



METALS EXPLORATION LTD.

80 COLLINS STREET, MELBOURNE, AUSTRALIA 3000. TELEPHONE 653 7100. TELEX AA32051. TELEGRAM ROCKDOC.

656001

of M	A.O.	C.G.	E.O.	D.S.M.E
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MT. BISCHOFF TIN PROSPECT
EXPLORATION LICENCE 13/79
AND AUTHORITY TO PROSPECT 5/80

TASMANIA

MONTHLY REPORTS FOR JANUARY TO DECEMBER, 1982
REPORT FOR JANUARY, 1982

VOL I

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G.M. MOTTERAM
10/3/82

MT. BISCHOFF TIN PROSPECTREPORT FOR JANUARY, 19821. General

The surface trenching programme was completed during the period.

Reinterpretation of geological ore reserves has commenced.

No drilling was undertaken.

A preliminary review of project economics utilizing initial optimisation of mine plans and Austin Anderson plant and infrastructure costs has commenced.

A study of the potential to operate a minimum scale plant for the production of 100 to 150 tonnes per annum of contained tin has commenced.

2. Geology2.1 Diamond Drilling

Stage III diamond drilling programme has been completed. Summary logs and assays have been incorporated within previous reports.

2.2 Surface Trenching

Trenching has been undertaken over weathered dolomite/DSL on the sections indicated below. Samples have been taken as continuous channel samples over 2 metre intervals and the trenches mapped and photographed. In addition, pits have been dug at selected points as indicated below and off section trench digging performed to expose contacts in the Pig Flat area and the 920-940E areas. Two trenches have been dug over the Don Hill alluvial deposit without reaching bedrock.

Section 940E

Trench from 1770N-1796N, average 0.33% Sn with a pit at 1784N averaging 0.21% Sn over 6 metres (surface value at 1784N was 0.18% Sn).

Trench from 1898N-1926N average 0.27% Sn.

Trench from 1926N-1962N average 0.45% Sn.

Section 980E

Trench 1722N-1828N, low values.

Trench 1861N-1885N was dug in limonitic clays over dolomite moving to limonitic clays containing pyrite. The entire trench averaged 0.36% Sn with 14 metres over pyritic material averaging 0.44% Sn.

Trench 1902N to 1960N (Greisen Face Flat), low values correlating with drill core of good core recovery in the area.

Section 1020E

Trench 1726N-1756N average 0.26% Sn, including 1744N-1756N at 0.51% Sn.

Trench 1787N-1825N average 0.32% Sn.

Trench 1838N-1868N average 0.17% Sn.

Trench 1932N-1966N average 0.26% Sn.

Section 1060E

Trench 1794N-1816N average 0.14% Sn.

Trench 1834N-1872N average 0.16% Sn.

Trench 1880N-1898N average 0.27% Sn.

Trench 1976N-2010N average 0.29% Sn.

Section 1100E

Trench 1856N-1928N averaged 0.41% Sn including 1880N-1928N at 0.51% Sn. This trench is over Pig Flat DSL not included in ore reserves due to low core recovery. The presence of grade was confirmed by a pit dug at 1890N averaging 0.75% Sn to 4 metres.

Trench 2016N-2028N average 0.81% Sn over possible outcrop of lower DSL sequence.

Section 1140E

Trench 1844N-1890N average 0.56% Sn. This trench covers the interpreted position of below porphyry DSL outcropping towards the White Face pit. No DSL reserves are included in this area due to poor core recovery on diamond drilling.

Section 1180E

Trenching gave variable results indicating patchy DSL mineralisation between 1918N and 1940N. Average grade was 0.22% Sn including 10 metres at less than 0.01% Sn.

Section 1220E

Trenching in highly pyritic White Face DSL from 1896N to 1940N showed very low tin values.

2.3 Proposed Drilling Programmes

As a result of encouraging tin values in weathered material exposed in the above trenching, it is proposed that drilling meterage allocations for the current stage should be utilised as reverse circulation drilling. Particular attention will be placed on defining below porphyry DSL potential between Sections 1120E and 1220E, plus DSL potential in the 940E area. Drilling to define bedrock on the Don Hill alluvials will also be performed.

A suitable rig is to be supplied by Geopeko drilling in early March. This rig can also be converted to perform diamond drilling and will be utilised to drill from the top of the Slaughter Yard structure and to extend one hole into the main pit sediment wall, exploring the potential for the lower dolomite sequence in that area.

2.4 Reinterpretation and Geological Ore Reserves

Reinterpretation of geology for the main pit area and Stanhope Queen Dyke system has been completed. Results from surface sampling and trenching have been used only as an aid to reinterpretation in certain areas. Inclusion of surface sampling results will be contemplated following reverse circulation drilling and as such will probably result in development of an inferred ore category. Similarly, a potential 70,000 tonnes of 1.0% Sn DSL indicated in Slaughter Yard Face from previous surface sampling has not been included.

Cut off grade utilised in this revision of reserves has been a nominal 0.2% Sn in DSL, previously nominal 0.3% Sn. This has a minimal effect on tonnage and grade of DSL.

Cut off grade for porphyry has been standardised at 0.2% Sn, also. Whereas previous reserves were estimated at 0.1% Sn, 0.2% Sn and 0.3% Sn cut off.

A significant increase has occurred in DSL reserves as a result of Stage 3B drilling. Porphyry reserve at the 0.2% Sn cut off remains similar despite significant changes to the Stanhope Queen Dyke interpretations, ie.

	<u>August, 1981 Estimate</u>			<u>January, 1982 Estimate</u>		
	<u>MILLION TONNES</u>	<u>% Sn</u>	<u>CONTAINED Sn</u>	<u>MILLION TONNES</u>	<u>% Sn</u>	<u>CONTAINED Sn</u>
DSL	1.19	0.89	10.62	1.51	0.88	13.43
Porphyry	3.15	0.46	14.47	3.49	0.43	15.01
TOTAL	4.34	0.58	25.09	5.00	0.57	28.44

3. Mine Planning

Optimisation of the mine plans progressed utilising preliminary geological reinterpretations. The aim of optimisation being to reduce ore to waste ratios below 1 to 5 and to reduce projected mining cost via savings in drilling and blasting plus potential use of contractors. This work is due for completion by end February, 1982.

A mining plan was also established for mining of the Greisen Face DSL only, to supply ore for minimum plant scale development to produce 100 to 150 tpa contained Sn. In this case it has been established that 10 years ore supply at the rate of approximately 35,000 tpa of 0.9% Sn could be obtained at low stripping ratio (1 to 2.25).

4. Metallurgy

Pilot scale testwork on porphyry preconcentration was repeated at Mineral Deposits Ltd. with satisfactory results. Products from this work are being tested for gravity response (preconcentration) and tin flotation (slimes bypass).

Results of DSL variability work are now to hand. On detailed assessment it appears that provision should be made in recovery projections for some areas containing fine tin.

On this basis, the projection of 65% Sn recovery in DSL is maintained. However, it appears unlikely that average recovery will be raised above 65% Sn.

Plant requirements for the 100 tpa tin production case were outlined on the basis of achieving 45% Sn recovery without tin flotation.

5. Engineering

Estimates were produced for the 100 tpa contained Sn minimum production case and economics run on the proposition.

APPENDED INFORMATION

Project Expenditure Details

Joint Venture Assets Statement

Assays

MT BISCHOFF JOINT VENTURE

	<u>January 1982</u>		<u>6 Months to June 1982</u>	
	<u>Actual</u> <u>\$000</u>	<u>Budget</u>	<u>Actual</u> <u>\$000</u>	<u>Budget</u>
Administration	22	25	22	134
Geology	69	52	69	181
Mining	-	21	-	106
Metallurgy	13	28	13	67
Engineering	7	16	7	239
Commercial	1	8	1	29
<u>TOTAL PROJECT:</u>	<u>112</u>	<u>148</u>	<u>112</u>	<u>756</u>
<u>M.E.L. SHARE:</u>	45	59	45	302

SUMMARY OF EXPENDITURE TO 30.12.81

	<u>CURRENT PERIOD</u> <u>\$000</u>	<u>ACCUMULATIVE</u> <u>\$000</u>
Stage 1		270
Stage 2A - Early Start		29
Stage 2A		199
Overruns: Stage 1 - M.E.L.		11
Metallurgical - C.R.A.E.		24
Stage 2B		482
Stage 2B - 3A Holding Costs Offset - A.I.R. & D.		40
Stage 3A - Partly offset by A.I.R. & D Grant Rec. June 1981 \$6,500	58	861
Stage 3B - Partly offset by A.I.R. & D Grant Rec. July 1981 \$25,863	674	674
Stage 3C -	<u>112</u>	<u>112</u>
<u>ACCUMULATIVE EXPENDITURE TO DATE</u>	<u>844</u>	<u>2,702</u>

MT BISCHOFF PROJECT

	<u>January 1982</u>		<u>6 Months to June 1982</u>	
	<u>Actual</u>	<u>Budget</u>	<u>Actual</u>	<u>Budget</u>
	<u>\$000</u>		<u>\$000</u>	
<u>ADMINISTRATION</u>				
Technical Services	18	23	18	117
Consumables	4	1	4	12
Travel	-	1	-	5
	<u>22</u>	<u>25</u>	<u>22</u>	<u>134</u>
 <u>GEOLOGY</u>				
Technical Services	10	13	10	68
Labour	2	1	2	5
Consumables	2	6	2	18
Accommodation	-	1	-	6
Vehicles	1	1	1	5
Travel	-	-	-	3
Contractors	52	21	52	54
Consultants	3	9	3	21
	<u>69</u>	<u>52</u>	<u>69</u>	<u>181</u>
 <u>MINING</u>				
Technical Services	-	13	-	70
Consumables	-	1	-	4
Travel	-	-	-	2
Consultants	-	7	-	30
	<u>-</u>	<u>21</u>	<u>-</u>	<u>106</u>
 <u>METALLURGY</u>				
Technical Services	8	8	8	32
Consumables	-	1	-	3
Travel	1	5	1	7
Contractors	4	12	4	20
Consultants	-	2	-	5
	<u>13</u>	<u>28</u>	<u>13</u>	<u>67</u>
 <u>ENGINEERING</u>				
Technical Services	7	4	7	42
Consumables	-	-	-	2
Travel	-	1	-	12
Contractors	-	10	-	170
Consultants	-	1	-	13
	<u>7</u>	<u>16</u>	<u>7</u>	<u>239</u>

MT BISCHOFF PROJECT

	<u>January 1982</u>		<u>6 Months to June 1982</u>	
	<u>Actual</u>	<u>Budget</u>	<u>Actual</u>	<u>Budget</u>
	<u>\$000</u>		<u>\$000</u>	
<u>COMMERCIAL</u>				
Technical Services	1	4	1	17
Consumables	-	2	-	9
Travel	-	-	-	3
	<u>1</u>	<u>8</u>	<u>1</u>	<u>29</u>
<u>TOTAL:</u>	<u>112</u>	<u>148</u>	<u>112</u>	<u>756</u>

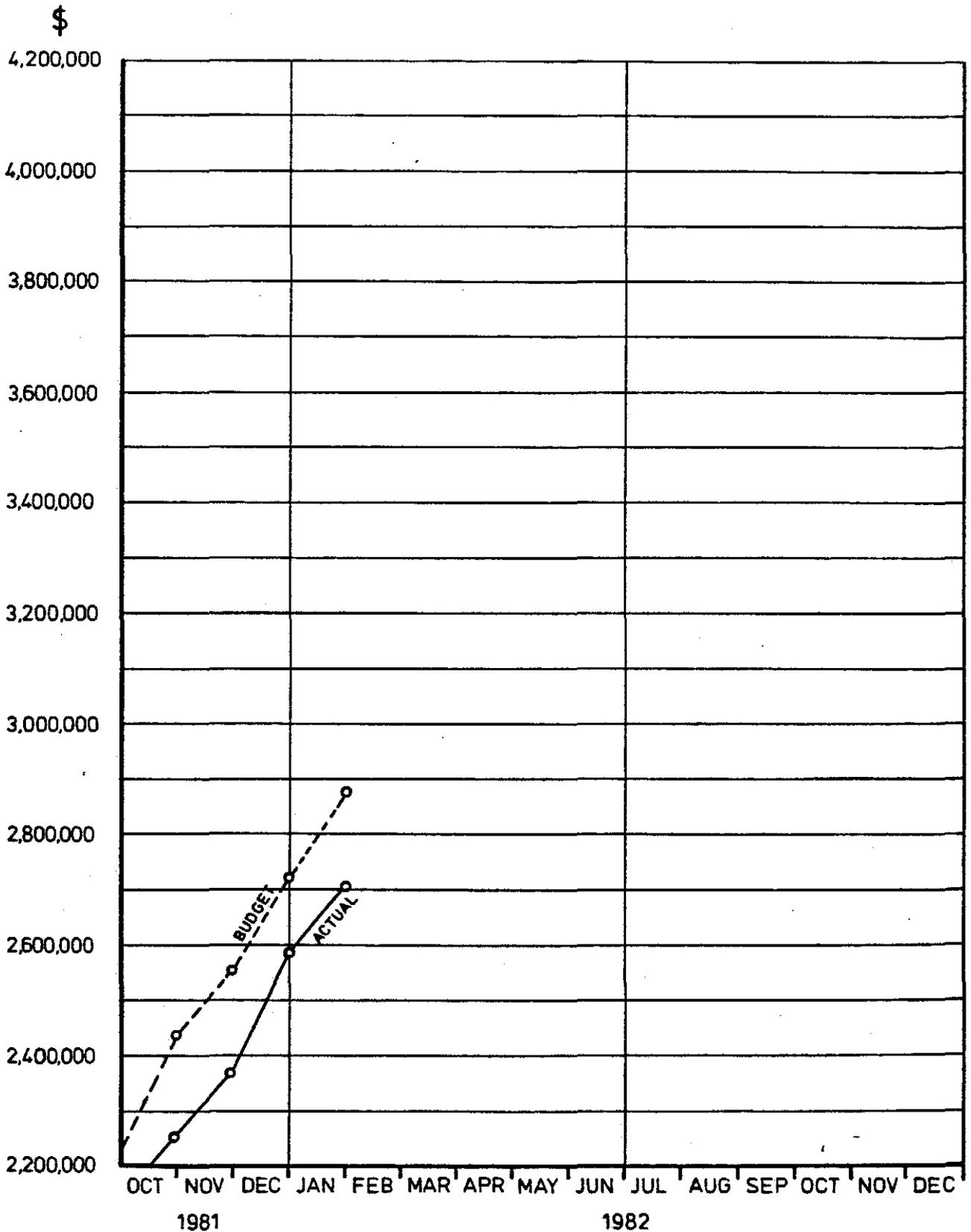
MT BISCHOFF PROJECTCUMULATIVE CAPITAL EXPENDITURE

	<u>AS AT</u> <u>31/ 1/82</u>	<u>JANUARY 1982</u> <u>EXPENDITURE</u>	<u>AS AT</u> <u>31/ 1/82</u>
STAGE 1 & 2 Core Shed	\$15,295	-	\$15,295
Concrete Foundations	\$ 2,100	-	\$ 2,100
	<u>\$17,395</u>		<u>\$17,395</u>
STAGE 3A Core Shed	\$ 8,660	-	\$ 8,660
Accommodation Unit	\$32,500	—	\$32,500
TOTAL	<u>\$58,555</u>	—	<u>\$58,555</u>

Beneficial Ownership - As at 31st December, 1981.

C.R.A. $51 \times \frac{100}{85} = 60\%$

M.E.L. $34 \times \frac{100}{85} = 40\%$



CUMULATIVE EXPENDITURE SCHEDULE

MT. BISCHOFF PROJECT

SUMMARY
as at Jan. 1982

SAMPLE NO.	LINE	FROM TRENCH	TO TRENCH	INTERVAL m	Sn SPLIT	Sn GROUND	Cu	Pb	Zn	Ag	W	Au	Check Sn	Bulked Assays
146721	940E	1770	1772		1200									
22	"	1772	1774		1400									
23	"	1774	1776		2050									
24	"	1776	1778		6350									
25	"	1778	1780		1.05%*									
26	"	1780	1782		1250									
27	"	1782	1784		6500									
28	"	1784	1786		1800									
29	"	1786	1788		2200									
730	"	1788	1790		3050									
31	"	1790	1792		2800									
32	"	1792	1794		1250									
33	"	1794	1796		1800									
146734	940E	1898	1900		1150									
35	"	1900	1902		760									
36	"	1902	1904		2850									
37	"	1904	1906		6750									
38	"	1906	1908		1550									
39	"	1908	1910		4150									
740	"	1910	1912		3000									
41	"	1912	1914		6500									
42	"	1914	1916		2700									
43	"	1916	1918		3350									
44	"	1918	1920		720									
45	"	1920	1922		560									
46	"	1922	1924		440									
47	"	1924	1926		1800									
48	"	1926	1928		3350									
49	"	1928	1930		3700									

Notes: -XRF J14 method

* being confirmed

METALS* EXPLORATION LTD - MT BISCHOFF TIN PROSPECT

ASSAY SUMMARY SHEET HOLE NO.

SAMPLE TYPE : DRILL CORE

FROM 1770 TO 1930

TRENCH SAMPLES 940E

626012

SAMPLE NO.	LINE	FROM TRENCH	TO TRENCH	INTER. VAL	Sn SPLIT	Sn GROUND	Cu	Pb	Zn	Ag	W	Au	Check Sn	Bulked Assays
146668	980E	1722	1724		230									
69	"	1724	1726		290									
70	"	1726	1728		360									
71	"	1728	1730		240									
72	"	1730	1732		65									
73	"	1732	1734		300									
74	"	1734	1736		250									
75	"	1736	1738		220									
76	"	1738	1740		1500									
77	"	1740	1742		510									
78	"	1742	1744		380									
79	"	1744	1746		570									
680	"	1746	1748		400									
81	"	1748	1750		890									
82	"	1750	1752		490									
83	"	1752	1754		120									
84	"	1754	1756		400									
85	"	1756	1758		420									
86	"	1758	1760		950									
87	"	1760	1762		1300									
88	"	1762	1764		900									
89	"	1764	1766		2000									
690	"	1766	1768		3600									
91	"	1768	1770		800									
92	"	1770	1772		1000									
93	"	1772	1774		870									
94	"	1774	1776		900									
95	"	1776	1778		810									
96	"	1778	1780		900									
97	"	1780	1782		520									

Notes: - xRF 214 method

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT
 ASSAY SUMMARY SHEET HOLE NO.

SAMPLE TYPE : DRILL CORE FROM 1722 TO 1782

TRENCH SAMPLES 980E

656014

SAMPLE NO.		FROM	TO	INTER. VAL.	Sn	Sn	Cu	Pb	Zn	Ag	W	Au	Check Sn	Bulked Assays
SPLIT CORE	LINE	TRENCH	TRENCH	m	SPLIT	GROUND								
146698	980E	1782	1784		530									
99	"	1784	1786		600									
146700	"	1786	1788		1200									
01	"	1788	1790		1300									
02	"	1790	1792		3100									
03	"	1792	1794		3400									
04	"	1794	1796		2000									
05	"	1796	1798		1800									
06	"	1798	1800		2800									
07	"	1800	1802		4500									
08	"	1802	1804		350									
09	"	1804	1806		930									
146710	"	1806	1808		310									
11	"	1808	1810		2300									
12	"	1810	1812		120									
13	"	1812	1814		510									
14	"	1814	1816		2.25% P. 1.9%	Quartz Dilution Technique								
15	"	1816	1818		630									
16	"	1818	1820		660									
17	"	1820	1822		180									
18	"	1822	1824		180									
19	"	1824	1826		260									
720	"	1826	1828		810									
146866	980E	1828	1830		1650									
67	"	1830	1832		1950									
68	"	1832	1834		3900									
69	"	1834	1836		6700									
078	"	1836	1838		3200									
71	"	1838	1840		4000									

Notes: - XRF 214 method

* Being confirmed

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT

ASSAY SUMMARY SHEET HOLE NO.

SAMPLE TYPE : DRILL CORE

FROM 1782 TO 1877

TRENCH SAMPLE 980E

656012

SAMPLE NO.		FROM	TO	INTERVAL	Sn	Sn	Cu	Pb	Zn	Ag	W	Au	Check Sn	Bulked Assays
SPLIT CORE	LINE	TRENCH	TRENCH	M	SPLIT	GROUND								
146872	980E	1873	1875		4650									
73	"	1871	1873		3650									
74	"	1869	1871		4100									
75	"	1867	1869		1200									
76	"	1865	1867		940									
77	"	1863	1865		2150									
78	"	1861	1863		8150	*2350	Confirmed using Quartz dilution method							
146764	980E	1902	1904		130									
65	"	1909	1906		160									
66	"	1906	1908		350									
67	"	1908	1910		130									
68	"	1910	1912		80									
69	"	1912	1914		150									
70	"	1914	1916		70									
71	"	1916	1918		70									
72	"	1918	1920		70									
73	"	1920	1922		220									
74	"	1922	1924		95									
75	"	1924	1926		45									
76	"	1926	1928		90									
77	"	1928	1930		160									
78	"	1930	1932		40									
79	"	1932	1934		130									
780	"	1934	1936		90									
81	"	1936	1938		200									
82	"	1938	1940		270									
83	"	1940	1942		160									
84	"	1942	1944		250									
85	"	1944	1946		410									

Notes:- XRF 214 method

*To be confirmed

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT

ASSAY SUMMARY SHEET HOLE NO.

SAMPLE TYPE : DRILL CORE FROM 1873 TO 1946

TRENCH SAMPLE 980E

626010

SAMPLE NO.		FROM	TO	INTER-VAL	Sn	Sn	Cu	Pb	Zn	Ag	W	Au	Check Sn	Bulked Assays
SPLIT CORE	LINE	TRENCH	TRENCH	m	SPLIT	GROUND								
146634	1020E	1726	1728		1500									
35	"	1728	1730		980									
36	"	1730	1732		1400									
37	"	1732	1734		1250									
38	"	1734	1736		510									
39	"	1736	1738		170									
40	"	1738	1740		120									
41	"	1740	1742		1130									
42	"	1742	1744		2000									
43	"	1744	1746		4800									
44	"	1746	1748		4550									
45	"	1748	1750		3450									
46	"	1750	1752		4650									
47	"	1752	1754		6450									
48	"	1754	1756		6450									
146649	"	1787	1789		3200									
50	"	1789	1791		720									
51	"	1791	1793		6300									
52	"	1793	1795		3350									
53	"	1795	1797		820									
54	"	1797	1799		1450									
55	"	1799	1801		3050									
56	"	1801	1803		2800									
57	"	1803	1805		1000									
58	"	1805	1807		2650									
59	"	1807	1809		1.08%									
60	"	1809	1811		9100									
61	"	1811	1813		5600									
62	"	1813	1815		2100									

Notes:- XRF OIA method

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT
 ASSAY SUMMARY SHEET HOLE NO.

SAMPLE TYPE : DRILL CORE FROM 1726 TO 1789
 TRENCH SAMPLES 1020E

656018

SAMPLE NO.	LINE	TRENCH	TRENCH	INTERVAL	Sn	Sn	Cu	Pb	Zn	W	Au	Check Sn	Bulked Assays	
SPLIT CORE	LINE	TRENCH	TRENCH	M	SPLIT	GROUND								
146663	1020E	1815	1817		4200									
64	"	1817	1819		3000									
65	"	1819	1821		2100									
66	"	1821	1823		6300									
67	"	1823	1825		690									
146844	1020E	1838	1840		380									
45	"	1840	1842		850									
46	"	1842	1844		1600									
47	"	1844	1846		2300									
48	"	1846	1848		1450									
49	"	1848	1850		3550									
850	"	1850	1852		7150									
51	"	1852	1854		1650									
52	"	1854	1856		330									
53	"	1856	1858		230									
54	"	1858	1860		510									
55	"	1860	1862		1050									
56	"	1862	1864		740									
57	"	1864	1866		2100									
58	"	1866	1868		1050									
146393	1020E	1932	1934		500									
94	"	1934	1936		2600*	2850	Confirmed using Quartz Dilution Method							
95	"	1936	1938		500									
96	"	1938	1940		1500*	1600	Confirmed using Quartz Dilution Method							
97	"	1940	1942		2300*	2530	Confirmed using Quartz Dilution Method							
98	"	1942	1944		5300*	5750	Confirmed using Quartz Dilution Method							
99	"	1944	1946		4000									
146800	"	1946	1948		3050									

Notes: - XRF 214 Method

* Approximate values, to be confirmed

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT

ASSAY SUMMARY SHEET HOLE NO.

SAMPLE TYPE : DRILL CORE FROM 1815 TO 1948

TRENCH SAMPLES 1020E

656019

SAMPLE NO.	LINE	FROM	TO	INTER VAL	Sn	Sn	Cu	Pb	Zn	Ag	W	Au	Check Sn	Bulked Assays
SPLIT CORE	LINE	TRENCH	TRENCH	M	SPLIT	GROUND								
146594	1060E	1816	1818		2150									
95	"	1814	1816		1760									
96	"	1812	1814		1800									
97	"	1810	1812		2750									
98	"	1808	1810		1650									
99	"	1806	1808		220									
146600	"	1804	1806		110									
01	"	1802	1804		2400									
02	"	1800	1802		1050									
03	"	1798	1800		450									
04	"	1796	1798		2900									
05	"	1794	1796		220									
146606	"	1834	1836		3950									
07	"	1836	1838		750									
08	"	1838	1840		550									
09	"	1840	1842		530									
610	"	1842	1844		630									
11	"	1844	1846		850									
12	"	1846	1848		820									
13	"	1848	1850		730									
14	"	1850	1852		760									
15	"	1852	1854		900									
16	"	1854	1856		610									
17	"	1856	1858		2650									
18	"	1858	1860		2250									
19	"	1860	1862		3050	**								
620	"	1862	1864		2400									
21	"	1864	1866		1850									
22	"	1866	1868		1750									

Notes: - XRF 314 Method
 ** Quartz Dilution Method

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT
 ASSAY SUMMARY SHEET HOLE NO.
 SAMPLE TYPE : DRILL CORE FROM 1816 TO 1868
 TRENCH SAMPLES 1060E

656021

SAMPLE NO.		FROM	TO	INTER-VAL	Sn	Sn	Cu	Pb	Zn	Ag	W	Au	Check Sn	Bulked Assays
SPLIT CORE	LINE	TRENCH	TRENCH	M	SPLIT	GROUND								
146623	1060E	1868	1870		2100									
24	"	1870	1872		2350									
146625	"	1880	1882		3200									
26	"	1882	1884		3350									
27	"	1884	1886		3550									
28	"	1886	1888		3550									
29	"	1888	1890		3550									
30	"	1890	1892		2150									
31	"	1892	1894		2000									
32	"	1894	1896		1700									
33	"	1896	1898		1400									
146610	"	1976	1978		560									
11	"	1978	1980		220									
12	"	1980	1982		550									
13	"	1982	1984		2300									
14	"	1984	1986		3250									
15	"	1986	1988		1850									
16	"	1988	1990		1650									
17	"	1990	1992		2100									
18	"	1992	1994		2450									
19	"	1994	1996		2900									
20	"	1996	1998		5450									
21	"	1998	2000		3400									
22	"	2000	2002		4350									
23	"	2002	2004		4850									
24	"	2004	2006		6600									
25	"	2006	2008		3500									
26	"	2008	2010		4750									

Notes: - XRF J14 Method

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT

ASSAY SUMMARY SHEET HOLE NO.

SAMPLE TYPE : DRILL CORE

FROM 1868 TO 2010

TRENCH SAMPLES 1060E

656022

SAMPLE NO.	LINE	FROM	TO	INTER-VAL	Sn	Sn	Cu	Pb	Zn	Ag	W	Au	Check Sn	Bulked Assays
SPLIT CORE	LINE	TRENCH	TRENCH	m	SPLIT	GROUND								
146558	1100E	1856	1858		3400									
59	"	1858	1860		1050									
560	"	1860	1862		1000									
61	"	1862	1864		1050									
62	"	1864	1866		1900									
63	"	1866	1868		690									
64	"	1868	1870		1100									
65	"	1870	1872		1450									
66	"	1872	1874		1450									
67	"	1874	1876		1750									
68	"	1876	1878		2650									
69	"	1878	1880		4100									
570	"	1880	1882		5000									
71	"	1882	1884		2900									
72	"	1884	1886		920									
73	"	1886	1888		3200									
74	"	1888	1890		3050									
75	"	1890	1892		1150									
76	"	1892	1894		1200									
77	"	1894	1896		2200									
78	"	1896	1898		1600									
79	"	1898	1900		2350									
580	"	1900	1902		2500									
81	"	1902	1904		3250									
82	"	1904	1906		1050**									
83	"	1906	1908		950**									
84	"	1908	1910		5300									
85	"	1910	1912		6750**									
86	"	1912	1914		3300									
87	"	1914	1916		6800									

Notes: - XRF Q14 method

** Quartz Dilution method

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT

ASSAY SUMMARY SHEET HOLE NO.

SAMPLE TYPE: DRILL CORE

FROM 1856 TO 1916

TRENCH SAMPLES 1100E

656023

SAMPLE NO.	LINE	FROM	TO	INTER .VAL	Sn	Sn	Cu	Pb	Zn	g	W	Au	Check Sn	Bulked Assays
SPLIT CORE		TRENCH	TRENCH	m	SPLIT	GROUND								
146888	1100E	1916	1918		4600									
89	"	1918	1920		110%	**								
90	"	1920	1922		9750									
91	"	1922	1924		115%	**								
92	"	1924	1926		7650									
93	"	1926	1928		105%	**								
146859	1100E	2006	2008		2900									
146860	"	2016	2018		1.35%*	1.35%	Confirmed using Quartz Dilution Method							
61	"	2018	2020		1.25%*	1.20%	Confirmed using Quartz Dilution Method							
62	"	2020	2022		1.75%*	1.65%	Confirmed using Quartz Dilution Method							
63	"	2022	2024		7250									
64	"	2024	2026		1600									
65	"	2026	2028		1600									
PIT														
146879	1103E	1.0	2.0		3500	*3750	Confirmed using Quartz Dilution Method							
80	"	2.0	3.0		3100	*3150	Confirmed using Quartz Dilution Method							
81	"	3.0	4.0		180%	*157%	Confirmed using Quartz Dilution Method							

Notes: - XRF 214 Method

** Quartz Dilution Method

* To be confirmed

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT

ASSAY SUMMARY SHEET HOLE NO.

SAMPLE TYPE : DRILL CORE

FROM 1916 TO 2028

TRENCH SAMPLES 1100E

656024

SAMPLE NO.	HOLE NO.	FROM	TO	INTER-VAL	Sn	Sn	Cu	Pb	Zn	g	W	Au	Check Sn	Bulked Assays
SPLIT CORE	LINE	TRENCH	TRENCH	M	SPLIT	GROUND								
146533	1140E	1840	1842		210									
34	"	1842	1844		200									
35	"	1844	1846		1700									
36	"	1846	1848		4400									
37	"	1848	1850		7100									
38	"	1850	1852		5700									
39	"	1852	1854		4350									
540	"	1854	1856		1500									
41	"	1856	1858		3050									
42	"	1858	1860		1752									
43	"	1860	1862		2200									
44	"	1862	1864		370									
45	"	1864	1866		140									
46	"	1866	1868		2650									
47	"	1868	1870		1402									
48	"	1870	1872		5400									
49	"	1872	1874		3150									
530	"	1874	1876		7000									
51	"	1876	1878		7150									
52	"	1878	1880		1352									
53	"	1880	1882		2350									
54	"	1882	1884		5000									
55	"	1884	1886		7500									
56	"	1886	1888		5450									
57	"	1888	1890		9500									
PIT														
146882	1840N/1140E	20	30		3300									
83	"	30	40		510									
84	"	40	50		160									
85	"	50	60		1250									

Notes: - XRF 214 Method

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT
 ASSAY SUMMARY SHEET HOLE NO.

SAMPLE TYPE : DRILL CORE FROM 1840 TO 1890

TRENCH SAMPLES 1140E

656023



METALS EXPLORATION LTD.

80 COLLINS STREET, MELBOURNE, AUSTRALIA 3000. TELEPHONE 653 7100. TELEX AA32051. TELEGRAM ROCKDOC.

D of M	A.O.	C.G.	E.O.	D.S.M.E
				Registrar
Received	29 MAR 1982			E & IL
Answered				
DEPT. OF MINES				
REF. No. 2317/82				

MT. BISCHOFF TIN PROSPECT
EXPLORATION LICENCE 13/79
AND AUTHORITY TO PROSPECT 5/80

TASMANIA

MONTHLY REPORTS FOR JANUARY TO DECEMBER 1982

REPORT FOR FEBRUARY, 1982

Distribution:

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G.M. Motteram
24/ 3/82

MT BISCHOFF TIN PROSPECTREPORT FOR FEBRUARY, 19821. General

Activity on site was limited to continued surface sampling. The results of this work indicate the presence of tin mineralization in areas previously undrilled or yielding low core recovery, particularly in the White Face DSL.

Evaluation of the project economics continued.

Preparation of the Stage III Report has been delayed, however, mining and metallurgical input is nearing completion.

2. Geology2.1 Drilling

Arrangements have been finalised for location of a Warman rig on site as of 8th March, 1982. This rig is owned by Overland Drilling (Geopeko) and will be convertible between diamond drilling and reverse circulation drilling.

The programme established for the rig includes:

(a) Diamond Drilling - 120 metres

- . 2 holes into Slaughteryard Face.
- . Extension MBD 113 to intersect possible Lower Dolomite sequence in Greisen Face footwall.

(b) Reverse Circulation Drilling - 1000 metres

- . Low core recovery zone Allen's Workings.
- . Low core recovery zone Greisen Face Flat.
- . Low core recovery zone Pig Flat.
- . 1120E-1180E Sub Porphyry DSL.
- . White Face DSL.
- . Don Hill Alluvial, basement definition.

2.2 Surface Sampling

Surface sampling at 2 metre interval spot samples was continued following completion of the surface trenching exercise. Correlation between length of tin bearing zones and grade has been good for sections with both surface and trench sampling.

Work performed during February included completion of White Face sampling (1240E to 1320E) and continued sampling over Allens Workings (940E to 980E).

Results are as follows:

<u>Section 940E</u>	1700N to 1898N
	Assays incomplete 1708-1734N, 28 m @ 0.28% Sn
<u>Section 960E</u>	1700N to 1928N
	Assays not available
<u>Section 980E</u>	1830N to 1840N
	Assays not available, sampling incomplete
<u>Section 1240E</u>	1850N to 1930N and 1950N to 2000N
	Intervals of interest were:
	1850-1854N, 6 m @ 0.30% Sn (Sediment)
	1882-1892N, 12 m @ 1.27% Sn (DSL)
	1908-1912N, 6 m @ 0.70% Sn (DSL)
	1954-1968N, 16 m @ 0.29% Sn (Porphyry)
<u>Section 1260E</u>	1850N to 1926N and 1948N to 2000N
	Intervals of interest were:
	1866-1872N, 8 m @ 0.47% Sn (Sediment)
	1894-1898N, 6 m @ 0.27% Sn (Assays incomplete) (DSL)
	1960-1990N, 32 m @ 0.45% Sn (Sediment-Porphyry)

Section 1280E 1850N to 1922N and 1948N to 2000N

Intervals of interest were:

1854-1874N, 22 m @ 0.32% Sn
(Sediment)
1904-1914N, 12 m @ 0.64% Sn (DSL)
1958-1984N, 28 m @ 0.51% Sn
(Sediment)

Section 1300E 1850N to 1930N and 1944N to 1974N

Intervals of interest were:

1870-1878N, 10 m @ 0.58% Sn
(Sediment)
1908-1920N, 14 m @ 1.16% Sn (DSL)
1962-1972N, 12 m @ 0.45% Sn
(Sediment)

Section 1320E 1850N to 1908N and 1942N to 1970N

1874-1888N, 16 m @ 0.41% Sn
(Sediment)

Remaining area sampled - low grade

This work indicates a zone of good grade DSL mineralization to be remaining in the White Face pit from 1240E to 1300E at least. This area is outside of reserve estimates. The work also indicates possible surface expression of the Lower Dolomite sequence outcropping in "sediments".

2.3 Channel Samples - Don Hill Alluvial

Results have been received from vertical channel samples taken every 5 metres along the two Don Hill trenches. These indicate significant tin content at ostensibly zero stripping ratio, ie.

0 West to 40 West
Average Vertical Depth 1.6 metres
Average Grade - 664 ppm Sn
(Potential cassiterite content
approx. 2lb/yd sq)

0 West to 65 West
Average Vertical Depth 1.9 metres
Average Grade - 247 ppm Sn
(Potential cassiterite content
approx. 0.7 lb/yd sq)

Sampling to establish in situ density, wash density and bulk cassiterite content, is continuing.

A sample from Trench No. 1 has been dispatched for metallurgical assessment.

2.4 Stage III Report

Preparation of geological, text & cross sections for presentation in the Stage III Report continued.

3. Mine Planning

Definition of open pits for the Main Dolomite area to pit base RL 540 and the Stanhope area to pit base RL 610 was completed. Operating costs have been estimated including allowance for pit roads and contract stripping of approximately 6 million tonnes of sediment.

Dilution studies have been performed for mining of DSL ore zones (22% dilution @ 0.1% Sn) and porphyry ore zones (10% dilution @ 0.1% Sn).

Open pit minable ore reserve estimates including the above dilution and 90% extraction are:

	<u>Tonnes 10⁶</u>	<u>% Sn</u>
DSL	1.475	0.73
Porphyry	2.088	0.41
<hr/>		
Total	3.563	0.54
<hr/>		

Waste to Ore ratio: 5.3 to 1.0

Continued optimisation work is required to reschedule stripping requirements and minimise stripping ratios.

4. Metallurgy

A report was received from Minerals Deposits Limited on their Porphyry preconcentration testwork. From a sample assaying 0.27% tin and ground to -1 mm, a weight rejection of 40% was reported for a tin loss of 7%. A standard Variability test is underway on the concentrate. Fines

from preconcentration were subjected to cassiterite flotation tests. Concentrate grades were only about 10% Sn because of the presence of goethite which floated selectively with the cassiterite.

Samples of talc rich DSL were sent to Metals Exploration Limited's Kalgoorlie laboratories for evaluation of cheaper alternative talc depressants.

Collation of results and preparation of a report for the Stage 3 Metallurgical testwork continued during the month.

5. Engineering

Preparation of the main Engineering Study Brief will commence once the Stage 3 report is completed and reviewed.

Environmental base studies have been completed.

APPENDED INFORMATION

Project Expenditure Details

Joint Venture Assesst Statement

Asays

MT BISCHOFF JOINT VENTURE

	<u>February 1982</u>		<u>6 Months to June 1982</u>	
	<u>Actual</u> <u>\$000</u>	<u>Budget</u>	<u>Actual</u> <u>\$000</u>	<u>Budget</u>
Administration	18	23	40	134
Geology	11	58	80	181
Mining	1	21	1	106
Metallurgy	15	13	28	67
Engineering	7	14	14	239
Commercial	-	5	1	29
TOTAL:	<u>52</u>	<u>134</u>	<u>164</u>	<u>756</u>
M.E.L. SHARE:	20	54	65	302

SUMMARY OF EXPENDITURE TO 28. 2.82

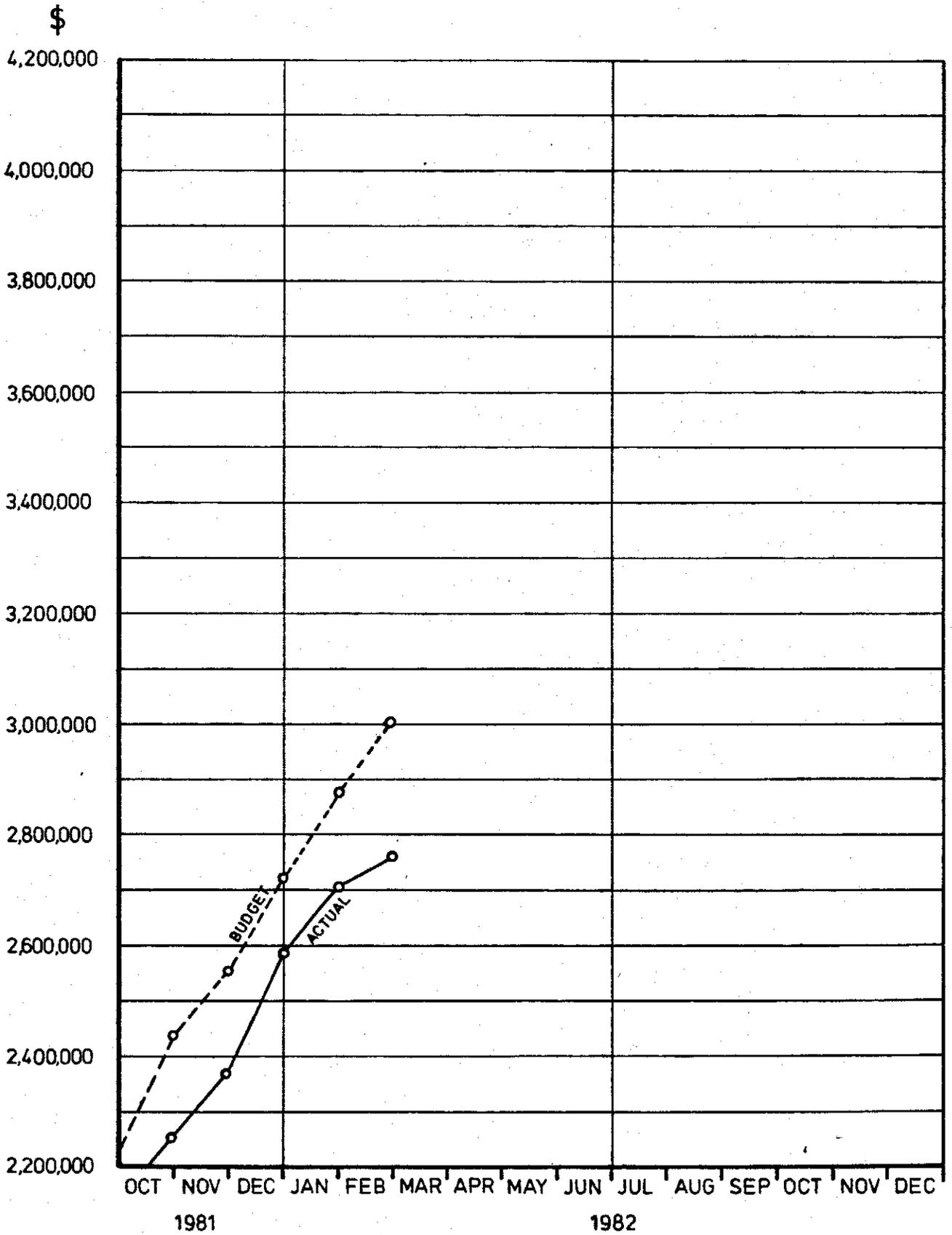
	<u>CURRENT PERIOD</u> <u>\$000</u>	<u>ACCUMULATIVE</u> <u>\$000</u>
Stage 1		270
Stage 2A - Early Start		29
Stage 2A		199
Overruns: Stage 1 - M.E.L.		11
Metallurgical - C.R.A.E.		24
Stage 2B		482
Stage 2B - 3A Holding Costs Offset - A.I.R. & D.		40
Stage 3A - Partly offset by A.I.R. & D Grant Rec. June 1981 \$6,500		861
Stage 3B - Partly offset by A.I.R. & D Grant Rec. July 1981 \$25,863		674
Stage 3C -	<u>52</u>	<u>164</u>
ACCUMULATIVE EXPENDITURE TO DATE	<u>52</u>	<u>2,754</u>

MT BISCHOFF PROJECT

	<u>February 1982</u>		<u>6 Months to June 1982</u>	
	<u>Actual</u>	<u>Budget</u>	<u>Actual</u>	<u>Budget</u>
	<u>\$000</u>		<u>\$000</u>	
<u>ADMINISTRATION</u>				
Technical Services	14	21	32	117
Consumables	3	1	7	12
Travel	-	1	1	5
	<u>18</u>	<u>23</u>	<u>40</u>	<u>134</u>
<u>GEOLOGY</u>				
Technical Services	1	12	11	68
Labour	1	1	3	5
Consumables	-	5	2	18
Accommodation	1	1	1	6
Vehicles	-	1	1	5
Travel	1	1	1	3
Contractors	6	31	58	54
Consultants	1	6	3	21
	<u>11</u>	<u>58</u>	<u>80</u>	<u>181</u>
<u>MINING</u>				
Technical Services	-	12	-	70
Consumables	-	1	-	4
Travel	-	1	-	2
Consultants	1	7	1	30
	<u>1</u>	<u>21</u>	<u>1</u>	<u>106</u>
<u>METALLURGY</u>				
Technical Services	8	8	16	32
Consumables	1	1	1	3
Travel	-	1	1	7
Contractors	5	3	9	20
Consultants	1	-	1	5
	<u>15</u>	<u>13</u>	<u>28</u>	<u>67</u>
<u>ENGINEERING</u>				
Technical Services	6	7	13	42
Consumables	-	1	-	2
Travel	-	1	-	12
Contractors	1	-	1	170
Consultants	-	5	-	13
	<u>7</u>	<u>14</u>	<u>14</u>	<u>239</u>

MT BISCHOFF PROJECT

	<u>February 1982</u>		<u>6 Months to June 1982</u>	
	<u>Actual</u>	<u>Budget</u>	<u>Actual</u>	<u>Budget</u>
	<u>\$000</u>		<u>\$000</u>	
<u>COMMERCIAL</u>				
Technical Services	-	3	1	17
Consumables	-	2	-	9
Travel	-	-	-	3
	<u>-</u>	<u>5</u>	<u>1</u>	<u>29</u>
<u>TOTAL:</u>	<u>52</u>	<u>134</u>	<u>164</u>	<u>756</u>



CUMULATIVE EXPENDITURE SCHEDULE

MT. BISCHOFF PROJECT

SUMMARY
as at Feb. 1982

SAMPLE NO.	SAMPLE NO	LINE	NESTING	INTER-VAL	Sn	Sn	Cu	Pb	Zn	Ag	W	Au	Check Sn	Bulked Assays
SURFACE SAMPLES	GROUND CORE			m	SPLIT	GROUND								
147285		940E	1700N		2050									
86		"	1702N		2250									
87		"	1704N		1900									
88		"	1706N		1700									
89		"	1708N		2400									
890		"	1710N		0950									
91		"	1712N		1850									
92		"	1714N		2000									
93		"	1716N		5000									
94		"	1718N		1850									
95		"	1720N		1750									
96		"	1722N		0580									
97		"	1724N		0950									
98		"	1726N		1100									
99		"	1728N		1000									
147300		"	1730N		2200									
10		"	1732N		3100									
02		"	1734N		0950									
03		"	1736N		1600									
04		"	1738N		0950									
05		"	1740N		3200									
06		"	1742N		0081									
07		"	1744N		1850									
08		"	1746N		1180									
09		"	1748N		0500									
06		"	1750N		2100									
11		"	1752N		0580									
12		"	1754N		2250									
13		"	1756N		700									
14		"	1758N		1800									

Notes: - XRF BI method
 * QUARTZ DILUTION TECHNIQUE

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT
 ASSAY SUMMARY SHEET HOLE NO.
 SAMPLE TYPE: DRILL CORE FROM 1700N TO 1750N

SURFACE SAMPLES 940E

650039

SAMPLE NO.	SAMPLE NO	DRILL LINE	TO NO/THICK	INTER VAL	Sn	Sn	Cu	Pb	Zn	Ag	W	Au	Check Sn	Bulked Assays
SURFACE SAMPLE	GROUND CORE			m	SPLIT	GROUND								
147315		940E	1760N		5200									
16		"	1760N		4400*									
17		"	1760N		4850									
18		"	1760N		3950									
19		"	1760N		2000									
320		"	1770N		3800									
21		"	1790N		1350									
22		"	1800N		5000									
23		"	1800N		2945*									
24		"	1800N		2000									
25		"	1800N		440									
26		"	1800N		90									
27		"	1810N		5300									
28		"	1810N		1650									
29		"	1814N		2650									
330		"	1816N		120									
31		"	1818N		1850									
32		"	1820N		90									
33		"	1822N		2600									
34		"	1824N		230									
35		"	1826N		1550									
36		"	1828N		1400									
37		"	1830N		1050									
38		"	1832N		4600									
39		"	1834N		1150									
340		"	1836N		1300									
41		"	1838N		1450									
42		"	1840N		670									
43		"	1842N		650									
44		"	1844N		460									

Notes: - XRF BI Method

* QUARTZ DILUTION TECHNIQUE

METALS EXPLORATION LTD - MT. BISCHOFF TIN PROSPECT

ASSAY SUMMARY SHEET HOLE NO.

SAMPLE TYPE: DRILL CORE FROM 1760N TO 1844N

SURFACE SAMPLES 940E

656040

SAMPLE NO.	SAMPLE NO	FROM LINE	TO - STRIKE	INTER - VAL	Sn	Sn	Cu	Pb	Zn	Ag	W	Au	Check Sn	Bulked Assays
SURFACE SAMPLES	GROUND CORE		m	m	SPLIT	GROUND								
147343		940E	1846N		520									
46		"	1848N		800									
47		"	1850N		110									
48		"	1852N		55									
49		"	1854N		500									
350		"	1856N		270									
51		"	1858N		290									
52		"	1860N		420									
53		"	1862N		700									
54		"	1864N		3650*									
55		"	1866N		110									
56		"	1868N		1.47*									
57		"	1870N		890									
58		"	1872N		85									
59		"	1874N		590									
360		"	1876N		1450									
61		"	1878N		1400									
62		"	1880N		3500*									
63		"	1882N		1600									
64		"	1884N		1650									
65		"	1886N		1250									
66		"	1888N		9200*									
67		"	1890N		9000									
68		"	1892N		950									
69		"	1894N		1900									
370		"	1896N		4300									
71		"	1898N		620									

Notes: - XRF BI Method

* QUARTZ DILUTION TECHNIQUE

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT

ASSAY SUMMARY SHEET HOLE NO.

SAMPLE TYPE: DRILL CORE FROM 1846N TO 1898N

SURFACE SAMPLES 940E

656041

SAMPLE NO.	SAMPLE NO	LINE	NEATHING	INTER VAL	Sn	Sn	Cu	CONFIRMED RESULT	Zn	Ag	W	Au	Check Sn	Bulked Assays
SURFACE SAMPLES	GROUND CORE			m	SPLIT	GROUND								
147487		980E	1830N		1.13%*									
88		"	1832N		2.53%*									
89		"	1834N		1.61%*									
490		"	1836N		260									
91		"	1838N		3900									
92		"	1840N		3500 *									
93		"	1842N		130									
94		"	1844N		240									
95		"	1846N		70									
96		"	1848N		400									
97		"	1850N		1350									
98		"	1852N		430									
99		"	1854N		2900 *									
145500		"	1856N		1600									
01		"	1858N		4400			4600*						
02		"	1860N		1.2%			1.22%*						
03		"	1862N		4100									
04		"	1870N		3350									
05		"	1872N		1.0%			9000 *						
06		"	1874N		4600									
07		"	1876N		5100			5000 *						
08		"	1878N		5200			5500 *						
09		"	1900N		2350									

Notes: - XRF BI Method

* Quartz Dilution Technique

* QUARTZ DILUTION TECHNIQUE

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT

ASSAY SUMMARY SHEET HOLE NO.

SAMPLE TYPE: DRILL CORE FROM 1830N TO 1900N

SURFACE SAMPLES 980E

656042

SAMPLE NO.	SAMPLE NO	LINE	NORTHING	INTER VAL	Sn	Sn	Cu	Pb	Zn	g	W	Au	Check Sn	Bulked Assays
	GROUND CORE			m	SPLIT	GROUND								
147000		1240E	1868N		1950									
01		"	1870N		200									
02		"	1872N		230									
03		"	1874N		340									
04		"	1876N		500									
05		"	1878N		250									
06		"	1880N		710									
07		"	1882N		1850									
08		"	1884N	*	2550									
09		"	1886N		1902*	2.00%	Quartz	Dilution	Technique					
010		"	1888N		1300									
11		"	1890N		9250*	9550	Quartz	Dilution	Technique					
12		"	1892N	*	3.30%	3.60%	Quartz	Dilution	Technique					
13		"	1894N		520									
14		"	1896N		1350									
15		"	1898N		75									
16		"	1900N		120									
17		"	1902N		55									
18		"	1904N		300									
19		"	1906N		450									
020		"	1908N	*	1.25%	1.25%	Quartz	Dilution	Technique					
21		"	1910N	*	6450*	6600	Quartz	Dilution	Technique					
22		"	1912N		1750									
23		"	1914N		350									
24		"	1916N		85									
25		"	1918N		220									
26		"	1920N		250									
27		"	1922N		1650									
28		"	1924N		620									
29		"	1926N		1250									

Notes: - XRF BI method
* Being confirmed

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT

ASSAY SUMMARY SHEET HOLE NO.

SAMPLE TYPE: DRILL CORE FROM 1868N TO 1926N

SURFACE SAMPLES 1240E

656044

SAMPLE NO.	SAMPLE NO	LINE	NORTHING	INTER VAL	Sn	Sn	Cu	Pb	Zn	g	W	Au	Check Sn	Bulked Assays
	GROUND CORE			m	SPLIT	GROUND								
147030		1240E	1928N		2100									
31		"	1930N		1950									
32		"	1950N		2300									
33		"	1952N		2700									
34		"	1954N		6500									
35		"	1956N		2650									
36		"	1958N		2300									
37		"	1960N		2000									
38		"	1962N		2500									
39		"	1964N		2400									
040		"	1966N		700									
41		"	1968N		3100									
42		"	1970N		790									
43		"	1972N		80									
44		"	1974N		200									
45		"	1976N		2200									
46		"	1978N		2000									
47		"	1980N		1850									
48		"	1982N		1350									
49		"	1984N		2050									
050		"	1986N		2400									
51		"	1988N		250									
52		"	1990N		600									
53		"	1992N		190									
54		"	1994N		1100									
55		"	1996N		1650									
56		"	1998N		710									
57		"	2000N		1050									

Notes: - XRF 61 method

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT
ASSAY SUMMARY SHEET HOLE NO.

SAMPLE TYPE: DRILL CORE FROM 1928N TO 2000N

SURFACE COMPLEX 1240E

656045

SAMPLE NO.	SAMPLE NO	LINE	DEPTH	INTER	Sn	Sn	Cu	Pb	Zn	g	W	Au	Check Sn	Bulked Assays
SURFACE SAMPLES	GROUND CORE			m	SPLIT	GROUND								
147058		1260E	1850N		770									
59		"	1852N		290									
060		"	1854N		390									
61		"	1856N		190									
62		"	1858N		210									
63		"	1860N		220									
64		"	1862N		290									
65		"	1864N		120									
66		"	1866N		2650	*								
67		"	1868N		5250									
68		"	1870N		5600									
69		"	1872N		5150	*								
070		"	1874N		230									
71		"	1876N		85									
72		"	1878N		85									
73		"	1880N		80									
74		"	1882N		120									
75		"	1884N		75									
76		"	1886N		140									
77		"	1888N		380									
78		"	1890N		110									
79		"	1892N		270									
080		"	1894N		2150									
81		"	1896N		2850									
82		"	1898N		2950									
83		"	1900N		1400									
84		"	1902N		820									
85		"	1904N		990									
86		"	1906N		140									
87		"	1908N		160									

Notes: - XRF Bl method

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT
 ASSAY SUMMARY SHEET HOLE NO.

SAMPLE TYPE: DRILL CORE FROM 1850N TO 1908N

SURFACE SAMPLES 1260E

656046

SAMPLE NO.	SAMPLE NO	LINE	NO. OF PULPS	INTER-VAL	Sn	Sn	Cu	Pb	Zn	g	W	Au	Check Sn	Bulked Assays
147080	GROUND CORE			m	SPLIT	GROUND								
147080		1260E	1910N		180									
89		"	1912N		1150									
090		"	1914N											
91		"	1916N											
92		"	1918N		1250									
93		"	1920N		1550									
94		"	1922N		460									
95		"	1924N											
96		"	1926N		710									
97		"	1928N		330									
98		"	1930N		60									
99		"	1932N		80									
147100		"	1934N		330									
01		"	1936N		250									
02		"	1938N		5450									
03		"	1940N		520									
04		"	1942N		4800	*								
05		"	1944N		1350									
06		"	1946N		4850									
07		"	1948N		7500									
08		"	1950N		9000									
09		"	1952N		5850									
10		"	1954N		8200									
11		"	1956N		4600									
12		"	1958N		2600									
13		"	1960N		4800									
14		"	1962N		4750									
15		"	1964N		1650									
16		"	1966N		2750									
17		"	1968N		5450									

Notes:- XRF BI method

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT
 ASSAY SUMMARY SHEET HOLE NO.

SAMPLE TYPE : DRILL CORE FROM 1910N TO 1990N

SURFACE SAMPLES 1260E

656047

SAMPLE NO.	SAMPLE NO	LINE	NEATH	INTER VAL	Sn	Sn	Cu	Pb	Zn	g	W	Au	Check Sn	Bulked Assays
	GROUND CORE			m	SPLIT	GROUND								
127		1280E	1250N		330									
24		"	1252N		320									
25		"	1254N		3300	*								
26		"	1256N		2400									
27		"	1258N		1500									
28		"	1260N		2150									
29		"	1262N		740									
30		"	1264N		2400									
31		"	1266N		3550									
32		"	1268N		320									
33		"	1270N		4600									
34		"	1272N		1250									
35		"	1274N		3600	*								
36		"	1276N		1050									
37		"	1278N		640									
38		"	1280N		730									
39		"	1282N		210									
40		"	1284N		70									
41		"	1286N		60									
42		"	1288N		55									
43		"	1290N		120									
44		"	1292N		55									
45		"	1294N		150									
46		"	1296N		150									
47		"	1298N		300									
48		"	1300N		300									
49		"	1302N		910									
150		"	1304N		2350	*								
51		"	1306N		2400	*								
52		"	1308N		6000									

R.25% Dilution Technique

Notes: - XRF BI Method

* To be confirmed

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT

ASSAY SUMMARY SHEET HOLE NO.

SAMPLE TYPE: DRILL CORE FROM 1250N TO 1308N

SURFACE SAMPLES 1280E

656049

SAMPLE NO.	SAMPLE NO	LINE	NO. OF INCHES	INTER. VAL.	Sn	Sn	Cu	Pb	Zn	Ag	W	Au	Check Sn	Bulked Assays
SURFACE SAMPLE	GROUND CORE			m	SPLIT	GROUND								
147153		1280E	1910N		2100									
54		"	1912N		2650									
55		"	1914N		2350	y								
56		"	1916N		1800									
57		"	1918N		490									
58		"	1920N		310									
59		"	1922N		1500									
147160		1280E	1942N		490									
61		"	1950N		1100									
62		"	1952N		240									
63		"	1954N		170									
64		"	1956N		930									
65		"	1958N		2300	y								
66		"	1960N		7650									
67		"	1962N		1052	1:10% Quartz Dilution Technique								
68		"	1964N		6300									
69		"	1966N		4250									
70		"	1968N		1250									
71		"	1970N		4200									
72		"	1972N		6900									
73		"	1974N		2300									
74		"	1976N		2500									
75		"	1978N		8200									
76		"	1980N		7400									
77		"	1982N		1400									
78		"	1984N		6600	y								
79		"	1986N		1500									
180		"	1988N		220									
81		"	1990N		220									

Notes:- XRF BI method
 * being confirmed

METALS EXPLORATION LTD • MT BISCHOFF TIN PROSPECT
 ASSAY SUMMARY SHEET HOLE NO.

SAMPLE TYPE: DRILL CORE FROM 1910N TO 1990N

SURFACE SAMPLES 1280E

656050

SAMPLE NO.	SAMPLE NO	LINE	NO. OF INCHES	INTERVAL VAL	Sn	Sn	Cu	Pb	Zn	Ag	W	Au	Check Sn	Bulked Assays
	GROUND CORE			m	SPLIT	GROUND								
147187		1300E	1850N		320									
88		"	1852N		400									
89		"	1854N		730									
190		"	1856N		400									
91		"	1858N		280									
92		"	1860N		110									
93		"	1862N		630									
94		"	1864N		590									
95		"	1866N		730									
96		"	1868N		670									
97		"	1870N		3400									
98		"	1872N		6100									
99		"	1874N		4150									
147200		"	1876N		7300									
10		"	1878N		7750									
02		"	1880N		50									
03		"	1882N		320									
04		"	1884N		660									
05		"	1886N		130									
06		"	1888N		180									
07		"	1890N		330									
08		"	1892N		310									
09		"	1894N		570									
10		"	1896N		510									
11		"	1898N		800									
12		"	1900N		1550									
13		"	1902N		2300									
14		"	1904N		1850									
15		"	1906N		1150									
16		"	1908N		6350									

Notes: - XRF 81 method

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT
 ASSAY SUMMARY SHEET HOLE NO.

SAMPLE TYPE: DRILL CORE FROM 1850N TO 1908N

SURFACE SAMPLES 1300E

656052

SAMPLE NO.	SAMPLE NO	LINE	NORTHING	INTERVAL	Sn	Sn	Cu	Pb	Zn	Ag	W	Au	Check Sn	Bulked Assays
SURFACE SAMPLE	GROUND CORE			m	SPLIT	GROUND								
147217		1300E	1910N		2050									
18		"	1912N		1.25% **									
19		"	1914N		3.70% **									
20		"	1916N		1.05% **									
21		"	1918N		3500									
22		"	1920N		9250	y								
23		"	1922N		710									
24		"	1924N		350									
25		"	1926N		180									
26		"	1928N		680									
27		"	1930N		300									
147228		1300E	1944N		460									
29		"	1946N		5300									
30		"	1948N		3750									
31		"	1950N		640									
32		"	1952N		230									
33		"	1954N		200									
34		"	1956N		140									
35		"	1958N		120									
36		"	1960N		380	x								
37		"	1962N		105%	* 1.10%								
38		"	1964N		1150	y								
39		"	1966N		910									
40		"	1968N		210									
41		"	1970N		1900	y								
42		"	1972N		1.30%	* 1.50%								
43		"	1974N		190									

Notes: - XRF BI Method

* To be confirmed
 * + QUARTZ DILUTION TECHNIQUE

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT
 ASSAY SUMMARY SHEET HOLE NO.

SAMPLE TYPE : DRILL CORE FROM 1910N TO 1974N

SURFACE SAMPLES 1300E

626053

SAMPLE NO.	SAMPLE NO	LINE	NO. STRIPS	INTER. VAL	Sn	Sn	Cu	Pb	Zn	Ag	W	Au	Check Sn	Bulked Assays
GROUND CORE	GROUND CORE			m	SPLIT	GROUND								
147244		1320E	1850N		1250									
45		"	1852N		630									
46		"	1854N		180									
47		"	1856N		2300									
48		"	1858N		2500									
49		"	1860N		420									
250		"	1862N		1100									
51		"	1864N		330									
52		"	1866N		390									
53		"	1868N		230									
54		"	1870N		480									
55		"	1872N		1250									
56		"	1874N		3750									
57		"	1876N		2450									
58		"	1878N		2550									
59		"	1880N		1650									
260		"	1882N		3600									
61		"	1884N		6750									
62		"	1886N		8250									
63		"	1888N		7900									
64		"	1900-1920N		460									
65		"	1922N		120									
66		"	1924N		180									
67		"	1926N		290									
68		"	1928N		880									
69		"	1930N		1300									
147270		1320E	1942N		170									
71		"	1944N		600									
72		"	1946N		280									

Notes: - XRF Bl. method

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT
 ASSAY SUMMARY SHEET HOLE NO.
 SAMPLE TYPE : DRILL CORE FROM 1850N TO 1946N

SURFACE SAMPLES 1320E

656054



METALS EXPLORATION LTD.

80 COLLINS STREET, MELBOURNE, AUSTRALIA 3000. TELEPHONE 653 7100. TELEX AA32051. TELEGRAM ROCKDOC.

J of M	A.O.	C.G.	E.O.	D.S.M.E
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Received	- 3 MAY 1982			E & IL
Answered				
DEPT. OF MINES				
REF. No. 3155/82				D.J.J.

*covering letter
noted by all
concerned.*

MT. BISCHOFF TIN PROSPECT

EXPLORATION LICENCE 13/79

AND AUTHORITY TO PROSPECT 5/80

TASMANIA

MONTHLY REPORTS FOR JANUARY TO DECEMBER 1982

REPORT FOR MARCH, 1982

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G. Motteram

19/ 4/82

MT BISCHOFF TIN PROSPECTREPORT FOR MARCH, 19821. General

- . Stage 4 drilling programme commenced. Two diamond drill holes involving 111.8 metres and 5 reverse circulation holes involving 39 metres were completed.
- . Diamond drilling results
 - . diminished potential to upgrade DSL reserves in Slaughteryard Area
 - . failed to intersect footwall dolomite sequence in Greisen Face area.
- . Difficulties encountered with reverse circulation drilling in Allen's Workings area. 20 metres of DSL encountered immediately below surface in White Face area.
- . Surface sampling programme covering the DSL/Dolomite sequence between 940E and 1300E continued. Programme is now completed.
- . Mining, Metallurgy and Engineering reports prepared for inclusion within Stage III Report. Semi optimization of mine planning has revised open pit mineable ore reserves to that reported in February report.

2. Geology

2.1 Drilling Programme

2.1.1 Diamond Drilling

Two diamond drill holes involving 111.8 metres were drilled during the period.

MBD 134: 1060E/2140N (approx.)
Vertical: Drilled depth 71.8 metres

Designed to test the vertical development of DSL in the Slaughteryard Face locality. From collar to 6 metres DSL was intersected. From 6 metres to 71.8 metres mineralized dolomite was intersected. Hole terminated at 71.8 metres without detecting development of footwall DSL.

MBD 135: Extension of MBD 113
Drilled Depth 40.0 metres

Designed to test existence of second dolomite horizon approximately 50 metres below main dolomite sequence. The 40 metres drilled intersected sediments only. Down rates possibility of lower dolomite unit being developed in the Greisen Face footwall.

2.1.2 Reverse Circulation Drilling

The reverse circulation drilling programme commenced during the period.

The aim of the programme is to provide grade information in near surface areas where core recovery from previous diamond drilling operations was poor.

Allen's Workings, 940E to 980E, was the first area to be drilled. Variability in ground conditions (hard blocks to soft clays) and mechanical drilling problems resulted in the recovery of non representative samples. Details of the holes attempted follow:

<u>Hole No.</u>	<u>Co-ordinates East</u>	<u>North</u>	<u>Angle degrees</u>	<u>Depth metres</u>	<u>Comments</u>
MBR1	940	1780	-90	3.0	Limonite clay with dolomite. Less than 50% recovery. Fragments blocking bit.
MBR2	980	1745	-90	6.0	Similar to MBR1. Some siltstone.
MBR3	980	1765	-90	4.0	Similar to MBR 1 & 2.
MBR4	1300	1910	-90		Very poor sample return. Did not penetrate overburden.

MBR4a	1300	1905	-90	5.0	Soft pyritic DSL. Less than 50% recovery.
MBR5	1240	1890	-90	21.0	Collar to 20 m DSL. 20 to 21 m sediments. Good recovery.

Mechanical drilling problems were solved prior to attempting MBR5.

It appears the reverse circulation technique will, in homogenous, fine-grained and relatively soft material, provide reasonable samples. The ongoing reverse circulation drilling programme involves further holes in the White Face area and then a series of holes in the Pig Flat and Don Hill areas. Whether or not further attempts will be made to drill in the Allen's Workings area is yet undecided (depends on ongoing drilling performance)

2.2 Surface Trench Sampling

Analysis of all samples from the recent surface trenching programme has been completed.

All trenches have been backfilled.

A summary of the significant intervals of interest reported within the trenches follows:

Trench 940E	1770-1796N	26m @ 0.33% Sn
	1898-1926N	28m @ 0.27% Sn
	1926-1962N	36m @ 0.45% Sn
Trench 980E	1861-1885N	24m @ 0.36% Sn
Trench 1020E	1726-1756N	30m @ 0.26% Sn
	1744-1756N	12m @ 0.51% Sn
	1787-1825N	38m @ 0.32% Sn
	1932-1966N	34m @ 0.26% Sn
Trench 1060E	1880-1898N	18m @ 0.27% Sn
	1976-2010N	34m @ 0.29% Sn
Trench 1100E	1856-1928N	72m @ 0.41% Sn
	2016-2028N	12m @ 0.81% Sn
Trench 1140E	1844-1890N	46m @ 0.56% Sn
Trench 1180E	1918-1940N	22m @ 0.22% Sn

Trench 1220E no significant interval

Trenches Don Hill:

No. 1.	0 to 40 west	0.066% Sn
No. 2.	0 to 65 west	0.025% Sn

2.3 Surface Sampling

The surface sampling programme continued during the period with the objective to cover the DSL/Dolomite sequence between 940E and 1300E substantially achieved.

The following section lines were sampled:

Section 980E 1842N to 1860N
 1888N to 1900N

Section 1000E 1700N to 1978N
 2030N to 2068N
 2080N to 2100N

Section 1020E 1700N to 1726N
 1756N to 1786N
 1860N to 1900N
 2042N to 2076N
 2084N to 2100N

Section 1040E 1750N to 1898N
 2040N to 2100N

Section 1060E 2060N to 2100N

Section 1100E 2040N to 2060N

Two lines of surface samples were collected in the Brown Face western pit area.

Surface sampling results continue to indicate interesting tin mineralization in the Allen's Workings and Greisen Face areas. Trench sampling appears to verify this concept. If the reverse circulation drilling technique is not amenable to recovering representative samples, some alternative sampling technique is required to test these near surface zones down to bedrock.

2.3.1 Surface Sample Assay Results

A status summary (as at March 31st, 1982) of the current surface sampling (2 metre interval spot samples) programme and assay results follows:

Section 940E 1700N to 1898N : Assays available
 1940N to 1990N : Assays available

Intervals of interest include:

1708-1734N	28m @ 0.28% Sn
1748-1770N	24m @ 0.37% Sn
1800-1822N	24m @ 0.43% Sn
1864-1868N	6m @ 0.59% Sn
1880-1896N	18m @ 0.37% Sn
1940-1944N	6m @ 0.32% Sn
1966-1988N	24m @ 0.36% Sn

Section 960E 1700N to 1990N : Assays available

Intervals of interest include:

1700-1704N	6m @ 0.47% Sn
1720-1796N	78m @ 0.42% Sn
1810-1814N	6m @ 0.85% Sn
1824-1844N	22m @ 0.46% Sn
1872-1892N	22m @ 0.37% Sn
1924-1926N	4m @ 0.30% Sn
1950-1986N	18m @ 0.53% Sn

Section 980E 1830N to 1860N : Assays available
 1888N to 1900N : Assays available
 1970N to 2016N : Assays available

Intervals of interest include:

1830-1840N	12m @ 1.04% Sn
1854-1860N	8m @ 0.51% Sn
1888-1900N	14m @ 0.50% Sn
1972-1986N	16m @ 0.95% Sn

Section 1000E 1700N to 2028N : Assays available
 2030N to 2100N : Assays not available

Intervals of interest include:

1700-1702N	4m @ 0.35% Sn
1722-1730N	10m @ 0.30% Sn
1752-1794N	44m @ 0.77% Sn
1830-1834N	6m @ 0.44% Sn
1892-1902N	12m @ 0.22% Sn
1916-1924N	10m @ 0.56% Sn
1936-1940N	6m @ 0.63% Sn
1960-1978N	20m @ 0.51% Sn
1980-1996N	18m @ 0.80% Sn
2004-2026N	24m @ 0.55% Sn

Section 1020E 1700N to 1726N : Assays available
 1756N to 2026N : Assays available
 2042N to 2076N : Assays not available
 2084N to 2100N : Assays not available

Intervals of interest include:

1702-1708N	8m @ 0.22% Sn
1756-1770N	16m @ 0.44% Sn
1782-1786N	6m @ 0.32% Sn
1860-1868N	10m @ 0.30% Sn
1882-1900N	20m @ 0.62% Sn
1902-1904N	4m @ 0.76% Sn
1934-1996N	64m @ 0.45% Sn

Section 1040E 1750N to 2042N : Assays available
 2046N to 2100N : Assays not available

Intervals of interest include:

1778-1790N	14m @ 0.48% Sn
1806-1818N	14m @ 0.28% Sn
1858-1898N	42m @ 0.42% Sn
1900-1902N	4m @ 0.47% Sn
1928-1932N	6m @ 0.27% Sn
1938-1956N	20m @ 0.37% Sn
1988-2006N	20m @ 0.80% Sn

Section 1060E 1720N to 2040N : Assays available
 2060N to 2100N : Assays not available

Intervals of interest include:

1860-1908N	50m @ 0.38% Sn
1920-1978N	60m @ 0.36% Sn
2026-2040N	16m @ 0.51% Sn

Section 1080E 1750N to 2050N : Assays available

Intervals of interest include:

1750-1766N	18m @ 0.31% Sn
1776-1784N	10m @ 0.49% Sn
1848-1854N	8m @ 0.28% Sn
1860-1936N	78m @ 0.55% Sn
1950-1976N	28m @ 0.32% Sn
2020-2034N	16m @ 0.45% Sn

Section 1100E 1760N to 2040N : Assays available
 2042N to 2060N : Assays not available

Intervals of interest include:

1760-1766N	8m @ 0.36% Sn
1782-1804N	24m @ 0.36% Sn
1846-1956N	114m @ 0.53% Sn
2010-2016N	8m @ 0.46% Sn

Section 1120E 1836N to 1980N : Assays available

Intervals of interest include:

1890-1910N	22m @ 0.28% Sn
1930-1932N	4m @ 0.45% Sn

Section 1140E 1820N to 1960N : Assays available

Intervals of interest include:

1840-1866	28m @ 0.53% Sn
1880-1932	54m @ 0.78% Sn

Section 1160E 1850N to 1970N : Assays available

Intervals of interest include:

1888-1922N	36m @ 0.60% Sn
1952-1970N	20m @ 0.53% Sn

Section 1180E 1870N to 1970N : Assays available

Intervals of interest include:

1876-1880N	6m @ 0.37% Sn
1890-1918N	30m @ 0.25% Sn

Section 1200E 1870N to 1970N : Assays available

Interval of interest includes:

1918-1926N	10m @ 69% Sn
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Section 1240E 1850N to 2000N : Assays available

Intervals of interest include:

1884-1892N	10m @ 1.40% Sn
1908-1910N	4m @ 0.95% Sn
1954-1968N	16m @ 0.29% Sn

Section 1260E 1850N to 2000N : Assays available

Intervals of interest include:

1866-1872N	8m @ 0.47% Sn
1964-1990N	28m @ 0.47% Sn

Section 1280E 1850N to 2000N : Assays available

Intervals of interest include:

1854-1874N	22m @ 0.32% Sn
1904-1914N	12m @ 0.66% Sn
1958-1984N	28m @ 0.51% Sn

Section 1300E 1850N to 1974N : Assays available

Intervals of interest include:

1870-1878N	10m @ 0.58% Sn
1908-1920N	14m @ 1.16% Sn
-1962N	2m @ 1.05% Sn
-1972N	2m @ 1.30% Sn

Section 1320E 1850N to 1970N : Assays available

Interval of interest includes:

1874-1888N	16m @ 0.46% Sn
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2.4 Stage III Geological Report

A formal geological ore reserve and drilling report for inclusion within the Stage III Report was prepared during the period.

2.5 Geological Interpretation

Draughting work has commenced in preparation for the composition of 1:500 Level Plans at 10 metre vertical intervals showing location of drill holes, geological boundaries, grade boundaries, geological ore reserve blocks and grades, and rock type boundaries.

2.6 Environment

Surface trenches developed during the December 1981-January 1982 trenching programme were backfilled.

3. Mining

The Stage III Mining Report was completed during the period. Semi optimization of stripping schedules and stripping ratios resulted in the following new open pit mineable ore reserve estimate being incorporated within the Stage III Mining Report:

	<u>Tonnesx10⁶</u>	<u>% Sn</u>
DSL	1.475	0.77
Porphyry	1.843	0.39
<hr/>		
Total	3.318	0.56
<hr/>		

Waste to Ore ratio: 4.7 to 1.0

With recruitment of a permanent Senior Mining Engineer, preparation is being made to undertake final definitive mine planning studies. Such studies will incorporate results from the current drilling programme and will serve as the basis for mining parameters within a Definitive Feasibility Study.

4. Metallurgy

Preparation of the Stage III Metallurgical Report was completed.

Flotation tests were carried out to compare the cassiterite collector SPA with a cheaper alternative CA540. Test results showed tin recovery was achievable with CA540 but concentrate grades were poor relative to SPA. Further assessment of CA540 may be warranted once concentrate production/sales options have been reviewed.

Testwork at Metals Exploration's Kalgoorlie laboratory established that the reagent Guartec was as effective as Daicel 1120 for talc depression while offering significant cost benefits.

Metallurgical testing on samples from the surface trenching programme continued during the period. Final results are expected in early April.

5. Engineering

The engineering section of the Stage III Report was completed. A financial evaluation of the Stage III Report has commenced.

APPENDED INFORMATION

1. Project Expenditure Details
2. Joint Venture Asset Statement
3. Assays
4. Drill Hole Logs

MT BISCHOFF JOINT VENTURE

	<u>March 1982</u>		<u>6 Months to June 1982</u>	
	<u>Actual</u> <u>\$000</u>	<u>Budget</u>	<u>Actual</u> <u>\$000</u>	<u>Budget</u>
Administration	19	24	59	134
Geology	19	19	99	181
Mining	12	15	13	106
Metallurgy	17	10	45	67
Engineering	8	15	22	239
Commercial	-	3	1	29
<u>TOTAL PROJECT:</u>	<u>75</u>	<u>86</u>	<u>239</u>	<u>756</u>
<u>M.E.L. SHARE (40%)</u>	30	34	95	302

SUMMARY OF EXPENDITURE TO 31. 3.82

	<u>CURRENT PERIOD</u> <u>\$000</u>	<u>ACCUMULATIVE</u> <u>\$000</u>
Stage 1		270
Stage 2A - Early Start		29
Stage 2A		199
Overruns: Stage 1 - M.E.L.		11
Metallurgical - C.R.A.E.		24
Stage 2B		482
Stage 2B - 3A Holding Costs Offset - A.I.R. & D.		40
Stage 3A - Partly offset by A.I.R. & D Grant Rec. June 1981 \$6,500		861
Stage 3B - Partly offset by A.I.R. & D Grant Rec. July 1981 \$25,863		674
Stage 4 -	<u>75</u>	<u>239</u>
<u>ACCUMULATIVE EXPENDITURE TO DATE</u>	<u>75</u>	<u>2,829</u>

MT BISCHOFF PROJECT

	<u>March 1982</u>		<u>6 Months to June 1982</u>	
	<u>Actual</u>	<u>Budget</u>	<u>Actual</u>	<u>Budget</u>
	<u>\$000</u>		<u>\$000</u>	
<u>ADMINISTRATION</u>				
Technical Services	18	23	50	117
Consumables	1	1	8	12
Travel	-	-	1	5
	<u>19</u>	<u>24</u>	<u>59</u>	<u>134</u>
<u>GEOLOGY</u>				
Technical Services	3	8	14	68
Labour	2	1	5	5
Consumables	2	3	4	18
Accommodation	-	1	1	6
Vehicles	1	1	2	5
Travel	-	-	1	3
Contractors	5	2	63	54
Consultants	6	3	9	21
	<u>19</u>	<u>19</u>	<u>99</u>	<u>181</u>
<u>MINING</u>				
Technical Services	3	11	3	70
Consumables	2	-	2	4
Travel	-	1	-	2
Consultants	7	3	8	30
	<u>12</u>	<u>15</u>	<u>13</u>	<u>106</u>
<u>METALLURGY</u>				
Technical Services	14	4	30	32
Consumables	-	1	1	3
Travel	-	1	1	7
Contractors	3	3	12	20
Consultants	-	1	1	5
	<u>17</u>	<u>10</u>	<u>45</u>	<u>67</u>
<u>ENGINEERING</u>				
Technical Services	7	8	20	42
Consumables	-	-	-	2
Travel	-	4	-	12
Contractors	-	-	1	170
Consultants	1	3	1	13
	<u>8</u>	<u>15</u>	<u>22</u>	<u>239</u>

MT BISCHOFF PROJECT

	<u>March 1982</u>		<u>6 Months to June 1982</u>	
	<u>Actual</u>	<u>Budget</u>	<u>Actual</u>	<u>Budget</u>
	<u>\$000</u>		<u>\$000</u>	
<u>COMMERCIAL</u>				
Technical Services	-	2	1	17
Consumables	-	.5		9
Travel	-	.5		3
	<u>-</u>	<u>3</u>	<u>1</u>	<u>29</u>
<u>TOTAL:</u>	<u>75</u>	<u>86</u>	<u>239</u>	<u>756</u>

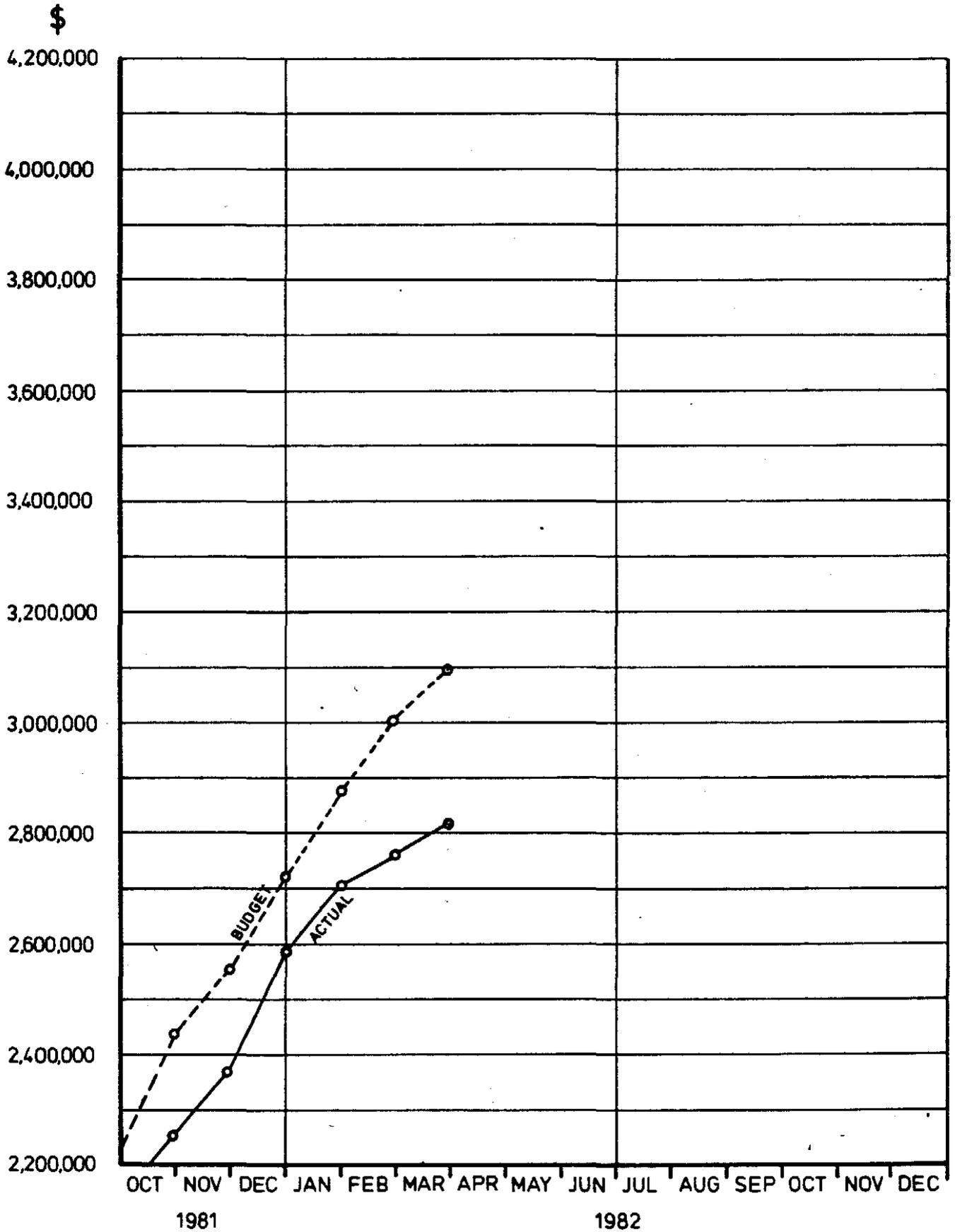
MT BISCHOFF PROJECTCUMULATIVE CAPITAL EXPENDITURE

	<u>AS AT</u> <u>28/ 2/82</u>	<u>MARCH 1982</u> <u>EXPENDITURE</u>	<u>AS AT</u> <u>31/ 3/82</u>
STAGE 1 & 2 Core Shed	\$15,295	-	\$15,295
Concrete Foundations	\$ 2,100	-	\$ 2,100
	<u>\$17,395</u>		<u>\$17,395</u>
STAGE 3A Core Shed	\$ 8,660	-	\$ 8,660
Accommodation Unit	\$32,500	—	\$32,500
TOTAL	<u>\$58,555</u>	—	<u>\$58,555</u>

Beneficial Ownership - As at 31st December, 1981.

C.R.A. $51 \times \frac{100}{85} = 60\%$

M.E.L. $34 \times \frac{100}{85} = 40\%$



CUMULATIVE EXPENDITURE SCHEDULE

MT. BISCHOFF PROJECT

SUMMARY

as at MARCH 1982

AMPLE NO.	SAMPLE NO	LINE	DEPTH, M	INTERVAL	Sn	Cu	CONFIRMED RESULTS	Zn	W	Au	Check Sn	Bulked Assays
REF: SAMPLE	GROUND CORE			m	SPLIT	GROUND						
145510		1000E	1700N		4400							
11		"	1702N		2650							
12		"	1704N		780							
13		"	1706N		390							
14		"	1708N		1450							
15		"	1710N		640							
16		"	1712N		710							
17		"	1714N		750							
18		"	1716N		190							
19		"	1718N		1400							
145520		"	1720N		1200							
21		"	1722N		3600							
22		"	1724N		3150							
23		"	1726N		2300							
24		"	1728N		2700							
25		"	1730N		3000							
26		"	1732N		800							
27		"	1734N		840							
28		"	1736N		920							
29		"	1738N		1500							
145530		"	1740N		2100							
31		"	1742N		780							
32		"	1744N		790							
33		"	1746N		870							
34		"	1748N		120							
35		"	1750N		170							
36		"	1752N		1.1%		1.24%*					
37		"	1754N		280							
38		"	1756N		3300							
39		"	1758N		3800							
145540		"	1760N		5200							

XRF BI METHOD

* QUARTZ DILUTION TECHNIQUE

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT

ASSAY SUMMARY SHEET HOLE NO.

SAMPLE TYPE : DRILL CORE

FROM 1700N TO 1760N

626075

SAMPLE NO.	SAMPLE NO	LINE	NORTHING	INTEI VAL	Sn	Cu	CONCENTR RESULT	Zn	W	Au	Check Sn	Bulked Assays
REACE SAMPLES	GROUND CORE			m	SPLIT	GROUND						
145541		1000E	1762N		2000							
2		"	1764N		1.8%		2.00%*					
3		"	1766N		3400							
4		"	1768N		2900							
5		"	1770N		5700		6400*					
6		"	1772N		4300							
7		"	1774N		4300							
8		"	1776N		2500							
9		"	1778N		4800							
145550		"	1780N		1.3%		1.50%*					
51		"	1782N		2900							
52		"	1784N		2400							
145553		1000E	1786N		1400							
54		"	1788N		4100		4400*					
55		"	1790N		4200		4550*					
56		"	1792N		<6%		4.73%*					
57		"	1794N		9600	x	1.04%*					
58		"	1796N		1400							
59		"	1798N		1000							
560		"	1800N		2150							
61		"	1802N		3350		3600*					
62		"	1804N		1800							
63		"	1806N		700							
64		"	1808N		1700							
65		"	1810N		2950		3150*					
66		"	1812N		1100							
67		"	1814N		1100							
68		"	1816N		1800							
69		"	1818N		580							

Notes:— XRF BI METHOD
* QUARTZ DILUTION TECHNIQUE

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT
ASSAY SUMMARY SHEET HOLE NO.

SAMPLE TYPE : DRILL CORE FROM 1762N TO 1818N

SURFACE SAMPLES 1220

656076

SAMPLE NO.	SAMPLE NO	LINE	WDATHING	II	Sn	Sn	Cu	CONFIRMED RESULTS	Zr	g	W	Au	Check Sn	Bulked Assays
SURFACE SAMPLES	GROUND CORE			m	SPLIT	GROUND								
145570		1000E	1820N		710									
71		"	1822N		630									
72		"	1824N		210									
73		"	1826N		270									
74		"	1828N		200									
75		"	1830N		4300			4500 *						
76		"	1832N		6700			7250 *						
77		"	1834N		2200									
78		"	1836N		450									
79		"	1838N		710									
580		"	1840N		550									
81		"	1842N		260									
82		"	1844N		1900									
83		"	1846N		950									
84		"	1848N		600									
85		"	1850N		3000									
86		"	1852N		700									
87		"	1854N		430									
88		"	1856N		430									
89		"	1858N		3700			4000 *						
590		"	1860N		2300									
91		"	1862N		1600									
92		"	1864N		1700									
93		"	1866N		1350									
94		"	1868N		2350			2550 *						
95		"	1870N		1450									
96		"	1872N		2250			2400 *						
97		"	1874N		1450									
98		"	1876N		2150									
99		"	1878N		2350			2550 *						

Notes:—
 XRF BI METHOD
 * QUARTZ DIKATION TECHNIQUE

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT
 ASSAY SUMMARY SHEET HOLE NO.
 SAMPLE TYPE : DRILL CORE FROM 1820N TO 1878N
 SURFACE SAMPLES 1000E

656077

AMPLE NO.	SAMPLE NO	LINE	NORTHING	INTER-VAL	Sn	Cu	CONFIRMED RESULTS	Zn	W	Au	Check Sn	Bulked Assays
FACE SAMPLES	GROUND CORE			m	SPLIT	GROUND						
145600		1000E	1880N		1300							
01		"	1882N		550							
02		"	1884N		590							
03		"	1886N		660							
04		"	1888N		2300		2500	*				
05		"	1890N		160							
06		"	1892N		1600							
07		"	1894N		1900							
08		"	1896N		4400		4500	*				
09		"	1898N		2600							
610		"	1900N		1000							
11		"	1902N		1500							
12		"	1904N		300							
13		"	1906N		280							
14		"	1908N		390							
15		"	1909N		100							
16		"	1912N		170							
17		"	1914N		910							
18		"	1916N		1800							
19		"	1918N		1.0%		1.06%	*				
620		"	1920N		260							
21		"	1922N		1.5%		1.70%	*				
22		"	1924N		1050							
23		"	1926N		850							
24		"	1928N		1050							
25		"	1930N		2050							
26		"	1932N		1650							
27		"	1934N		1300							
28		"	1936N		6800		7050	*				
29		"	1938N		5500		6100	*				

656078

Notes:—
 XRF BI METHOD
 * QUARTZ DILATION TECHNIQUE

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT
 ASSAY SUMMARY SHEET HOLE NO.
 SAMPLE TYPE : DRILL CORE FROM 1880N TO 1938N

CHECK SAMPLES 1000E

SAMPLE NO.	SAMPLE NO	LINE	NORTHING	INTEI VAL	Sn	Cu	CONFIRMED RESULT	Zn	W	Au	Check Sn	Bulked Assays
SURFACE SAMPLING	GROUND CORE			m	LIT	GROUND						
145630		1000E	1940N		6700		7000	*				
31		"	1942N		1500							
32		"	1944N		1500							
33		"	1946N		1900							
34		"	1948N		3000		3200	*				
35		"	1950N		1850							
36		"	1952N		1000							
37		"	1954N		170							
38		"	1956N		210							
39		"	1958N		450							
640		"	1960N		5200		5450	*				
41		"	1961N		3400		3500	*				
42		"	1964N		6900		7400	*				
43		"	1966N		780							
44		"	1968N		3150							
45		"	1970N		1.1%							
46		"	1972N		8900							
47		"	1974N		3500							
48		"	1976N		930							
49		"	1978N		7450							

Notes:-

XRF BI METHOD

* QUARTZ DILUTION TECHNIQUE

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT

ASSAY SUMMARY SHEET HOLE NO.

SAMPLE TYPE : DRILL CORE

FROM 1940N TO 1964N

SURFACE SAMPLES 1000E

656079

SAMPLE NO.	SAMPLE NO	L/AVE	NORTHING	INT. VAL	n	Sn	Cu	Pb	Zn	W	Au	Check Sn	Bulked Assays
GROUND CORE	m	m	m	SPLIT	GROUND								
145650		1020E	1700N		760								
51		1020E	1702N		1850								
52		"	1704N		2250								
53		"	1706N		2900								
54		"	1708N		1650								
55		"	1710N		1400								
56		"	1712N		1650								
57		"	1714N		660								
58		"	1716N		2800								
59		"	1718N		40								
145660		"	1720N		410								
61		"	1722N		170								
62		"	1724N		1850								
63		"	1726N		280								
145664		1020E	1756N		4000								
65		"	1758N		2400								
66		"	1760N		2150								
67		"	1762N		680								
68		"	1764N		7500								
69		"	1766N		5900								
145670		"	1768N		9300								
71		"	1770N		3250								
72		"	1772N		890								
73		"	1774N		270								
74		"	1776N		630								
75		"	1778N		720								
76		"	1780N		890								
77		"	1782N		2150								
78		"	1784N		4900								

Notes:—

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT
 ASSAY SUMMARY SHEET HOLE NO.

SAMPLE TYPE : DRILL CORE

FROM 1700N TO 1784N

SURFACE SAMPLES 1980

656080

SAMPLE NO.	SAMPLE NO	LINE	NORTHING	INTE VAL	Sn	Cu	Pb	Zn	W	Au	Check Sn	Bulked Assays
IR TABLE SAMPLES	GROUND CORE	m	m	m	SPLIT	GROUND						
145679		1020E	1786N		2600							
145680		"	1860N		1100							
81		"	1862N		2150							
82		"	1864N		4400							
83		"	1866N		4000							
84		"	1868N		3300							
85		"	1870N		310							
86		"	1872N		1000							
87		"	1874N		1150							
88		"	1876N		650							
89		"	1878N		3150							
90		"	1880N		1100							
91		"	1882N		2900							
92		"	1884N		2750							
93		"	1886N		1950							
94		"	1888N		1450							
95		"	1890N		1100							
96		"	1892N		1900							
97		"	1894N		2650							
98		"	1896N		4450							
99		"	1898N		2.0%							
145700		"	1900N		2.3%							

Notes: —

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT
 ASSAY SUMMARY SHEET HOLE NO.
 SAMPLE TYPE : DRILL CORE FROM 1786N TO 1900N
 SURFACE SAMPLES 1020E

1809581

DEPTH (length from collar)	INTERVAL	DEPTH from - to : ROCK UNIT		MINERALISATION	BULKED ASSAYS Ni
		Depth	Description and notes INDENTED ABOUT 10mm		

NOTES: 1. FOR ABBREVIATIONS SEE "FIELD GEOLOGIST'S MANUAL", O.A. BERGMAN & W.R. RYALL (ED.), MONOGRAPH NO. 5 AUSTRALAS INST MIN METALL - 1976
 2. ATTITUDE OF BEDDING, VEIN, ETC IS ANGLE BETWEEN PLANAR STRUCTURE AND LONG AXIS OF CORE 3. LENGTH IS GIVEN AS METRES OR MILLIMETRES

0	6 m	0 - 6 m <u>DOLOMITE SULPHIDE LORE</u> Dark grey-green fine grained "wrigglite" passing into dark green serpentine-talc rock. 5.7 - 6 m Medium grained pale green talc-carbonate "griessen" Irregular patches of bronze po, yellow carbonate, pyrite and sellesite. 0 - 0.5 m limonite stained	6/7	Irregularly distributed po, from blebs up to 7 mm to grains <<1 mm. Minor fg pyrite.	
5					
10		6- <u>DOLOMITE</u> Fine grained, khaki to dark grey-green. Minor talc/serpentine alteration. Sections 6 - 10 m, 29 - 31 m, 35 - 36 m show well defined thin bedding laminae with po along bedding planes. Dominantly massive, fine grain, siliceous, or chaotically bedded (slumped?) Intervals of soft, dark grey green talc/serpentine alteration 9 - 10 m, 12.6 - 16.6 m. Po 10 - 15% in these sections. Fg white quartzite? band 10 - 20 cms at 28.9 m, with minor quartz veining. Bulk of dolomite is very fine grained, hard siliceous, massive to chaotically textured, with "whispy" irregular po laminate and sub angular to sub rounded pale grey siliceous clasts 31 - 34.5 m.	2	<40° <45° Disseminated po, generally 1%. Po along bedding planes in well laminated sections, and as irregular stringers and blebs in chaotic textured (slumped?) zones. Po abundant (10 - 15%) in talc/serpentine zone. As disseminated grains up to 5 mm. Cg quartz - carbonate - pyrite minor asp - sp - cp - sellesite veins. 30.5 - 30.9 m 38.2 - 38.6 m 39.3 - 39.6 m 3 m quartz - sellesite - SnO ₂ vuggyvein at 39.7 m.	
15					
20					
25					
30					
35				<65° Throughout, core contains 1 - 5% po as bedding laminae, irregular streaks in chaotic text. Slumps? and irregular <30° veins assoc. with minor brecciation. <90°	
40		Zones of thinly regularly lam. dolomite interbedded with chaotic textured "slumped" dolomite with clasts of quartzite and po rich laminae.		<45° <30°	
45		Fine grained grey massive to faintly laminated (sub grey wacke?) quartzite 46.5 - 49 m.			
50		55.2 - 56.1. Laminated grey to khaki dolomite, minor pale green siltstone bands approx. 1 cm dolomite contains 50% aggregates and streaks of py, minor sp, asp. Few dark glassy? spherules approx. 1 mm.		<70° 50% py, minor asp sp 55.2 - 56.1	
55		Well laminated dolomite 56 - 60 m. Po distributed along bedding laminae. Minor "pull aparts" Graded bedding indicates top. Confirmed by load casts and sole markings in sulphide rich laminae.		<70° 58.3 - 5 cm band of 50% py, minor asp sp as above <90°	
60					

FOR LEGEND
SEE DRAWING
NO



**METALS
EXPLORATION
LIMITED**

**SUMMARY
DRILL LOG**
Scale

Prospect or project Mt. Bischoff Tin	HOLE No. MBD134
	LOG SHEET 1 OF 2

DEPTH (length from collar)	INTERVAL	DEPTH from - to : ROCK UNIT Depth Description and notes INDENTED ABOUT 10mm	CAPITAL LETTERS, UNDERLINED	FOUNTER & CODE	GRAPHIC LOG	FOUNTER & CODE	MINERALISATION	BULKED ASSAYS Ni
	NOTES:							

1 FOR ABBREVIATIONS SEE "FIELD GEOLOGIST'S MANUAL", O A BERRMAN & W R NYALL (ED.), MONOGRAPH NO 9 AUSTRALAS INST MIN METALL - 1976
 2 ATTITUDE OF BEDDING, VEIN, ETC IS ANGLE BETWEEN PLANAR STRUCTURE AND LONG AXIS OF CORE 3 LENGTH IS GIVEN AS METRES OR MILLIMETRES

60	DOLOMITE with minor interbedded QUARTZITE. As above. Quartzites become dominate below 65 m.	2/11	< 70° < 0° < 60° < 90°	1 - 2% po, py along bedding laminae, slumps and irregular fractures.
65				
70	Well laminated dol. section, minor po and py along bedding laminae; minor slumps and "pull aparts: END OF HOLE 71.8 m		70° 90°	

FOR LEGEND
SEE DRAWING
NO

DEPTH INTERVAL	DEPTH from - to : ROCK UNIT	CAPITAL LETTERS, UNDERLINED	POINTER & CODE	GRAPHIC LOG	POINTER & CODE	MINERALISATION	BULKED ASSAYS
	Depth Description and notes INDENTED ABOUT 10mm						Ni

NOTES: 1. FOR ABBREVIATIONS SEE "FIELD GEOLOGIST'S MANUAL", D.A. BERKMAN & W.R. RYALL (ED.), MONOGRAPH NO. 9 AUSTRALAS. INST. MIN. METALL. - 1976
 2. ATTITUDE OF BEDDING, VEIN, ETC. IS ANGLE BETWEEN PLANAR STRUCTURE AND LONG AXIS OF CORE 3. LENGTH IS GIVEN AS METRES OR MILLIMETRES

51	<p>51 - 91.8 m <u>SILTSTONES</u> with interbedded <u>QUARTZITES</u> Finely laminated grey siltstones, with massive to poorly laminated mg quartzite and minor toffaceous? sandstone.</p> <p>Slump and flaser bedding common.</p> <p>Minor grey fig. dolomite interbeds 61.5 - 63.2 m; dolomitic siltstones 80 - 82.2 m.</p>	10/11	<p>Bedding</p> <p>< 70° 10 cm wide 9 py - po minor carb. vien at 51.3 m, 76.8 m.</p> <p>< 50° minor disseminated and vienlet po. Overall average 2% solphides.</p> <p>< 90°</p> <p>< 75°</p> <p>< 90°</p> <p>< 45°</p> <p>< 70°</p> <p>< 45°</p>
61	<p>Interbedded quartzites more common below 82 m. (>20%)</p> <p>Discoid "rip-up" clast of massive po at 63.5 m. (Clearly sedimentary bx)</p>		
71			
81			
91	<p>END OF HOLE 92.8 m</p>		

656084

FOR LEGEND SEE DRAWING NO.

of M.	A.O.	C.G.	E.O.	D.S.M.
Received Answered				20 MAY 1982
DEPT. OF MINES				E & IL
REF. No. 3808/82				

MT. BISCHOFF TIN PROSPECTEXPLORATION LICENCE 13/79AND AUTHORITY TO PROSPECT 5/80TASMANIAMONTHLY REPORTS FOR JANUARY TO DECEMBER, 1982REPORT FOR APRIL, 1982VOL II

Distribution:

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MT BISCHOFF TIN PROSPECTREPORT FOR APRIL, 1982

1.

General

- . Reverse circulation/diamond drilling programme continued. Eleven holes involving 68.25 drilled metres of reverse circulation and 96.5 drilled metres of diamond drilling were completed.
- . Given limits of drilling equipment being used, reverse circulation technique unable to test near surface zone in Allen's Workings. Moderate success achieved in Pig Flat and White Face areas. Available assay values are disappointing.
- . Stage III Report completed and distributed. The Stage III Economic Evaluation Study completed.
- . Provisional operating budget plan and expenditure for May and June, 1982 period and July to December, 1982 period submitted.
- . Preliminary mine planning for consideration within Stage IV Study commenced.
- . Independent DSL Geological Ore Reserve estimate at 0.3% Sn nominal cutoff completed.
- . DSL and Porphyry Definitive Geological Ore Reserve estimate (open pit vicinity) underway.

2.

Geology

2.1

Drilling Programme

2.1.1

Diamond Drilling

No formal diamond drill holes were attempted during the period. Intermittent diamond drilling was involved within the reverse circulation programme.

2.1.1.2 Assay Results

A summary of significant intervals of interest received for MBD 134 and MBD 135 follows:

MBD 134 1059.01 E / 2141.02N RL 708.89

Vertical	Drilled depth	71.8 metres		
	0.6 to 1.0 metres		0.4 m @	1.06% Sn
	1.0 to 6.0 metres		5 m @	0.37% Sn
	37.0 to 39.0 metres		2 m @	0.63% Sn

MBD 135 Extension of MBD 113
Drilled depth 40.0 metres

No significant mineralization

2.1.2 Reverse Circulation Drilling

The reverse circulation drilling programme continued during the period with only limited success.

Eleven drill holes involving 96.5 drilled metres of diamond drilling and 68.25 drilled metres of reverse circulation drilling were completed.

The reverse circulation technique, using an NQ diameter hole, is very sensitive to hard blocks within a soft matrix. Satisfactory performance is only achieved in fine grained and friable zones, eg. the White Face area where the zone of interest is a soft pyritic-dolomite rock. In the Pig Flat and Allen's Workings areas the recoveries are generally unsatisfactory reflecting the difficult and variable ground conditions.

To offset inappropriate ground conditions (hard and blocky) for reverse circulation drilling technique, diamond drilling has been intermittently introduced.

The original programme has been revised owing to ground conditions (recovery) and drilling performance (costs).

Allen's Workings represented one of the biggest targets for substantially increasing reserves of tin mineralization. Unfortunately, eight attempts to drill holes in this area have proved unsuccessful.

Priority is now being given to the area between Pig Flat and White Face with the principal target being the "low recovery" zone below the porphyry.

Details of holes completed during the period follow:

Hole No.	Co-ordinates		Reduced Level	Metres Drilled		Depth	Type
	East	North		From	To		
MBR 6	1260.46	1902.47	642.73	13.0	19.0	19.0	Diamond
MBR 7	1280.51	1901.77	643.16	1.0	5.0		Reverse
				5.0	24.1	24.1	Diamond
MBR 8	1244.66	1927.36	648.09	1.0	20.0	20.0	Reverse
MBR 9	*980	1775	Unsuccessful hole				
MBR 10	1221.77	1909.51	647.40	0	13.6		Reverse
				13.6	20.95	20.95	Diamond
MBR 11	1201.35	1918.31	647.05	0	2.3		Diamond
				2.3	12.0		Reverse
				12.0	17.8	17.8	Diamond
MBR 12	*1140	1840	NA	0	7.7		Reverse
				7.7	20.4	20.4	Diamond
MBR 13	*980	1760	NA	0	6.0	6.0	Reverse
MBR 13A	*980	1758	NA	0	11.0	11.0	Reverse
MBR 14	*960	1810	NA	0	9.5		Reverse
				9.5	20.0	20.0	Diamond
MBR 15	*1040	1855	NA	0	21.5	21.5	Diamond

* Approximate Only: subject to survey.
 NA. Not yet available.
 All vertical holes.

The overall drilling performance at 6.34 metres per available 10 hour shift has been extremely disappointing. (Original estimate was 50 metres per 10 hour shift). Mechanical drilling problems have been the major influence.

*A summary of the reverse circulation drilling recoveries follows:

Hole	Meterage	Recovery %
MBR 6	0 to 13.0 metres	79
MBR 7	1.0 to 5.0 "	69
MBR 8	1.0 to 20.0 "	73
MBR 10	0 to 13.6 "	103
MBR 11	2.3 to 12.0 "	NA
MBR 12	0 to 7.7 "	52
MBR 13	0 to 3.0 "	43
MBR 13A	0 to 11.0 "	18
MBR 14	0 to 9.5 "	NA

% Recovery calculated as: actual weight of recovered sample divided by theoretical weight of sample from stated interval x 100.

Based on 2.0 SG, one metre represents 5.6 kg sample.

2.1.2.1 Assay Results

Incomplete assay results for holes MBR 6, 7, 8 and 10 are available.

With the exception of MBR 6, no significant intervals of interest were reported.

MBR 6	8.0 to 14.0 metres	6 metres @ 1.93% Sn
	or 5.0 to 14.0 metres	9 metres @ 1.46% Sn

(assays over 1.0% Sn still to be confirmed)

2.2 Surface Sampling

Assay results received during the period involved:

Section 1000E 2030N to 2100N

Intervals of interest include:

2030N - 2050N	22 m @ 0.62% Sn
2058N - 2082N	16 m @ 0.35% Sn

Section 1020E 2042N to 2076N
2084N to 2100N

Intervals of interest include:

2042N - 2048N	8 m @ 0.37% Sn
2056N - 2058N	4 m @ 2.53% Sn
2084N - 2100N	18 m @ 0.43% Sn

Section 1040E 2046N to 2100N

Intervals of interest include:

2046N - 2052N	8 m @ 0.59% Sn
2066N - 2100N	36 m @ 0.52% Sn

Section 1060E 2060N to 2100N

Intervals of interest include:

2060N - 2100N	42 m @ 0.49% Sn
---------------	-----------------

Section 1100E 2042N to 2060N

Intervals of interest include:

2046N - 2048N	4 m @ 0.38% Sn
---------------	----------------

Section 1120E 1980N to 2042N

Intervals of interest include:

1986N - 1992N	8 m @ 0.95% Sn
2000N - 2004N	6 m @ 0.24% Sn
2040N - 2042N	4 m @ 0.26% Sn

Section 1140E 1980N to 2036N

Intervals of interest include:

1980N - 1992N	14 m @ 0.15% Sn
2002N - 2010N	10 m @ 0.37% Sn
2018N - 2036N	20 m @ 0.19% Sn

2.3 Brown Face: Sampling

A limited surface sampling programme was conducted over a zone of DSL within the Brown Face open pit during the period.

Assay results reported the following intervals of interest:

Section 1120E	2215N - 2237N	24m @ 0.55% Sn
Section 1140E	2215N - 2223N	10m @ 0.42% Sn
	2237N - 2245N	10m @ 0.52% Sn
Section 1160E	2220N - 2224N	6m @ 0.25% Sn

Surface mapping suggests there could be approximately 10,000 tonnes of DSL in the zone. Only minor overburden is associated with the DSL zone.

2.4 Don Ridge Alluvials

Prospecting in the area south of Don Hill and north of Waratah township revealed the presence of tin bearing alluvials possibly 2 to 3 metres thick, stratigraphically beneath the tertiary basalt.

Two hand auger samples taken from approximately 888E and 1270N reported grades of 0.185% and 0.24% Sn over the interval 0 to 1.4 metres.

A programme for further work to determine overall potential tonnes and grade of such alluvial material is being prepared.

2.5 Geological Mapping

Geological mapping at a scale of 1:500 over the proposed open pit area has commenced. The mapping will provide factual data to assist with the interpretation of the definitive geological ore reserves.

The western side of the main pit area was completed during the period. Currently, White Face and Pig Flat is being mapped.

A chaotic textured clay-tuff-sulphide unit immediately below the White Face porphyry is now recognised as part of the "mine sequence" as it has the same joint orientation as the enveloping rocks. The significance of finding carbonaceous-pyritic wood in this sequence has yet to be resolved. The unit is important as it is tin bearing and is the target for the current reverse circulation holes in 1120E and 1140E sections.

2.5 Draughting

A complete set of level plans covering the proposed open pit area at 10 metre intervals inclusive of all drill hole intersections on a 1:500 scale is being draughted. The area bounded by 700E, 1640E and 1860N, 2200N was completed during the period.

2.6 Geological Ore Reserves

The DSL geological ore reserve stated in the Stage III Report was based on a 0.2% Sn nominal cutoff grade.

During the period an independent DSL geological ore reserve based on a 0.3% Sn cutoff grade was undertaken. An estimate of 1.2×10^7 tonnes at 0.99% Sn was computed.

Preparation is now underway to complete a Definitive Geological Ore Reserve for both the DSL and Porphyry within the immediate vicinity of the proposed open pit. The estimate will take into account all available data (subject to reliability) including recent geological mapping, surface and trench samples, and the diamond and reverse circulation drilling programme. Tin mineralization inventories of DSL at 0.2%, 0.3% and 0.4% Sn nominal cutoff grades and porphyry at 0.1%, 0.2% and 0.3% Sn nominal cutoff grades will be computed from both sectional and level plan bases

2.7 A to P 5/80

Housego Grid Area. (Old Fook's Lode). A review of all historical geophysical work programmes and results is being undertaken. Endeavouring to develop magnetic model that screens out effect of basalt thereby reflecting magnetic signature of underlying sediments.

3. Mining

Preparation of a preliminary mine study for inclusion within the Stage IV Escalation Study has commenced.

In respect to the Stage III mining study, efforts will be directed towards:

- (a) minimising waste dilution of ore
- (b) minimising prestripping requirements
- (c) establishing indicative breakeven grade
- (d) designing a pit development sequence in harmony with the location of the two ore types as they are presently understood.

The preliminary mining study will be based on the independent DSL Geological Ore Reserve estimate at a 0.3% Sn nominal cutoff grade. The preparation of indicative level plans and an ore (DSL) dilution model has commenced.

A preliminary report by Golders & Associates on explosive requirements and drilling and blasting techniques has been received.

4. Metallurgy

Metallurgical testing on samples from the surface trenching programme continued during the period. Final results are now expected in May.

Four additional DSL variability tests are being undertaken to provide further metallurgical characteristics on the major ore blocks in the area 1040E to 1080E. Metallurgical performance varied widely on previously tested samples spaced at 20 m easterly but were reasonably consistent vertically.

The current programme will endeavour to test the north/south variability of the zone.

A similar programme to assess the variability of the porphyry is being undertaken. Twelve samples are involved representing:

- (a) porphyry within the proposed open pit
- (b) Stanhope Dyke porphyry
- (c) porphyry composites MCD and MCF.

The diamond core intersects selected will provide a reasonable coverage of the current open pit Porphyry Geological Ore Reserve.

5. Engineering

An economic evaluation of the Stage III Report was completed. Sensitivity studies on variations to the Stage III Report criteria were studied and included within the Stage III Economic Evaluation Report.

6. Budgets

A revised provisional operating budget plan and expenditure for the two month period May and June, 1982, was submitted to the April 30th Mount Bischoff Joint Venture Operating Committee for approval.

A provisional operating budget plan and expenditure for the six month period July to December, 1982, was submitted to the April 30th Mount Bischoff Joint Venture Operating Committee for approval.

Copies of both provisional budget plan and expenditure is included within appended information.

7. Stage III Report

The Stage III Report was completed and distributed.

The Economic Evaluation of the Stage III Report, together with a requirement to incorporate geological and assay data from recent trenching and diamond and reverse circulation drilling programmes, prompted the need to schedule a Stage IV Evaluation Study in which parameters considered within the Stage III Report will be updated or semi-optimised.

The Stage IV Evaluation Study will form the basis for recommending the nature and scope of a Definitive Feasibility Study.

APPENDED INFORMATION

1. Project Expenditure Details
2. Joint Venture Asset Statement
3. Assays
4. Revised May and June, 1982 Budget Plan and Expenditure
5. July to December, 1982 Budget Plan and Expenditure

MT BISCHOFF JOINT VENTURE

	<u>April 1982</u>		<u>YTD April</u>		<u>6 Months to</u>
					<u>June 1982</u>
	<u>Actual</u>	<u>Budget</u>	<u>Actual</u>	<u>Budget</u>	<u>Budget</u>
	<u>\$000</u>		<u>\$000</u>		<u>\$000</u>
Administration	33	17	92	90	134
Geology	70	20	169	148	181
Mining	8	15	21	72	106
Metallurgy	6	7	51	57	67
Engineering	5	32	27	77	239
Commercial	1	3	2	17	29
	<u>123</u>	<u>94</u>	<u>362</u>	<u>461</u>	<u>756</u>
M.E.L. SHARE 40%	49	38	144	184	302

SUMMARY OF EXPENDITURE TO 30. 4.82

	<u>CURRENT PERIOD</u>	<u>ACCUMULATIVE</u>
	<u>\$000</u>	<u>\$000</u>
Stage 1		270
Stage 2A - Early Start		29
Stage 2A		199
Overruns: Stage 1 - M.E.L.		11
Metallurgical - C.R.A.E.		24
Stage 2B		482
Stage 2B - 3A Holding Costs Offset - A.I.R. & D.		40
Stage 3A - Partly offset by A.I.R. & D Grant Rec. June 1981 \$6,500		861
Stage 3B - Partly offset by A.I.R. & D Grant Rec. July 1981 \$25,863		674
Stage 4 -	<u>123</u>	<u>362</u>
<u>ACCUMULATIVE EXPENDITURE TO DATE</u>	<u>123</u>	<u>2,952</u>

MT BISCHOFF JOINT VENTURE

	<u>April 1982</u>		<u>YTD April</u>		<u>6 Months to</u> <u>June 1982</u>
	<u>Actual Budget</u>		<u>Actual Budget</u>		<u>Budget</u>
		<u>\$000</u>		<u>\$000</u>	<u>\$000</u>
<u>ADMINISTRATION</u>					
Technical Services	24	15	74	82	117
Consumables	2	1	10	4	12
Travel	7	1	8	4	5
	<u>33</u>	<u>17</u>	<u>92</u>	<u>90</u>	<u>134</u>
<u>GEOLOGY</u>					
Technical Services	12	13	26	46	68
Labour	3	1	8	4	5
Consumables	4	1	8	15	18
Accommodation	1	1	2	4	6
Vehicles	1	1	3	3	5
Travel	-	1	1	2	3
Contractors	24	-	87	54	54
Consultants	25	2	34	20	21
	<u>70</u>	<u>20</u>	<u>169</u>	<u>148</u>	<u>181</u>
<u>MINING</u>					
Technical Services	8	10	11	47	70
Consumables	-	1	2	2	4
Travel	-	-	-	1	2
Consultants	-	4	8	22	30
	<u>8</u>	<u>15</u>	<u>21</u>	<u>72</u>	<u>106</u>
<u>METALLURGY</u>					
Technical Services	6	2	36	23	32
Consumables	-	.5	1	3	3
Travel	-	.5	1	7	7
Contractors	-	2	12	20	20
Consultants	-	2	1	4	5
	<u>6</u>	<u>7</u>	<u>51</u>	<u>57</u>	<u>67</u>
<u>ENGINEERING</u>					
Technical Services	4	7	24	26	42
Consumables	-	.5	-	2	2
Travel	-	3	-	9	12
Contractors	-	20	1	30	170
Consultants	1	1.5	2	10	13
	<u>5</u>	<u>32</u>	<u>27</u>	<u>77</u>	<u>239</u>
<u>COMMERCIAL</u>					
Technical Services	1	2	2	12	17
Consumables	-	.5	-	4	9
Travel	-	.5	-	1	3
	<u>1</u>	<u>3</u>	<u>2</u>	<u>17</u>	<u>29</u>
TOTAL	<u>123</u>	<u>94</u>	<u>362</u>	<u>461</u>	<u>756</u>

MT BISCHOFF PROJECTCUMULATIVE CAPITAL EXPENDITURE

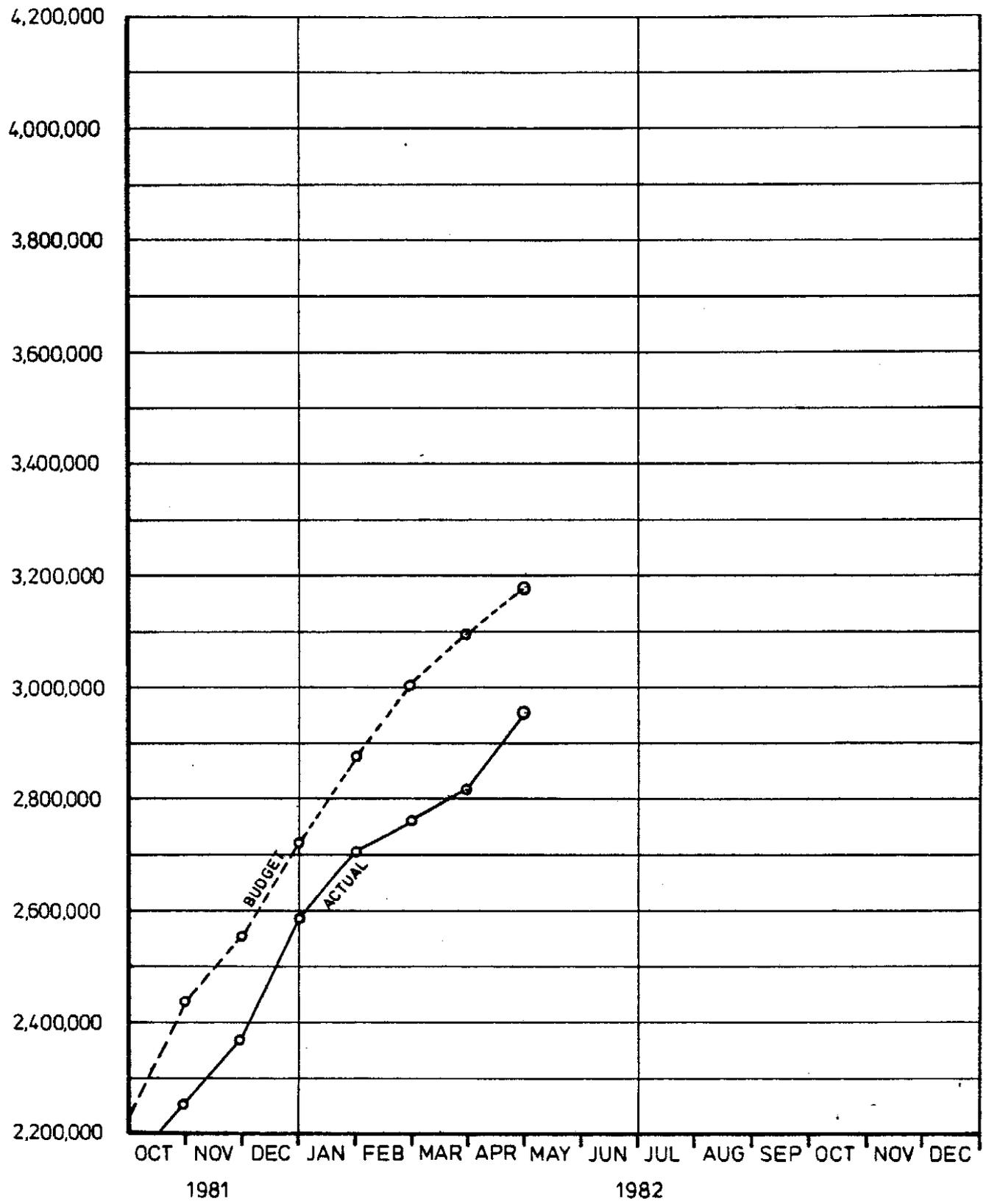
	<u>AS AT</u> <u>31/ 3/82</u>	<u>APRIL 1982</u> <u>EXPENDITURE</u>	<u>AS AT</u> <u>30/ 4/82</u>
STAGE 1 & 2 Core Shed	\$15,295	-	\$15,295
Concrete Foundations	\$ 2,100	-	\$ 2,100
	<u>\$17,395</u>		<u>\$17,395</u>
STAGE 3A Core Shed	\$ 8,660	-	\$ 8,660
Accommodation Unit	\$32,500	—	\$32,500
TOTAL	<u>\$58,555</u>	—	<u>\$58,555</u>

Beneficial Ownership - As at 31st December, 1981.

C.R.A. $51 \times \frac{100}{85} = 60\%$

M.E.L. $34 \times \frac{100}{85} = 40\%$

\$



CUMULATIVE EXPENDITURE SCHEDULE

MT. BISCHOFF PROJECT

SUMMARY
as at ..APRIL.. 82 ..

Drg No. T/T64

SAMPLE NO.	SAMPLE NO	FROM	TO	INTER VAL	Sn	Sn	Cu		Zn	g	W	Au	Check Sn	WEIGHT KG.
SPLIT CORE	GROUND CORE	m	m	m	SPLIT	GROUND								
145107	*	0.0	1.0	1.0	290									3.7
145105	*	1.0	2.0	1.0	40									4.4
6	*	2.0	3.0	1.0	35									5.0
7	*	3.0	4.0	1.0	50									5.7
8	*	4.0	5.0	1.0	500									5.0
9	*	5.0	6.0	1.0	2800									4.6
10	*	6.0	7.0	1.0	2850									4.1
1	*	7.0	8.0	1.0	2900									2.5
2	*	8.0	9.0	1.0	7600									4.3
3	*	9.0	10.0	1.0	3.65% **									4.0
4	*	10.0	11.0	1.0	2.10% **									4.9
5	*	11.0	12.0	1.0	9.5% ****									4.9
6	*	12.0	13.0	1.0	3200									4.1
145150	*	13.0	14.0	1.0	7700 **		8000 ***							2.4
1	*	14.0	15.0	1.0	1800									3.1
2	*	15.0	16.0	1.0	50									2.7
3	*	16.0	17.0	1.0	690									2.4
4	*	17.0	18.0	1.0	180									2.0
5	*	18.0	19.0	1.0	140									2.6

656099

Notes: * WEIGHT KG.

402 METHOD
 ** TO BE CONFIRMED
 *** APPROX. VALUE ONLY

*** CONFIRMED
 RESULT
 DETECTION
 DIGESTION
 METHOD 402

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT
 ASSAY SUMMARY SHEET HOLE NO. MBR 6

SAMPLE TYPE : DRILL CORE FROM 0.0 TO 17.0

N & SPLIT

SAMPLE NO.	SAMPLE NO	FROM	TO	INTER VAL	Sn	Sn	Cu	Pb	Zn	g	W	Au	Check Sn	WEIGHT KG
SPLIT CORE	GROUND CORE	m	m	m	SPLIT	GROUND								
145191		1.0	2.0	1.0	95									1.2
2		2.0	3.0	1.0	85									5.3
3		3.0	4.0	1.0	200									4.0
4		4.0	5.0	1.0	1600									5.0
145157	*	5.0	8.0	3.0	160									0.3
8	*	8.0	11.0	3.0	2250									0.6
9	*	12.1	16.0	3.9	x									1.4
60	*	16.0	17.0	1.0	30									1.5
1	*	17.0	18.0	1.0	50									2.5
2	*	18.0	19.0	1.1	20									0.9
3	*	19.1	20.1	1.0	130									2.2
4	*	20.1	21.1	1.0	140									2.0
5	*	21.1	22.1	1.0	110									2.5
145166	*	22.1	23.1	1.0	120									2.2
7	*	23.1	24.1	1.0	130									2.3

Notes: - 402 METHOD
* WEIGHT KG.

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT
ASSAY SUMMARY SHEET HOLE NO. MBR 7

SAMPLE TYPE : DRILL CORE FROM 1.0 TO 24.1
NO SPLIT

656100

SAMPLE NO.	SAMPLE NO	FROM	TO	INTER .VAL	n	Sn	Cu	Pb	Zn	W	Au	Check Sn	WEIGHT Kg.
SPLIT CORE	GROUND CORE	m	m	m	SPLIT	GROUND							
145137	*	0.0	1.0	1.0	180								5.2
8	*	1.0	2.0	1.0	30								5.3
9	*	2.0	3.0	1.0	100								5.3
40	*	3.0	4.0	1.0	610								5.5
1	*	4.0	5.0	1.0	260								5.2
2	*	5.0	6.0	1.0	20								6.2
3	*	6.0	7.0	1.0	15								5.1
4	*	7.0	8.0	1.0	40								7.0
5	*	8.0	9.0	1.0	15								5.8
6	*	9.0	10.0	1.0	15								7.2
7	*	10.0	11.0	1.0	170								6.5
8	*	11.0	12.0	1.0	190								7.5
9	*	12.0	13.0	1.0	1850								3.1
145172	*	13.0	14.0	1.0	170								0.5
3	*	14.0	15.25	1.25	45								0.5
4	*	15.25	15.8	0.55	65								0.5
5	*	15.8	16.95	1.15	170								0.8
6	*	16.95	17.9	0.95	120								2.3
7	*	17.9	18.3	0.4	130								1.0
8	*	18.3	18.7	0.4	90								0.8
9	*	18.7	19.4	0.7	55								1.6
80	*	19.4	20.95	1.55	40								4.1

Notes: - * WEIGHT KG.
402 METHOD

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT
ASSAY SUMMARY SHEET HOLE NO. MBR 10
SAMPLE TYPE : DRILL CORE FROM 0.0 TO 20.95
NO SPLIT

656102

SAMPLE NO.	SAMPLE NO	FROM	TO	INTER .VAL		Sn	Cu	Pb	Zn	W	Au	Check Sn	Bulked Assays
SPLIT CORE	GROUND CORE	m	m	m	SPLIT	GROUND							
145062		30.0	31.0	1.0	720								
145063		31.0	32.0	1.0	1250								
64		32.0	33.0	1.0	130								
65		33.0	34.0	1.0	280								
66		34.0	35.0	1.0	100								
67		35.0	36.0	1.0	140								
68		36.0	37.0	1.0	850								
69		37.0	38.0	1.0	3850								
145070		38.0	39.0	1.0	8650								
71		39.0	40.0	1.0	450								
72		0.6	1.0	0.4	*1069								
73		40.0	41.0	1.0	180								
74		41.0	42.0	1.0	80								
75		42.0	43.0	1.0	40								
76		43.0	44.0	1.0	40								
77		44.0	45.0	1.0	35								
78		45.0	46.0	1.0	30								
79		46.0	47.0	1.0	50								
145080		47.0	48.0	1.0	310								
81		48.0	49.0	1.0	950								
82		49.0	50.0	1.0	25								
83		50.0	51.0	1.0	75								
84		51.0	52.0	1.0	95								
85		52.0	53.0	1.0	40								
86		53.0	54.0	1.0	40								
87		54.0	55.0	1.0	40								
88		55.0	56.0	1.0	60								
89		56.0	57.0	1.0	80								
145090		57.0	58.0	1.0	40								
91		58.0	59.0	1.0	25								

Notes: -
 XRF BY METHOD
 * FIRST SAMPLE

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT
 ASSAY SUMMARY SHEET HOLE NO. MBD 134

SAMPLE TYPE : DRILL CORE FROM 30.0 TO 59.0
 NQ SPLIT

656103

SAMPLE NO.	SAMPLE NO	LINE	NO. OF SACS	INTE. VAL	Sn	Sn	Cu	CONF. RESULTS	Zn	W	Au	Check Sn	Bulked Assays
	GROUND CORE	m	m	m	SPLIT	GROUND							
145780		1000E	2030N		1.0%	* Y		1.30%	**				
81		"	2032N		1.0%	*		1.20%	**				
82		"	2034N		6700								
83		"	2036N		1.1%	*		1.30%	**				
84		"	2038N		540								
85		"	2040N		4850								
86		"	2042N		9300	*		1.00%	**				
87		"	2044N		2750								
88		"	2046N		8100								
89		"	2048N		390								
145790		"	2050N		4250	*							
91		"	2052N		910								
92		"	2054N		200								
93		"	2056N		170								
94		"	2058N		3700	*							
95		"	2060N		5900								
96		"	2062N		3300								
97		"	2064N		2550								
98		"	2066N		2200								
99		"	2068N		6300								
145800		"	2080N		2200								
01		"	2082N		1450	*							
02		"	2084N		220								
03		"	2086N		650								
04		"	2088N		120								
05		"	2090N		980								
06		"	2092N		1600								
07		"	2094N		1100								
08		"	2096N		470								
09		"	2098N		6000								

Notes:—

XRF BI METHOD

* TO BE CONFIRMED
 ** CONFIRMED RESULTS - DETECTION 3 DIGESTION METHOD 402

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT

ASSAY SUMMARY SHEET HOLE NO.

SAMPLE TYPE : DRILL CORE

FROM 2030N TO 2098N

SURFACE SAMPLES 1000E

656106

SAMPLE NO.	SAMPLE NO	LINE	PORTIONS	INTERVAL	Sn	Sn	Cu	COMP. RESULT	Zn	W	Au	Check Sn	Bulked Assays
GROUND CORE	GROUND CORE	m	m	m	SPLIT	GROUND							
145827		1020E	2084N		1750								
145830		"	2086N		1.1%	*		1.25%	**				
31		"	2088N		9900	*		1.20%	**				
32		"	2090N		1000								
33		"	2092N		4500								
34		"	2094N		3500								
35		"	2096N		1600								
36		"	2098N		2250								
37		"	2100N		2850	*							
38		"	2042N		790								
39		"	2044N		9050								

Notes:-

XRF BI METHOD

* TO BE CONFIRMED

** CONFIRMED RESULTS - DETECTION 3
DIGESTION METHOD 402

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT
ASSAY SUMMARY SHEET HOLE NO.

SAMPLE TYPE : DRILL CORE

FROM 2084N TO 2100N

SURFACE SAMPLES 1020E

656108

SAMPLE NO.	SAMPLE NO	LINE	NO. OF HOLE	INT. - VZ	Sn	Sn	Cu	CONF. RESULTS	Zn	W	Au	Check Sn	Bulked Assays
GROUND CORE				m	LIT	GROUND							
131157		1020E	2042N		1100								
58			2044N		840								
59			2046N		5800								
145811		1020E	2042N		1.0%	* *		1-22%	**				
12		"	2044N		1600								
13		"	2046N		15								
14		"	2048N		3000	x							
15		"	2050N		930								
16		"	2052N		1050								
17		"	2054N		1100								
18		"	2056N		4600								
19		"	2058N		4.6%	* *		6.00%	**				
145820		"	2060N		330								
21		"	2062N		280								
22		"	2064N		230								
23		"	2066N		3500								
24		"	2068N		1700								
25		"	2070N		1700								
26		"	2072N		550								
27		"	2074N		150								
28		"	2076N		2550	x							

Notes: - XRF BI (NCHX)

* TO BE CONFIRMED
 ** CONFIRMED RESULT - DETECTION 3
 DIGESTION METHOD 402

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT
 ASSAY SUMMARY SHEET HOLE NO.

SAMPLE TYPE : DRILL CORE

FROM 2022N TO 2066N
 2042N TO 2076N

656109

AMPLE NO.	SAMPLE NO	LINE	NORTH- ING	INTER VAL	Sn	Cu	CONF. RESULTS	Zn	Ag	W	Au	Check Sn	Bulked Assays
FACE SAMPL.	GROUND CORE			m	SPLIT	GROUND							
45840		1040E	2046N		5400	*							
41		"	2048N		6700								
42		"	2050N		3200								
43		"	2052N		8200	*							
44		"	2054N		900								
45		"	2056N		880								
46		"	2058N		2600								
47		"	2060N		640								
48		"	2062N		840								
49		"	2064N		430								
45850		"	2066N		9300	*							
51		"	2068N		1.2%	*	1.65%	**					
52		"	2070N		3600								
53		"	2072N		8600								
54		"	2074N		4050								
55		"	2076N		1050								
56		"	2078N		3150								
57		"	2080N		7300								
58		"	2082N		7850								
59		"	2084N		7050								
45860		"	2086N		2350								
61		"	2088N		2900								
62		"	2090N		740								
63		"	2092N		3600								
64		"	2094N		5100								
65		"	2096N		280								
66		"	2098N		5650								
67		"	2100N		3400	*							

Notes:—
 XRF BI METHOD
 * TO BE CONFIRMED
 ** CONFIRMED RESULT - DETECTION 3
 DIGESTION METHOD 403

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT
 ASSAY SUMMARY SHEET HOLE NO.
 SAMPLE TYPE : DRILL CORE FROM 2046N TO 2100N

SURFACE SAMPLES 1040E

656110

SAMPLE NO.	SAMPLE NO	LINE	NORTH- ING	INTER- VAL	Sn	Sn	Cu	CONF. RESULTS	Zn	Ag	W	Au	Check Sn	Bulked Assays
SURFACE SAM.	GROUND CORE			m	SPLIT	GROUND								
145868		1060E	2060N		1.3%	*		1.58%	**					
9		"	2062N		2250									
145870		1060E	2064N		1.14%	†								
71		"	2066N		6900									
72		"	2068N		7000									
73		"	2070N		5100									
74		"	2072N		2.00%									
75		"	2074N		200									
76		"	2076N		2800									
77		"	2078N		2250									
78		"	2080N		1.10%									
79		"	2082N		2900									
145880		"	2084N		2350									
81		"	2086N		2850									
82		"	2088N		4300									
83		"	2090N		1150									
84		"	2092N		7200									
85		"	2094N		960									
86		"	2096N		460									
87		"	2098N		2300									
88		"	2100N		1600	†								

Notes:—

XRF BI METHOD

* TO BE CONFIRMED

** CONFIRMED RESULT - DETECTION 3
DIGESTION METHOD 402

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT

ASSAY SUMMARY SHEET HOLE NO.

SAMPLE TYPE: DRILL CORE

FROM 2060N TO 2100 N

SURFACE SAMPLES 1060E

656111

SAMPLE NO.	SAMPLE NO	LINE	NORTHING	INT. VA.	Sn	Cu	Pb	Zn	W	Au	Check Sn	Bulked Assays
	GROUND CORE			m	LIT	GROUND						
147664		1100E	2002N		3250							
65		"	2004N		80							
66		"	2006N		26							
67		"	2008N		100							
68		"	2010N		1850							
69		"	2012N		2250							
70		"	2014N		6500							
71		"	2016N		7800							
72		"	2018N		320							
73		"	2020N		370							
74		"	2022N		1600							
75		"	2024N		310							
76		"	2026N		8500							
77		"	2028N		120							
78		"	2030N		85							
79		"	2032N		0							
80		"	2034N		420							
81		"	2036N		4200							
82		"	2038N		250							
83		"	2040N		2600							
145829		1100E	2040N		4200							
145890		"	2042N		630							
91		"	2044N		480							
92		"	2046N		1500							
93		"	2048N		6150							
94		"	2050N		500							
95		"	2052N		880							
96		"	2054N		6250							
97		"	2056N		730							

Notes: - XRF Bimethod

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT
 ASSAY SUMMARY SHEET HOLE NO.

SAMPLE TYPE : DRILL CORE FROM 2002N TO 2056N

211000

SAMPLE NO.	SAMPLE NO	LINE	POSITION	INTER. VA.	Sn	Sn	Cu	Zn	W	Au	Check Sn	Bulked Assays
SAMPLE NO.	GROUND CORE			m	SPLIT	GROUND						
143749		1120E	1956N		360							
45		"	1958N		60							
46		"	1960N		36							
47		"	1962N		95							
48		"	1964N		500							
49		"	1966N		600							
750		"	1968N		880							
51		"	1970N		390							
52		"	1972N		860							
53		"	1974N		640							
54		"	1976N		600							
55		"	1978N		1450							
56		"	1980N		2200							
145900		1120E	1980N*		2950							
01		"	1982N*		740							
02		"	1984N*		85							
03		"	1986N*		2350	*						
04		"	1988N*		1100		0.9					
05		"	1990N*		2600							
06		"	1992N*		3.20%*		5.75%**					
07		"	1994N*		460							
08		"	1996N*		200							
09		"	1998N*		360							
910		"	2000N*		1350	*						
11		"	2002N*		2050							
12		"	2004N*		3900	*						
13		"	2006N*		520							
14		"	2008N*		170							
15		"	2010N*		530							

Notes: - XRF BI Method

XRF A14 METHOD

* TO BE CONFIRMED

** CONFIRMED RESULT

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT

ASSAY SUMMARY SHEET HOLE NO.

SAMPLE TYPE : DRILL CORE

FROM 1956N TO 2010N

SURFACE SAMPLES 1120E

656114

SAMPLE NO.	SAMPLE NO	LINE	NORTH- ING	INTER VAL	Sn	Cu	CONF. RESULTS	Zn	A	W	Au	Check Sn	Bulked Assays
<i>SURFACE SAMPLES</i>	GROUND CORE			m	SPLIT	GROUND							
145916		1120E	2012N		1100								
17		"	2014N		1100								
18		"	2016N		1050								
19		"	2018N		890								
20		"	2020N		820								
21		"	2022N		3200								
22		"	2024N		140								
23		"	2026N		1350								
24		"	2028N		110								
25		"	2030N		210								
26		"	2032N		660								
27		"	2034N		660								
28		"	2036N		910								
29		"	2038N		530								
930		"	2040N		2400	*							
31		"	2042N		2750	*							

Notes:— XRF A14 METHOD

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT
ASSAY SUMMARY SHEET HOLE NO.

SAMPLE TYPE : DRILL CORE FROM 2012N TO 2042N

SURFACE SAMPLES 1120E

656115

SAMPLE NO.	SAMPLE NO	LINE	NORTH- ING	INTER- VAL	Sn	Cu	CONF. RESULTS	Zn	Al	W	Au	Check Sn	Bulked Assays
<i>SURFACE SAMPLES</i>	GROUND CORE			m	SPLIT	GROUND							
145984		1120E	2215N		9500	* *	1.10%						
85		"	2217N		2100								
86		"	2219N		1.83%	*	2.05%						
87		"	2221N		6550								
88		"	2223N		890								
89		"	2225N		4500								
145990		1120E	2227N		1.00%	*	1.20%						
91		"	2229N		4700								
92		"	2231N		1700								
93		"	2233N		2000								
94		"	2235N		3800								
95		"	2237N		2500	x							
96		"	2239N		310								
97		"	2241N		440								
98		"	2243N		2050								
99		"	2245N		240								

Notes:—

XRF A14 METHOD
* TO BE CONFIRMED

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT

ASSAY SUMMARY SHEET HOLE NO.

SAMPLE TYPE : DRILL CORE

FROM 2215N TO 2245N

SURFACE SAMPLES 1120E

650116

AMPLE NO.	SAMPLE NO	LINE	NORTH- TNG	INTER- VAL	n Sn		Cu	CONF. RESULTS	Zn	P	N	Au	Check Sn	Bulked Assays
					SPLIT	GROUND								
145	932	1140E	1980N		2350	*								
	33	"	1982N		2050									
	34	"	1984N		950									
	35	"	1986N		920									
	36	"	1988N		1150									
	37	"	1990N		2000									
	38	"	1992N		1050	*								
	39	"	1994N		120									
	40	"	1996N		110									
	41	"	1998N		90									
	42	"	2000N		270									
	43	"	2002N		4750	*								
	44	"	2004N		190									
	45	"	2006N		1.15%	*		1.25%**						
	46	"	2008N		900									
	47	"	2010N		1300									
	48	"	2012N		850	*								
	49	"	2014N		200									
	450	"	2016N		300									
	51	"	2018N		2450	*								
	52	"	2020N		1400									
	53	"	2022N		570									
	54	"	2024N		2600									
	55	"	2026N		1650									
	56	"	2028N		3300									
	57	"	2030N		680									
	58	"	2032N		1500									
	59	"	2034N		590									
	460	"	2036N		3550	*								

Notes:—

XRF 1/14 METHOD

* TO BE CONFIRMED ** CONFIRMED RESULT

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT

ASSAY SUMMARY SHEET HOLE NO.

SAMPLE TYPE: DRILL CORE

FROM 1980N TO 2036N

SURFACE SAMPLES 1140E

656117

AMPLE NO.	SAMPLE NO	LINE	NORTH- ING	INTER VAL	Sn	Sn	Cu	CONF. RESULTS	Zn	Pb	W	Au	Check Sn	Bulked Assays
	GROUND CORE			m	SPLIT	GROUND								
146000		1140E	2215N		5400	Y								
1		"	16N		1550									
2		"	19N		330									
3		"	21N		2950									
4		"	23N		1.10%			1.25%						
5		"	25N		610									
6		"	27N		230									
7		"	29N		15									
8		"	31N		250									
9		"	33N		180									
10		"	35N		240									
1		"	37N		6700	Y								
2		"	39N		4500									
3		"	41N		3700									
4		"	43N		6900									
5		"	45N		2750	Y								

Notes:—

XRF A14 METHOD

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT

ASSAY SUMMARY SHEET HOLE NO.

SAMPLE TYPE : DRILL CORE

FROM 2215N TO 2245N

SURFACE SAMPLES 1140E

656118

AMPLE NO.	SAMPLE NO	LINE	NORTH- INC	INTER VAL	S	Sn	Cu	CONF. RESULTS	Zn	Ag	W	Au	Check Sn	Bulked Assays
SURFACE SAMPLES		GROUND CORE		m	SPLIT	GROUND								
145961		1160G	2190N		2100									
62		"	2192N		190									
63		"	2194N		710									
64		"	2196N		4150									
65		"	2198N		320									
66		"	2200N		330									
67		"	2202N		920									
68		"	2204N		2000									
69		"	2206N		120									
970		"	2208N		80									
71		"	2210N		75									
72		"	2212N		810									
73		"	2214N		500									
74		"	2216N		1500									
75		"	2218N		1200									
76		"	2220N		3050	*								
77		"	2222N		1900									
78		"	2224N		2400	*								
79		"	2226N		20									
980		"	2228N		1050									
81		"	2230N		1700									
82		"	2232N		1050									
83		"	2234N		4250									

Notes: —
XRF. A14 METHOD

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT
ASSAY SUMMARY SHEET HOLE NO.

SAMPLE TYPE: DRILL CORE FROM 2190N TO 2234N

SURFACE SAMPLES 1160G

656119

MOUNT BISCHOFF TIN COMPANY

BUDGET PLAN AND EXPENDITURE

MAY AND JUNE 1982

Submission to April 30th, 1982
Mount Bischoff Joint Venture
Operating Committee

1. BACKGROUND

Reference minutes Mt Bischoff Operating Committee meeting of 17th December, 1981.

Item 4. Expenditure

quote "it was raised by MEX and subsequently agreed, to agree to the budget to end of February 1982 of \$270,000 and review the later period in mid January" unquote.

Reference Mt Bischoff Operating Committee meeting of 19th February, 1981.

The March budget was approved. The procedure for approving the April budget was not finalised although no formal agreement to the proposed April budget was received.

It has subsequently been agreed to submit to the April 30th Mt Bischoff Operating Committee meeting a revised budget for the May to June 1982 period.

The Stage III Report summarizing results as at December 31st, 1981, was submitted on 5th April, 1982.

2. STRATEGY

Semi optimize parameters within the Stage III Report to determine whether (at this point in time) a Definitive Feasibility Study is justified.

Financial evaluations and, if applicable, the scope of the Definitive Feasibility Study to be presented within a Stage IV Evaluation Study.

Essential project activities only will be undertaken.

The reverse circulation drilling programme currently in progress has been shortened. Only those holes within the immediate vicinity of the proposed pit will be drilled. Programme will be modified as progressive results become available.

Peripheral and longer term activities will, wherever possible, be frozen pending a decision following the Stage IV Evaluation Study.

3. TACTICS

3.1 Geology

- . Complete logging and sample preparation of recent diamond drill and reverse circulation drilling programme.
- . Compute definitive geological ore reserves inclusive of
 - (a) results from recent drilling programme
 - (b) interpretation arising from new surface geological mapping (eg. trenches).

The updated geological ore reserves will be based on various mineralization cutoff boundaries and will be illustrated via cross sections, long sections and level plans.

- . Identify and delineate ore zones in reference to metallurgical ore type classifications.

3.2 Mining

- (a) preliminary ultimate pit design inclusive of breakeven grade and mining cutoff grade; waste to ore ratio, etc.
- (b) semi optimum DSL and Porphyry annual production schedules inclusive of mining method, dilution, etc.
- (c) subsequent annual mining capital and operating cost estimates.

3.3 Metallurgy

- . Continue metallurgical test work associated with
 - (a) surface trench samples
 - (b) completion of DSL and porphyry variability testwork
- . Metallurgical testing of reverse circulation drilling samples
- . Review (with engineering) plant design and capacity economics.
- . redefine metallurgical parameters as consequence of geological, mining and engineering reviews, eg. DSL/Porphyry ratio, annual production, modified flow sheet, ore types, concentrate specification, etc.

3.4 Engineering

- . Prepare submission to Comstaff/Preussag seeking approval for a major time extension.
- . Re-establish economic rational for
 - (a) construction and operation of leach plant
 - (b) construction and operation of porphyry preconcentrator
 - (c) concentrator capacity
 - (d) ratio of DSL to Porphyry
 - (e) concentrates produced and mixas reflected within the Stage III Report.
- . Briefly review economic impact on plant design and concentrate specifications should a Tin Fumer become available within Tasmania.
- . Undertake financial evaluations for inclusion within the Stage IV Evaluation Study.

MOUNT BISCHOFF TIN COMPANY

MAY - JUNE 1982 BUDGET SUMMARY

	<u>Budget</u> <u>Jan/April 82</u> <u>\$</u>	<u>Expenditure</u> <u>as at</u> <u>March 31st 82</u> <u>\$</u>	<u>Brought</u> <u>Forward</u> <u>\$</u>	<u>May</u> <u>\$</u>	<u>June</u> <u>\$</u>	<u>Total</u> <u>\$</u>
01 ADMINISTRATION	90000	46000	44000	17160	17760	34920
02 GEOLOGY	145800	99000	46800	30015	25770	55785
03 MINING	68000	13000	55000	13560	10420	23980
04 METALLURGY	34570	45000	9570	14210	5960	20170
05 ENGINEERING	77000	22000	55000	6698	6336	13034
06 COMMERCIAL/LEGAL	17000	1000	16000	4500	5000	9500
TOTAL	452370	226000	226370	86143	71246	157389
plus overruns from 1981			40400			
less inappropriate activities			54000			
			Total			
			212770	86143	71246	157389
		Distribution 40%	85108	34457	28498	62956
		60%	127662	51686	42748	94433

MOUNT BISCHOFF TIN COMPANY

MAY - JUNE 1982 BUDGET

	<u>Budget</u> <u>Jan/April 82</u> <u>\$</u>	<u>Expenditure</u> <u>as at</u> <u>March 31st 82</u> <u>\$</u>	<u>Brought</u> <u>Forward</u> <u>\$</u>	<u>May</u> <u>\$</u>	<u>June</u> <u>\$</u>	<u>Total</u> <u>\$</u>	<u>Comments</u>
01 ADMINISTRATION							
01 Technical Services							
Project Manager				9450	9900	19350	
Secretary				3150	3300	6450	
Operating Committee Secretary				900	900	1800	
Accounting Officer				800	800	1600	
Titles Officer				360	360	720	
Total	82300	37000	45300	14660	15260	29920	
03 General Expenses & Consumables							
Office Expenses				1500	1500	3000	
Total	4000	8000	(4000)	1500	1500	3000	
06 Travel							
Visit Site				500	500	1000	
Other				500	500	1000	
Total	3700	1000	2700	1000	1000	2000	
TOTAL ADMINISTRATION	90000	46000	44000	17160	17170	34920	

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MAY - JUNE 1982 BUDGET

	Budget Jan/April 82 \$	Expenditure as at March 31st 82 \$	Brought Forward \$	May \$	June \$	Total \$	Comments
02 GEOLOGY							
01 Technical Services							
D. Simpson				5880	3130	9010	Two weeks' leave
D. Reid				4200	4400	8600	
Total	46240	14000	32240	10080	7530	17610	
02 Labour							
N. Housego				1050	1100	2150	
M. Prouse				945	990	1935	
Total	3850	5000	(1150)	1995	2090	4085	
03 General Expenses & Consumables							
Sample bags & boxes				500	500	1000	
Sample freight				1000	1000	2000	
Site draughting supplies				250	250	500	
Equipment rental				150	150	300	MEX/DMP
Site office rental				400	400	800	
Power/Plane				-	600	600	Site Offices
Total	14610	4000	10610	2300	2900	5200	
04 Accommodation							
Messing				400	400	800	
Telephone				-	200	200	Camp
Power				-	300	300	Camp
Housing subsidy				280	280	560	Simpson
Other (incl. maintenance)				250	250	500	
Total	4100	1000	3100	930	1430	2360	
05 Vehicles							
Fuel & Servicing				400	400	800	
Hire				500	500	1000	
Total	3400	2000	1400	900	900	1800	
06 Travel							
Visit Melbourne				250	500	750	Simpson
Visit Site				500	-	500	Jannink
Other				-	1000	1000	Reid
Total	1800	1000	800	750	1500	2250	

656126

MAY - JUNE 1982 BUDGET

	<u>Budget</u> <u>Jan/April 82</u> <u>\$</u>	<u>Expenditure</u> <u>as at</u> <u>March 31st 82</u> <u>\$</u>	<u>Brought</u> <u>Forward</u> <u>\$</u>	<u>May</u> <u>\$</u>	<u>June</u> <u>\$</u>	<u>Total</u> <u>\$</u>	<u>Comments</u>
02 GEOLOGY							
01 Technical Services							
D. Simpson				5880	3130	9010	Two weeks' leave
D. Reid				4200	4400	8600	
Total	46240	14000	32240	10080	7530	17610	
02 Labour							
N. Housego				1050	1100	2150	
M. Prouse				945	990	1935	
Total	3850	5000	(1150)	1995	2090	4085	
03 General Expenses & Consumables							
Sample bags & boxes				500	500	1000	
Sample freight				1000	1000	2000	
Site draughting supplies				250	250	500	
Equipment rental				150	150	300	MEX/DMP
Site office rental				400	400	800	
Power/Plane				-	600	600	Site Offices
Total	14610	4000	10610	2300	2900	5200	
04 Accommodation							
Messing				400	400	800	
Telephone				-	200	200	Camp
Power				-	300	300	Camp
Housing subsidy				280	280	560	Simpson
Other (incl. maintenance)				250	250	500	
Total	4100	1000	3100	930	1430	2360	
05 Vehicles							
Fuel & Servicing				400	400	800	
Hire				500	500	1000	
Total	3400	2000	1400	900	900	1800	
06 Travel							
Visit Melbourne				250	500	750	Simpson
Visit Site				500	-	500	Jannink
Other				-	1000	1000	Reid
Total	1800	1000	800	750	1500	2250	

MOUNT BISCHOFF TIN COMPANY

MAY - JUNE 1982 BUDGET

	<u>Budget</u> <u>Jan/April 82</u> \$	<u>Expenditure</u> <u>as at</u> <u>March 31st 82</u> \$	<u>Brought</u> <u>Forward</u> \$	<u>May</u> \$	<u>June</u> \$	<u>Total</u> \$	<u>Comments</u>
07 Contractors							
Assays				1500	1500	3000	Reverse Circulation
Total	53800	63000	(9200)	1500	1500	3000	Drilling
08 Consultants							
Geophysical				-	-	-	
Geological - Jannink				4000	-	4000	G O R
N. Langsford				7560	7920	15480	Surface mapping/Logs
Total	18000	9000	9000	11560	7920	19480	
 TOTAL GEOLOGY	 145800	 99000	 46800				
 plus overrun from 1981							
Australian Mineral Laboratory			2160				
Parry Drilling Co.			28600				
Fagan			9640				
Total			40400				
Yields			86200	30015	25770	55785	

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MOUNT BISCHOFF TIN COMPANY

MAY - JUNE 1982 BUDGET

	<u>Budget</u> <u>Jan/April 82</u> <u>\$</u>	<u>Expenditure</u> <u>as at</u> <u>March 31st 82</u> <u>\$</u>	<u>Brought</u> <u>Forward</u> <u>\$</u>	<u>May</u> <u>\$</u>	<u>June</u> <u>\$</u>	<u>Total</u> <u>\$</u>	<u>Comments</u>
03 MINING							
01 Technical Services							
Project Mining Engineer				7560	7920	15480	- CRA
Project Draughtsman				1000	1000	2000	- Melbourne
Total	46500	3000	43500	8560	8920	17480	Drafting
03 General Expenses & Consumables							
Drafting/Office Supplies				500	500	1000	
Total	2350	2000	350	500	500	1000	
06 Travel							
Visit Site				500	500	1000	
Other				-	500	500	
Recruitment				4000	-	4000	
Total	1150	-	1150	4500	1000	5500	
08 Consultants							
Mine Planning Fluor				-	-	-	
Other				-	-	-	
Total	18000	8000	10000	-	-	-	
TOTAL MINING	68000	13000	55000				
less inappropriate items			18000				
Yields			37000	13560	10420	23980	

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MOUNT BISCHOFF TIN COMPANY

5.

MAY - JUNE 1982 BUDGET

	<u>Budget</u> <u>Jan/April 82</u> <u>\$</u>	<u>Expenditure</u> <u>as at</u> <u>March 31st 82</u> <u>\$</u>	<u>Brought</u> <u>Forward</u> <u>\$</u>	<u>May</u> <u>\$</u>	<u>June</u> <u>\$</u>	<u>Total</u> <u>\$</u>	<u>Comments</u>
04 METALLURGY							
01 Technical Services							
G. Motteram				-	-	-	
K. O'Keefe				5760	5760	11520	16 Days
Total	23040	30000	(6960)	5760	5760	11520	
03 General Expenses & Consumables							
Sample freight				100	100	200	
Other				100	100	200	
Total	2810	1000	1810	200	200	400	
06 Travel							
To site				250	-	250	
To Launceston				500	-	500	
Other				-	-	-	
Relocation				-	-	-	
Total	6750	1000	5750	750	-	750	
07 Contractors							
Amdel				5200	-	5200	
Mineral Deposits				-	-	-	
Aberfoyle				1200	-	1200	
Dept. of Mines				400	-	400	
Total	20000	12000	8000	6800	-	6800	
08 Consultants							
Metallurgical				-	-	-	
Mineralogical				700	-	700	
Total	1970	1000	970	700	-	700	
TOTAL METALLURGY	54570	45000	9570	14210	5960	20170	

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MOUNT BISCHOFF TIN COMPANY

MAY - JUNE 1982 BUDGET

	<u>Budget</u> <u>Jan/April 82</u> <u>\$</u>	<u>Expenditure</u> <u>as at</u> <u>March 31st 82</u> <u>\$</u>	<u>Brought</u> <u>Forward</u> <u>\$</u>	<u>May</u> <u>\$</u>	<u>June</u> <u>\$</u>	<u>Comments</u>
05 ENGINEERING						
01 Technical Services						
G. May				6048	6336	12384
P. Matheson				-	-	-
Total	25800	20000	5800	6048	6336	12384
02 General Expenses & Consumables 03						
Equipment Rental				-	-	
Other				-	-	
Total	1500	-	1500	-	-	-
06 Travel						
To Site				250	-	250
To Hobart				400	-	400
To Sydney				-	-	-
Other						
Total	8650	-	8650	650	-	650
07 Contractors						
Engineering Contractor				-	-	-
Total	30000	1000	29000	-	-	-
08 Consultants						
Environmental				-	-	-
Other				-	-	-
Total	11050	1000	10050	-	-	-
TOTAL ENGINEERING	77000	22000	55000			
less inappropriate items			36000			
			19000	6698	6336	13034

MOUNT BISCHOFF TIN COMPANY

MAY - JUNE 1982 BUDGET

	<u>Budget</u> <u>Jan/April 82</u> <u>\$</u>	<u>Expenditure</u> <u>as at</u> <u>March 31st 82</u> <u>\$</u>	<u>Brought</u> <u>Forward</u> <u>\$</u>	<u>May</u> <u>\$</u>	<u>June</u> <u>\$</u>	<u>Total</u> <u>\$</u>	<u>Comments</u>
06 COMMERCIAL/LEGAL							
01 Technical Services							
Commercial Officer				900	900	1800	Reviews
Legal				900	900	1800	
Total	11500	1000	10500	1800	1800	3600	
03 General Expenses & Consumables							
EDP Costs				2000	2000	4000	
Other				200	200	400	
Total	4500	-	4500	2200	2200	4400	
06 Travel							
General				500	1000	1500	
Total	1000	-	1000	500	1000	1500	
TOTAL COMMERCIAL/LEGAL	17000	1000	16000	4500	5000	9500	

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MAY AND JUNE 82 PLANNING SCHEDULE GEOLOGY

ACTIVITY	MARCH	APRIL	MAY	JUNE
1. Diamond Drill Programme				
1.1 Assaying and data				
compilation				
Reverse Circulation Drilling				
2.1 Drilling				
2.2 Assaying and data				
compilation				
Geological Mapping				
3.1 Field Mapping				
3.2 Data compilation				
Draughting				
4.1 Surface geology/topographic				
4.2 X sections				
4.3 Long sections				
4.4 Level Plans				
Geological Ore Reserves				
5.1 Reassessment of current				
DSL and Porphyry ore				
reserves				
5.2 Assessment of near surface				
low core recovery DSL zones				
6. Ore Type Determinations				
6.1 Geological logging				
6.2 Classification				
Surface Sampling				
7.1 Pit area: Brown Face				
7.2 Data Compilation				

MOUNT BISCHOFF TIN COMPANY

BUDGET PLAN AND EXPENDITURE

JULY TO DECEMBER 1982

Submission to April 30th, 1982
Mount Bischoff Joint Venture
Operating Committee

1. BACKGROUND

In accordance with the Metals Exploration/CRA Farm in Agreement conditions a six monthly operating budget plan and expenditure for the period July to December 1982 is herein presented.

A three month time extension granted by Comstaff/Preussag has altered the expiry date of the Metals Exploration/Comstaff/Preussag Agreement and the Metals Exploration/CRAE Farm in Agreement from December 31st, 1982 to March 31st, 1983.

2. STRATEGY

The work programme scheduled for the July to December, 1982 period is designed to cover the two phases of Project development

- (a) completion and evaluation of Stage IV work, which is essentially semi optimisation of work carried out in previous studies plus incorporation of latest available drilling, trenching and surface mapping information obtained since the close of Stage III
- (b) assuming a positive decision to proceed with Project development arising out of the Stage IV Evaluation, the ongoing work necessary to prepare for and execute a $\pm 15\%$ Definitive Feasibility Study.

Concurrent with the above work, the programme includes

- . continuing negotiations to determine likely availability of an offsite concentrator and appropriate facilities
- . regularly briefing Comstaff/Preussag with status of the Project. The objective is to secure a 12 - 24 month time extension if required by optimum economic operating option.

Until recommendations arising out of the Stage IV Evaluation Study are accepted, all project activities not directly involved with the Stage IV Study will be deferred.

If the Stage IV Evaluation Study fails to reflect adequate economic viability to justify proceeding towards execution of a Definitive Feasibility Study as outlined in the accompanying programme, a revised budget plan and expenditure will be submitted.

3. TACTICS

3.1 Geology

- . Pending recommendations and decisions from Stage IV Study, operate minimum geological activities sufficient to
 - (a) complete outstanding tasks associated with Stage IV Study
 - (b) satisfy statutory regulations re maintenance of A to P 5/80 and EL 13/79
 - (c) allow minimum reaction time to commence geological activities scheduled for inclusion within a Definitive Feasibility Study.
- . Specific activities will include
 - (a) a survey and integration of all historical geological data (open pit area specifically)
 - (b) placing site facilities onto basic care and maintenance basis
 - (d) reassessment of future EL regional exploration programmes.
- . Given a Definitive Feasibility Study is recommended and approved, the scheduled geological work programmes are directed towards
 - (a) identification and delineation of major ore types
 - (b) structural interpretation of immediate pit area
 - (c) geological testing of ground selected to accommodate plant facilities
 - (d) investigating the potential for additional near surface ore sources, eg. Don Hill Vein Deposits
- . A comprehensive geological study inclusive of Geological Ore Reserves is to be prepared for inclusion within the Definitive Feasibility Study.

3.2 Mining

Following the completion of the preliminary mining study (for inclusion within the Stage IV Evaluation Study) a Definitive Mining Feasibility Study is proposed.

The Definitive Mining Feasibility Study will specify the design and operation of an optimum economic mining operation with due regard to overall project economics and constraints.

3.3 Metallurgy

Given that the results of the Stage IV Evaluation Study do not necessitate a major metallurgical reassessment of the Stage III concentrator circuit design capacity, material balances and metallurgical behaviour and performance, provision is made for the following ongoing programmes

- . input to the Stage IV Evaluation Study
- . metallurgical assessment of trench and reverse circulation ore zones
- . complete metallurgical investigation of
 - . ore variability
 - . ore type classification
 - . head grade recovery analysis
 - . cost reductions
- . in conjunction with engineering, generate all metallurgical criteria and parameters for consideration within the Definitive Feasibility Study.

3.4 Engineering

- . economic analysis of Stage IV Evaluation Study
- . preparation of brief for Definitive Feasibility Engineering Study
- . organise engineering consultant to perform estimates of capital and operating cost parameters
- . monitor and control Definitive Feasibility Study
- . liaison with government departments
- . preparation of Environment Impact Statement
- . economic analyses of Definitive Feasibility Study.

MOUNT BISCHOFF TIN COMPANY

JULY TO DECEMBER 1982 BUDGET SUMMARY

		<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>	<u>November</u>	<u>December</u>	<u>Total</u>
01	ADMINISTRATION	20260	20760	17660	17160	17060	17660	110560
02	GEOLOGY	20330	19880	32005	51455	26480	20505	170655
03	MINING	11220	15120	33760	56660	13000	23960	153720
04	METALLURGY	12370	13120	9510	11010	9400	7760	63170
05	ENGINEERING	9170	15970	15310	62610	108250	108610	319920
06	COMMERCIAL	3000	4000	3000	4000	4000	5000	23000
	TOTAL	76350	88850	111245	202895	178190	183495	841025
DISTRIBUTION	40%	30540	35540	44498	81158	71276	73398	336410
	60%	35810	53310	66747	121937	106914	109097	504615

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MOUNT BISCHOFF TIN COMPANY

JULY TO DECEMBER 1982 BUDGET

	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>	<u>November</u>	<u>December</u>	<u>Total</u>	
01 ADMINISTRATION								
01 Technical Services								
Project Manager	9900	9900	9450	9450	9000	9450	57150	100%
Secretary	3300	3300	3150	3150	3000	3150	19050	100%
Operating Committee Sec.	900	900	900	900	900	900	5400	2 days
Accounting Officer	800	800	800	800	800	800	4800	4 days
Titles Officer	360	360	360	360	360	360	2160	1 day
Total	15260	15260	14660	14660	14060	14660	88560	
03 General Expenses & Consumables								
Tenement Expenses	-	-	-	-	-	500	500	
Office Expenses	1500	1500	1500	1500	1500	1500	9000	Phone/telex, etc.
Total	1500	1500	1500	1500	1500	2000	9500	
06 Travel								
Visit Site	500	500	500	500	500	500	3000	2 trips
Visit Hobart	-	500	-	500	-	500	1000	1 trip
Recruitment	3000	3000	-	-	-	-	6000	
Other	-	-	1000	-	1000	-	2000	Sydney: mines:
Total	3500	4000	1500	1000	1500	1000	12500	
TOTAL ADMINISTRATION	20260	20760	17660	17160	17060	17660	110560	

MOUNT BISCHOFF TIN COMPANY

JULY TO DECEMBER 1982 BUDGET

	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>	<u>November</u>	<u>December</u>	<u>Total</u>	
02 GEOLOGY								
01 Technical Services								
Project Geologist	6160	6160	5880	5880	5600	5880	35560	100%
Draughtsman/surveyor	4400	4400	4200	4200	4000	4200	25400	100%
Total	10560	10560	10080	10080	9600	10080	60960	
02 Labour								
Snr. Field Assistant	1100	1100	1050	1050	1000	1050	6350	100%
Jnr. Field Assistant	990	990	945	945	900	945	5715	100%
Total	2090	2090	1995	1995	1900	1995	12065	
03 General Expenses & Consumables								
Sample Bags & Boxes	500	500	500	500	500	500	3000	
Sample Freight	1000	-	1000	-	1000	-	3000	
Site drafting supplies	250	250	250	250	250	250	1500	
Equipment rental	150	150	150	150	150	150	900	MEX/DMP
Site office rental	400	400	400	400	400	400	2400	Atco
Power/Plane	-	-	600	-	-	600	1200	Site Offices
Total	2300	1300	2900	1300	2300	1900	12000	
04 Accommodation								
Messing	400	400	400	400	400	400	2400	
Telephone	-	-	200	-	-	200	400	Camp
Power	-	-	300	-	-	300	600	Camp
Housing Subsidy	280	280	280	280	280	280	1680	Simpson
Other (incl. maintenance)								
Total	680	680	1180	680	680	1180	5080	

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MOUNT BISCHOFF TIN COMPANY

JULY TO DECEMBER 1982 BUDGET

Page 2 Geology

	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>	<u>November</u>	<u>December</u>	<u>Total</u>	
05 Vehicles								
Fuel Servicing	400	400	400	400	400	400	2400	
Supply	500	500	500	500	500	500	3000	MEX
Total	900	900	900	900	900	900	5400	
06 Travel								
Visit Melbourne	500	-	500	-	500	500	2000	
Other	-	250	-	250	-	-	500	
Total	500	250	500	250	500	500	2500	
07 Contractors								
Percussion Drilling 600 metres	-	-	-	25000	-	-	25000	Plant Site Testing
Field Costs	-	-	500	1000	-	-	1500	
Site Preparation	-	-	5000	-	-	-	5000	
Grid Cutting								Plant Site
10 km.	-	-	4500	-	-	-	4500	Testing
4 km.	-	-	-	1800	-	-	1800	Stanhope ext.
Assays	-	-	-	1000	2500-	-	3500	
Contingency	-	-	500	500	-	-	1000	
Total	-	-	10500	29300	2500	-	42300	
08 Consultants								
Geophysical	-	-	-	3000	4300	-	7300	Map survey & Ind. Pol.
Mineralogical	-	200	200	200	200	200	1000	
Geological - A. Jannink	-	600	600	600	600	600	3000	4 days
- CRA(Langsford)	3300	3300	3150	3150	3000	3150	19050	100%
Total	3300	4100	3950	6950	8100	3950	30350	
TOTAL GEOLOGY	20330	19880	32005	51455	26480	20505	170655	

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MOUNT BISCHOFF TIN COMPANY

JULY TO DECEMBER 1982 BUDGET

	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>	<u>November</u>	<u>December</u>	<u>Total</u>	
03 MINING								
01 Technical Services								
Project Mining Engineer	7920	7920	7560	7560	7200	7560	45720	100%
Draughtsman	3000	1500	1500	3000	3000	3000	15000	\$15/hr.
Total	10920	9420	9060	10560	10200	10560	60720	
03 General Expenses & Consumables								
Total	300	200	200	600	800	1400	3500	
06 Travel								
Visit Site	-	500	-	500	-	-	1000	
Other	-	-	500	-	-	-	500	
Total	-	500	500	500	-	-	1500	
08 Consultants								
Structural Analysis & Waste Dump Stability	-	-	-	45000	-	-	45000	3 holes @ 100m
Ground Water Survey	-	-	24000	-	-	10000	34000	
Drillability Testing	-	5000	-	-	-	-	5000	
Computer Orebody Model Dev.	-	-	-	-	2000	2000	4000	
Total	-	5000	24000	45000	2000	12000	88000	
TOTAL MINING	11220	15120	33760	56660	13000	23960	153720	

MOUNT BISCHOFF TIN COMPANY

JULY TO DECEMBER 1982 BUDGET

	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>	<u>November</u>	<u>December</u>	<u>Total</u>	
04 METALLURGY								
01 Technical Services								
Project Metallurgist	7920	7920	7560	7560	7200	7560	45720	100%
Total	7920	7920	7560	7560	7200	7560	45720	
03 General Expenses & Consumables								
Sample Freight	100	100	100	100	100	100	600	
Other	100	100	100	100	100	100	600	
Total	200	200	200	200	200	200	1200	
06 Travel								
To Site	250	-	250	250	-	-	750	
To Launceston	500	-	500	-	-	-	1000	
Other	-	-	-	500	-	-	500	
Total	750	-	750	750	-	-	2250	
07 Contractors								
Amdel	1000	-	1000	-	1000	-	3000	
Mineral Deposits	-	3000	-	-	-	-	3000	
Aberfoyle	1000	1000	-	1000	-	-	3000	
Total	2000	4000	1000	1000	1000	-	9000	
08 Consultants								
Metallurgical	1000	1000	-	1000	1000	-	4000	
Mineralogical	500	-	-	500	-	-	1000	
Total	1500	1000	-	1500	1000	-	5000	
TOTAL METALLURGY	12370	13120	9510	11010	9400	7760	63170	

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MOUNT BISCHOFF TIN COMPANY

JULY TO DECEMBER 1982 BUDGET

	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>	<u>November</u>	<u>December</u>	<u>Total</u>
05 ENGINEERING							
01 Technical Services							
Project Engineer	7920	7920	7560	7560	7200	7560	45720
Total	7920	7920	7560	7560	7200	7560	45720
03 General Expenses & Consumables							
General	250	250	250	250	250	250	1500
Total	250	250	250	250	250	250	1500
06 Travel							
To Site	500	1000	1000	1000	-	-	3500
To Hobart	500	500	-	-	-	-	1000
To Sydney	-	-	1000	-	-	-	-1000
Other	-	-	1000	-	-	-	1000
Total	1000	2300	2000	1800	800	800	8700
07 Contractors							
Engineering Contractor	-	-	-	50000	100000	100000	250000
Total	-	-	-	50000	100000	100000	250000
08 Consultants							
Environmental	-	3000	3000	3000	-	-	9000
Other	-	2500	2500	-	-	-	5000
Total	-	5500	5500	3000	-	-	14000
TOTAL ENGINEERING	9170	15970	15310	62610	108250	108610	319920

MOUNT BISCHOFF TIN COMPANY

JULY TO DECEMBER 1982 BUDGET

	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>	<u>November</u>	<u>December</u>	<u>Total</u>	
06 COMMERCIAL								
01 Technical Services								
Senior Commercial Officer	900	900	900	900	900	900	5400	Reviews
Legal	900	900	900	900	900	900	5400	
Total	1800	1800	1800	1800	1800	1800	10800	
03 General Expenses & Consumables								
EDP Costs	1000	2000	1000	1000	2000	2000	9000	
Other	200	200	200	200	200	200	1200	
Total	1200	1200	1200	1200	2200	2200	9200	
06 Travel								
General	-	1000	-	1000	-	1000	3000	
Total	-	1000	-	1000	-	1000	3000	
 TOTAL COMMERCIAL/LEGAL	 3000	 4000	 3000	 4000	 4000	 5000	 23000	

MT. BISCHOFF PROJECT
 PLANNING SCHEDULE GENERAL

1982

1983

ACTIVITY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL
1. Comstaff/Preussag submissions Format Documentation Presentation & briefings														
2. Reverse Circulation Drilling Programme (over-run)														
3. Definitive Geological Ore Reserves (Open Pit)														
4. Preliminary Mining Study														
5. Metallurgical Tests: Trench & Reverse Circulation														
6. Concentrator design & scale study														
7. Stage IV Evaluation Study scope & economic analysis presentation														
Definitive Feasibility Study justification														
Brief for Definitive feasibility Study														
Definitive Feasibility Study														
Fine tuning & economic analysis of Definitive Feasibility Study														
Definitive Feasibility Study board submission														
Board Approval														

CRA TIN DIVISION
 MT BISCHOFF JOINT VENTURE
 PLANNING SCHEDULE GENERAL
 Date MAY 1st, 1982

656149

PLANNING SCHEDULE

GEOLOGY

1982

1983

ACTIVITY	1982												1983				
	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	
1. Ore Type Classification (ongoing)																	
1.1 DSL																	
1.2 Porphyry																	
2. Plant Site Testing																	
Tailings Dam, Waste Dump,																	
Concentrator																	
2.1 Gridding																	
2.2 Mapping																	
2.3 Drilling																	
3. Geological & Structural Mapping (Pit Area)																	
3.1 Field Mapping																	
3.2 Plotting Interpretation																	
4. Surface Sampling																	
4.1 Summit Area																	
4.2 North Face Area																	
4.3 Don Hill																	
5. Regional Exploration Programmes																	
5.1 Stanhope Extension																	
5.2 A to P 5/80																	
5.3 EL 13/79																	
6. Survey of historical geological data within pit locality																	
7. Geology Report for inclusion within Definitive Feasibility Study																	
8. Site Facilities: care & maintenance																	

656150

CRA TIN DIVISION
MT. BISCHOFF JOINT VENTURE
PLANNING SCHEDULE <u>GEOLOGY</u>
Date: MAY 1st 1982

Dept of M	A.O.	C.G.	E.O.	D.S.M.E
Received Answered				18 JUN 1982
DEPT. OF MINES				Registrar
REF. No. 4605/82				E & IL

MT. BISCHOFF TIN PROSPECT
EXPLORATION LICENCE 13/79
AND AUTHORITY TO PROSPECT 5/80
TASMANIA
REPORT FOR MAY, 1982

Distribution: Copy No. 1: Department of Mines, Tasmania
 Copy No. 2: CRAE
 Copy No. 3: AAA (Comstaff)
 Copy No. 4: AAA (Preussag)
 Copy No. 5: R. Kay
 Copy No. 6: T. Dickson
 Copy No. 7: G.M. Motteram
 Copy No. 8: B. Phillips
 Copy No. 9: M.D. Laverty
 Copy No. 10: D. Simpson
 Copy No. 11: Mt. Bischoff Project File
 Copy No. 12: CRA Accounts Department

M.D. Laverty

15/6/82

MT BISCHOFF TIN PROSPECTREPORT FOR MAY, 19821. General

- . Stage IV reverse circulation drilling programme completed. A total of 22 drill holes involving 226 drilled metres of diamond core and 173 drilled metres of reverse circulation sampling.
- . Preparatory work for Stage IV evaluation study commenced.
- . Geological interpretation for DSL and Porphyry Definitive Geological Ore Reserve estimates completed.
- . Geological surface mapping over proposed open pit locality 70% completed.
- . Preliminary design and analysis of ultimate pit alternatives for Stage IV study completed.
- . Metallurgical testwork on porphyry variability commenced (additional DSL variability also involved).
- . Initial metallurgical test work on trench samples downrates scope for treatment through preconcentrator.

2. Geology2.1 Drilling Programme

- . The Stage IV reverse circulation drilling programme was completed during the period.
- . Four drill holes involving 53.6 drilled metres of diamond drilling and 42.9 drilled metres of reverse circulation drilling were achieved.
- . Details of holes completed during the period follows:

Hole No.	Co-ordinates		Reduced Level	Metres Drilled		Depth Metres	Type
	East	North		From	To		
MBR 16				0	1.0	1.0	Reverse
MBR 16A	1894.21	1097.13	625.98	0	2.7		Reverse
				2.7	10.5	10.5	Diamond
MBR 17	1869.68	1115.06	626.00	0	13.7		Reverse
				13.7	25.5		Diamond
				25.5	28.5		Reverse
				28.5	50.0	50	Diamond
MBR 18	1901.84	1141.01	627.13	0	11.5		Diamond
				11.5	35.0	35	Reverse

The holes drilled during the period were located mainly in the Pig Flat - White Face area and achieved only limited success re adequate sample recovery.

MBR17 intersected porphyry from 0 to 39.0 metres. This has resulted in a substantial change to the geological interpretation for this section. The footwall porphyry contact now being significantly deeper than previously envisaged.

In general, the application of reverse circulation drilling as applied at Mt. Bischoff was extremely disappointing. A CRA engineer experienced in exploration drilling inspected the reverse circulation drilling operation. Recommendations on alternate drilling techniques that may improve sample recovery from the near surface zone will be made.

Given the limited reliability of samples recovered, the following significant intervals of interest have been reported.

Hole No.	Meterage		Interval	Sn %	Ore Type
	From	To			
MBR5	7.0	10.0	3.0	0.55	DSL
MBR6	9.0	12.0	3.0	5.08	DSL
	5.0	14.0	9.0	2.02	DSL
MBR11	0	2.3	2.3	0.30	DSL
MBR12	0	7.7	7.7	0.18	DSL
MBR13A	5.0	6.0	1.0	0.56	DSL
MBR14A	6.0	20.0	14.0	0.39	DSL
MBR15	15.3	20.35	5.05	0.27	DSL
MBR16A	0	2.0	2.0	0.97	DSL
	2.7	7.1	4.4	1.64	DSL
	9.4	11.0	1.6	0.26	DSL
MBR17	27.0	32.4	5.4	1.22	Porphyry
MBR18	11.15	17.0	5.85	3.85	DSL
	0.95	21.0	20.05	1.37	DSL

- . Complete assay results for holes MBR1 to MBR18 are now available.
- . Survey results for previously reported holes follow.

<u>Hole No.</u>	<u>Coordinates</u>		<u>Reduced Level</u>
	<u>North</u>	<u>East</u>	
12	1837.99	1139.44	625.38
13	1776.57	982.99	624.13
13A	1775.39	981.95	623.97
14	1813.82	956.23	630.13
15	1855.72	1037.27	636.35

- . In summary, the Stage IV drilling programme undertaken during the period March 10th, 1982 to May 14th, 1982 completed 2 diamond drill holes and 20 reverse circulation/diamond drill holes involving 173 drilled metres of reverse circulation technique and 266 drilled metres of diamond drilling.

2.2 Geological Mapping

Geological surface mapping of the proposed open pit locality at a scale of 1:500 continued during the period. Completion of the field work is scheduled for early June.

2.3 Definitive Geological Ore Reserves

All geological interpretation for the DSL and porphyry mineralisation was completed during the period.

DSL Mineralisation

- . The 0.4%Sn mineralisation zones for cross section and level plans (5 metre intervals) were plotted and planimetered. Computation of tonnes and grades is now being undertaken.
- . The 0.3%Sn mineralisation zones were plotted on cross section.

Porphyry Mineralisation

- . The 0.3%Sn mineralisation zones for cross sections and level plans (10 metre intervals) were plotted.
- . The 0.2%Sn mineralisation zones for cross sections were plotted.

2.4 Geostatistics

An attempt was made to determine the applicability of geostatistics on estimating DSL ore reserves. The results indicated:

- . the range of influence of 1m samples in the downhole direction is approximately 4m to 5m;
- . the range of influence of 5m composites in the downhole direction is less than 5m.

3. Mining

Preliminary mine planning studies continued during the period.

Level plans were developed from the currently available DSL cross section mineralisation zones at 0.3%Sn nominal cut-off grade and porphyry cross section mineralisation zones at 0.2%Sn nominal cut-off grade.

Design and analysis of ultimate pit alternatives and pit increment profiles has commenced.

Breakeven analysis of the ultimate pit alternatives will be undertaken. At this stage analysis can only be done on the global 0.3%Sn nominal cut-off grade DSL and the 0.2%Sn nominal cut-off grade porphyry.

Golder & Associates submitted a preliminary report on "first look" drilling and blasting requirements for a proposed open pit operation.

4. Metallurgy

Porphyry Variability

Samples were prepared at the Department of Mines, Launceston and sent to Amdel for heavy liquid separation and assay. Estimated time for receipt of results is mid July.

Additional DSL Variability

Four additional DSL intercepts were tested at the Department of Mines, Launceston. Sulphide flotation work was completed and results are expected in the second week of June. Heavy liquid separation to assess cassiterite liberation is underway at Amdel with results expected in mid July.

Trench Sample Metallurgy

Results were received from Amdel but they contained several anomalies which are now being checked. Generally preconcentration of trenched material does not appear feasible.

Cassiterite in material from trenching of Don Hill appears highly amenable to recovery through simple scheme of scrubbing sizing (classification) and tabling.

Aberfoyle Metallurgical Testwork

Discussions were held with Aberfoyle's Central Metallurgical Laboratory regarding progress on reporting of their testwork on composite MCA, MCC and MCD. The report should be completed by early June.

Stage IV Metallurgical Assessment

Stage III metallurgical statistics for DSL and porphyry ore have been reviewed to reflect current knowledge. Recoveries predicted are the same as in Stage III but a greater proportion of recovered tin is predicted to come from gravity. Preparation of metallurgical aspects of treatment options described for Stage IV investigations is proceeding.

5. Engineering

Preparatory work for the Stage IV study commenced.

Economic analysis of revenue against various head grade, recovery, and concentrate grade was attempted. A cost benefit study for the leach plant and the preconcentrator was also undertaken.

APPENDED INFORMATION

1. Project Expenditure Details
2. Joint Venture Asset Statement
3. Assays

MT BISCHOFF JOINT VENTURE

	<u>May 1982</u>		<u>YTD May</u>		<u>6 Months to</u>
	<u>Actual</u>	<u>Budget</u>	<u>Actual</u>	<u>Budget</u>	<u>June 1982</u>
	<u>\$000</u>		<u>\$000</u>		<u>Budget</u>
Administration	25	17	117	107	125
Geology	37	30	206	176	202
Mining	22	14	43	82	92
Metallurgy	10	14	61	69	75
Engineering	6	7	33	84	90
Commercial	<u>3</u>	<u>4.5</u>	<u>5</u>	<u>21.5</u>	<u>26.5</u>
	<u>103</u>	<u>86.5</u>	<u>465</u>	<u>539.5</u>	<u>610.5</u>
M.E.L. Share 40%	34	35	178	219	244

SUMMARY OF EXPENDITURE TO 31/5/82

	<u>Current Period</u>	<u>Accumulative</u>
	<u>\$000</u>	<u>\$000</u>
Stage 1		270
Stage 2A - Early Start		29
Stage 2A		199
Overruns: Stage 1 - M.E.L.		11
Metallurgical - CRAE		24
Stage 2B		482
Stage 2B - 3A Holding Costs Offset - A.I.R. & D.		40
Stage 3A - Partly offset by A.I.R. & D. Grant Rec. June 1981 \$6,500		861
Stage 3B - Partly offset by A.I.R. & D. Grant Rec. July 1981 \$25,863		674
Stage 4 - Partly offset by A.I.R. & D. Grant Rec. February 1982 \$16,500	<u>103</u>	<u>465</u>
<u>ACCUMULATIVE EXPENDITURE TO DATE:</u>	<u>103</u>	<u>3,055</u>

MT BISCHOFF JOINT VENTURE

	<u>May 1982</u>		<u>YTD May</u>		<u>6 Months to</u>
	<u>Actual</u>	<u>Budget</u>	<u>Actual</u>	<u>Budget</u>	<u>June 1982</u>
	<u>\$000</u>		<u>\$000</u>		<u>Budget</u>
					<u>\$000</u>
<u>ADMINISTRATION</u>					
Technical Services	20	15	94	97	112
Consumables	1	1	11	5	7
Travel	4	1	12	5	6
	<u>25</u>	<u>17</u>	<u>117</u>	<u>107</u>	<u>125</u>
<u>GEOLOGY</u>					
Technical Services	6	10	32	56	64
Labour	2	2	10	6	8
Consumables	1	2	9	17	20
Accommodation	-	1	2	5	6
Vehicles	-	1	3	4	5
Travel	-	1	1	3	4
Contractors	17	1	104	55	57
Consultants	11	12	45	30	38
	<u>37</u>	<u>30</u>	<u>206</u>	<u>176</u>	<u>202</u>
<u>MINING</u>					
Technical Services	14	9	25	54	63
Consumables	1	0.5	3	3	3
Travel	6	4.5	6	7	8
Consultants	1	-	9	18	18
	<u>22</u>	<u>14</u>	<u>43</u>	<u>82</u>	<u>92</u>
<u>METALLURGY</u>					
Technical Services	6	6	42	29	35
Consumables	-	-	1	3	3
Travel	2	1	3	7.5	7.5
Contractors	2	7	14	27	27
Consultants	-	1	1	2.5	2.5
	<u>10</u>	<u>14</u>	<u>61</u>	<u>69</u>	<u>75</u>
<u>ENGINEERING</u>					
Technical Services	6	6	30	32	38
Consumables	-	-	-	1	1
Travel	-	1	-	10	10
Contractors	-	-	1	30	30
Consultants	-	-	2	11	11
	<u>6</u>	<u>7</u>	<u>33</u>	<u>84</u>	<u>90</u>
<u>COMMERCIAL</u>					
Technical Services	2	2	4	13	15
Consumables	1	2	1	7	9
Travel	-	0.5	1	1.5	2.5
	<u>3</u>	<u>4.5</u>	<u>5</u>	<u>21.5</u>	<u>26.5</u>
TOTAL:	<u>103</u>	<u>86.5</u>	<u>465</u>	<u>539.5</u>	<u>610.5</u>
M.E.L. Share 40%	34	35	178	219	244

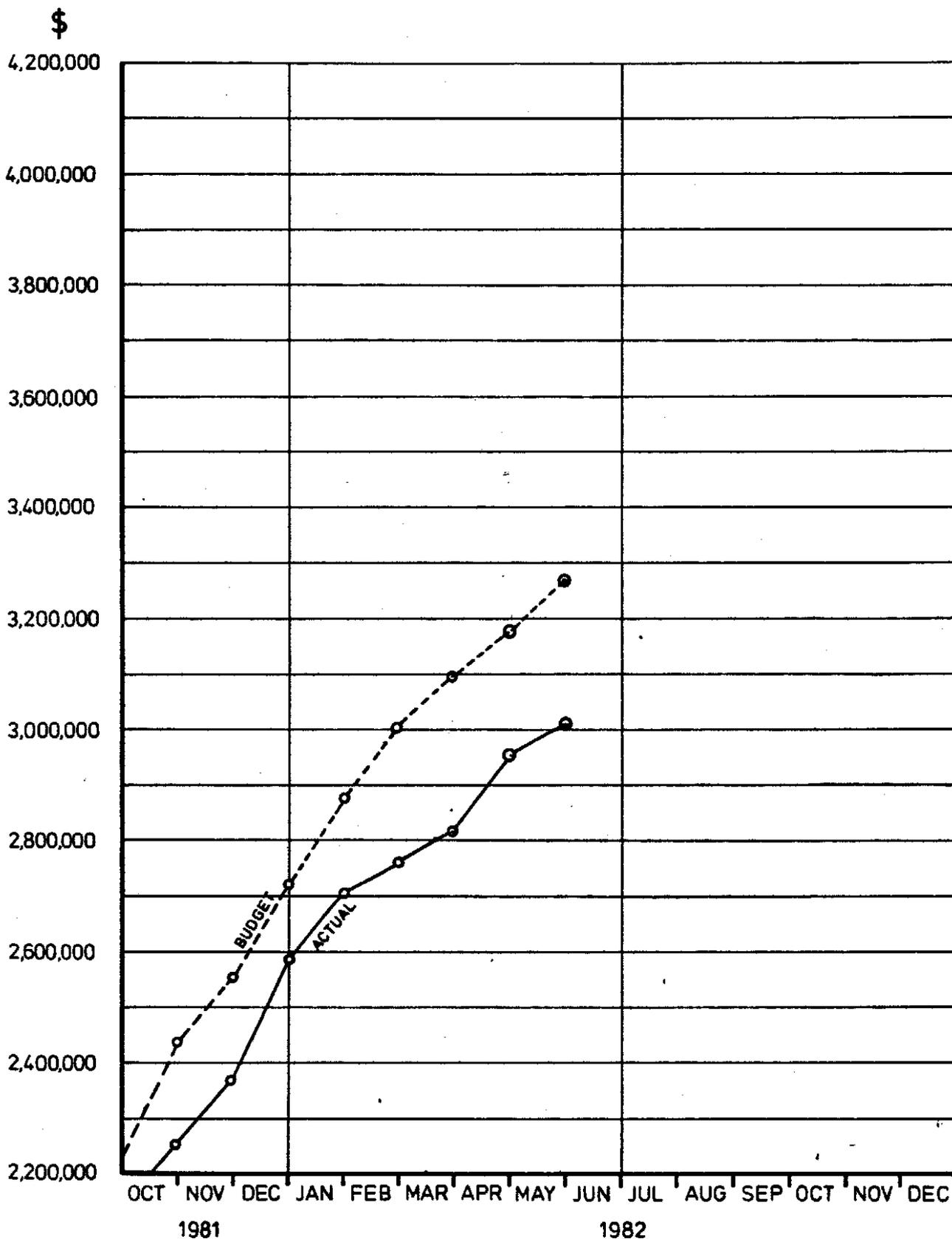
MT BISCHOFF PROJECTCUMULATIVE CAPITAL EXPENDITURE

	<u>As at 31/3/82</u>	<u>April 1982 Expenditure</u>	<u>As at 30/4/82</u>
STAGE 1 & 2 Core Shed	\$15,295	-	\$15,295
Concrete Foundations	<u>\$ 2,100</u>	-	<u>\$ 2,100</u>
	\$17,395		\$17,395
STAGE 3A Core Shed	\$ 8,660	-	\$ 8,660
Accommodation Unit	<u>\$32,500</u>	-	<u>\$32,500</u>
TOTAL	<u>\$58,555</u>		<u>\$58,555</u>

Beneficial Ownership - As at 31 December, 1981.

CRA 51 x $\frac{100}{85}$ = 60%

M.E.L 34 x 100 = 40%



CUMULATIVE EXPENDITURE SCHEDULE

MT. BISCHOFF PROJECT

SUMMARY
as at 31. May. 1982.

Drg No. T/T64

SAMPLE NO.	SAMPLE NO	FROM	TO	INTER VAL	Sn	Sn	Cu	Pb	Zn	g	W	Au	Check Sn	WT. Kgs.
SPLIT CORE	GROUND CORE	m	m	m	SPLIT	GROUND								
145181	*	0.0	0.9	0.9	2650									0.6
2	*	0.9	1.7	0.8	4650									0.6
3	*	1.7	2.3	0.6	1300									1.0
145219		2.0	3.0	1.0	30									1.4
20		3.0	4.0	1.0	70									1.6
1		4.0	5.0	1.0	10									3.4
2		5.0	6.0	1.0	45									3.0
3		6.0	7.3	1.3	15									6.0
4		7.3	8.0	0.7	15									4.4
5		8.0	9.0	1.0	20									5.5
6		9.0	10.0	1.0	140									3.9
7		10.0	11.0	1.0	710									5.0
145228	*	11.0	12.0	1.0	410									6.6
9	*	12.0	13.0	1.0	340									2.6
145184		12.0	12.7	0.7	880									0.5
5		12.7	13.7	1.0	130									0.9
6		13.7	14.55	0.85	55									1.1
7		14.55	15.2	0.65	50									1.0
8		15.2	17.1	1.9	45									0.6
9		17.1	17.8	0.7	50									1.2

656165

Notes:— 402 METHOD
* WEIGHT KGS.

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT
ASSAY SUMMARY SHEET HOLE NO. MBR 11
SAMPLE TYPE : DRILL CORE FROM 0.0 TO 17.8
NO SPLIT

SAMPLE NO.	SAMPLE NO	FROM	TO	INTER VAL	Sn	Sn	Cu	Zn	g	W	Au	Check m	WEIGHT	KGS.
SPLIT CORE	GROUND CORE	m	m	m	SPLIT	GROUND								
145230		0.0	1.0	1.0	2150									1.4
1		1.0	2.0	1.0	960									3.4
2		2.0	3.0	1.0	1850									2.4
3		3.0	4.0	1.0	1400									3.3
4		4.0	5.0	1.0	3200									3.2
5		5.0	6.0	1.0	1150									3.7
6		6.0	7.0	1.0	2200									3.6
7		7.0	7.7	0.7	1950									2.4
145262		7.7	8.3	0.6	530			9.71%*						1.1
3		8.3	9.6	1.3	1400			29.5%*						1.1
4		9.6	11.35	1.75	510			6.95%*						1.0
5		11.35	11.65	0.30	190			4.68%*						0.4
6		11.65	14.5	2.85	1000			20.8%*						0.6
7		14.5	16.9	2.4	300			3.73%*						0.9
8		16.9	17.5	0.6	320			1240*						0.6
9		17.5	18.5	1.0	150			4200*						0.9
10		18.5	20.1	1.6	340			2160*						0.4



Notes: - 402 METHOD

* DETECTION 25
DIGESTION 104
METHOD 104

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT

ASSAY SUMMARY SHEET HOLE NO. MBR 12

SAMPLE TYPE : DRILL CORE

FROM 0.0 TO 20.1

NB SPLIT

656166

SAMPLE NO.	SAMPLE NO	FROM	TO	INTER VAL	Sn	Sn	Cu	Pb	Zn	g	W	Au	Check Sn	WEIGHT Kg
SPLIT CORE	GROUND CORE	m	m	m	SPLIT	GROUND								
145241		0.0	1.0	1.0	2000									1.1
2		2.0	3.0	1.0	290									1.2
3		3.0	4.0	1.0	730									0.5
4		4.0	5.0	1.0	680									2.2
5		5.0	6.0	1.0	5550									2.0
6		6.0	7.0	1.0	980									1.6
7		7.0	8.0	1.0	400									0.15 GRAMS
8		8.0	9.0	1.0	240									0.25 GRAMS
9		9.0	10.0	1.0	80									0.4
50		10.0	11.0	1.0	200									0.8
145254		1.0	2.0	1.0	1150									

656168

Notes: - 402 METHOD

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT
 ASSAY SUMMARY SHEET HOLE NO. 17BR 13A
 SAMPLE TYPE : DRILL CORE FROM 0.0 TO 11.0
 NQ SPLIT

SAMPLE NO.	SAMPLE NO	FROM	TO	INTER VAL	Si.	Sn	Cu		Zn	Ag	W	Au	Check Sn	WEIGHT (KG)
SPLIT CORE	GROUND CORE	m	m	m	SPLIT	GROUND								
145255		3.0	4.0	1.0	2350									
6		4.0	5.0	1.0	25									
7		5.0	6.0	1.0	25									
8		6.0	7.0	1.0	5200									
9		7.0	8.0	1.0	1.00%									
60		8.0	9.0	1.0	3650									
1		9.0	10.0	1.0	3550									
145271		10.0	10.7	0.7	2250			1980 *						1.4
2		10.7	11.75	1.05	2450			1760 *						1.3
3		11.75	13.0	1.25	2300			820 *						2.9
4		13.0	14.6	1.6	4500			8900 *						3.3
5		14.6	15.25	0.65	3450			5650 *						1.7
6		15.25	16.2	0.95	2350			1940 *						2.1
7		16.2	17.45	1.25	1200			420 *						3.0
8		17.45	18.7	1.25	5800			560 *						1.2
9		18.7	19.3	0.6	5058			520 *						1.4
80		19.3	20.0	0.7	2850			3820 *						1.5



Notes: - 402 METHOD

- * DETECTION 25
- DIGESTION 104
- METHOD 104

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT

ASSAY SUMMARY SHEET HOLE NO. MBR 14

SAMPLE TYPE : DRILL CORE

FROM 3.0 TO 20.0

NO SPLIT

656169

SAMPLE NO.	SAMPLE NO	FROM	TO	INTER VAL	Sn	Sn	Cu	Zn	Ag	W	Au	Check Sn	WEIGHT (KG)
SPLIT CORE	GROUND CORE	m	m	m	SPLIT	GROUND							
145281		4.1	4.9	0.8	230			180 *					1.5
2		4.9	6.2	1.3	170			420 *					1.1
3		6.2	7.2	1.0	140			380 *					1.0
4		7.2	7.7	0.5	50			150 *					0.9
5		7.7	8.5	0.8	25			160 *					2.0
6		8.5	8.9	0.4	360			820 *					1.0
7		8.9	9.4	0.5	240			320 *					1.3
8		9.4	11.0	1.6	65			180 *					0.9
9		11.0	12.25	1.25	50			200 *					2.4
90		12.25	12.9	0.65	15			160 *					0.9
1		12.9	13.45	0.55	10			100 *					1.0
145292		13.45	14.5	1.05	45								2.3
3		14.5	15.3	0.8	290								0.8
4		15.3	16.4	1.1	1350								1.0
5		16.4	20.25	3.85	3150								0.6
6		20.25	21.5	1.25	540								0.4

Notes: - 402 METHOD

* DETECTION 25
 DIGESTION 104
 METHOD 104

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT

ASSAY SUMMARY SHEET HOLE NO. MBR 15

SAMPLE TYPE : DRILL CORE FROM 4.1 TO 21.5
 N&R SPLIT

656170

SAMPLE NO.	SAMPLE NO	FROM	TO	INTER VAL	Sn	Sn	Cu	Pb	Zn	Ag	W	Au	Check Sn	WEIGHT (KG)
SPLIT CORE	GROUND CORE	m	m	m	SPLIT	GROUND								
145299		13.5	15.0	1.5	650									2.2
300		15.0	16.5	1.5	1700									1.7
1		16.5	17.9	1.4	1050									2.0
2		18.65	21.4	2.75	810									1.5
145303		21.4	22.45	1.05	407									0.3
4		22.45	23.0	0.55	520									0.5
5		23.0	23.2	0.2	240									0.4
6		23.2	24.1	0.9	310									1.7
7		24.1	25.1	1.0	450									0.9
8		28.5	29.53	1.03	3350									2.2
145314		0.0	1.0	1.0	160									2.8
5		1.0	2.0	1.0	140									4.4
6		2.0	3.0	1.0	3100									-
7		3.0	4.0	1.0	120									4.3
8		4.0	5.0	1.0	90									3.8
9		5.0	6.0	1.0	70									2.6
20		6.0	7.0	1.0	55									3.8
1		7.0	8.0	1.0	40									4.3
2		8.0	9.0	1.0	50									3.6
3		9.0	10.0	1.0	70									3.7
4		10.0	11.0	1.0	110									3.9
5		11.0	12.0	1.0	120									3.5
6		12.0	13.0	1.0	200									3.8
7		13.0	14.0	1.0	270									1.0
8		25.0	26.0	1.0	310									0.9
9		26.0	27.0	1.0	520									2.8
30		27.0	28.5	1.5	1450									2.2
		28.5	29.53	1.03	3350									

Notes:— 402 METHOD

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT

ASSAY SUMMARY SHEET HOLE NO. 17BR 17

SAMPLE TYPE : DRILL CORE
N/A SPLIT

FROM 13.5 TO 29.53

656173

SAMPLE NO.	SAMPLE NO	FROM	TO	INTER VAL	Y	SN	CU	Pb	Zn	W	AU	Check	Bulk	Assays
SPLIT CORE	GROUND CORE	m	m	m	SPLIT	GROUND								
145341		0.95	2.10	1.15	2100									
2		2.10	3.4	1.3	3950									
3		3.4	4.8	1.4	2550									
4		4.8	6.45	1.65	1400									
5		6.45	7.45	1.0	1800									
6		7.45	8.45	1.0	1400									
7		8.45	9.45	1.0	860									
8		9.45	11.15	1.7	1500									
9		11.15	12.5	1.35	6.8%	*								
145350		12.5	13.0	0.5	2.35%	*								
1		13.0	14.0	1.0	4.35%	*								
2		14.0	15.0	1.0	1.90%	*								
3		15.0	16.0	1.0	3.70%	*								
4		16.0	17.0	1.0	2.30%	*								
5		17.0	18.0	1.0	4100									
6		18.0	19.0	1.0	1050									
7		19.0	20.0	1.0	630									
8		20.0	21.0	1.0	530									
9		20.0	21.0A	1.0	3600									
145360		21.0	22.0	1.0	350									
1		22.0	23.0	1.0	170									
2		23.0	24.0	1.0	70									
3		24.0	25.0	1.0	35									
4		25.0	26.0	1.0	390									
5		26.0	27.0	1.0	85									
6		27.0	28.0	1.0	550									
7		28.0	29.0	1.0	400									
8		29.0	30.0	1.0	80									
145369		30.0	31.0	1.0	100									

Notes:-

402 Method.

* To be confirmed.

METALS EXPLORATION LTD - MT BISCHOFF TIN PROSPECT

ASSAY SUMMARY SHEET HOLE NO. MBR 18

SAMPLE TYPE : DRILL CORE FROM 0.95^m TO 31.0^m

NQ Split.

556175

of M	2	3	E.O.	D.S.
Received	6 JUL 1982			E & it
Answered				
DEPT. OF MINES				
REF. No. 5449/82.				

PH

① D.J.J.

⑤ J.J.

MT. BISCHOFF TIN PROSPECT
EXPLORATION LICENCE 13/79
AND AUTHORITY TO PROSPECT 5/80
TASMANIA
REPORT FOR JUNE, 1982

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M.D. Lavery
15/7/82

MOUNT BISCHOFF TIN PROSPECT

REPORT FOR JUNE, 1982

1. General

- . Waratah site facilities placed on care and maintenance for remainder of winter.
- . Stage IV Evaluation Study continued.
- . Definitive open pit geological ore reserves completed, documentation underway.
- . Geological surface mapping over proposed open pit locality completed; documentation underway.
- . Geophysical report on Authority to Prospect 5/80 Housego Grid ground magnetic data received.
- . Aberfoyle's Central Metallurgical Services report on Mount Bischoff ore characterisation received.

2. Geology

2.1 Geological Mapping

Field work associated with geological surface mapping of the proposed open pit locality was completed during the period. A geological report to accompany 1:500 lithological and structural fact and interpretation surface maps and sections is being prepared.

2.2 Definitive Geological Ore Reserves

Definitive geological ore reserve estimate within the immediate vicinity of the proposed open pit has been completed. A formal report inclusive of sections and level plans will be available mid July. //

2.3 Authority to Prospect 5/80 (Housego Grid Area)

Ground magnetic data from the Housego Grid was treated mathematically to allow forward modelling of basalt thickness to be undertaken. Magnetic susceptibilities as measured from drill core and remnant magnetization data were used as constraints on the bulk susceptibilities assigned to these models. The observed magnetic field was found to be adequately explained by postulated basalt configuration. Recommendations for confirmatory drilling were made. No sub-basaltic magnetic targets were delineated.

2.4 Mount Bischoff Site Facilities

With the completion of the Stage IV drilling program and the advent of winter, site facilities were placed on a care and maintenance basis. Geological staff were transferred back to their parent company. Mr. Jack Housego will remain in Waratah as the project's site representative. Draughting activities have been transferred to Melbourne office where all outstanding draughting work will be brought up to date.

3. Mining

Preliminary mine planning in preparation for the Stage IV Economic Evaluation Study continued during the period.

A final pit profile which integrated the constraints of topography, the practicalities of mining and basic economic considerations was established.

Availability of indicative net minesite realisation estimates, definitive geological ore reserves and detailed Stage IV operating cost estimates allowed simple "breakeven" grade analyses to be undertaken. The objective being to determine, given a positive operating cash flow from the open pit, what money would be available for capital expenditure.

4. Metallurgy

4.1 DSL and Porphyry Ore Variability

Variability testwork on the recent DSL drill hole intercept samples have confirmed earlier predictions of metallurgical characteristics.

The porphyry variability testwork results are expected in mid July.

4.2 Aberfoyle Metallurgical Testwork

A report dated 15 June, 1982, and titled "Mount Bischoff Ore Characterisation" was received from Aberfoyle's Central Metallurgical Services.

Three drill core samples, MCA, MCC and MCD were subjected to cassiterite natural grainsize analysis, heavy liquid washability tests, bulk sulphide flotation, super panning and cassiterite flotation, together with mineralogical analysis of feeds and products.

The testwork was designed to indicate how the ores would perform with flowsheets similar to those at Cleveland and Renison.

The report concluded that the cassiterite grainsize distribution is not unlike those of the Cleveland ores and the general response of the Mount Bischoff material in terms of sulphide flotation, gravity separation and cassiterite flotation at a Cleveland type circuit would yield recoveries of 70-75% for MCA (DSL above porphyry) and 65-70% for MCC (DSL below porphyry) and MCD (porphyry) after an initial learning period. Results demonstrated that the porphyry material is the only one amenable to heavy media preconcentration.

The amenability of the ore to matt fuming or preconcentration and fuming was not tested in any detail.

4.3 Stage IV Metallurgical Assessment

Metallurgical aspects of treatment options considered within the Stage IV Evaluation Study were completed.

5. Engineering

Capital and operating cost estimates for the Stage IV Economic Evaluation Study is proceeding.

APPENDED INFORMATION

1. Project Expenditure Details
2. Joint Venture Asset Statement

MOUNT BISCHOFF JOINT VENTURE

	<u>June 1982</u>		<u>YTD June</u>		<u>6 Months to</u>
	<u>Actual Budget</u>		<u>Actual Budget</u>		<u>June 1982</u>
	<u>\$000</u>		<u>\$000</u>		<u>Budget</u>
Administration	17	18	134	125	125
Geology	44	26	*262	204	204
Mining	17	10	60	96	96
Metallurgy	9	6	*58	77	77
Engineering	1	6	34	90	90
Commercial	1	5	6	26.5	26.5
	<u>89</u>	<u>71</u>	<u>554</u>	<u>618.5</u>	<u>618.5</u>
M.E.L. SHARE 40%	36	28	214	247	247

*Redistribution adjustment.

SUMMARY OF EXPENDITURE TO 30/6/82

	<u>Current Period</u>	<u>Accumulative</u>
	<u>\$000</u>	<u>\$000</u>
Stage 1		270
Stage 2A - Early Start		29
Stage 2A		199
Overruns: Stage 1 - M.E.L.		11
Metallurgical - CRAE		24
Stage 2B		482
Stage 2B - 3A Holding Costs Offset - A.I.R. & D.		40
Stage 3A - Partly offset by A.I.R. & D Grant Rec. June 1981 \$6,500		861
Stage 3B - Partly offset by A.I.R. & D Grant Rec. July 1981 \$25,863		674
Stage 4 - Partly offset by A.I.R. & D. D. Grant Rec. February 1982 \$16,500	<u>89</u>	<u>554</u>
ACCUMULATIVE EPXENDITURE TO DATE:	<u>89</u>	<u>3,144</u>

MOUNT BISCHOFF JOINT VENTURE

	June 1982		YTD June		6 Months to
	Actual	Budget	Actual	Budget	June 1982
	\$000		\$000		Budget
					\$000
ADMINISTRATION					
Technical Services	12	15	106	112	112
Consumables	4	2	15	7	7
Travel	1	1	13	6	6
	<u>17</u>	<u>18</u>	<u>134</u>	<u>125</u>	<u>125</u>
GEOLOGY					
Technical Services	3	8	*47	64	64
Labour	2	2	12	8	8
Consumables	2	3	11	20	20
Accommodation	2	1	4	6	6
Vehicles	1	1	4	5	5
Travel	-	1	1	4	4
Contractors	13	2	117	57	57
Consultants	21	8	66	40	40
	<u>44</u>	<u>26</u>	<u>*262</u>	<u>204</u>	<u>204</u>
MINING					
Technical Services	16	9	41	63	63
Consumables	-	-	3	3	3
Travel	1	1	7	8	8
Consultants	-	-	9	22	22
	<u>17</u>	<u>10</u>	<u>60</u>	<u>96</u>	<u>96</u>
METALLURGY					
Technical Services	9	6	*39	35	35
Consumables	-	-	1	3	3
Travel	-	0.5	3	7.5	7.5
Contractors	-	7	14	27	27
Consultants	-	0.5	1	4.5	4.5
	<u>9</u>	<u>14</u>	<u>*58</u>	<u>77</u>	<u>77</u>
ENGINEERING					
Technical Services	1	6	31	38	38
Consumables	-	-	-	1	1
Travel	-	-	-	10	10
Contractors	-	-	1	30	30
Consultants	-	-	2	11	11
	<u>1</u>	<u>6</u>	<u>34</u>	<u>90</u>	<u>90</u>
COMMERCIAL					
Technical Services	-	2	4	15	15
Consumables	-	2	-	9	9
Travel	1	1	2	2.5	2.5
	<u>1</u>	<u>1</u>	<u>6</u>	<u>*26.5</u>	<u>26.5</u>
TOTAL	<u>89</u>	<u>71</u>	<u>554</u>	<u>618.5</u>	<u>618.5</u>
M.E.L. Share 40%	36	28	214	247	247

*Redistribution Adjustment

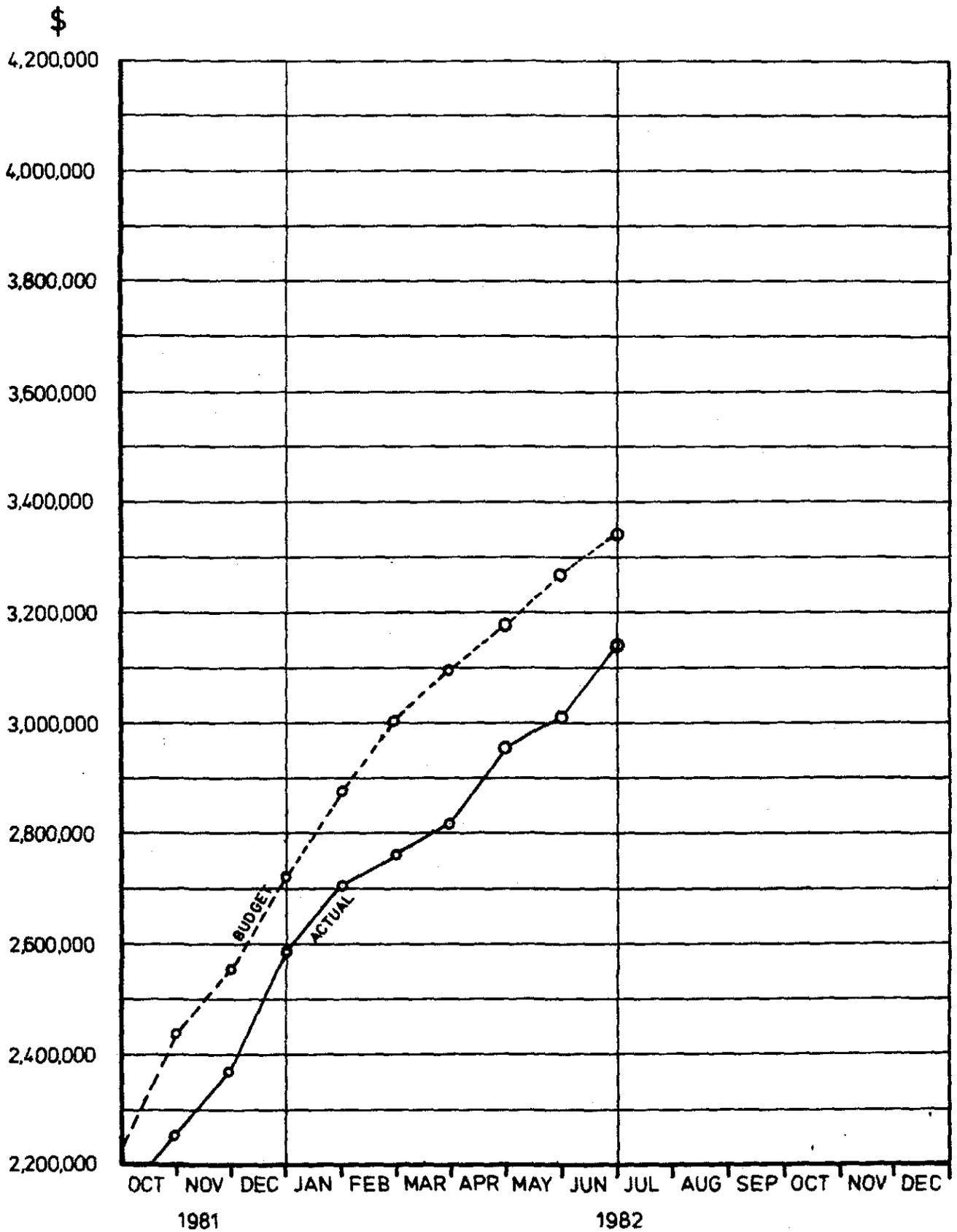
MT BISCHOFF PROJECT
CUMULATIVE CAPITAL EXPENDITURE

	As at 31/5/82	June 1982 Expenditure	As at 30/6/82
STAGE 1 & 2 Core Shed	\$15,295	-	\$15,295
Concrete Foundations	<u>\$ 2,100</u>	-	<u>\$ 2,100</u>
	\$17,395		\$17,395
STAGE 3A Core Shed	\$ 8,660	-	\$ 8,660
Accommodation Unit	<u>\$32,500</u>	-	<u>\$32,500</u>
TOTAL	<u>\$58,555</u>		<u>\$58,555</u>

Beneficial Ownership - As at 30 June, 1982.

CRA $51 \times \frac{100}{85} = 60\%$

M.E.L. $34 \times \frac{100}{85} = 40\%$



CUMULATIVE EXPENDITURE SCHEDULE

MT. BISCHOFF PROJECT

SUMMARY

as at 30-6-'82.

Drg No. T/T64

I,
I,

Michael Devlin LAVERTY

of 89 Kerford Street, MALVERN. VIC. 3144.

in the State of Victoria

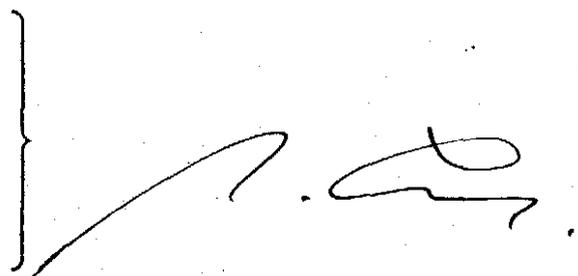
do solemnly and

sincerely declare

THAT I am the Project Manager in charge of Exploration within the Authority to Prospect 5/80 (Tasmania), and that the expenditure for the month of June, 1982 on AP 5/80 was \$1,269.00.

AND I make this solemn declaration conscientiously believing the same to be true and by virtue of the provisions of an Act of the Parliament of Victoria rendering persons making a false Declaration punishable for wilful and corrupt perjury.

DECLARED at MELBOURNE in the
State of Victoria this THIRTEENTH
day of JULY One Thousand
nine hundred and EIGHTY-TWO
Before me



I,
Michael Devlin LAVERTY

of 89 Kerford Street, MALVERN. VIC. 3144.

in the State of Victoria

do solemnly and

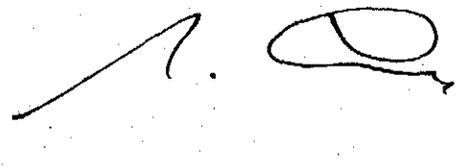
sincerely declare

THAT I am the Project Manager in charge of Exploration within the Exploration Licence 13/79 (Tasmania), and that the expenditure for the month of June, 1982 on EL 13/79 was \$87,731.00.

AND I make this solemn declaration conscientiously believing the same to be true and by virtue of the provisions of an Act of the Parliament of Victoria rendering persons making a false Declaration punishable for wilful and corrupt perjury.

DECLARED at MELBOURNE in the
State of Victoria this THIRTEENTH
day of JULY One Thousand
nine hundred and EIGHTY-TWO

Before me



MT. BISCHOFF TIN PROSPECT
EXPLORATION LICENCE 13/79
AND AUTHORITY TO PROSPECT 5/80
TASMANIA
REPORT FOR JULY, 1982

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M.D. Lavery

16/8/82

MOUNT BISCHOFF TIN PROSPECT

REPORT FOR JULY, 1982

1. General

- . draft Stage IV evaluation study completed.
- . Stage IV geological ore reserve (open pit) computations and documentation completed.
- . draft surface mapping geological report completed.
- . draft Stage IV supplementary mining study completed.
- . applicability of porphyry preconcentration confirmed by further porphyry variability test work.

2. Geology

2.1 Surface Mapping

- . Draughting of fact and interpretation surface geology maps commenced. A draft report to accompany the 1:500 fact and interpretation geological maps was completed. The report briefly describes facets of the geology of Mount Bischoff examined during the mapping programme (not intended as a detailed geological description).

2.2 Drilling

- . Approximately 20 hard auger reconnaissance holes (6 metre depth) along an east west traverse line immediately south of the Don Hill workings were completed during the period. Samples were split and one half tested for presence of tin by vanning.

2.3 Geological Ore Reserve

- . A geological interpretation and ore reserve report inclusive of all maps and computation sheets was completed by Douglas McKenna & Partners.
Five sets of reserves were calculated for different cut-off grades and ore types. Each reserve was calculated separately on sectional and level basis.

The reserves are confined to specific coordinates, 1700N to 2040N, 940E to 1300E and surface to RL530 metres. This volume covers the main DSL occurrences.

Further geological reserves may be found in the Slaughteryard Face and Brown Face with respect to DSL and west of 940E, at depth, in Stanhope, Queen Dyke in respect to Porphyry.

A summary of the calculated ore reserves within the specified coordinates follows.

Type	Cut-off Grade	Proven		Probable		Possible		Total	
		Tonnes	Grade	Tonnes	Grade	Tonnes	Grade	Tonnes	Grade
	%Sn	x103	%Sn	x103	%Sn	x103	%Sn	x103	%Sn
DSL	0.4	40	1.5	910	1.1	150	0.89	1 100	1.1
DSL	0.3	55	1.1	1 000	1.0	200	0.80	1 300	1.0
DSL	0.2	58	1.1	1 100	0.98	290	0.69	1 400	0.93
Porphyry	0.3	-	-	1 000	0.54	29	0.63	1 000	0.55
Porphyry	0.2	-	-	1 500	0.46	50	0.51	1 500	0.46

3. Mining

Preliminary mine planning studies for consideration within the Stage IV Economic Evaluation Study were completed. A supplementary report detailing the concepts and rationale used in designing the final open pit profile and mode of operation is being prepared for reference purposes.

4. Metallurgy

4.1 Porphyry Ore Variability

Twelve samples were tested representing;

- (a) diamond drill hole intercepts in the major porphyry dyke,

- (b) diamond drill holes intercepts in the Stanhope Dyke,
- (c) the two porphyry composites tested to date in 50 kg scale tests (MCD and MCF).

Testing comprised heavy liquid analysis of size fractions of crushed samples to assess cassiterite liberation and response to preconcentration and mineralogical analysis. Results generally confirm liberation characteristics shown in the bulked composites, and hence confirm the general applicability of preconcentration as described in the Stage III report. The results do show that as the sulphide content of porphyry ore increases the fraction rejectable to tail decreases but this should be affected by removal of the additional sulphides in sulphide flotation after fine grinding of concentrate.

5. Engineering

Capital and operating cost estimates for the Stage IV Economic Evaluation Study were completed.

APPENDED INFORMATION

1. Project Expenditure Details

MOUNT BISCHOFF JOINT VENTURE

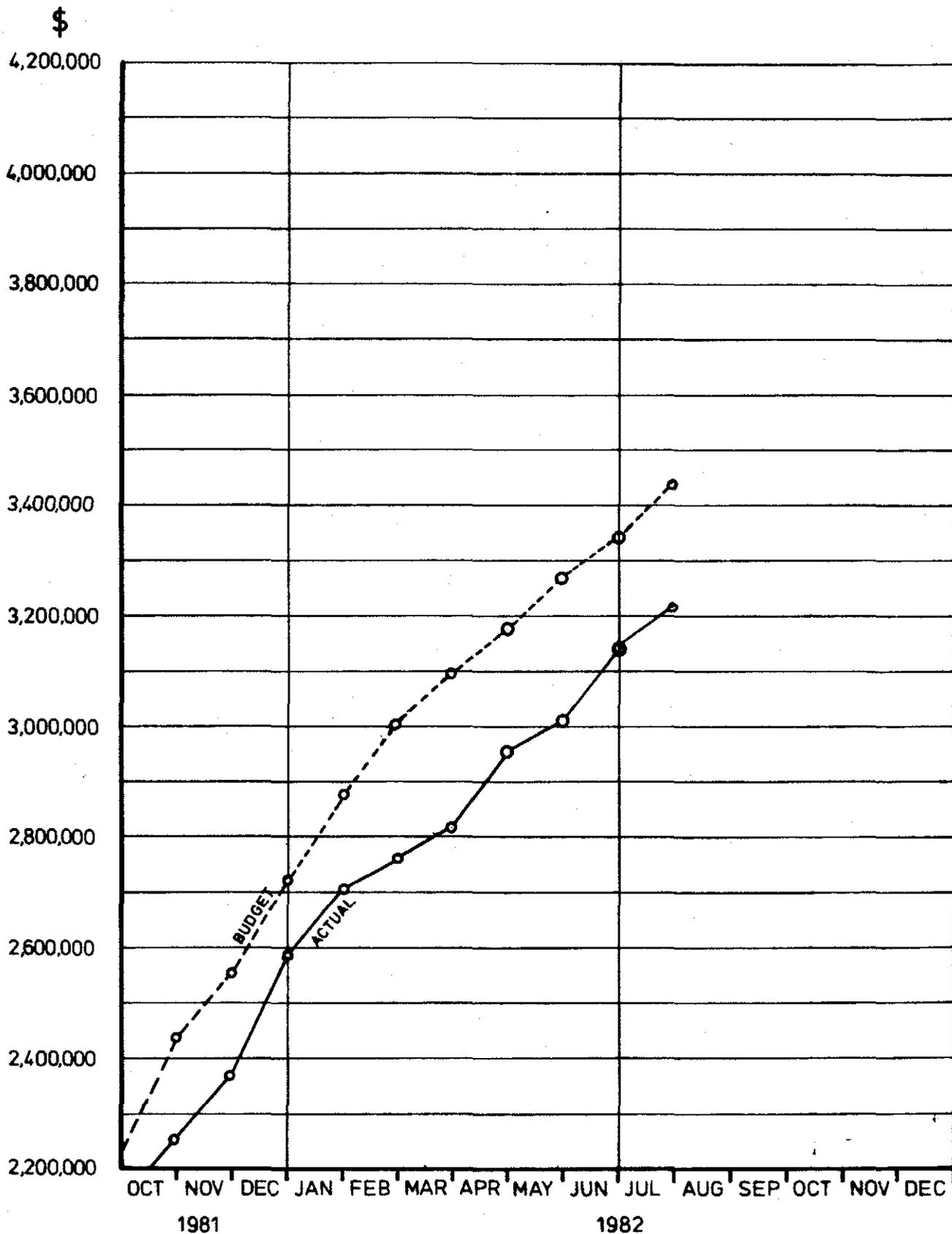
	<u>July 1982</u>		<u>YTD July</u>	
	<u>Actual</u>	<u>Budget</u>	<u>Actual</u>	<u>Budget</u>
	<u>\$000</u>		<u>\$000</u>	
Administration	15	20	149	145
Geology	8	20	270	224
Mining	12	11	72	107
Metallurgy	14	13	72	90
Engineering	10	9	44	99
Commercial	<u>2</u>	<u>3</u>	<u>8</u>	<u>29.5</u>
	<u>61</u>	<u>76</u>	<u>615</u>	<u>694.5</u>
M.E.L. SHARE 40%	25	31	239	278

SUMMARY OF EXPENDITURE TO 31/7/82

	<u>Current Period</u>	<u>Accumulative</u>
	<u>\$000</u>	<u>\$000</u>
Stage 1		270
Stage 2A - Early Start		29
Stage 2A		199
Overruns: Stage 1 - M.E.L.		11
Metallurgical - CRAE		24
Stage 2B		482
Stage 2B - 3A Holding Costs Offset - A.I.R. & D.		40
Stage 3A - Partly offset by A.I.R. & D Grant Rec. June 1981 \$6,500		861
Stage 3B - Partly offset by A.I.R. & D Grant Rec. July 1981 \$25,863		674
Stage 4 - Partly offset by A.I.R. & D. D. Grant Rec. February 1982 \$16,500	<u>61</u>	<u>615</u>
ACCUMULATIVE EXPENDITURE TO DATE:	<u>61</u>	<u>3,205</u>

MOUNT BISCHOFF JOINT VENTURE

	<u>July 1982</u>		<u>YTD July</u>	
	<u>Actual</u>	<u>Budget</u>	<u>Actual</u>	<u>Budget</u>
	<u>\$000</u>		<u>\$000</u>	
ADMINISTRATION				
Technical Services	15	15	121	127
Consumables	-	2	15	9
Travel	-	3	13	9
	<u>15</u>	<u>20</u>	<u>149</u>	<u>145</u>
GEOLOGY				
Technical Services	3	11	50	75
Labour	(2)	2	10	10
Consumables	2	3	13	22
Accommodation	-	1	4	7
Vehicles	-	1	4	6
Travel	-	-	1	4
Contractors	-	-	117	57
Consultants	5	3	71	43
	<u>8</u>	<u>20</u>	<u>270</u>	<u>224</u>
MINING				
Technical Services	12	11	53	74
Consumables	-	-	3	3
Travel	-	-	7	8
Consultants	-	-	9	22
	<u>12</u>	<u>11</u>	<u>72</u>	<u>107</u>
METALLURGY				
Technical Services	8	8	47	43
Consumables	-	-	1	3
Travel	-	1	3	8.5
Contractors	3	2	17	29
Consultants	3	2	4	6.5
	<u>14</u>	<u>13</u>	<u>72</u>	<u>90</u>
ENGINEERING				
Technical Services	10	8	41	46
Consumables	-	-	-	1
Travel	-	1	-	11
Contractors	-	-	1	30
Consultants	-	-	2	11
	<u>10</u>	<u>9</u>	<u>44</u>	<u>99</u>
COMMERCIAL				
Technical Services	1	2	5	17
Consumables	1	1	1	10
Travel	-	-	2	2.5
	<u>2</u>	<u>3</u>	<u>8</u>	<u>29.5</u>
TOTAL	<u>61</u>	<u>76</u>	<u>615</u>	<u>694.5</u>
M.E.L. Share 40%	25	31	239	278



CUMULATIVE EXPENDITURE SCHEDULE

MT. BISCHOFF PROJECT

SUMMARY
as at 31-7-'82

MT. BISCHOFF 1IN PROSPECT
EXPLORATION LICENCE 13/79
AND AUTHORITY TO PROSPECT 5/80
TASMANIA
MONTHLY REPORTS FOR JANUARY TO DECEMBER, 1982
REPORT FOR JULY - SEPTEMBER, 1982

VOL. II.

Distribution:

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- Copy No. 11: CRA Accounts Department

M.D. Lavery

12/10/82

MOUNT BISCHOFF TIN PROSPECT

REPORT FOR JULY - SEPTEMBER, 1982

(incorporates the previously submitted "Report for July 1982")

1. General

- . Stage IV Preliminary Economic Evaluation Study completed.
- . Stage IV geological ore reserve estimate (pertaining to the proposed open pit) completed.
- . Draft surface mapping report completed.
- . Stage IV supplementary mining report completed.
- . Applicability of porphyry pre-concentration confirmed by further porphyry variability testwork.

2. Geology

2.1 Surface Mapping

Drafting of 1:500 scale "fact" and "interpretation" surface geology maps was completed. A draft report to accompany the maps was also completed. The report briefly describes facets of the geology of Mount Bischoff examined during the mapping programme. The report is not intended as a detailed geological description.

2.2 Drilling

Approximately 50 hand auger reconnaissance holes were drilled (to a maximum of 6 metres where conditions permitted) along east-west traverse lines immediately south of the Don Hill workings. The samples were split and one fraction tested for presence of tin by vaning.

2.3 Assay Results

Five samples from the reconnaissance hole program were submitted for assay. The results were:

Sample Number	Report Grade ppm Sn
144949	1350
144950	1100
144951	1150
144952	650
144953	1600

2.4 Geological Ore Reserve

A geological interpretation and ore reserve report inclusive of all maps and computation sheets was completed by Douglas McKenna & Partners.

Five sets of reserves were calculated to accommodate different cut-off grades and ore types. Each reserve was calculated separately on sectional and level bases.

The reserve estimate is confined to the volume delineated by 1700N to 2040N, 940E to 1300E and surface to RL530 metres. This volume incorporates the main DSL occurrences.

Further geological reserves may be found in the Slaughteryard Face and Brown Face with respect to DSL and west of 940E, at depth, in Stanhope, and Queen Dyke in respect to Porphyry.

A summary of the calculated ore reserves within the specified coordinates follows.

Type	Cut-off Grade	Proven		Probable		Possible		Total	
		Tonnes	Grade	Tonnes	Grade	Tonnes	Grade	Tonnes	Grade
	%Sn	x10 ³	%Sn	x10 ³	%Sn	x10 ³	%Sn	x10 ³	%Sn
DSL	0.4	40	1.5	910	1.1	150	0.89	1 100	1.1
DSL	0.3	55	1.1	1 000	1.0	200	0.80	1 300	1.0
DSL	0.2	58	1.1	1 100	0.98	290	0.69	1 400	0.93
Porphyry	0.3	-	-	1 000	0.54	29	0.63	1 000	0.55
Porphyry	0.2	-	-	1 500	0.46	50	0.51	1 500	0.46

3. Mining

Preliminary mine planning studies for consideration within the Stage IV Economic Evaluation Study were completed. A supplementary report detailing the concepts and rationale used in designing the final open pit profile and mode of operation prepared for reference purposes, was finalised.

4. Metallurgy

4.1 Porphyry Ore Variability

Twelve samples were tested representing:

- (a) diamond drill hole intercepts in the major porphyry dyke,
- (b) diamond drill holes intercepts in the Stanhope Dyke,
- (c) the two porphyry composites tested to date in 50 kg scale tests (MCD and MCF).

Testing comprised heavy liquid analysis of size fractions of crushed samples to assess cassiterite liberation and response to preconcentration and mineralogical analysis. Results generally confirm liberation characteristics shown in the bulked composites, and hence confirm the general applicability of preconcentration as described in the Stage III report. The results do show that as the sulphide content of porphyry ore increases the fraction rejectable to tail decreases but this should be affected by removal of the additional sulphides in sulphide flotation after fine grinding of concentrate.

5. Engineering

Capital and operating cost estimates for the Stage IV Economic Evaluation Study were completed.

APPENDED INFORMATION

1. Project Expenditure Details

MOUNT BISCHOFF JOINT VENTURE

	September Qtr 1982		YTD 1982	
	<u>Actual</u>	<u>Budget</u>	<u>Actual</u>	<u>Budget</u>
	<u>\$000</u>		<u>\$000</u>	
Administration	40	45	174	170
Geology	21	21.5	283	225.6
Mining	25	26	85	122
Metallurgy	2	13	60	90
Engineering	17	9	51	99
Commercial	<u>4</u>	<u>13</u>	<u>10</u>	<u>39.5</u>
TOTAL	<u>109</u>	<u>127.5</u>	<u>663</u>	<u>746</u>

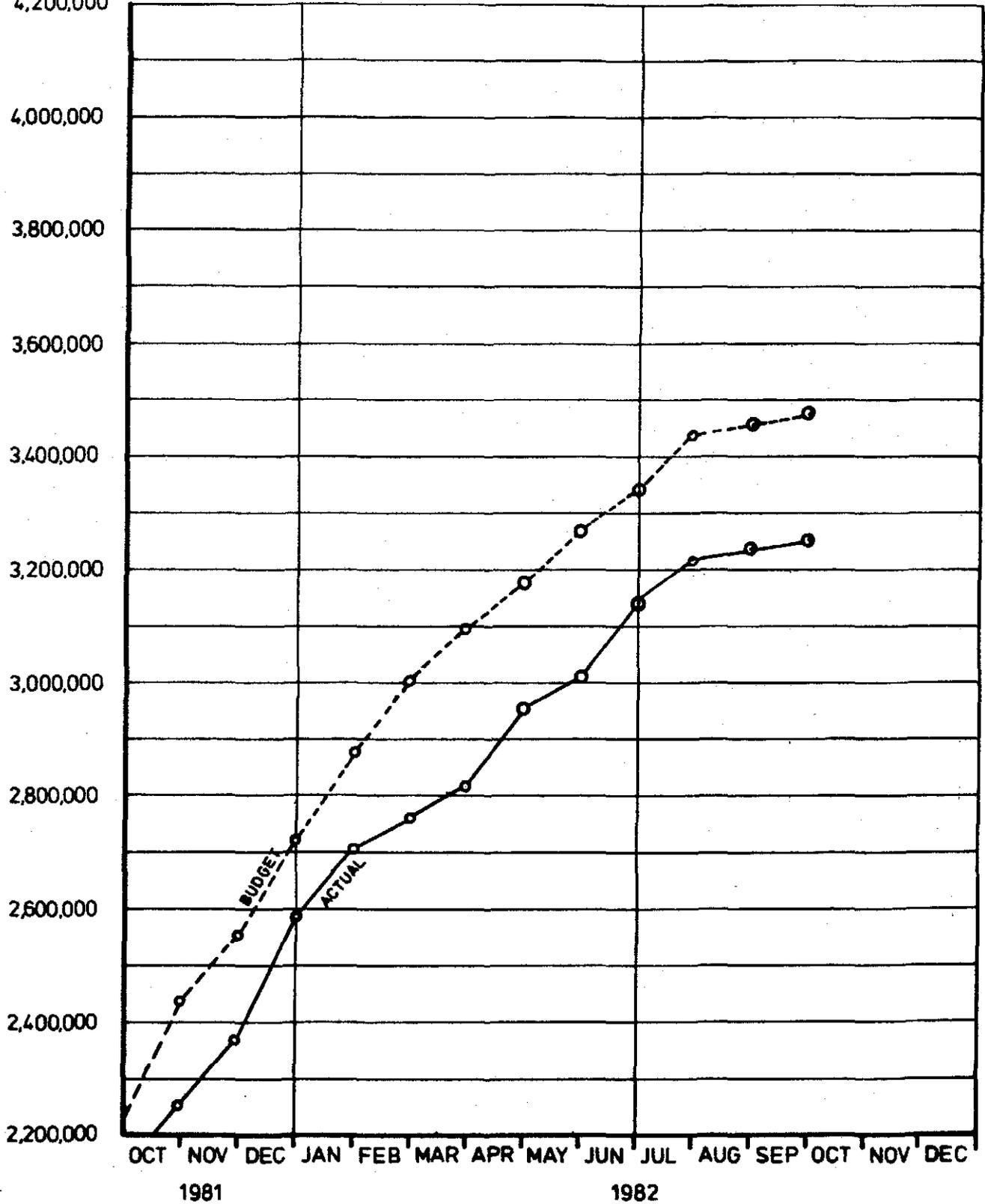
SUMMARY OF EXPENDITURE TO 31/7/82

	<u>Current Period</u>	<u>Accumulative</u>
	<u>\$000</u>	<u>\$000</u>
Stage 1		270
Stage 2A - Early Start		29
Stage 2A		199
Overruns: Stage 1 - M.E.L.		11
Metallurgical - CRAE		24
Stage 2B		482
Stage 2B - 3A Holding Costs Offset - A.I.R. & D.		40
Stage 3A - Partly offset by A.I.R. & D Grant Rec. June 1981 \$6,500		861
Stage 3B - Partly offset by A.I.R. & D Grant Rec. July 1981 \$25,863		674
Stage 4 - Partly offset by A.I.R. & D. D. Grant Rec. February 1982 \$16,500	<u>109</u>	<u>663</u>
ACCUMULATIVE EXPENDITURE TO DATE:	<u>109</u>	<u>3,253</u>

MOUNT BISCHOFF JOINT VENTURE

	<u>September Qtr 1982</u>		<u>YTD July</u>	
	<u>Actual</u>	<u>Budget</u>	<u>Actual</u>	<u>Budget</u>
	<u>\$000</u>		<u>\$000</u>	
ADMINISTRATION				
Technical Services	35	36	41	148
Labour	-	1	-	1
Consumables	4	2.5	19	9.5
Travel	1	4.5	14	0.5
Consultants	-	1	-	1
	<u>40</u>	<u>45</u>	<u>174</u>	<u>170</u>
GEOLOGY				
Technical Services	3	11	50	75
Labour	1	2	13	10
Consumables	3	2.5	14	22.5
Accommodation	1	1	5	7
Vehicles	-	1.5	4	6.5
Travel	-	-	1	4
Contractors	3	-	120	57
Consultants	10	3.5	76	43.5
	<u>21</u>	<u>21.5</u>	<u>283</u>	<u>225.5</u>
MINING				
Technical Services	25	23	66	86
Consumables	-	3	3	6
Travel	-	-	7	8
Consultants	-	-	9	22
	<u>25</u>	<u>26</u>	<u>85</u>	<u>122</u>
METALLURGY				
Technical Services	(8)	8	31	43
Consumables	-	-	1	3
Travel	-	1	3	8.5
Contractors	7	2	21	29
Consultants	3	2	4	6.5
	<u>2</u>	<u>13</u>	<u>60</u>	<u>90</u>
ENGINEERING				
Technical Services	17	8	48	46
Consumables	-	-	-	1
Travel	-	1	-	11
Contractors	-	-	1	30
Consultants	-	-	2	11
	<u>17</u>	<u>9</u>	<u>51</u>	<u>99</u>
COMMERCIAL				
Technical Services	3	7	7	22
Consumables	1	6	1	15
Travel	-	-	2	2.5
	<u>4</u>	<u>13</u>	<u>10</u>	<u>39.5</u>
TOTAL	<u>109</u>	<u>127.5</u>	<u>663</u>	<u>746</u>

\$
4,200,000



CUMULATIVE EXPENDITURE SCHEDULE

MT. BISCHOFF PROJECT

SUMMARY
as at 30-9-82.....

Drg No. T/T64

MT. BISCHOFF TIN PROSPECT
EXPLORATION LICENCE 13/79
AND AUTHORITY TO PROSPECT 5/80
TASMANIA
MONTHLY REPORTS FOR ~~JANUARY~~ TO DECEMBER, 1982
REPORT FOR OCTOBER-DECEMBER, 1982

VOLUME III

Reviewed 14-1-83

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M.D. Lavery

5/1/83

MOUNT BISCHOFF TIN PROSPECT
REPORT FOR OCTOBER-DECEMBER, 1982

1. General

- . 50 hand auger reconnaissance holes drilled in Don Hill locality.
- . Review of 100 tonne per annum (contained tin) minimum production case studies.
- . EL 13/79 and A to P 5/80 renewal applications submitted to Mines Department.

2. Geology

2.1 Drilling

Approximately 50 hand auger reconnaissance holes were drilled to a maximum of 6 metres where conditions permitted along east-west traverse lines immediately south of the Don Hill workings. The samples were split and one fraction tested for presence of tin by vanning.

On the basis of the vanning results, fractions of sixteen samples were submitted for chemical analysis.

The results were:

Hand Auger Line Number	Hole Number	Sample Internal(m)	Sample Number	Sn Assay ppm
1	7	0-1	144955	911
1	7	1-2	144956	465
1	8	0-1	144957	1220
1	8	1-2	144958	2450
1	9	0-1	144959	401
1	9	1-2	144960	1790
2	2	0-1	144961	1280
2	2	1-2	144962	1840
2	4	0-1	144963	2150
2	4	1-2	144964	1550
2	11	0-1	144965	1210
2	12	0-1	144966	1480
2	12	1-2	144967	1140
2	13	0-1	144968	2310
2	13	1-2	144969	1460
3	4	0-1	144970	2740

A survey pickup of the auger traverse lines was completed. A map showing traverse lines and individual auger holes is incorporated in this report.

2.2 Geochemical Haloes (CSIRO)

CSIRO collected a small suite of specimens from the Mount Bischoff drill core in connection with their research on the use of primary geochemical haloes in mineral exploration.

Samples representing the sequence from "unaltered" to "highly altered" both in the footwall siltstones and the porphyry dykes were collected. The samples will be examined microscopically and then analysed for as full a range as possible of major and trace elements. To interpret the results may require some electron probe microanalysis and fluid inclusion or stable isotope research. All results and interpretations obtained will be reported to the MBJV as a CSIRO "Restricted Investigation Report".

2.3 Surface Mapping

The final report describing facets of the surface geology of Mount Bischoff (limited to within boundaries of proposed open pit) was completed. A series of 1:500 scale "fact" and "interpretation" surface geology maps accompany the report.

3. Engineering

A review of various 100 tonnes per annum (contained tin) production case studies was completed. The recently estimated Stage IV geological ore reserve was the basis for new pit designs and mine planning.

4. Administration

The year ending December 31st, 1983, work programme and budget for EL 13/79 and A to P 5/80 were completed.

Applications for renewal of EL 13/79 and A to P 5/80 to December 31st, 1983, were submitted to the Tasmanian Mines Department.

Care and maintenance of all onsite facilities continued during the period.

APPENDED INFORMATION

1. Project Expenditure Details

MOUNT BISCHOFF JOINT VENTURE

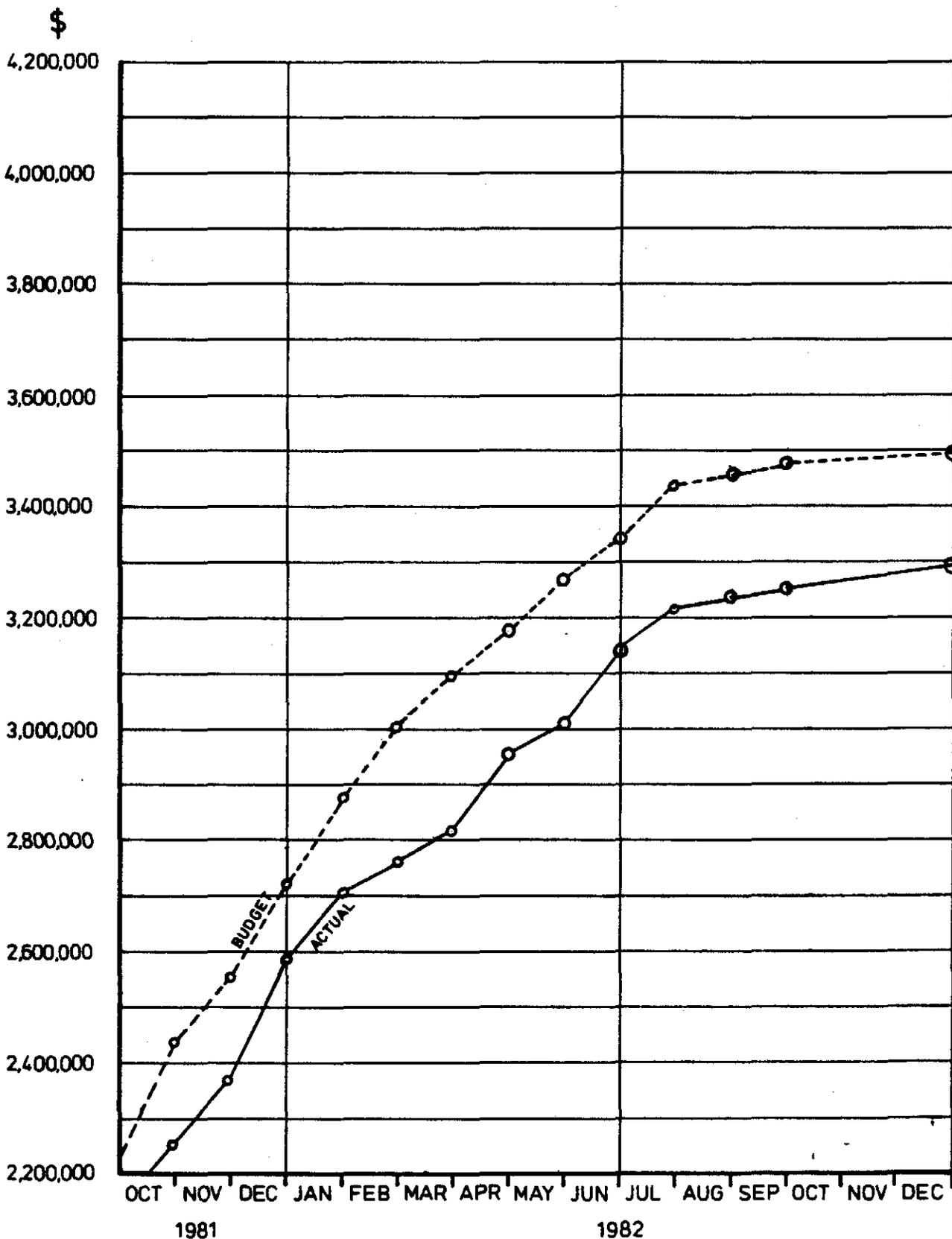
	<u>December Qtr 1982</u>		<u>YTD December 1982</u>	
	<u>Actual</u>	<u>Budget</u>	<u>Actual</u>	<u>Budget</u>
	<u>\$000</u>		<u>\$000</u>	
ADMINISTRATION				
Technical Services	23.0	14.1	164.0	162.3
Labour	4.0	0.7	4.0	1.7
Consumables	2.0	1.4	21.0	10.7
Travel	1.0	1.8	15.0	12.6
Consultants	-	1.0	-	2.0
Sub Total	30.0	19.0	204.0	189.3
GEOLOGY				
Technical Services	-	-	50.0	74.6
Labour	-	-	13.0	10.1
Consumables	1.0	0.6	15.0	23.3
Accommodation	1.0	-	6.0	6.7
Vehicles	1.0	0.3	5.0	6.4
Travel	-	-	1.0	4.5
Contractors	1.0	-	121.0	57.0
Consultants	2.0	1.5	78.0	45.3
Sub Total	6.0	2.4	289.0	227.9
MINING				
Technical Services	-	-	66.0	85.2
Consumables	-	-	3.-	6.8
Travel	-	-	7.0	8.0
Consultants	-	-	9.0	22.0
Sub Total	-	-	85.0	122.0
METALLURGY				
Technical Services	3.0	-	34.0	42.9
Consumables	-	-	1.0	3.2
Travel	1.0	-	4.0	8.3
Contractors	-	-	21.0	29.0
Consultants	1.0	-	5.0	6.0
Sub Total	5.0	-	65.0	89.4
ENGINEERING				
Technical Services	1.0	-	49.0	45.9
Consumables	-	-	-	1.3
Travel	-	-	-	11.0
Contractors	-	-	1.0	30.0
Consultants	-	-	2.0	11.0
Sub Total	1.0	-	52.0	99.2
COMMERCIAL				
Technical Services	3.0	-	10.0	27.2
Consumables	-	-	1.0	10.2
Travel	-	-	13.0	39.9
Sub Total	3.0	-	13.0	39.9
TOTAL	45.0	21.4	708.0	767.7

MOUNT BISCHOFF JOINT VENTURE

	December Qtr 1982		YTD 1982	
	<u>Actual</u>	<u>Budget</u>	<u>Actual</u>	<u>Budget</u>
	<u>\$000</u>		<u>\$000</u>	
Administration	30.0	19.0	204.0	189.3
Geology	6.0	2.4	289.0	227.9
Mining	-	-	85.0	122.0
Metallurgy	5.0	-	65.0	89.4
Engineering	1.0	-	52.0	99.2
Commercial	3.0	-	13.0	39.9
TOTAL	45.0	21.4	708.0	767.7

SUMMARY OF EXPENDITURE TO 31/12/82

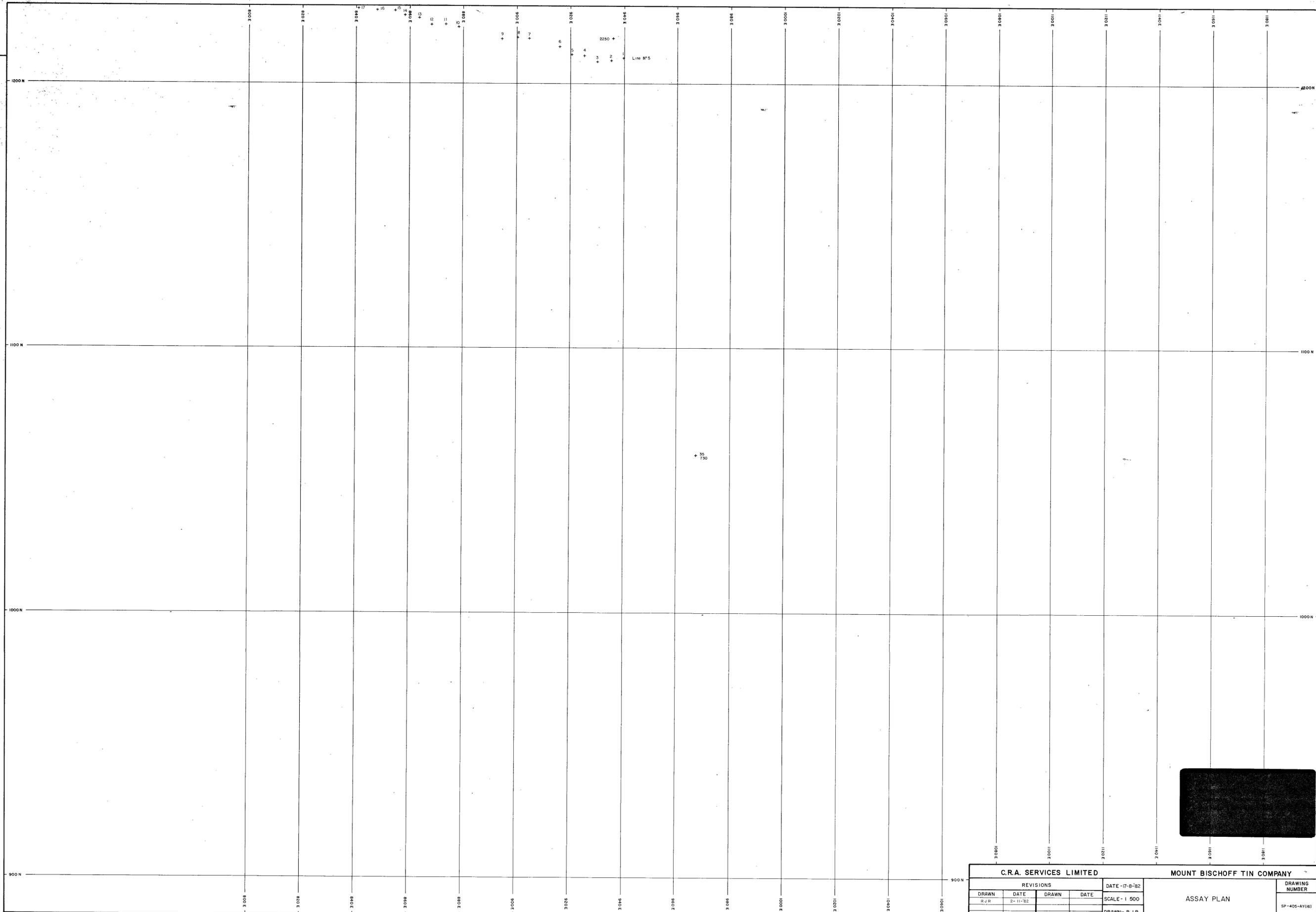
	<u>Current Period</u>	<u>Accumulative</u>
	<u>\$000</u>	<u>\$000</u>
Stage 1		270
Stage 2A - Early Start		29
Stage 2A		199
Overruns: Stage 1 - M.E.L.		11
Metallurgical - CRAE		24
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Stage 2B - 3A Holding Costs Offset - A.I.R. & D.		40
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Stage 3B - Partly offset by A.I.R. & D Grant Rec. July 1981 \$25,863		674
Stage 4 - Partly offset by A.I.R. & D. D. Grant Rec. February 1982 \$16,500	45	708
ACCUMULATIVE EXPENDITURE TO DATE:	45	3 298



CUMULATIVE EXPENDITURE SCHEDULE

MT. BISCHOFF PROJECT

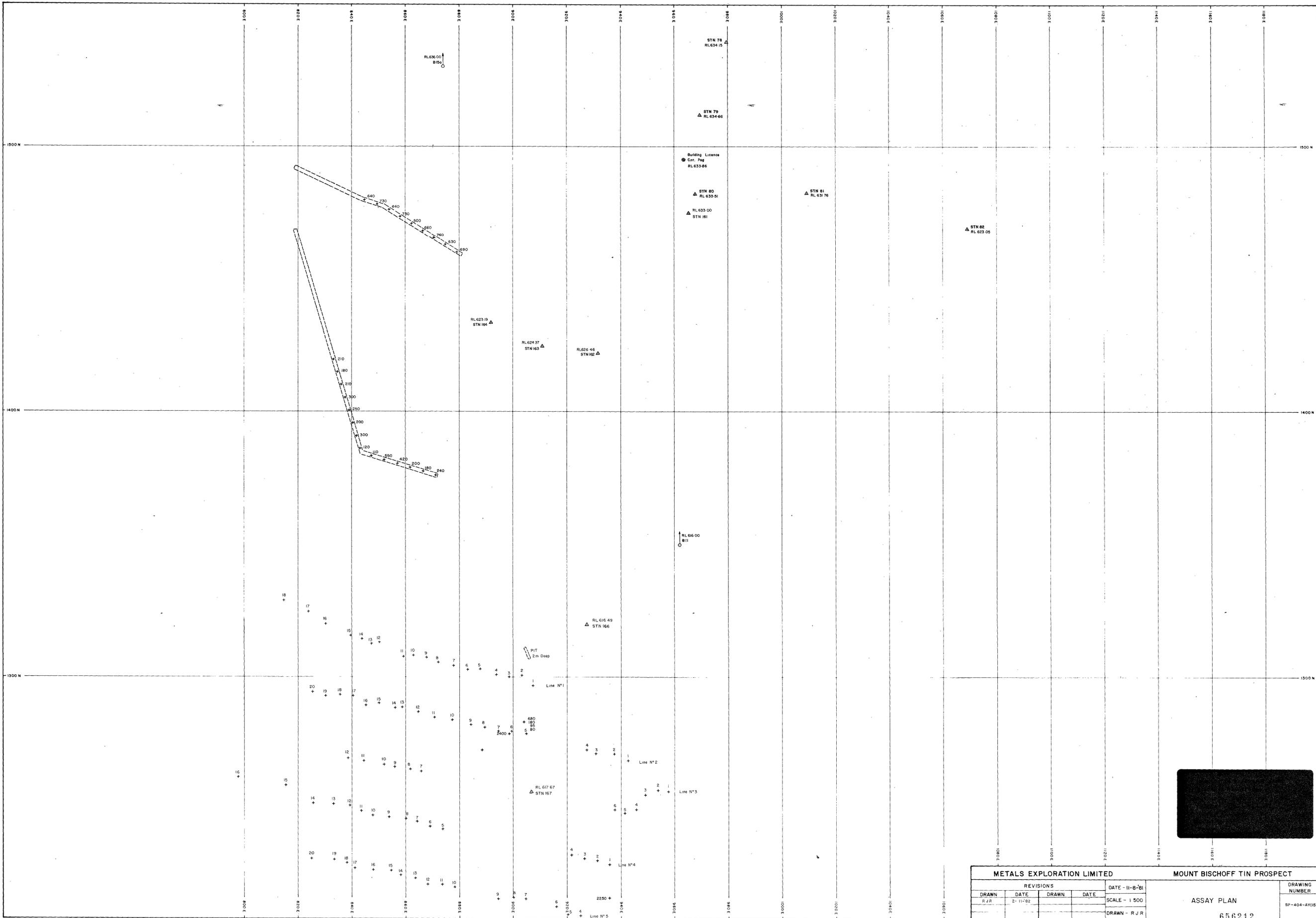
SUMMARY
as at 31-12-82



C.R.A. SERVICES LIMITED				MOUNT BISCHOFF TIN COMPANY	
REVISIONS				DATE - 17-8-'82	
DRAWN	DATE	DRAWN	DATE	SCALE - 1 500	
R.J.R.	2-11-'82			DRAWN - R.J.R.	
				ASSAY PLAN	
				DRAWING NUMBER	
				SP-405-AY(16)	

656211

5 cm



METALS EXPLORATION LIMITED				MOUNT BISCHOFF TIN PROSPECT	
REVISIONS				DATE - 11-8-81	DRAWING NUMBER
DRAWN	DATE	DRAWN	DATE	SCALE - 1:500	ASSAY PLAN
RJR	2-11-82			DRAWN - RJR	
					656212

5 cm

SP-404-41151

NOTES TO ACCOMPANY
1:500 FACT AND INTERPRETATION GEOLOGICAL MAPS
MOUNT BISCHOFF PROJECT

MONTHLY REPORTS FOR JANUARY TO DECEMBER 1982

VOL V

2 Diagramatic Sections (1060E, 1160E)
and Sketch Sections of Weathered
Mantle/Dolomite Relationships

N.R. LANGSFORD
Geologist
August 1982

Received 5 Jan 83

INTRODUCTION

Surface mapping was carried out to record exposures generated by recent trenching, drill site preparation and track forming, and to extend this into the areas of the mine where previously no detailed mapping had been done.

Mapping was carried out using the 1:500 maps of Jim Wright (1981) as a base, extending and modifying where necessary. In most areas considerably more information was obtained. The limit of the proposed open pit was chosen as the limit of the mapping.

Limited additional data was compiled from earlier work by Groves (1971), Chappelle (1971) and Comstaff Pty. Ltd.

"Fact" sheets were compiled to show all lithological and structural data, from this interpretation sheets were produced showing the major lithological and structural units. Information from drilling and underground workings were used to assist in the interpretation.

These notes only briefly describe facets of the geology of Mount Bischoff examined during the mapping program. They are not intended as a detailed geological description.

MAPS

Surface Geology Interpretation

82-2119 → 82-2124

Diagrammatic sections of local Geology.

Standard Symbols & Abbreviations.

Surface Geology Interpretation

LEGEND.

GEOLOGYBROWN FACE - DESERT FACE

Brown Face has been the most productive orebody on the Mount Bischoff field, yielding over one third of the tin metal produced. Up to 1923 the average yield was about 2% tin; since then considerable low grade ore has been produced. Very little mineralised material remains in the cut; no stratiform mineralisation has been intersected in the extensive underground workings or the horizontal diamond drill holes from the Western cross cut, beneath Brown Face.

Descriptions of the ore as mined prior to 1910 suggest a "central core of fissured slate", bounded by dykes of porphyry, strongly mineralised. Many rich tin bearing veins were found in "slate" walls. Oxidation caused a considerable development of gossan in the central section, probably from the oxidation of numerous pyrite-quartz-cassiterite veins. Massive pyrrhotite mineralization is not mentioned in early reports. Most of the material was sufficiently soft to be removed by shovels.

Reid (1923) emphasised the amount of dolomite and porphyry present at deeper levels, and described the "bottoming" of the ore zone on a flat lying "floor of silicified dolomite and slate". He considered the orebody to be bounded by 2 E-W trending faults converging to the W and at depth, and the ore to be due to replacement of dolomite (itself a replacement of an ultra basic "dyke") along the intersections of flat faults and N-S striking, W dipping "lode fissures".

Structure

More recent interpretations consider the Brown Face to be an "asymmetric synclinal structure, faulted on its southern side", (Hopwood and Anderson, 1963); the syncline contains a portion of the dolomite unit bearing sulphide "replacement" mineralisation. Apart from the "boat"

shaped outline of Brown Face, there is not much evidence to support this. The steep walls of the face prevent detailed mapping over critical areas. In the extreme west of the Brown Face where the cut appears most "synclinal", dips are consistently northerly and this is supported by dips in the western crosscut below the northern wall. A synclinal axis may strike at about 300 degrees M through the centre of the north wall, changing to an EW trend at the eastern end of Brown Face. The detailed structural data offered by Chapple (1971), do not support a simple E-W synclinal structure.

Time and weather did not permit the detailed mapping and analysis required to work out the structure of Brown Face.

The walls of the Face consist of laminated to massive, dark grey to grey-brown siltstones and shales with interbedded fine grained grey quartzites and sandstones. The sediments are invariably strongly jointed and show small scale folding. Pervasive tourmalinisation, pyritisation and silicification have affected the sediments.

Mineralisation

The mineralisation remaining is limonite stained quartz-carbonate-pyrite "replacement" with minor massive to banded pyrrhotite-talc rocks. Weakly pyritic porphyry seems to form a sill near the base of the mineralisation. No dykes occur in drill holes or underground workings, suggesting that the porphyry was folded with the "DSL".

A fault trending at about 340 degrees M, (parallel to the major joint direction), separates Brown and Desert Faces. Desert Face consists of a number of flat low amplitude folds plunging approximately 20 degrees W. Remnants of barren pyrrhotite-talc "DSL" occur in the base of several of these synclines; the "DSL" weathers to white skeletal soft talc, with limonite staining. Massive gossan has formed along the fault zone; the fault zone has been mapped in the main tunnel workings.

Below the "DSL" the sediments are tourmalinised, silicified, pyritised and strongly jointed (MBD 7, 38). Just west of the fault zone a 1m thick tourmalinised siltstone band occurs within the talcose "DSL". It shows the same alteration as the footwall sediments; a similar band occurs in Gossan Face and western Brown Face.

In the eastern part of Desert Face, the footwall sediments are jointed grey shales and siltstones with minor fine grained sandstones and quartzites, showing strong jointing but no alteration.

Numerous thin quartz - cassiterite veinlets occur in footwall sediments in Brown and Desert Faces; the cassiterite is black, shiny and crystalline. The veinlets occur along joints.

Vein Deposits below Brown Face

Significant mineralised veins occur as:

- (a) Flat lying, rich quartz-mica-cassiterite veins ie. "Flat Make" intersected and exploited from the levels below Brown Face. At least 3 veins containing 2-20cms of cassiterite were worked above the main tunnel level for horizontal distances of 50-100m.
- (b) Quartz-carbonate-fluorite-pyrite-sphalerite-cassiterite veins, up to 2m wide, dipping steeply W, striking 330-350 degrees M ie. parallel to a major joint direction. These veins have been intersected in drill holes off Western Crosscut; generally they contain about 1% tin. Many smaller 1-10cm thick parallel? veins also occur.

Significant low grade intersections exist ie. 75m 0.15% Sn in B54 in vein form which may be a potential "ore sorting" resource.

SLAUGHTERYARD FACE

Mineralisation

Slaughter Yard Face is located south of the Brown Face and contains ore remnants similar to those found in Brown Face. Massive pyrrhotite and banded talc-serpentine-pyrrhotite-carbonate occur overlying recrystallised dolomite, which overlies closely jointed laminated siltstones, dolomitic in part. The ore remnants sit in a shallow basinal structure within a complex anticline, probably related to the southern limb of the Brown Face structure.

The mineralised dolomite is broken into blocks by a number of small shears, and marked by strongly developed jointing. Drilling (MBD 130, 134) has shown that the remnant mineralisation is low grade, thin and underlain by dolomite and dolomitic siltstones, which contain pyrrhotite of undoubted sedimentary origin. The underlying dolomite is traversed by subvertical coarse grained sulphide-carbonate-fluorite- cassiterite veins up to 10 cms thick.

Porphyry

Several variants of altered porphyry occur. As in Brown Face the porphyry within the mineralised dolomite appears to be a sill. It is folded and faulted with the mineralised dolomite and has the same joint pattern. It contains disseminated pyrrhotite (up to 10%) which contrasts with the more usual pyrite. The porphyry appears to be topazised.

Immediately south of the ore remnants a dark green to black altered porphyry type occurs within tourmalinised footwall sediments and appears to have sheared contacts with sediments. The altered porphyry consists of "phenocrysts" of radiating fine grained tourmaline and sellaite set in a groundmass of sericite or phlogopite with minor sulphides (CMS Report 82/3/34, W. Fander). (The same type of alteration occurs in a dyke in the northern section of Gossan Face and is referred to on surface mapping

as "black altn." QP.) In several places small pods of tourmalinised contact breccias are preserved at the margins of this alteration type proving its intrusive nature.

To the east of the remnants of massive mineralisation are small isolated patches of talcose "DSL" overlying closely jointed tourmaline-rich pyritised footwall sediments with a few thin quartz-cassiterite veins.

GOSSAN FACE

Gossan (or Greisen) Face covers a considerable area south of Western Dyke and has yielded considerable low grade ore from surface workings and massive pyrrhotite ore from underground openings. It contains significant reserves of "DSL" ore within the dolomite unit.

The Gossan Face is bounded to the north by Western Dyke, to the west by the partly faulted, partly stratigraphic margin of the dolomite unit, to the east by White Face Dyke and to the south by Allen's workings.

Dolomite and Footwall Sediments

Immediately south of Western dyke is exposed a sequence of footwall siltstones, shales and fine grained sandstones, generally closely jointed and showing an overall E-W strike and S dip (with variations due to minor folding). This passes conformably upwards into the dolomite unit hosting the stratiform pyrrhotite mineralisation. From numerous drill holes the lower contact can be seen to be conformable. A narrow transition zone of dolomitic siltstones often with sedimentary slump structures, passes upwards into massive to crudely banded pyrrhotite-talc-serpentine rock with minor dolomite bands. This unit contains very little pyrite. Tin contents are extremely irregular ranging from less than 20 ppm to 10%. Considerable sections are barren; these are mesoscopically indistinguishable from richly stanniferous material. This extreme variability has been a cause of mining problems in the past eg. Knight (1947) and Keid (1943).

The talc-pyrrhotite-mineralisation is exposed in a number of open stopes and glory holes in the back of Gossan Face. Strong limonitic staining prevents detailed examination. Where talc rich zones crop out, characteristic white soft foliated talc-clay masses occur, with occasional layers of rusty massive pyrrhotite. Such material crops out extensively west of MBD28; a "foliation" in the talc material is parallel to the dip of the unit.

A one metre thick siltstone band occurs near the top of the mineralised unit; the siltstone is laminated, grey green and pyritic. The thin siltstone is a feature of the talc rich pyrrhotite unit and can be traced along the entire exposure of the dolomite unit. It occurs also in Brown Face. Relatively unmineralised dolomite overlies the "DSL"; it is massive to rarely finely laminated, grey to cream, fine grained to coarsely recrystallized. Minor bands of "wrigglite" alteration occur up to 2m thick. These contain pyrite and only insignificant amounts of pyrrhotite. Minor pyrite - carbonate - sphalerite - fluorite veins also occur. These vein fillings or replacements can be seen to crosscut bedding and are not stratiform. Dark green serpentine rich siltstone bands about 1m thick occur in the lower parts of the dolomite.

The main part of Gossan Flat is covered with a thin veneer of limonitic orange-brown clays derived from weathered dolomite, with minor sulphides and clays derived from weathering of "wrigglite" and pyrite veins.

Clay-Talc Unit

A poorly exposed white clay-talc band with grey chert fragments occurs at the southern margin of Gossan Face between MBD110 and the western rim of Pig Flat. This does not appear to be derived from any sulphide bearing "DSL" unit. Chert bands in dolomite are exposed north of the main tunnel entrance and occur in some drill holes eg. MBD115 and in a trench at 1060E 1920N along this horizon. The talc-clay-chert unit is probably derived by weathering from a talcose cherty dolomite and is only a few metres thick.

On the western side of Gossan Face grey laminated to chaotic textured pyritic clays occur, overlying limonite stained dolomite. These clays may be Tertiary tuffs and are discussed in more detail below.

Faulting

To the west of Gossan Face are intensely jointed and fractured massive grey siltstones and fine grained sandstones. A trench (940E) immediately east of the faulted contact showed limonitic and tuffaceous grey pyritic clays overlying dolomite. Drill holes on this line showed less than 50m of dolomite; it is most likely that the contact is a fault rather than a sedimentary contact as the latter would require a radical change in attitude over a very short distance.

To the east the dolomite unit cuts out against a N-S trending fault marked by a displacement of Western Dyke and shear zone at about 1110E 1980N. To the east of this fault no dolomite or "DSL" has been located in drill holes and only thin talcose remnants occur overlying jointed, silicified, tourmalinised and pyritised siltstone and sandstones. In this area bedding dips are generally fairly flat, steepening to the north.

"Wrigglites"

"Wrigglites" occur adjacent to the White Face Dyke in Pig Flat and the SE portion of Gossan Face; they are well exposed in the high wall of Pig Flat and in numerous drill holes eg. MBD 118, MBR 16. They probably result from the hydrothermal alteration of brecciated dolomite. In some drill core incipient alteration can be seen as "fronts" moving out from fractures in brecciated dolomite and forming alternate thin, highly convoluted concentric layers of pyrite, sellaite, tourmaline, etc. The "wrigglites" commonly carry tin in the range 0.5-1%.

Porphyry

A black altered porphyry dyke (see section on Slaughteryard Face) occurs in the Northern section of Gossan Face. Reasonably regular outcrops can be traced for about 80m E-W. East of the main N-S fault thin irregular coarse grained cream porphyry dyklets cut siltstones between the old conveyor and treatment works floor around 1160E 2000N.

ALLEN'S WORKINGS

Allen's Workings are bounded to north by Gossan Face, to the west by a partly faulted, partly stratigraphic contact, to the east by White Face Dyke and to the south by the erosional margin of the dolomite unit.

Considerable low grade ore has been removed from Allen's Workings and much may remain above the dolomite surface of weathering. Old tributor's returns suggest a recovered grade of 0.3% tin; Kied, 1943.

Allen's Workings are underlain by massive to weakly laminated dolomite, generally recrystallised, fine grained grey to cream. Brecciated textures are common. Minor "wrigglite" and pyritic mineralisation occur.

Trenching has shown a considerable thickness of limonitic clays and grey "tuffaceous" laminated to chaotic textured clays, overlying dolomite. The limonitic clays can reasonably be interpreted as being derived from weathered dolomite.

Tertiary Tuffs

The "tuffaceous" clays have been reported as having affinities with basaltic tuffs (CMS report 82/1/10 H.W. Fander). In hand specimen the clays are black, grey or khaki; thinly, regularly laminated to chaotic textured, rarely massive, and contain clasts of dolomite, chert, "DSL", quartz-sphalerite-carbonate aggregates, porphyry and siltstones. Coarse

grained pyrite and carbonate "geodes" with coarse grained black sphalerite are common eg. near MBD 105. Yellow cream mottling is in evidence. Panning of samples shows abundant sulphides, up to 20%; mainly pyrite with rare sphalerite and galena. Cassiterite is common in some samples. The matrix is a mixture of fine crystalline carbonate and dominant "saponitic clays" derived from glassy volcanic material? On drying the clays become very light, crack and shrink in a characteristic fashion.

The stratigraphic position of the clays is not totally clear. They appear to occur overlying a weathered "karst" dolomite surface; filling caves and joint controlled depressions over a rounded limonite stained dolomite surface. A search for spores should be made to determine their age. It is provisionally supposed that they are Tertiary tuffs deposited on a dolomite weathering surface. However similar material has been described from drill holes below dolomite and porphyry (CMS Report 82/2/1 - W.H. Fander MBD 16, 31).

Dolomite Conglomerate

The northern section of Allen's Workings consists of cliffs and plateaus of limonite stained dolomite overlain by up to 5m of hard limonite and clay cemented dolomite conglomerate, consisting of rounded to sub angular disoriented blocks of dolomite. The conglomerate contains minor "DSL" and siltstone fragments and minor bands of grey laminated pyritic clays. In places a peculiar laminated silicified claystone occurs eg. 1000 E 1860 N.

On the western side of Pig Flat, (1065E 1890N) the conglomerate can be clearly seen overlying a rounded weathered dolomite surface, "draping" over and penetrating deeply into joint controlled cavities. It represents a coarse clastic accumulation on an old "karsted" dolomite surface.

Immediately south of the old compressor shed (1030E 1870N) a black unconsolidated sandy clay with coarse clasts occurs. This also lies over a "karsted" limonite stained strongly jointed dolomite surface and may interfinger with the conglomerate mentioned above. The black clay unit is up to 3m thick; it contains rounded clasts of altered porphyry, sediments, "DSL" and sulphides, and considerable amounts of "coaly" matter as seams and patches. The black material is limited in area, extending E to MBD 119 and 120, and is well exposed in a trench on line 1060E adjacent to these holes.

In addition to the natural detrital and weathering products Allen's Workings are covered by a veneer of mine waste and rubble caused by road and drill pad construction.

Dolomite

Dolomite is exposed over a fairly small area, mainly in the south east of Allen's Workings, where it is massive, recrystallised, grey and fine grained. It has a distinctly "karst like" surface and is draped with laminated clays.

Underlying the dolomite in Allen's Workings is a sequence of black to dark grey shales and siltstones with minor quartzites. These are strongly disrupted, closely jointed and cleaved. The sediments are well exposed to the west and south of the dolomite, in drill holes and in pits and trenches near the southern margin of the dolomite.

The southern boundary is the erosional limit of the dolomite; it thins steadily and at the southern margin is weathered to a few metres thickness of limonitic clays with dolomite blocks.

The western margin is essentially a stratigraphic contact, modified by faulting at a strike angle of about 30 degrees to the contact. The eastern boundary is White Face Dyke.

Porphyry

A quartz-porphyry dyke about 1-3m wide extends from White Face Dyke almost to the western limit of Allen's Workings. The dyke has limited surface exposure but has been further exposed by trenching. It is cream coloured, contains rare, small rounded quartz phenocrysts and has characteristic "platey" joints. In places it is strongly altered to a tourmaline - sellaite rock and commonly has massive green tourmaline (zeuxite) alteration associated with it.

Chert-clay

In the west of Allen's Workings a soft chaotic textured white chert-talc-clay unit with minor fragments of siltstone, "DSL" and limonite stained clay is exposed. Below this is cherty dolomite (eg. MBD 68). The unit is interpreted as a residual weathering accumulation upon dolomite similar to that occurring between Allen's Workings and Gossan Flat, and over dolomite in Happy Valley. The unit appears to be less than 5m thick. It commonly contains fragments of coarsely crystalline sellaite.

WHITE FACE

The White Face is bounded to west and south by White Face Dyke, to the north by Little Stanhope Dyke and to the south by "hanging wall" sediments.

The north-eastern floor of the White Face pit consists of white to brown talcose pyritic clays with large zones of massive pyrite. Recent drilling has shown that these soft pyritic formations are about 20m thick overlying closely jointed, fractured tourmalinised pyritised siltstones with minor quartz-cassiterite veinlets (a typical footwall situation).

Sediments

Intensely jointed, massive to weakly laminated grey siltstones and quartzites are exposed in a steep face to the N of the "DSL" in the pit floor. Bedding directions suggest that the sediment/"DSL" contact dips steeply S, flattening in that direction and that the contact is conformable. No dolomite is exposed although old reports eg. Reid (1923) describe its presence and it has been intersected in drill holes in the southern section ie. MBD 31,34. The pyritic "DSL" probably grades south into unaltered dolomite, overlain conformably by "hanging wall" sediments forming the S wall of the White Face pit.

The "hanging wall" sediments are grey, thinly laminated, closely jointed siltstones with minor interbedded fine grained tourmaline rich sandstones less than 1m thick. Small scale folds are common. The sediments show a consistent south dip. To the east of the "footwall" sediments, between line 1300E and 1340E, are a set of blocks of tourmalinised, slump bedded siltstones and sandstones, separated by shears parallel to the dominant joint direction. These sediments are similar to the footwall type and may represent an upfaulted block; if this is so then the eastern limit of White Face pyritic "DSL" is a fault. This is in keeping with the rapid thinning of DSL east of MBR7 and lack of dolomite in B35. Faulting in this direction is also proposed by Keid (1943, page 9); the direction is parallel to Little Stanhope Dyke.

The southern section of White Face contains a curious type of mineralisation. The unit, which underlies the White Face Dyke, is described below.

"Tuff" Clays

The clays are generally black to very dark green, rarely light to dark brown, with some white mottling caused by saccharoidal quartz-talc aggregates. Textures range from chaotic, small scale breccia to large scale breccia. Some zones show a crude banding; pure clay zones show

fine laminations, less than 0.5mm grading abruptly into chaotic textures. Some sections are massive, others show a classic tuffaceous texture.

The unit consists dominantly of dark clays (+ talc?) with abundant sand sized grains of sulphide, carbonate, chert, siltstones and "DSL". Larger clasts, in order of abundance, are; subangular altered brown pyritic porphyry up to 1m, generally 5-20cms; siltstone, quartzite and sandstone, showing green to brown alteration; carbonate-py-sp aggregates, coarse grained and vuggy; grey granular fractured chert; rare black shale; and green zeuxite-fluorite fragments. Angular masses of fine grained, crystalline fresh brassy pyrite up to 1m across are fairly common. Sulphides (in matrix) in order of abundance pyrite, sphalerite, rare galena, chalcopryite; cassiterite up to 10%, very fine grained.

A characteristic feature is presence of black shiny conchoidal fracturing coaly matter as films on joints; as joint fillings up 1cm thick and as lumps up to 10cms. Reid (1923) commented on the presence of lignite in several faces including White Face (see page 109). Carbonized pyritized fossil wood has been located on line 1140E, structurally below White Face Dyke.

The unit displays very characteristic irregular, anastomosing shiny curved joints with numerous slickensides, with carbonaceous matter along them; sometimes also filling planar fractures in larger clasts. Some planar joints have been observed in clays, parallel to the dominant local joint direction eg. 10m S of MBD 32; 5m W of MBD67.

The clays grade from clay breccias upward into porphyry breccias, with angular jointed porphyry clasts up to 3m across surrounded by a black clay matrix which shows "laminations" parallel to clast outlines, suggesting that the clays were squeezed into the porphyry mass forcing joint blocks apart. This can be well seen between 1140E and 1180E, along 1900N.

When dry the clays often shrink, become light and crack, probably due to the presence of saponite clays derived from basaltic volcanic glass.

In a trench along 1140E at about 1870N, clays as described above can be seen "intruding" laminated yellow brown cherty clays overlying dolomite.

In the White Face area the clays can reasonably be interpreted as structurally underlying porphyry; the clays contain clasts of porphyry, but seem to intrude the porphyry as plastic clays, forced between joint blocks.

It has been intersected in MBR18 below massive porphyry (White Face Dyke) and is almost 25m thick. Along lines 1180E - 1120E the breccia is underlain by dolomite. At 1160E 1870N the clays are overlain by shattered highly contorted laminated grey siltstones, similar to the hanging wall siltstones.

Where the clay breccia immediately below the porphyry has been sampled, it has often proved to contain high tin values; some values are tabled below:

1888N	1160E	1.75% + 15m (limit of exposure)
1890N	1140E	1.95% + 1.5m " " "
1860N	1150E	2.30% + 2m " " "
1890N	1180	8.3% + 2m " " "
MBR18		3.2% + 6m (reverse circulation)
MBD31		2.1% + 4m (split core)

These results suggest that a significant band of enrichment lies beneath the porphyry dyke between 1130E and 1190E.

Contemporary reports of the White Face workings ie. Reid (1923), Herman (1914) and Twelvetreets (1900) emphasise the soft, "alluvial" appearance of much of the White Face ore; however as this occurred below a cover of "slate and sandstone" that required blasting, it could not have been alluvial Herman (1914) also comments upon the close association of clays,

similar to those described above, and porphyry boulders, grading into massive porphyry. This is most suggestive of a clay breccia, grading upwards into a porphyry clast rich clay breccia, in turn passing upwards into massive porphyry overlain by hanging wall sediment. As in Brown Face, local enrichments occurred where cassiterite bearing veins cut the porphyry and adjacent dolomite.

PORPHYRY DYKES

Western Dyke

The Western dyke trends approximately EW, is 7-10m thick and dips vertically to very steeply south. It suffers several small offsets due to N-S trending faults. Strong jointing is developed parallel to the faulting direction and to the margins of the dyke; a set of flat joints is also developed. Adjacent to the faults, joints are spaced 0.1-0.2m; in other areas 0.2-1m. Cassiterite, sphalerite and wolframite are common, especially on joints parallel to the margins of the dyke. Gossanous pyrite-cassiterite veins, parallel to the fault direction, cut the dyke immediately south of Slaughteryard Flat.

The dyke appears to be uniformly altered to fine grained white quartz-topaz rock, containing 2-10% pyrite. Tin values in the dyke are generally less than 0.2% but very little information is available. The dyke has not been tested at depth. Minor argillic and tourmaline alteration can be seen; sericite alteration occurs where Western Dyke cuts Stanhope Dyke.

White Face Dyke

This is the main dyke in the mine area; it is variably altered and mineralised, varying in thickness from 15-30 metres.

Immediately south of the dolomite on Don Hill the dyke is a grey colour with feldspar phenocrysts altered to white clays (argillic alteration). This passes northerly into sericitic alteration, then to patchy topaz alteration with minor zeuxite and 5-10% pyrite. In this area, forming the eastern margin of Allen's Workings, the porphyry is strongly jointed (joints spaced 0.5-1m planes, very persistent), with a distinct lineation which may be caused by faulting, plunging 150-200 at 3200-3500 M. A planar feature, previously described as flow banding, is prominent in parts but at 1045E 1780N can be seen dipping normal to the upper contact of the dyke.

North of 1800N the dyke exhibits strong closely spaced joints, numerous directions being present. Argillic alteration is strong, xenoliths of grey siltstones are commonly present and several strong shear zones traverse the dyke at approximately 3000 M. The upper contact of the dyke is strongly brecciated and tourmalinised. Sulphides are rare in this section.

Beneath the old White Face loading station at 1120E 1870N the upper section of the dyke is soft, coarse grained, foliated, brown and has strong argillic alteration with no sulphides. Below 25m in MBR17 grey topazised pyritic porphyry occurs, with tin values up to 2.8%. Below the porphyry coarsegrained recrystallised dolomite with pyrite and sphalerite occurs.

Along the upper contact of the White Face Dyke, exposed in two small trenches and the main 1100E trench, are brecciated clays with green zeuxite, weathered wrigglite and masses of coarse grained pyrite with blue-black granular sphalerite.

An "off shoot" of White Face dyke extends 40m W across Pig Flat and was exposed in a series of trenches. It is about 10-12m wide and dips steeply north. A band of contact "wrigglites" continues from the dyke to the wall of Pig Flat where more "wrigglites" are exposed. The porphyry, intensely topazised, carries up to 20% pyrite and 0.3-1.5% tin.

Further north, the main body of White Face dyke is a massive cream topazised pyritic quartz porphyry dipping west at 70-45 degrees. A strong joint pattern 310^o-330^o M, 70^oW to vertical, is spaced 0.5-1m. To the east is a flat lying lens of brecciated porphyry underlain by clays described above. The contact between the massive dyke and the breccia lens is a sharply defined shear zone, dipping steeply west.

The fault cuts through White Face dyke, and is responsible for the unexpected increase in porphyry thickness in MBR17; further SE the fault is expressed as a strongly sheared zone in the dyke around 1100E 1830N. The fault then passes along the W edge of White Face dyke; it is probably the cause of the lineations observed on the western face of the dyke, and its local steep westerly dip. Marginal breccias have been mapped at 1075E 1815N, 1060N 1795N and at 1040E 1750N.

The final section of White Face dyke is bounded by a fault which offsets it; the northerly portion is the Stanhope dyke.

Sediments adjacent to the dyke are strongly jointed and contorted but there is no visible brecciation. The dyke contains a strong joint set, striking 320^o-340^o M, dipping 65^o-75^o W, spaced 0.5-1m, and persistent.

HAPPY VALLEY

Dolomite

No mineralised material occurs within this excavation; only massive, light grey fine grained recrystallised dolomite remains. The dolomite is interpreted as a broad synclinal warp extending southerly from Pig Flat and White Face. Approximately 50m of grey partly recrystallised dolomite underlies the bottom of Happy Valley Pit; the dolomite overlies black shales and siltstones.

Cherty Clays

Overlying the massive crystallised dolomite is a soft crudely banded talc-clay horizon, commonly limonite stained, with abundant angular grey chert fragments. This material extends north across the North Valley Road and is well exposed around the collars of AAB3 and B27. Both these holes intersected the zone, approximately 10m thick; it is also in AAB4, below porphyry. In AAB4 the recovered core is mainly fine grained chert; the zone above massive dolomite is about 10m thick, consisting mainly of grey chert with minor clays partly limonite stained.

It is suggested that the clay-chert-talc layers represent a weathered profile over the dolomite. Chert nodules occur sparsely within dolomite eg. MBD68 and the clay-chert-talc zones probably represent the weathering of a considerable thickness of dolomite. It would seem unlikely that such an accumulation would occur below porphyry which is itself only moderately weathered. Thus the porphyry must be younger than the weathering surface.

Faulting

The eastern margin of the Happy Valley is a N-S trending, E dipping fault; the east block has moved upwards. A parallel fault about 25m west has movement in the opposite sense. This fault causes the offset of the narrow porphyry dyke 5m N of B27, and the decrease in dolomite thickness between AAB2 and MBD35. A third parallel fault may occur to the east to explain the offset of the narrow dyke at 1240E 1840N.

To the south the dolomite lenses out and black footwall siltstones are exposed; to the west the dolomite unit dips under White Face Dyke. In the western part of White Face a vertical shear striking 240° M brings dolomite in contact with grey siltstones.

Minor Dykes

A thin quartz porphyry dyke, probably an offshoot of White Face Dyke, trends approximately N-S along the eastern margin of Pig Flat-White Face. The dyke is 1-3m wide; it is a characteristic creamy colour with flat "platey" joints, small rare rounded quartz phenocrysts and a very fine grained even ground mass. This dyke can be used to trace the offsets of the faults cutting through Happy Valley, Pig Flat and White Face.

The dyke is generally associated with coarse grained carbonate-zeuxite alteration, and strong galena-sphalerite? mineralisation. The sphalerite is a fine grained brown variety (a possibility - willemite?) eg. MBR12, B33.

This narrow dyke appears very similar to that crossing the northern section of Allen's Workings and is significantly different from the main body of White Face Dyke.

RECOMMENDATION

The notes are intended as comments on the geological fact and interpretation. More time would be required for a comprehensive structural and stratigraphic analysis; however the base data is available for most of the area.

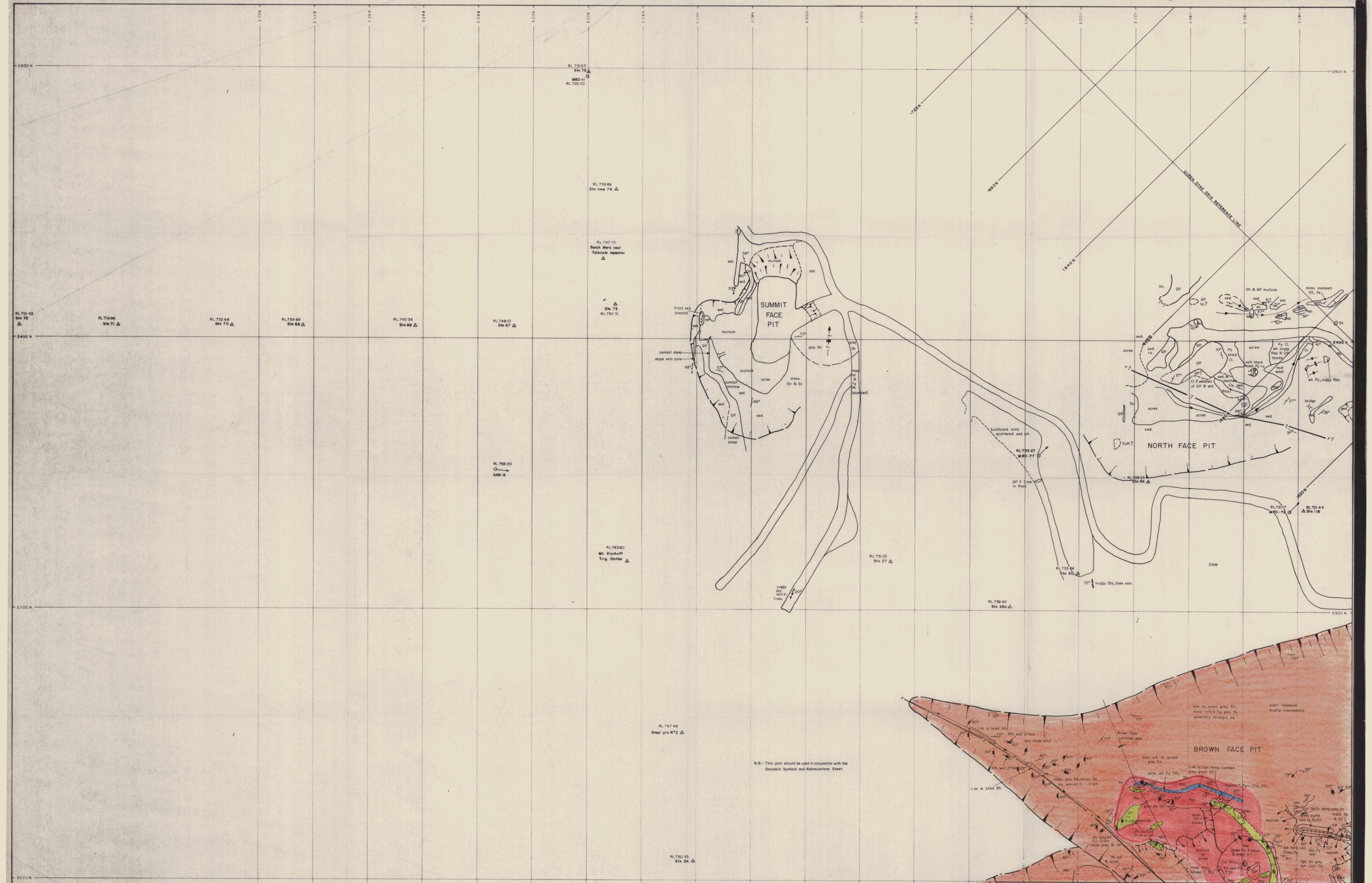
More surface mapping is required in the Summit, North Face, Queen Dyke and Brown Face areas.

Some problems to consider are:

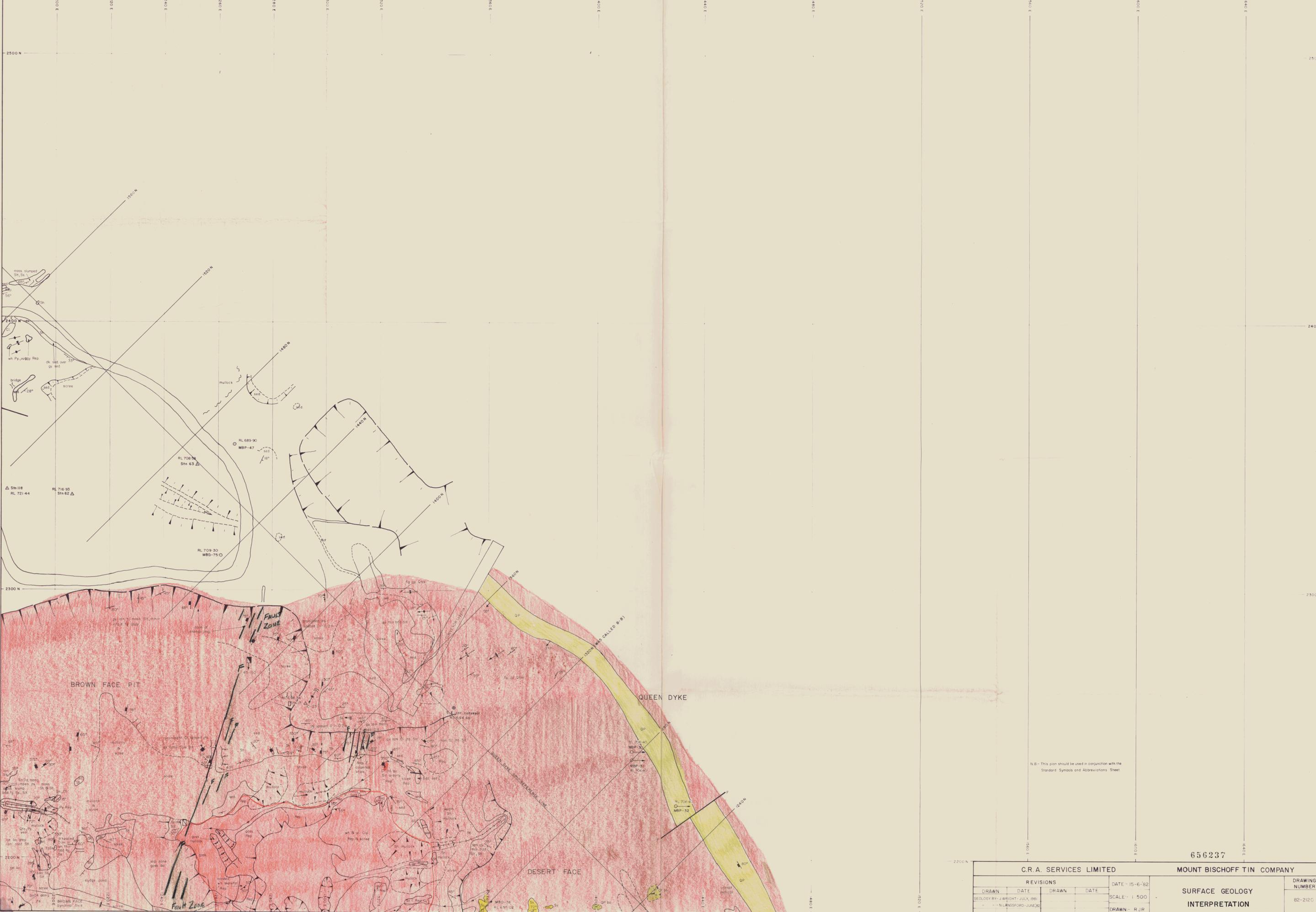
- (i) Structure of Brown Face; possible down faulted "DSL" remnants and economic possibilities of veins and "fissure lodes".
- (ii) Structure of Summit and North Faces; economic possibilities of quartz-cassiterite veining in "rheomorphic zone".
- (iii) Detailed stratigraphy of footwall sediments, relationship of black siltstones under dolomite in southern section with grey shales to north.
- (iv) Age of porphyry dykes.
- (v) Stratigraphic relationship of "tuff-clay" unit - should be checked for spores. Significance of tin enrichments in this unit are low porphyry.
- (vi) Study of early reports to determine (if possible) exactly what material was mined in Brown and White Faces and possible occurrence of Bolivian style "porphyry" tin deposits.

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C.R.A. SERVICES LIMITED		MOUNT BISCHOFF TIN COMPANY	
REVISIONS		DATE - 15-6-'82	
DRAWN	DATE	SCALE - 1:500	DRAWN - R.J.R.
GEOLOGY BY - JAWHENT - JULY, 1981		DRAWN - R.J.R.	
+ - N LANGFORD - JUNE, '82		DRAWN - R.J.R.	
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INTERPRETATION			82-2119
5 cm			

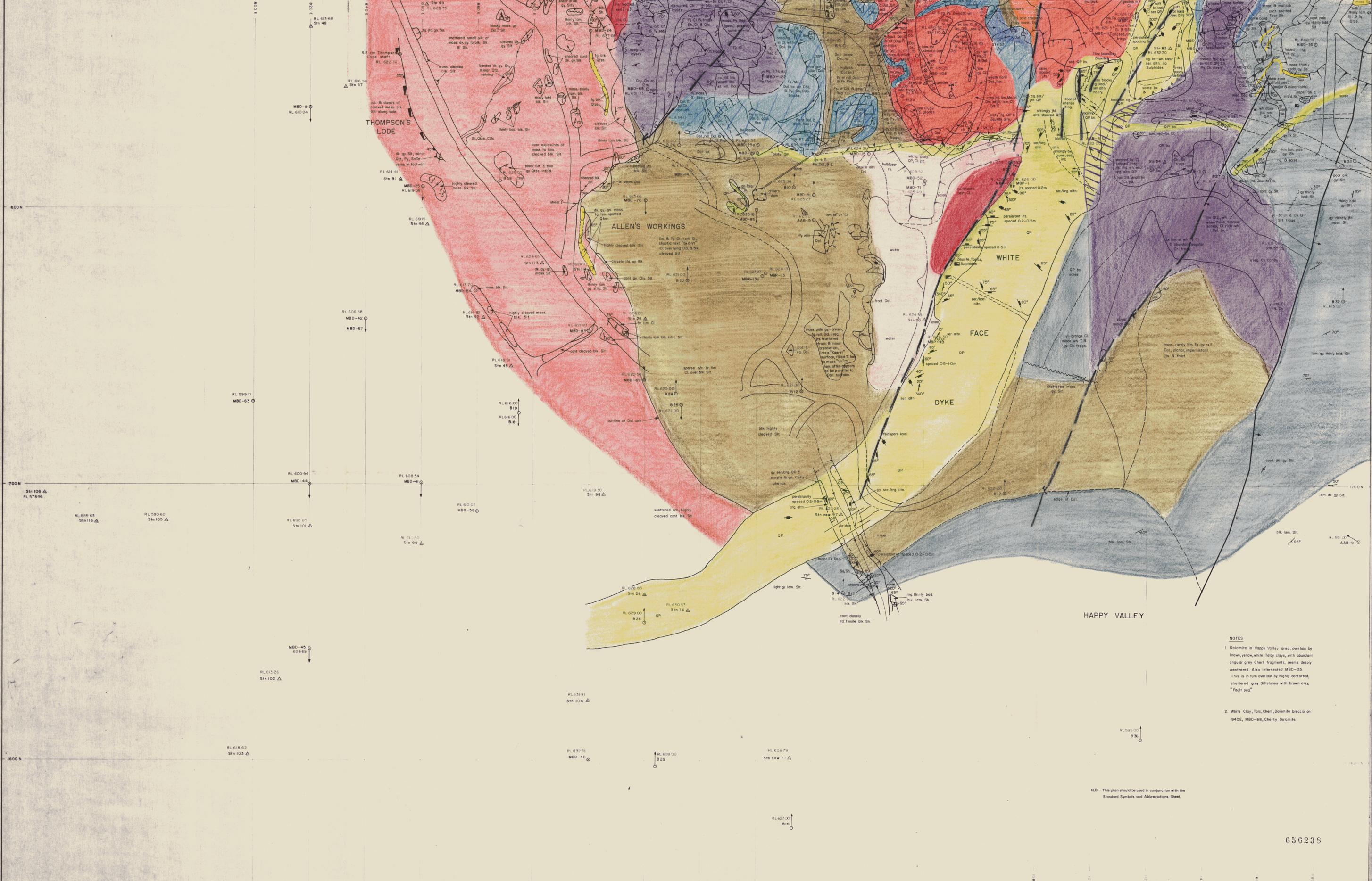


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DRAWN	DATE	DRAWN	DATE	SCALE - 1:500	
GEOLOGY BY - J. WRIGHT - JULY, 1981				DRAWN - R.J.R.	
N. LANGFORD - JUNE, 80					

SURFACE GEOLOGY
INTERPRETATION

5 cm



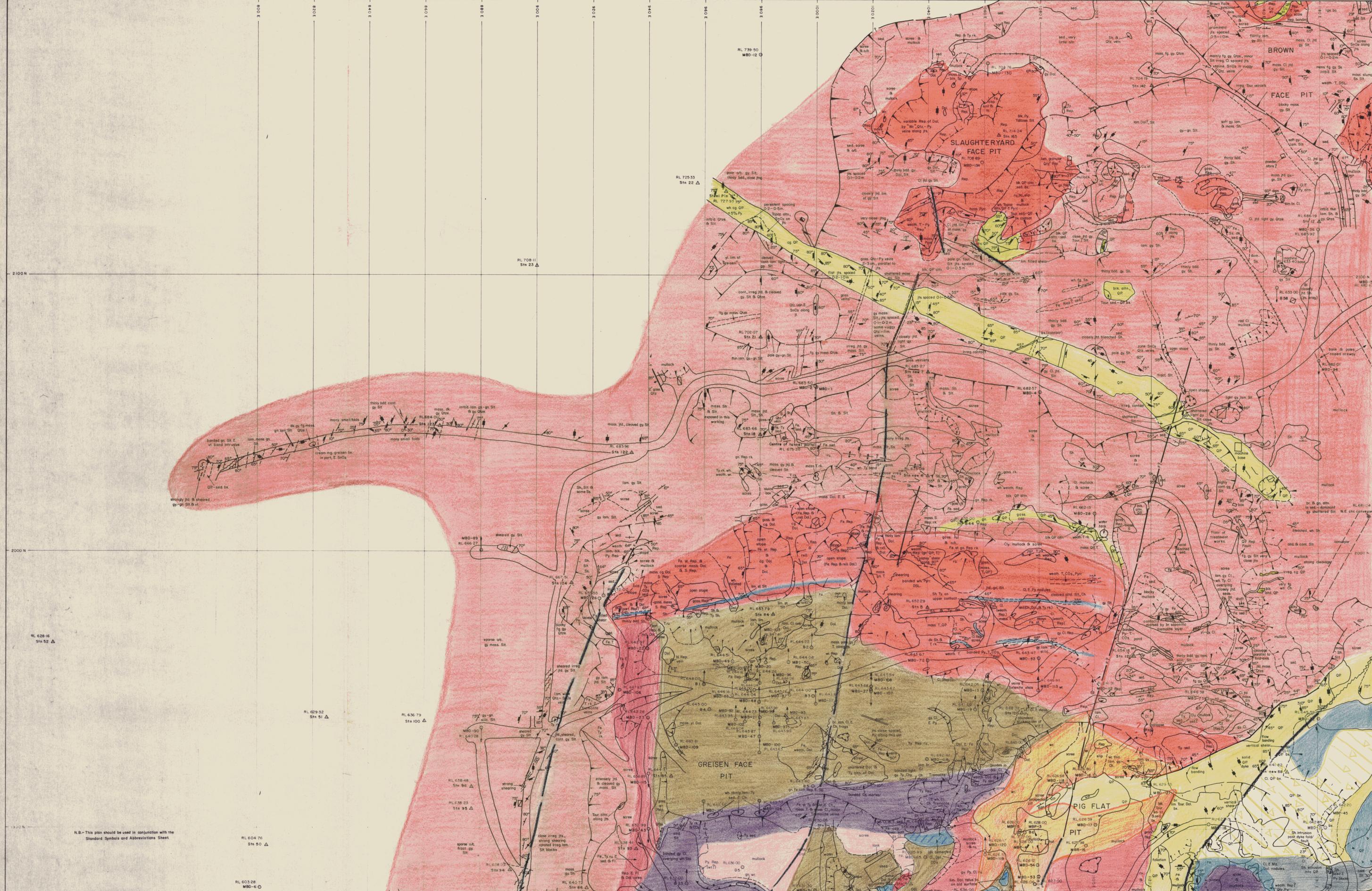
NOTES

- Dolomite in Happy Valley area, overlain by brown, yellow, white Talc clays, with abundant angular grey Chert fragments, seems deeply weathered. Also intersected MBD-35. This is in turn overlain by highly contorted, shattered grey Siltstones with brown clay, "Fault pug".
- White Clay, Talc, Chert, Dolomite breccia on 940E, MBD-68, Cherty Dolomite.

N.B. - This plan should be used in conjunction with the Standard Symbols and Abbreviations Sheet.

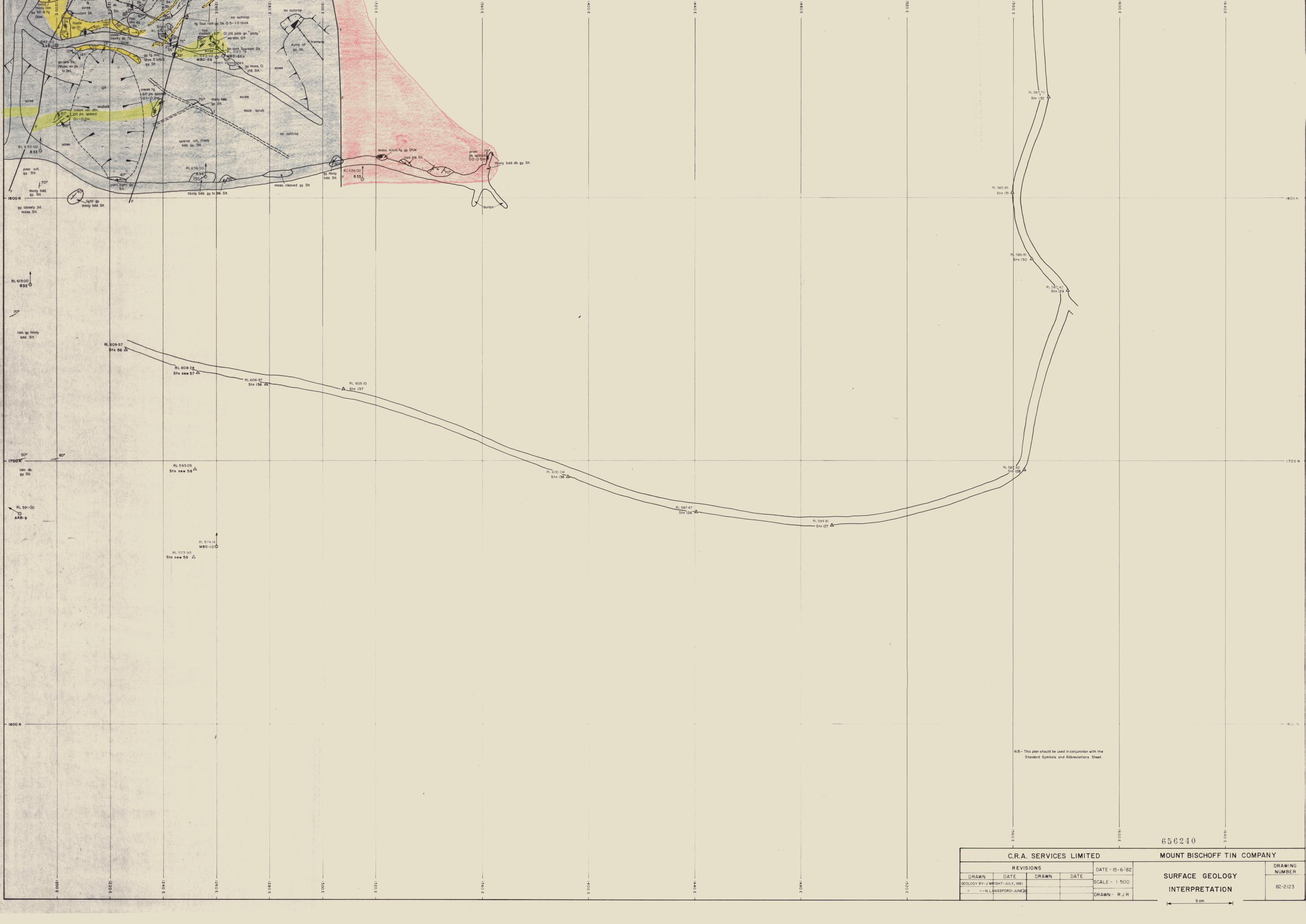
656238

C.R.A. SERVICES LIMITED				MOUNT BISCHOFF TIN COMPANY	
REVISIONS				DATE - 15-6-82	
DRAWN	DATE	DRAWN	DATE	SCALE - 1:500	
GEOLOGY BY - J. WRIGHT - JULY, 1981				DRAWN - R. J. R.	
" - N. LANGFORD - JUNE, 82				SURFACE GEOLOGY INTERPRETATION	
					DRAWING NUMBER
					82-2121
5 cm					



N.B. - This plan should be used in conjunction with the Standard Symbols and Abbreviations Sheet

C.R.A. SERVICES LIMITED				MOUNT BISCHOFF TIN COMPANY	
REVISIONS		DATE - 15-6-82		650239	
DRAWN	DATE	DRAWN	DATE	SURFACE GEOLOGY	
GEOLOGY BY - J. WRIGHT - JULY, 1981		SCALE - 1:500		INTERPRETATION	
GEOLOGY BY - N. LANGFORD - JUNE, 82		DRAWN - R. J. R.		82-2122	



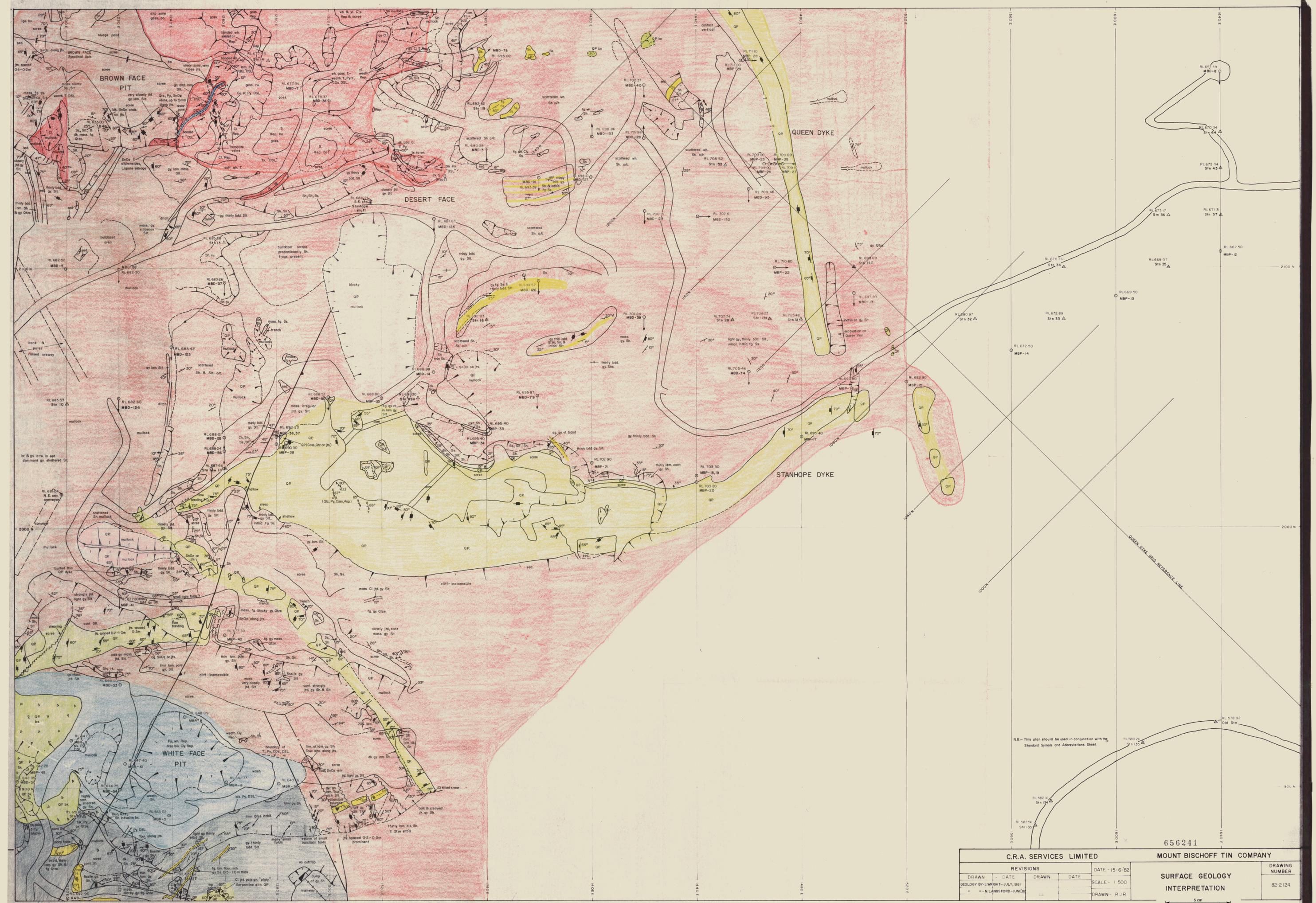
N.B. - This plan should be used in conjunction with the Standard Symbols and Abbreviations Sheet.

656240

C.R.A. SERVICES LIMITED				MOUNT BISCHOFF TIN COMPANY	
REVISIONS		DATE - 15-6-'82		DRAWING NUMBER	
DRAWN	DATE	DRAWN	DATE	82-2123	
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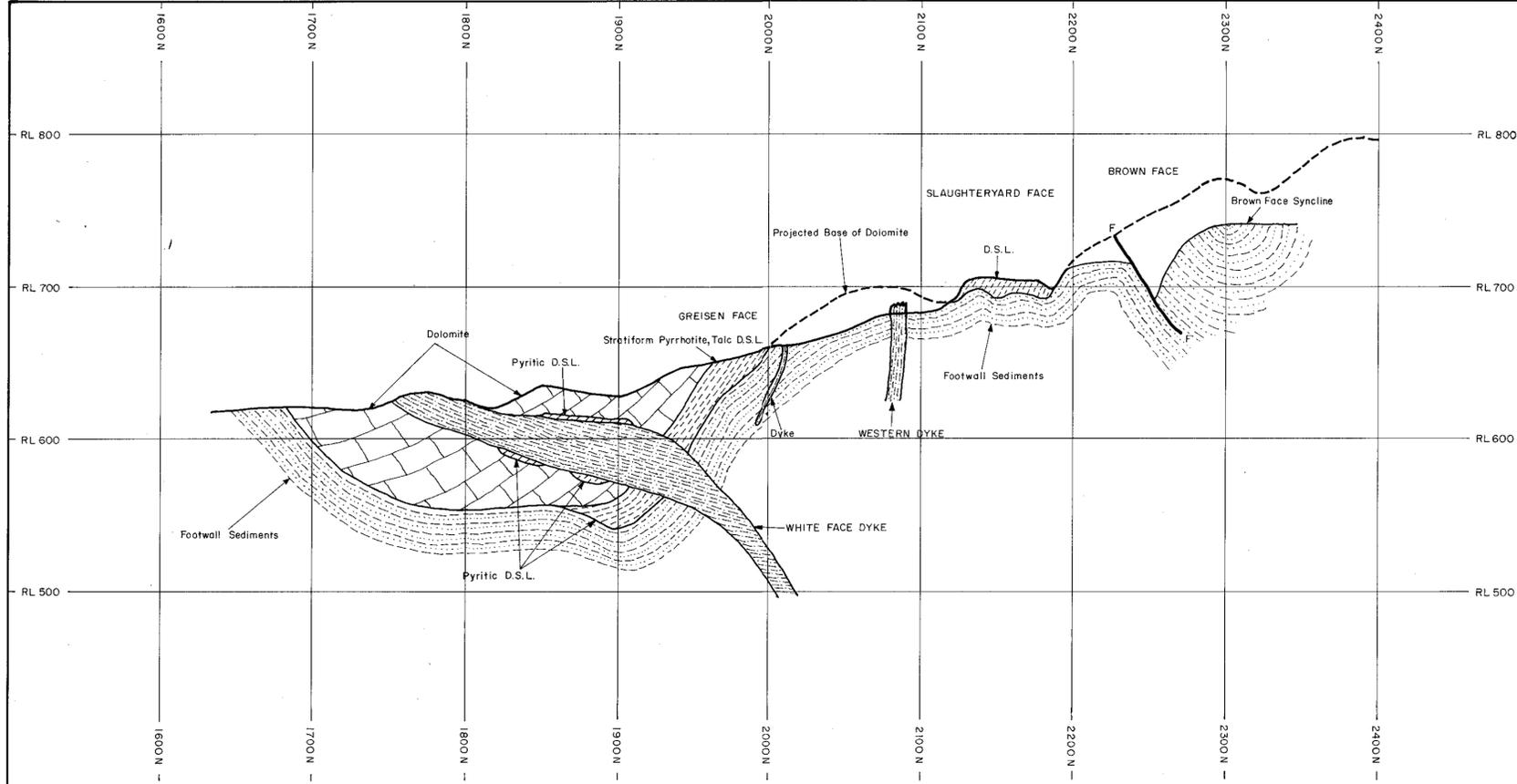
SURFACE GEOLOGY
INTERPRETATION

5 cm

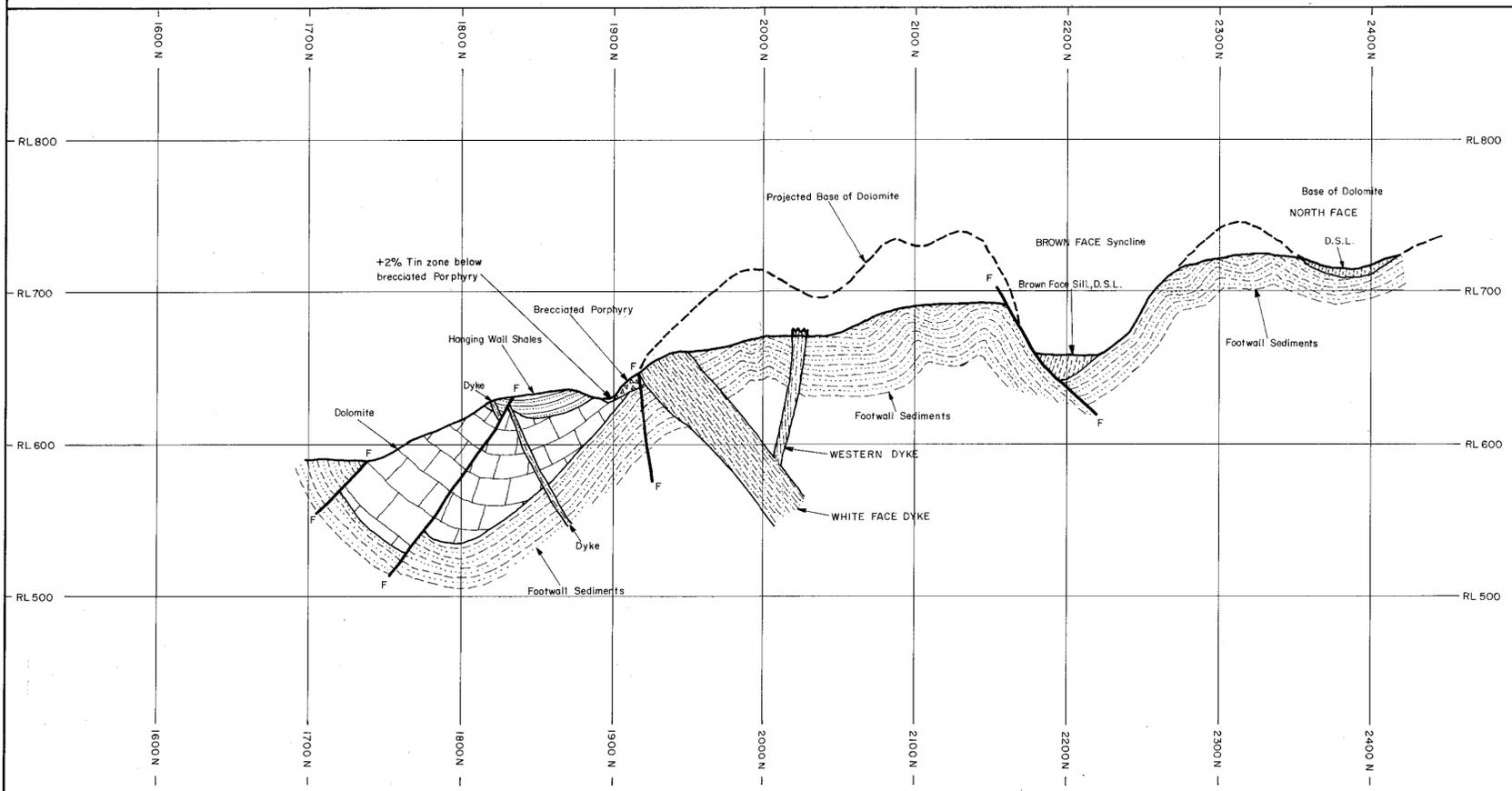


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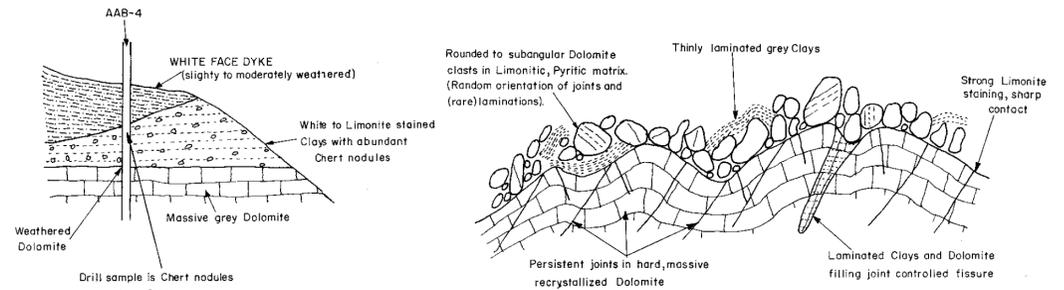
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REVISIONS		DATE - 15-6-82	DRAWING NUMBER 82-214
DRAWN	DATE	SCALE - 1:500	
GEOLOGY BY - J. WRIGHT - JULY, 1981		DRAWN - R. J. R.	
" - N. LANGFORD - JUNE, 82		5 cm	



DIAGRAMATIC SECTION ON LINE 1060E
0 50m 100m 150m 200m



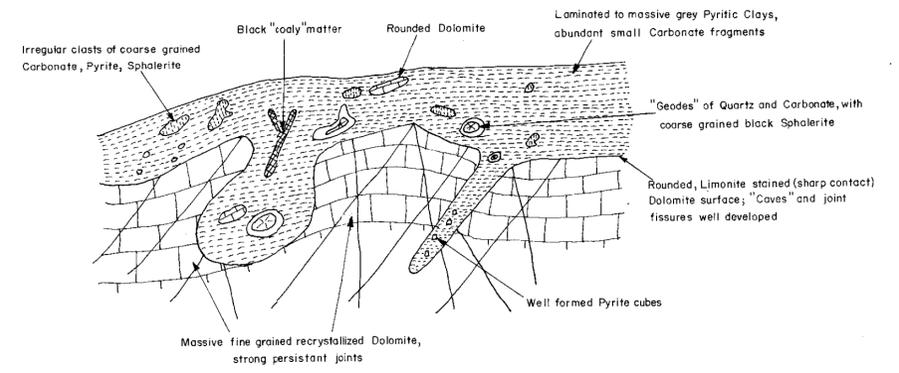
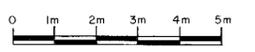
DIAGRAMATIC SECTION ON LINE 1160E
0 50m 100m 150m 200m



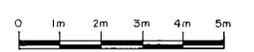
RELATIONSHIP BETWEEN PORPHYRY, DOLOMITE and CHERTY WEATHERING MANTLE.
WEST END OF HAPPY VALLEY PIT



DOLOMITE CONGLOMERATE OVER DOLOMITE
WEST WALL OF PIG FLAT



GREY CLAYS FILLING CAVES, ETC. ON KARSTED DOLOMITE
10m. SOUTH-EAST OF MBD-65



DIAGRAMATIC SECTIONS, SHOWING RELATIONSHIPS OF WEATHERING MANTLE TO KARSTED DOLOMITE SURFACE
AGE OF SURFACE UNKNOWN

LEGEND

- D.S.L.
- Quartz Porphyry Dyke.
- Footwall Sediments.
- Hanging Wall Sediments.
- Dolomite.
- Clays.
- Clasts of Carbonate, Pyrite, Sphalerite.
- Black "Coaly" matter.
- "Geodes" of Quartz, Carbonate, Sphalerite.
- Fault.

656242

C.R.A. SERVICES LIMITED				MOUNT BISCHOFF TIN COMPANY	
REVISIONS				DATE: 11-8-82	
DRAWN	DATE	DRAWN	DATE	SCALE: Various	
GEOLOGY BY N.R. LANGSFORD - 24 & 25 JUNE, 1982				DRAWN: R.J.R.	
DIAGRAMATIC SECTIONS of LOCAL GEOLOGY					DRAWING NUMBER

ROCK TYPES

NAME	PENCIL N°	COLOUR	CODE N°
Quartz Feldspar Porphyry	48		1
Dolomite	27		2
Dolomite, Re-crystallized	27		3
Dolomite Sulphide Lode			
Pyrrhotite rich	12		4
Pyrite rich	12		5
Talc rich	12		6
Serpentine rich	12		7
Quartz Carbonate rich	12		8
Shale	68		9
Shale/Carbonaceous	68		9/c
Siltstone	59		10
Quartzite	06		11
Quartzite/Sandstone	06		11/s
Tuff	47		12
Quartz Vein			qv
Chert			

GEOLOGICAL SYMBOLS

NAME	SYMBOL
Horizontal Bedding	
Vertical Bedding	
Dip & Strike of Bedding	
Generalized Bedding	
Joints - Horizontal	
Vertical	
Unmeasured	
Measured	
Shear	
Plunge of Minor Folds	
or	
Generalized Dip & Strike of Contorted Beds	
Anticlinal Axis	
Synclinal Axis	
Boundary of Rock Exposure - Accurate	
Approximate	
Geological Boundary - Accurate	
Approximate	
FAULT - Approximate	
Inferred	
Measured	
Breccia	
Surface Sample	
Vein	

TOPOGRAPHIC SYMBOLS

NAME	SYMBOL
Pit or Edge of Steep Face	
Stream	
Road or Track	
Mullock or Rubble	
Tramway	
Adit	
Shaft	
Inclined Shaft	
Stope	
Underground Workings	
Structural Contours	
Diamond Drill Holes - Vertical	
Inclined	
Survey Station	
Other Points Surveyed	

ABBREVIATIONS

Alteration	altn.	Large	lge
Argillite	arg	Limestone	Lst
Bedded	bdd.	Liminite	lim
Black	blk	Manganese	Mn
Blue	bl	Marcasite	Ma
Boulders	bo.	Massive	mass.
Breccia	bx.	Medium Grained	mg.
Broken	bkn	Mineral	min.
Brown	br	Muscovite	Musc
Carbonate	CO3.	Outcrop or Exposure	o/c
Cassiterite	Cass	Porphyry Dyke (Rock)	QP
Chert	Ch.	Pyrite	Py.
Clay	Cl.	Pyrrhotite	Pyrr
Coarse Grained	cg.	Quartz	Qtz
Contorted	cont	Quartzite	Qtze
Copper	Cu.	Replacement Rock	Rep.
Crystal	xtal	Recrystallized	rxll
Crystalline	xtaline	Rock	rk
Dark	dk	Rubble	ru.
Dolomite	Dol	Sandstone	Ss
Dominant	dom	Sericite	ser
Feldspar	Fs	Shale	Sh
Ferruginous	ferr.	Siderite	St.
Fine Grained	fg.	Silica	Sl
Fluorite	Fl.	Silicified	silic
Fracture	fract.	Siltstone	Slt.
Fragments	frags.	Sphalerite	Sp
Gossanous	goss	Spotted	sptd
Green	gn	Stained	st.
Grey	gy.	Sulphide	S
Greywacke	Gw	Talc	T
Intrusion	int	Tourmaline	Tour.
Interbedded	intbd	Tuff	Vt
Irregular	irreg	Undifferentiated Sediment	sed.
Joints	jts	Weathered	weath
Jointing	jtng.	White	wh
Kaolitic	kaol.	With	w.
Laminated	lam	Wrigglite Replacement	Wr
		Yellow	yl.

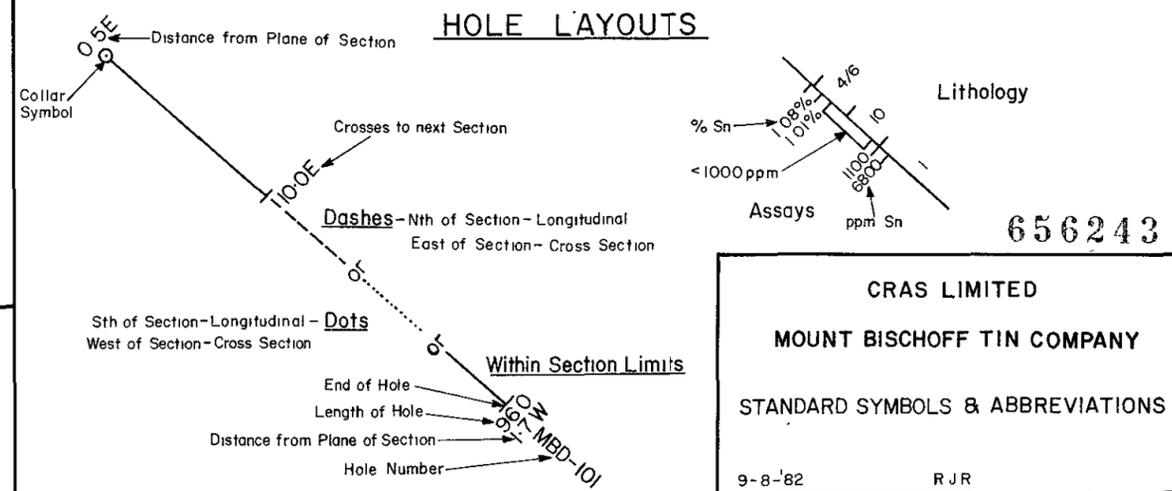
HOLE TYPES & COMPANIES

HOLE TYPE	NAME	COMPANY
DIAMOND DRILL	D,H,L Series	Mines Department
"	AB	Aberfoyle Exploration
"	AAB	Anglo American
"	B	Comstaff
"	MBD	Joint Venture
PERCUSSION DRILL	MBP	"
REVERSE CIRCULATION	MBR	"

ORE RESERVE BLOCK

0.4% Sn. Cut Off	
0.3% " " "	
0.2% " " "	
0.1% " " "	

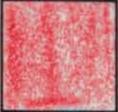
HOLE LAYOUTS



C.R.A. SERVICES LIMITED
MOUNT BISCHOFF TIN COMPANY

SURFACE GEOLOGY INTERPRETATION

LEGEND

COLOUR	PENCIL N°	DESCRIPTION OF ROCK TYPES	
	18	Mine rubble, scree, talus, etc.	
   	DEVELOPED ON DOLOMITE	25	White to brown Clay-Talc rocks with numerous clasts of grey Chert.
		20	Black to brown, laminated and chaotic textured Clays over Karsted Dolomite, includes Quartz-Sphalerite "geodes", Limonite stained Clays.
		32	Dolomite "conglomerates": Mainly rounded Dolomite clasts overlying Karsted Dolomite.
		38	"Clay-Tuff breccia," occurs below brecciated Porphyry.
	48	Porphyry Dykes; altered in mine area to Quartz-Topaz, Quartz-Sericite, or Quartz-Clay rocks with Porphyritic texture. Various mineralized, brecciated in part.	
	68	Hanging Wall Sediments; light grey Siltstones and Shales, minor yellow Sandstones. Occurs South of WHITE FACE PIT, strongly fractured and contorted, no alteration or veining.	
  	DEVELOPED WITHIN DOLOMITE	10	"Wrigglite," dark green, characteristic convoluted concentric finely laminated structure.
		14	D.S.L.- Talc, Quartz, Serpentinite, Pyrrhotite rock, weathered to Limonite stained, skeletal foliated Quartz, Talc, Clay rock. Common band of altered green Siltstone. Conformable lower contact with footwall sediments.
		29	
	52	Dolomite; massive to laminated, cream to grey, brecciated and recrystallized. Conformable lower contact with footwall sediments.	
 	64	Footwall Sediments; grey, thinly laminated to massive Siltstone and Shale with fine grained Quartzites and Sandstones. Pre-consolidation slump structures common. Few Tuff bands. At contact with D.S.L., sediments are very closely jointed, silicified, Pyritized and Tourmalinized, Quartz, Sulphide, Cassiterite, ^{vanillets} . In Southern section, footwall sediments are disrupted black Shales and Siltstones.	
	06		