

EXPLORATION LICENCE 1 / 71

**CAPE SORELL PENINSULA
WEST TASMANIA**

Progress Report of Operations

For the month ending 31 March 1971

71_741

Comaleo

902002

EXPLORATION LICENCE NO. 1/71CAPE SORELL PENINSULA -WEST TASMANIA

Progress Report of Operations for the Month Ending
31st March, 1971.

SUMMARY

Exploration Licence No. 1/71 covers the northernmost twenty-two (22) square miles of the Cape Sorell Peninsula, Western Tasmania. The Licence was granted on the 6th January, 1971.

Massive quartzites, shales and thinly bedded quartzites of Upper Proterozoic age outcrop. Faulting is evident and no igneous activity has been noted.

The massive quartzites are being investigated as a source of high purity silica for the manufacture of silicon metal and five optics.

PROGRESS1. Geology

Massive quartzites, shales and thinly bedded quartzites with minor shale outcrop. The rock is of Upper Proterozoic age. Faulting is evident. No sign of igneous activity has been noted in the field.

The massive quartzites form prominent strike ridges inland while differential erosion is evident along the coast. The shale, where outcropping on the coast, forms deep coves. Inland, the quartzite strike ridges protrude through sandy, peaty loam soil covers. This 'blanket' cover masks the inland geology to some extent. However, with the aid of air photo interpretation a moderately clear picture is possible. The inland topography is relatively flat with light vegetation.

The strike varies from 030° to 330° magnetic with sub-vertical dips to the east and west. Some drag folding and contortion of the more incompetent beds has been noted. The outcropping massive quartzite is often highly polished. This has resulted from bombardment by wind-blown particles.

A further four (4) quartzite samples were collected and have been labelled CSP-90 to CSP-94.

2. Sample Analysis

The initial seventeen (17) quartzite samples have now been assayed. These samples were labelled CSP 01 to CSP 17. Table 1 (attached) shows the individual results and the overall average grade of the material. In addition, the bulk sample sent to Elkem A/S Research Division in Norway for Thermal Stability tests was assayed for Silica, Iron, Aluminium, Titanium, Phosphate, Calcium and Loss on Ignition. The bulk sample was obtained by taking one specimen from the samples labelled CSP 18 to CSP 90. The bulk sample was then crushed and riffled to an amount suitable for assay.

The analysis gave the following values :-

SiO ₂	=	99.44	%
Fe ₂ O ₃	=	0.056	%
TiO ₂	=	0.015	%
Al ₂ O ₃	=	0.24	%
P	=	0.0003	%
CaO	=	0.004	%
Loss on Ignition	=	0.11	% .

A range of samples (CSP 18 to CSP 26 and CSP 35 to CSP 94) have been air-expressed to the A.C.I. Technical Centre in Waterloo, N.S.W. These samples will be assayed by spectrographic methods to determine the percentage of Silica, Iron, Aluminium, Titanium, Magnesium Calcium and Sodium. Phosphate will be determined on one in ten samples by wet chemical methods.

3. Thermal Stability

The report on Thermal Stability tests undertaken by Elkem A/S Research Division Norway has been completed. A copy of the report is attached. (Appendix 1) The conclusion is that the sample has a high thermal stability and very good mechanical strength. The material is suitable for the production of ferro-silicon and silicon metal in an electric smelting furnace.

4. Depth of Survey

A survey to determine the depth of water in Pilot Bay and approach areas has been partially completed. The fishing boat "Cape Martin" equipped with a continuous chart type "Furuno 850" echo sounder was chartered from Strahan. Theodolites at two shore stations accurately fixed the course of the "Cape Martin". The results

002

from this survey are presently being plotted. It is anticipated that an idea of the rate of siltation in Pilot Bay can be determined by comparing the present survey results with previous records. It is planned to produce a sea bed contour map of Pilot Bay.

5. Seismic Investigation

With the view to establishing a port in Pilot Bay a series of seismic traverses was completed to determine the approximate depth of overburden to bed rock in Pilot Bay. A copy of A.H. Bartlett's report on this survey is attached. (Appendix 2)

CONCLUSION

The area appears extremely favourable and more geological development investigations are planned.

Ian. D. Picken.

I.D. PICKEN
Geologist - Exploration.

CAPE SONELL QUARTZITE ANALYSIS

CSP
003

Sample Number	SiO ₂ %	Fe ₂ O ₃ %	Al ₂ O ₃ %	TiO ₂ %	L.O.I.	MgO. ppm	Ca O ppm	P. ppm	
CSP 01	99.51	0.06	0.27	0.03	0.12	110	18	ND	<p><u>NOTE</u></p> <p>The results are derived from two (2) independent sets of analyses (Comalco Laboratories, Melbourne and Griffith Inteco (Aust.) P/L). The deficit in the total aggregate has been proportioned out amongst the individual assay for each sample.</p>
" 02	99.21	0.04	0.55	0.04	0.14	113	ND	ND	
" 03	99.06	0.10	0.70	0.04	0.08	140	4	ND	
" 04	99.06	0.06	0.65	0.05	0.16	165	25	ND	
" 05	99.06	0.04	0.66	0.04	0.18	123	35	ND	
" 06	99.06	0.05	0.76	0.02	0.10	105	ND	ND	
" 07	99.33	0.12	0.41	0.03	0.09	125	ND	ND	
" 08	99.42	0.07	0.42	0.02	0.05	120	ND	ND	
" 09	99.66	0.04	0.22	0.02	0.05	85	ND	ND	
" 10	99.65	0.03	0.26	0.02	0.03	110	ND	ND	
" 11	99.30	0.06	0.55	0.02	0.04	125	ND	ND	
" 12	99.40	0.07	0.43	0.06	0.02	115	ND	ND	
" 13	98.42	0.14	1.17	0.04	0.21	181	ND	ND	
" 14	99.39	0.13	0.40	0.02	0.04	125	ND	ND	
" 15	99.27	0.20	0.41	0.01	0.09	115	ND	ND	
" 16	99.77	0.02	0.41	0.01	0.05	80	ND	ND	
Test only 17	93.16	0.20	4.38	0.53	1.49	0.18% ←	ND	ND	<p>Sample CSP 17 was taken near Queens- town (Tas) and submitted as a test sample only.</p> <p>I.D.Picken</p>
Average (excluding CSP 17)	99.29	0.08	0.50	0.03	0.09	114	5	0	

0.018%

TABLE I

902005

902006

Research Division, Fiskaa Verk

004

Date
2nd March, 1971
Report No.
F/FV 38/71
File
1773 C

LABORATORY TEST OF A QUARTZITE SAMPLE FOR
COMALCO LIMITED

005

902007

LABORATORY TEST OF A QUARTZITE SAMPLE FOR COMALCO LIMITED

Sample : 4.5 kg quartzite
Received : February 18th 1971
Our ref. No: 14/71

1. INTRODUCTION

The sample received consisted of pieces of grain size between 3/4 and 2 inches.

Visual examination showed mainly two types, one fine grained type, white or light grey in colour, and the other one a little more coarse grained and darker in colour. A few pieces were transitional to the two mentioned types.

The sample has been tested on thermal stability according to our normal method.

Chemical analyses have not been carried out.

2. CONCLUSION

The quartzite sample examined has a high thermal stability and a very good mechanical strength, and should from this point of view be well suitable for use as a raw material for production of ferro-silicon and silicon metal in electric smelting furnaces.

3. PROCEDURE

The thermal stability has been determined according to the method description No 21, given as appendix 1.

4. RESULTS

Sieve curves showing the disintegration after heat treatment and after further tumbling are given in appendix 2.

Thermal stability (+3/4" after heat treatment)	73%
Mechanical strength (+5 mm after heating and 100 revolutions in the drum)	95%

Kr. sand S, 2nd March, 1971

TA/mh

T. Anderssen

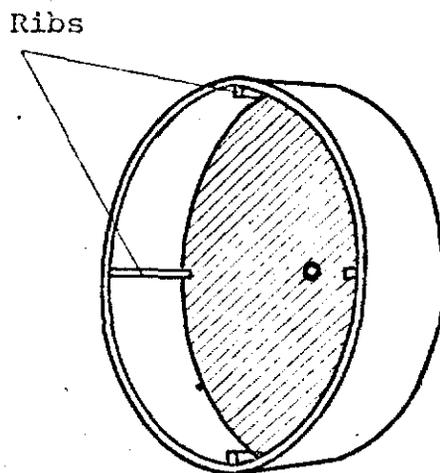
006

THERMAL STABILITY OF QUARTZ.

The $- 1.06 + 3/4"$ U.S. sieve fraction is prepared. A graphite crucible containing about 200 g quartz is placed into a Tamman furnace at 1300°C and held at this temperature for one hour. The crucible is then withdrawn and cooled to room temperature. Sieve analysis is carried out. The whole sample is placed in the drum shown in the sketch and rotated for 100 revolutions ($2\frac{1}{2}$ minutes).

Finally, sieve analysis is again carried out.

The result is given as sieve curves. The amount of $+ 3/4"$ fraction after heat treatment and of $+ 5$ mm after 100 revolutions are especially noted.

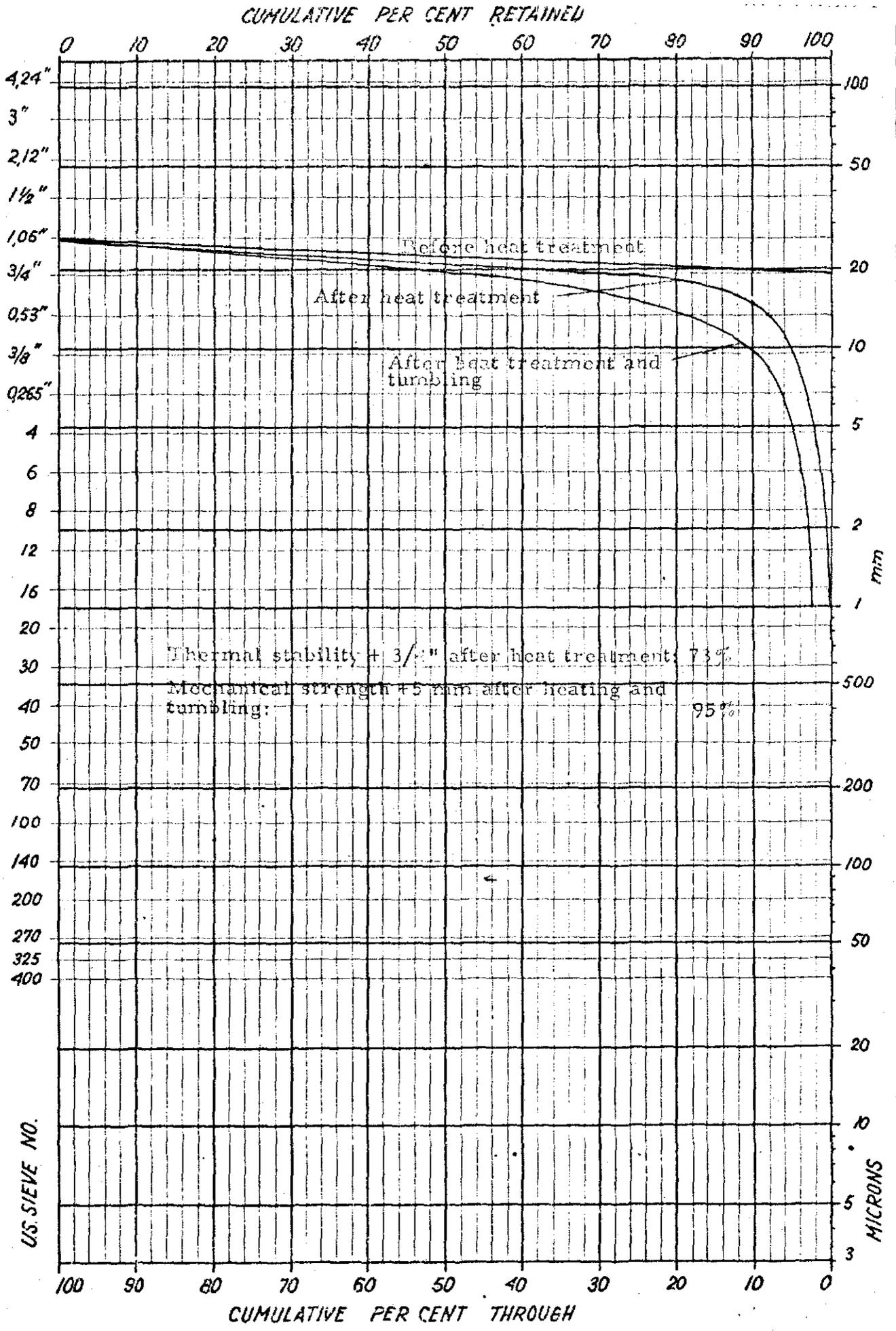


METHOD DESCRIPTION No. 21.

Thermal stability of quarts.

902009

007



Quartzite from COMALCO LIMITED
Our ref. No 14/71



TASMANIA - CAPE SORELLSEISMIC TRAVERSES RESULTS.SUMMARY

Seismic work has been carried out to determine approximately the depth of sand or gravel or boulders overlying the quartzite or shale bedrock in Pilot Bay.

Refer to attached drawings.

Traverses 1, 2 & 3 along Pilot Bay beach indicated that there is at least 100 feet of predominantly sand overlying bedrock. A hump of gravel and boulders occurs between chainages 500' to 800'.

Traverses 4, 5, 6, 7, 8 & 9 were carried out using hydrophones in the water of Pilot Bay. The varying depths of the layers are shown on the attached section drawings. It can be assumed that a velocity of 5400 - 6000 ft/sec. represents predominantly sand, whereas 6,000 to 7,800 ft/sec. represents gravel and boulders.

Traverse 10 was carried out along a depression behind the sand dunes which ran parallel to Tidley's Beach. Shale or quartzite bedrock occurs some 50 feet below, which would be at 150 feet below the top of the higher sand dunes.

NOTE : SEISMIC WORK GIVES ONLY APPROXIMATE INDIRECT DEPTH DETERMINATIONS AND SHOULD NOT BE USED FOR DESIGN PURPOSES WITHOUT CONFIRMATORY DRILLING.

PROBABLE INTERPRETATION OF SEISMIC WAVE VELOCITIES

<u>Wave velocity</u> feet/second	<u>Rock Type inferred</u>
1,000 or less	Dry sand or topsoil
5,200	Sea water
5,400 - 6,000	Saturated SAND
6,000 - 7,800	Saturated GRAVEL/BOULDERS with SAND packed between.
8,000 - 10,000	Probably SHALE
10,000 - 20,000	QUARTZITE.



A.H. BARTLETT
Divisional Manager - Exploration

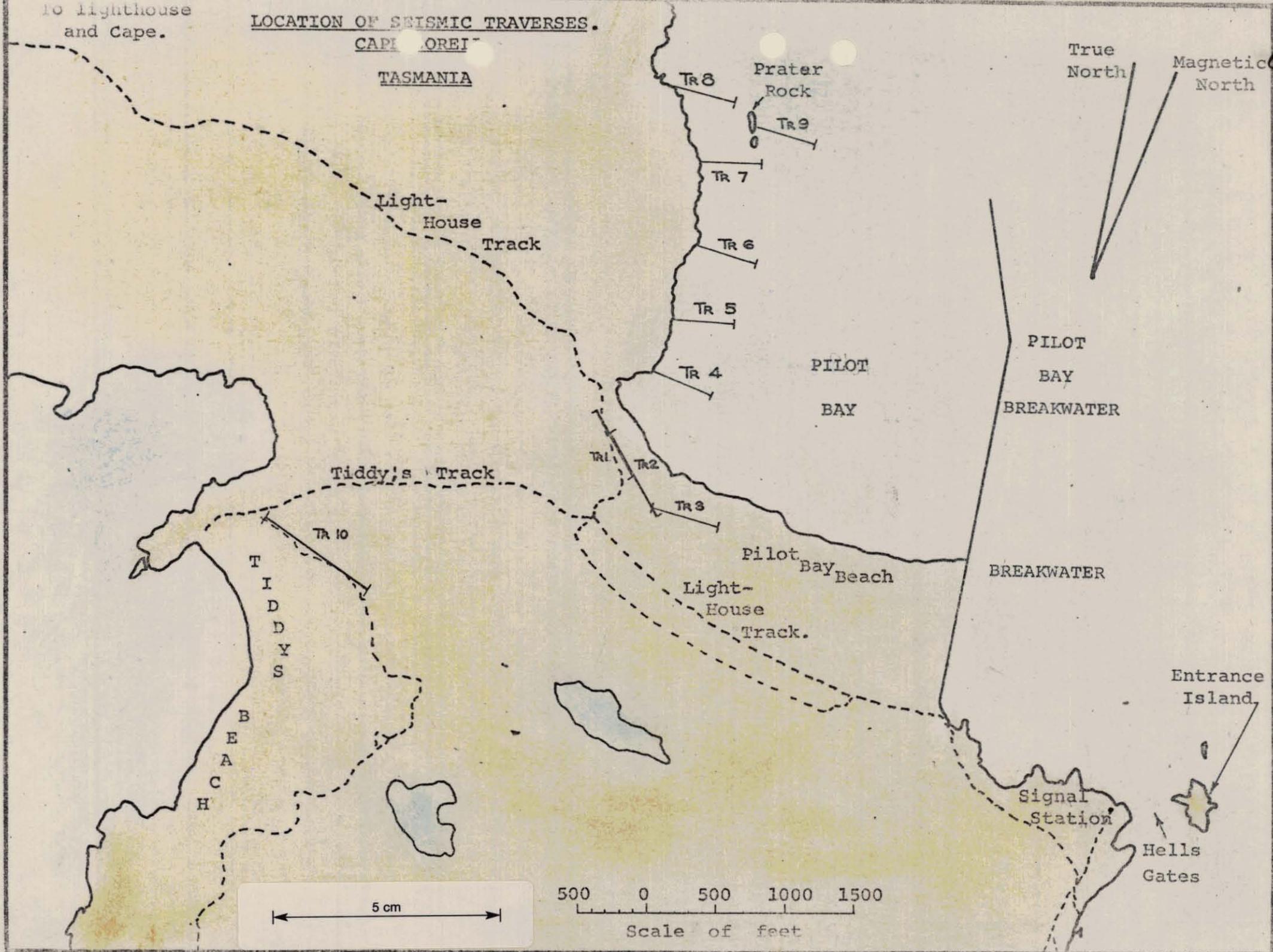
to lighthouse
and Cape.

LOCATION OF SEISMIC TRAVERSES.

CAPI MOREI

TASMANIA

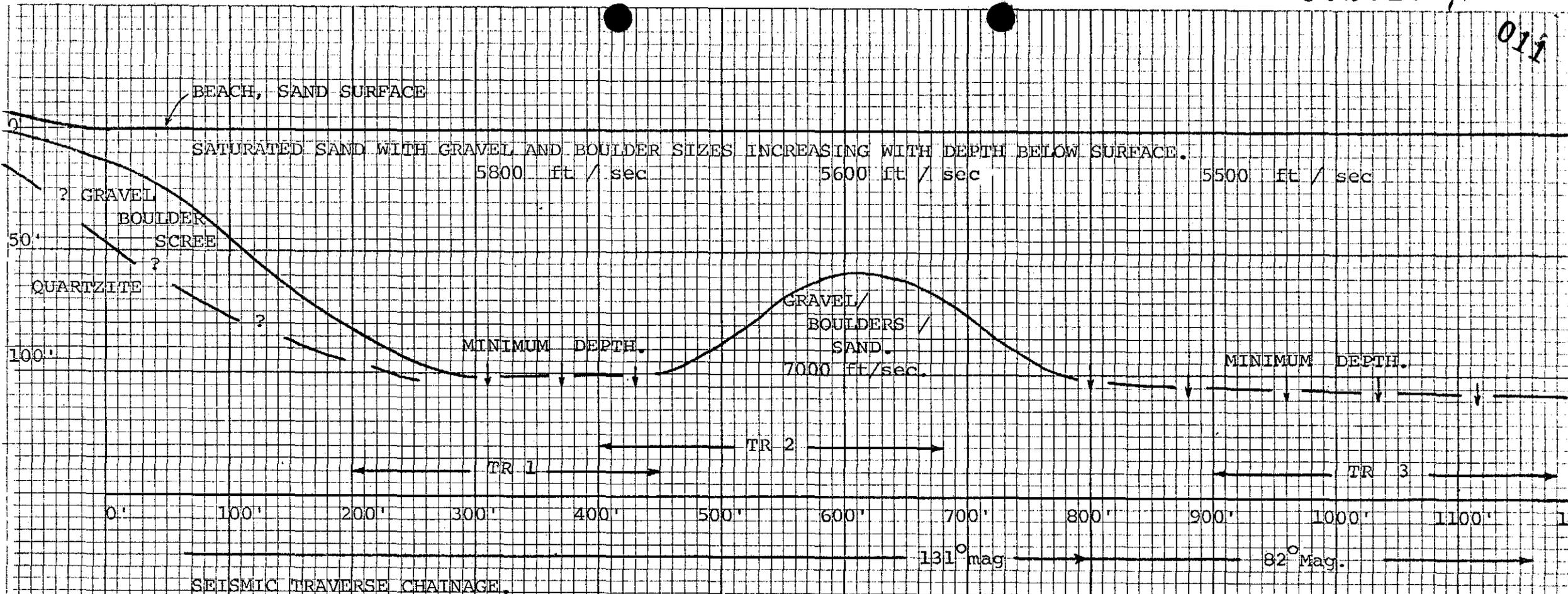
True North
Magnetic North ⁰¹⁰



5 cm

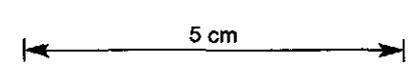
500 0 500 1000 1500
Scale of feet

902012



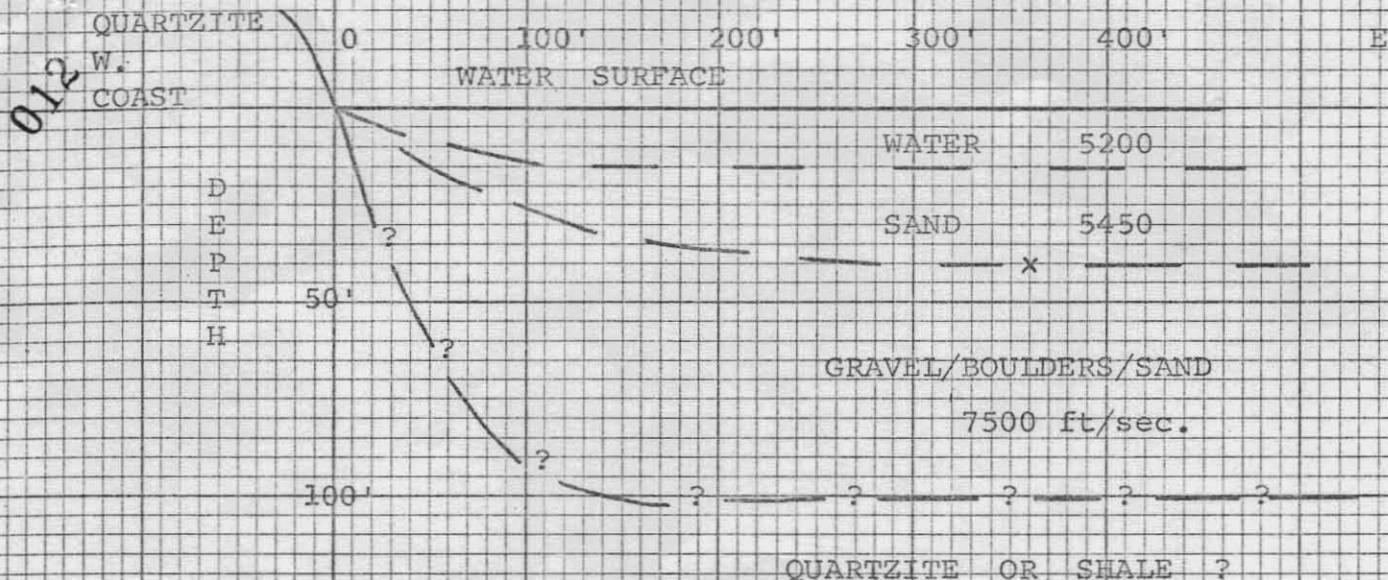
TASMANIA. CAPE SORELL.
 Seismic Traverses along Pilot Bay Beach.
 Interpretation of Results

Scales: HORZ. 1 inch = 100 feet.
 VERT. 1 inch = 50 feet.



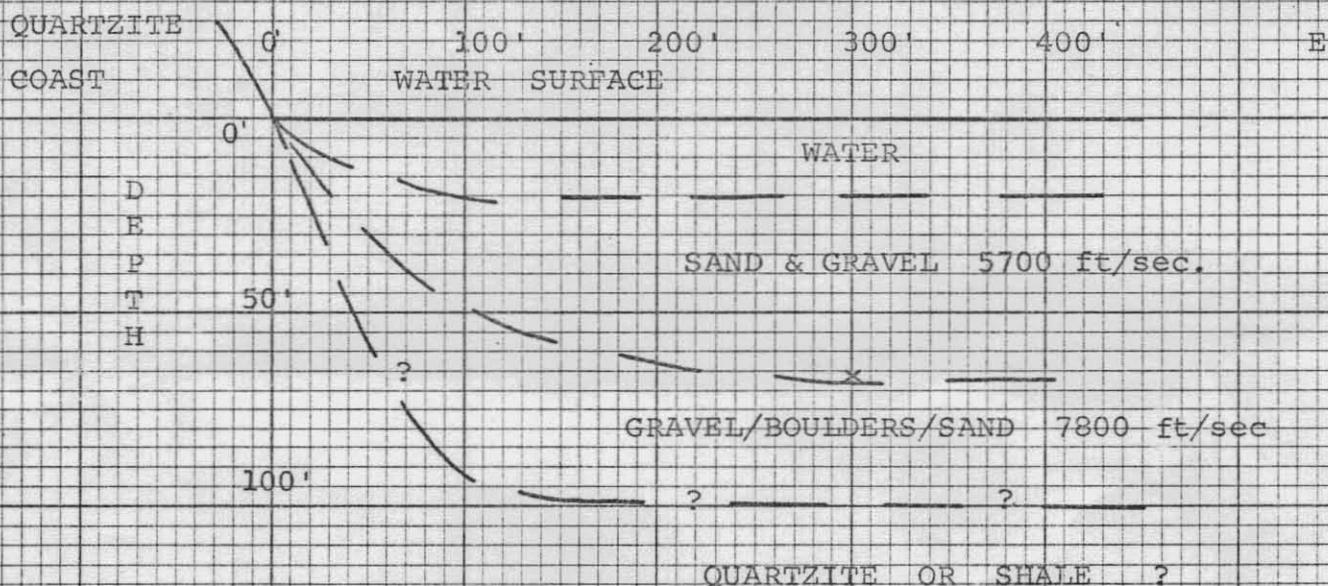
TRAVERSE 4

IN water extending eastwards from west side of Pilot Bay



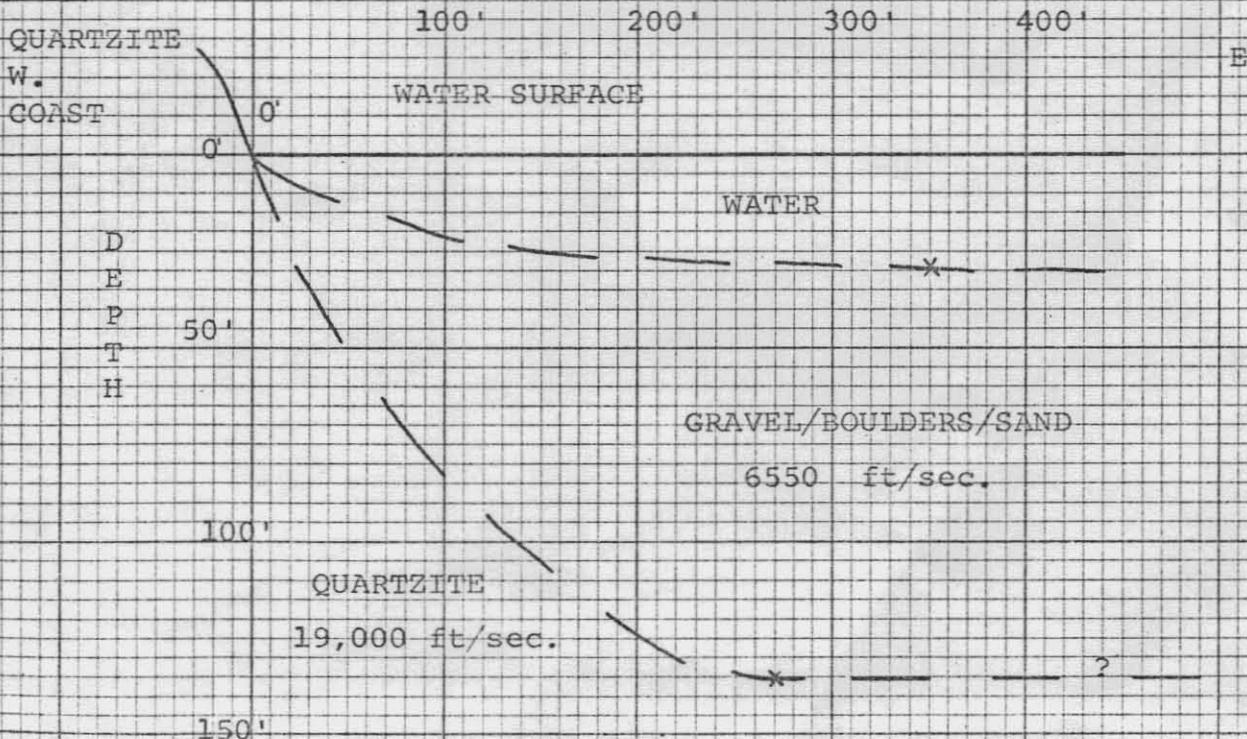
TRAVERSE 5.

in water extending eastwards from west side of Pilot Bay.



TRAVERSE 6.

in water extending eastwards from west side of Pilot Bay.



5 cm

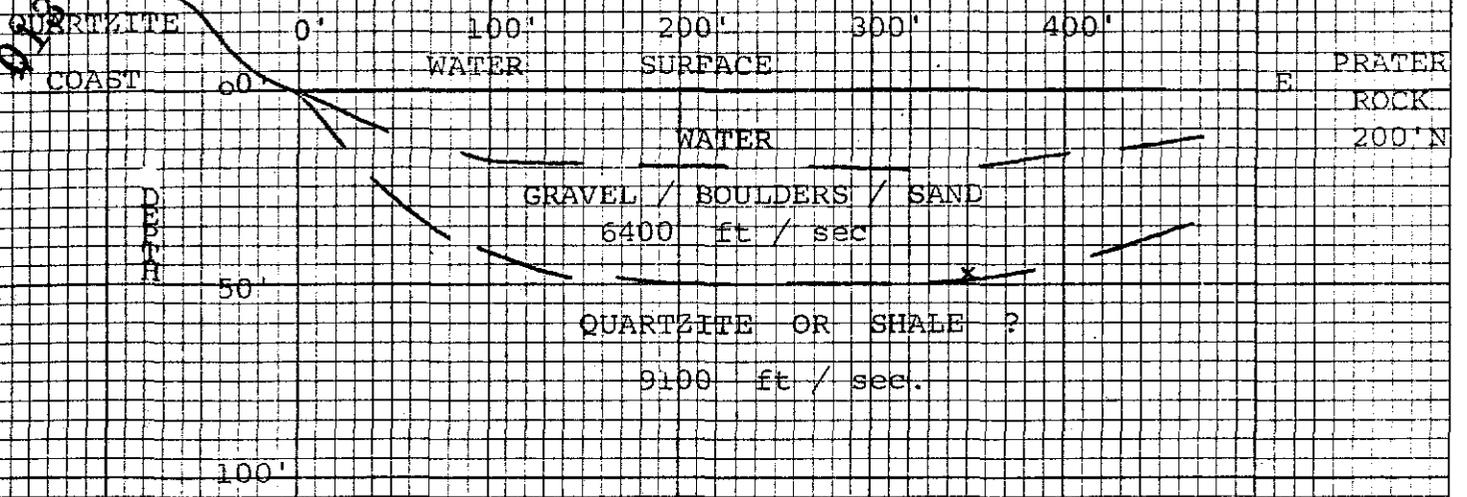
Scales: Horz. 1 inch = 100 ft
Vert. 1 inch = 50 ft

TASMANIA. CAPE SORELL
Seismic Traverses in Pilot Bay.

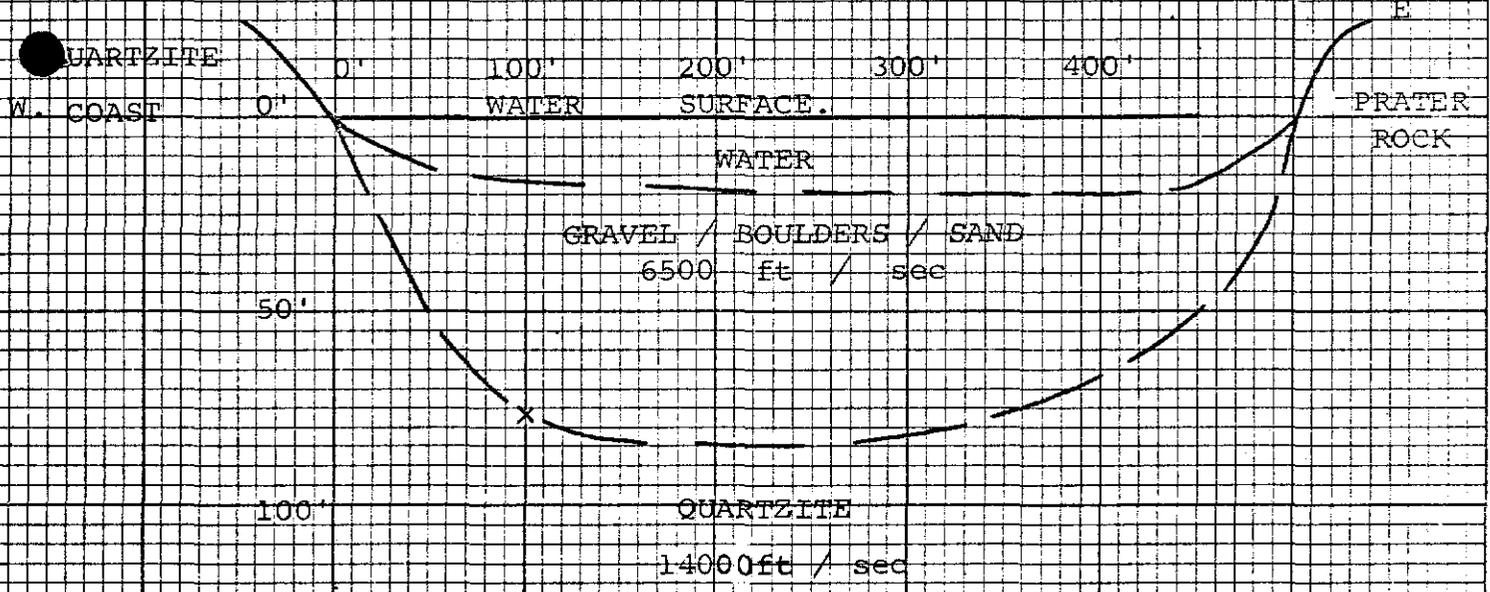
Interpretation of Results

902014

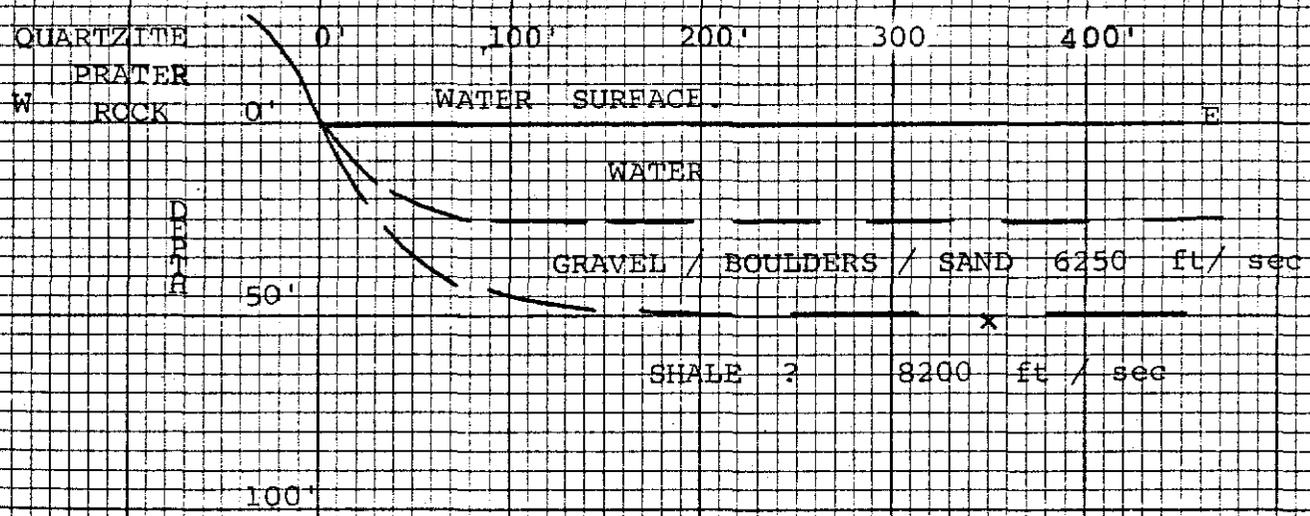
TRAVERSE 7 in water extending eastwards from west side of Pilot Bay.



TRAVERSE 8 in water extending eastwards from west side of Pilot Bay.



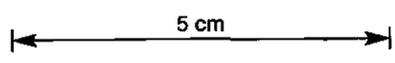
TRAVERSE 9 in water extending eastwards from Prater Rock.



TASMANIA. CAPE SORELL
Seismic Traverses in Pilot Bay.

Interpretation of Results

Scales: Horz. 1 inch = 100ft.
Vert. 1 inch = 50ft.



902015

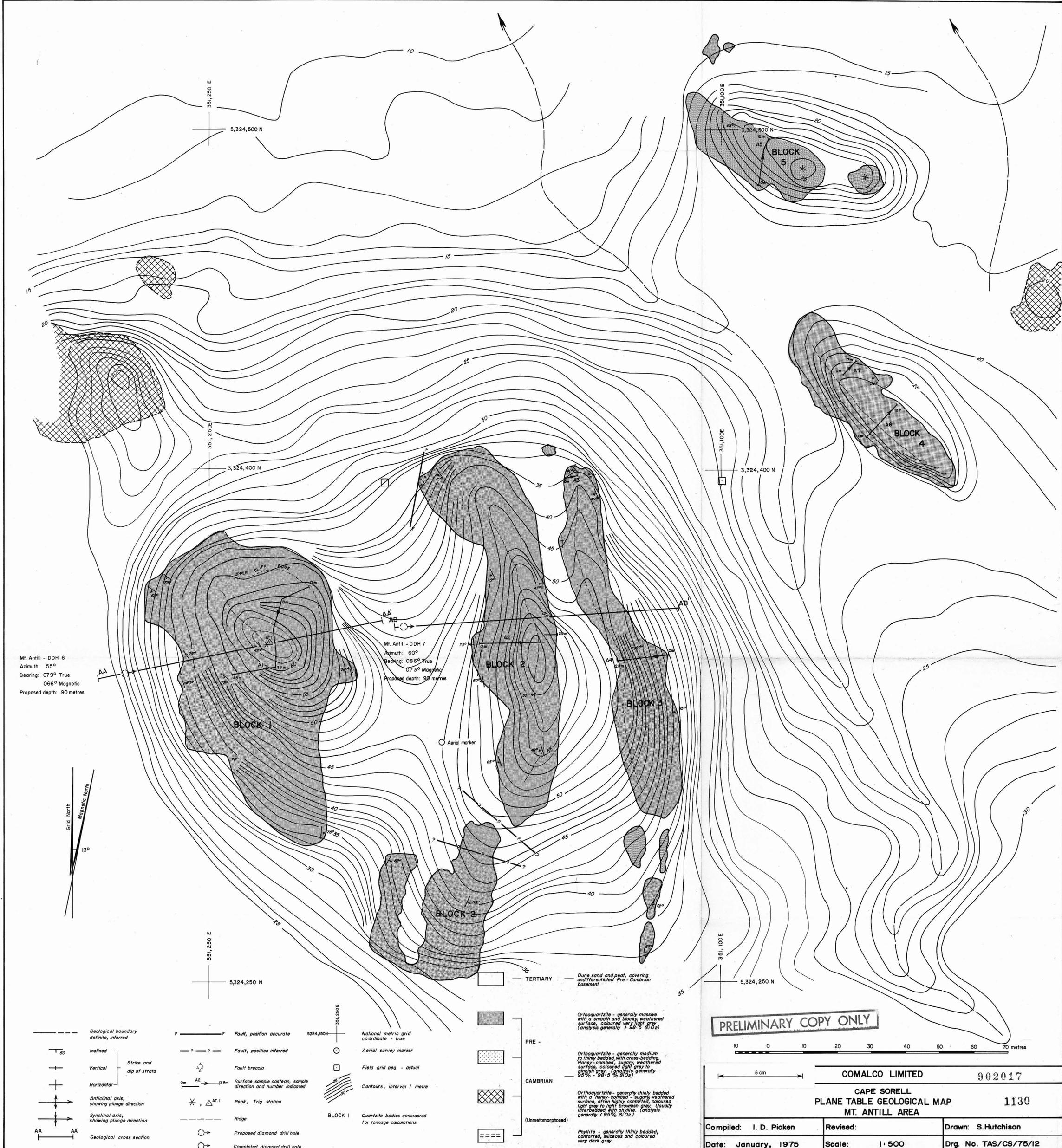
E.L. 1/71

CAPE SORREL

902016

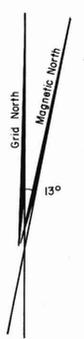
COMALCO SANDS. SERIES "CSP"

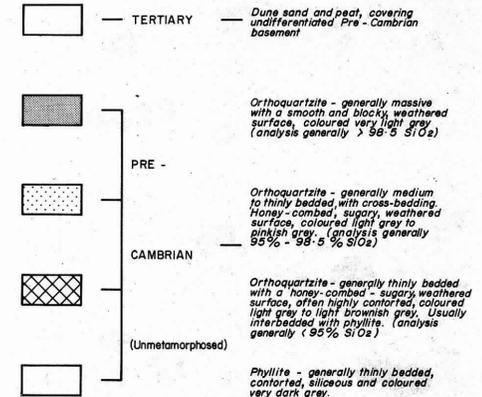
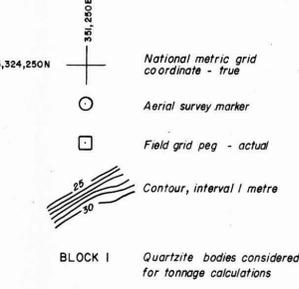
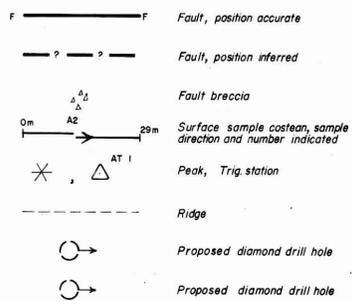
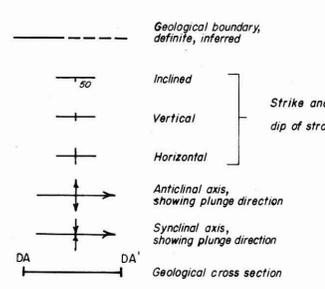
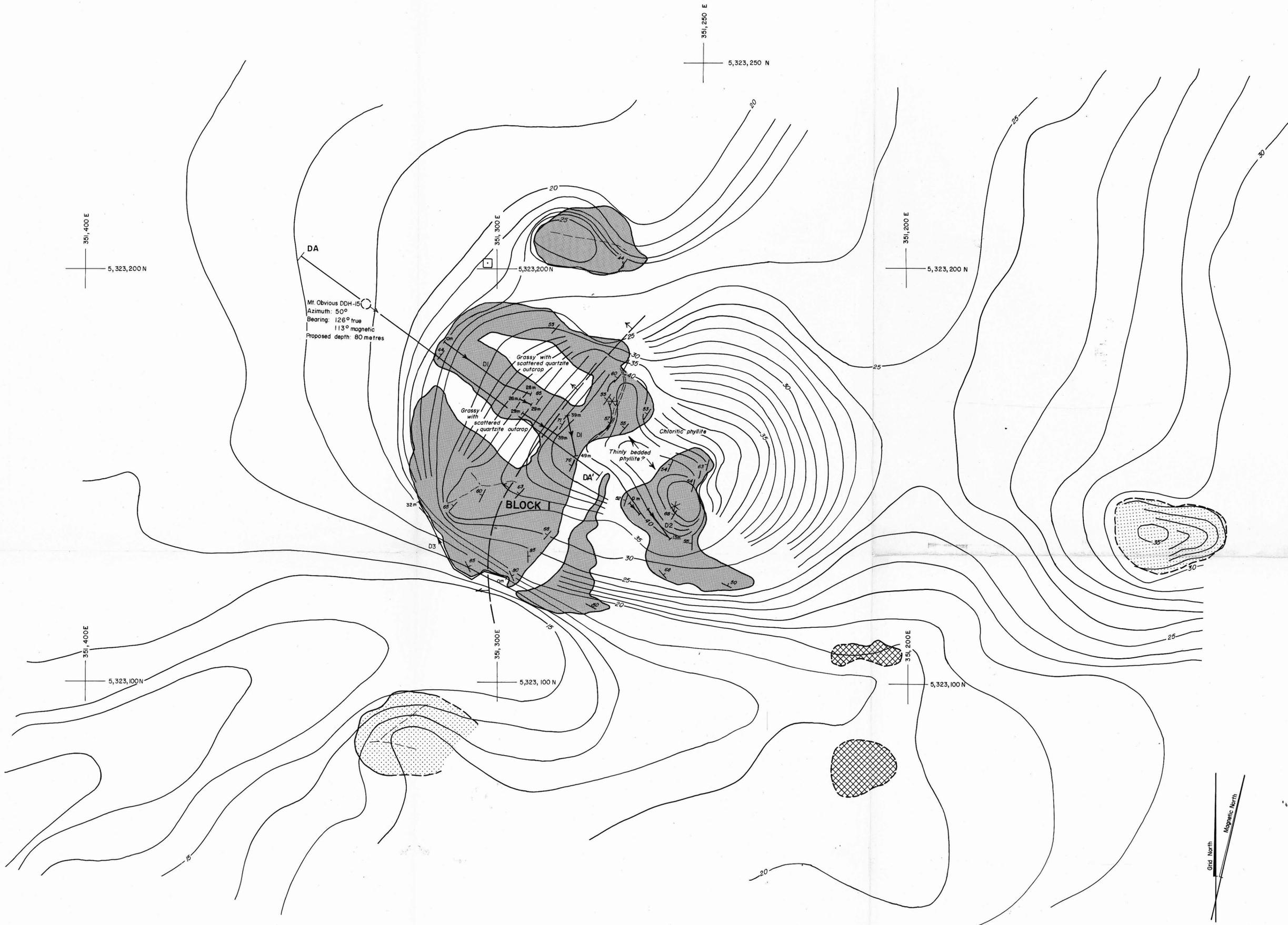
	Cr ₂ O ₃	Fe ₂ O ₃	Al ₂ O ₃	TiO ₂	CaO	MgO	Na ₂ O	LOI	SiO ₂
CSP 1009	<.001	0.018	0.14	0.014	<.010	<.010	<.010	0.13	99.70
1010	<.001	0.022	0.16	0.013	<.010	<.010	<.010	0.12	99.68
1011	.001	0.032	0.11	0.020	<.010	<.010	<.010	0.32	99.52
1012	.001	0.24	0.71	0.046	1.4	0.14	0.11	1.41	95.9
1013	.001	0.25	0.79	0.042	1.1	0.13	0.11	1.39	96.2
1014	.005	0.24	0.67	0.070	0.058	0.12	0.10	0.55	98.19
1015	.003	0.26	0.77	0.063	0.050	0.12	0.13	0.75	97.85
1016	.028	0.075	0.21	0.10	<.010	0.034	0.04	0.22	99.29
1017	.027	1.0	0.39	0.11	0.016	0.18	0.04	1.03	97.2
1018	.026	0.13	0.23	0.10	<.010	0.025	0.010	0.17	99.31
1019	.011	0.060	0.21	0.078	<.010	0.022	0.010	0.26	99.35
1020	.011	0.064	0.19	0.044	0.048	0.052	0.05	3.12	96.4
1021	.005	0.12	0.76	0.046	<.010	0.024	0.03	0.98	98.0
1022	.002	0.059	0.21	0.023	<.010	0.013	<.010	0.12	99.57
1023	.004	0.048	0.19	0.025	<.010	0.015	<.010	0.14	99.58
1024	.002	0.035	0.18	0.022	<.010	<.010	<.010	0.08	99.68
1025	<.001	0.027	0.20	0.015	<.010	<.010	<.010	0.16	99.60
1026	.023	0.12	0.31	0.076	0.010	0.039	0.012	0.18	99.23
1027	.001	0.23	0.72	0.029	2.0	0.15	0.11	2.28	94.5
1028	.002	0.35	0.84	0.048	2.1	0.18	0.15	2.56	93.8
1030	.045	0.080	0.19	0.074	<.010	0.020	<.010	0.77	98.82



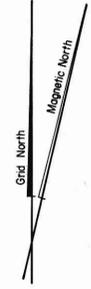
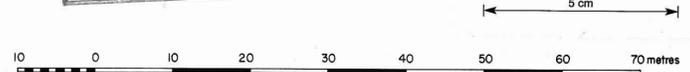
Mt. Antill - DDH 6
 Azimuth: 55°
 Bearing: 079° True
 066° Magnetic
 Proposed depth: 90 metres

Mt. Antill - DDH 7
 Azimuth: 60°
 Bearing: 086° True
 073° Magnetic
 Proposed depth: 90 metres

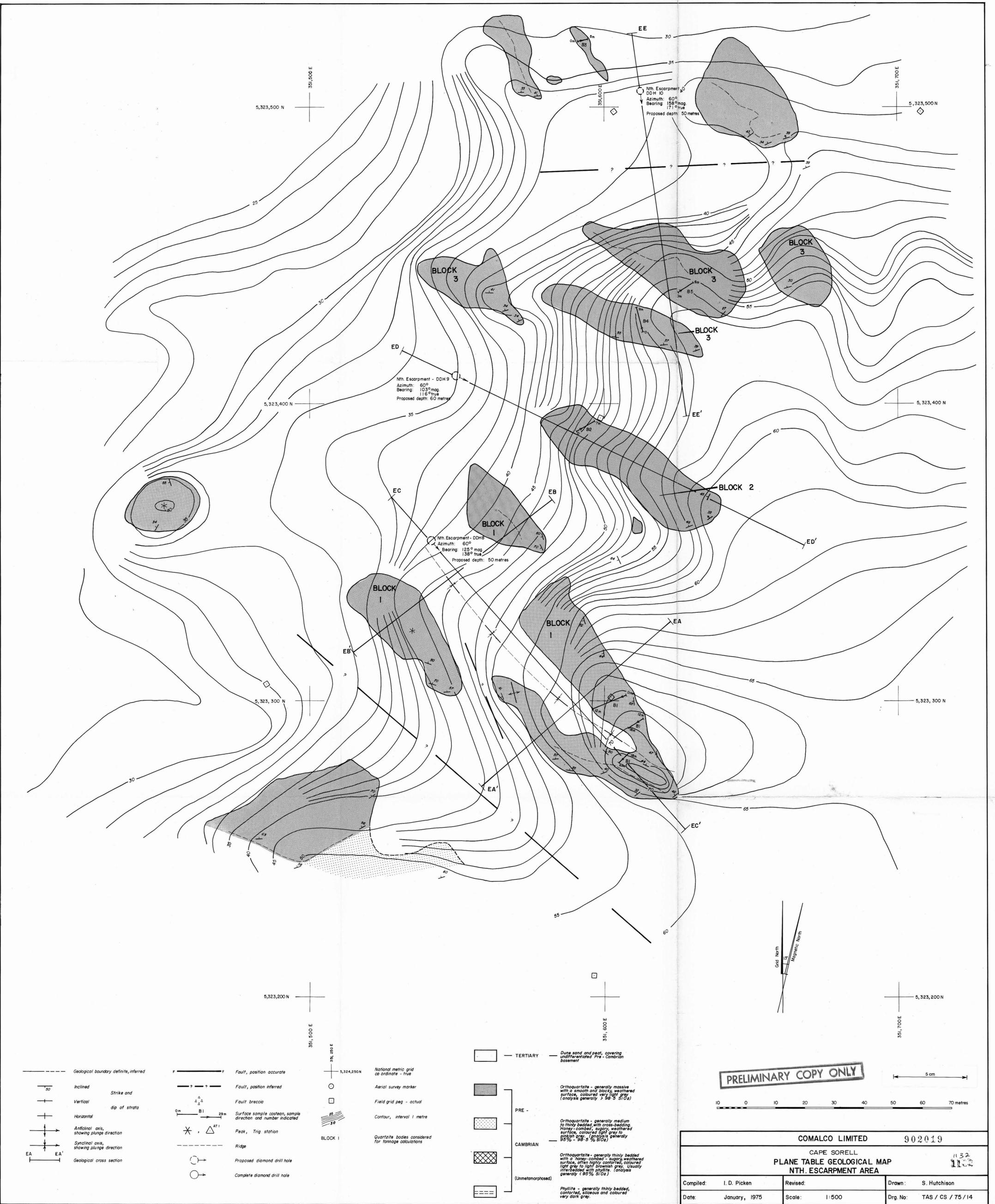




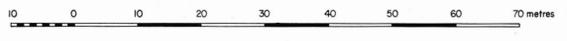
PRELIMINARY COPY ONLY



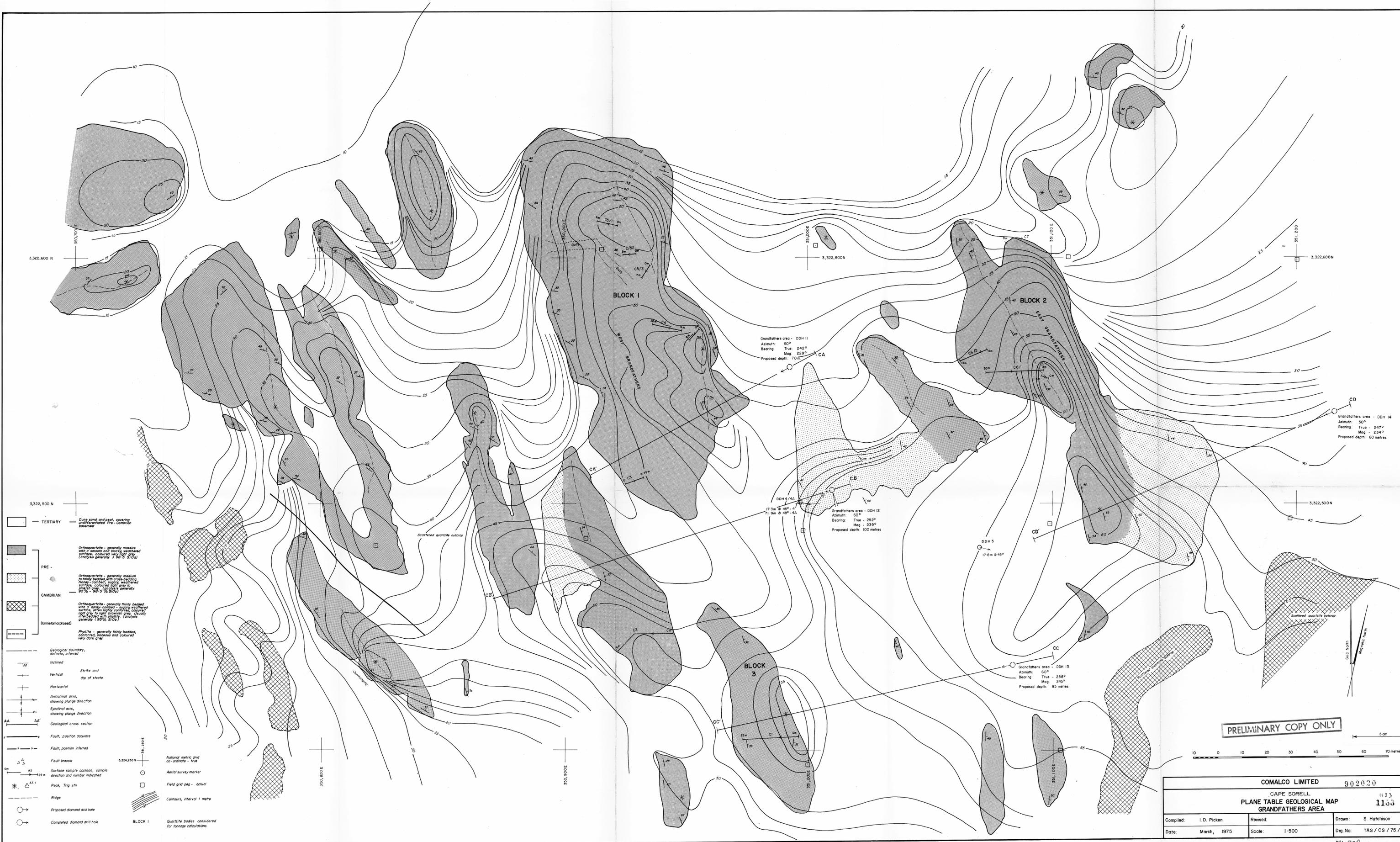
COMALCO LIMITED			902018
CAPE SORELL PLANE TABLE GEOLOGICAL MAP MT. OBVIOUS AREA			
Compiled: I.D. Picken	Revised:	Drawn: S. Hutchison	
Date: January, 1975	Scale: 1:500	Drg. No. TAS / CS / 75 / 13	



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COMALCO LIMITED		902019
CAPE SORELL PLANE TABLE GEOLOGICAL MAP NTH. ESCARPMENT AREA		
Compiled: I. D. Picken	Revised:	Drawn: S. Hutchison
Date: January, 1975	Scale: 1:500	Dwg. No: TAS / CS / 75 / 14



- 3,322,500 N
 - 3,322,600 N
 - 3,322,700 N
 - 3,322,800 N
 - 3,322,900 N
 - 3,323,000 N
 - 350,000 E
 - 350,100 E
 - 350,200 E
 - 350,300 E
 - 350,400 E
 - 350,500 E
- TERTIARY — Dune sand and peat, covering unconsolidated Pre-Cambrian basement
 - PRE-CAMBRIAN — Orthoquartzite - generally massive with a smooth and blocky weathered surface, coloured red to light grey (felsites generally 50% SiO₂)
 - CAMBRIAN — Orthoquartzite - generally medium to finely bedded with cross-bedding, honey-combed, sugary weathered surface, coloured light grey to yellow grey (felsites generally 55% - 58% SiO₂)
 - (Unmetamorphosed) — Phyllite - generally finely bedded, contains siliceous and coloured very dark grey
 - Geological boundary, definite, inferred
 - Inclined
 - Vertical
 - Horizontal
 - Anticlinal axis, showing plunge direction
 - Synclinal axis, showing plunge direction
 - Geological cross section
 - Fault, position accurate
 - Fault, position inferred
 - Fault breccia
 - Surface sample location, sample direction and number indicated
 - Peak, Trig. stn
 - Ridge
 - Proposed diamond drill hole
 - Completed diamond drill hole
- National metric grid co-ordinate - true
 - Aerial survey marker
 - Field grid peg - actual
 - Contours, interval 1 metre
 - Quartzite bodies considered for tonnage calculations

PRELIMINARY COPY ONLY

COMALCO LIMITED		902020
CAPE SORELL		1133
PLANE TABLE GEOLOGICAL MAP		1153
GRANDFATHERS AREA		
Compiled: I. D. Picken	Revised:	Drawn: S. Hutchison
Date: March, 1975	Scale: 1:500	Dir. No: TAS / CS / 75 / 15