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ANNUAL REPORT

WELD RIVER AREA, SOUTH EASTERN TASMANIA, EL11/84

Period 27 September, 1985 to
26 September, 1986

Report collated by
Queensland Mines Limited
on behalf of
Pioneer Silicon Industries Pty Ltd

OPEN FILE

Distribution:

Date: 19 SEPTEMBER, 1986

Department of Mines, Tasmania
M.C. Forster
Queensland Mines Limited

Report No: PCS 1986/5

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INTRODUCTION

Pioneer Concrete Services entered into an agreement with H.S. & M.C. Forster in February 1984, to conduct exploration for hard rock silica resources within EL 11/84 and CML 39M/76.

This report is the Annual Report and represents the exploration activities for the period from 27 September 1985 to 26 September 1986. It is presented by Pioneer Silicon Industries on behalf of M.C. Forster.

RESULTS

Detailed results on the exploration programme are contained in the enclosed consultant's reports as follows:

1. APPENDIX 1
   Sampling and drilling at Pyramid Hill, by T.G. Summons, November 1985.

2. APPENDIX 2
   Sampling and drilling at Hogsback Hill, by T.G. Summons, December 1985

3. APPENDIX 3
   Test pitting at Hogsback Hill, by R.G. Wright, August 1986.

The consultant's reports on Pyramid Hill and Hogsback Hill detail follow up work on areas with promising surface silica discoveries. However drilling and pitting has shown that there are no substantial reserves of silica suitable for silicon manufacture except at Glovers Bluff.

EXPENDITURE

During the period from 15.12.85 (when this project was individually costed) to 24.8.86 the total expenditure was $28,933.36.

A separate expenditure statement is attached.

WORK PROGRAMME

The proposed work programme during the third year of EL 11/84 is divided into two stages.

Stage 1

Geological reconnaissance and surface sampling for further depsoits of economic minerals. In particular metallurgical silica, diopside and dolomite.

Stage 2

If deposits are located in Stage 1, then test pitting or drilling.

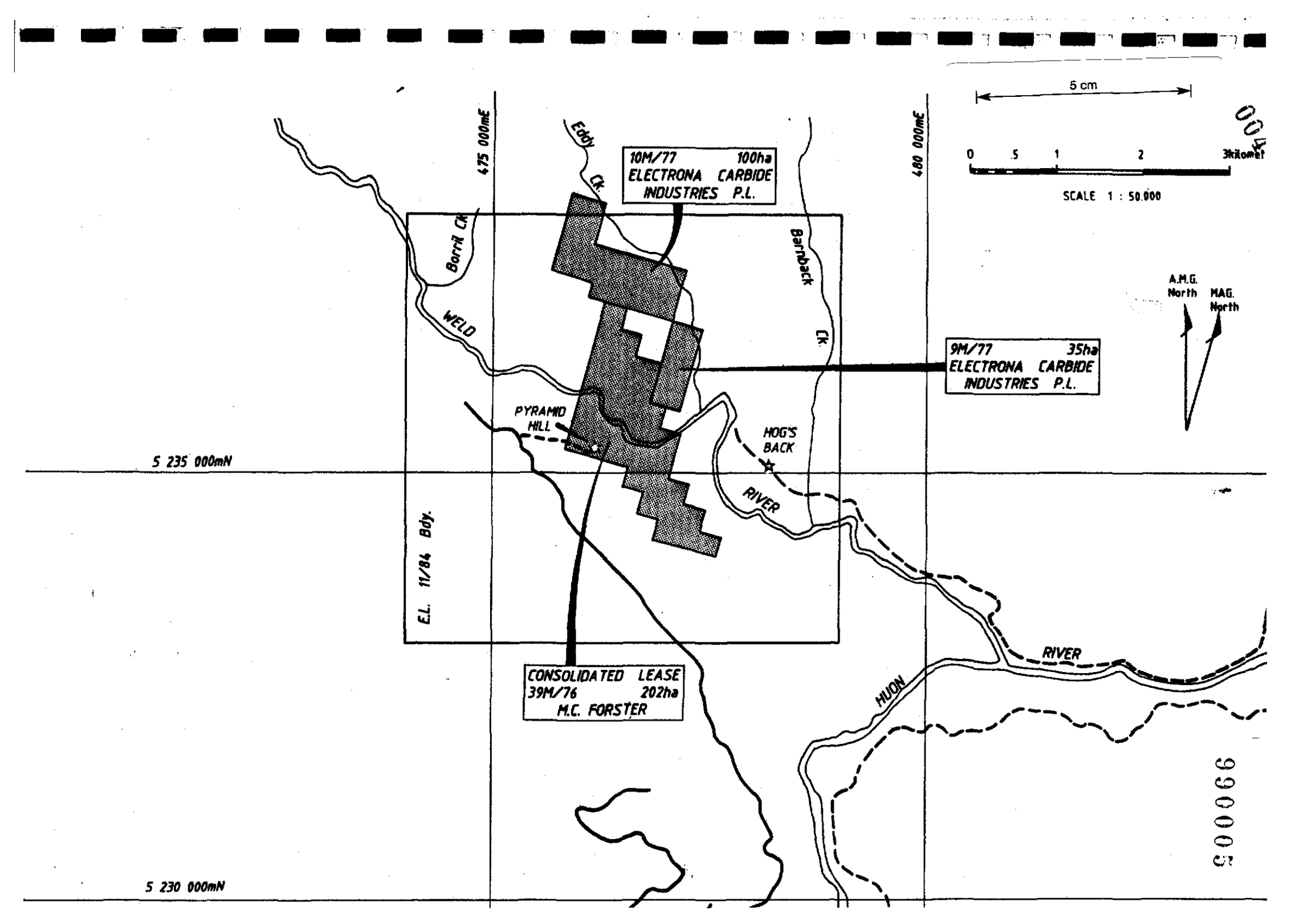
PROPOSED EXPENDITURE

Stage 1

Geologist (Consultant), 25 days at $250.00/day		$ 6,250
Assays		3,000
Travel and Accommodation		1,000
Supervisory time (Sydney staff)		3,000
Drafting		1,000
Incidentals		2,000
	Sub Total	$16,250

Stage 2

Geologist (Consultant) 10 days at $250.00/day		2,500
Pitting contractor		4,000
Assays		3,000
Travel and Accommodation		1,000
Supervisory time (Sydney staff)		3,000
Drafting		1,000
Incidentals		2,000
	Sub total	16,500
	TOTAL	$32,750


5 cm
0 .5 1 2 3kilomet
SCALE 1 : 50.000
475 000mE
480 000mE
Eddy Ck.
Barrd Ck
WELD
Barnback Ck
10M/77 100ha
ELECTRONA CARBIDE
INDUSTRIES P.L.
9M/77 35ha
ELECTRONA CARBIDE
INDUSTRIES P.L.
A.M.G. North
MAG. North
PYRAMID HILL
HOG'S BACK
RIVER
E.L. 11/84 Boy.
CONSOLIDATED LEASE
39M/76 202ha
M.C. FORSTER
HUON
RIVER
5 235 000mN
5 230 000mN

APPENDIX 1

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PYRAMID HILL

WELD RIVER

SOUTHERN TASMANIA

(CML 39M/77 - M.C. FORSTER)

Report Prepared for
Queensland Mines Ltd. by
T.G. Summons
Summons Geoservices Pty. Ltd.
November, 1985.

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1. INTRODUCTION

Pyramid Hill is located in Southern Tasmania near the Weld River, 5 Km. north west of the Weld-Huon river confluence.

The name (which is unofficial), relates to the triangular shape of the hill, which is approximately 120m. above the Weld River, and 80m. above Pyramid Creek, the valley of which forms its steep southern end.

Pyramid Hill, with its summit at 476 100E, 5235 300 N., is situated in the south west corner of consolidated Mineral Lease (CML) 39M/77, itself enclosed by Exploration Licence 11/84, both tenements being held in the name of M.C. Forster. Full location details are shown in Figures 1 and 2.

Access to the area is via a Forestry Commission road (South Weld Road), and thence, from 475 300E on this road via a four wheel drive track approximately 800m. long which was installed by the Forestry Commission.

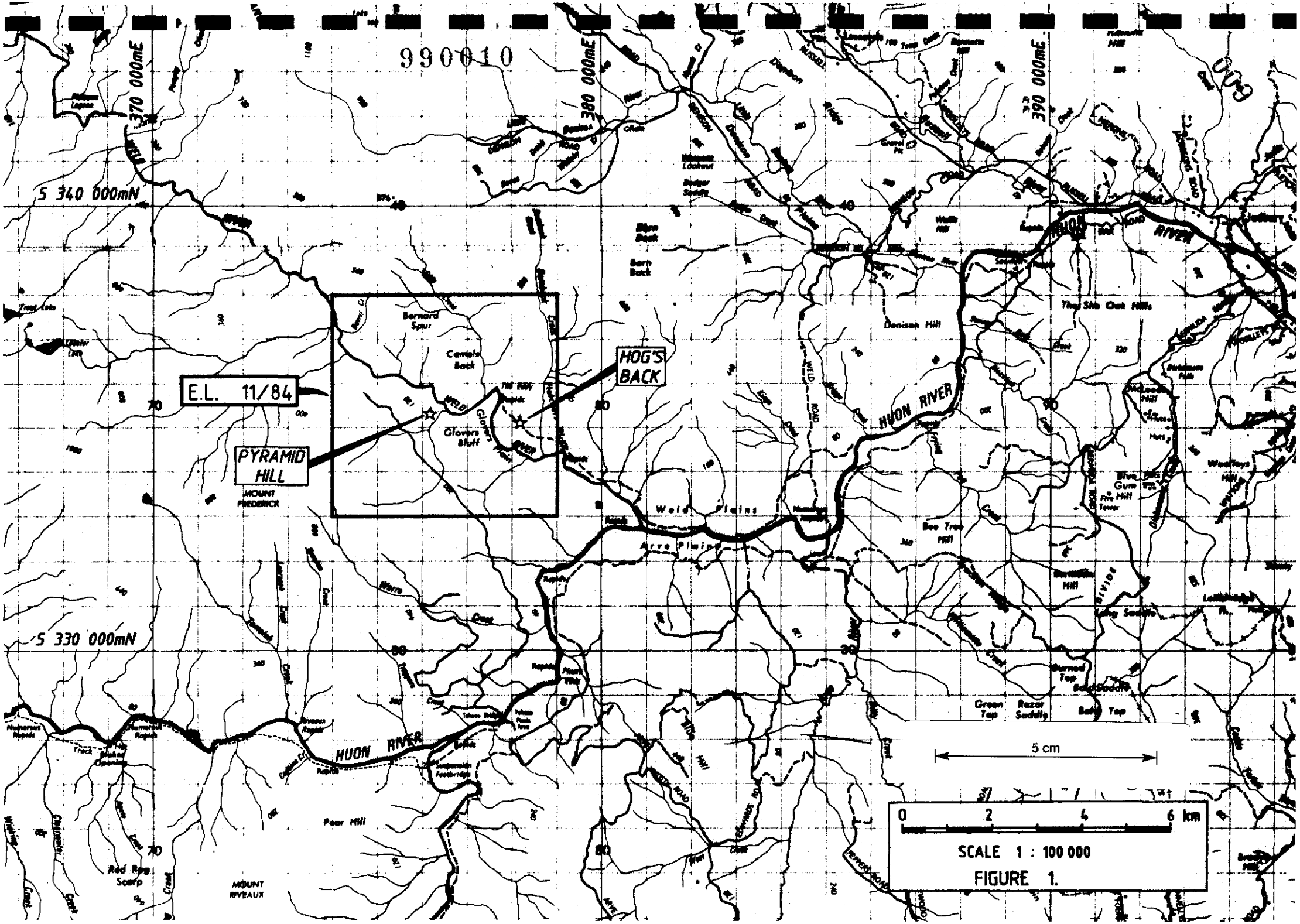
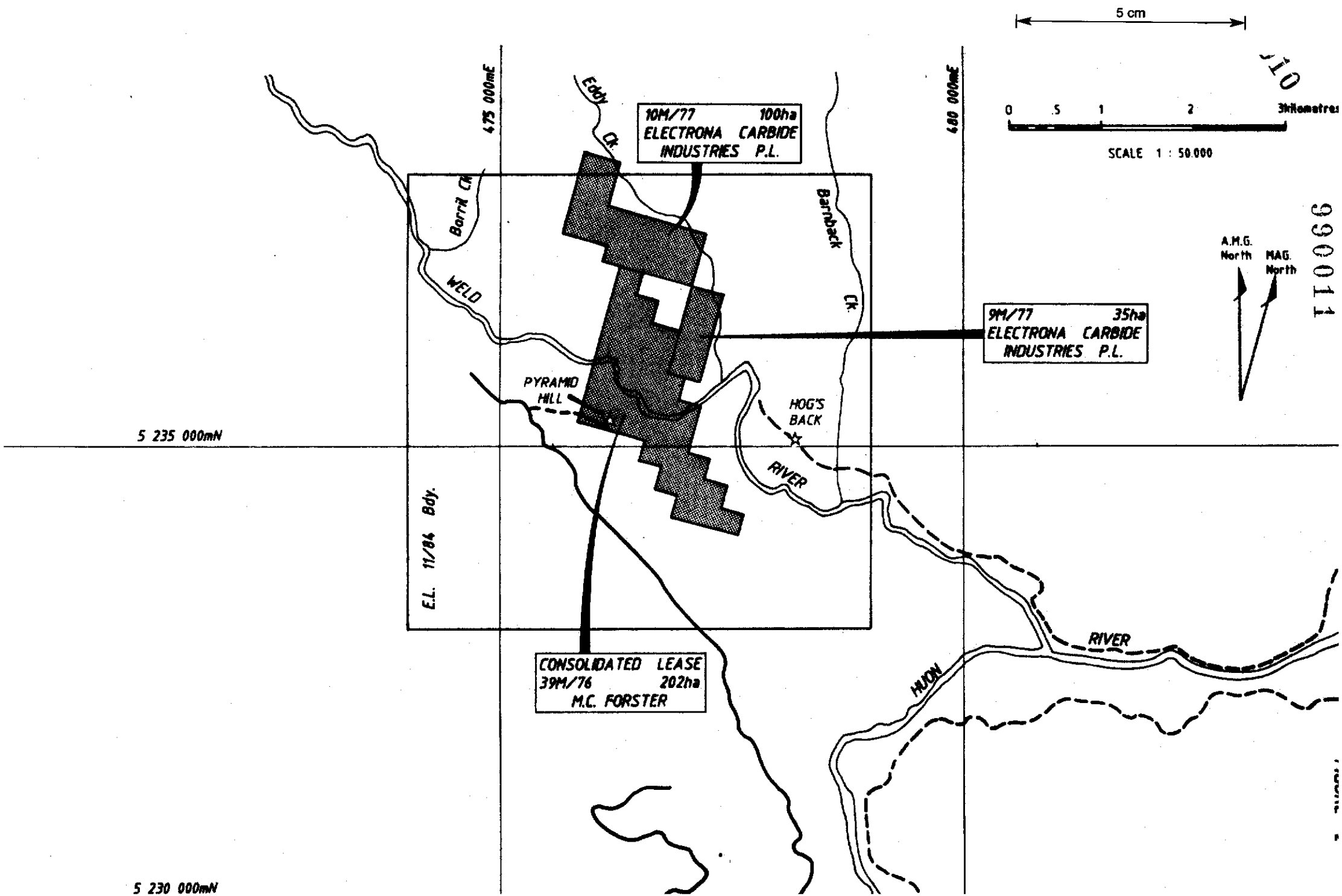

370 000mE
380 000mE
390 000mE
S 340 000mN
S 330 000mN
E.L. 11/84
PYRAMID HILL
MOUNT FREDERICK
HOG'S BACK
HUON RIVER
Wild Plains
Acre Plains
Bernard Spur
Cowtails Back
Glovers Bluff
Denison Hill
Blue Gum Hill
Beo Tree Hill
Razor Saddle
Green Top
Peer Hill
Red Row Scarp
MOUNT RIVEAUX
5 cm
0 2 4 6 km
SCALE 1 : 100 000

FIGURE 1.


5 cm
0 .5 1 2 3Kilometres
SCALE 1 : 50.000
475 000mE
480 000mE
Eddy Ck.
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9M/77 35ha
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5 235 000mN
E.L. 11/84 Bdy.
CONSOLIDATED LEASE
39M/76 202ha
M.C. FORSTER
HUON
RIVER
5 230 000mN
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2. REGIONAL STRATIGRAPHY

The Precambrian sedimentary stratigraphy of southern Tasmania has been recorded on the Huntly and Pedder 1:50 000 scale map sheets, produced by the Geological Survey of Tasmania (Brown et. al. 1982, Turner et. al. 1985).

However, the Precambrian age sedimentary rocks in the lower Weld River Inlier (part of the Picton sheet) have not been mapped by the Geological Survey, and regional correlations between these areas have not been published.

Within the Pedder map sheet, Calver (1982) recognised three main sequences

(1) Orthoquartzite Sequence, which is faulted against the;
(2) Mudstone and impure Dolomite Sequence, which is unconformally overlain by the;
(3) Dolomite and Mixtite Sequence.

Calver (pers. comm. 1985) has now assigned formal names to these sequences, namely the Mt. Eliza Group (Sequence 1), the Sandfly Creek Group (Sequence 2) and the Weld River Group (Sequence 3).

Summons (1985) described three lithostratigraphic units, from the lower Weld inlier namely the orthoquartzite, siltstone and dolomite associations. Collectively these three associations appear to be the lithocorrelates of the Mt. Eliza Group in the Pedder quadrangle.

Pyramid Hill, composed in part of orthoquartzite beds was considered to be part of the orthoquartzite association, an interpretation since disproved by the recent program of exploration.

3. EXPLORATION RESULTS

3.1 GRAB AND CHIP SAMPLING

Between July and September 1985, grab samples from both surface and shallow pits on Pyramid Hill were analysed and found to be high in Silica(>99% SiO_2) as detailed in Appendix 3 of the earlier report (Summons 1985) and in Appendix 1 of this report.

Samples prefixed PY-01 to PY-05 were chip samples taken in Pyramid Creek, while those prefixed PY-06 to PY-11 were collected mainly from shallow pits on top of Pyramid Hill. (refer Figure 3).

Based on these encouraging early analyses, it was decided to assess the vertical and lateral extent of the apparently prospective orthoquartzite beds by a program of open hole drilling.

3.2 DRILLING

During October 1985, seven percussion holes(totalling 109.5m), were drilled over the summit of Pyramid Hill using an Air Trak rig with a 750 c.f.m. 100 psi compressor.

Drill hole locations are shown in Figure 3, drill hole logs are attached as Appendix 2, drill sample analyses as Appendix 3 and cross sections of the holes are shown in Figures 4, 5 and 6. The lithological terms used are a combination of the field descriptions of rock chips, and the chemical analyses of the one metre samples.

Due to the nature of the samples obtained, the complications caused by uphole contamination, and the absence of detailed petrographic descriptions, the following ad hoc classifcation was used;

> 95% SiO_2 - Quartzite (strictly orthoquartzite)
90-95% SiO_2 - Silty Quartzite
85-90% SiO_2 - Siliceous Siltstone
< 85% SiO_2 - Siltstone.

3.3. DISCUSSION

The singularly notable results arising from the drilling are that;

(1) Pyramid Hill is part of the Siltstone assocation, and;
(2) Leaching of the non quartz components of the quartzites has been extensive.

160N
140N
120N
100N
80N
60N
40N
20N
00N

Base Line (305° A.M.G.)

A.M.G. North

Py-10
Py-9
Py85-07 (-50°)
Py85-06 (-50°)
Py85-05 (-60°)
Py85-04 (-55°)
Py-11
Py-6
Py-7
Py-8
Py85-02 (-90°)
Py85-03 (-60°)
Py85-01 (-90°)

From South Weld Road
Access Track

Base Line

LEGEND

- ☆ GRAB SAMPLE
- □ PIT
- ● PERCUSSION DRILLHOLE
- AREA OF MAXIMUM DESILICIFICATION
- (4) TOPOGRAPHIC CONTOURS RELATIVE TO DATUM AT PY85-01

Scale 1 : 500 Drawn R.T.

SUMMONS GEOSERVICES P/L
NOV. 1985

5 cm

PYRAMID HILL
WELD RIVER
C.M.L. 39M/77
(M.C. Forster)
sketch plan

FIGURE 3

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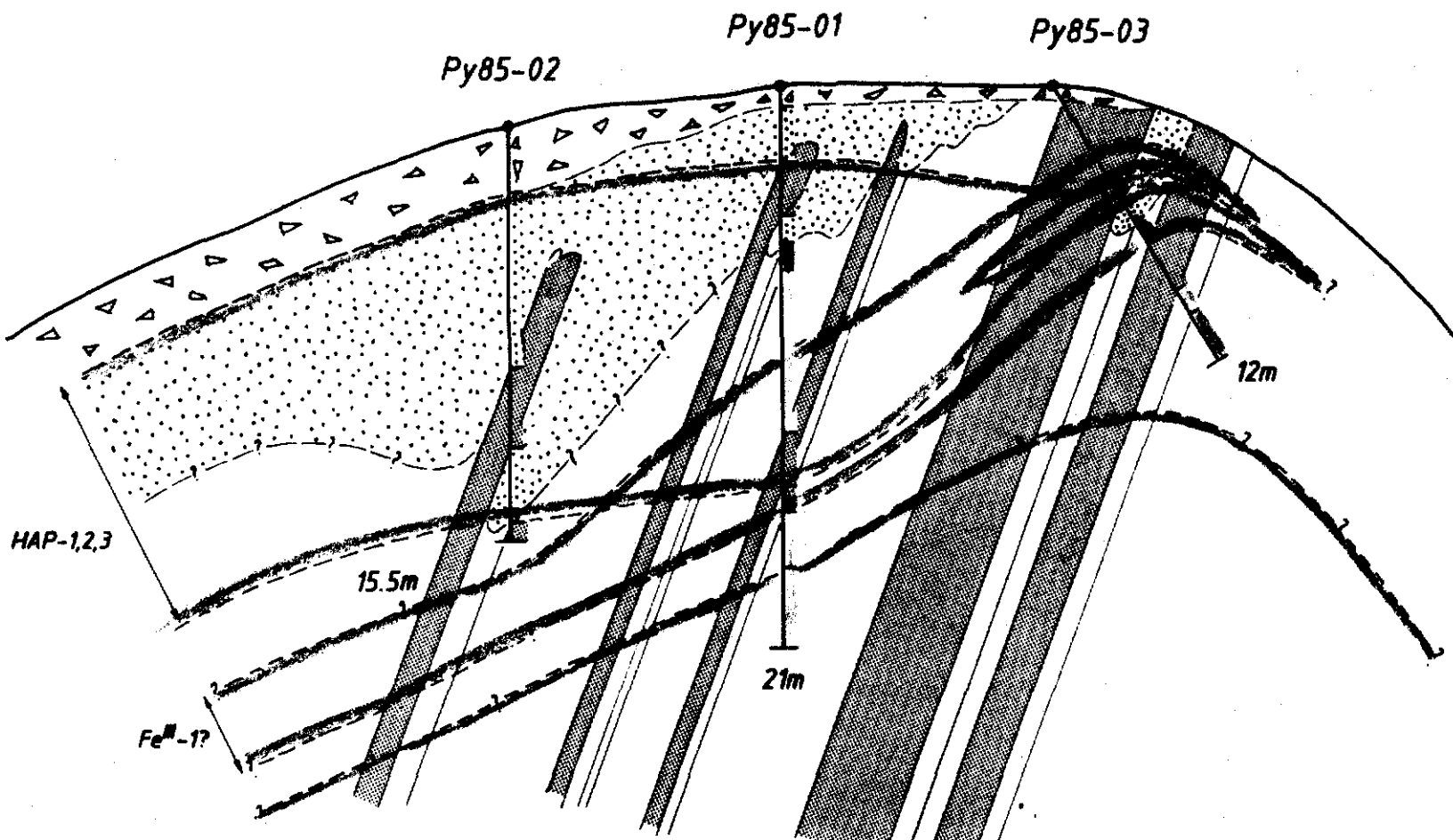
PYRAMID HILL WELD RIVER
C.M.L. 39M/77 (M.C. FORSTER)
CROSS SECTION (striking 035° Grid)
FIGURE 4



5 cm

LEGEND

- GRAVEL (angular lag)
- SAND (desilicified quartzite)
- SILTSTONE
- QUARTZOSE SILTSTONE
- SILTY QUARTZITE
- QUARTZITE
- •Py85-01 PERCUSSION DRILLHOLE
- Iron Horizon (Fe^{I})
- Iron Horizon (Fe^{III})
- Humic Acid Precipitate (HAP)
- Base of minimum leaching

0 5 10m

Scale 1 : 250 V/H=1

Geology: T.G. SUMMONS
Summons Geoservices P/L
Draughting: R.T. November 1985.

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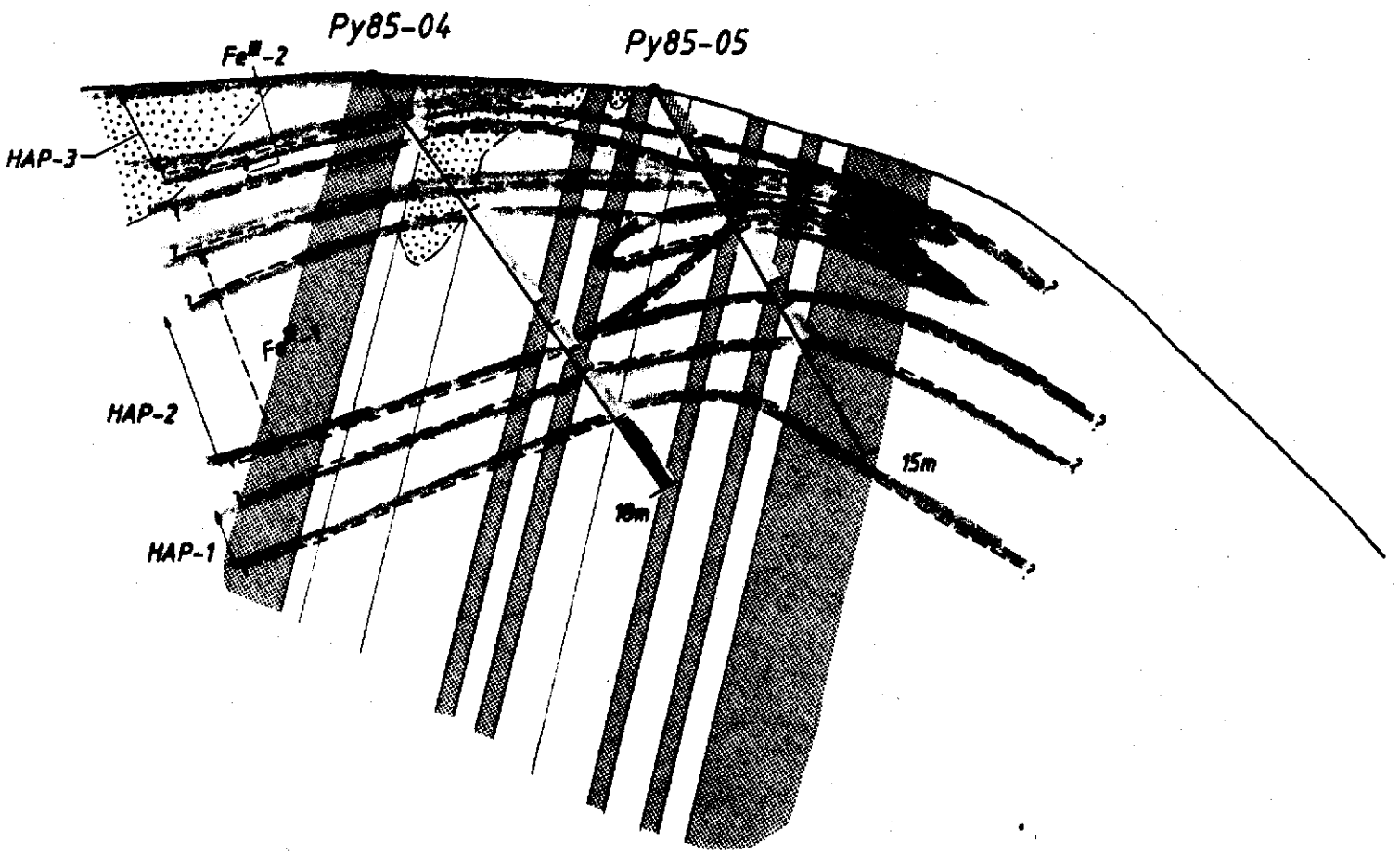
PYRAMID HILL WELD RIVER
C.M.L. 39M/77 (M.C. FORSTER)
CROSS SECTION (striking 035° Grid)
FIGURE 5



5 cm

LEGEND

- GRAVEL (angular lag)
- SAND (desilicified quartzite)
- SILTSTONE
- QUARTZOSE SILTSTONE
- SILTY QUARTZITE
- QUARTZITE
- •Py85-01 PERCUSSION DRILLHOLE
- Iron Horizon (Fe^{II})
- Iron Horizon (Fe^{III})
- Humic Acid Precipitate (HAP)
- Base of minimum leaching

0 5 10m

Scale 1 : 250 V/H=1

Geology: T.G. SUMMONS
Summons Geoservices P/L
Draughting: R.T. November 1985.

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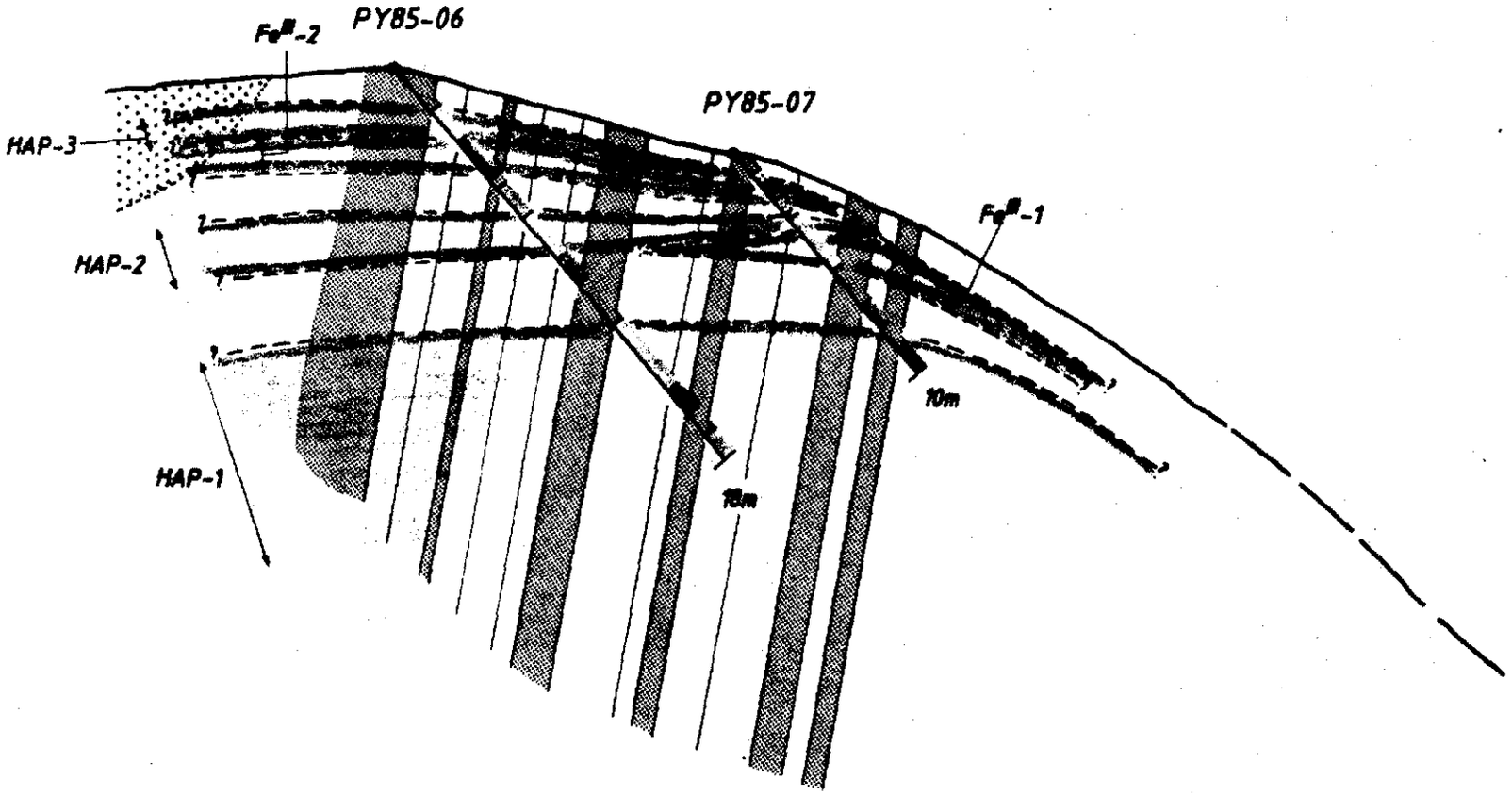
PYRAMID HILL WELD RIVER
C.M.L. 39M/77 (M.C. FORSTER)
CROSS SECTION (striking 035° Grid)
FIGURE 6



5 cm

LEGEND

- GRAVEL (angular lag)
- SAND (desilicified quartzite)
- SILTSTONE
- QUARTZOSE SILTSTONE
- SILTY QUARTZITE
- QUARTZITE
- •Py85-01 PERCUSSION DRILLHOLE
- Iron Horizon (Fe^{II})
- Iron Horizon (Fe^{III})
- Humic Acid Precipitate (HAP)
- Base of minimum leaching

0 5 10m

Scale 1 : 250 V/H=1

Geology: T.G. SUMMONS
Summons Geoservices P/L
Draughting: R.T. November 1985.

The sedimentary succession at Pyramid Hill consists of interbedded quartzites and siltstones, with very minor mudstones. The quartzites range from friable quartz sandstone to orthoquartzite, and are variably silty, while the siltstones are often quartzose, with lesser mudstone interbeds.

Quartzite beds range 0.5m to 3m in thickness, and there appears to be several 3m. thick beds which have produced the shape of the hill.

Ground water leaching processes have been so pronounced that in addition to the removal of clays and micas from the quartzites, the silica cement has been dissolved, resulting in a surprisingly large area of the quartz sand constituting Pyramid Hill, as shown in Figure 4.

The cause of at least some of the desilicification would appear to lie with percolating organic acids (humic and fulvic acids etc.), which have left a distinctive brown stain (or humic acid precipitate - HAP) on the rocks.

Closely associated with the organic acid activity has been the movement of iron in ground waters, as typically shown by the ferric state in the equally distinctive ferriginous horizons.

Indirect evidence suggests that the organic acid activity is mainly Quaternary in age, and that leaching may have varied in tandem with glacial and interglacial phases of the climate.

3.4 GROUND WATER LEACHING EFFECTS

Correlation of the sedimentary units (Figures 4, 5 and 6), allows the extent of the leaching processes to be assessed. The drill holes and the depth intervals chosen for this comparison are as follows:

PY85 - 04 (13 - 15m) with PY85 - 05 (0 - 2m)
PY85 - 04 (15 - 18m) with PY85 - 05 (2 - 5m)
PY85 - 06 (16 - 17m) with PY85 - 07 (0 - 1m)
PY85 - 06 (17 - 18m) with PY85 - 07 (1 - 2m)

Full details are given in Table 1, from which the following observations are made;

(1) Silty Quartzites (90-95% SiO_2) - can be upgraded in to quartzites

(>95% SiO_2), with the following changes;

Na_2O	-	loss,	with	surface	values	from	52 to 82%	of	original
K_2O	-	loss,	"	"	"	"	5 to 12%	"	"
MgO	-	loss	"	"	"	"	10 to 23%	"	"
Al_2O_3	-	loss,	"	"	"	"	9 to 33%	"	"
Fe_2O_3	-	loss,	"	"	"	"	18 to 33%	"	"

P_2O_5 and TiO_2 - inconclusive, and the analyses may reflect background variation.

(2) Quartzites (orthoquartzites) - show little change with position in the weathering/leaching profile; the analyses shown in Table 1 appear to reflect background variation.

(3) Siltstones - no significant variation between surface and at depth; there is a loss of alkalies and an apparent loss of both SiO_2 and Al_2O_3, although background variation is also suspected.

An example of leaching induced upgrading of a silty quartzite can be inferred from the interval 1-5m. in drill hole PY85-03, as shown in Table 2, where an apparently prospective quartzite with 98.6% SiO_2 can be generated from a silty quartzite with 93% SiO_2.

TABLE 1

DRILL HOLE/ /Sample Interval (m)	Na_2O	K_2O	MgO	Al_2O_3	Fe_2O_3	SiO_2	P_2O5	TiO_2	Classification
PY85-05(0-2)	70	785	315	2675	375	98.6%	-	575	Quartzite
PY85-04(13-15)	85	1.55%	3275	2.90%	2025	94.0%	35	900	Silty Quartzite
Leach Factor =	0.82	0.05	0.10	0.09	0.18	1.05	-	0.64	
PY85-07(1-2)	60	2850	1090	1.11%	920	97.5%	90	950	Quartzite
PY85-06(17-18)	115	2.45%	4800	3.33%	2800	91.3%	70	800	Silty Quartzite
Leach Factor =	0.52	0.12	0.23	0.33	0.33	1.07	1.3	1.2	
PY85-07(0-1)	90	980	440	3900	2800	97.9%	-	600	Quartzite
PY85-06(16-17)	65	1000	430	3950	2950	97.3%	70	400	"
Leach Factor =	1.38	0.98	1.02	0.99	0.95	1.01	-	1.5	
PY85-05 (2-4)	88	9100	5500	6.22%	(5650)	87.7%	50	1100	Siliceous Siltstone
PY85-04(15-18)	122	2.3%	4800	5.69%	3167	89.1%	90	833	" "
Leach Factor =	0.72	0.40	1.14	1.09	N.A.	0.98	0.55	1.32	

NB: 1. All values in ppm except where otherwise indicated.

2. Fe_2O_3 value in brackets is spurious - refer Figure 5

TABLE 2

	Na_2O	K_2O	MgO	Al_2O_3	Fe_2O_3	SiO_2	P_2O_5	TiO_2	Comment
PY85-03(1-5m)	57	1312	577	5950	997	98.6%	-	-	Quartzite
Ave. Leach Factor*	0.67	0.08	0.16	0.21	0.25	1.06	?0.65	?0.92	
Line 1 ÷ Line 2	85	1.64%	3606	2.83%	3988	93.0%	-	-	Silty Quartzite
Ave. of PY85-04 (13 -15m) and PY85-06(17-18m)	100	2.0%	4037	3.11%	2412	92.7%	21	850	Silty Quartzite

* Average Leach Factor derived from PY85-05(0.2m) - PY85-04(13-15m) and PY85-07(1-2m) - PY85-06(17-18m).

4. CONCLUSIONS

4.1 The sedimentary rocks forming Pyramid Hill belong to the (unprospective) Siltstone Association.

4.2 High grade silica rocks (orthoquartzites) form only a minor portion of the Siltstone Association; in addition, few of these orthoquartzites exceed the required 99% SiO_2 and associated low ($<0.5\%$) Al_2O_3 and Fe_2O_3 contents.

4.3 Many of theapparently prospective (high SiO_2) rocks at Pyramid Hill are beneficiated silty quartzites.

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5. REFERENCES

Brown A.V. et. al. 1982: Huntley 1:50,000 Series Sheet 8112N(73), Geol. Surv. Tas.

Calver, C.R. 1982 : Proterozoic sedimentary sequences in the eastern part of the Pedder Quadrangle, South western Tasmania. Unpub. Report 1982/35 Geol. Surv. Tas.

Summons, T.G. 1985 : Exploration Licence 11/84, Annual Report for the year ended 27.9.85. Unpub. Report. M.C. Forster.

Turner, N.J. et. al. 1985 : Pedder 1:50 000 Series Sheet 8112 S(80) Geol. Survey Tas.

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ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	24.5 08 3256	24.9.85		2 OF 3

TUBE No.	SAMPLE No.	Na2O	MgO	Al2O3	SiO2%	P2O5%	K2O	CaO		
10	PY 01	105	1800	8000	98.4		2600	130		
11	PY 02	60	5100	9900	97.7	0.009	1950	130		
12	PY 03	135	10200	27900	93.4	0.011	13500	200		
13	PY 04	105	2000	16100	96.8	0.009	7600	160		
14	PY 05	315	3600	29300	92.6	0.011	32000	350		
15	PY 06A	35	130	600	99.7	x	195	50		
16	PY 06B	35	130	550	99.8	x	175	60		
17	PY 07A	25	90	450	99.7	x	135	60		
18	PY 07B	45	85	350	99.8	x	95	50		
19	PY 08A	20	100	350	99.8	x	110	50		
20	PY 08B	35	120	650	99.7	x	200	70		
21	PY 09A	25	120	500	99.7	x	165	80		
22	PY 09B	55	130	700	99.7	x	150	60		
23	PY 09C	75	130	700	99.6	x	155	60		
24	PY 10A	45	70	500	99.8	x	130	60		
25	PY 10B	85	90	500	99.9	x	135	60		
1	PY 11A	35	100	450	99.9	x	100	80		
2	PY 11B	35	120	450	99.8	x	85	50		

Results in ppm unless otherwise specified.
T = element present; but concentration too low to measure.
x = element concentration is below detection limit.
nd = element not determined.

AUTHORISED OFFICER

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APPENDIX 2

Hole : PY85-01 Date commenced : 5.10.85 Declination = 90°
Co-ordinates = NS Date completed : 5.10.85 Azimuth = NA

0 - 1m	=	Humvs, covering quartzite lag deposit.
1 - 3m	=	Sand, quartz, minor quartzite float from 0.5 - 2m.
3 - 5m	=	Quartzite, pale brown, 25% quartz sand.
5 - 6m	=	Sand, quartz, white.
6 - 7m	=	Siltstone, siliceous.
7 - 10m	=	Quartzite, silty dark brown (HAP), soft.
10 - 13m	=	Quartzite, silty mottled white/orange/pale brown (HAP),soft.
13 - 15m	=	Quartzite, grey to pale brown (HAP), with orange/yellow argillaceous siltstone interbeds 14 - 15m.
15 - 16m	=	Siltstone, orange, minor interbeds of silty claystone.
16 - 18m	=	Quartzite silty yellow to pale yellow, moderately hard in places.
18 - 19.5m	=	Quartzite, silty pale yellow to brown, variably hard/soft.
19.5 - 21m	=	Quartzite silty, cream/white, hard.
		EO - 21m.

Hole : PY85-02 Date commenced : 5.10.85 Declination = 90°
Co-ordinates = NS Date completed : 5.10.85 Azimuth = NA

0 - 2.5m.	=	Quartzite, white (surface lag).
2.5 - 9m	=	Sand, quartz, pale brown (HAP) minor soft quartzite, minor water flow to 6m, then good aquifer.
9 - 12m.	=	Sand, quartz, pale brown and white, 10% quartzite fragments, ground appears drier with depth.
12 - 14.9m	=	Sand, quartz, pale brown (HAP), increased water flow (? second aquifer).
14.9 - 15.5m	=	Quartzite, white, moderately hard, but poor sample return; hole abandoned due to increased water flushing sand down hole.
		EO - 15.5m.

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Hole = PY85-03 Date commenced : 6.10.85 Declination = -60°
Co-ordinates = NS Date completed : 6.10.85 Azimuth = 035°

0 - 1m	=	Quartzite, white surface (ag).
1 - 2.9m	=	Quartzite, white, moderately hard.
2.9-4.5m	=	Quartzite, yellow/orange/white, moderately hard.
4.5-4.8m	=	Quartzite, brown staining (HAP), soft.
4.8-6m	=	Sand, quartzose, orange and white; poor sample return 5 - 6m; possibly a siltstone interbed.
6 - 7m	=	Siliceous siltstone, khaki brown to orange, soft.
7 - 9m	=	Quartzite, pink and white, moderately hard.
9 -10m	=	Quartzite and siltstone, poor sample return.
10 -12m	=	No sample return - soft (? siltstone).
		EO - 12m.

Hole = PY85-04 Date commenced : 6.10.85 Declination = -55°
Co-ordinates = NS Date completed : 6.10.85 Azimuth = 035°

0 - 2m	=	Quartzite, white, very minor brown (HAP) staining.
2 - 3m	=	Quartzite, silty white/yellow/orange, soft.
3 - 5m	=	Sand, quartz, grey/pale green/pale yellow, (?reduction haloe).
5 - 6m	=	Sand, quartz, yellow/white.
6 -12m	=	Quartzite, silty white/yellow, with variable brown (HAP) staining; moderately hard, quartzite bed from 10 - 11m.
12 -13m	=	Quartzite, yellow/orange to 12.2m.
13 -15m	=	Quartzite, Silty white and HAP stained; minor claystone between 13 and 14m.
15 - 18m	=	Siltstone siliceous white/pale yellow/very pale green; moderately hard - (fresh rock).
		EO - 18m.

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Hole = PY85-05 Date commenced : 6.10.85 Declination = -60°
Co-ordinates = NS Date completed : 6.10.85 Azimuth = 035°

0 - 2m	=	Quartzite, white and quartz sand.
2 - 3.5m	=	Quartzite, silty, orange; very soft - possibly silicified siltstone also.
3.5-4m	=	Siltstone, grey/green (reduction haloe), very soft.
4 - 5m	=	No sample (? siltstone/siliceous siltstone etc.)
5 - 6m	=	Quartzite, brown (HAP) staining.
6 - 8m	=	Quartzite, silty, yellow to orange, very soft.
8 - 9m	=	Quartzite, white to yellow, relatively hard.
9 -10.5m	=	Quartzite, silty, cream.
10.5 - 15m	=	Quartzite, brown (HAP) staining.
		EO - 15m.

Hole = PY85-06 Date commenced : 7.10.85 Declination = -50°
Co-ordinates = Date completed : 7.10.85 Azimuth = 035°

0 - 2m	=	Quartzite, white ≒ 30% quartz sand.
2 - 3.5m	=	Quartzite, silty weak brown (HAP) staining, soft.
3.5-5.3m	=	Siltstone, siliceous, orange/yellow/white.
5.3-5.7m	=	Quartzite, silty brown (HAP)stained, soft, water @ 5.7m.
5.7-7m	=	No sample.
7 - 9m	=	Quartzite, silty, cream to white, minor HAP staining 7-8m, variably hard and soft.
9 -10m	=	Siltstone, siliceous.
10-12m	=	Quartzite, white, hard.
12-15m	=	Quartzite, silty, pale/medium brown (HAP) stained, moderately hard.
15-16m	=	Siltstone siliceous.
16-17m	=	Quartzite, white.
17-18m	=	Quartzite, silty pale/medium HAP staining, moderately hard.
		EO - 18m.

029

990028

Hole = PY85-07 Date commenced : 7.10.85 Declination = -50°

Co-ordinates NS Date completed : 7.10.85 Azimuth = 035°

0 - 1m	=	Quartzite, white.
1 - 2m	=	Quartzite, brown (HAP), soft.
2 - 2.5m	=	Quartzite, orange, soft.
2.5- 3m	=	Quartzite, white, hard.
3 - 4m	=	Quartzite, silty brown (HAP), moderately hard.
4 - 5.5m	=	Quartzite, silty, orange, leached.
5.5- 7m	=	Quartzite, white/cream, hard.
7 - 8m	=	No sample (? siltstone).
8 - 9m	=	Quartzite, brown (HAP) stained, moderately hard.
9 -10m	=	Siltstone siliceous, HAP stained, moderately hard.
		EOH 10m.

031

990029

ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.
Phone (09) 458 7999 — 52 Murray Road, Welshpool, W.A. 6106 — Telex AA92560

ANALYTICAL REPORT No. 34.5.01.40782

THIS REPORT MUST BE READ IN CONJUNCTION WITH THE ACCOMPANYING ANALYTICAL DATA

Queensland Mines Ltd
8th Floor, FCA House
50 Margaret Street
Sydney
NSW 2000

ORDER No.	PROJECT

DATE RECEIVED	RESULTS REQUIRED
09/10/85	ASAP

No. OF PAGES OF RESULTS	DATE REPORTED	No. OF COPIES	TOTAL No. OF SAMPLES
12	21/10/85	1	89

PRE-TREATMENT								ANALYSIS		
SAMPLE NUMBERS	DRY	CRUSH	SPLIT	PULVERISE	SIEVE	OTHER SEE REMARKS	NONE	REFER TO ANALYSIS SECTION	PREPARATION	METHOD
Pref:PY 85 01										
various				1				Al203,Fe203,Ti	2	103
								MgO,CaO,Na20		103
								K20		103
								P205		402
								LOI		408
								Si02		199
Pref:PY 85 03										
various				1				Al203,Fe203,Ti	2	103
								MgO,CaO,Na20		103
								K20		103

RESULTS TO: as above
J Noakes

RESULTS TO:
T G Summons
1 Greenlands Ave
Sandy Bay
Tasmania 7005

REMARKS

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STATE OF SAMPLES		ANALYSIS — PREPARATION				ANALYSIS — METHOD	
whole core	WC	perchloric acid	A1	cold acid	CA	atomic absorbtion	AAS
split core	SC	hydrochloric acid	A2	specific sulphide	SS	x-ray fluorescence	XRF
cutting	CU	nitric acid	A3	other mixed acids	Ma	spectrophotometry	SPEC
rock	Ro	aqua regia	A4	alkaline attack	AA	colorimetry	COL
soil	SO	nitric-perchloric	A5	volatilization	VO	chromatography	CHR
pulp	PU	HF mixture	A6	ignition	IG	titration	TTN
water	WA	HF under pressure	A7	pressed powder (XRF)	PP	other chemicals means	CHEM
tissue	TI	fusion	A8	glass fusion (XRF)	GF	miscellaneous	MISC
stream sediment	SS					fluorescence	FLUOR
heavy mineral	HM					inductively coupled plasma	ICP

AUTHORISED OFFICER

990030

ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	34.5.01.40782	21/10/85		1 OF 12

TUBE No.	SAMPLE No.			Na2O	Na2O(1)	MgO	MgO(1)	Al2O3	Al2O3(	SiO2%
1	PY 85 01	00-01		75	-	170	-	1200	-	98.7
2	PY 85 01	01-02		55	-	170	-	1000	-	99.4
3	PY 85 01	02-03		85	-	140	-	1200	-	99.5
4	PY 85 01	03-04		100	-	2100	-	1.57%	-	96.4
5	PY 85 01	04-05		95	-	1900	-	1.48%	-	96.8
6	PY 85 01	05-06		45	-	810	-	6900	-	98.6
7	PY 85 01	06-07		135	-	5400	-	4.15%	-	90.0
8	PY 85 01	07-08		100	-	4400	-	3.42%	-	91.3
9	PY 85 01	08-09		120	-	3500	-	2.58%	-	93.4
10	PY 85 01	09-10		120	-	4900	-	3.69%	-	91.3
11	PY 85 01	10-11		80	-	4000	-	3.05%	-	92.9
12	PY 85 01	11-12		95	-	4000	-	2.95%	-	93.2
13	PY 85 01	12-13		105	-	4100	-	3.51%	-	92.2
14	PY 85 01	13-14		80	-	2400	-	2.31%	-	95.3
15	PY 85 01	14-15		65	-	2800	-	2.54%	-	94.6
16	PY 85 01	15-16		120	-	5100	-	6.46%	-	86.7
17	PY 85 01	16-17		85	-	3400	-	3.78%	-	91.9
18	PY 85 01	17-18		65	-	2500	-	2.86%	-	94.3
19	PY 85 01	18-19		175	-	2300	-	3.23%	-	93.2
20	PY 85 01	19-20		110	120	2000	1900	2.86%	2.58%	94.9
21	PY 85 01	20-21		110	-	2900	-	3.14%	-	93.6
22	PY 85 03	00-01		40	-	130	-	800	-	98.1
23	PY 85 03	01-02		40	-	80	-	700	-	99.5
24	PY 85 03	02-03		90	-	170	-	1550	-	99.6
25	PY 85 03	03-04		40	-	360	-	3050	-	99.1

Results in ppm unless otherwise specified.
Element present but concentration too Low to determine.
Element concentration is below detection limit.

AUTHORISED OFFICER

990031

ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	34.5.01.40782	21/10/85	33	5 of 12

TUBE No.	SAMPLE No.			P2O5%	K2O	K2O(1)	CaO	CaO(1)	TiO2	TiO2(1)
1	PY 85 01	00-01		x	170	-	170	-	650	-
2	PY 85 01	01-02		x	210	-	170	-	850	-
3	PY 85 01	02-03		x	245	-	120	-	650	-
4	PY 85 01	03-04		0.011	5850	-	150	-	1500	-
5	PY 85 01	04-05		x	5400	-	130	-	750	-
6	PY 85 01	05-06		x	2150	-	100	-	500	-
7	PY 85 01	06-07		0.011	2.40%	-	140	-	2650	-
8	PY 85 01	07-08		0.011	1.95%	-	150	-	1500	-
9	PY 85 01	08-09		0.009	1.65%	-	150	-	1000	-
10	PY 85 01	09-10		0.014	2.25%	-	130	-	1100	-
11	PY 85 01	10-11		0.011	1.75%	-	110	-	850	-
12	PY 85 01	11-12		0.016	1.80%	-	100	-	650	-
13	PY 85 01	12-13		0.018	1.95%	-	130	-	550	-
14	PY 85 01	13-14		0.011	7500	-	120	-	500	-
15	PY 85 01	14-15		0.011	8050	-	100	-	500	-
16	PY 85 01	15-16		0.018	2.40%	-	130	-	600	-
17	PY 85 01	16-17		0.014	1.50%	-	100	-	400	-
18	PY 85 01	17-18		0.007	6800	-	100	-	350	-
19	PY 85 01	18-19		0.009	6500	-	120	-	350	-
20	PY 85 01	19-20		0.007	5450	5300	100	130	250	300
21	PY 85 01	20-21		0.007	1.35%	-	110	-	350	-
22	PY 85 03	00-01		x	175	-	130	-	300	-
23	PY 85 03	01-02		x	135	-	100	-	300	-
24	PY 85 03	02-03		x	310	-	110	-	400	-
25	PY 85 03	03-04		0.007	755	-	110	-	600	-

990032 34

ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	34.5.01.40782	21/10/85		9 OF 12

TUBE No.	SAMPLE No.			Fe2O3	LOI%					
1	PY 85 01	00-01		300	1.03					
2	PY 85 01	01-02		280	0.29					
3	PY 85 01	02-03		310	0.12					
4	PY 85 01	03-04		2050	0.83					
5	PY 85 01	04-05		1950	0.70					
6	PY 85 01	05-06		730	0.24					
7	PY 85 01	06-07		3300	2.09					
8	PY 85 01	07-08		2350	2.44					
9	PY 85 01	08-09		1900	1.72					
10	PY 85 01	09-10		2650	1.85					
11	PY 85 01	10-11		2750	1.53					
12	PY 85 01	11-12		2600	1.26					
13	PY 85 01	12-13		2600	1.54					
14	PY 85 01	13-14		2100	1.07					
15	PY 85 01	14-15		2600	1.44					
16	PY 85 01	15-16		1.16%	2.68					
17	PY 85 01	16-17		7600	1.69					
18	PY 85 01	17-18		4550	1.41					
19	PY 85 01	18-19		4450	2.15					
20	PY 85 01	19-20		3000	1.18					
21	PY 85 01	20-21		3400	1.21					
22	PY 85 03	00-01		280	1.73					
23	PY 85 03	01-02		250	0.33					
24	PY 85 03	02-03		490	0.12					
25	PY 85 03	03-04		1300	0.26					

Results in ppm unless otherwise specified
- Element present but concentration too low to measure
- Element concentration is below detection limit

AUTHORISED OFFICER

ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	34.5.01.40782	21/10/85		2 OF 12

TUBE No.	SAMPLE No.			Na2O	Na2O(1)	MgO	MgO(1)	Al2O3	Al2O3(	SiO2%
1	PY 85 03	04-05		60	-	1700	-	1.85%	-	96.4
2	PY 85 03	05-06		80	-	3100	-	3.60%	-	92.5
3	PY 85 03	06-07		150	-	5600	-	5.54%	-	88.0
4	PY 85 03	07-08		75	-	2700	-	2.58%	-	94.7
5	PY 85 03	08-09		65	-	2000	-	1.94%	-	96.2
6	PY 85 03	09-10		100	-	4100	-	3.69%	-	91.7
7	PY 85 04	00-01		25	-	200	-	1350	-	99.0
8	PY 85 04	01-02		40	-	410	-	3950	-	98.8
9	PY 85 04	02-03		75	-	2700	-	3.32%	-	93.8
10	PY 85 04	03-04		65	-	2700	-	3.69%	-	93.2
11	PY 85 04	04-05		80	-	4000	-	4.50%	-	91.2
12	PY 85 04	05-06		80	-	3800	-	3.32%	-	93.0
13	PY 85 04	06-07		80	-	2800	-	2.68%	-	94.2
14	PY 85 04	07-08		75	-	2800	-	2.68%	-	94.0
15	PY 85 04	08-09		90	100	3500	3500	3.70%	-	92.8
16	PY 85 04	09-10		110	-	3500	-	3.14%	-	93.1
17	PY 85 04	10-11		75	-	2200	-	1.85%	-	96.3
18	PY 85 04	11-12		110	-	3600	-	4.15%	-	92.0
19	PY 85 04	12-13		75	-	3000	-	2.40%	-	95.5
20	PY 85 04	13-14		80	-	3150	-	2.86%	-	94.0
21	PY 85 04	14-15		90	-	3400	-	2.70	-	93.1
22	PY 85 04	15-16		120	-	4100	-	4.80	-	90.6
23	PY 85 04	16-17		125	-	5100	-	6.05	-	88.4
24	PY 85 04	17-18		120	-	5200	-	6.19	-	88.3
25	PY 85 05	00-01		80	-	390	-	3700	-	97.9

Results in ppm unless otherwise specified.
Element present, but concentration too low to measure.
Element concentration is below detection limit.

AUTHORISED OFFICER

1036 990034 36

ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	34.5.01.40782	21/10/85		6 OF 12

TUBE No.	SAMPLE No.			P2O5%	K2O	K2O(1)	CaO	CaO(1)	TiO2	TiO2 (1
1	PY 85 03	04-05		0.014	4050	-	100	-	450	-
2	PY 85 03	05-06		0.011	1.35%	-	140	-	450	-
3	PY 85 03	06-07		0.007	2.90%	-	130	-	900	-
4	PY 85 03	07-08		0.007	7550	-	100	-	400	-
5	PY 85 03	08-07		0.007	5500	-	90	-	400	-
6	PY 85 03	09-10		0.007	1.90%	-	130	-	800	-
7	PY 85 04	00-01		x	305	-	110	-	250	-
8	PY 85 04	01-02		0.007	1050	-	100	-	400	-
9	PY 85 04	02-03		0.014	7550	-	100	-	500	-
10	PY 85 04	03-04		0.009	7950	-	100	-	400	-
11	PY 85 04	04-05		0.009	1.80%	-	100	-	650	-
12	PY 85 04	05-06		0.016	1.75%	-	110	-	750	-
13	PY 85 04	06-07		0.011	1.60%	-	100	-	500	-
14	PY 85 04	07-08		0.011	1.65%	-	120	-	650	-
15	PY 85 04	08-09		0.011	1.70%	1.70%	140	140	850	750
16	PY 85 04	09-10		0.007	1.75%	-	110	-	1000	-
17	PY 85 04	10-11		0.007	5350	-	100	-	1050	-
18	PY 85 04	11-12		0.007	1.70%	-	110	-	800	-
19	PY 85 04	12-13		0.007	6000	-	130	-	900	-
20	PY 85 04	13-14		x	1.55%	-	130	-	1100	-
21	PY 85 04	14-15		0.007	1.55%	-	150	-	700	-
22	PY 85 04	15-16		0.009	1.85%	-	130	-	750	-
23	PY 85 04	16-17		0.009	2.55%	-	130	-	850	-
24	PY 85 04	17-18		0.009	2.50%	-	130	-	900	-
25	PY 85 05	00-01		x	1050	-	130	-	400	-

Results in ppm unless otherwise specified

ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	34.5.01.40782	21/10/85.		10 OF 12

TUBE No.	SAMPLE No.			Fe_2O_3	LOI%					
1	PY 85 03	04-05		1950	0.92					
2	PY 85 03	05-06		3300	1.82					
3	PY 85 03	06-07		8550	1.99					
4	PY 85 03	07-08		5100	1.10					
5	PY 85 03	08-09		3050	0.70					
6	PY 85 03	09-10		4400	1.71					
7	PY 85 04	00-01		300	0.79					
8	PY 85 04	01-02		660	0.51					
9	PY 85 04	02-03		4050	1.32					
10	PY 85 04	03-04		2200	1.74					
11	PY 85 04	04-05		2550	1.76					
12	PY 85 04	05-06		2300	1.17					
13	PY 85 04	06-07		1750	0.95					
14	PY 85 04	07-08		1850	1.14					
15	PY 85 04	08-09		1900	1.16					
16	PY 85 04	09-10		2000	1.29					
17	PY 85 04	10-11		1750	1.84					
18	PY 85 04	11-12		2350	1.45					
19	PY 85 04	12-13		2150	0.91					
20	PY 85 04	13-14		2000	0.97					
21	PY 85 04	14-15		2050	0.95					
22	PY 85 04	15-16		3050	1.95					
23	PY 85 04	16-17		3350	1.98					
24	PY 85 04	17-18		3100	2.07					
25	PY 85 05	00-01		420	1.43					

Results in ppm unless otherwise specified.

AUTHORISED OFFICER

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ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	34.5.01.40782	21/10/85		3 OF 12

TUBE No.	SAMPLE No.			Na2O	Na2O (1)	MgO	MgO (1)	Al2O3	Al2O3 (	SiO2%
1	PY 85 05	01-02		60	-	240	-	1650	-	99.3
2	PY 85 05	02-03		100	-	3500	-	4.15%	-	91.7
3	PY 85 05	03-04		175	-	7500	-	8.30%	-	83.7
4	PY 85 05	05-06		90	-	1600	-	1.52%	-	97.1
5	PY 85 05	06-08		120	-	2700	-	2.58%	-	94.4
6	PY 85 05	08-09		90	-	1400	-	1.48%	-	97.2
7	PY 85 05	09-10.5		115	-	2900	-	2.58%	-	94.1
8	PY 85 05	10.5-12		150	-	2100	-	1.85%	-	96.0
9	PY 85 05	12-13		115	-	2100	-	1.66%	-	96.6
10	PY 85 05	13-15		115	150	2200	2000	1.85%	1.75%	95.9
11	PY 85 06	00-01		75	-	640	-	7000	-	97.9
12	PY 85 06	01-02		65	-	620	-	6900	-	98.4
13	PY 85 06	02-03		115	-	3200	-	2.77%	-	93.8
14	PY 85 06	03-04		150	-	5300	-	6.18%	-	87.4
15	PY 85 06	04-05		110	-	4400	-	5.26%	-	89.7
16	PY 85 06	05-06		70	-	2800	-	3.54%	-	93.0
17	PY 85 06	06-07		N/L	-	N/L	-	N/L	-	N/L
18	PY 85 06	07-08		140	-	4000	-	4.15%	-	91.5
19	PY 85 06	08-09		115	-	4000	-	4.89%	-	90.5
20	PY 85 06	09-10		95	-	4700	-	5.35%	-	89.3
21	PY 85 06	10-11		95	-	2300	-	2.68%		95.0
22	PY 85 06	11-12		80	-	1700	-	2.03%	-	96.3
23	PY 85 06	12-13		80	-	2900	-	3.23%	-	93.4
24	PY 85 06	13-14		90	-	3100	-	3.23%	-	93.1
25	PY 85 06	14-15		95	-	3600	-	3.49%	-	92.1

Results apply to the sample as specified

ATTACHED

ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	34.5.01.40782	21/10/85		7 OF 12

TUBE No.	SAMPLE No.			P2O5%	K2O	K2O(1)	CaO	CaO(1)	TiO2	TiO2(1)
1	PY 85 05	01-02		x	520	-	100	-	550	-
2	PY 85 05	02-03		x	1.45%	-	130	-	550	-
3	PY 85 05	03-04		0.011	3800	-	150	-	1650	-
4	PY 85 05	05-06		x	4500	-	130	-	650	-
5	PY 85 05	06-08		0.009	1.30%	-	100	-	850	-
6	PY 85 05	08-09		0.009	3850	-	100	-	500	-
7	PY 85 05	09-10.5		0.007	1.45%	-	100	-	850	-
8	PY 85 05	10.5-12		x	6150	-	100	-	900	-
9	PY 85 05	12-13		x	5400	-	110	-	800	-
10	PY 85 05	13-15		0.009	7950	-	100	110	750	650
11	PY 85 06	00-01		x	2200	-	130	-	400	-
12	PY 85 06	01-02		x	2150	-	150	-	400	-
13	PY 85 06	02-03		x	1.75%	-	100	-	850	-
14	PY 85 06	03-04		0.011	2.85%	-	100	-	750	-
15	PY 85 06	04-05		0.009	2.15%	-	130	-	650	-
16	PY 85 06	05-06		0.011	1.50%	-	110	-	500	-
17	PY 85 06	06-07		N/L	N/L	-	N/L	-	N/L	-
18	PY 85 06	07-08		0.009	1.95%	-	110	-	600	-
19	PY 85 06	08-09		0.011	2.20%	-	90	-	600	-
20	PY 85 06	09-10		0.011	2.45%	-	110	-	700	-
21	PY 85 06	10-11		0.007	7400	-	100	-	500	-
22	PY 85 06	11-12		0.007	5100	-	100	-	400	-
23	PY 85 06	12-13		0.009	1.35%	-	160	-	600	-
24	PY 85 06	13-14		x	1.45%	-	160	-	750	-
25	PY 85 06	14-15		0.011	1.70%	-	150	-	750	-

Results in ppm unless otherwise specified

[illegible]

[illegible]

ANALABS

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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	34.5.01.40782	21/10/85		11 OF 12

TUBE No.	SAMPLE No.		Fe2O3	LOI%
1	PY 85 05	01-02	330	0.40
2	PY 85 05	02-03	4750	1.84
3	PY 85 05	03-04	6550	2.58
4	PY 85 05	05-06	1750	0.51
5	PY 85 05	06-08	3400	1.04
6	PY 85 05	08-09	2000	0.53
7	PY 85 05	09-10.5	2500	1.19
8	PY 85 05	10.5-12	1750	1.05
9	PY 85 05	12-13	1450	0.77
10	PY 85 05	13-15	1600	0.93
11	PY 85 06	00-01	440	1.06
12	PY 85 06	01-02	500	0.52
13	PY 85 06	02-03	1500	1.09
14	PY 85 06	03-04	4800	2.50
15	PY 85 06	04-05	3450	1.99
16	PY 85 06	05-06	5550	1.39
17	PY 85 06	06-07	N/L	N/L
18	PY 85 06	07-08	2650	1.68
19	PY 85 06	08-09	2450	1.65
20	PY 85 06	09-10	2550	2.07
21	PY 85 06	10-11	1700	1.06
22	PY 85 06	11-12	1200	0.82
23	PY 85 06	12-13	1950	1.45
24	PY 85 06	13-14	2000	1.65
25	PY 85 06	14-15	2150	1.83

Results in ppm unless otherwise specified
... element present but concentration too low to measure
... element concentration is below detection limit

1.041 990039 41

ANALABS

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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	34.5.01.40782	21/10/85		4 OF 12

TUBE No.	SAMPLE No.			Na2O	Na2O(1)	MgO	MgO(1)	Al2O3	Al2O3(1)	SiO2%
1	PY 85 06	15-16		135	-	6200	-	5.08%	-	87.7
2	PY 85 06	16-17		65	-	430	-	3950	-	97.3
3	PY 85 07	00-01		90	-	440	-	3900	-	97.9
4	PY 85 07	01-02		60	-	1090	-	1.11%	-	97.5
5	PY 85 07	02-02½		75	70	1800	1750	1.66%	1.57%	96.1
6	PY 85 07	03-04		110	-	2700	-	2.49%	-	94.7
7	PY 85 07	04-05		95	-	2800	-	3.32%	-	92.9
8	PY 85 07	05-06		65	-	1020	-	1.02%	-	98.0
9	PY 85 07	06-07		65	-	1700	-	1.57%	-	96.8
10	PY 85 07	07-08		N/L	-	N/L	-	N/L	-	N/L
11	PY 85 07	08-09		80	-	2200	-	1.94%	-	95.7
12	PY 85 07	09-10		130	-	4600	-	4.61%	-	89.8
13	sPY 85 06	17-18		115	-	4800	-	3.33%	-	91.3
14	sPY 85 07	02.5-03		80	-	1070	-	1.01%	-	97.0
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION			5	5	10	10	50	50	0.1
24	DIGESTION									
25	METHOD			103	103	103	103	103	103	1Y9

ANALABS

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ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	34.5.01.40782	21/10/85		8 OF 12

TUBE No.	SAMPLE No.			P2O5%	K2O	K2O(1)	CaO	CaO(1)	TiO2	TiO2(1)
1	PY 85 06	15-16		x	3.25%	-	120	-	1500	-
2	PY 85 06	16-17		0.007	1000	-	120	-	400	-
3	PY 85 07	00-01		x	980	-	100	-	600	-
4	PY 85 07	01-02		0.009	2850	-	80	-	950	-
5	PY 85 07	02-03 2.5		x	4550	4450	120	110	1300	1350
6	PY 85 07	03-04	M	0.007	8000	-	110	-	1900	-
7	PY 85 07	04-05		0.009	1.30%	-	100	-	700	-
8	PY 85 07	05-06		x	2900	-	110	-	450	-
9	PY 85 07	06-07		0.009	5100	-	140	-	450	-
10	PY 85 07	07-08		N/L	N/L	-	N/L	-	N/L	-
11	PY 85 07	08-09		x	6800	-	120	-	600	-
12	PY 85 07	09-10		0.009	2.40%	-	140	-	1350	-
13	sPY 85 06	17-18		0.007	2.45%	-	140	-	800	-
14	sPY 85 07	02.5-03		x	2500	-	130	-	650	-
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION			0.007	5	5	10	10	50	50
24	DIGESTION									
25	METHOD			402	103	103	103	103	103	103

Results in ppm unless otherwise specified
[illegible] concentration too low to measure
[illegible] concentration is below detection limit
[illegible]

1.043 990041 43

ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	34.5.01.40782	21/10/85		12 OF 12

TUBE No.	SAMPLE No.			Fe2O3	LOI%					
1	PY 85 06	15-16		3400	2.62					
2	PY 85 06	16-17		2950	1.77					
3	PY 85 07	00-01		2800	1.23					
4	PY 85 07	01-02		920	0.82					
5	PY 85 07	02-02.5		5350	0.96					
6	PY 85 07	03-04		2300	1.26					
7	PY 85 07	04-05		4050	1.74					
8	PY 85 07	05-06		1300	0.44					
9	PY 85 07	06-07		1300	0.77					
10	PY 85 07	07-08		N/L	N/L					
11	PY 85 07	08-09		2500	1.15					
12	PY 85 07	09-10		3400	2.19					
13	sPY 85 06	17-18		2800	2.05					
14	sPY 85 07	02.5-03		2500	1.30					
15										
16										
17										
18										
19										
20										
21										
22										
23	DETECTION			10	0.01					
24	DIGESTION									
25	METHOD			103	40B					

Results apply to items as received.

AUTHORISED

APPENDIX 2

045

990043

HOGSBACK HILL

WELD RIVER

SOUTHERN TASMANIA

(EL 11/84 - M.C. FORSTER).

Report prepared for Queensland Mines Ltd. by T. G. Summons, Summons Geoservices Pty. Ltd. December, 1985.

TABLE OF CONTENTS

1. INTRODUCTION

Hogsback Hill is located in southern Tasmania on the north bank of the Weld River, approx. 3-5km northwest of the Weld-Huon river confluence.

The unofficial name of the hill relates to its spine-like shape, rising some 50m above the surrounding plain (Fletchers Plain).

The summit of the Hogsback is approx. 132m ASL, and is located at 478 145 mE, 5235 530 mN ; the entire Hogsback ridge is situated within Exploration Licence (EL) 11/84, which is held in the name of M.C. Forster. Further location details are shown in Figures 1 and 2.

Access to the area is via the Weld Road (Huon Sheet 8211) to the western side of the Weld Plains and thence via a 4WD drive track for a further 3km.

This track terminates at The Eddy on the Weld River, and as a result of both neglect and misuse by the recreational public, required minor upgrading to allow access for the drill rig used by the recent exploration programme.

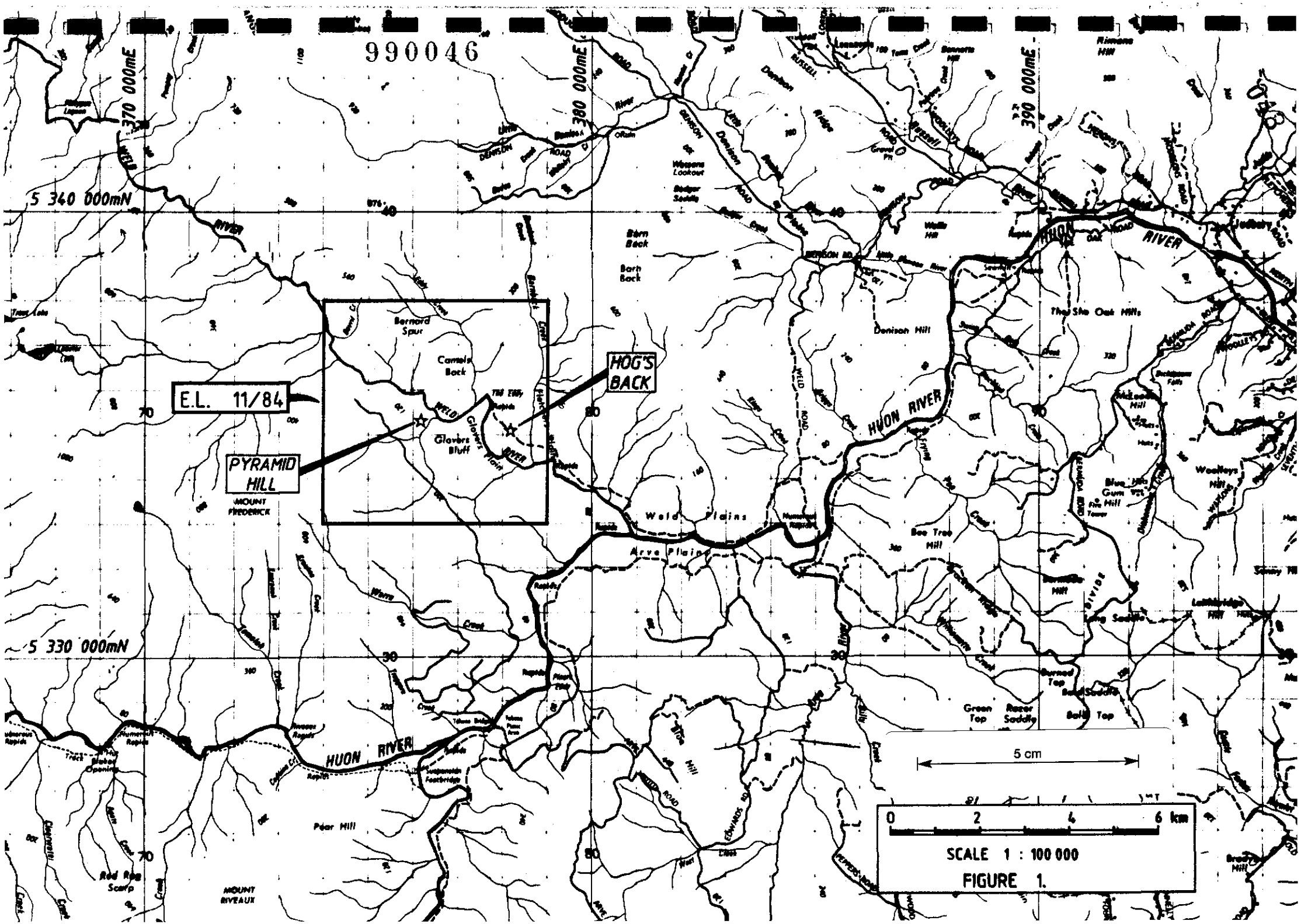
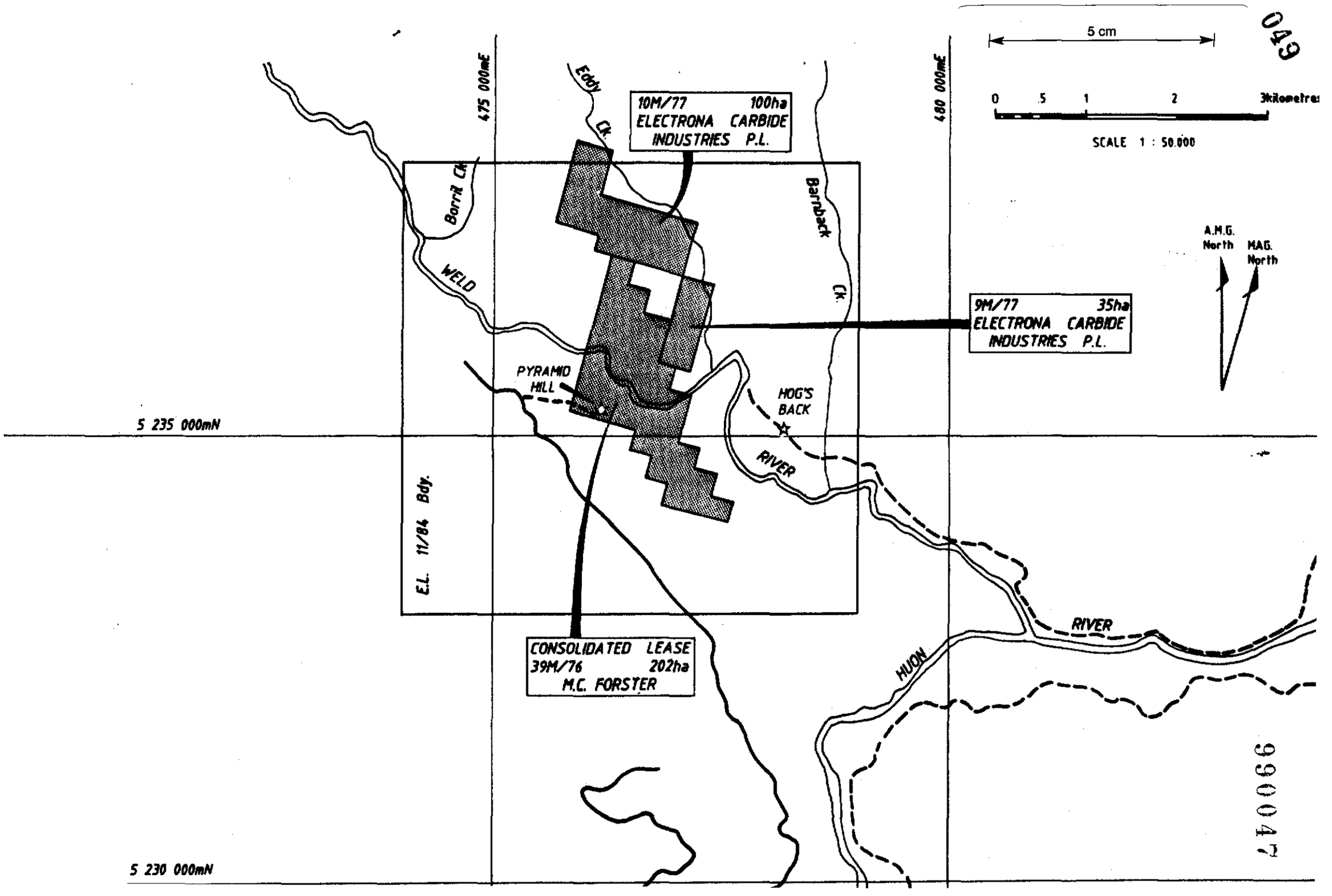

990046
370 000mE
380 000mE
390 000mE
5 340 000mN
5 330 000mN
E.L. 11/84
PYRAMID HILL
HOG'S BACK
HUON RIVER
Weld Plains
Arve Plains
Bernard Spur
Camels Back
Glovers Bluff
Denison Hill
Bee Tree Hill
Pear Hill
Red Rag Scarp
MOUNT RIVEAUX
MOUNT FREDERICK
5 cm
0 2 4 6 km
SCALE 1 : 100 000

FIGURE 1.


049
5 cm
0 .5 1 2 3kilometres
SCALE 1 : 50.000
475 000mE
480 000mE
Eddy Ck.
10M/77 100ha
ELECTRONA CARBIDE
INDUSTRIES P.L.
Borrid Ck.
WELD
Barnback Ck.
9M/77 35ha
ELECTRONA CARBIDE
INDUSTRIES P.L.
A.M.G. North
MAG. North
PYRAMID HILL
HOG'S BACK
RIVER
5 235 000mN
E.L. 11/84 Bdy.
CONSOLIDATED LEASE
39M/76 202ha
M.C. FORSTER
RIVER
HUON
5 230 000mN
9900047

2. EXPLORATION RESULTS

2.1 GRAB AND CHIP SAMPLING

Between July and September 1985, grab samples taken from the Hogsback were analysed for major elements and found to be high in silica (SiO_2) averaging 99.5% SiO_2, with low Al_2O_3 (< 0.25%), and low Fe_2O_3 (< 0.05%) contents. Details are given in Appendix 1 of this report.

Petrographic work by H.W. Fander (in Summons 1985) showed these siliceous rocks to have relict tectures considered to be derived from brecciated fine grained carbonate rocks.

The silica rock forming the main ridge of the Hogsback consists of a fine to medium grained mosaic of quartz with very small carbonate inclusions, and sporadic ? carbonaceous matter. These early encouraging results led to the decision to further assess the locality , by means of open drill holes.

2.2 DRILLING

During late October/early November 1985, a total of 21 precussion holes (aggregating 260.5m of drilling) were drilled on and around the Hogsback using an Air Track rig with a 1000 c.f.m, 120 psi compressor. This rig was towed in to the area, andbetween holes etc. using a caterpillar log skidder owned by M. Helm of Judbury

Drill hole locations are depicted in Figure 3, drill hole logs are attached as Appendix 2, drill hole sample analyses as Appendix 3, and cross sections incorporating the drill holes are shown as Figures 4 and 5.

All drill holes were vertical, and collar co-ordinates are included in Figure 3.

3. DISCUSSION OF RESULTS

3.1 INTRODUCTION

In an earlier report (Summons 1985) the silicified carbonate at the Hogsback was described as a silicified dolomite which was flanked to the east by a partly silicified ultramafic rock (s).

In the absence of any new petrographic or mineralogic data etc., the above description cannot at present be refuted, although indirect evidence arising from the recent work hints at a possible ultramafic origin, as discussed in section 3.4.3.

Based on lithologies, fabrics and geochemical results, the silica rocks in the area may be broadly sub divided in to silicified carbonates, and silicified ultramafic rocks.

3.2 SILICIFIED ULTRAMFIC ROCKS

3.2.1. The topography of the northern end of the Hogsback is distinctly influenced by the presence of silicified ultramafic rocks whilst the adjoining Fletchers Plain is formed in part by clay-dominated weathering products of similar ultramafic lithologies, (Figure 4). These clays have not been rigorously differentiated in Figure 4, and some (particularly east of hole HB 85-04) are of mixed residual and transported origin.

3.2.2 Deeply weathered/leached ultramafic lithologies were encountered in drill holes HB 85-01 to 10 and HB 85-20; the parent rocks (variably altered) included pyroxenite, serpentinite, and talc schist. The precise nature of the contact between the massive silica rock in hole 20 and the talc shist in hole 21 is not known, and the locally steep topography may be indicative of a faulted contact.

3.2.3 Massive silica rocks were intersected in drill holes HB 85-04, 05, 06, 08, 09, 10 and 20 ; relict tectures seen in the cuttings from these holes include cellular "streaky" (sheared fabric), and ? granular.

However, most original (pre silicification) textures appear to have been destroyed during replacement by amorphous silica.

3.2.4 Only one drill hole (HB 85-20) intersected any silica rock of potential interest, the remainder, even on anhydrous bases, are unprospective. The blue grey silica rocks seen in this hole, and in the adjacent holes, (colour due to Ni or Co) appears to signify the basal zone of silicification and accordingly, the only area worthy of further investigation lies to the north of HB 85-20.

3.3 SILICIFIED CARBONATE ROCKS

3.3.1 The morphology of the Hogsback is due to the development of a white/yellow/grey silica rock up to 10m thick, as shown in Figure 5.

Limited petrography indicates this rock to have been derived from a carbonate parent (refer Section 2.1.)

3.3.2 Even through none of the drill holes penetrated the unaltered/unweathered parent rocks, a regular vertical zonation can be recognised from top to base, as follows:-

3.3.2.1. Massive Silica Rock
3.3.2.2. Silica Sand ± Silt
3.3.2.3. Silica Silt ± Clay

3.3.3. Several drill holes met high grade silica zones (> 98% SiO_2), most of which are underlain by medium grade silica (95-98% SiO_2). However, some of these high grade intervals may have been either poorly silicified, or have suffered desilicification of ? matrix silica ; examples of these "sandy" intervals occur in holes HB 85-17, 19. In addition, the high grade (non "sand") zones range in drill hardness, such variation being due to a combination of varying cementation and varying fracture/joint spacing.

3.4 ORIGIN OF THE SILICA ROCKS

3.4.1. The silica rocks from both the carbonate and the ultramafic parent rocks are regarded as having a common mode of formation, probably during Tertiary time.

Deep chemical weathering, (including lateritization) have mobilised SiO_2 down profile, contemporaneous with upward migration of the R_2O_3 elements. Most of the latertic R_2O_3 capping has been removed by post-Tertiary erosion, with the possible exception of the intensely ferruginous zone in HB85-18, which appears as a "pendant" of the said capping.

3.4.2. Most of the other ferruginous zones shown in Figures 4 and 5 are considered to be younger that the Tertiary laterites, and to be associated with the mobilization of iron by organic acids (humic acid precipitates - HAP etc) during the Quaternary. The extent to which any organic acid-induced beneficiation of the silica rocks of the Hogsback has occurred is not known/recognised at present.

3.4.3. An alternative parent rock for some of the silicified carbonates may have been a talc-magnesite/dolomite altered ultramafic body.

Refer Appendix 2 for further details.

4. CONCLUSIONS

4.1 Silica rocks both comprising and adjacent to the Hogsback Hill occur in two general categories, as follows;

4.1.1. Silicified ultramafic lithologies

4.1.2. Silicified carbonates

4.2 The majority of the high grade silica rocks are silicified carbonates, and the most prospective of these occur on the southern end of the Hogsback. These rocks offer have the best (chemical) potential for use in the manufacture of either silicon metal, or silicon alloys.

4.3 The probable in situ mass of high grade silica on the southern end of the hogsback (based on an average width of 30m, thickness of 5m, and strike extent (HB 85-15 to 19) of 200m) is approx. 75000 tonnes.

4.4. The possible in situ mass of high grade silica in the vicinity of HB 85-20, (based on an average width of 20m, thickness of 5m, and strike of 100m), is approx. 25000 tonnes.

5. RECOMMENDATION

The potential resources of high grade silica described above require further evaluation regarding their physical properties; such assessment should include excavation of test pit tenches to allow collection of bulk samples for furnace trials etc.

REFERENCE

SUMMONS, T.G., 1985: Exploration Licence 11/84, Annual Report for the year ended 27.9.85 - Unpub. rep. M.C. Forster.

ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
S	34.5 89 3256	24.9.85		1 OF 3

TUBE No.	SAMPLE No.	Na2O	MgO	Al2O3	SiO2	P2O5	K2O	CaO		
10	HB 01F	25	360	400	99.6	x	55	270		
11	HB 01B	15	190	350	99.7	x	x	190		
12	HB 01C	20	210	500	99.7	x	x	220		
13	HB 02A	95	190	2300	99.5	x	55	360		
14	HB 02B	105	190	2500	99.4	x	55	370		
15	HB 02C	75	210	2050	99.5	x	x	300		
16	HB 03A	25	370	600	99.7	x	x	310		
17	HB 03B	85	320	800	99.6	x	x	310		
18	HB 03C	85	460	550	99.5	x	50	310		
19	HB 04A	55	360	900	99.5	x	x	450		
20	HB 04B	44	270	650	99.6	x	x	320		
21	HB 04C	45	510	800	99.5	x	51	520		

058

APPENDIX - 2

990056

Hole : HB 85-01 Date Commenced : 28.10.85
Date Completed : 28.10.85

0-1m : Gravel, quartzose, and pale brown clay.
1-4m : Clay, orange/yellow/white (illitic), minor silicified ultramatic (UM) fragments.
4-5m : Clay, medium brown, silicified UM chips.
5-6m : No sample - lost circulation.
E.O.H. - 6m.

Hole : HB 85-02 Date Commenced : 28.10.85
Date Completed : 28.10.85

0-1m : Clay, pale brown, minor silica cap float/subcrop.
1-3m : Clay, yellow to orange (as for HB 85-01)
3-6m : No sample - lost circulation, ground soft and wet.
E.O.H. - 6m.

Hole : HB 85-03 Date Commenced : 28.10.85
Date Completed : 28.10.85

0.1m : Gravel, ex UM silica capping, minor humus.
1-3m : Clay, red and brown.
3-6m : Poor sample return - very minor red clay (? UHC)
6-9m : Clay, medium brown, but very poor sample recovery.
9-15m : Poor sample return to 12m, and virtually no return from 12-15m ; section presumably consists of clays similar to upper part of hole.
E.O.H. - 15m.

Hole : HB 85-04 Date Commenced ; 29.10.85
Date Completed ; 29.10.85

0-2m : Talus of silicified ultramafic rocks etc.
2-4m : Clay, cream, kaolinitic, minor gravel.
3-6m : Gravel. HAP stained, composed of quartz/quartzite. and silicified UM fragments : water table @ 3m.
6-9m : Silicified ultramafic rock, generally grey/brown with HAP staining.
9-12m : Silicified ultramafic rock, grey/brown, but with minor cream spongy fragments also ; very minor pyroxenite chips (slightly weathered).
12-14m : Less silicified ultramafic, increased content of sand sized chips (- ? reflection of hardness)
E.O.H. - 14m.

060

990058

Hole - HB 85-05 Date Commenced : 29.10.85
Date Completed : 29.10.85

0.1m : Gravel/talus of silicified ultramafic rock and within lesser silica (undifferentiated) rock.
1-3m : Clay, ferruginous and chalcedonic silicified UM fragments.
3-7m : Silicified ultramafic rock, kaolinitic in part, mostly chalcedonic ; water table @ 4m.
7-14m : Clay, medium to dark brown, with small chips (? joint infillings) of silicified UM rock, this clay is identified with 4-5m in HB 85 -01, and 6-9m in HB 85-03.
E.O.H. - 14m.

Hole : HB 85-06 Date Commenced : 29.10.85
Date Completed : 29.10.85

0-1m : Gravel, undifferentiated silica rock.
1-2m : Clay, orange/brown ferruginous with ≈ 2 vol % of bright green siliceous chips (? ex ultramafic rock).
2-4m : Clay, cream > brown ; very minor green chips.
4-5m : Clay, brown > cream : " " " "
5-12m : Silicified ultramafic rock, alternating with brown clays ; the siliceous material is white/cream/ transluscent, with 30% green coloured (? gaspeite) chips. (Note, no sample from 8-9m).
12-15m : No samples ; water table @ 15m.
15-18m : Clay, medium brown, ± green (?ni/Cu) chips, (?UHC).
18-21m : Contaminated samples of silica rock and green chips from uphole ; hole caving suggests clay.
E.O.H. - 21m.

HB 85-07

Date Commenced 29.10.85
Date Completed 29.10.85

0-1m	:	Gravel lag of undifferentiated silica rock
1-2m	:	Clay, orange/ferruginous
2-8.8	:	Clay, cream coloured, with 10% hard/siliceous) dark to clear coloured chips (? ex ultramafic)
8.8-9m	:	Clay, orange/ferruginous
9-13.5	:	Poor sample return - inferred to be similar to 15-18m in HB 85-06 on the basis of minor amount of dark brown sticky clay.
		E.O.H. - 13.5m

HB 85-08

Date Commenced 28.10.85
Date Completed 28.10.85

0-1m	:	Humus and sandy podsolic soil.
1-4m	:	Clay, medium brown 90%, grey silica rock < 10% and spinel (chromite) 5-10% ; the clay is variably orange/yellow.
4-6m	:	Silica rock - streaky fabric, grey to white, with minor apple green (? Ni/Cu/Cr) colourization (not staining), white clay ≪ 20%, and chromite 3-5%. The interval is very similar to 1-2m in HB 85-10.
6-8m	:	Silica rock - granular fabric, grey, with very fine siliceous cuttings (eg. sand tail in dish).
8-9m	:	Silica rock, granular ≃ 50% and pseudo flow banded (streaky) silica rock 45%, with ≃ 5% chromite.
9-10m	:	Silica rock, streaky fabric, 80% grey to pale brown, (Some with chromite equivalent to 5% overall), and 15% non granular/amorphous silica rock with grey colour.
10-11M	:	Poor sample return, probably same as 9-10m.
11-12m	:	Silica rock, grey blue colour, both granular and massive amorphous ; trace chromite (? UHC).
12-13.5m:		No sample return ; water table @ 12m ; interval probably clay or cavernous ground.

E.O.H. 13.5m

062

990060

Hole HB 85-09 Date Commenced : 29.10.85
Date Completed : 29.10.85

0-08m : Humus and sandy soil

0.8-2.5m : Silica rock, amorphous, pale green and pale brown, trace spinel, orange/ferruginous clay ≒ 30%. (? oxidised version of 6-7m in HB 85-10).

2.5-3.5m : Silica rock amorphous and streaky, white to pale grey, with ≒ 10% chromite ; (? similar to 1.2m in HB 85-10)

3.5-5.5m : Silica rock, similar to 2.5-3.5m, but with pale brown and green (?Ni, Cr) colourisation : orange ferruginous clay ≒ 50%, and 1-2% chromite in overall sample.

5.5-7.0m : Silica rock, streaky, grey with minor UHC of white -green and brown chips ; minor (< 5%) chromite is flattened and streaky.

7-8m : Silica rock, amorphous, grey ; no spinels.

8-9m : ? Contaminated sample (by orange clay) ; probably similar (カ7-8m~; Compare 7-9m in hb 85-09 with 9-12m in HB 85-10).

9-12m : No sample return - hole damp - suggestion of clay. E.O.H. - 12m.

063

990061

Hole HB 85 -10 Date Commenced 29.10.85
Date Completed 29.10.85

0.-0.5m : Humus and sandy soil.

0.5-2m : Silica rock, streaky fabric (pseudo flow banded) grey and white with streaks of non magnetic spinel (chromite) $\ll$ 0.3mm totalling $\ll$ 15% ; minor fuschitic green staining and traces of relict serpentine with chromite. The grey colour is similar to the colour of much of the amorphous and granular silica rock described in holes HB 85-08 and -09.

2-3m : Clay yellow/green and grey silica rock as for 1-2m 50% each ; as for 1-2m, this interval has rare chips of gaspeite/garnierite green rock. Chromite streaks are $\ll$ 1mm long, and total 5-10%.

3-4m : Clay, yellow and green $\ll$ 80%, balance is 15%, streaky grey silica rock, and $\simeq$ 5% chromite.

4-5m : Silica rock, buff/yellow/very pale green/white, comparable with silica rock float near the collar of HB 85-06 ; $\simeq$ 3% chromite.

5-6m : Silica rock, buff 60% (including rare gaspeitic green chips), and 40% pale cream clay ; ave. 5% chr.

6-7m : Silica rock, grey ($\pm$ dark grey yellow and pale green) $\simeq$ 50% and 50% cream clay ; trace Ni green chips, trace silicified serpentinite (medium green colour) and 1% chromite.

7-9m : As for 6-7m, but with poor return for the 7-8 interval suggestive of increased clay ; still trace to 3% of Ni green chips, and trace dark grey silica rocks.

9-11m : Silica rock, medium to dark grey, amorphous, $\simeq$ 80%, with balance of brown/cream clay ; ? UHC by Ni green chips and chromite (note - no chromite visible in the silica rock - in contrast with the top 9m of the hole).

11-12m : Silica rock, medium blue/grey ; green (Ni, Cr) Coloured chips $\simeq$ 10% - some may be UHC.

12-15m : No sample return - ? cavenous ground, or clay. E.O.H. - 15m.

064

Hole HB 85-11 Date Commenced : 30.10.85
Date Completed : 30.10.85

0-2m : Talus/gravel of silica rock, massive to granular, grey.
2-5.5m : Silica rock, amorphous and granular, grey and variably soft/brittle ; minor (15%) limonite, mainly as joint coatings ; minor (20%) cream clay.
5.5-6.0m: As for 2-5,5m, but with organic acid (HAP) staining.
6-8.8m : Silica rock, amorphous and granular, grey and not as intensely silicified as 2-6m ; cream clay 30%.
8.8-10m : As for 6-8.8m, but with HAP staining.
10-11m : Clay/silt,brown colour due to HAP staining.
11-12m : Clay, cream 80%, with grey silica rock ≈ 20%, of which approx. half is HAP stained.
E.O.H. - 12m.

Hole HB 85-12 Date Commenced : 30.10.85
Date Completed : 30.10.85

0-2m : Silica rock, massive, grey with minor yellow coloured clay.
2-3m : Silica rock, massive, grey, soft/brittle.
3-4m : As for 2-3m, with HAP staining ; hard rock.
4-6m : As for 2-3m.
6-7m : As for 3-4m, possibly cavenous ground.
7-8m : Clay, grey and brown, minor silica rock chips.
E.O.H. - 8m.

Hole HB 85-13 Date Commenced : 30.10.85
Date Completed : 30.10.85

0-2m : Silica rock, massive/amorphous, grey.
2-3m : Silica rock, massive, dark grey to blue grey, with 15% limonite, and 20% yellow brown clayey material.
3-4m : As for 2-3m, but strongly ferruginized
4-5m : Silica rock, massive, pale grey to cream (blotchy), with ≈ 20% limonite and limonitic silica ; minor (20%) yellow orange clayey material which may host the iron.
5-9m ; Silica rock, massive, grey (including dark grey), with patches of cream/yellow coloured (? less silicified) rock ; the grey silica is reasonably hard.

Hole HB 85-13 cont.

9-9.5m : No sample return - rock is very hard, but lost circulation caused the hole to be abandoned.

Hole HB 85-14 Date Commenced 30.10.85
Date Completed 30.10.85

0-1m : Silica rock, massive, grey.

1-3m : Silica rock, massive, orange, and clayey/silty. (? poorly silicified) material ; ferruginous zone.

3-4.5m : Silica rock, massive, cream/yellow, with simiarly coloured clay.

4.5-6m : Silica rock, massive, mainly grey, with both HAP and limonite staining and silty clay (? poorly silicified rock) ; ferruginous zone, and cream clayey/silty matrix to hard silica.

8.5-9.0m: Silica rock, as for 4.5-6m ; ferruginous zone.

9-11m : Sand/silt/clay sized grains of silica, totalling 30% ; balance silica rock chips (70%).

11-15m : No sample return - suspect increased content of fine grained silica ± clay ± water.
E.O.H. - 15m.

Hole HB 85-15 Date Commenced 31.10.85
Date Completed 31.10.85

0-3m	:	Silica rock, massive, grey/white, hard, with 20% fines (silt to sand size grains of silica).
3-5m	:	Silica rock, massive, grey/yellow, moderately hard.
5-6m	:	Silica rock, massive, grey, with pale yellow coating of ? poorly silicified material.
6-7m	:	Silica rock, massive, white/grey, iron staining on joints and fractures ; minor ferruginous silty to sandy material.
7-8m	:	Cave - no sample.
8-9m	:	Sand sized material, poor return.
9-10m	:	Silt sized material - very poor return.
		E.O.H. - 10m

Hole HB 85-16 Date Commenced 31.10.85
Date Completed 31.10.85

0-3m	:	Silica rock, massive, grey to white, with 10 to 20% sandy silica material (? with in situ granular texture)
3-6m	:	Silica rock, massive, grey ≃ 50%, with ≃ 30% sandy silica, (loose sand size grains) and 20% clay (kaolinitic in part).
6-9m	:	Silt/sand, white/grey and orange ferruginous ≤ 60% with balance of massive silica rock showing limonite staining on fractures.
9-12m	:	No sample return - suspected to be similar to the interval 6-9m, ± water.
		E.O.H. - 12m.

067

Hole HB 85-17

Date Commenced 31.10.85
Date Completed 31.10.85

0-2m : Silica rock, massive, grey/white ≃80%, balance is very fine grained silica sand/silt.
2-3m : Sand, silica, white ≃80%, balance is silica rock
3-5m : Silica rock, massive, white ≃70%, balance is very fine grained silica sand and silt.
5-7m : Sand, silica, white ≃80%, balance is silica rock.
7-8m : No sample return - suspect small cave.
8-9m : Sand/silt, silica, white to pale grey ≃70%, the balance being white/grey silica rock.
9-12m : Sand, silica, grey - but poor return, suggesting loss of silt and clay sized fines in cavenous ground.
E.O.H. - 12m.

Hole HB 85-18

Date Commenced 31.10.85
Date Completed 31.10.85

0-1m : Silica rock, massive, grey and white, minor ferruginization.
1.5-5.5m: Silica rock, massive, 50% grey/white, 50% hematite + limonite stained, (including limonite filled joints). Distinctive red brown lateritic colour.
5.5-9m : Silica rock, massive, grey/white ; limonite and hematite restricted to staining of silica rock. Minor silty/sandy matrix material.
9-10.5m : No sample return, (increased sand/silt content).
EOH - 10.5 m.

Hole HB 85-19

Date Commenced 31.10.85
Date Completed 31.10.85

0-1m : Humus and massive grey/white silica rock.
1-2m : Silica rock, massive, grey/white, soft ; minor relict carbonate (? dolomite)
2-3m : Sand, silica (or very soft granular silica rock)
3-4m : Silica rock, massive, white/grey, hard, with ≃10% silica sand.
4-6m : As for 3-4m, but with ≃30% silica sand.
6-9m : Sand, silica, white ≃80%, balance is similarly coloured silica rock, poor recovery.

Hole HB 85-19 cont.

9-10.5m : No sample return - suspect wet sand, or silty clay.

E.O.H. - 10.5m.

Hole HB 85-20 Date Commenced 1.11.85
Date Completed 1.11.85

0-1.5m : Silica rock, massive, grey and white
1.5-4.5m : Clay, orange yellow, and silica rock 25-50%, the clay is illitic to kaolinitic.
4.5-6m : Silica rock, massive, grey/white ≈60%, the 40% balance being yellow clayey silty material.
6-9m : Silica rock etc. ≈ 80% balance 20% of silty sandy silica.
9-12m : Sand, silica, brown, stained (HAP), but poor return and sand is damp.
12-16.5m : Silica rock, massive, blue/grey, uniform and hard, HAP stained; water table @ 16.5m.
E.O.H. - 16.5m.

Hole HB 85-21 Date Commenced 1.11.85
Date Completed 1.11.85

0.1m : Gravel/talus lag deposit of silica rock
1-2m : Clay, orange brown
2-3m : Talc schist (EW) with spinels
3-6m : ? Clay or talcose material, poor recovery.
6-9m : No sample return.
E.O.H.- 9m.

069

APPENDIX – 3

390067

070

990068

ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.

Phone (09) 458 7999 — 52 Murray Road, Welshpool, W.A. 6106 — Telex AA92560

ANALYTICAL REPORT No. ~~34.5.61.41308~~

THIS REPORT MUST BE READ IN CONJUNCTION WITH THE ACCOMPANYING ANALYTICAL DATA

Queensland Mines Ltd
8th Floor, FCA House
50 Margaret Street
Sydney
NSW 2000

ORDER No.	PROJECT

DATE RECEIVED	RESULTS REQUIRED
07/11/85	ASAP

No. OF PAGES OF RESULTS	DATE REPORTED	No. OF COPIES	TOTAL No. OF SAMPLES
10	21/11/85	1	117

STATE OF SAMPLES (REFER BELOW)	SAMPLE NUMBERS	PRE-TREATMENT: DRY	CRUSH	SPLIT	PULVERISE	SIEVE	OTHER SEE REMARKS	NONE	ANALYSIS: REFER TO ANALYSIS SECTION	PREPARATION	METHOD
	Pref:MB various				1				Al2O3,TiO2,Fe2	3	1A3
									MnO,MgO,CaO,K2		1A3
									Na2O		1A3
									P2O5		4A2
									LOI		4A9
									SiO2		1A7
	Pref:MB various				1				Al2O3,TiO2,Fe2	3	1A3
									MnO,MgO,CaO,K2		1A3
									Na2O		1A3

RESULTS TO

as above
Mr J B Noakes

RESULTS TO

T Summons
Summons Geoservices Pty Ltd
1 Greenlands Ave
Sandy Bay Tasmania 7005

REMARKS

This Laboratory is registered by the National Association of Testing Authorities, Australia. The tests reported herein have been performed in accordance with its terms of registration. This document shall not be reproduced except in full.

STATE OF SAMPLES		ANALYSIS — PREPARATION				ANALYSIS — METHOD	
whole core	WC	perchloric acid	A1	cold acid	CA	atomic absorbtion	AAS
split core	SC	hydrochloric acid	A2	specific sulphide	SS	x-ray fluorescence	XRF
cutting	CU	nitric acid	A3	other mixed acids	Ma	spectrophotometry	SPEC
rock	Ro	aqua regia	A4	alkaline attack	AA	colorimetry	COL
soil	SO	nitric-perchloric	A5	volatilization	VO	chromatography	CHR
pulp	PU	HF mixture	A6	ignition	IG	titration	TTN
water	WA	HF under pressure	A7	pressed powder (XRF)	PP	other chemicals means	CHEM
tissue	TI	fusion	A8	glass fusion (XRF)	GF	miscellaneous	MISC
stream sediment	SS					fluorescence	FLUOR
heavy mineral	HM					inductively coupled plasma	ICP

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990069

071

ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	34.5.01.41308	21/11/85		1 OF 10

TUBE No.	SAMPLE No.		Na2O	MgO	Al2O3	SiO2%	P2O5%	K2O	CaO	TiO2
1	MB 06 05-06		1205	5060	14.55%	68.2	0.021	5.85%	250	6150
2	MB 06 06-07		1275	2740	14.00%	71.1	0.018	5.85%	250	8850
3	MB 06 07-08		710	2740	7.65%	85.4	0.016	2.05%	1330	2850
4	MB 06 09-10		1275	1070	8.30%	80.0	0.009	5.35%	150	5650
5	MB 06 10-11		1275	1410	8.60%	79.7	0.011	5.42%	200	4000
6	MB 06 11-12		1340	2400	14.02%	72.1	0.011	5.90%	360	5350
7	MB 08 01-02		140	2320	6.15%	85.1	0.014	415	440	5750
8	MB 08 02-03		260	1660	9.15%	81.9	0.014	4400	330	5500
9	MB 08 03-04		295	1740	8.30%	83.5	0.007	3675	340	5600
10	MB 08 04-05		315	1820	8.50%	85.8	x	3900	300	4600
11	MB 08 05-06		385	2160	9.15%	84.9	0.009	5240	330	5250
12	MB 08 06-07		275	3070	6.35%	88.1	x	6990	270	4150
13	MB 08 07-08		230	1490	8.40%	87.0	0.009	4500	500	1500
14	MB 08 08-09		295	2160	5.50%	91.0	0.007	3675	600	2350
15	MB 08 09-10		245	2240	5.70%	89.1	0.009	4460	380	4150
16	MB 08 10-11		255	1110	5.80%	90.2	0.007	3800	500	2100
17	MB 08 11-12		255	1990	6.15%	89.8	0.009	3315	850	2000
18	MB 09 01-02	clay	565	1580	12.40%	77.0	0.039	2.78%	160	900
19	MB 09 02-03		140	570	3.80%	93.0	0.011	2230	440	250
20	MB 09 03-04		195	650	5.00%	89.4	0.007	2650	410	450
21	MB 09 04-05	clay	355	1410	7.45%	84.2	0.011	5600	410	500
22	MB 09 05-06		235	970	5.40%	89.2	0.016	2770	380	350
23	MB 09 06-07		445	1680	6.35%	87.4	0.021	6500	430	2650
24	MB 09 07-08		290	1660	7.35%	87.8	0.018	4035	710	2150
25	MB 09 08-09		325	1660	8.10%	82.4	0.037	4460	530	3350

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
— = element not determined

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072

990070

ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	34.5.01.41308	21/11/85		6 OF 10

TUBE No.	SAMPLE No.		MnO	Fe2O3	LOI%					
1	MB 06 05-06		20	3.50%	6.57					
2	MB 06 06-07		20	1.95%	5.78					
3	MB 06 07-08		25	1.35%	2.76					
4	MB 06 09-10		15	1.10%	4.47					
5	MB 06 10-11		20	1.30%	4.25					
6	MB 06 11-12		25	1.85%	5.17					
7	MB 08 01-02		25	3.20%	4.66					
8	MB 08 02-03		15	2.65%	5.11					
9	MB 08 03-04		15	2.15%	4.88					
10	MB 08 04-05		5	5300	4.08					
11	MB 08 05-06		5	4000	4.18					
12	MB 08 06-07		15	8000	3.32					
13	MB 08 07-08		x	3700	3.45					
14	MB 08 08-09		5	2600	2.32					
15	MB 08 09-10		5	1.00%	3.04					
16	MB 08 10-11		15	4100	2.71					
17	MB 08 11-12		5	4700	2.73					
18	MB 09 01-02		x	2.05%	5.38					
19	MB 09 02-03		x	1.10%	1.76					
20	MB 09 03-04		x	2.35%	2.78					
21	MB 09 04-05		5	3.90%	3.62					
22	MB 09 05-06		5	2.40%	2.50					
23	MB 09 06-07		5	1.50%	3.51					
24	MB 09 07-08		x	9500	3.03					
25	MB 09 08-09		x	4.20%	4.22					

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
x = element concentration is below detection limit
- = element not determined

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A division of MacDonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	34.5.01.41308	21/11/85		2 OF 10

TUBE No.	SAMPLE No.		Na2O	MgO	Al2O3	SiO2%	P2O5%	K2O	CaO	TiO2
1	MB 10 01-02	?flood.	125	790	4.20%	93.1	0.014	1900	500	250
2	MB 10 02-03	grey clay	390	1200	10.80%	82.6	0.025	7530	420	500
3	MB 10 03-04	grey clay	295	690	10.05%	85.3	0.021	4820	360	750
4	MB 10 04-05		270	610	8.40%	87.7	0.011	5000	260	900
5	MB 10 05-06		390	970	10.25%	83.8	0.011	1.45%	340	1100
6	MB 10 06-07		425	1910	10.25%	83.3	0.023	1.81%	340	750
7	MB 10 07-08		595	2240	9.70%	83.4	0.030	1.99%	970	900
8	MB 10 08-09	? Fault.	480	1990	10.25%	83.1	0.018	2.11%	330	700
9	MB 10 09-11		425	1580	4.65%	92.2	0.025	3800	1750	550
10	MB 10 11-12		200	1160	4.85%	91.9	0.011	4300	550	500
11	MB 11 00-01		130	380	5250	98.4	x	525	350	4150
12	MB 11 01-02		100	460	3000	99.0	x	290	490	1750
13	MB 11 02-03		90	360	2100	99.3	x	165	380	850
14	MB 11 03-04		120	280	2850	99.2	x	200	330	900
15	MB 11 04-05		115	300	1800	99.4	x	200	340	650
16	MB 11 05-06		180	800	1.40%	96.2	x	1930	440	900
17	MB 11 06-07		170	700	2.30%	95.9	x	1625	260	800
18	MB 11 07-08		140	520	2.10%	96.4	x	990	260	800
19	MB 11 08-09		130	590	2.65%	95.3	x	880	300	1750
20	MB 11 09-10		150	840	1.90%	95.7	x	950	300	2750
21	MB 11 10-11		150	1.29%	2.65%	90.6	0.009	890	320	5150
22	MB 11 11-12		200	2.40%	5.60%	85.5	0.011	850	250	4650
23	MB 13 00-01		80	740	2150	98.6	x	70	710	600
24	MB 13 01-02		200	710	3600	98.3	x	115	710	600
25	MB 13 02-03		95	520	1.85%	93.7	0.009	170	410	2000

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
– = element not determined

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990072

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A division of MacDonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	34.5.01.41308	21/11/85		7 OF 10

TUBE No.	SAMPLE No.	MnO	Fe2O3	LOI%					
1	MB 10 01-02	5	2600	2.09					
2	MB 10 02-03	x	2900	5.03					
3	MB 10 03-04	x	1900	3.73					
4	MB 10 04-05	x	1600	2.98					
5	MB 10 05-06	x	2200	3.99					
6	MB 10 06-07	x	2700	3.98					
7	MB 10 07-08	25	4800	3.94					
8	MB 10 08-09	5	3800	3.77					
9	MB 10 09-11	35	3100	2.04					
10	MB 10 11-12	5	2900	2.24					
11	MB 11 00-01	x	300	0.46					
12	MB 11 01-02	x	200	0.34					
13	MB 11 02-03	x	200	0.30					
14	MB 11 03-04	x	200	0.31					
15	MB 11 04-05	x	200	0.22					
16	MB 11 05-06	x	700	1.95					
17	MB 11 06-07	x	700	1.38					
18	MB 11 07-08	x	500	1.21					
19	MB 11 08-09	x	800	1.74					
20	MB 11 09-10	x	1100	1.78					
21	MB 11 10-11	x	1.50%	3.34					
22	MB 11 11-12	15	1.85%	4.08					
23	MB 13 00-01	5	3800	0.56					
24	MB 13 01-02	25	5100	0.60					
25	MB 13 02-03	5	2.20%	1.94					

* Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
- = element not determined

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075

990073

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A division of MacDonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	34.S.01.41308	21/11/85		3 OF 10

TUBE No.	SAMPLE No.	Na2O	MgO	Al2O3	SiO2%	P2O5%	K2O	CaO	TiO2
1	MB 13 03-04	75	480	5.40%	↓ 82.3	0.011	175	300	850
2	MB 13 04-05 2 contam	60	410	1.90%	↓ 94.1	0.009	135	340	500
3	MB 13 05-06	80	420	1.50%	↑ 96.0	0.007	200	400	650
4	MB 13 06-07	80	640	1.00%	96.8	0.009	125	600	750
5	MB 13 07-08	75	620	1.00%	96.9	0.007	135	530	550
6	MB 13 08-09	65	750	1.10%	↓ 96.8	0.007	125	530	550
7	MB 14 00-01	45	220	2650	98.1	x	85	200	600
8	MB 14 01-02	60	510	4.95%	86.9	0.009	165	180	2600
9	MB 14 02-03	65	1500	6.45%	87.6	0.011	165	220	3500
10	MB 14 03-04	65	510	1.65%	95.5	0.007	140	320	2150
11	MB 14 04-05	75	590	2.15%	93.6	x	175	300	2500
12	MB 14 05-06	65	510	2.60%	88.9	0.011	175	320	2850
13	MB 14 06-07	100	420	1.80%	94.2	0.009	285	360	2850
14	MB 14 07-08	135	360	1.80%	95.5	0.007	320	320	3100
15	MB 14 08-09	115	360	2.00%	87.6	0.018	390	310	4350
16	MB 14 09-10	115	400	1.80%	90.2	0.016	345	330	2850
17	MB 14 10-11	130	570	2.10%	90.8	0.011	350	490	? 150
18	MB 15 00-01	45	290	700	99.3	x	65	300	50
19	MB 15 01-02	40	250	600	99.6	x	55	270	50
20	MB 15 02-03	35	370	700	99.5	x	40	400	50
21	MB 15 03-04	25	390	600	99.0	x	35	400	50
22	MB 15 04-05	35	340	600	99.3	x	40	330	x
23	MB 15 05-06	40	390	1150	↓ 98.9	x	60	360	x
24	MB 15 06-07	55	390	6300	96.8	x	90	400	250
25	MB 15 07-09	60	410	8100	96.9	x	195	370	1550

Results in ppm unless otherwise specified

T = element present: but concentration too low to measure

x = element concentration is below detection limit

- = element not determined

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990074

076

ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	34.5.01.41308	21/11/85		8 OF 10

TUBE No.	SAMPLE No.		MnO	Fe2O3	LOI%					
1	MB 13 03-04		5	7.30%	4.77					
2	MB 13 04-05		5	2.00%	1.88					
3	MB 13 05-06		5	1.10%	1.24					
4	MB 13 06-07		15	1.00%	0.95					
5	MB 13 07-08		15	9500	0.98					
6	MB 13 08-09		15	9500	0.95					
7	MB 14 00-01		5	3500	1.13					
8	MB 14 01-02		5	4.50%	3.32					
9	MB 14 02-03		5	2.20%	3.18					
10	MB 14 03-04		5	1.20%	1.29					
11	MB 14 04-05		5	2.00%	1.86					
12	MB 14 05-06		5	5.30%	2.83					
13	MB 14 06-07		5	2.15%	1.42					
14	MB 14 07-08		5	1.35%	0.90					
15	MB 14 08-09		5	7.15%	2.70					
16	MB 14 09-10		5	4.80%	2.77					
17	MB 14 10-11		15	4.00%	2.94					
18	MB 15 00-01		5	400	0.49					
19	MB 15 01-02		5	300	0.27					
20	MB 15 02-03		5	300	0.35					
21	MB 15 03-04		5	1200	0.70					
22	MB 15 04-05		15	1200	0.43					
23	MB 15 05-06		15	4300	0.42					
24	MB 15 06-07		20	1.00%	1.43					
25	MB 15 07-09		15	5400	1.45					

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
I = element concentration is below detection limit
- = element not determined

AUTHORISED OFFICER

990075

/ 077

ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	34.5.01.41308	21/11/85		4 of 10

TUBE No.	SAMPLE No.	Na2O	MgO	Al2O3	SiO2%	P2O5%	K2O	CaO	TiO2
1	MB 16 00-01	60	310	550	99.4	x	85	170	150
2	MB 16 01-02	35	180	400	99.6	x	35	130	150
3	MB 16 02-03	40	190	450	99.0	x	30	180	150
4	MB 16 03-04	40	190	450	99.1	x	30	160	50
5	MB 16 04-05	35	200	400	99.3	x	30	180	100
6	MB 16 05-06	40	190	550	99.1	x	35	200	200
7	MB 16 06-09 (s)	40	300	1150	97.4	0.009	30	360	350
8	MB 17 00-01	75	160	600	99.1	x	35	150	50
9	MB 17 01-02	55	190	550	99.1	x	80	150	150
10	MB 17 02-03	35	260	200	99.4	x	50	150	50
11	MB 17 03-04	45	360	300	99.2	x	70	150	50
12	MB 17 04-05	35	380	300	99.2	x	60	150	100
13	MB 17 05-06	40	340	400	99.3	x	55	190	x
14	MB 17 06-07	25	240	450	99.2	x	35	200	50
15	MB 17 08-09	25	220	150	99.3	x	35	180	x
16	MB 17 09-12	35	220	300	99.2	x	30	210	x
17	MB 18 00-01 Cag	25	240	1250	95.4	x	30	250	500
18	MB 18 01-02	20	290	5650	85.5	0.018	60	210	1650
19	MB 18 02-03	35	320	2100	89.2	0.016	50	320	1650
20	MB 18 03-04	20	300	5400	86.2	0.016	50	280	2350
21	MB 18 04-05	25	390	1.10%	83.5	0.018	80	410	2350
22	MB 18 05-06	25	490	6500	96.6	0.011	115	410	1250
23	MB 18 06-09 (s)	135	360	3500	97.2	x	185	390	2750
24	MB 19 00-01	45	170	1050	98.0	x	60	340	650
25	MB 19 01-02	35	170	750	99.6	x	35	180	150

Results in ppm unless otherwise specified

x = element present; but concentration too low to measure

x = element concentration is below detection limit

AUTHORISED OFFICER

078

ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	34.5.01.41308	21/11/85		9 OF 10

TUBE No.	SAMPLE No.	MnO	Fe2O3	LOI%					
1	MB 16 00-01	15	300	0.41					
2	MB 16 01-02	5	200	0.28					
3	MB 16 02-03	5	200	0.88					
4	MB 16 03-04	5	400	0.74					
5	MB 16 04-05	5	300	0.59					
6	MB 16 05-06	5	300	0.72					
7	MB 16 06-09	15	1.40%	0.96					
8	MB 17 00-01	5	200	0.77					
9	MB 17 01-02	5	300	0.79					
10	MB 17 02-03	5	200	0.47					
11	MB 17 03-04	5	400	0.69					
12	MB 17 04-05	5	700	0.58					
13	MB 17 05-06	5	800	0.56					
14	MB 17 06-07	5	800	0.60					
15	MB 17 08-09	5	900	0.58					
16	MB 17 09-12	5	900	0.76					
17	MB 18 00-01	15	3.20%	1.19					
18	MB 18 01-02	60	11.15%	2.49					
19	MB 18 02-03	75	7.85%	2.18					
20	MB 18 03-04	50	10.60%	2.29					
21	MB 18 04-05	50	11.70%	3.39					
22	MB 18 05-06	40	.6600	1.86					
23	MB 18 06-09	15	1100	1.97					
24	MB 19 00-01	15	500	1.69					
25	MB 19 01-02	5	300	0.24					

Results in ppm unless otherwise specified
= element present; but concentration too low to measure
= element concentration is below detection limit
= element not determined

AUTHORISED OFFICER

079

990077

ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	34.5.01.41308	21/11/85		5 OF 10

TUBE No.	SAMPLE No.	Na2O	MgO	Al2O3	SiO2%	P2O5%	K2O	CaO	TiO2
1	MB 19 02-03	15	170	400	99.7	x	20	250	150
2	MB 19 03-04	15	110	450	99.8	x	20	140	150
3	MB 19 04-05	20	460	500	99.5	x	35	140	300
4	MB 19 05-06	25	220	400	99.5	x	35	130	250
5	MB 19 06-09 (3)	65	220	600	98.4	x	70	190	800
6	MB 20 00-01	Lag. 65	260	1500	98.4	x	95	260	4500
7	MB 20 01-02	75	910	4.20%	91.1	x	205	240	3750
8	MB 20 02-03	45	950	5.30%	89.2	x	175	130	2750
9	MB 20 03-04	55	1310	4.10%	91.3	x	205	180	4350
10	MB 20 04-05	55	600	1.00%	96.8	x	125	230	4000
11	MB 20 05-06	110	550	8500	96.9	x	185	340	3000
12	MB 20 06-07	80	390	3150	98.7	x	150	360	1400
13	MB 20 07-08	80	360	2850	98.8	x	140	390	1100
14	MB 20 08-09	115	600	6200	96.7	0.007	155	650	1000
15	MB 20 09-12 (3)	65	380	4200	98.6	x	145	350	1650
16	MB 20 12-15 (3)	110	660	7750	96.7	x	155	710	900
17	MB 20 15-16.5	110	710	5450	97.0	x	110	820	300
18									
19									
20									
21									
22									
23	DETECTION	5	10	50	0.1	0.007	5	10	50
24	DIGESTION								
25	METHOD	103	103	103	199	402	103	103	103

Results in ppm unless otherwise specified

x = element present, but concentration too low to measure

- = element concentration is below detection limit

n.d. = not determined

AUTHORISED OFFICER

990078

ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX	REPORT NUMBER	REPORT DATE	CLIENT ORDER No.	PAGE
	34.5.01.41308	21/11/85		10 OF 10

TUBE No.	SAMPLE No.	MnO	Fe2O3	LOI%					
1	MB 19 02-03	x	100	0.15					
2	MB 19 03-04	x	100	0.15					
3	MB 19 04-05	5	300	0.33					
4	MB 19 05-06	5	400	0.35					
5	MB 19 06-09	20	1700	1.21					
6	MB 20 00-01	5	2400	0.72					
7	MB 20 01-02	5	1.30%	2.86					
8	MB 20 02-03	5	1.15%	3.83					
9	MB 20 03-04	6	1.35%	2.99					
10	MB 20 04-05	5	6900	0.98					
11	MB 20 05-06	5	4800	1.34					
12	MB 20 06-07	5	3000	0.42					
13	MB 20 07-08	5	2400	0.41					
14	MB 20 08-09	25	5500	1.91					
15	MB 20 09-12	5	3000	0.46					
16	MB 20 12-15	5	3000	2.00					
17	MB 20 15-16.5	5	1700	2.09					
18									
19									
20									
21									
22									
23	DETECTION	5	10	0.01					
24	DIGESTION								
25	METHOD	103	103	408					

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
- = element not determined

AUTHORISED OFFICER

081

A.M.G. Co-ordinates A.H.D.

DRILL HOLE	EASTING	NORTHING	R.L.
SHAFT	418332·8	5234957·5	78·18 (Surface Level)
1	418353·4	5235008·5	79·62
2	418342·3	5235027·0	79·71
3	418315·7	5235062·7	82·42
4	418294·2	5235087·1	85·81
5	418265·8	5235118·4	90·30
6	418230·0	5235149·3	95·81
7	418191·2	5235189·7	96·15
8	418147·3	5235219·9	98·83
9	418142·5	5235175·3	104·83
10	418140·6	5235121·0	113·78
11	418147·2	5235094·9	120·53
12	418144·8	5235052·9	132·31
SHAFT	418146·6	5235051·6	132·08 (Surface Level 132·78)
SHAFT	418149·3	5235050·8	132·23 (Surface Level 132·93)
13	418147·8	5235045·8	132·66
14	418151·2	5235015·8	129·80
SHAFT	418152·4	5235002·5	127·00 (Surface Level 128·3)
15	418151·9	5234976·4	123·74
16	418152·4	5234936·8	115·88
17	418150·6	5234893·0	106·95
18	418153·1	5234841·4	95·74
19	418155·1	5234798·3	86·49
20	418122·2	5235230·7	97·58
21	418091·8	5235246·6	91·78

NOTE: A.M.G. Co-ordinates and AHD Datum derived from Forestry Commission Trig Station on South Weld Road

DH 21
DH 20
DH 8
5235 200
DH 7
DH 9
DH 6
DH 10
DH 5
5235100
DH 11
DH 4
DH 3
DH 12
SHAFT
DH 13
HOGSBACK HILL
DH 2
DH 14
DH 1
5235 000
SHAFT
DH 15
SHAFT
Centreline
DH 16
5234900
74·57
DH 17
of
72·92
71·72
Existing
DH 18
61·78
Track
59·74
Black-wood Creek
RL on Bridge 58·31
RL in Creek Bed 56·81
990079
5 cm
N 5234800
DH 19
E 418200
418300
418400
418500
418600
418100
GRID NORTH

BROOKS LARK & CARRICK
LAND & ENGINEERING SURVEYORS
23 ANTILL ST. SOUTH HOBART PH.(002) 23 5666

DRILL HOLE DETAIL
WELD RIVER VALLEY
VICINITY OF HOGSBACK HILL

SCALE 1:1000 | DRAWING No.
DRAWN [illegible] | DATE 27-11-85 | FIGURE 3
APPROVED | No. OF SHEETS

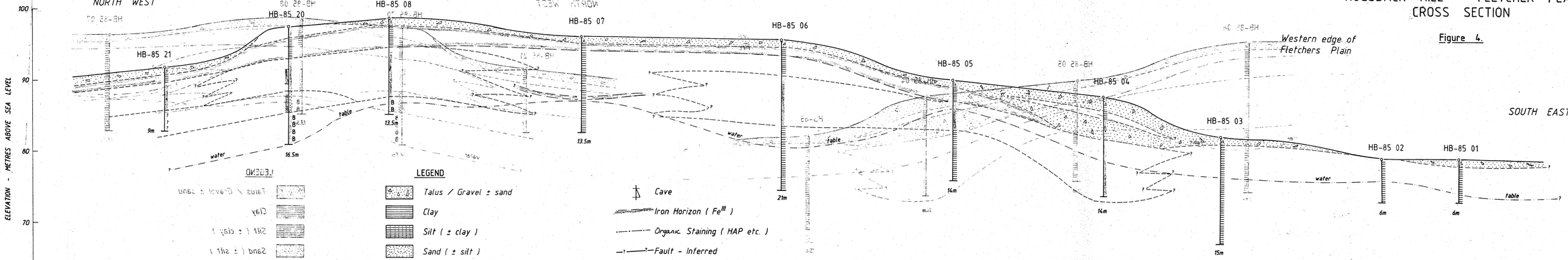
86-2590

082

Northern end of Hogsback Hill

WELD RIVER
EXPLORATION LICENCE 11/84
(M.C. FORSTER)
HOGSBACK HILL - FLETCHER PLAIN
CROSS SECTION

Figure 4.



LEGEND

- Talus / Gravel ± sand
- Clay
- Silt (± clay)
- Sand (± silt)
- Silica Rock - ex Carbonate
- Silica Rock - ex Ultramafic (B - blue grey coloured)
- Talc Schist
- High Grade SiO_2 (98%)
- Medium Grade SiO_2 (95-98%)

- Cave
- Iron Horizon (Fe^{III})
- Organic Staining (HAP etc.)
- Fault - Inferred

Vertical Scale = 1 : 250
Horizontal Scale = 1 : 500
} Vertical Exaggeration = 2

GEOLOGY : T.G. Summons
SUMMONS GEOSERVICES PTY. LTD.

DRAUGHTING : R.T. December 1985.

5 cm

0 5 10 20 30 40 50 60metres

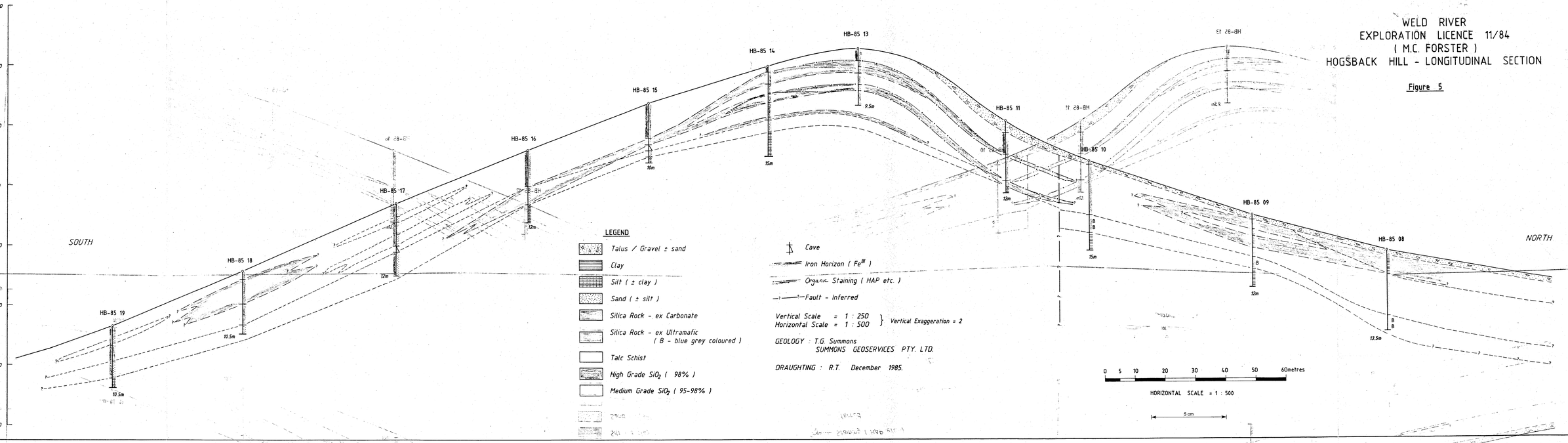
HORIZONTAL SCALE = 1 : 500

86-2590

2

WELD RIVER
EXPLORATION LICENCE 11/84
(M.C. FORSTER)
HOGSBACK HILL - LONGITUDINAL SECTION

Figure 5



APPENDIX 3

085

990083

TEST PITTING AT HOGSBACK HILL-WELD RIVER

SOUTHERN TASMANIA

EXPLORATION LICENCE 11/84

M.C. FORSTER

by

R.G. WRIGHT

CONSULTING GEOLOGIST

DISTRIBUTION

J.S. Noakes - Queensland Mines Ltd.

Mr. M.C. Forster

Tasmanian Department of Mines.

DEVONPORT

August, 1986.

Report No: PCS 1986/4

086

990084

TEST PITTING AT HOGSBACK HILL - WELD RIVER SOUTHERN TASMANIA

LIST OF FIGURES

LIST OF APPENDICES

1. INTRODUCTION

Pioneer Concrete has negotiated an option arrangement with Mr. M.C. Forster to explore Exploration Licence 11/84 for silica material suitable for use at the Electrona Plant.

Hogsback Hill, the subject of this report, is situated on the north bank of the Weld River, approximately 3-5km NW of the Weld-Huon river confluence.

2. PREVIOUS WORK

Previous investigation of the area was undertaken by T.G.Summons of Summons Geoservices Pty. Ltd. Details of this earlier work are recorded in Summons, 1985.
A drilling programme undertaken in late October/early November 1985 outlined a probable reserve of 75,000 tonnes of high grade silica on the southern end of the Hogsback ridge. The author was requested to follow-up this drilling programme with test pitting to obtain bulk samples and further information about the homogeneity of the deposit.

3. GEOLOGY

The Hogsback Hill deposit is located within a window of Precambrian orthoquartzites, mudstones and sandstones exposed through deep erosion of the overlying Jurassic dolerite and Permium-Triassic sediments.

The deposit itself has developed over an upthrust block of Cambrian ultramafic rocks.

Previous work by Summons indicated that the Hogsback ridge is composed of a NS trending zone of silicified dolomite with a partly silicified ultramafic sequence to the east.

Silicification of the rocks to depths of upto 10m is considered to have occurred during Tertiary times.

4. TEST PITTING PROGRAMME

Follow-up test pitting was carried out between the 10th-12th June, 1986 across the high grade silica zone previously outlined by drilling.

A total of 14 pits, numbered H1-H13 inclusive and H19, were dug across the southern flank of the Hogsback ridge. (Refer Figure 1).

A further 5 pits were dug for Mr. Forster in nearby areas. Details of all 19 pits are included in Appendix I.

Results, overall, were disappointing in that most of the silica material proved to be too soft and friable for use at Electrona. The first few pits quickly showed that the silica rock was very poorly indurated and could easily be broken by hand. The material was generally harder near the surface and

became softer and very friable at depth. Several pits, especially H5 and H6, bottomed in very soft silica "flour". Overall only about 10% of the silica material occurs as hard lumps of silica rock. Various samples were collected and these are listed in Appendix I.

The next feature of importance was revealed during the excavation of pit 7. Randomly scattered pebbles and large facetted boulders were found within the white, leached silica "flour". Excavations up hill revealed more of this pebbly white material especially in the vicinity of the best holes, HB15 and HB16. Test pits H11 and H12 (refer Figure 2) showed that the very white silts intersected in holes HB15 and 16 are deeply leached ?Permium glacial deposits draped over the underlying silicified carbonate rocks.

Pit H8 located a well-defined 0.5m wide NS fault zone which dipped 80-85° grid W.

Pits H11 and H12 uncovered EW faults which dipped at 80° N. These faults apear to have been active since the deposition of the glacials so that these rocks are now in direct contact with the weathered silicified carbonate rock. Block faulting during the Tertiary may have lowered the glacials down into sharp contact with the underlying bedrock.

Leaching of the glacials is variable in depth as is shown in pit H11 where the manganese oxide-stained contact varies from 0.8 to 3.3m depth over only 10m horizontally. A similar variation was seen in pit H12.

5. CONCLUSIONS AND RECOMMENDATIONS

Test pitting has shown that there are two sources for high grade silica material on Hogsback Hill:

1. Silicified dolomite bedrock.

2. Deeply weathered and leached, poorly silicified glacial silts.

Neither of these is likely to provide a good yield of hard silica rock fragments. The deposit is unfortunately downgraded as a source of silica for the Electrona plant but testing of the pure "flour" material is recommended to determine whether it is suitable for other uses.

R. G. WRIGHT

CONSULTING GEOLOGIST.

REFERENCES

Summons. T.G., 1985 — Exploration Licence 11/84. Annual Report for the year ended 27.9.85. Unpub. Report for M.C. Forster.

1985 — Hogsback Hill, Weld River - Southern Tasmania. EL11/84 - M.C. Forster. December, 1985.

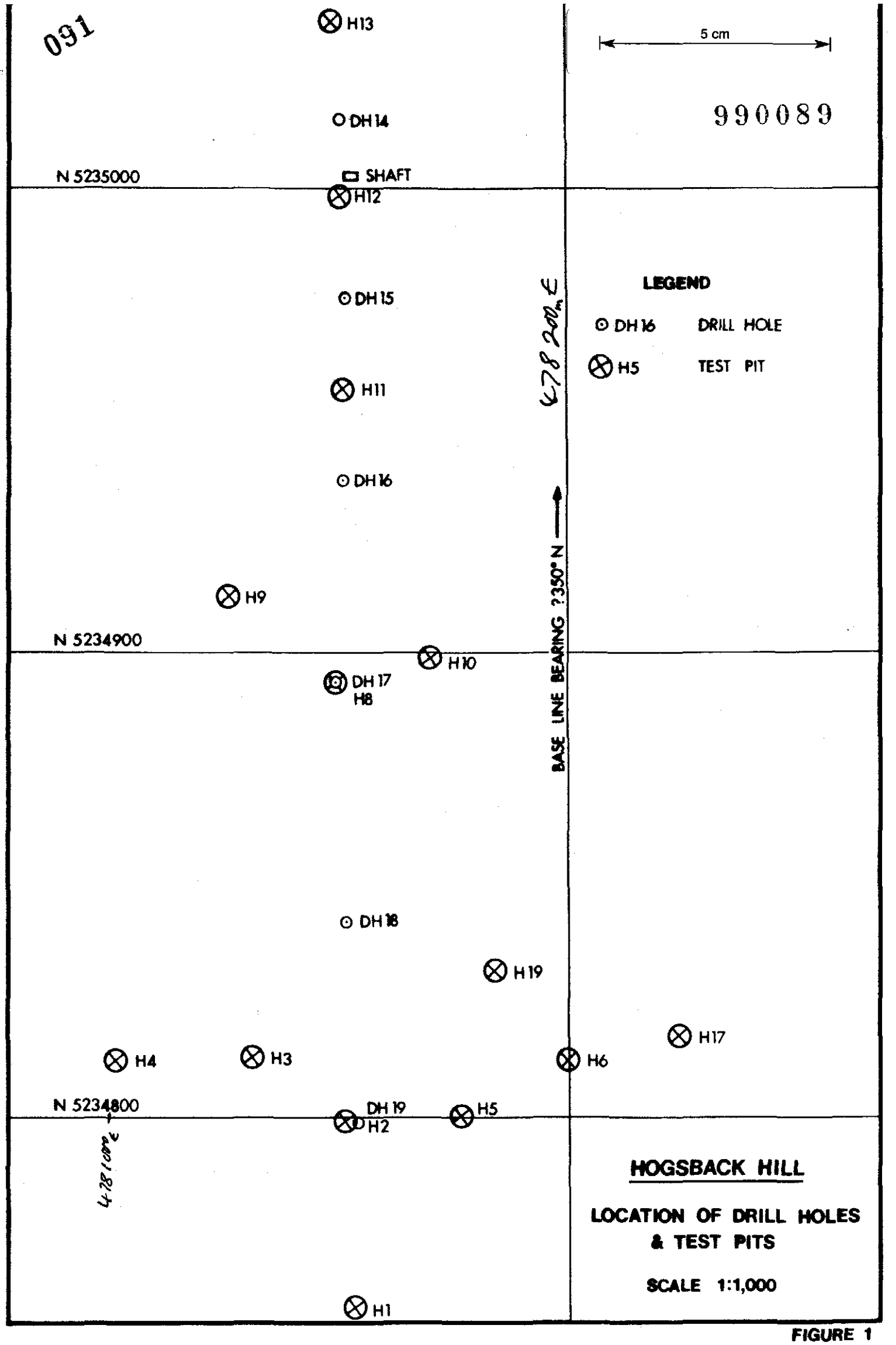
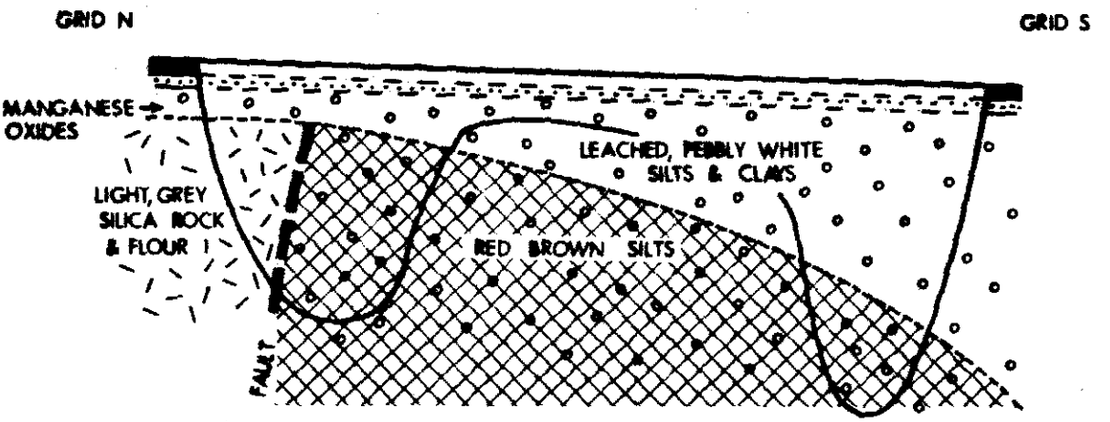

091
H13
5 cm
990089
DH 14
N 5235000
SHAFT
H12
LEGEND
DH 15
678 200mE
DH 16
DRILL HOLE
H5
TEST PIT
H11
DH 16
H9
N 5234900
H10
DH 17
H8
BASE LINE BEARING ?350° N
DH 18
H19
H17
H4
H3
H6
N 5234800
DH 19
H2
H5
428 100mE
HOGSBACK HILL
LOCATION OF DRILL HOLES
& TEST PITS
SCALE 1:1,000
H1

FIGURE 1

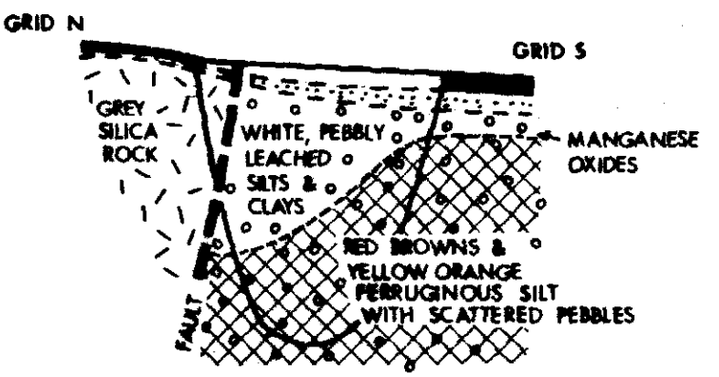
990090

092

PIT H11



PIT H12



LEGEND

- BLACK LOAMY SOIL
- PALE BROWN SANDY CLAY
- WHITE LEACHED PEBBY CLAY
- RED BROWN & YELLOW ORANGE FERRUGINOUS PEBBLY SILTS & CLAYS
- GREY SILICA ROCK & FLOUR

HOGSBACK HILL

DIAGRAMATIC SECTIONS OF PITS H11 & H12

SCALE 1:100

5 cm

FIGURE 2

APPENDIX I

TEST PIT RESULTS - HOGSBACK HILL

WELD RIVER - SOUTHERN TASMANIA

094

990092

TEST PIT RESULTS - HOGSBACK HILL

(All measurements in metres)

PIT H1

0	- 0.5	Black loamy soil.
0.5	- 1.0	White to pale grey, leached, fine grained sand with an occasional 1-2mm pebble.
1.0	- 1.2	Black to dark brown manganese oxide-stained and cemented pebbly grey-brown clayey sand. Manganese staining weakens with depth. The upper contact at 1.0m is very sharp at the base of the leached overlying sands.
1.2	- 2.4	Yellow orange stiff clay with an occasional 5-10mm rounded quartz pebble.
2.4	- 3.5	Pale grey fine grained silica rock with traces of limonite staining along joints. This rock is friable and easily broken by hand - at depth it becomes slightly harder.

Sample H1 collected.

PIT H2 (Drill hole HB19 site)

0	- 0.4	Black loamy soil and grey clayey sand.
0.4	- 0.8	Pale brown to grey-brown clayey sand.
0.8	- 1.0	Grey-white fine sand with occasional 10-20cm discontinuous patches of limonite.
1.0	- 3.7	Pale grey to white fine grained silica rock. Very friable and easily broken by hand - much softer than material seen in Pit H1.

Sample H2 collected.

PIT H3

0	- 0.4	Black loamy soil.
0.4	- 0.6	Pale brown to cream clayey sand.
0.6	- 3.4	White to pale grey silica rock. Very friable and soft.

Sample H3 collected.

PIT H4

0	- 0.3	Black loamy soil.
0.3	- 0.5	Grey white leached fine sand.

095

0.5 - 1.15	Black manganese oxide-stained pebbly clay. Upper contact sharp with manganese staining decreasing with depth - grades gradually into pale brown to red brown and pale cream-yellow clay with basal pebbles of silica rock upto 4-5cm diameter.
1.15 - 2.3	Red brown, very weathered equigranular ultramafic - now clay with scattered 1mm spots of grey talc.

PIT H5

0 - 0.4	Black loamy soil.
0.4 - 0.5	Pale brown clayey sand with brown ferruginous zone at base.
0.5 - 3.0	White to pale cream fine silica flour and silica rock. Becomes whiter and softer with depth. Rock is very friable and easily dug with the excavator.

Sample H5 of silica flour collected by M. Forster.

PIT H6

0 - 0.25	Black loamy soil.
0.25 - 0.4	Pale grey to dark brown clayey sand with basal zone of dark brown manganese oxide staining.
0.4 - 1.05	Pale cream to off white leached, soft silica rock - becomes harder with depth.
1.05 - 2.5	Harder grey to pale grey cherty rock - hardest material intersected so far - becomes softer again with depth.

Sample H6 collected of harder lumps.

2.5 - 3.6	Soft white silica rock and silica flour. Material becomes softer with depth. Overall only 10% of the zone between 0.4 - 3.6m depth consists of hard lumps of silica rock.

PIT H7

0 - 0.3	Black loamy soil.
0.3 - 0.5	Grey brown sandy clay with manganese oxide staining towards 0.5m depth. Sharp contact at 0.5m depth.
0.5 - 1.8	White leached sands with pale to medium grey coloured chert fragments and large facetted pebbles upto 35cm long.

1.8 - 3.5 Pale yellow-cream to orange yellow pebbly clay. Pebbles are upto 4-5cm diameter. The upper contact of this clay is marked by a 10cm thick zone of dark brown to black manganese oxides - the upper contact is sharp but the lower contact grades gradually into the yellow-orange clay.

3.5 - 3.6 Pale grey to dark grey-black silica rock - hard so could not dig further.

Sample H7 collected of this bedrock material.

PIT H8 (Drill hole HB17 site)

0 - 0.3 Black loamy soil.

0.3 - 0.5 Pale brown clayey sand.

0.5 - 3.5 White silica flour on the eastern end of the pit which grades into pale grey, moderately friable silica rock to the west.
The western end of the pit exposed a 0.5m wide vertically dipping strongly ferruginized fault zone - dips 80-85 grid W.

Sample H8 of harder silica lumps collected.

PIT H9

0 - 0.3 Black loamy soil.

0.3 - 0.5 Pale brown clayey sand - weathered bedrock.

0.5 - 1.2 Pale grey, hard silica rock - slightly friable but hardest rock encountered so far. Excavator could not dig any deeper.

Sample H9 collected.

PIT H10

0 - 0.3 Black loamy soil.

0.3 - 0.5 Pale grey sandy clay - weathered bedrock with a dark brown manganese oxide rich layer at the base. Contact with the underlying white silica flour very sharp.

0.5 - 3.6 Soft white silica flour with 10% as solid lumps of silica rock. Material became softer with depth.

Two samples H10 collected
one of lumps, one of flour.

PIT H11

A very complex pit which was extended to the south to try to understand its geology. (Refer Figure 2).

A section down the northern face of the pit showed the following:

0	- 0.2	Black loamy soil.
0.2	- 0.4	Pale brown sandy clay.
0.4	- 0.8	White leached pebbly clay. Basal part has red brown and black discontinuous manganese oxide staining.
0.8	- 3.5	Grey white silica flour and silica rock fragments.

To the south across a sharp 090 M fault zone which dips 80 N, is red brown iron-stained silt and clay. Figure 1 shows the complexity of this pit as revealed by the extension to the south. The pit was not sampled as overall most of the zone was heavily contaminated with iron oxides and only 10% of the material occurs as harder lumps.

PIT H12

Another pit with complex geology - details are shown on Figure 1.

A section down the south end of the pit is as follows:

0	- 0.3	Black loamy soil.
0.3	- 0.5	Pale brown clayey sand.
0.5	- 0.9	White leached silt with a 1-2cm thick manganese oxide layer at the base.
9	- 3.8	Red brown and yellow orange ferruginous silt with scattered pebbles of grey siltstone upto 10mm diameter.

The northern end of the pit exposed a zone of foliated soft silica rock in ?fault contact with the leached silts to the south.

PIT H13

0	- 0.1	Black loam with grey silica rock fragments.
0.1	- 0.2	Pale grey brown clayey sand.
0.2	- 1.1	Grey white, hard silica rock.
1.1	- 3.5	Yellow orange harder silica rock as above - heavily stained with iron oxides along joints.

Sample H13 collected of grey to grey black cherty silica rock coated with limonitic clay.

PIT H14 (Drill hole HB21 site).

A pit dug for M. Forster in a NS direction at this site showed the following:

0	- 0.3	Black loamy soil and pale grey brown sandy clay.
0.3	- 0.8	White leached silts.

0.8	- 5.0	Yellow-white and pale green stiff clay - weathered and altered serpentinite? The clays are strongly slickensided and contain discontinuous 3-5mm thick layers of white talc.

Another pit dug in an EW direction adjactent to the first pit revealed a similar profile to the above. At 4.9m depth, however, it ran into dark red, finely foliated red to yellow-white sheared clay after ultramafic rock.

Samples of the talcose clay and the dark red clay were collected by M. Forster for identification.

PIT H15

A pit was dug on the east side of the Weld River on strike of a band of white diopside rock which runs through the river bed at a strike of 325 M. A large block of this material was obtained for M. Forster and walked out in the excavator bucket to the Toyota ute.

PIT H16

This pit was dug for M. Forster at a point about halfway between the Eddy on the Weld River and the HB21 drill site.

A log of this pit situated just N of the access track was:

0	- 1.5	Yellow, very sticky clay.
1.5	- 3.0	Dark green clay with subangular dolerite boulders upto 30-40cm long (?possible scree slope material).

PIT H17

This pit was dug for M. Forster at a site about 250m south of Pit H1 on a bearing of 150 M.

0	- 0.3	Black loamy soil.
0.3	- 0.4	Grey brown sandy clay.
0.4	- 0.5	White leached sand.
0.5	- 0.8	Dark brown to black manganese oxide stained silts and sands.
0.8	- 4.4	Yellow-white clay with scattered grey siltstone pebbles.

PIT H18

This pit was dug back along the track at a point about 160m N of pit H17.

0	- 0.3	Black loamy soil.
0.3	- 0.5	Pale brown sandy clay.
0.5	- 0.6	White leached silts with small pebbles.

0.6	- 0.8	Black to dark brown manganese oxide stained silts.
0.8	- 3.0	Yellow white clay with scattered pebbles and boulders.

PIT H19

0	- 0.3	Black loamy soil.
0.3	- 0.5	Pale brown sandy clay.
0.5	- 0.7	Pale grey, leached, soft silts with angular to subrounded silica rock fragments.
0.7	- 5.2	More consolidated, white silica flour and silica rock fragments.

LIST OF SAMPLES COLLECTED DURING PITTING PROGRAMME

PIT NO.	SAMPLE DEPTH	DESCRIPTION
H1	2.4-3.5	1 bag of silica lumps
H2	1.0-3.7	1 bag of silica lumps
H3	0.6-3.4	1 bag of silica lumps
H5	0.5-3.0	3 bags of silica flour
H6	1.05-2.5	1 bag of silica lumps
H7	3.5-3.6	1 bag of silica lumps
H8	0.5-3.5	1 bag of silica lumps
H9	0.5-1.2	1 bag of silica lumps
H10	0.5-3.6	1 bag of silica lumps
H10	0.5-3.6	1 bag of silica flour
H13	1.1-3.5	1 bag of silica lumps
H14	0.8-5.0	2 bags of talcose clay and dark red clay.

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990099

EXPENDITURE STATEMENT

[redacted]

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QUEENSLAND MINES LIMITED

990100

Expenditure Statement

Date: 15.9.86

Project Name: WELD RIVER

Code: 1703

Account Codes		From: 15.12.85 To: 24.8.86	
		Dollars	Cents
0101	STAFF SALARIES	3,467.	81
0102	FIELD WAGES		
0103	CONTRACT WAGES		
0106	TRAVEL & ACCOMMODATION	855.	06
0107	FIELD ACCOMMODATION		
0108	VEHICLE/HOUSE/INSTRUMENT RENTALS	62.	89
0109	REPRESENTATION		
0110	MEETINGS		
0111	FUEL		
0112	EXPLORATION EQUIPMENT		
0113	CONSUMABLES	25.	80
0114	REPAIRS & MAINTENANCE		
0115	PUBLICATIONS	20.	00
0116	FREIGHT	691.	22
0117	DRAFTING	256.	64
0118	TELEPHONE & TELEX		
0119	SECURITY		
0120	MEDICALS		
0126	AIRBORNE SURVEYS		
0127	CONSULTANTS FEES	3,776.	93
0128	GEOLOGICAL CONTRACTORS	9,121.	96
0129	GEOPHYSICAL CONTRACTORS		
0130	GEOCHEMICAL CONTRACTORS		
0131	SURVEYING CONTRACTORS	1,497.	96
0132	DRILLING CONTRACTORS	6,282.	50
0133	GEOPHOTO CONTRACTORS		
0134	LABORATORY	2,874.	59
0135	ACCESS EXPENSES		
0150	LEGAL FEES		
0151	GOVERNMENT CHARGES		
0152	INSURANCES		
0153	COMPENSATION		
0154	COMPUTER EXPENSES & ANALYSES		
0155	J.V. PAYMENTS		
0156	GENERAL EXPENSES		
TOTAL		$28,933.	36