite vein, 55°
- ← 50.0 Bedding 60
- ← 53.1 Bedding 80°
- ← 53.4 15 mm qtz-carbonate-py-po breccia vein, 40°
- 54.7 – 55.1 } Small drag? folds – axis 70°, plane 55°
- ← 55.4 Bedding 75°
- ← 58.3 Bedding 70°
- ← 61.3 Bedding 80°
- ← 64.0 10 mm carbonate-fluorite-sp vein, 45°
- ← 64.8 Bedding 60°
- ← 67.5 Bedding 65°
- ← 70.0 Bedding 65°
- ← 70.4 10 mm py-qtz vein, 30°
- ← 72.4 Bedding 65°
- ← Gradual Change to.

Mineralisation:
- 19.3 – 34.0 py, qtz as thin veinlets and stringers. Percent mineralisation: 1%
- 34 – 37.05 Increased veining with minor sp, fluorite, arseno, qtz. Percent mineralisation: 2-3%
- 37.05 – 38.0 See left
- 38.0 – 73.0 py, po as thin bedded laminae < 2 mm, dissem in quartzites. Some rare thin qtz-py-cassiterite veinlets. Percent mineralisation: 2-3%

73.0 – 87.0 THINLY BEDDED SILTSTONES, SHALES, WITH QUARTZITES.

Thinly bedded (< 5 cm) greenish grey sericitic clay rich siltstones and minor shales with an increased proportion of massive, disrupted, hard pale brownish grey fine – medium grained quartzites, to 1.5 m thick.

Structural and vein information (10/11/9):
- ← 76.7 Bedding 75°
- ← 79.4 Bedding 60°
- ← 79.9 10 mm py vein, 55°
- ← 82.0 Bedding 70°

Mineralisation: 73.0 – 109.3 py, po, dissem in quartzites, as rare blebs to 6 x 3 mm, and as thin veinlets, stringers and bedded laminae in thinly bedded siltstones/shales. Sparse py-marcasite-qtz-fluorite veining. Percent mineralisation: 5-7%

5 cm

% RECOVERY ESTIMATE OR CORE LENGTH RECOVERED	DEPTH from-to : ROCK UNIT capital letters, underlined. Depth : Detailed rock description and notes indented about 15 mm	DRILL LOG DEPTH TAG	DEPTH POINTER	GRAPHIC LOG SEE LEGEND ON SHEET 1	DEPTH POINTER	STRUCTURAL AND VEIN INFORMATION. ATTITUDE = Angle between feature and LONG CORE AXIS	MINERALISATION	PERCENT MINERALISATION Visual estimate	NOTES

METALS EXPLORATION LIMITED

MINERAL EXPLORATION DRILL LOG Scale 1:100

Prospect or project	MOUNT BISCHOFF
Logged by	G. BROADBENT date 21/3/80
HOLE No.	MBD 36
LOG SHEET	2 OF 4
from	0 m. to 84.0 m.

Prepared 9/6/80

028494

Drill advance	Core length recovered	% recovery
3.0	3.0	100
0.5	0.6	100
2.5	2.4	
3.0	3.0	100
3.0	3.0	100
3.0	3.0	100
3.0	3.0	100
3.0	3.0	100
3.0	3.0	100
3.0	3.0	100
3.0	3.0	100
3.0	3.0	100
3.0	3.0	100
2.7	2.7	100
3.0	3.0	100
2.9	2.9	100
3.1	3.1	100
3.2	3.2	100
3.1	3.1	100
3.0	3.0	100
2.5	2.5	100
3.1	3.1	100
3.1	3.1	100
3.1	3.1	100
3.2	3.2	100
3.0	3.0	100
1.6	1.6	100
0.6	0.6	100
0.7	0.7	100
0.2	0.1	50
0.2	0.1	50
0.2	0.2	100
2.5	2.5	100
0.5	0.5	100
1.0	0.2	20

Depth scale: 84, 88, 92, 96, 100, 104, 108, 112, 116, 120, 124, 128, 132, 136, 140, 144, 148, 152, 156, 160, 164, 168

84–87

See previous page for description.

Structural and vein information:
- 86.5 50 mm qtz-py-carbonate-fluorite vein, 80°
- 86.9 Bedding 85°
- Gradual Change to

Mineralisation: See previous page for description.

87 – 109.3 QUARTZITES, minor SILTSTONES (drill date 11/10)

(As for 13.7 – 19.3)
Massive hard pale grey and brownish grey quartzites to 2.5 m separated by thin intervals of greenish-grey sericitic siltstones.
Massive and featureless, with some disruption and minor brecciation.

Structural and vein information:
- 91.6 Bedding 55°
- 94.6 Bedding 60°
- 97.8 Bedding 75°
- 105.7 15 mm py-marcasite-qtz-fluorite vein, 70°
- Gradual Change.

109.3 – 132.8 THINLY BEDDED SILTSTONES, SHALES with Minor QUARTZITES (drill date 10/9/11)

(As for 32.0 – 87.0)
Thinly bedded brownish and bluish grey extremely hard quartzose siltstone and pronounced greenish (sericitic) clay rich siltstones and shales. Sparse brownish/bluish pale grey fine grained quartzites to 0.5 m.
Minor disruption and brecciation in intervals up to 5 m, otherwise well bedded.

Structural and vein information:
- 110.1 Bedding 75°
- 113.8 25 mm qtz-py-marcasite-carbonate fluorite vein, 65°
- 114.6 Bedding 60°
- 114.1 60 mm py-marcasite-qtz-carbonate-sp-ga vein, 35°
- 117.0 Bedding 45°
- 119.5 Bedding 50°
- 122.8 Bedding 65°
- 122.9 30 mm vuggy py-marcasite-trace cassiterite vein, 80°
- 129.3 Bedding 65°
- 130.6 Bedding 45°

Mineralisation: 109.3 – 132.8 py>po as thin bedded laminae and minor stringers. Minor qtz-carbonate fluorite-py-sp veining. Po is mainly dissem euhedral(?) and as rare blebs to 5×6 mm. — 5-7%

132.8 – 140.8 QUARTZITES. (drill date 11)

Very hard brownish grey (tourmaline rich ?) quartzites with grey dendritic staining about fine brecciation fractures. Almost massive, with some sparse thin siltstone beds dividing beds 0.5 – 2 m thick.

Structural and vein information:
- 134.1 Bedding 45°
- 138.2 10 mm qtz-py-marcasite vein, 20°
- 138.4 Bedding 50°

Mineralisation: 132.8 – 140.8 py, po as thin veinlets and stringers and finely dissem throughout. Minor qtz-carbonate-py-po veining to 3 mm. — 7-10%

140.8 – 176.50 THINLY BEDDED SILTSTONES, SILTY SHALES, minor QUARTZITES.

As for 109.3 – 132.8, very well bedded.

Structural and vein information:
- 143.4 Bedding 70°
- 145.8 Bedding 70°
- 148.3 Bedding 50°
- 151.1 Bedding 40°
- 154.3 Bedding 70°
- 157.3 Bedding 55°
- 160.9 Bedding 55°
- 161.8
- 161.8 – 164.5 Small fault zone – bleached and broken core ≃70° LCA.
- 164.5
- 164.6 Bedding 5°
- 166.5 – 168.7 Small fault zone – broken core, small puggy zones and micro faults

Continued next page.

Mineralisation: 140.8 – 176.50 py, finely dissem and in thin bedded laminae with shales. Thin py-qtz stringers < 2 mm. — 3-5%

5 cm

DRILL ADVANCE	LOST CORE ZONE	CORE LENGTH RECOVERED	% RECOVERY OR ESTIMATE	DEPTH from-to : ROCK UNIT capital letters, underlined Depth : Detailed rock description and notes indented about 15 mm	DRILL LOG DEPTH TAG	DEPTH POINTER	GRAPHIC LOG SEE LEGEND ON SHEET 1	DEPTH POINTER	STRUCTURAL AND VEIN INFORMATION ATTITUDE = Angle between feature and LONG CORE AXIS	MINERALISATION	PERCENT MINERALISATION Visual estimate	NOTES

METALS EXPLORATION LIMITED

MINERAL EXPLORATION
DRILL LOG
Scale 1:100

Prospect or project: MOUNT BISCHOFF
Logged by: G. BROADBENT date 21 / 3 / 80

HOLE No. MBD 36
LOG SHEET 3 OF 4
from 84 m. to 168.0 m.

Prepared 9/6/80

028495

DRILL ADVANCE	% RECOVERY ESTIMATE OR CORE LENGTH RECOVERED	LOST CORE ZONE	DEPTH from-to : ROCK UNIT (capital letters, underlined) / Depth : Detailed rock description and notes (indented about 15 mm)	DRILL LOG DEPTH TAG	DEPTH POINTER	GRAPHIC LOG (SEE LEGEND ON SHEET 1)	DEPTH POINTER	STRUCTURAL AND VEIN INFORMATION (ATTITUDE = Angle between feature and LONG CORE AXIS)	MINERALISATION	PERCENT MINERALISATION Visual estimate	NOTES
0.6	100		See previous page.					1665-168.1 cont. Small fractures etc. ≠ to CA.	See previous page.		
0.9	100							← 168.8 Bedding 60°			
2.7	100			169				← 170.0 2cm py-Mn-carb-qtz vein, 55°			
								← 171.0 Bedding 75°			
1.8	78			172							
0.7	71							171.4 Bedding 80°			
0.7	71	R20						172.2-177.1 Broken core with small puggy zones 1-2cm apart every 0.5m			
0.5	71	0.5 broken									
0.7	86		176.50 - 194.55 QUARTZ FELSPAR PORPHYRY				1				
0.7	83		176.5 - 186.8 Upper 20 cm fine grained and greenish grey Matrix: pinkish cream, finely crystalline. Well fractured and sheared (mostly <45° to CA), pitted by weathering. Phenocrysts: Qtz - subhedral and rounded grains to 4 mm, 15-20%. Felspar - hard, brownish and altered, phenocrysts to 3 mm, some well formed. 3-5%.						Contact irregular, approx 75°	176.5-186.8 pitted py in discrete rounded grains to 4 mm, trace sp, cassiterite. Original concentration of sulphides ≈ 15%.	7%	
0.8	83			180							
0.2	100										
0.5	100										
1.0	100										
0.5	100										
1.0	97										
0.6	80			184							
0.4	100										
0.7											
0.6	100										
0.7	100										
0.7	100		186.8 - 194.55 Not so broken or pitted by weathering. Matrix has faintly greyish mottling - siliceous patches to 15 cm. 'Qtz' rounded grains to 5 mm, 15-20% Felspar - 50% altered to hard brownish ?topaz, otherwise soft, white and weathered. Max grain size 2-3 mm, TOTAL 3%	188						186.8-194.55 Py, trace sp as distinct grains to 4 mm, and also as diffuse fine grained aggregates to 5m in the greyish portions of the matrix. Pitted and weathered.		
1.4	100										
1.3	100										
2.0	100			192							
0.5	100										
0.9	100										
0.7	100		Inclusions of sediments in 30 cm above contact.								
1.6	94		194.55 - 206.90 THINLY BEDDED SILTSTONES AND SHALES (minor ARGILLITES)	196			10/9/11	< 195.0 Bedding 70°	194.55-206.90 py as thin bedded laminae and in small stringers and blebs	3-5%	
0.9	94		Medium grey thinly bedded (1-2 mm) quartzose and clay rich siltstones, minor shales. Some bluish grey fine grained quartzites to 0.5 m thick. Well bedded, minor disruption, core is broken by partings along bedding planes.								
0.9	100							< 198.4 Bedding 70°			
1.2	100			200							
1.0	100							< 200.5 Bedding 50°			
1.3											
1.7											
1.4	100										
1.0	100							< 203.0 Bedding 50°			
0.3	100			204							
1.1	73										
0.9	100							< 205.7 Bedding 75°			
1.3	100										
			END OF HOLE 206.9 m.	208							
				212							
				216							

5 cm

METALS EXPLORATION LIMITED

MINERAL EXPLORATION
DRILL LOG
Scale 1:100

Prospect or project: MOUNT BISCHOFF

Logged by: C. BROADBENT date: 21 / 3 / 80

Proposed 9/6/80

HOLE No. MBD 36

LOG SHEET 4 OF 4

from 168.0 m. to 206.9 m.

SAMPLE NO.	SAMPLE NO	FROM	TO	INTER-VAL	Sn	Sn	Cu	Pb	Zn	Ag	W	As	Check Sn	Bulked Assays
SPLIT CORE	GROUND CORE	m	m	m	SPLIT	GROUND								
97835		35.8	38.0	2.2	8400.									
97824		174.5	176.5	2.0	65									
25		176.5	178.5	"	2400		260	65	630	<1	35	60		
26		178.5	180.5	"	3750		330	20	170	<1	25	55		
27		180.5	182.5	"	3150		310	65	190	<1	20	160		
28		182.5	184.5	"	600		350	24	150	1	15	740		
29		184.5	186.5	"	460		340	26	160	<1	<10	4100		
30		186.5	188.5	"	540		330	15	90	<1	25	2550		
31		188.5	190.5	"	1350		290	16	85	<1	55	900		
32		190.5	192.5	"	1450		330	22	95	<1	45	1200		
33		192.5	194.5	"	1450.		300	40	150	1	10	75		
34		194.5	196.5	"	260									

0284496

Notes:— Sn by XRF Bi Method.

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT

ASSAY SUMMARY SHEET HOLE NO. MBD 36

SAMPLE TYPE : DRILL CORE FROM 35.8 TO 196.5.