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HOPKINS QUARTZITE DEPOSIT  
M.L. 1206 P/M  
FORTH, NORTHERN TASMANIA  
PERCUSSION DRILLING PROGRAMME  
OCTOBER, 1985

by

R.G. WRIGHT  
CONSULTING GEOLOGIST

Distribution

J. Noakes - Queensland Mines  
Tasmanian Department of Mines  
Mr. B. R. Hopkins - Forth

Devonport

November, 1985.

HOPKINS QUARTZITE DEPOSIT -  
PERCUSSION DRILLING PROGRAMME

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Report Number 34.5 08 3335

1. INTRODUCTION

An evaluation of the Hopkins Quartzite Prospect was requested by Mr. J. S. Noakes, Chief Geologist, Queensland Mines on behalf of Picon Exploration Pty. Ltd.

The deposit occurs on land owned by Mr. B. R. Hopkins of Forth and is held by him under Mineral Lease 1206 P/M of 2 Hectares. In the past the ground was covered by ML 941 P/M of 3 Hectares previously held by the Broken Hill Proprietary Company Ltd.

2. PREVIOUS WORK

The Hopkins quartzite deposit was mapped and test drilled by E.H.P. in February, 1977 as part of their investigation of E.L. 18/75 - Forth, Tasmania. This work showed that high grade quartzite occurs as surface, silcrete-type crusts over leached, micaceous and mica-poor Precambrian quartzite.

The high grade surface quartzite was found to extend from 6 to 10 metres below the surface. Below this depth the alumina content increased above 0.8%Al<sub>2</sub>O<sub>3</sub> due to the presence of unleached mica.

The deposit was considered to be too small and to have too erratic a distribution of pure quartzite to be of use as feedstock for the Bell Bay ferro-silicon plant.

3. GEOLOGY

A number of small but high-grade quartzite deposits are known within the Proterozoic quartzite of the Ulverstone and Forth Metamorphics.

Regional investigation by B.H.P. located two main deposits - the John's and Hopkin's deposits, both situated south of and close to the township of Forth.

The Hopkins deposit occurs on a south plunging fold nose which forms part of major south plunging anticlinorium. (Refer Figure 1 and the Devonport 1:63,360 geological sheet).

4. DRILLING PROGRAMME

A total of 21 vertical percussion holes were drilled on the deposit to infill between the earlier B.H.P. drilling.

The programme was carried out by G & G Drilling of Ulverstone between 9-15th October, 1985.

An Atlas Copco 601 track-mounted, down-hole hammer rig was used with an Atlas Copco 700 CFM 150 PSI Compressor.

A total of 168.2m was drilled at an average penetration rate of 9m/hour using a 100mm diameter bit.

The drilling confirmed the shape and high silica, low  $\text{Fe}_2\text{O}_3$ ,  $\text{Al}_2\text{O}_3$  content of the surface quartzites.

The base of the quartzite crust was found to have a very sharp contact with the underlying leached micaceous quartzites.

The long grid western edge of the quartzite is vertical or steep west dipping unlike the  $40-50^\circ$  dips seen in outcrop. Possibly this edge of deposit is a fault contact. The sharp cut-off on the grid southern edge may also be due to faulting.

Good grade quartzite persisted further along Section 1080N than expected. Possibly further limited reserves of quartzite are present beneath the soil cover in this area.

#### 5. RESERVE ESTIMATE

The results from the previous B.H.P. drilling have been combined with those from the recent drilling in this estimation of overall grade and tonnage.

Details of the reserve calculation are shown on Tables 1-3 inclusive. (At a cut-off grade of 98.0% $\text{SiO}_2$ ).

The unpredictable variation in the thickness of the surface high-grade crust suggests that the reserve should be placed in the "probable" category.

A probable, undiluted geological reserve for the Hopkins Prospect is estimated to be:

134,000 tonnes @ 99.2% $\text{SiO}_2$ , 0.08% $\text{Al}_2\text{O}_3$  and 0.07% $\text{Fe}_2\text{O}_3$ .



R.G. Wright

Consulting Geologist.

REFERENCE

Exploration Licence 18/75, Forth, Tasmania - Final Report.

Unpublished B.H.P. Co. Ltd. report to the Tasmanian  
Department of Mines.

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# HOPKINS QUARTZITE DEPOSIT

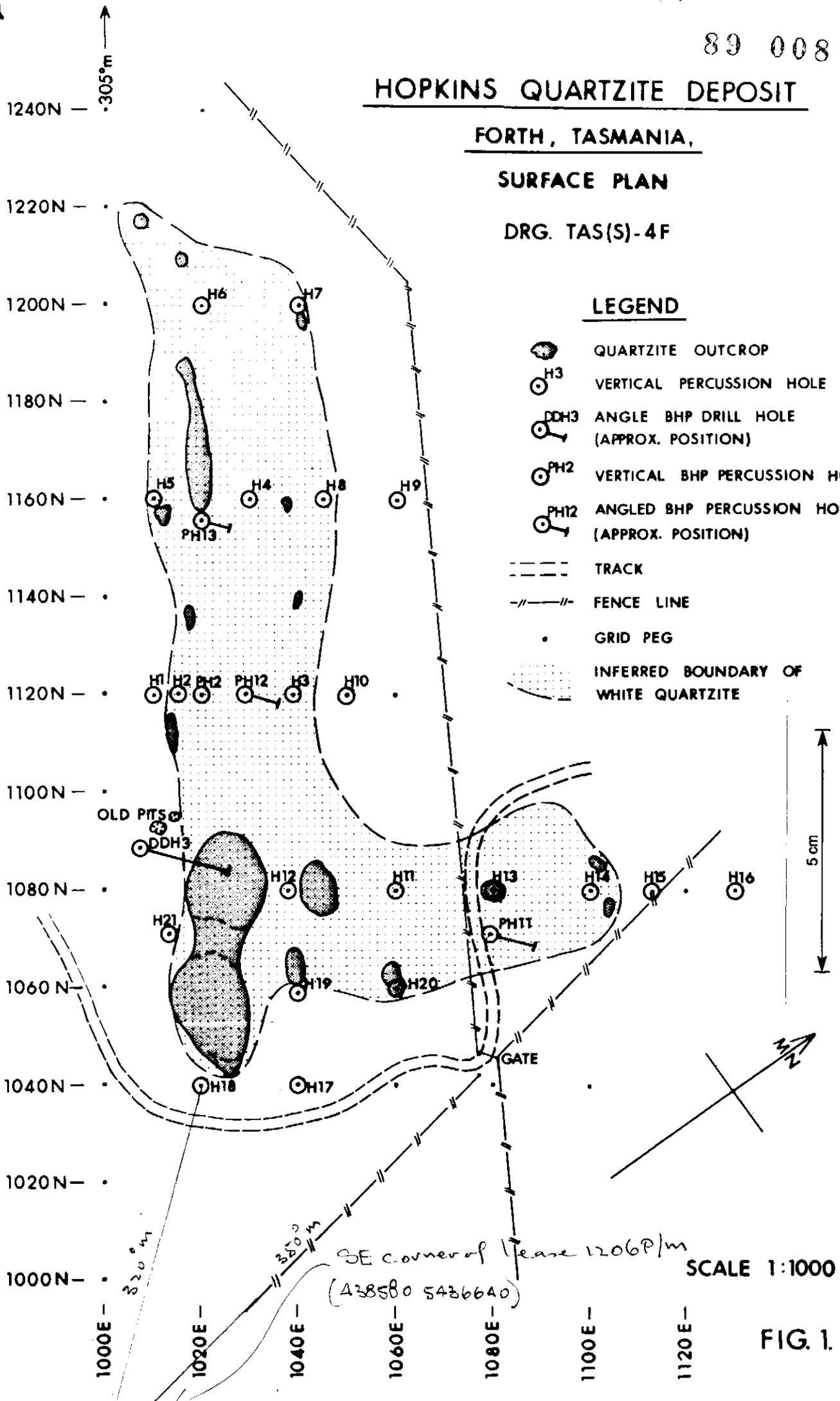
FORTH, TASMANIA,

SURFACE PLAN

DRG. TAS(S)-4F

## LEGEND

-  QUARTZITE OUTCROP
-  VERTICAL PERCUSSION HOLE
-  ANGLE BHP DRILL HOLE (APPROX. POSITION)
-  VERTICAL BHP PERCUSSION HOLE
-  ANGLED BHP PERCUSSION HOLE (APPROX. POSITION)
-  TRACK
-  FENCE LINE
-  GRID PEG
-  INFERRED BOUNDARY OF WHITE QUARTZITE



SCALE 1:1000

FIG. 1.

008

# HOPKINS QUARTZITE DEPOSIT

FORTH, TASMANIA.

DRG. TAS(S)-5F

SECTION 1060N

## LEGEND

- H20 PERCUSSION DRILL HOLE
- 99.5  
99.3 % SILICA ASSAYS
- NA NOT ASSAYED
- DDH3 APPROX. POSITION OF BHP DRILL HOLE
- INFERRED BOUNDARY OF > 98% SILICA QUARTZITE
- MICACEOUS SCHISTS AND QUARTZITE

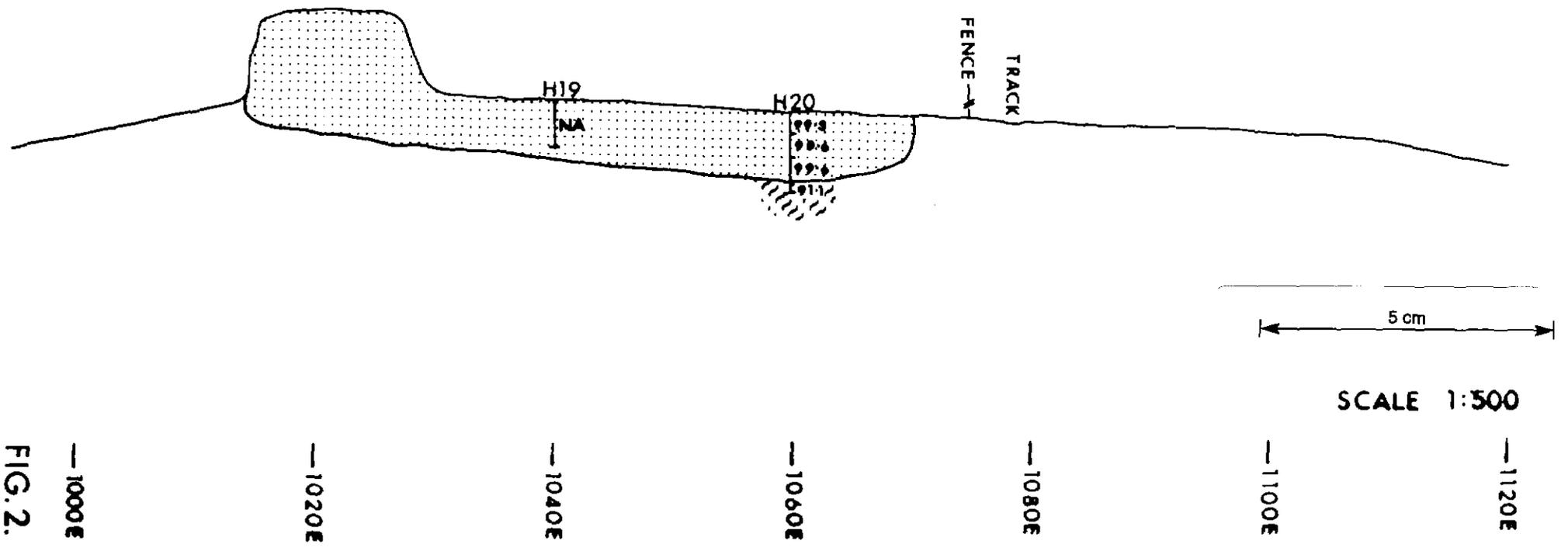


FIG. 2.

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009

# HOPKINS QUARTZITE DEPOSIT

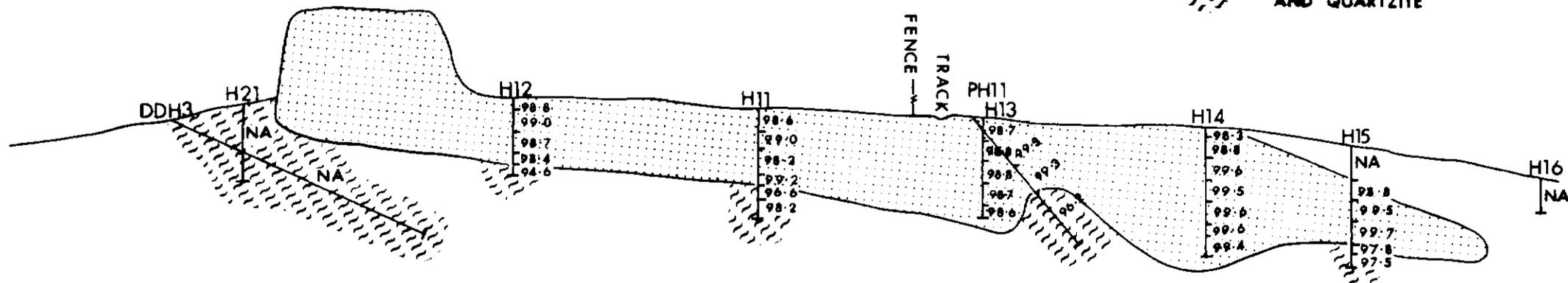
FORTH, TASMANIA,

DRG. TAS(S)-6F

SECTION 1080N

## LEGEND

- H20 PERCUSSION DRILL HOLE
- 99.5  
99.3 % SILICA ASSAYS
- NA NOT ASSAYED
- DDH3 APPROX. POSITION OF BHP DRILL HOLE
- INFERRED BOUNDARY OF >98% SILICA QUARTZITE
- MICACEOUS SCHISTS AND QUARTZITE



5 cm

SCALE 1:500

—1000E      —1020E      —1040E      —1060E      —1080E      —1100E      —1120E

FIG. 3.

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# HOPKINS QUARTZITE DEPOSIT

FORTH, TASMANIA,

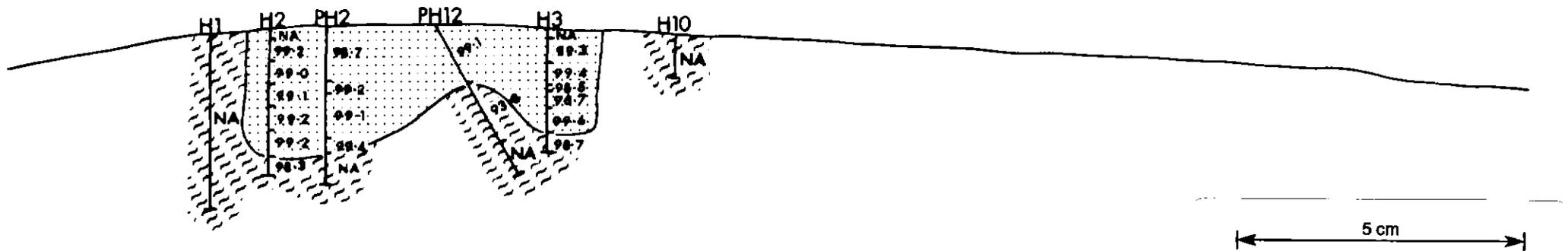
DRG. TAS(S)-7F

SECTION 1120N

## LEGEND

- H20 PERCUSSION DRILL HOLE
- |      |
|------|
| 99.5 |
| 99.3 |

 % SILICA ASSAYS
- NA NOT ASSAYED
- DDH3 APPROX. POSITION OF BHP DRILL HOLE
- INFERRED BOUNDARY OF > 98% SILICA QUARTZITE
- MICACEOUS SCHISTS AND QUARTZITE



5 cm

SCALE 1:500

—1000E      —1020E      —1040E      —1060E      —1080E      —1100E      —1120E

FIG. 4.

89 011

# HOPKINS QUARTZITE DEPOSIT

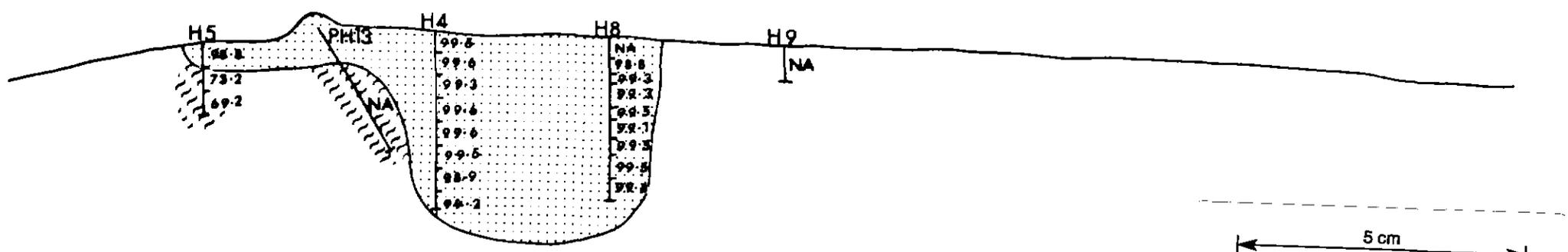
FORTH, TASMANIA,

DRG. TAS(S)-8F

SECTION 1160N

### LEGEND

- H20 PERCUSSION DRILL HOLE
- 99.5  
99.3 % SILICA ASSAYS
- NA NOT ASSAYED
- DDH3 APPROX POSITION OF BHP DRILL HOLE
- INFERRED BOUNDARY OF >98% SILICA QUARTZITE
- MICACEOUS SCHISTS AND QUARTZITE



5 cm

SCALE 1:500

—1000E      —1020E      —1040E      —1060E      —1080E      —1100E      —1120E

FIG. 5.

012

# HOPKINS QUARTZITE DEPOSIT

FORTH, TASMANIA,

DRG. TAS(S)-9F

SECTION 1200N

## LEGEND

- H20 PERCUSSION DRILL HOLE
- | 99.5  
| 99.3 % SILICA ASSAYS
- NA NOT ASSAYED
- DDH3 APPROX. POSITION OF BHP DRILL HOLE
- [Dotted pattern] INFERRED BOUNDARY OF >98% SILICA QUARTZITE
- [Hatched pattern] MICACEOUS SCHISTS AND QUARTZITE



5 cm

SCALE 1:500

—1000E      —1020E      —1040E      —1060E      —1080E      —1100E      —1120E

FIG. 6.

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TABLE 1  
THICKNESS & AVERAGE GRADES OF QUARTZITE  
ABOVE CUT-OFF OF 98.0%SiO<sub>2</sub>

<u>Drill Hole</u>	<u>Sample Length Metres</u>	<u>Drill Indicated Grade</u>		
		<u>%SiO<sub>2</sub></u>	<u>%Al<sub>2</sub>O<sub>3</sub></u>	<u>%Fe<sub>2</sub>O<sub>3</sub></u>
PH2	11	99.0	0.05	0.27
PH11	9 (inclined at 50°)	99.3	0.05	N.A.
PH12	6 (inclined at 60°)	99.1	0.05	N.A.
H2	10	99.1	0.08	0.07
H3	8.5	98.9	0.31	0.05
H4	15.5	99.4	0.06	0.04
H5	2	98.8	0.12	0.07
H6	1	98.7	0.39	0.10
H7	3.8	99.0	0.04	0.09
H8	12.3	99.3	0.02	0.06
H11	6.6	98.6	0.20	0.04
H12	6	98.8	0.02	0.03
H13	9.1	98.7	0.07	0.06
H14	12	99.3	0.09	0.05
H15	5.6	99.4	0.16	0.12
H20	6	99.6	0.04	0.04

TABLE 2

A. ESTIMATION OF AVERAGE GRADE  
WEIGHTED BY DRILL SAMPLE LENGTHS

<u>Section</u>	<u>Sample Length</u> <u>Metres</u>	<u>Drill Indicated Grades</u>		
		<u>%SiO<sub>2</sub></u>	<u>%Al<sub>2</sub>O<sub>3</sub></u>	<u>%Fe<sub>2</sub>O<sub>3</sub></u>
1060N	6	99.6	0.04	0.04
1080N	48.3	99.0	0.09	0.06
1120N	35.5	99.0	0.12	0.14
1160N	29.8	99.3	0.05	0.05
1200N	4.8	98.9	0.11	0.09
Total/ Averages	124.4	99.1%	0.09%	0.08%

B. ESTIMATION OF AVERAGE GRADE WEIGHTED BY SECTION AREAS

<u>Section</u>	<u>Area</u> <u>Sq. Metres</u>	<u>Drill Indicated Grades</u>		
		<u>%SiO<sub>2</sub></u>	<u>%Al<sub>2</sub>O<sub>3</sub></u>	<u>%Fe<sub>2</sub>O<sub>3</sub></u>
1060N	368	99.6	0.04	0.04
1080N	893	99.0	0.09	0.06
1120N	271	99.0	0.12	0.14
1160N	301	99.3	0.05	0.05
1200N	101	98.9	0.11	0.09
	1934	99.2%	0.08%	0.07%

TABLE 3ESTIMATION OF UN-DILUTED GEOLOGICAL RESERVE

Sections	A, Sq.M.	A <sub>2</sub> Sq.M.	A, xA <sub>2</sub>	$\sqrt{A, xA_2}$	Volume = $\frac{d}{3}(A, +A_2 + \sqrt{A, xA_2})$	Tonnes at assumed S.G. of 2.5
1060N- 1080N	368	893	328624	573	12,227	30,600
1080N- 1120N	893	271	242003	492	22,080	55,200
1120N- 1160N	271	301	81571	286	11,440	28,600
1160N- 1200N	301	101	30401	174	7,680	19,200
					53,427 cubic metres	133,600 tonnes

d = distance between sections.

APPENDIX I

PERCUSSION DRILL LOGS

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DRILL HOLE: H1PROSPECT: Hopkins Quartzite  
Deposit, Forth, Tas.GRID CO-ORDS: 1120N 1010EFINAL DEPTH: 15.5mDATE DRILLED: 10.10.85HOLE ANGLE: VerticalDRILLER: G. Gleeson, G & G Drilling, Ulverstone.

<u>FROM</u>	<u>TO</u>	<u>DESCRIPTION</u>
0	4	Surface quartzite gravel grading into grey-pale purple sands and clays.
4	7	Yellow white, red brown to pale brown soft, leached micaceous schists and quartzite.
7	10	Pale yellow to pale brown fine-grained soft leached micaceous schists and quartzite.
10	13	Pale orange, soft, leached fine-grained schistose quartzite.
13	15½	Pale yellow to pale green soft micaceous quartzite.

DRILL HOLE: H2PROSPECT: Hopkins Quartzite  
Deposit, Forth, Tas.GRID CO-ORDS: 1120N 1015EFINAL DEPTH: 13mDATE DRILLED: 10.10.85HOLE ANGLE: VerticalDRILLER: G. Gleeson, G & G DRILLING, Ulverstone.

<u>FROM</u>	<u>TO</u>	<u>DESCRIPTION</u>
0	1	Surface quartzite gravel and sandy clay
1	3	Loose broken quartzite in brownish clay to about 2.75m then into hard white quartzite.
3	5	Hard white quartzite
5	7	Hard white quartzite to 5.6m then into grey brown, slightly softer quartzite.
7	9	Pale brown, hard quartzite.
9	11	Pale brown, hard quartzite with a 50cm band of soft brown to pale brown micaceous quartzite between 9.5-10m depth. Strong water inflow at 10m.
11	13	Soft yellow micaceous quartzite and schists.

019

DRILL HOLE: H3PROSPECT: Hopkins Quartzite  
Deposit, Forth, Tas.GRID CO-ORDS: 1120N 1039EFINAL DEPTH: 11mDATE DRILLED: 10.10.85HOLE ANGLE: VerticalDRILLER: G. Gleeson, G & G Drilling

<u>FROM</u>	<u>TO</u>	<u>DESCRIPTION</u>
0	0.5	Loose surface quartzite gravel and sand.
0.5	3	White hard quartzite
3	5	Hard white quartzite
5	5.4	Hard white quartzite
5.4	7	Grey brown, slightly ferruginous quartzite which grades into white quartzite again from about 6.5m depth.
7	9	Hard white quartzite grading into pale yellow-brown quartzite from about 8.5m.
9	11	Pale yellow-brown quartzite which becomes slightly darker orange yellow with depth. At 10.7m the quartzite becomes suddenly softer and pale to dark brown in colour.

020

DRILL HOLE: H4PROSPECT: Hopkins Quartzite  
Deposit, Forth, Tas.GRID CO-ORDS: 1160N 1030EFINAL DEPTH: 15.5mDATE DRILLED: 10.10.85HOLE ANGLE: VerticalDRILLER: G. Gleeson of G & G Drilling

<u>FROM</u>	<u>TO</u>	<u>DESCRIPTION</u>
0	2	Hard white quartzite with a 10cm band of grey brown micaceous quartzite between 1.4-1.5m depth.
2	4	Hard white quartzite
4	6	Pale brown quartzite which becomes white between 5.0-5.2 depth. Returns to hard white quartzite again from 5.5m.
6	8	Pure white, hard quartzite.
8	10	Pure white quartzite as above to 9.7m depth when the pale brown colouration comes back in.
10	12	Grey brown to pale brown hard quartzite which becomes lighter in colour at depth. Grades into white quartzite again between 11.8-12m.
12	14	Brown quartzite grading into grey micaceous quartzite between 12.2-12.4m. From 12.4m depth the quartzite changes in colour from pale brown to white and pale yellow.
14	15.5	Brown hard quartzite with minor very fine-grained, grey? mica-rich bands. Water encountered at 15.5m depth - rods became temporarily jammed so stopped the hole.

DRILL HOLE: H5PROSPECT: Hopkins Quartzite  
Deposit, Forth, Tas.GRID CO-ORDS: 1160N 1010EFINAL DEPTH: 6mDATE DRILLED: 14.10.85HOLE ANGLE: VerticalDRILLER: G. Gleeson, G & G Drilling, Ulverstone.

<u>FROM</u>	<u>TO</u>	<u>DESCRIPTION</u>
0	2	Pale cream to white moderately hard quartzite - becomes soft, brown suddenly at 1.9m.
2	4	Soft brown, fine-grained, leached micaceous quartzite.
4	6	Soft, pale brown to yellow white leached micaceous quartzite as above.

DRILL HOLE: H6PROSPECT: Hopkins Quartzite  
Deposit, Forth, Tas.GRID CO-ORDS: 1200N 1020EFINAL DEPTH: 4mDATE DRILLED: 14.10.85HOLE ANGLE: VerticalDRILLER: G. Gleeson, G & G Drilling, Ulverstone.

<u>FROM</u>	<u>TO</u>	<u>DESCRIPTION</u>
0	1	Loose surface quartzite scree and loamy soil.
1	2	Hard white quartzite
2	4	Pale grey-brown quartzite - broken and difficult to drill to about 3m, thereafter soft brown, leached micaceous quartzite to 4m depth.

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DRILL HOLE: H7PROSPECT: Hopkins Quartzite  
Deposit, Forth, Tas.GRID CO-ORDS: 1200N 1040EFINAL DEPTH: 4mDATE DRILLED: 14.10.85HOLE ANGLE: VerticalDRILLER: G. Gleeson, G & G Drilling, Ulverstone

<u>FROM</u>	<u>TO</u>	<u>DESCRIPTION</u>
0	0.2	Surface quartzite gravel and soil
0.2	2	White, moderately hard quartzite to about 1.9m when hole passes into 0.1m of soft pale brown micaceous quartzite.
2	3	Pale brown to cream moderately hard quartzite
3	4	Brown to pale brown soft micaceous quartzite.

024

89 025

DRILL HOLE: H8PROSPECT: Hopkins Quartzite  
Deposit, Forth, Tas.GRID CO-ORDS: 1160N 1045EFINAL DEPTH: 14mDATE DRILLED: 14.10.85HOLE ANGLE: VerticalDRILLER: G. Gleeson, G & G Drilling, Ulverstone.

<u>FROM</u>	<u>TO</u>	<u>DESCRIPTION</u>
0	1.7m	Surface quartzite gravel and sands
1.7	3	Pale brown grading into white hard quartzite.
3	4	White hard quartzite
4	6	Pale brown to white hard quartzite
6	6.8	Hard white quartzite - with a 0.2m band of soft brown micaceous quartzite between 6.8-7.0m depth.
6.8	8.5	Pale grey brown moderately soft quartzite which becomes lighter coloured with depth.
8.5	10	Pale brown hard quartzite
10	12	Pale brown very hard quartzite with traces of very fine-grained, grey ?mica-rich bands. Water encountered at 10m.
12	14	Very hard, brown to pale brown quartzite.

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DRILL HOLE: H9

PROSPECT: Hopkins Quartzite  
Deposit, Forth, Tas.

GRID CO-ORDS: 1160N 1060E

FINAL DEPTH: 3m

DATE DRILLED: 14.10.85

HOLE ANGLE: Vertical

DRILLER: G. Gleeson of G & G Drilling, Ulverstone.

<u>FROM</u>	<u>TO</u>	<u>DESCRIPTION</u>
0	1m	Surface black loamy soil with quartzite fragments.
1	3	Red-brown basaltic clay with sparse fragments of quartzite. Very slow progress with hammer drill.

DRILL HOLE: H10

PROSPECT: Hopkins Quartzite  
Deposit, Forth, Tas.

GRID CO-ORDS: 1120N 1050E

FINAL DEPTH: 4m

DATE DRILLED: 14.10.85

HOLE ANGLE: Vertical

DRILLER: G. Gleeson of G & G DRILLING, ULVERSTONE

<u>FROM</u>	<u>TO</u>	<u>DESCRIPTION</u>
0	2m	Surface quartzite scree and sandy loams.
2	3	Pale brown, leached soft quartzite. Water encountered at 3 m depth.
3	4	Pale brown, grey, soft leached quartzite.

027

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DRILL HOLE: H11PROSPECT: Hopkins Quartzite  
Deposit, Forth, Tas.GRID CO-ORDS: 1080N 1060EFINAL DEPTH: 10mDATE DRILLED: 14.10.85HOLE ANGLE: VerticalDRILLER: G. Gleeson of G & G Drilling, Ulverstone.

<u>FROM</u>	<u>TO</u>	<u>DESCRIPTION</u>
0	2	White hard quartzite
2	3.5	White hard quartzite
3.5	6	White hard quartzite
6.0	6.6	White hard quartzite
6.6	8.2	Pale brown, slightly softer quartzite
8.2	10.0	Brown to red brown, soft, fine grained leached quartzite.

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DRILL HOLE: H12

PROSPECT: Hopkins Quartzite  
Deposit, Forth, Tas.

GRID CO-ORDS: 1080N 1038E

FINAL DEPTH: 7m

DATE DRILLED: 15.10.85

HOLE ANGLE: Vertical

DRILLER: G. Gleeson, G & G Drilling, Ulverstone.

<u>FROM</u>	<u>TO</u>	<u>DESCRIPTION</u>
0	1m	Hard white quartzite - became dark brown suddenly at 1m due to a thin clay-filled joint?
1	3	Hard white quartzite
3	5	Hard white quartzite
5	6	Hard white quartzite
6	7	Dark, chocolate-brown, soft, micaceous quartzite. Water inflow from 6.5m depth.

029

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DRILL HOLE: H13

PROSPECT: Hopkins Quartzite  
Deposit, Forth, Tas.

GRID CO-ORDS: 1080N 1080E

FINAL DEPTH: 9.1m

DATE DRILLED: 15.10.85

HOLE ANGLE: Vertical

DRILLER: G. Gleeson, G & G Drilling, Ulverstone.

<u>FROM</u>	<u>TO</u>	<u>DESCRIPTION</u>
0	2m	Hard white to pale yellow quartzite
2	4	Hard white to pale yellow quartzite
4	6	Hard white to pale yellow quartzite - becomes yellower with depth from about 5m.
6	8	Hard white to pale yellow quartzite.
8	9.1	Hard white quartzite to 9.1m. Problems with drill rods jamming at this depth in a crack or joint. Hole was collapsing and binding the rods so drilling was abandoned. Water encountered at 9.1m depth.

030

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DRILL HOLE: H14PROSPECT: Hopkins Quartzite  
Deposit, Forth, Tas.GRID CO-ORDS: 1080N 1100EFINAL DEPTH: 12mDATE DRILLED: 15.10.85HOLE ANGLE: VerticalDRILLER: G. Gleeson, G & G Drilling, Ulverstone.

<u>FROM</u>	<u>TO</u>	<u>DESCRIPTION</u>
0	1m	Hard white quartzite
1	3	Pale brown, soft, leached quartzite which becomes harder at 1.5m depth.
3	5	Hard white quartzite which becomes pale yellow after 4.5m depth.
5	7	White hard quartzite
7	9	Hard white quartzite which becomes yellowish from about 8.5m.
9	10	Pale yellowish-white hard quartzite. Water intersected at 10m.
10	12	Pale yellowish-white hard quartzite.

DRILL HOLE: H15PROSPECT: Hopkins Quartzite  
Deposit, Forth, Tas.GRID CO-ORDS: 1080N 1113EFINAL DEPTH: 11mDATE DRILLED: 15.10.85HOLE ANGLE: VerticalDRILLER: G.Gleeson, G & G Drilling, Ulverstone.

<u>FROM</u>	<u>TO</u>	<u>DESCRIPTION</u>
0	3.4	Red brown to yellow brown soft leached micaceous quartzite below 1m of red surface soil with quartzite fragments.
3.4	5.0	Pale yellow to pale brown soft leached quartzite
5.0	7.0	Pale yellow to white moderately hard quartzite - sample has some contamination from surface red brown quartzite.
7.0	9.0	White moderately hard quartzite
9.0	9.6	White moderately hard quartzite with 1-2mm flakes of green muscovite present at 9.6m depth.
9.6	11.0	White hard quartzite with 5mm flakes of greenish muscovite.

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DRILL HOLE: H16

PROSPECT: Hopkins Quartzite  
Deposit, Forth, Tas.

GRID CO-ORDS: 1080N 1130E

FINAL DEPTH: 3.1m

DATE DRILLED: 15.10.85

HOLE ANGLE: Vertical

DRILLER: G. Gleeson, G & G Drilling, Ulverstone

<u>FROM</u>	<u>TO</u>	<u>DESCRIPTION</u>
0	3.1m	Red brown densely packed basaltic clay. Difficult and slow to hammer drill - no bedrock intersected.

DRILL HOLE: H17PROSPECT: Hopkins Quartzite  
Deposit, Forth, Tas.GRID CO-ORDS: 104ON 104OEFINAL DEPTH: 4mDATE DRILLED: 15.10.85HOLE ANGLE: VerticalDRILLER: G. Gleeson, G & G Drilling, Ulverstone.

<u>FROM</u>	<u>TO</u>	<u>DESCRIPTION</u>
0	1	Surface loamy soil with quartzite boulders
1	4	Very soft, yellow-brown to pale brown leached micaceous fine-grained quartzite.

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DRILL HOLE: H18

PROSPECT: Hopkins Quartzite  
Deposit, Forth, Tas.

GRID CO-ORDS: 104ON 102OE

FINAL DEPTH: 4m

DATE DRILLED: 15.10.85

HOLE ANGLE: Vertical

DRILLER: G. Gleeson, G & G Drilling, Ulverstone

<u>FROM</u>	<u>TO</u>	<u>DESCRIPTION</u>
0	4m	Yellow-brown, soft fine-grained micaceous quartzite.

DRILL HOLE: H19PROSPECT: Hopkins Quartzite  
Deposit, Forth, Tas.GRID CO-ORDS: 1059N 1040EFINAL DEPTH: 4mDATE DRILLED: 15.10.85HOLE ANGLE: VerticalDRILLER: G. Gleeson, G & G Drilling, Ulverstone

<u>FROM</u>	<u>TO</u>	<u>DESCRIPTION</u>
0	2.4	Grey-brown, soft micaceous quartzite
2.4	2.9	Hard quartzite band
2.9	4.0	Pale brown soft micaceous quartzite.

036

89 037

DRILL HOLE: H20PROSPECT: Hopkins Quartzite  
Deposit, Forth, Tas.GRID CO-ORDS: 1060N 1060EFINAL DEPTH: 7mDATE DRILLED: 15.10.85HOLE ANGLE: VerticalDRILLER: G. Gleeson, G & G Drilling, Ulverstone

<u>FROM</u>	<u>TO</u>	<u>DESCRIPTION</u>
0	2m	White hard quartzite
2	4	Pure white hard quartzite
4	6	Pure white hard quartzite
6	7	Dark chocolate brown, soft fine-grained micaceous quartzite. Changed suddenly from hard quartzite at 6m depth.

037

89 038

DRILL HOLE: H21

PROSPECT: Hopkins Quartzite  
Deposit, Forth, Tas.

GRID CO-ORDS: 1071N 1014E

FINAL DEPTH: 7m

DATE DRILLED: 15.10.85

HOLE ANGLE: Vertical

DRILLER: G.Gleeson, G & G Drilling, Ulverstone.

<u>FROM</u>	<u>TO</u>	<u>DESCRIPTION</u>
0	4	Pale brown to brown, soft, fine-grained micaceous quartzite.
4	7	Pale yellow-brown, soft, fine-grained micaceous quartzite.

038

89 039

APPENDIX II

ASSAY RESULTS - ANALABS  
REPORT NUMBER 34.5 08 3335

039

# ANALABS

89 040

Phone (09) 458 7999

A division of MacDonald Hamilton & Co. Pty. Ltd.  
52 Murray Road, Welshpool, W.A. 6106

Telex AA92560

**ANALYTICAL REPORT No.** 34.5 68 3335

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

Queensland Mines Ltd  
8th Floor FCR House  
50 Margaret St  
Sydney NSW 2000

ORDER No.	PROJECT
DATE RECEIVED	RESULTS REQUIRED
17.10.85	ASAP

No. OF PAGES OF RESULTS	DATE REPORTED	No. OF COPIES	TOTAL No. OF SAMPLES
		3	68

STATE OF SAMPLES	REFER BELOW	SAMPLE NUMBERS	PRE-TREATMENT						ANALYSIS				
			DRY	CRUSH	SPLIT	PUL-VERSE	SIEVE	OTHER SEE REMARKS	NONE	REFER TO ANALYSIS SECTION	PREPARATION	METHOD	
		H2-H20	1		2						Whole Rock Analysis		

**RESULTS TO**  
Attn: J. Noakes

**RESULTS TO**  
Attn: R.G. Wright  
29 Mungarlar Crt.  
DEVONPORT Tas. 7310

**REMARKS**

STATE OF SAMPLES	ANALYSIS — PREPARATION	ANALYSIS — METHOD
whole core WC	perchloric acid A1	atomic absorption AAS
split core SC	hydrochloric acid A2	x-ray fluorescence XRF
cutting CU	nitric acid A3	spectrophotometry SPEC
rock Ro	aqua regia A4	colorimetry COL
soil SO	nitric-perchloric A5	chromatography CHR
pulp PU	HF mixture A6	titration TTN
water WA	HF under pressure A7	other chemicals means CHEM
tissue TI	fusion A8	miscellaneous MISC
stream sediment SS		fluorescence FLUOR
heavy mineral HM		inductively coupled plasma ICP

AUTHORISED OFFICER *[Signature]*

040

# ANALABS

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

89 041

## ANALYTICAL DATA

SAMPLE PREFIX

REPORT NUMBER

REPORT DATE

CLIENT ORDER No.

PAGE

		34.5 00 3335			13.11.85				OF	
TUBE No.	SAMPLE No.	Na2O	MgO	Al2O3	SiO2%	SiO2%	P2O5%	K2O	CaO	
1	H 02 01-03	40	70	500	-	99.2	X	70	160	
2	H 02 03-05	80	100	1100	-	99.0	0.014	115	640	
3	H 02 05-07	100	70	550	-	99.1	0.007	70	190	
4	H 02 07-089	140	70	550	-	99.2	0.007	70	180	
5	H 02 09-11	115	190	1200	-	99.2	0.007	110	290	
6	H 02 11-13	150	400	5150	-	98.3	0.011	1450	130	
7	H 03 0.5-03	75	70	350	-	99.3	X	60	130	
8	H 03 03-05	80	80	350	-	99.4	X	55	170	
9	H 03 05-05.4	40	220	3850	-	98.5	0.021	65	520	
10	H 03 05.4-07	130	70	13200	-	96.7	0.066	85	130	
11	H 03 07-09	115	50	1150	-	99.6	X	50	100	
12	H 03 09-11	120	70	1400	-	98.7	0.011	95	170	
13	H 04 00-02	85	40	400	-	99.5	X	65	90	
14	H 04 02-04	80	60	400	-	99.6	X	55	130	
15	H 04 04-06	80	30	1150	-	99.3	0.007	40	90	
16	H 04 06-08	75	90	250	-	99.6	X	35	240	
17	H 04 08-10	120	70	400	-	99.6	X	90	190	
18	H 04 10-12	150	50	350	-	99.5	X	70	140	
19	H 04 12-14	90	350	450	-	98.9	X	85	1450	
20	H 04 14-15.5	90	90	850	-	99.2	0.021	95	220	
21	H 05 00-02	160	230	1150	-	98.8	X	295	350	
22	H 05 02-04	1900	4250	174000	-	73.2	0.016	25300	100	
23	H 05 04-06	2100	8000	190000	-	69.2	0.011	41600	150	
24	H 06 01-02	210	250	3850	-	98.7	X	585	100	
25	H 06 02-04	510	1280	48000	-	93.0	0.014	4400	130	

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 *[Signature]*

# ANALABS

A Division of MacDonell Hamilton & Co. Pty. Ltd.

## ANALYTICAL DATA

SAMPLE PREFIX

REPORT NUMBER

REPORT DATE

CLIENT ORDER No.

PAGE

		34.5 08 3335			13.11.85					2 OF 9	
TUBE No.	SAMPLE No.	Na2O	MgO	Al2O3	SiO2%	SiO2%	P2O5%	K2O	CaO		
1	H 07 02-02	310	70	400	-	98.9	X	125	120		
2	H 07 02-03	330	60	500	-	99.1	X	90	130		
3	H 07 03-04	220	60	300	-	99.1	X	80	160		
4	H 08 01.7-03	45	120	400	-	98.8	X	30	90		
5	H 08 03-04	55	100	300	-	99.3	X	60	60		
6	H 08 04-06	25	100	300	-	99.3	X	35	730		
7	H 08 06-06.8	20	50	100	-	99.5	X	55	100		
8	H 08 06.8-08.5	40	50	150	-	99.1	X	55	100		
9	H 08 08.5-10	75	40	100	-	99.5	X	40	70		
10	H 08 10-12	75	70	150	-	99.5	X	55	140		
11	H 08 12-14	65	60	400	-	99.4	X	55	130		
12	H 11 00-02	20	110	450	-	98.6	X	60	280		
13	H 11 02-03.5	15	60	250	-	99.0	X	50	170		
14	H 11 03.5-06	15	90	4350	-	98.2	X	30	400		
15	H 11 06-06.6	20	70	1350	-	99.2	X	55	220		
16	H 11 06.6-08.2	45	510	1450	-	96.6	X	200	7000		
17	H 11 08.2-10	25	90	1000	-	98.2	0.007	90	160		
18	H 12 00-01	40	70	350	-	98.8	X	40	140		
19	H 12 01-03	25	60	150	-	99.0	X	40	90		
20	H 12 03-05	25	100	250	-	98.7	X	40	700		
21	H 12 05-06	25	60	150	-	98.4	X	40	120		
22	H 12 06-07	155	250	3650	94.6	-	0.021	985	260		
23	H 13 00-02	35	50	550	98.7	-	X	60	80		
24	H 13 02-04	20	70	300	98.8	-	X	110	90		
25	H 13 04-06	20	50	650	98.8	-	X	70	80		

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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042

89 043

**ANALABS**

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**ANALYTICAL DATA**

SAMPLE PREFIX

REPORT NUMBER

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		34.5 08 3335			13.11.85					3 OF 9	
TUBE No.	SAMPLE No.	Na2O	MgO	Al2O3	SiO2%	SiO2%	P2O5%	K2O	CaO		
1	H 13 06-03	20	50	500	98.7	-	X	55	150		
2	H 13 08-09.1	20	80	950	98.6	-	X	55	200		
3	H 14 00-01	35	140	6500	98.3	-	0.007	80	220		
4	H 14 01-03	35	70	400	98.8	-	X	65	140		
5	H 14 03-05	20	40	350	99.6	-	X	35	60		
6	H 14 05-07	25	40	450	99.5	-	X	40	60		
7	H 14 07-09	25	40	300	99.6	-	X	35	90		
8	H 14 09-10	20	40	450	99.6	-	X	35	60		
9	H 14 10-12	25	70	500	99.4	-	X	55	190		
10	H 15 03.4-05	25	100	4350	98.8	-	X	85	60		
11	H 15 05-07	20	60	800	99.5	-	X	55	70		
12	H 15 07-09	40	40	300	99.7	-	X	30	60		
13	H 15 09-09.6	115	970	10300	97.8	-	X	3200	80		
14	H 15 09.6-11	130	1130	12000	97.5	-	X	4050	80		
15	H 20 00-02	25	90	950	99.5	-	X	100	60		
16	H 20 02-04	20	60	300	99.6	-	X	40	80		
17	H 20 04-05	15	90	70	99.6	-	X	150	70		
18	H 20 06-07	160	2800	30200	91.1	-	0.021	8850	150		
19											
20											
21											
22											
23	DETECTION	5	10	50	0.1	0.1	0.007	5	10		
24	DIGESTION										
25	METHOD	103	103	103	199	408	402	103	103		

Results in ppm unless otherwise specified

T = element present; but concentration too low to measure

X = element concentration is below detection limit

1 = determined

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OFFICER*hoy 4*

043

89 044

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TUBE No.	SAMPLE No.	TiO2	Cr	MnO <sub>2</sub>	Fe2O3	Co	ZrO2	Cd	Pb
1	H 02 01-03	700	10	5	1100	205	240	X	X
2	H 02 03-05	200	5	X	450	140	190	X	5
3	H 02 05-07	150	5	X	420	165	250	X	5
4	H 02 07-09	350	5	X	600	155	310	X	X
5	H 02 09-11	350	5	5	860	190	270	X	X
6	H 02 11-13	250	5	5	4850	140	75	X	X
7	H 03 0.5-03	150	5	25	700	120	230	X	X
8	H 03 03-05	150	X	X	430	115	490	X	X
9	H 03 05-05.4	250	X	X	520	140	400	X	X
10	H 03 05.4-07	200	5	15	430	110	190	X	X
11	H 03 07-09	100	5	X	560	130	300	X	X
12	H 03 09-11	500	5	5	5650	135	380	X	X
13	H 04 00-02	150	X	X	360	135	160	X	X
14	H 04 02-04	100	X	X	370	130	280	X	X
15	H 04 04-06	300	X	X	210	110	360	X	X
16	H 04 06-08	50	X	X	370	165	160	X	X
17	H 04 08-10	150	X	X	440	110	180	X	X
18	H 04 10-12	250	X	X	520	125	200	X	X
19	H 04 12-14	3150	X	5	680	110	320	X	X
20	H 04 14-15.5	750	X	X	570	55	360	X	X
21	H 05 00-02	2200	X	5	740	150	260	X	X
22	H 05 02-04	7000	40	5	8850	35	340	X	X
23	H 05 04-06	2550	35	20	18800	25	270	X	X
24	H 05 01-03	1550	5	5	1000	120	280	X	X
25	H 05 02-04	3100	5	15	3000	150	300	X	X

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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044

89 045

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TUBE No.	SAMPLE No.	T102	Cr	MnO	Fe203	Co	ZrO2	Cd	Pb
1	H 07 02-02	2350	X	5	680	190	270	X	X
2	H 07 02-03	1950	X	5	1550	170	300	X	X
3	H 07 03-04	800	X	5	600	150	320	X	X
4	H 08 01.7-03	5850	X	20	1220	145	310	X	X
5	H 08 03-04	1500	X	5	530	165	300	X	X
6	H 08 04-05	400	X	X	460	160	410	X	X
7	H 08 05-05.8	450	X	X	460	160	250	X	X
8	H 08 06.8-08.5	3200	X	X	510	130	390	X	X
9	H 08 08.5-10	750	X	X	440	140	250	X	X
10	H 08 10-12	800	X	5	490	140	240	X	X
11	H 08 12-14	700	X	5	770	125	230	X	X
12	H 11 00-02	300	X	5	500	140	410	X	X
13	H 11 02-03.5	150	X	X	370	130	220	X	X
14	H 11 03.5-06	250	X	X	460	125	220	X	X
15	H 11 06-05.6	150	X	X	350	95	310	X	X
16	H 11 06.6-08.2	250	5	5	1060	150	520	X	X
17	H 11 08.2-10	150	5	X	550	150	130	X	X
18	H 12 00-01	400	X	X	390	150	190	X	X
19	H 12 01-02	150	X	X	250	85	230	X	X
20	H 12 03-05	150	X	X	240	110	380	X	X
21	H 12 05-07	150	X	X	300	130	390	X	X
22	H 12 06-07	4150	15	5	750	120	330	X	X
23	H 13 00-01	250	10	5	620	120	370	X	X
24	H 13 02-04	150	5	X	580	195	170	X	X
25	H 13 04-05	150	X	5	430	120	370	X	X

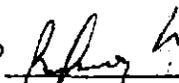
Results in ppm unless otherwise specified

T = element present; but concentration too low to measure

X = element concentration is below detection limit

- = element not determined

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045

89 046

# ANALABS

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

## ANALYTICAL DATA

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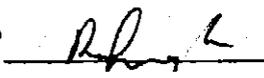
13.11.85

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TUBE No.	SAMPLE No.	TiO2	Cr	MnO	Fe2O3	Co	ZrO2	Cd	Pb
1	H 13 06-08	150	5	5	640	150	260	X	X
2	H 13 08-09.1	150	5	5	890	245	170	X	X
3	H 14 00-01	650	5	105	640	155	330	X	X
4	H 14 01-03	650	5	20	480	145	340	X	X
5	H 14 03-05	200	5	5	410	120	180	X	X
6	H 14 05-07	200	X	X	490	120	310	X	X
7	H 14 07-09	150	X	5	530	120	250	X	X
8	H 14 09-10	150	X	X	630	110	220	X	X
9	H 14 10-12	150	X	5	710	150	320	X	X
10	H 15 03.4-05	550	5	5	3050	110	230	X	X
11	H 15 05-07	200	5	X	680	125	230	X	X
12	H 15 07-09	200	X	X	350	120	140	X	X
13	H 15 09-09.6	500	X	X	3000	130	40	X	X
14	H 15 09.6-11	600	5	5	2450	130	55	X	X
15	H 20 00-02	150	5	X	500	105	250	X	X
16	H 20 02-04	200	X	X	270	95	300	X	X
17	H 20 04-05	200	X	X	340	125	230	X	X
18	H 20 06-07	3350	10	5	5250	90	440	X	X
19									
20									
21									
22									
23	DETECTION	50	5	5	10	5	7	0.5	5
24	DIRESTION								
25	ME THOD	100	100	100	100	100	401	100	100

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



046

89 047

**ANALABS**

A Division of MacDonald Hamilton &amp; Co. Pty. Ltd.

**ANALYTICAL DATA**

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REPORT NUMBER

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TUBE No.	SAMPLE No.	BI	LOI%						
1	H 02 01-03	X	0.53						
2	H 02 03-05	X	0.72						
3	H 02 05-07	X	0.65						
4	H 02 07-09	X	0.57						
5	H 02 09-11	X	0.48						
6	H 02 11-13	X	0.50						
7	H 03 0.5-03	X	0.53						
8	H 03 03-05	X	0.39						
9	H 03 05-05.4	X	0.83						
10	H 03 05.4-07	X	1.70						
11	H 03 07-09	X	0.40						
12	H 03 09-11	X	0.47						
13	H 04 00-02	X	0.34						
14	H 04 02-04	X	0.28						
15	H 04 04-06	X	0.46						
16	H 04 06-08	X	0.28						
17	H 04 08-10	X	0.27						
18	H 04 10-12	X	0.30						
19	H 04 12-14	X	0.46						
20	H 04 14-15.5	X	0.46						
21	H 05 00-02	X	0.67						
22	H 05 02-04	X	4.63						
23	H 05 04-06	X	4.44						
24	H 06 01-03	X	0.53						
25	H 06 03-04	X	0.86						

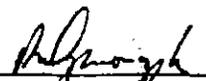
Results in ppm unless otherwise specified

T = element present; but concentration too low to measure

X = element concentration is below detection limit

- = element not determined

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047

89 048

**ANALABS**

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

**ANALYTICAL DATA**

SAMPLE PREFIX

REPORT NUMBER

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TUBE No.	SAMPLE No.	BI	LOI%						
1	H 07 0.2-02	X	0.61						
2	H 07 02-03	X	0.44						
3	H 07 03-04	X	0.61						
4	H 08 01.7-03	X	0.34						
5	H 08 03-04	X	0.35						
6	H 08 04-05	X	0.41						
7	H 08 06-06.8	X	0.38						
8	H 08 06.8-08.5	X	0.46						
9	H 08 08.5-10	X	0.33						
10	H 08 10-12	X	0.33						
11	H 08 12-14	X	0.34						
12	H 11 00-02	X	1.16						
13	H 11 02-03.5	X	0.88						
14	H 11 03.5-06	X	1.19						
15	H 11 06-05.6	X	0.55						
16	H 11 06.6-08.2	X	2.28						
17	H 11 08.2-10	X	1.27						
18	H 12 00-00	X	1.01						
19	H 12 01-03	X	0.93						
20	H 12 03-05	X	1.06						
21	H 12 05-05	X	1.42						
22	H 12 06-07	X	4.41						
23	H 13 00-02	X	1.10						
24	H 13 02-04	X	0.95						
25	H 13 04-05	X	1.00						

Results in ppm unless otherwise specified

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- = element not determined

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# ANALABS

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

## ANALYTICAL DATA

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TUBE No.	SAMPLE No.	Bi	LOI%						
1	H 13 06-08	X	1.09						
2	H 13 08-09.1	X	1.08						
3	H 14 00-01	X	1.39						
4	H 14 01-03	X	0.97						
5	H 14 03-05	X	0.24						
6	H 14 05-07	X	0.32						
7	H 14 07-09	X	0.22						
8	H 14 09-10	X	0.19						
9	H 14 10-12	X	0.35						
10	H 15 03.4-05	X	0.37						
11	H 15 05-07	X	0.23						
12	H 15 07-09	X	0.15						
13	H 15 09-09.6	X	0.38						
14	H 15 09.6-11	X	0.40						
15	H 20 00-02	X	0.27						
16	H 20 02-04	X	0.24						
17	H 20 04-05	X	0.17						
18	H 20 06-07	X	3.76						
19									
20									
21									
22									
23	DETECTION	5	0.01						
24	DIGESTION								
25	METHOD	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 *[Signature]*