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MT. BISCHOFF TIN PROSPECT

(Exploration Area being part of EL 5/63)

TASMANIA

REPORT ON STAGE I PROGRAMME

VOLUME I

A. Jannink

January, 1979.

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SUMMARY

This report covers the Stage I Exploration Programme at Mt. Bischoff for the MEL/CRAE Joint Venture carried out between June and December, 1978.

Excluded are an airborne magnetic survey which will be conducted over the Exploration Area prior to 15th February, 1979, and tin sizing and liberation metallurgy on six samples submitted for testing. These programmes will be reported upon separately.

- (a) A 20 metre square grid was established over part of the prospect area, essentially that area that covers most of the old mine workings. A subsequent ground magnetometer survey delineated four anomalous zones over known mineralisation.
- (b) Two stages of diamond drilling were carried out:
The first stage involved four holes (totalling 1081.1 metres) to test the tin mineralisation in the White Face/Stanhope porphyry dyke below and lateral to previous intersections. The best results obtained were 11.45 metres at 0.56% Sn and 12 metres at 0.45% Sn.
- In the second stage a deep diamond hole was drilled to a final depth of 972.5 metres (894.4 metres vertical depth) to test for a repetition or further mineralised dolomite sequences at depth, and also to test the possible occurrence of a large mineralised porphyry stock at depth. No dolomitic rocks were encountered and,

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although an aggregate of 111 metres of porphyry rock in 8 dykes was intersected, there was no intersection of a major porphyry stock.

(c) An extensive programme of sampling both new and old diamond drill core was undertaken. Significant results are listed.

(d) Various categories of reserves were calculated, the more significant being :

High grade Dolomite 350,000 tonnes at 1.11% Sn
1:4 reserve to waste ratio

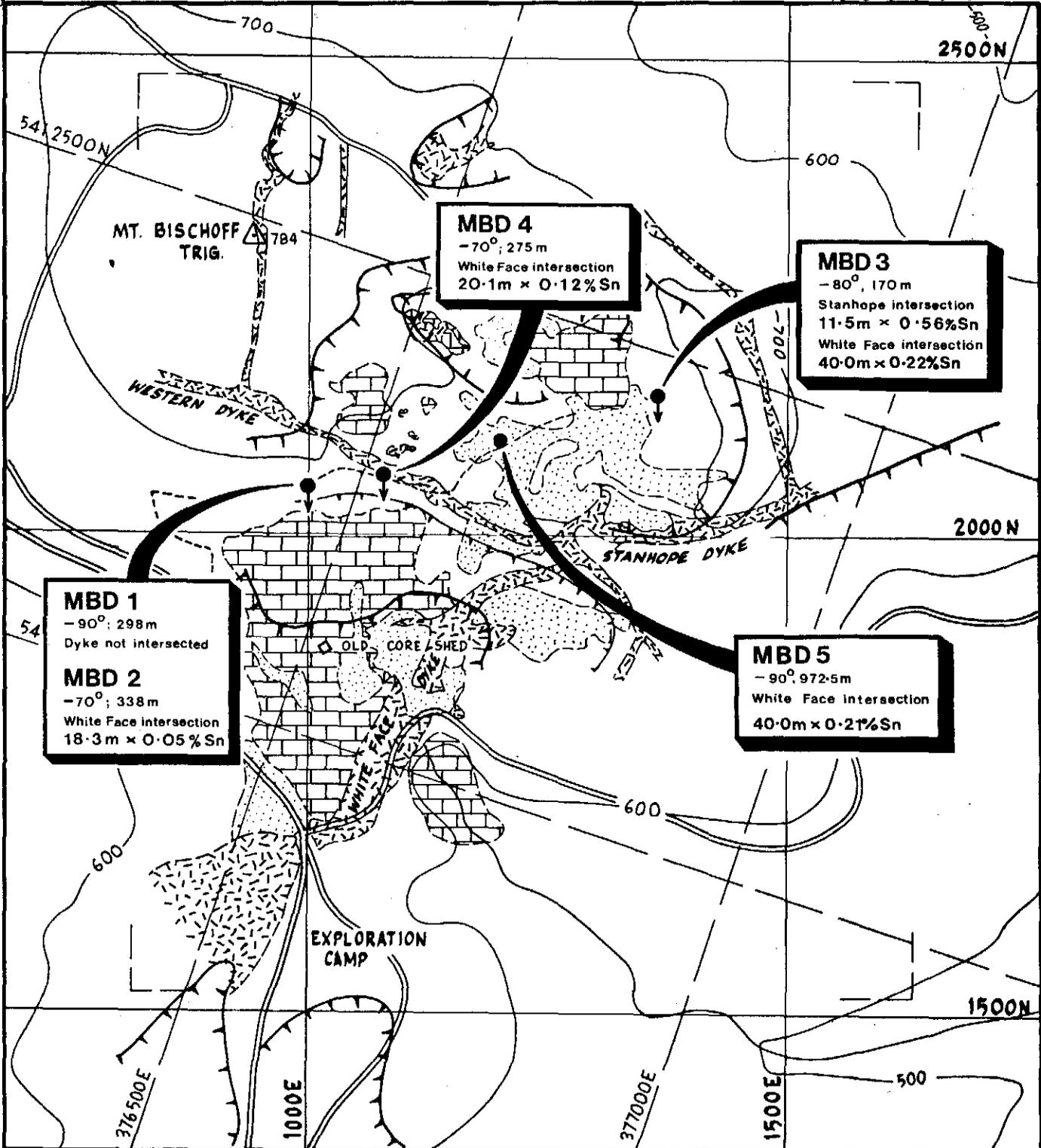
"High Grade" Porphyry

White Face/Stanhope Dyke 2,352,200 tonnes at 0.53% Sn

(See P 15)

Pit to extract White Face/
Stanhope and Queen Dykes
plus other incidental
reserves (Dolomite,
Argillite, other Por-
phyries) to RL 500 m 22,823,300 tonnes at 0.23% Sn
1:2.74 reserve to waste ratio.

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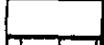
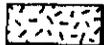
MBD 1
-90°, 298m
Dyke not intersected

MBD 2
-70°, 338m
White Face intersection
18.3m x 0.05% Sn

MBD 4
-70°, 275m
White Face intersection
20.1m x 0.12% Sn

MBD 3
-80°, 170m
Stanhope intersection
11.5m x 0.56% Sn
White Face intersection
40.0m x 0.22% Sn

MBD 5
-90°, 972.5m
White Face intersection
40.0m x 0.21% Sn

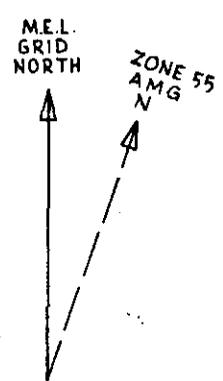
-  Mine rubble
-  Argillites
-  Dolomite mineralized in parts.
-  Porphyry.

● Hole completed.

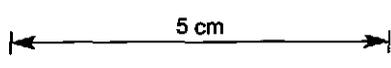
METRES
0 100 200

1: 6000

500M. GRIDS



METALS EXPLORATION LTD.
MT. BISCHOFF TIN PROSPECT
MT. BISCHOFF MINE AREA
M.E.L. DRILLING PROGRAMME



1. INTRODUCTION

Field work commenced in June, 1978 and the Stage I Exploration Programme was basically completed by December, 1978. The site personnel comprised two geologists, a technician and a field assistant. Accommodation was in caravans next to a core shed which was constructed on an area applied for under Temporary Licence adjacent to that held by Comstaff Pty. Ltd., number A8353 R/35.

The main effort of the Exploration Programme was the drilling of 5 diamond drill holes. The first 4 holes were designed to test the tin mineralisation in the White Face/Stanhope porphyry dyke below previously drilled intersections, and the fifth hole, programmed to 1000 metres, was drilled to ascertain whether a repetition or further dolomite horizons existed at depth, whether a mineralised porphyry stock existed at depth and possibly whether a mineralised greisenized granite lay beneath the mountain.

Other work carried out included gridding and surveying, a ground magnetic survey, reboxing and sampling of some of the old core, sampling and logging all new core, mineralogical examinations and tin sizing and liberation metallurgy. An airborne magnetic survey is planned for completion by 15th February, 1979.

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2. SURVEYING

A grid has been laid in over that part of Mt. Bischoff that contains most of the old workings. Grid spacing is 20 metres by 20 metres (horizontal) and an area of about 300,000 sq. metres has been covered. Grid north is on a magnetic bearing of $330^{\circ} 04'$ or true bearing of $342^{\circ} 26'$ (parallel to the main tunnel at its portal).

About 30 semi-permanent survey stations have been established within the area using a Wild T16 Theodolite. The Mt. Bischoff trig was tied in to the grid and has the following co-ordinates:

2317.80N 934.63E and RL 783.80.

The collars of the 5 holes drilled during the programme were picked up by Theodolite and the sections on which they were drilled were stadia surveyed.

Downhole surveys were carried out on the diamond drill holes using an Eastman single shot photo-logger. Readings were taken approximately every 30 metres.

3. GEOPHYSICS

A ground magnetometer survey traversing the gridded area was performed between the 9th and 17th October, 1978. A McPhar

Model GP-70 proton magnetometer, with the sensor on top of a 10 ft aluminium staff, was used. Readings were taken every 10 metres on lines (grid N-S) 20 metres apart and about 1500 measurements were recorded. The maximum diurnal variation for any one day was 21 gammas and all readings plotted have been corrected to a common base.

Background readings were about 62,000 gammas with background variations of 10 to 20 gammas in "flat areas" and 200 to 300 gammas generally. Readings over pyrrhotite sulphide lode areas were typically of the order of 67,000 to 68,000 gammas, i.e. 5000 to 6000 gammas above background. A number of small apparent anomalies were caused by surface metal (old rails, trucks, wire etc.) which is ubiquitous.

Four main anomalous areas were revealed :

- (i) Gossan/Greisen Face. The anomalous area extends over about 200 metres from Gossan Face to Pig Flat and corresponds to outcropping sulphide (pyrrhotite) and gossan. A maximum reading of 71,000 gammas was recorded. Massive pyrrhotite that has been intersected in drill holes 30 to 40 metres below the surface to the south of Greisen Face failed to give any anomalous magnetic readings at the surface.

- (ii) Slaughteryard Face. The outcropping massive sulphide in Slaughteryard Face gave anomalous readings, peaking at 68,100 gammas.
- (iii) Brown Face West. As for Slaughteryard Face with values peaking at 64,850 gammas.
- (iv) Brown Face East. An anomalous area about 150 metres long and 100 metres wide has a peak value of 67,300 gammas. The zone is at the eastern end of Brown Face, and coincides with outcropping limonitic gossan. This gossan may represent oxidized pyrrhotite, and fresh pyrrhotite may exist at depth.

Results of the airborne magnetic survey over the whole of the Exploration Area will be the subject of a separate report.

4. DIAMOND DRILLING

The diamond drilling programme was carried out in two stages. The first stage, involving 4 holes targetted on the White Face/ Stanhope porphyry dyke commenced on 13th August, 1978, and was completed on 29th September, 1978. In the second stage, a "deep" hole, MBD 5, was drilled between 25th October, 1978 and 17th December, 1978. A total of 2053.6 metres was drilled in the five holes.

The drilling programme was contracted to Longyear Australia Pty. Ltd., using an F38 rig for the first four holes and an F44 rig for the deep hole.

The first hole, MBD 1, was planned to intersect White Face dyke at about 220 metres depth, but no porphyry was cut. Re-interpretation of the intersection in hole B9 suggested that it had entered and exited the dyke through the hanging-wall and that thus the porphyry had rolled over and was more steeply dipping than originally interpreted. MBD 2 was then drilled from the same collar site but at an angle of 70° and struck porphyry between 293.1 and 311.3 metres containing an average grade of 0.04% Sn.

MBD 3's target was the Stanhope dyke, which is the faulted continuation of White Face dyke, and which had never previously been drilled. Two porphyries were intersected :

65.85 to 77.3 metres (average grade 0.56% Sn) and
108.3 to 148.35 metres (average grade 0.21% Sn including
12 metres at 0.45%).

Recent interpretation suggests that the upper porphyry is the Stanhope dyke and the lower one is White Face dyke, with the offsetting fault encountered in the drill hole between the two intersections.

The fourth drill hole was on a section 80 metres to the east of

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MBDs 1 and 2. This hole cut the White Face dyke between 188.8 and 208.9 metres and had an average grade of 0.12% Sn.

The deep hole, MBD 5, was drilled to test for the following possibilities :

- (i) A repetition or further dolomite horizons at depth.
- (ii) A mineralised porphyry stock at depth.
- (iii) A mineralised greisenized granite beneath the mountain, from which had emanated the porphyries.

Neither the first nor third possibilities was encountered in the 972.5 metres drilled. An aggregate of 111 metres of porphyry rock was penetrated in 8 dykes, the main three being :

176.5-224.6 metres	average grade	0.18% Sn	-	White Face dyke
307.1-324.8	"	"	"	0.14% Sn - Lower Stanhope or Queen dyke
783.7-808.2	"	"	"	0.01% Sn - ? White Face dyke

No major vein systems were intersected in any of the five drill holes.

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5. CORE LOGGING

The core from all five drill holes was geologically logged in fair detail, and these logs are appended. The logs include core recovery, lithology and description, veining above 5 mm thickness with core angles, bedding angles to core, description and visual estimation of mineralisation.

The main classification of rock-types encountered (these are often interbedded) is :

Shale)	sometimes sericitic)	Sometimes previously
))	
Silty shale)	or carbonaceous)	called Argillite
))	
Siltstone))	
))	
Sandstone))	previously called
))	
Quartzite))	Quartzite

Quartz Feldspar Porphyry

Twenty-two samples were submitted to Central Mineralogical Services for petrological description. These samples comprised :

- 9 Quartz Porphyry
- 6 Silty Shale
- 2 Shale
- 2 Quartzite
- 2 Siltstone
- 1 Sedimentary Breccia

The descriptions of the samples are appended.

6. SAMPLING

The core from MBD 1 to 5 was sampled either by splitting or grinding, the former using a diamond saw, the latter using a core grinder that takes a geochemical sample along the length of the core.

All porphyry and significant vein intersections were split in 2 metre intervals (where applicable). Hole MBD 3 was split due to the fractured nature of the core making it difficult to grind. Hole MBD 1 was also split in order to compare the assay results obtained from ground and split samples from equivalent intervals.

All holes except MBD 3 were sampled in 2 metre intervals by grinding. Any section that assayed higher than 0.1% was then split and re-submitted for assay.

A total of 792 samples for 1576.3 metres of ground core was despatched for analysis, and 464 samples for 898.15 metres were split and despatched.

Portions of 15 old diamond drill holes were selected for sampling and assaying. After a search of the Comstaff records it was found that some of these holes had previously been

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split and assayed. As a result parts of the core of 13 holes were reboxed, split and sent for assay. The sample interval was generally 2.5 metres. A total of 403 samples for 947.77 metres was split.

The ground samples were sieved to -80 mesh and despatched direct to the analysts. The split core was sent to MEL's Kalgoorlie Laboratories for crushing, quartering and pulverizing before being on-routed to the analysts. Residues of the split core were kept in Kalgoorlie.

7. ASSAY RESULTS

The analysing of samples was done by AMDEL in Adelaide. Ground drill core samples were analysed for tin by XRF (B 1 method) and split samples for tin (XRF B 1 method), copper, lead, zinc, silver by AAS, and every fifth sample for tungsten (XRF B 1 method). Any samples above 1% Sn were analysed by XRF B 2 method.

Eight samples were checked for gold content and all contained < 0.05 ppm. Six samples were run for 70 element qualitative spectrographic analysis and six samples for silicate analysis - these results are appended.

Four samples were checked by AMDEL by wet chemical analysis and results were within 50 ppm of the XRF values. Fifty-three

samples were also sent to Pilbara Laboratories P.L. in Perth for chemical checking, however, their method proved to be unsuccessful and no results were obtained.

All the assay results are enclosed in the drill log files and all tin assay results > 1000 ppm Sn are plotted on the sections.

The following significant intersections were found :

<u>Hole No.</u>	<u>Depths (m)</u>	<u>Length(m)</u>	<u>Grade % Sn</u>	<u>Rock type</u>
MBD 1	3.4 - 8.0	4.6	0.28	Silty Shale
	92.0 - 116.0	24.0	0.18	Sandstone & veins
MBD 2	3.0 - 10.0	7.0	0.19	Silty Shale
	38.0 - 44.0	6.0	0.33	Siltstone & veins
MBD 3	65.9 - 77.3	11.4	0.56	Quartz Porphyry
	77.3 - 84.0	6.7	0.89	Silty Shale
	84.0 - 86.1	2.1	0.27	Quartz Porphyry
	112.5 - 146.5	34.0	0.26	" "
MBD 4	36.0 - 38.0	2.0	1.07	Siltstone & veins
	140.7 - 142.8	2.1	0.41	Sulphide vein
	176.5 - 178.25	1.75	0.67	" "
	200.8 - 208.9	8.1	0.22	Quartz Porphyry
	208.9 - 210.9	2.0	0.43	Siltstone & vein
	223.4 - 224.1	0.7	0.41	Vein
MBD 5	24.05 - 24.30	0.25	1.06	Sulphide vein
	118.0 - 120.0	2.0	0.49	Quartzite & veins
	190.5 - 202.5	12.0	0.44	Quartz Porphyry

<u>Hole No.</u>	<u>Depths (m)</u>	<u>Length(m)</u>	<u>Grade % Sn</u>	<u>Rock type</u>
MBD 5	212.5 - 218.5	6.0	0.23	Quartz Porphyry
	312.5 - 322.5	10.0	0.21	" "
	369.5 - 370.2	0.7	1.16	Vein
B 9	NIL			
B 12	141.12- 142.5	1.38	0.45	Quartzite & veins
B 16	NIL			
B 19	NIL			
B 20	NIL			
B 21	NIL			
B 22	130.0 - 135.0	5.0	0.25	Argillite & veins
B 23	NIL			
B 33	NIL			
B 38	120.0 - 122.5	2.5	5.2	Argillite, veins, breccia
	162.5 - 165.0	2.5	1.3	Quartzite, Argillite veins
	180.0 - 190.0	10.0	0.19	Quartzite, Argillite veins
B 54	180.0 - 182.5	2.5	0.94	Quartzite & vein
B 55	NIL			
AAB 5	NIL			

Of the other metals that were analysed the following intersections of interest were found :

<u>Hole No.</u>	<u>Depths (m)</u>	<u>Length (m)</u>	<u>%Cu</u>	<u>%Pb</u>	<u>Grade Ag % Zn</u>	<u>Ag (ppm)</u>	<u>W (ppm)</u>
MBD 1	12.0 - 14.0	2.0			2.2		
	38.0 - 42.0	4.0			1.15	22	
	56.0 - 58.0	2.0			2.3	45	

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<u>Hole No.</u>	<u>Depths (m)</u>	<u>Length (m)</u>	<u>%Cu</u>	<u>%Pb</u>	<u>Grade % Zn</u>	<u>Ag (ppm)</u>	<u>W (ppm)</u>
	92.7 - 92.95	0.25		2.5		90	
	98.0 - 102.0	4.0			2.7	27	
	186.0 - 188.0	2.0			1.4		
MBD 1 wedged	212.4 - 213.2	0.8			1.2		
	256.0 - 258.0	2.0			2.2		
MBD 2	14.0 - 16.0	2.0			5.1		
	20.0 - 22.0	2.0			1.5	35	
	130.0 - 132.0	2.0			2.2		
MBD 4	20.0 - 22.0	2.0		1.1	1.3	35	
	176.5 - 178.25	1.75		1.3	13.9	110	
	223.4 - 224.1	0.7			3.5	42	
MBD 5	80.0 - 82.0	2.0			1.1		
B 9	382.5 - 385.0	2.5			3.8		
B 12	6.0 - 6.7	0.7			2.7		
B 22	82.5 - 85.0	2.5			1.0		
	115.0 - 117.5	2.5			3.6	32	
B 23	77.5 - 80.0	2.5			1.1		

The average grade for the main porphyry bodies struck in holes MBD 2 to MBD 5 is :

Cu 321 ppm, Pb 204 ppm, Zn 386 ppm, Ag 1.55 ppm

The grades for the sediments (and veins) in holes MBD 1 and MBD 3 are :

MBD 1: Cu 206 ppm, Pb 193 ppm, Zn 1448 ppm, Ag 3.72 ppm

MBD 3: Cu 88 ppm, Pb 68 ppm, Zn 276 ppm, Ag 0.39 ppm

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8. RESERVES

Various categories of reserves have been calculated and estimated. The basis of the figures and parameters used are given for each set of calculations.

1. High Grade Dolomite Reserves - Greisen Face

Parameters: Cut-off grade 0.3% Sn (poor recovery can be expected)

Specific Gravity 3.2, Waste 2.55

Between sections 940E and 1020E

Pit end effects to sections 920E and 1040E

Category: Drill Indicated i.e. within 50 metres of
drill hole on sections and 10 metres
between sections

Grade: per drill intersection to half distance to
next drill intersection (NB recoveries were
often poor).

Reserves: 350,000 tonnes at 1.11% Sn

1,399,700 tonnes waste (pit slope angle 45°)

Ratio 1:4 Reserve:waste

2. Other Dolomite Reserves

(a) Beneath Pig Flat

Parameters: cut-off grade 0.3% Sn (as above)

Specific Gravity 3.2

Between sections 1040E and 1100E

Category: Drill inferred i.e. within 50 metres of
drill hole on section and 30 metres
between sections

Grade: per drill intersection to half distance to
next drill intersection (NB recoveries
were often poor)

Reserves: 230,400 tonnes at 0.91% Sn

(b) Remnant Slaughteryard Face Reserves

Parameters: Specific Gravity 3.2

Between sections 1040E and 1080E

Category: Possible

Grade: 0.7% Sn (one grab sample)

Reserves: 61,400 tonnes at 0.7% Sn

(c) Remnant Brown Face Reserves

Parameters: Specific Gravity 3.2

Between sections 1120E and 1160E, and 1240E and 1300E

Category: Possible

Grade: Estimated 0.7% Sn

Reserves: 72,300 tonnes at 0.7% Sn

3. Total Dolomite Reserves

Parameters: As described above

Reserves: 714,100 tonnes at 0.97% Sn

4. White Face/Stanhope Porphyry Dyke "High Grade"

Reserves

Parameters: Cut-off grade 0.3% Sn

Specific Gravity 3.05

Between sections 860E and 1400E

Maximum depth RL 400 m

Categories: Drill Indicated i.e. within 50 metres
of drill hole on sections and 10 metres
between sections

Drill Inferred i.e. between 50 metres
and 100 metres of drill hole on sections
and 10 and 30 metres between sections

Possible i.e. beyond 100 metres of drill
hole on sections and 30 metres between
sections.

Grade: per drill intersection for indicated, where
applicable average of drill holes for
inferred and possible

Reserves:	Drill Indicated	523,500 tonnes at 0.55% Sn
	Drill Inferred	1,128,200 tonnes at 0.54% Sn
	Possible	700,500 tonnes at 0.52% Sn
	Total	2,352,200 tonnes at 0.53% Sn*

5. White Face/Stanhope Porphyry Dyke to RL 500 m

Parameters: Cut-off grade Nil

Specific gravity 3.05

* This specific reserve only available by underground mining.

Between sections 860E and 1400E i.e. known area
of mineralisation

Category: Drill Inferred

Grade: per drill intersection to half distance
to next intersection, and average of drill
holes where applicable

Reserves: 10,414,500 tonnes at 0.24% Sn

6. Queen Porphyry Dyke to RL 500 m

Parameters: Specific Gravity 3.0

Between sections 1220E and 1500E

Category: Possible - volumes calculated from
sections

Grade: 0.25% Sn (A.McI.R.). Four samples in
main tunnel average 0.32% Sn; 17.7 metres
at 0.14% Sn below RL 375 m in MBD 5 may be
Queen Dyke.

Reserves: 2,076,600 tonnes at 0.25% Sn

7. Western Porphyry Dyke to RL 500 m

Parameters: Cut-off grade Nil

Specific Gravity 3.0

Between sections 860E and 1400E

Category: Drill Inferred

Grade: Average of 6 drill intersections and sampling
of two underground openings.

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Reserves: 2,145,400 tonnes at 0.15% Sn

8. Other Porphyry Dykes to RL 500 m

Parameters: Specific Gravity 3.0

Between sections 860E and 1500E

Category: Possible - volumes calculated from
probable average dyke sizes

Grade: Little Wheal and Lower Stanhope dykes have
one, and three drill intersections respective-
ly, the other dykes are estimated.

Reserves:	Summit/Wheal Dyke	630,000 tonnes at 0.1% Sn
	North Face Dyke	420,000 tonnes at 0.15% Sn
	Little Wheal Dyke	551,300 tonnes at 0.07% Sn
	Brown Face Dyke	178,500 tonnes at 0.15% Sn
	Greisen Face Dyke	84,000 tonnes at 0.15% Sn
	Lower Stanhope Dyke	758,600 tonnes at 0.1% Sn

Two dykes, Stanhope Extended and Northern, occur to the east of 1500E. A grab sample from the Stanhope Extended dyke where it crosses the North Valley Road assayed 0.15% Sn.

The potential of these dykes to RL 500 m is :

Stanhope Extended Dyke	5,415,600 tonnes at 0.15% Sn
Northern Dyke	1,282,100 tonnes at 0.1% Sn

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9. Total Porphyry Reserves to RL 500 m

Parameters: As described above

Reserves: 23,956,600 tonnes at 0.19% Sn

10. Porphyry Reserves between RL 500 m and RL 400 m

Parameters: As described above

Reserves:	White Face/Stanhope Dyke	5,194,900 tonnes
	Queen Dyke	398,600 tonnes
	Western Dyke	1,176,000 tonnes
	Summit/Wheal Dyke	252,000 tonnes
	North Face Dyke	210,000 tonnes
	Little Wheal Dyke	225,000 tonnes
	Brown Face Dyke	105,000 tonnes
	Greisen Face Dyke	60,000 tonnes
	Lower Stanhope Dyke	526,200 tonnes
	Stanhope Extended Dyke	3,200,400 tonnes
	Northern Dyke	2,103,100 tonnes
	Total	13,451,200 tonnes

11. Other Reserves

From the present assay information the main zone of relatively high results outside the porphyry and dolomite intersections is in the main tunnel to the south of Queen dyke and encompassing Queen Lode. Here a width of about 50 metres averages 0.17% Sn. Eleven assay results in other openings on

the north side of Brown Face average 0.33% Sn. The north side of Brown Face and the south side of North Face are conspicuously brown stained, limonitic, and slightly gossanous. A possible areal extent of 200 metres by 50 metres of mineralised rock exists, however, the tin may be contained in sulphide lenses similar in mineralogy to the dolomite reserves, rather than in a vein network.

Parameters: Specific Gravity 2.55

Between sections 1120E and 1400E

Depth surface to RL 500 m

Category: Possible

Grade: 0.17% (from main tunnel sampling)

Reserves: 7,794,600 tonnes at 0.17% Sn

12. Vein Reserves

No calculations have been made for quartz vein reserves, but minor potential exists in the known veins eg. North Valley, Queen, Thompson etc., and in veins intersected in some drill holes eg. B 38, B 50.

13. Theoretical Open Pit designed to extract

White Face/Stanhope and Queen Porphyry Dykes

to RL 500 metres

Parameters: All reserves falling within the pit boundary are included.

Specific Gravity as above. Waste 2.55

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Between sections 880E and 1400E

Pit end effects to sections 780E and 1520E

Category: as above

Grade: as above

Reserves: Porphyry Reserves

White Face/Stanhope	11,267,300 tonnes at 0.24% Sn
Queen	2,046,400 " " 0.25% Sn
Western	832,000 " " 0.15% Sn
Greisen Face	84,000 " " 0.15% Sn
Brown Face	74,100 " " 0.15% Sn
North Face	120,000 " " 0.15% Sn

Total Porphyry 14,423,800 tonnes at 0.23% Sn
(1:4.86 reserve to waste ratio)

Dolomite Reserves

High grade (Greisen Face)	350,000 tonnes at 1.11% Sn
Other	254,900 " " 0.66% Sn

Total Dolomite 604,900 tonnes at 0.92% Sn

Other Reserves

Zone around Queen Vein 7,794,600 tonnes at 0.17% Sn

Total Reserves 22,823,300 tonnes at 0.23% Sn

Waste 62,446,700 tonnes (pit slope angle 45°)

Ratio 1:2.74 (reserves to waste)

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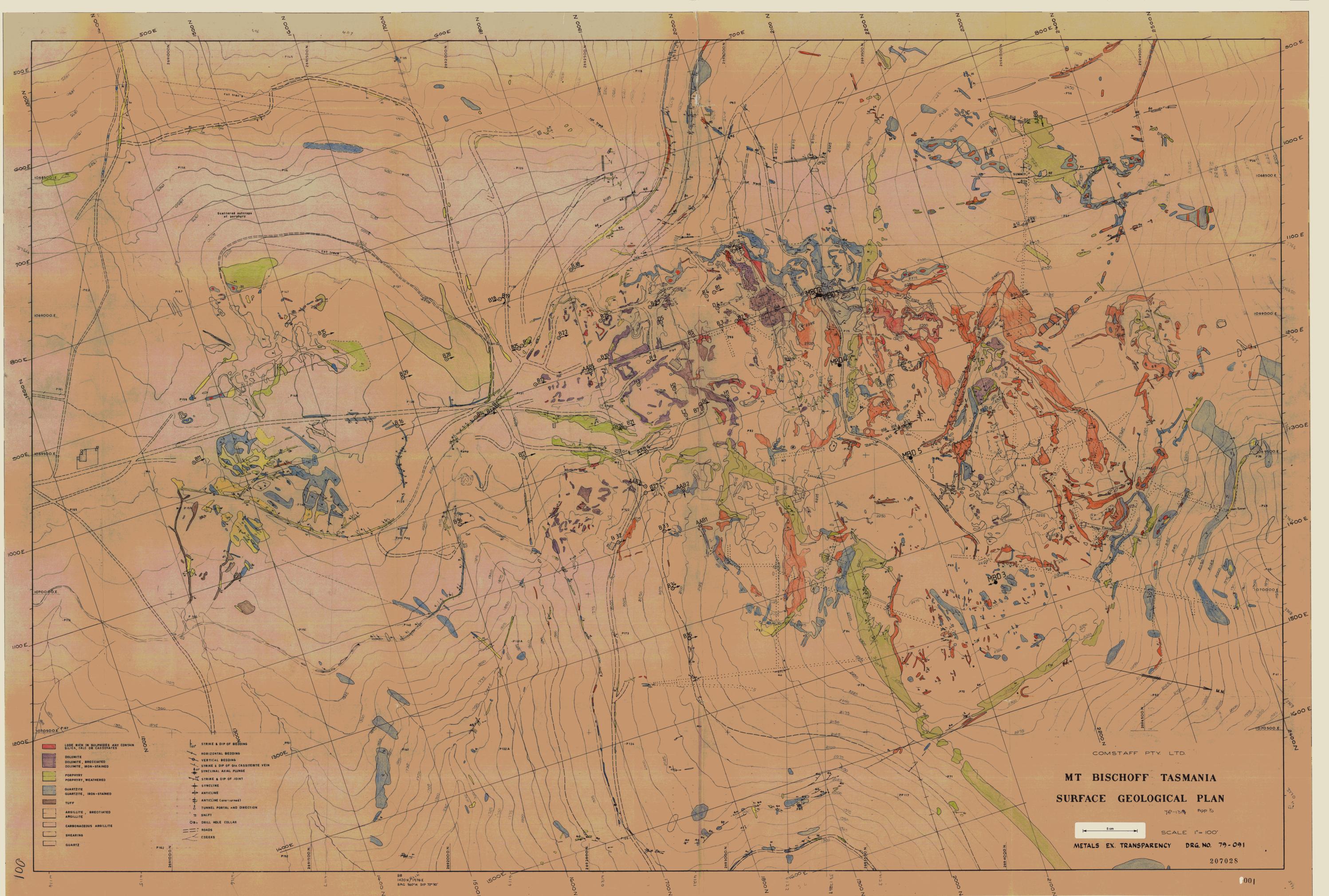
9. METALLURGY

Six samples have been studied by AMDEL for tin sizing and liberation. The results are in a separate report. *

The samples submitted were :

<u>Sample No.</u>	<u>Location</u>	<u>Rock type</u>	<u>% Sn</u>
94413	MBD 1 96 - 98 m (part of)	Sediments only	0.175
94416	MBD 1 98 -100 m (part of)	Veins only	0.43
94425	MBD 1 18 - 20 m	Sediments, sulphides, veins	0.21
94469	MBD 3 128.5-130.5m	Mineralised porphyry	0.56
95013	MBD 1 134 -136 m	Sediments, sulphides, veins	0.092
95679	Slaughteryard Face	Massive sulphide	(0.75)

* Now included as an appendix in this report.



- LOOSE RICH IN SULPHIDES MAY CONTAIN SILICA, TALE OR CASSITERITES
- DOLOMITE
- DOLOMITE, BRECCIATED
- DOLOMITE, IRON-STAINED
- PORPHYRY
- PORPHYRY, WEATHERED
- QUARTZITE
- QUARTZITE, IRON-STAINED
- TUFF
- ARSILLITE, BRECCIATED
- ARSILLITE
- CARBONACEOUS ARSILLITE
- SHEARING
- QUARTZ

- STRIKE & DIP OF BEDDING
- HORIZONTAL BEDDING
- VERTICAL BEDDING
- STRIKE & DIP OF SIX CASSITERITE VEIN
- SYNCLINAL AXIAL RUNGE
- STRIKE & DIP OF JOINT
- SYNCLINE
- ANTICLINE
- ANTICLINE (overturned)
- TUNNEL PORTAL AND DIRECTION
- SHUFT
- DRILL HOLE COLLAR
- ROADS
- CREEKS

COMSTAFF PTY. LTD.

MT BISCHOFF TASMANIA
SURFACE GEOLOGICAL PLAN

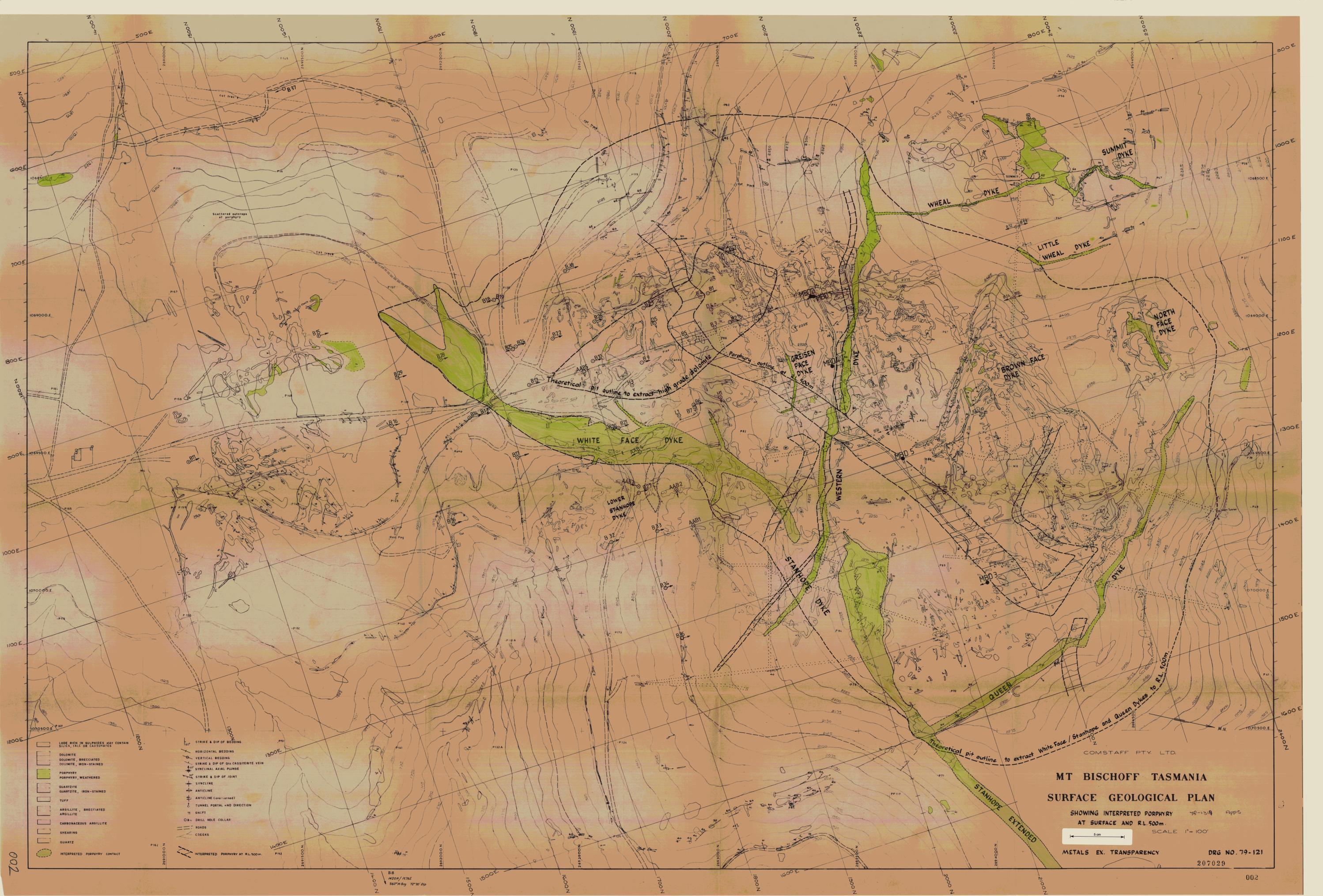
78-134 APP 5



SCALE 1" = 100'

METALS EX. TRANSPARENCY DRG. NO. 79-091

207028



- LOSE RICH IN SULPHIDES MAY CONTAIN SILICA, TALC OR CARBONATES
- DOLOMITE
- DOLOMITE, BRECCIATED
- DOLOMITE, IRON-STAINED
- PORPHYRY
- PORPHYRY, WEATHERED
- QUARTZITE
- QUARTZITE, IRON-STAINED
- TUFF
- ARGILLITE, BRECCIATED
- ARGILLITE
- CARBONACEOUS ARGILLITE
- SHEARING
- QUARTZ
- INTERPRETED PORPHYRY CONTACT

- STRIKE & DIP OF BEDDING
- HORIZONTAL BEDDING
- VERTICAL BEDDING
- STRIKE & DIP OF GREY-CASSITERITE VEIN
- SYNCLINAL AXIAL PLUNGE
- STRIKE & DIP OF JOINT
- SYNCLINE
- ANTICLINE
- ANTICLINE (see notes)
- TUNNEL PORTAL AND DIRECTION
- SHaft
- DRILL HOLE COLLAR
- ROADS
- CREEKS
- INTERPRETED PORPHYRY AT R.L. 500m

MT BISCHOFF TASMANIA
SURFACE GEOLOGICAL PLAN

SHOWING INTERPRETED PORPHYRY 48-1219 App 5
AT SURFACE AND R.L. 500m
SCALE 1" = 100'

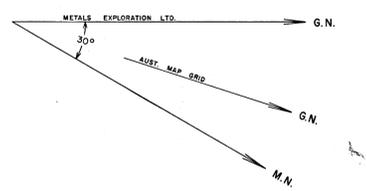
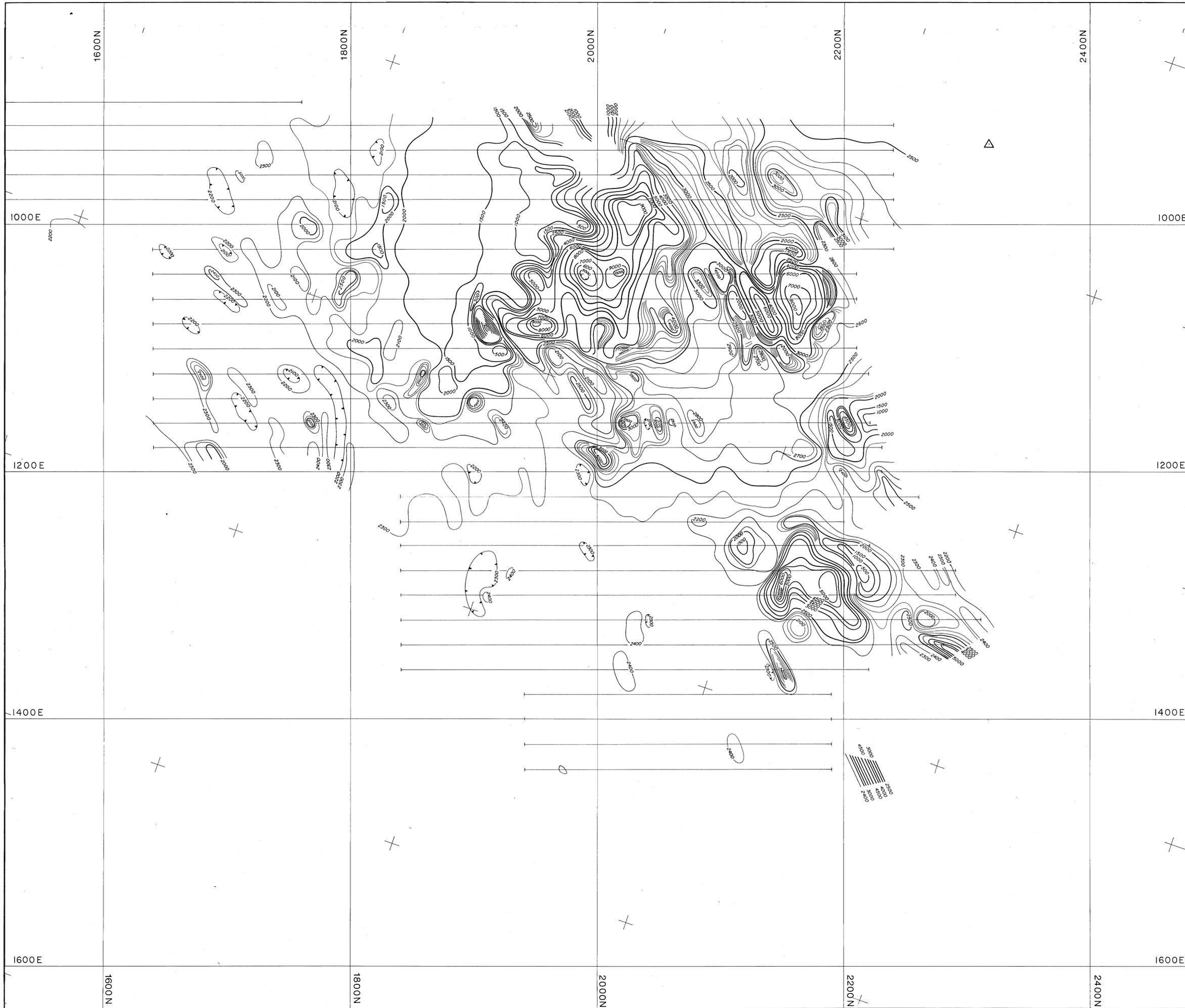
METALS EX. TRANSPARENCY

DRG NO. 79-121
207029

COMSTAFF PTY. LTD.

002

002



GRIDS : 200 m. M.E.L. grid in full lines
200 m. A.M.G. as intersections

Contour interval : 100 μ (with 500 μ index)
Add 60,000 μ to all contour values to get total magnetic intensity.
+ means no reading available.

Survey by A. Alexander using McPhor proton magnetometer (Model GP-70) with sensor on 10 ft. aluminium staff, and taking readings every 10m. on 20m. spaced lines.

See Drg. No. 78-176 for readings and Drg. No. 78-177 for notes on possible sources of magnetic interference.

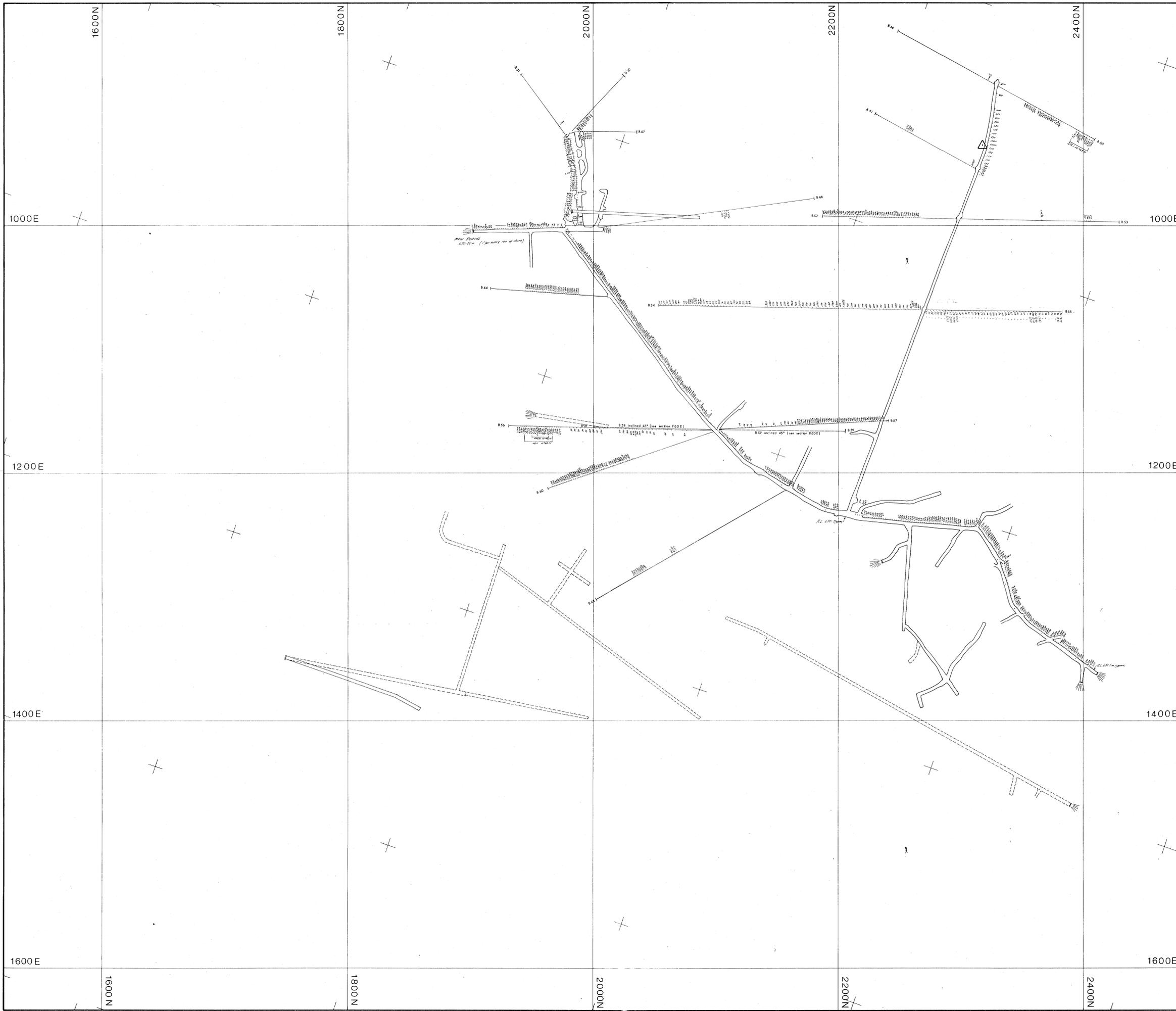


METALS EXPLORATION LIMITED
MOUNT BISCHOFF TIN PROSPECT
WARATAH, N.W. TASMANIA 78-13,19 App 5

**GROUND MAGNETIC SURVEY
OF MOUNT BISCHOFF MINE AREA
OCTOBER 1978**

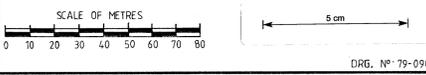
TOTAL MAGNETIC INTENSITY CONTOURS

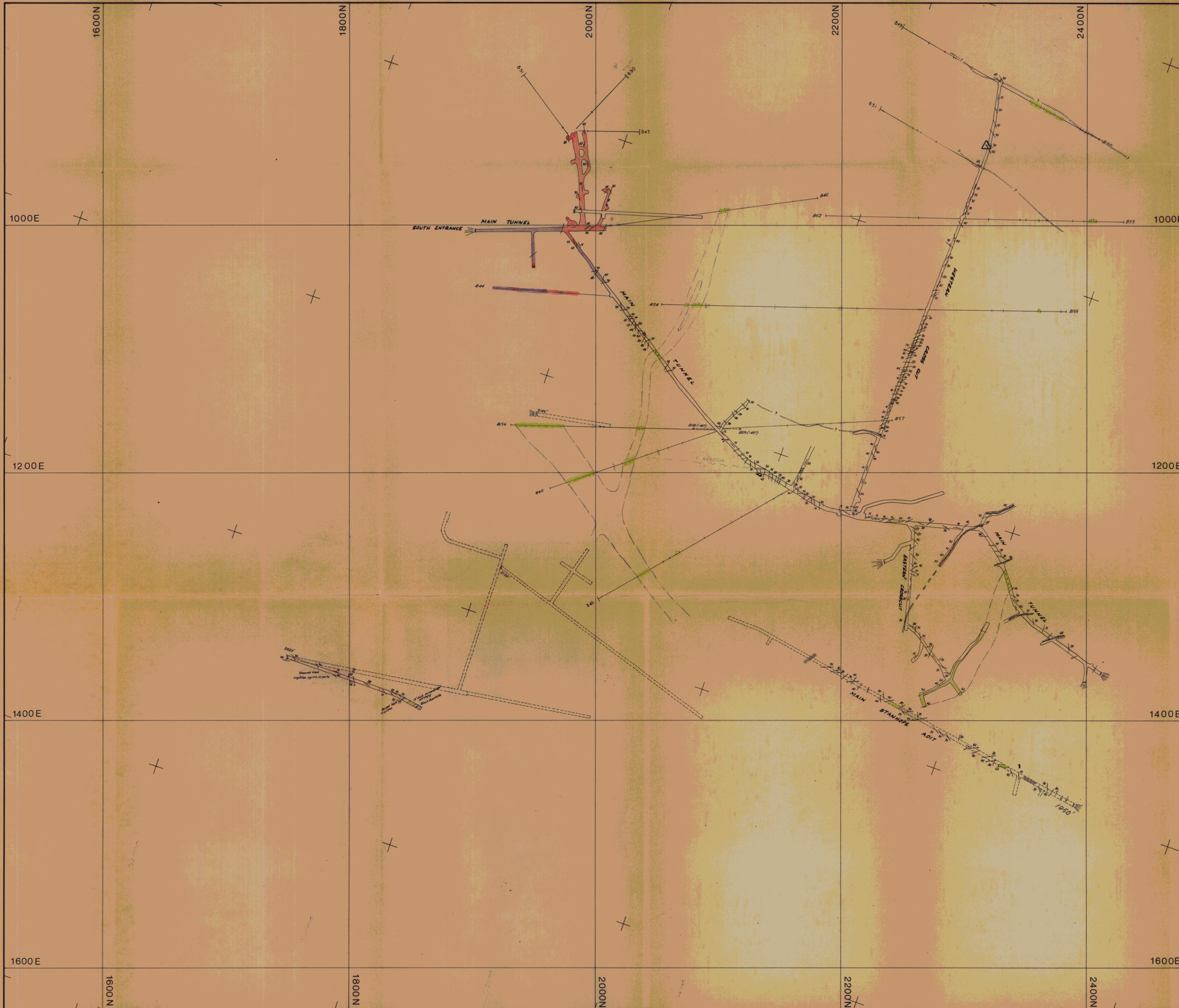
SCALE 1:1200 DATE: DEC. 1978 Drg. No. 78-175
Drawn by Kemp Drafting 207030



NOTE: ASSAYS BY XRF METHOD.

METALS EXPLORATION LIMITED
 MT. BISCHOFF TIN PROSPECT
 ASSAY PLAN OF SOME
 UNDERGROUND WORKINGS
 AT MAIN TUNNEL LEVEL 78-1319 - APP 5
 SCALE 1:1200 (100 ft = 1 in.) 207031
 200 m M.E.L. GRID





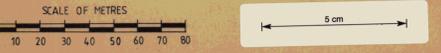
- Leds rich in sulphides, may contain silica, talc or carbonate
- Dolomite
- Dolomite, brecciated
- Dolomite, iron stained
- Porphyry
- Porphyry, weathered
- Quartzite
- Quartzite, iron stained
- Tuff
- Argillite, brecciated
- Argillite
- Carbonaceous argillite
- Shearing
- Quartz

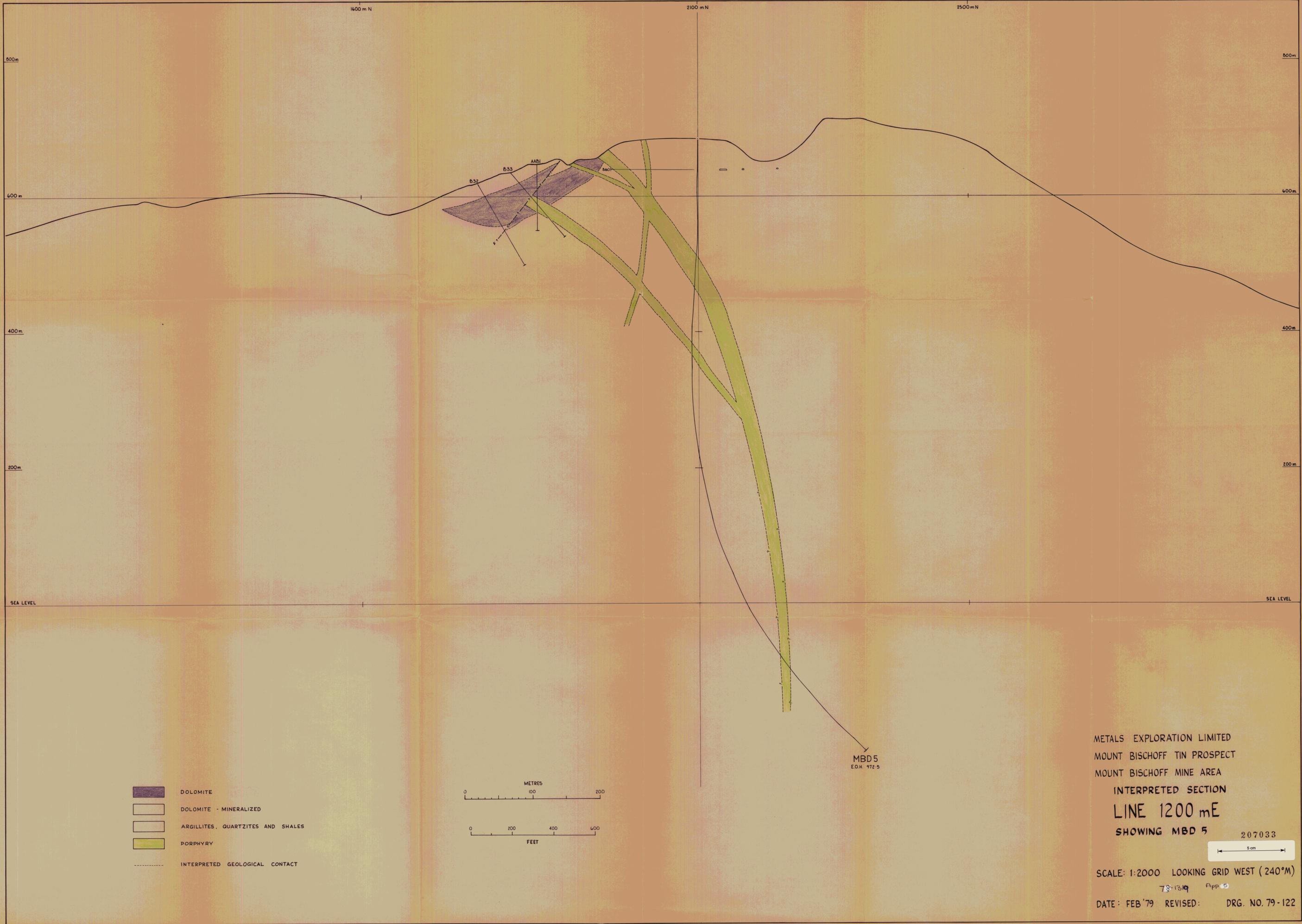
NOTE: TRACED FROM COMSTAFF PLAN NO MTB/15

METALS EXPLORATION LIMITED
 MT BISCHOFF TIN PROSPECT 78-1219 App 5.
 GEOLOGICAL PLAN OF SOME
 UNDERGROUND WORKINGS
 AT MAIN TUNNEL LEVEL

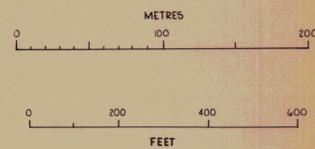
SCALE 1:1200 (100 ft=1in.)

200 m MEL. GRID 207032



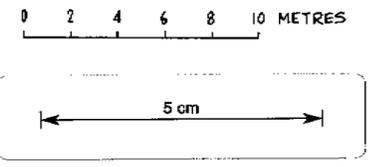
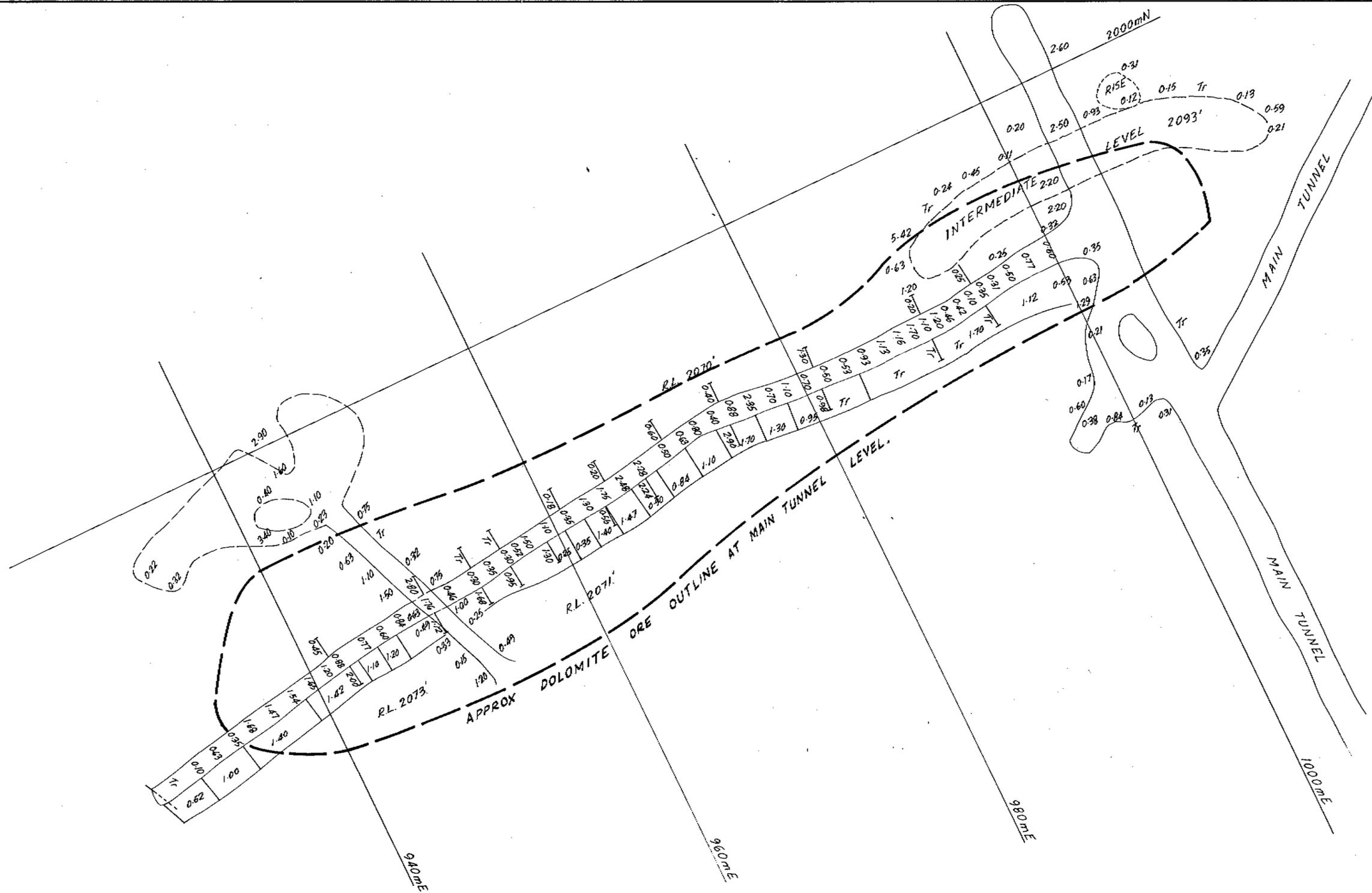


- DOLOMITE
- DOLOMITE - MINERALIZED
- ARGILLITES, QUARTZITES AND SHALES
- PORPHYRY
- INTERPRETED GEOLOGICAL CONTACT



METALS EXPLORATION LIMITED
MOUNT BISCHOFF TIN PROSPECT
MOUNT BISCHOFF MINE AREA
INTERPRETED SECTION
LINE 1200 mE
SHOWING MBD 5 207033

SCALE: 1:2000 LOOKING GRID WEST (240°M)
78-1319 APP 5
DATE: FEB '79 REVISED: DRG. NO. 79-122



METALS EXPLORATION LTD.
 MT. BISCHOFF TIN PROSPECT
 WARATAH, NORTH-WEST TASMANIA.
ASSAY PLAN
 MAIN TUNNEL - WEST DRIVE
 DOLOMITE - SULPHIDE LODGE

From Dept of Supply and Shipping 1944.

Note: Assays are by VANNING
 not chemical assays.

DRG. NO. 78-039

78-1319

207035

OPEN FILE

MT. BISCHOFF TIN PROSPECT

(Exploration Area being part of EL 5/63)

TASMANIA

REPORT ON STAGE I PROGRAMME

VOLUME II

A. Jannink

January, 1979.

DRILL LOGS

1001

SILTY SHALE with interbedded fine grained QUARTZOSE SANDSTONE.
 shale: Grey, siliceous, sericitic, with much soft-sediment deformation.
 Sandstone: Grey, hard.

3.40-60.7 m.
 (57.30)

Veins etc.
 (all veins over 50mm noted).

Mineralisation.
 (does not include veins over 5mm).

- 6-44: 50mm. 35° Qtz-py-limonite.
- 18-2: 105mm. 55° Qtz-carb-py-arseno.
- 20: Bedding 40°.
- 21-2: 140mm. 30° Py-sp-carb.
- 30-8: 80mm. 20° Qtz-carb-py-arseno-po-sp.
- 38-7: 70mm. 25° Qtz-carb-sp.
- 41-9: 60mm. 25° Py-sp.
- 51: Bedding 70°.

7-10% po > py.
 Mainly in ultra fi gr disseminations often arranged in bedded laminae.
 Also in thin stringers and veinlets.
 Trace sp, gn, cp.

7-10%

QUARTZOSE SANDSTONE and SILTSTONE with minor silty shale.
 Grey, very hard and siliceous.
 Finely bedded with much soft sediment disruption.

60.7-108.85 m
 (48.15)

- 92-1: Bedding 58°.
- 92-95: 100mm. 40° Qtz-carb-py-gn.
- 98-7-99-6: 30° Po-py-arseno-sp.
- 99-9: 70mm. 25° Carb-sp.

5% po > py.
 Mainly in bedded disseminations (po > py) and in stringers and tiny veinlets (py > po).

5%

7% po >> py.
 Mainly in bedded disseminations and bedded stringers.

7%

MASSIVE QUARTZOSE SANDSTONE or IMPURE QUARTZITE. Grey, very hard.

108.85-127.50
 (18.65)

- 100-2: 70mm. 10° Qtz-carb-sp-arseno.
- 100-4: 100mm. 55° sp-arseno-qtz.
- 102-55: 75mm. 45° Py / bedding.
- 103-5: 80mm. 35° Py-arseno-sp.

5-7% py > po. Mainly in evenly disseminated grains and blades up to 1mm.
 Trace sp or cassiterite.

5-7%

QUARTZOSE SILTSTONE and QUARTZOSE SANDSTONE.
 Grey and bluish-grey. Hard. Irregularly bedded.

127.5-150.15
 (22.65)

- 128-8: 75mm. 45° Sp. Cassiterite.
- 132-6: 100mm. 50° Qtz-py. W. cassit.
- 135-5: Bedding 60°.
- 140-3: 70mm. 30° Py-arseno-cassit.
- 144-7: 75mm. 35° Qtz-py.
- 148-4: 60mm. 45° Py-sp-qtz.

7% po >> py. Largely in ultra fi gr disseminations. Often bedded, concentrated in beds of bluish siltstone. Also in thin bedded & crosscutting stringers.

7%

MASSIVE QUARTZOSE SANDSTONE

150.15-158.00
 (7.85)

- 155-4-158-75: 210mm. 45° Py-arseno-qtz.

3-5% py > po. Trace sp or cassiterite.

3-5%

SILICEOUS BEDDED SILTSTONE, MASSIVE QUARTZOSE SANDSTONE and lower SILTY SHALE and CHERT.
 Grey + brownish-grey (tourmalinitic). Most rocks siliceous and hard. Increasingly massive with depth.

158-206.00
 (48.00)

- 161-4: 140mm. 30° Py-po-arseno.
- 164: Bedding 73°.

5-7% po >> py. Mainly in fi gr disseminations. Some stringers and veinlets.

5-7%

5% py >> po. Mainly in stringers and veinlets. Also disseminated. Minor sp.

5%

3-5% po > py. Mostly in bedded disseminations. Py mainly in stringers.

3-5%

Hole lost at 206m - bit jammed Wedged off at 179.5m and Continued

MBDI - Wedged.

QUARTZOSE SILTSTONE and SANDSTONE

179.5-187.20
 (7.70)

- 185-1: 50mm. 35° Py-qtz-arseno-cassit.

5-7% po = py. Disseminated and stringers.

5-7%

MASSIVE QUARTZOSE SANDSTONE

187.2-194.00

- 188-55: 50mm. 45° Carb-py-sp.

7-10% py - disseminated.

7-10%

QUARTZOSE and SERICITIC BEDDED SILTSTONE, QUARTZOSE SANDSTONE; Minor interbedded silty shale and chert.
 Some soft-sediment deformation. Rocks more massive with depth.

194-298.10
 (104.10)

- 207-35: 75mm. 55° Qtz-carb-arseno-qtz-arseno.
- 212-35-213-15: 22° Py-po-arseno.
- 214-1: 60mm. 45° Py-sp-qtz.

7% po >> py. Mainly disseminated - often concentrated in beds of bluish-grey siltstone. Also stringers and veinlets. Trace sp + cp.

7%

3-4% po >> py. As above. Trace sp + cp. Sulfides tending to decrease with depth.

3-4%

- 226-5: Bedding 78°.

- 254: Bedding 65°.
- 257-3: 50mm. 30°.

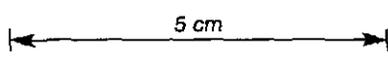
- 268-25: 75mm. 20° Py-qtz.

- 288: Bedding 55°.

2% py > po - Mainly in veinlets.

2%

END OF HOLE.



METALS EXPLORATION LTD.
& SUBSIDIARY COMPANIES



MINERAL EXPLORATION
DIAMOND DRILL LOG

003

Prospect, area, project or mine. MT. BISCHOFF HOLE No. MBD1

COLLAR LOCATION

Grid name _____ Rectangular space co-ordinates _____

PLANAR CO-ORDINATES ELEVATION

(1) MBJV 2059.67 m N 1000.05 m E 683.50m

(2) _____ N _____ E _____

(3) Aust. Map Grid _____ m E _____ m N _____ m A.H.D.
PRECISE / APPROX.

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

Mineral Tenement EL. 5/63 Holder COMSTAFF PTY. LTD.

Cadastral location and details _____
CROWN LAND / PRIVATE _____

Details of down hole location-survey methods. EASTMAN
Single Shot Photo-logging

Purpose of drilling and anticipated lengths to targets.
To intersect tin mineralization in "White's" Porphyry dyke between 210m and 260m

Inclination at collar VERTICAL

Total length 298.1m

Commenced: 13 / 8 / 1978
Completed: 31 / 8 / 1978

Drilling contractor LONGYEAR AUSTRALIA PTY. LTD.
LONGYEAR F38 RIG

Core size and non-coring (NC)
TRICONE 0 TO 2.8m
NQ 2.8m TO 96.0m
BQ 96.0m TO 298.1m

Results of down hole location-survey.

LENGTH FROM COLLAR m	W.C. BEARING type magnetic	DIP
30	330°	285°
60	320°	280°
90	320°	287°
119	310°	285°
153	330°	285°
177	320°	285°
210 w/dged	235°	287°
237 "	240°	287°
267 "	235°	287°
297 "	220°	280°

Comments on drilling. The bit was jammed at 206m and 30 metres of rods and barrel abandoned in the hole. A wedge was placed at 174-177 metres and drilling continued. 2.8m NQ rod left in hole.

Legend for graphic log column (see drill log for Hole No. _____) FIELD ROCK NAME, ETC.

DERWENT PENCIL NO. _____

Symbols and abbreviations for drilling notes column.

LOGGED BY J. E. FURVIS FROM 0 TO 298.1m DATE Sept 1978

LOGGED BY _____ FROM _____ TO _____ DATE _____

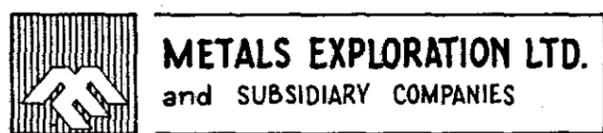
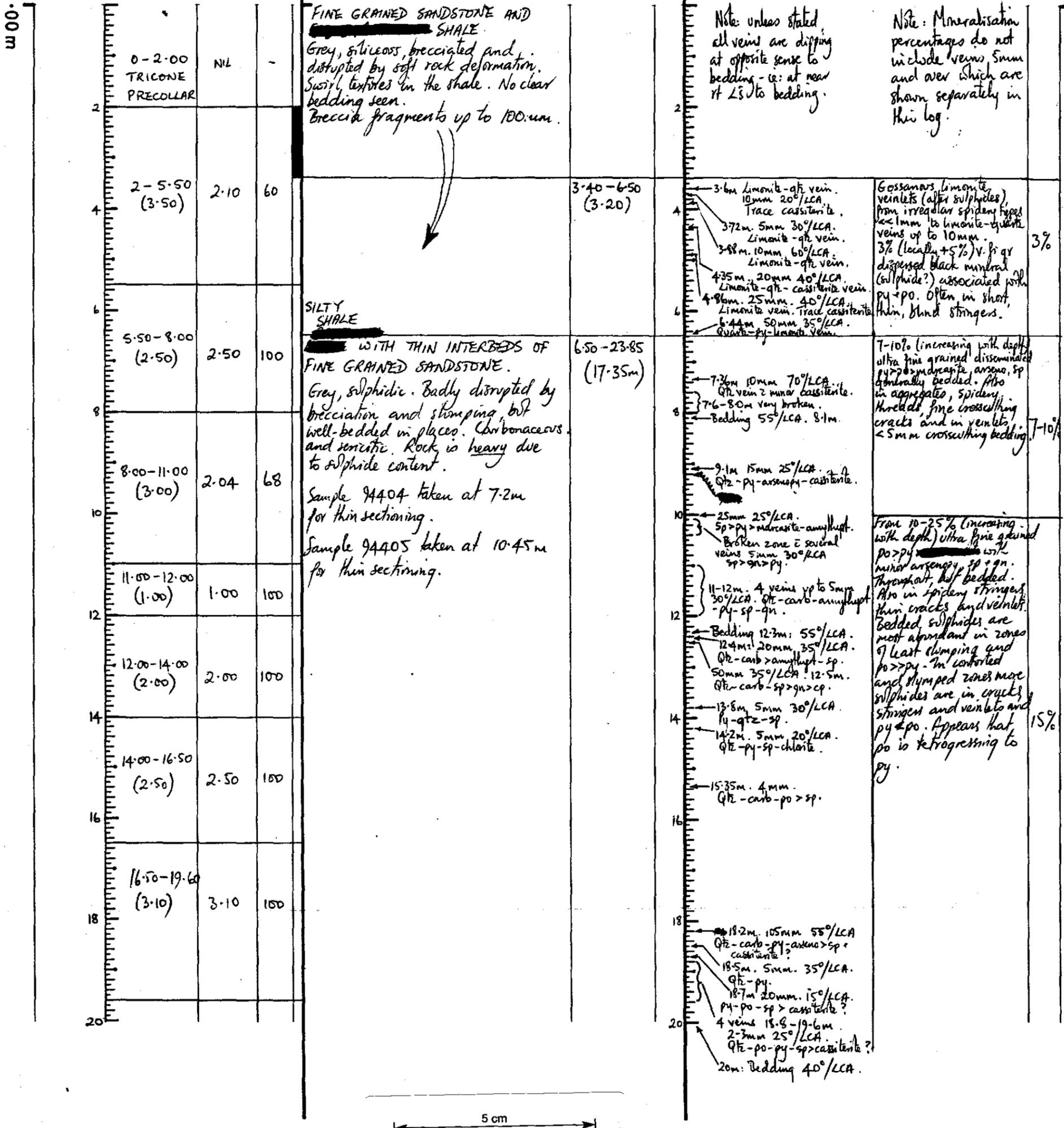
LOGGED BY _____ FROM _____ TO _____ DATE _____

Company managing exploration programme. METALS EXPLORATION LTD

HOLE No. MBD1
Log sheet 1 of _____

207038

DRILLING NOTES	DRILL ADVANCE (M. m_2) & LENGTH FROM COLLAR (M. m_2)	LENGTH OF CORE RECOVERED (M. m_2)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (M. m_2) & ADOPT. LENGTH FROM COLLAR (M. m_2)	GRAPHIC LOG	OBSERVATIONS - Commence with length from collar, either point (relates to marker) or 'from-to' (relates to brackets) ATTITUDE OF BEDDING OR FOLIATION; ATTITUDE & SPACING OF JOINTS; ATTITUDE, WIDTH & DESCRIPTION OF SHEARED ZONES [Attitude = angle of structure to long core axis] MINERALIZATION; ETC.	% MINERALIZATION (VISUAL ESTIMATE)
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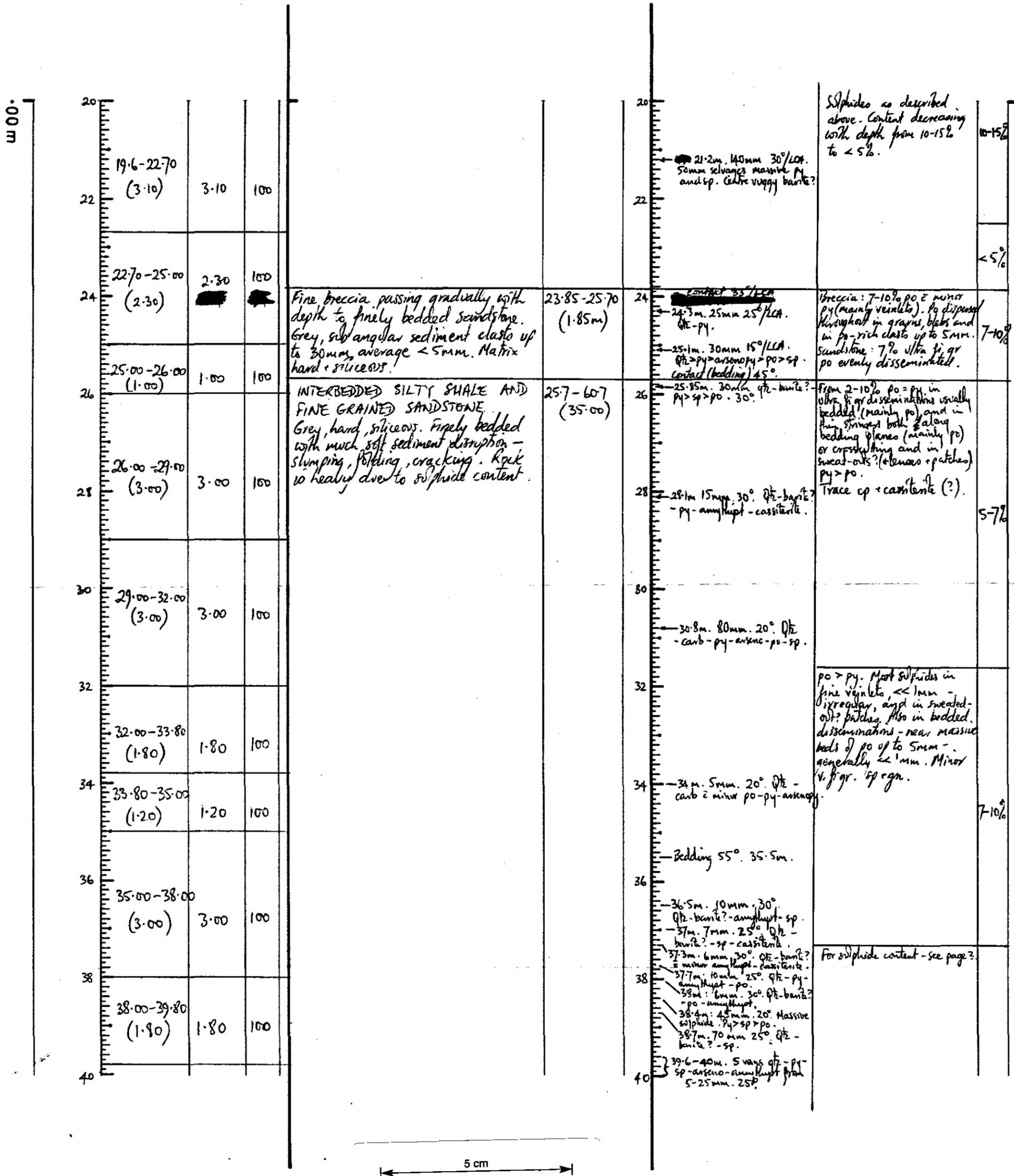


MINERAL EXPLORATION
DETAILED DIAMOND DRILL LOG
 Scale 1:80

HOLE No. MBD1
 Log sheet 1 of 17

207039

DRILLING NOTES	DRILL ADVANCE (m. mm) & LENGTH FROM COLLAR (m. mm)	LENGTH OF CORE RECOVERED (m. mm)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT. LENGTH FROM COLLAR (m. cm)	GRAPHIC LOG	OBSERVATIONS - Commence with length from collar, either point (relates to marker) or 'from-to' (relates to brackets) ATTITUDE OF BEDDING OR FOLIATION; ATTITUDE & SPACING OF JOINTS; ATTITUDE, WIDTH & DESCRIPTION OF SHEARED ZONES [Attitude = angle of structure to long core axis] MINERALIZATION; ETC.	% MINERALIZATION (VISUAL ESTIMATE)
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5 cm



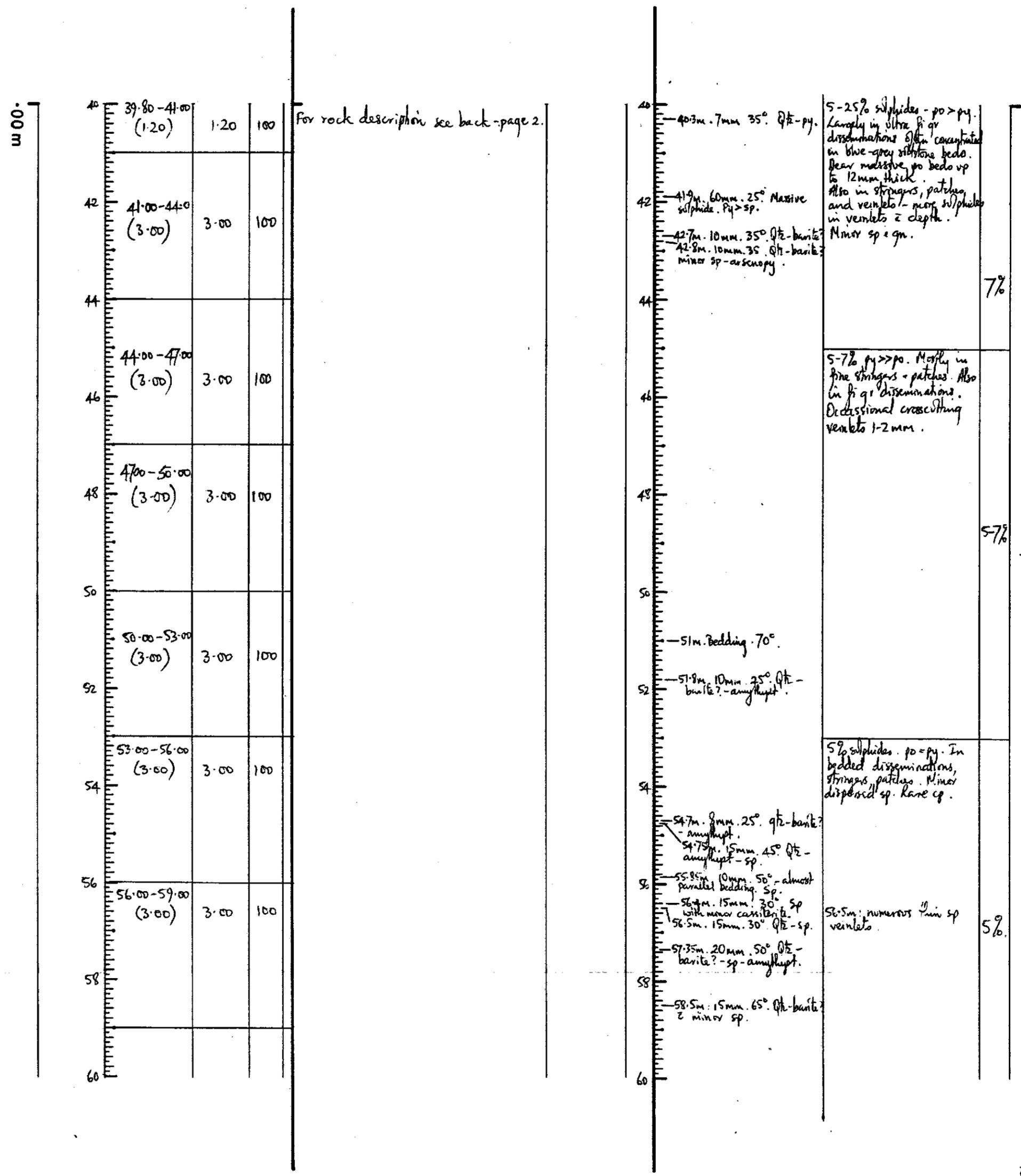
METALS EXPLORATION LTD.
and SUBSIDIARY COMPANIES

MINERAL EXPLORATION
DETAILED DIAMOND DRILL LOG
Scale 1: 80

HOLE No. MBD 1
Log sheet 2 of 17

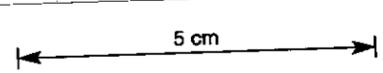
207040

DRILLING NOTES	DRILL ADVANCE (M. mm) & LENGTH FROM COLLAR (M. mm)	LENGTH OF CORE RECOVERED (M. mm)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (M. cm) & ADOPT. LENGTH FROM COLLAR (M. cm)	GRAPHIC LOG & BRACKETS & MARKERS (V)	OBSERVATIONS :- Commence with length from collar, either point (relates to marker) or 'from-to' (relates to brackets) ATTITUDE OF BEDDING OR FOLIATION; ATTITUDE & SPACING OF JOINTS; ATTITUDE, WIDTH & DESCRIPTION OF SHEARED ZONES [Attitude = angle of structure to long core axis] MINERALIZATION; ETC.	% MINERALIZATION (VISUAL ESTIMATE)
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MINERAL EXPLORATION
DETAILED DIAMOND DRILL LOG
 Scale 1: 80

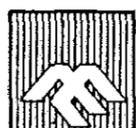
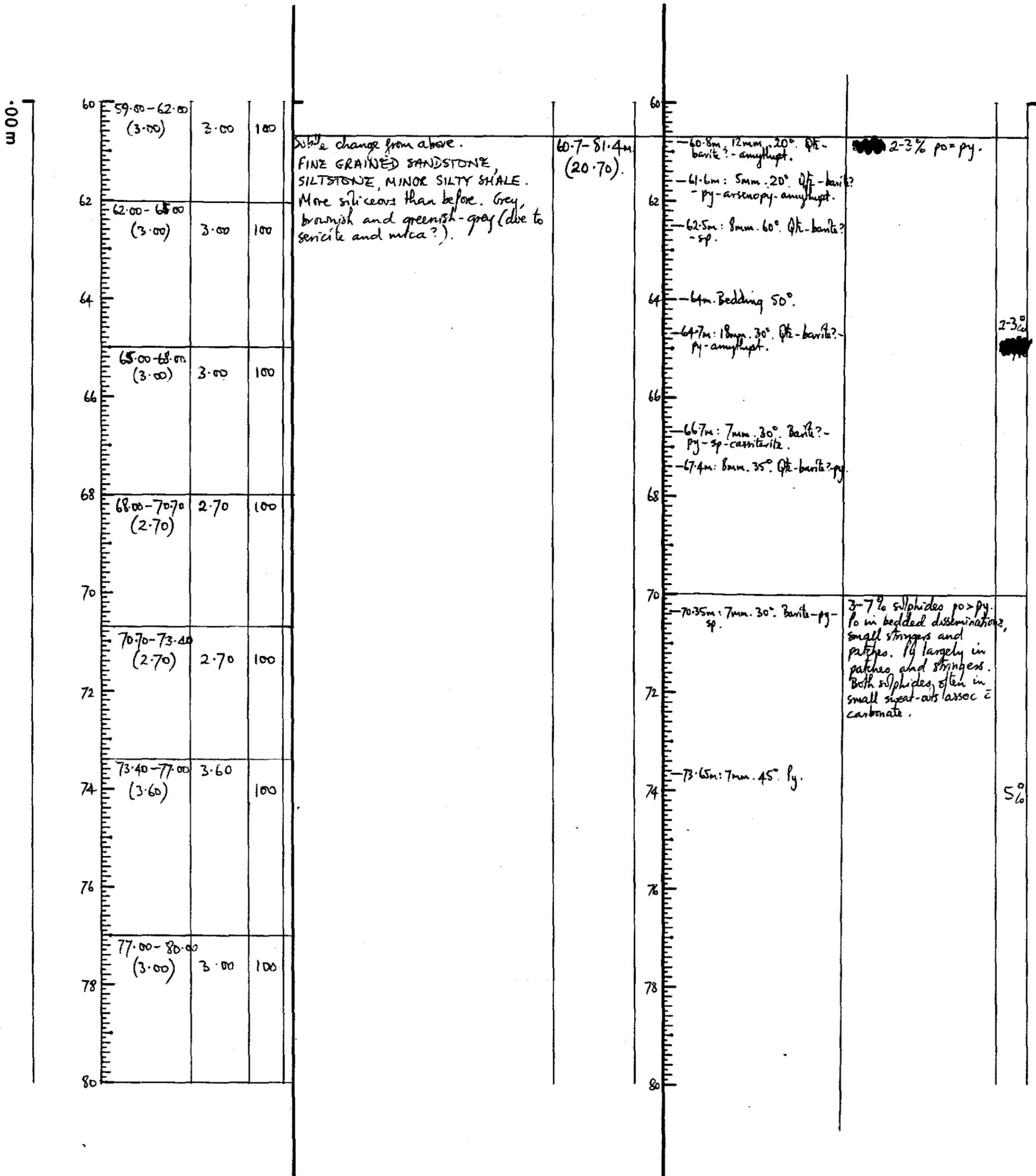
HOLE No. MBD 1
 Log sheet 3 of 17



207041

007

DRILLING NOTES	DRILL ADVANCE (m. mm) & LENGTH FROM COLLAR (m. mm)	LENGTH OF CORE RECOVERED (m. mm)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT. LENGTH FROM COLLAR (m. cm)	GRAPHIC LOG	ADDITIONAL NOTES & MARKERS (V)	OBSERVATIONS: Commence with length from collar, either point (relates to marker) or 'from-to' (relates to brackets) ATTITUDE OF BEDDING OR FOLIATION; ATTITUDE & SPACING OF JOINTS; ATTITUDE, WIDTH & DESCRIPTION OF SHEARED ZONES [Attitude = angle of structure to long core axis] MINERALIZATION; ETC.	% MINERALIZATION (VISUAL ESTIMATE)
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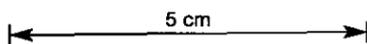


METALS EXPLORATION LTD.
and SUBSIDIARY COMPANIES

**MINERAL EXPLORATION
DETAILED DIAMOND DRILL LOG**
Scale 1: 80

HOLE No. MBD1
Log sheet 4 of 17

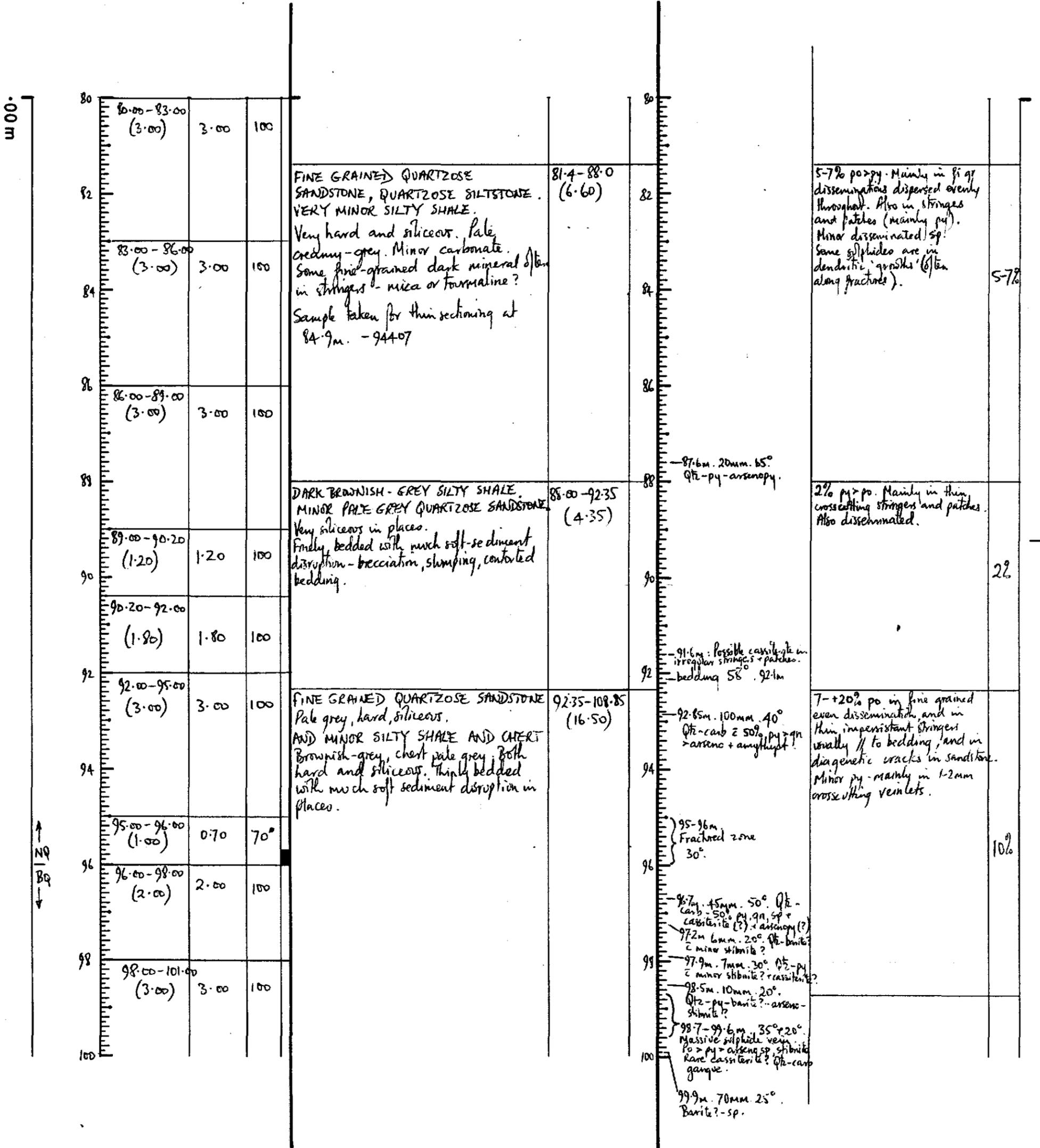
207042



Preliminary Design for Form Aug. 78

008

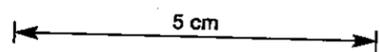
DRILLING NOTES	DRILL ADVANCE (m. mm) & LENGTH FROM COLLAR (m. mm)	LENGTH OF CORE RECOVERED (m. mm)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT. LENGTH FROM COLLAR (m. cm)	GRAPHIC LOG	OBSERVATIONS :- Commence with length from collar, either point (relates to marker) or 'from-to' (relates to brackets) ATTITUDE OF BEDDING OR FOLIATION; ATTITUDE & SPACING OF JOINTS; ATTITUDE, WIDTH & DESCRIPTION OF SHEARED ZONES [Attitude = angle of structure to long core axis] MINERALIZATION; ETC.	% MINERALIZATION (VISUAL ESTIMATE)
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MINERAL EXPLORATION
DETAILED DIAMOND DRILL LOG
Scale 1: 80

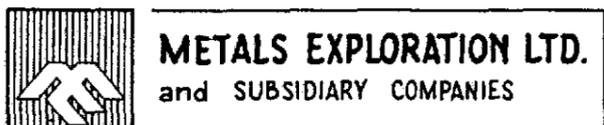
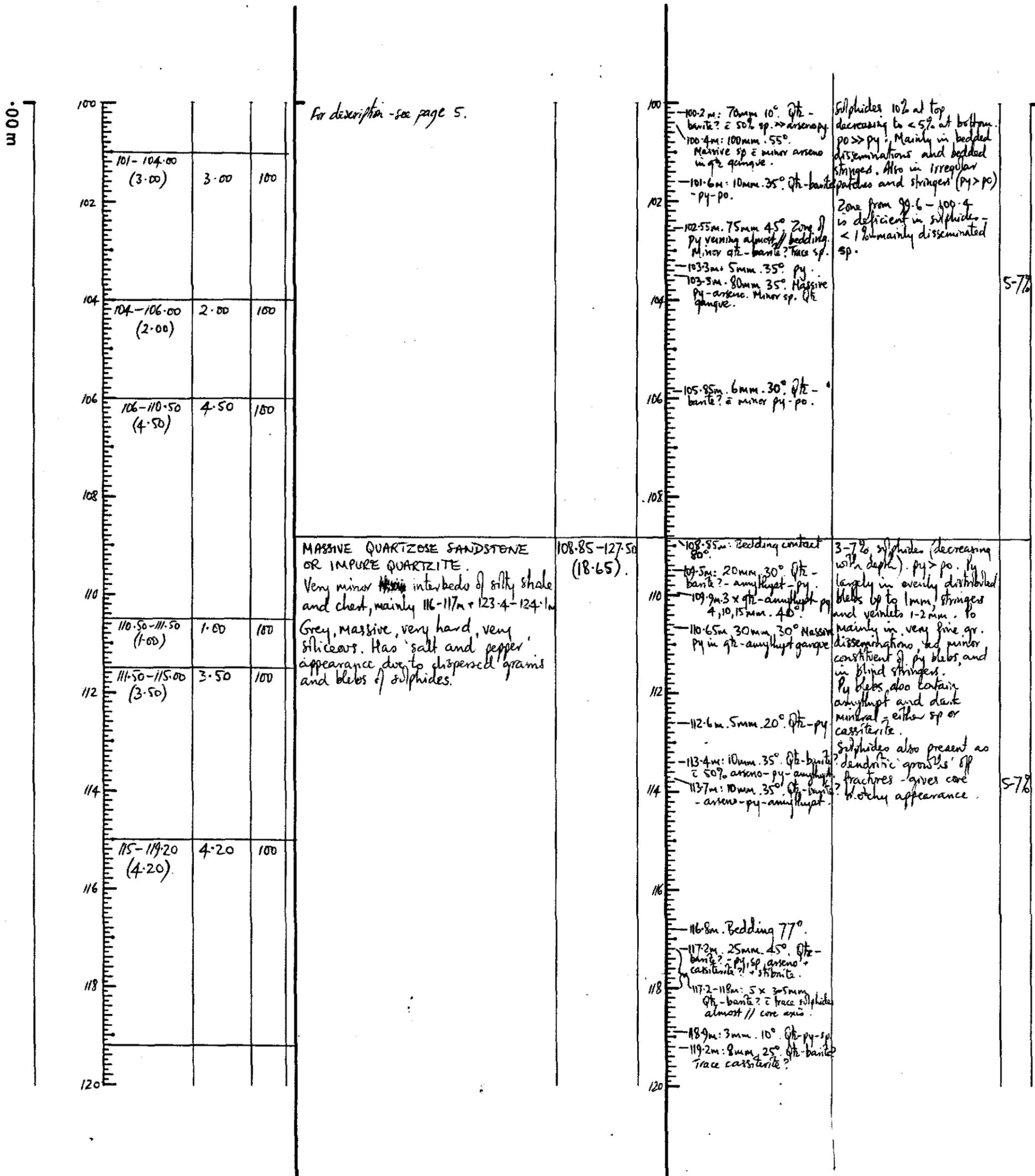
HOLE No. MBD 1
Log sheet 5 of 17

207043



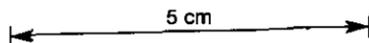
009

DRILLING NOTES	DRILL ADVANCE (M. MM) & LENGTH FROM COLLAR M. MM	LENGTH OF CORE RECOVERED M. MM	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (M. CM) & ADOPT. LENGTH FROM COLLAR M. CM	GRAPHIC LOG & BRACKETS ()	OBSERVATIONS - Commence with length from collar, either point (relates to marker) or 'from-to' (relates to brackets) ATTITUDE OF BEDDING OR FOLIATION; ATTITUDE & SPACING OF JOINTS; ATTITUDE, WIDTH & DESCRIPTION OF SHEARED ZONES [Attitude = angle of structure to long core axis] MINERALIZATION; ETC.	% MINERALIZATION (VISUAL ESTIMATE)
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MINERAL EXPLORATION
 DETAILED DIAMOND DRILL LOG
 Scale 1: 80

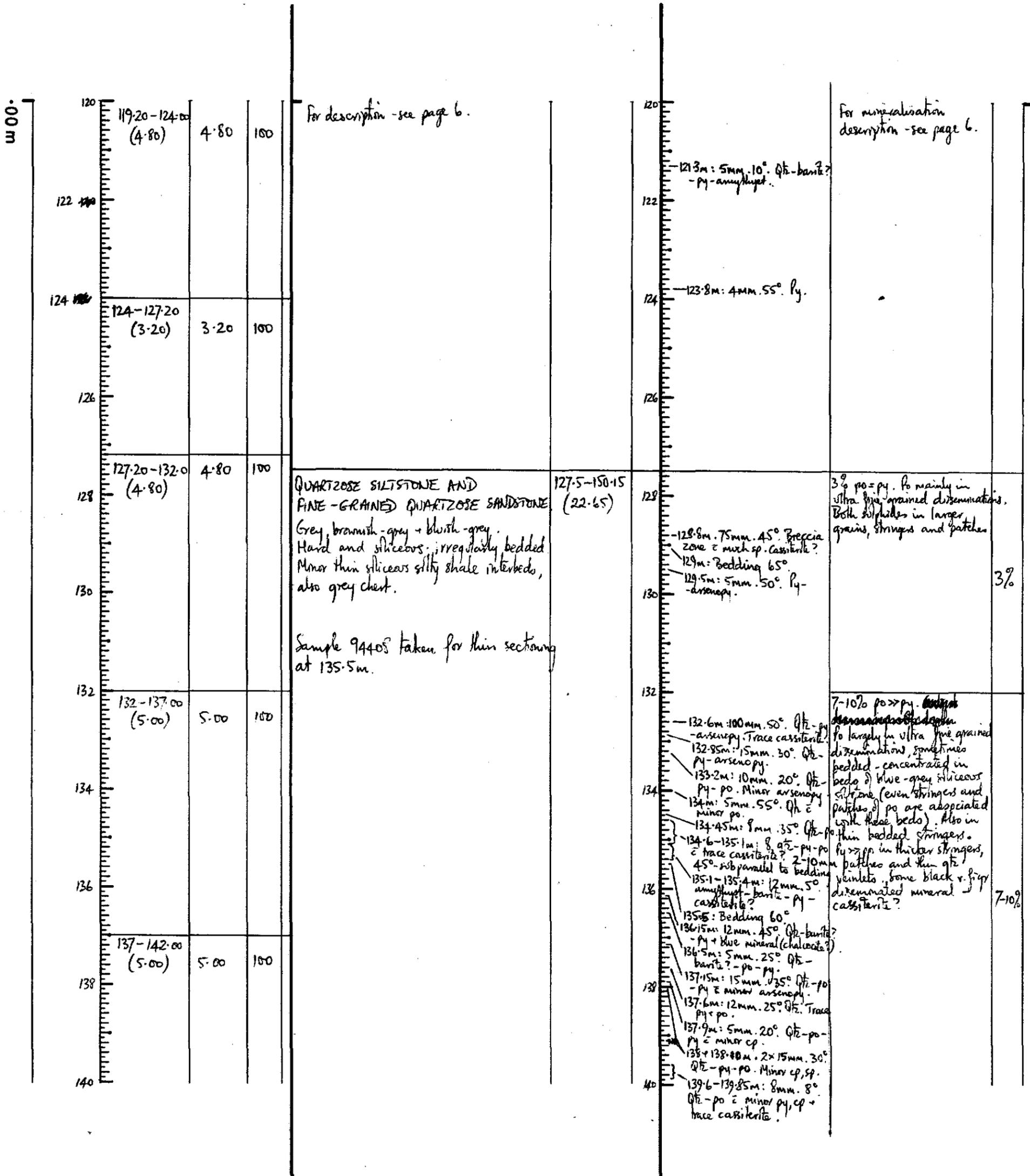
HOLE No. MBD 1
 Log sheet 6 of 17



207044

010

DRILLING NOTES	DRILL ADVANCE (m. mm) & LENGTH FROM COLLAR m. mm	LENGTH OF CORE RECOVERED m. mm	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT. LENGTH FROM COLLAR m. cm	GRAPHIC LOG	OBSERVATIONS - Commence with length from collar, either point (relates to marker) or 'from-to' (relates to brackets) ATTITUDE OF BEDDING OR FOLIATION; ATTITUDE & SPACING OF JOINTS; ATTITUDE, WIDTH & DESCRIPTION OF SHEARED ZONES [Attitude = angle of structure to long core axis] MINERALIZATION; ETC.	% MINERALIZATION (VISUAL ESTIMATE)
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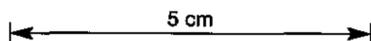


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**MINERAL EXPLORATION
DETAILED DIAMOND DRILL LOG**

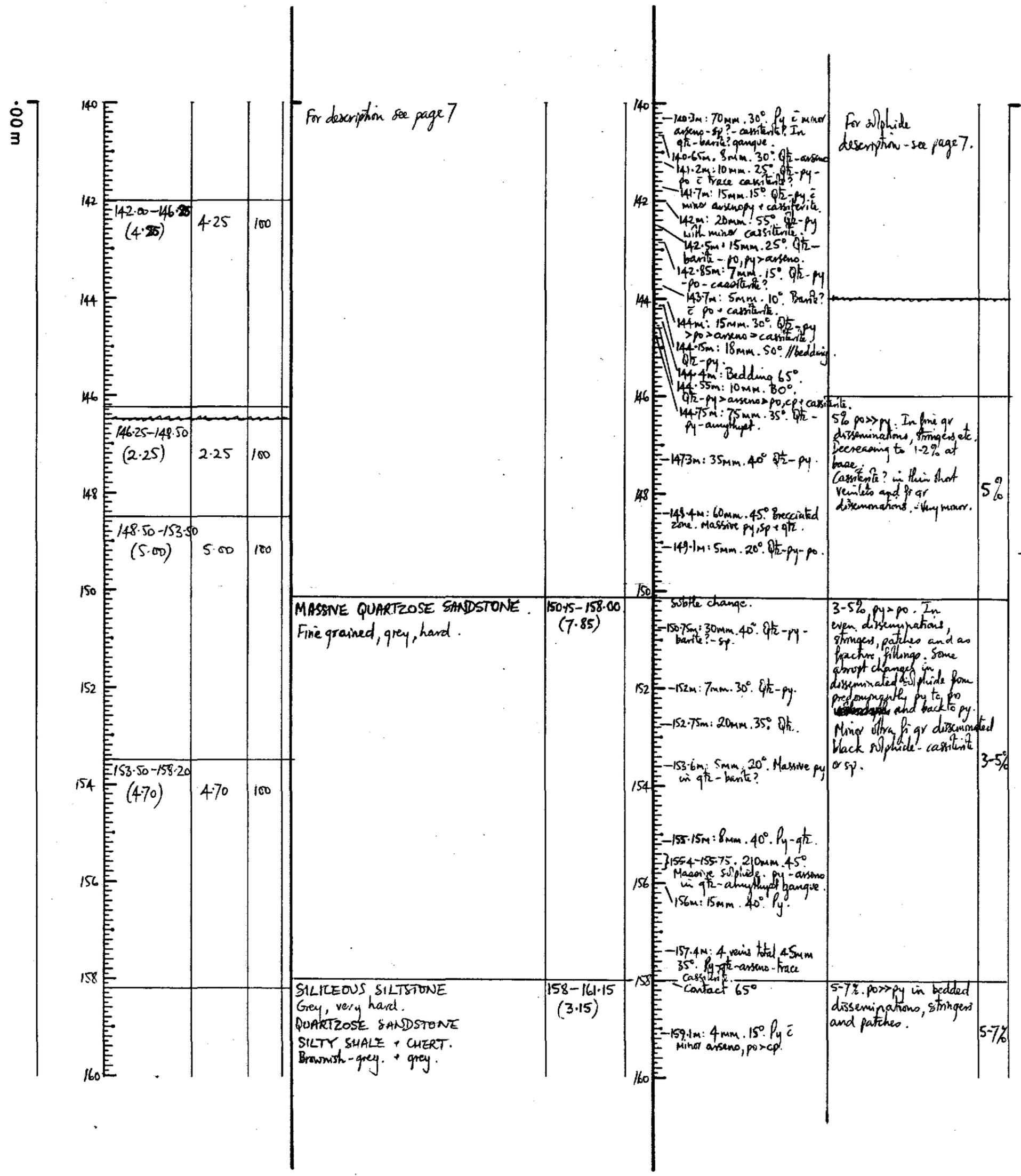
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HOLE No. MBD1
Log sheet 7 of 17



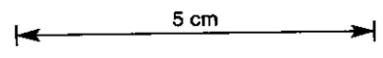
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DRILLING NOTES	DRILL ADVANCE (m. mm) & LENGTH FROM COLLAR m. mm	LENGTH OF CORE RECOVERED m. mm	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT. LENGTH FROM COLLAR m. cm	GRAPHIC LOG & BRACKETS (V)	OBSERVATIONS - Commence with length from collar, either point (relates to marker) or 'from-to' (relates to brackets) ATTITUDE OF BEDDING OR FOLIATION; ATTITUDE & SPACING OF JOINTS; ATTITUDE, WIDTH & DESCRIPTION OF SHEARED ZONES [Attitude = angle of structure to long core axis] MINERALIZATION; ETC.	% MINERALIZATION (VISUAL ESTIMATE)
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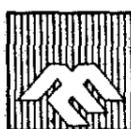
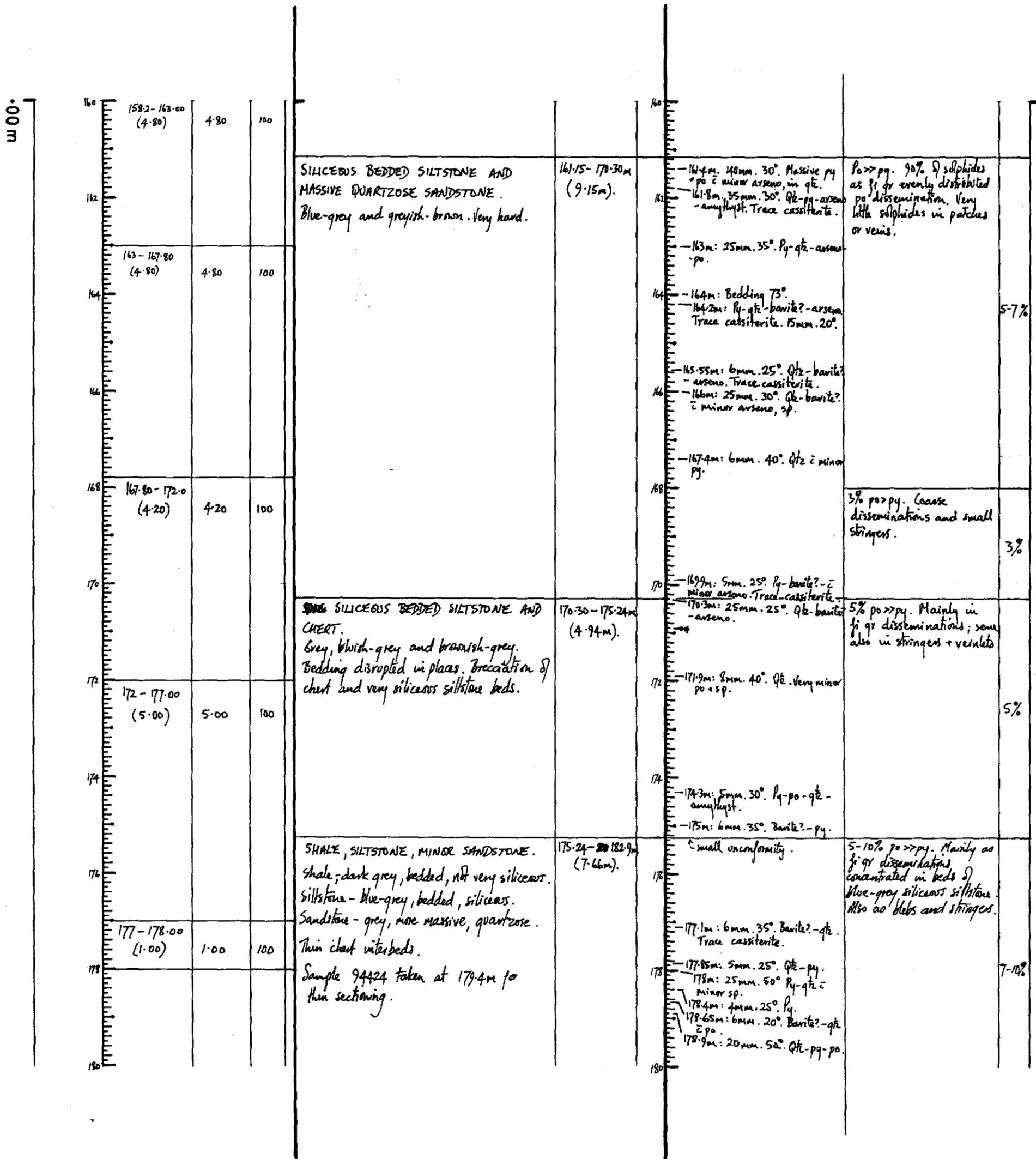
MINERAL EXPLORATION
DETAILED DIAMOND DRILL LOG
Scale 1: 80

HOLE No. MBD1
Log sheet 8 of 17



207046

DRILLING NOTES	DRILL ADVANCE (M. M.M.) & LENGTH FROM COLLAR (M. M.M.)	LENGTH OF CORE RECOVERED (M. M.M.)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (M. M.M.) & ADOPT. LENGTH FROM COLLAR (M. M.M.)	GRAPHIC LOG	OBSERVATIONS - Commence with length from collar, either point (relates to marker) or 'from-to' (relates to brackets) ATTITUDE OF BEDDING OR FOLIATION; ATTITUDE & SPACING OF JOINTS; ATTITUDE, WIDTH & DESCRIPTION OF SHEARED ZONES [Attitude = angle of structure to long core axis] MINERALIZATION; ETC.	% MINERALIZATION (VISUAL ESTIMATE)
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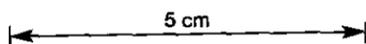


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MINERAL EXPLORATION DETAILED DIAMOND DRILL LOG Scale 1: 80

HOLE No. MBD1 Log sheet 9 of 17

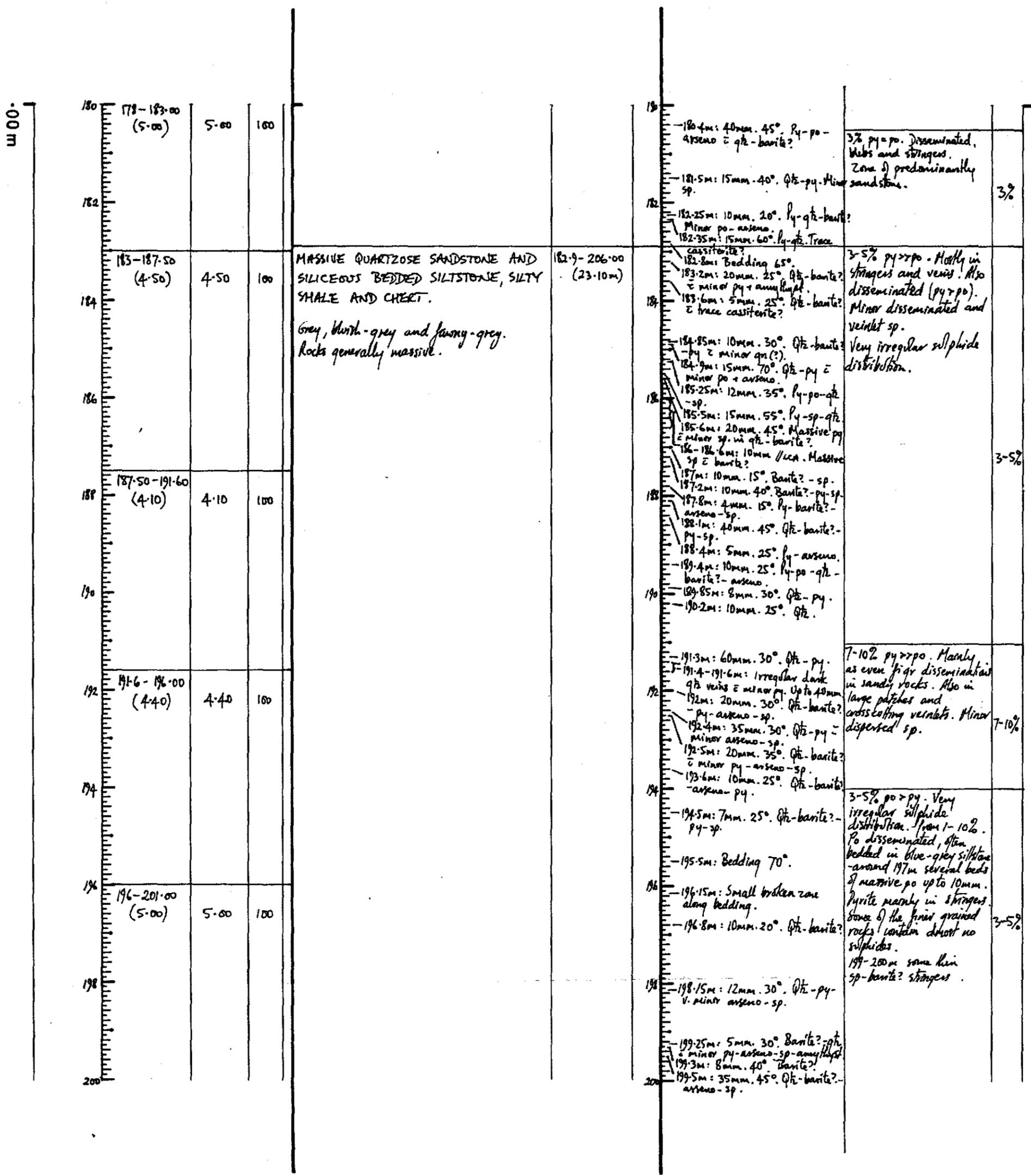
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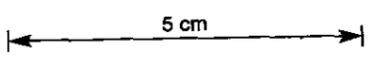
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DRILLING NOTES	DRILL ADVANCE (M. MM) & LENGTH FROM COLLAR (M. MM)	LENGTH OF CORE RECOVERED (M. MM)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (M. CM) & ADOPT. LENGTH FROM COLLAR (M. CM)	GRAPHIC LOG	OBSERVATIONS - Commence with length from collar, either point (relates to marker) or 'from-to' (relates to brackets) ATTITUDE OF BEDDING OR FOLIATION; ATTITUDE & SPACING OF JOINTS; WIDTH & DESCRIPTION OF SHEARED ZONES [Attitude = angle of structure to long core axis] MINERALIZATION; ETC.	% MINERALIZATION (VISUAL ESTIMATE)
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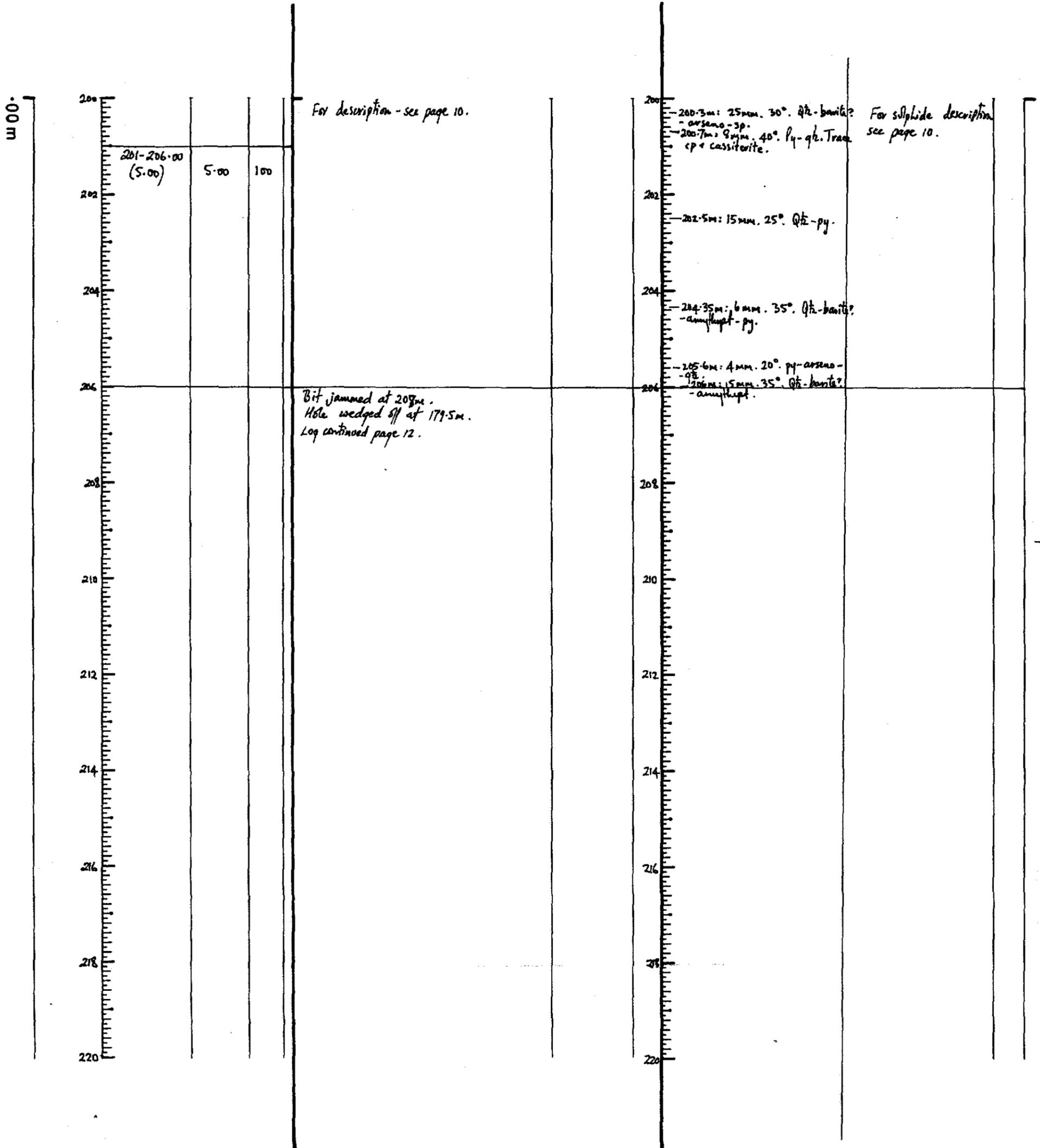
MINERAL EXPLORATION
DETAILED DIAMOND DRILL LOG
Scale 1: 80

HOLE No. MBD1
Log sheet 10 of 17



207048

DRILLING NOTES	DRILL ADVANCE (m. mm) & LENGTH FROM COLLAR (m. mm)	LENGTH OF CORE RECOVERED (m. mm)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT. LENGTH FROM COLLAR (m. cm)	GRAPHIC LOG	OBSERVATIONS :- Commence with length from collar, either point (relates to marker) or 'from-to' (relates to brackets) ATTITUDE OF BEDDING OR FOLIATION; ATTITUDE & SPACING OF JOINTS; ATTITUDE, WIDTH & DESCRIPTION OF SHEARED ZONES [Attitude = angle of structure to long core axis] MINERALIZATION; ETC.	% MINERALIZATION (VISUAL ESTIMATE)
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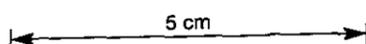


METALS EXPLORATION LTD.
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**MINERAL EXPLORATION
DETAILED DIAMOND DRILL LOG**

Scale 1: 80

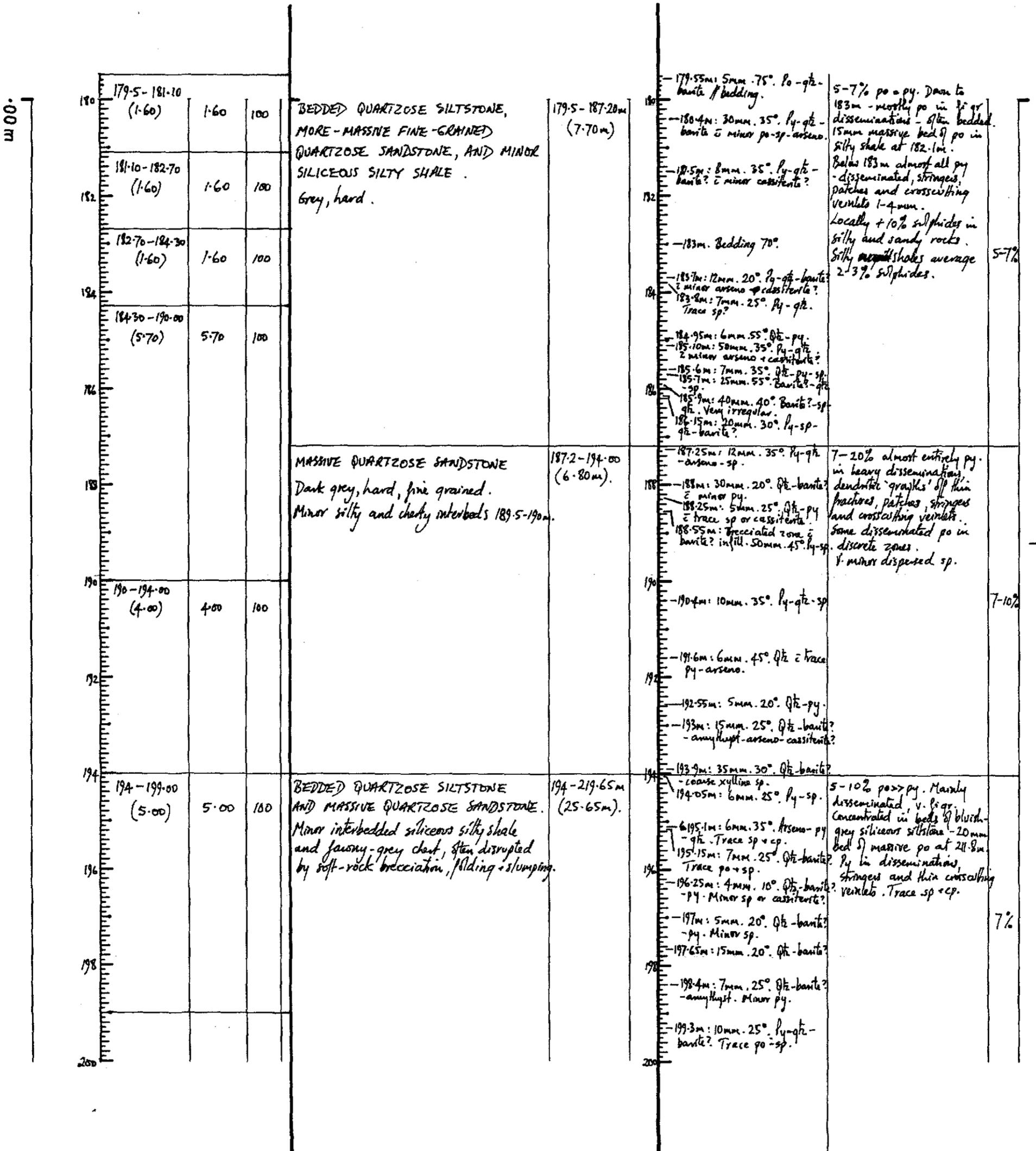
HOLE No. MBD1
Log sheet 11 of 17



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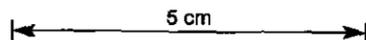
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METALS EXPLORATION LTD. and SUBSIDIARY COMPANIES

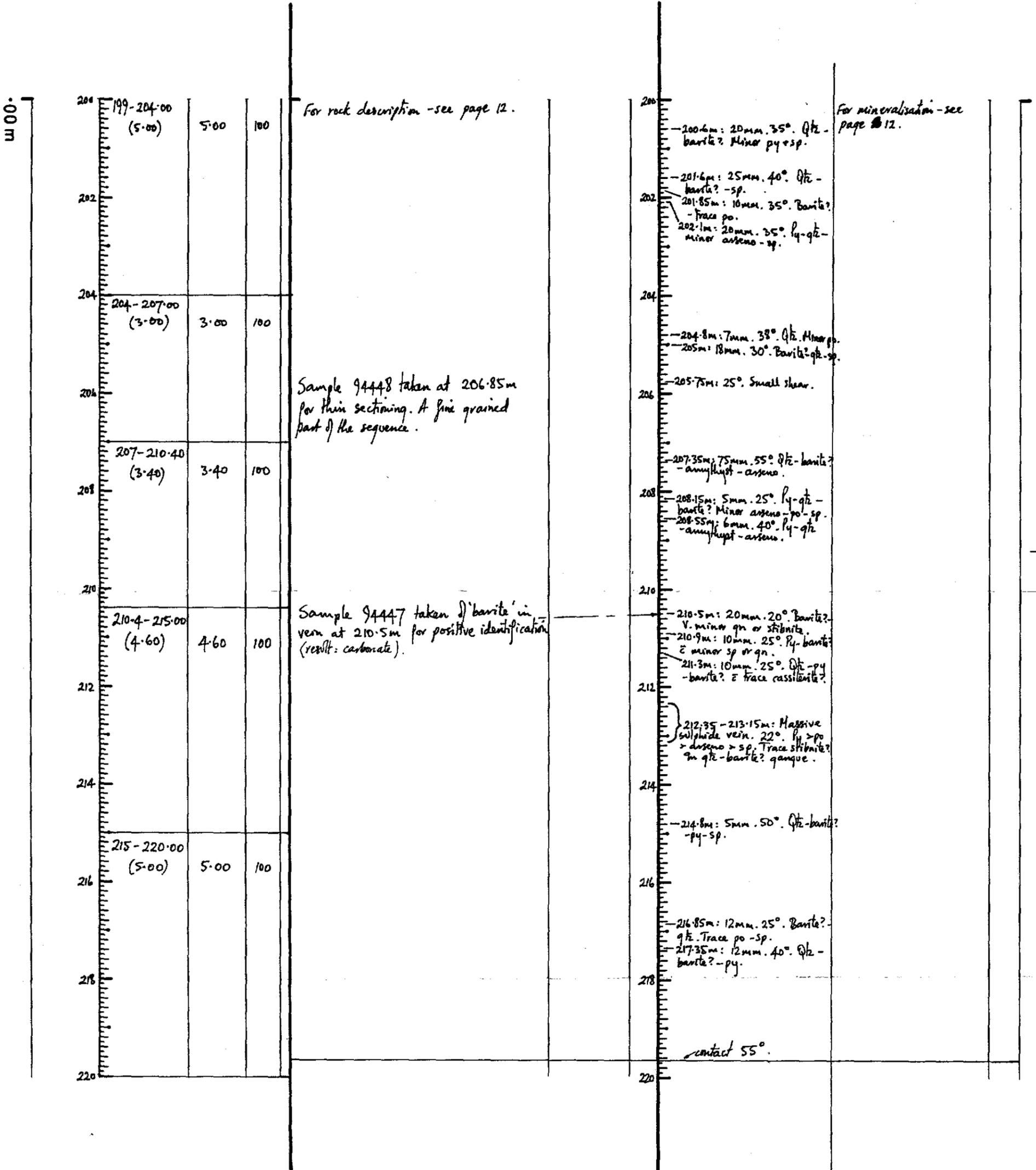
MINERAL EXPLORATION DETAILED DIAMOND DRILL LOG Scale 1:80

HOLE No. MBD-1-Wedged. Log sheet 12 of 17



016

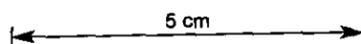
DRILLING NOTES	DRILL ADVANCE (M. mm) & LENGTH FROM COLLAR M. mm	LENGTH OF CORE RECOVERED M. mm	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (M. cm) & ADOPT. LENGTH FROM COLLAR M. cm	GRAPHIC LOG	OBSERVATIONS :- Commence with length from collar, either point (relates to marker) or 'from-to' (relates to brackets) ATTITUDE OF BEDDING OR FOLIATION; ATTITUDE & SPACING OF JOINTS; ATTITUDE, WIDTH & DESCRIPTION OF SHEARED ZONES [Attitude = angle of structure to long core axis] MINERALIZATION; ETC.	% MINERALIZATION (VISUAL ESTIMATE)



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**MINERAL EXPLORATION
DETAILED DIAMOND DRILL LOG**
Scale 1: 80

HOLE No. M5D1-Wedged.
Log sheet 13 of 17



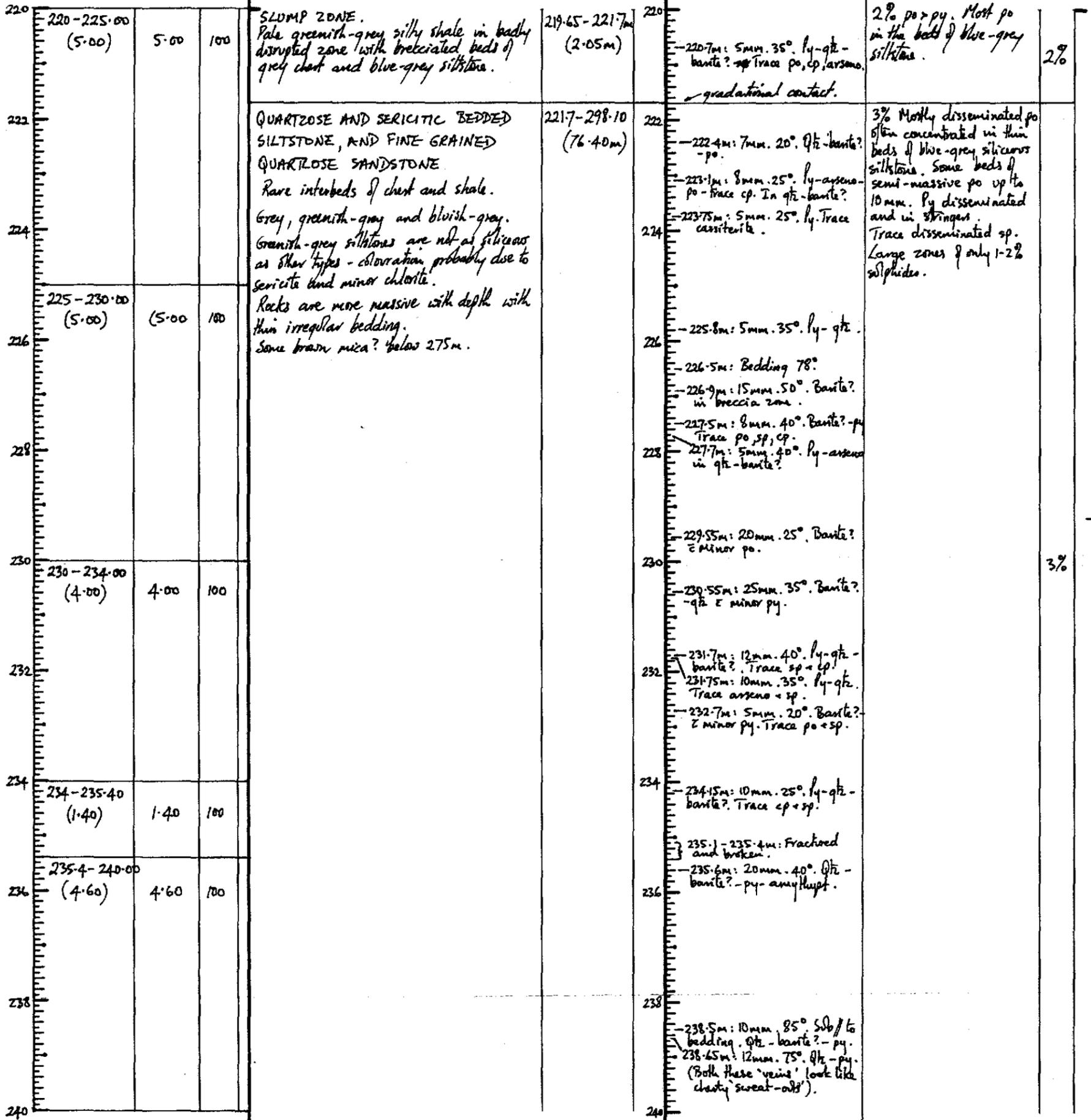
Preliminary Design for Form Aug. 78

207051

017

DRILLING NOTES	DRILL ADVANCE (M. MM) & LENGTH FROM COLLAR (M. MM)	LENGTH OF CORE RECOVERED (M. MM)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (M. CM) & ADOPT LENGTH FROM COLLAR (M. CM)	GRAPHIC LOG	OBSERVATIONS - Commence with length from collar, either point (relates to marker) or 'from-to' (relates to brackets) ATTITUDE OF BEDDING OR FOLIATION; ATTITUDE & SPACING OF JOINTS; ATTITUDE, WIDTH & DESCRIPTION OF SHEARED ZONES [ATTITUDE = angle of structure to long core axis] MINERALIZATION; ETC.	% MINERALIZATION (VISUAL ESTIMATE)
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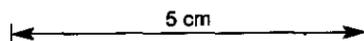
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and SUBSIDIARY COMPANIES

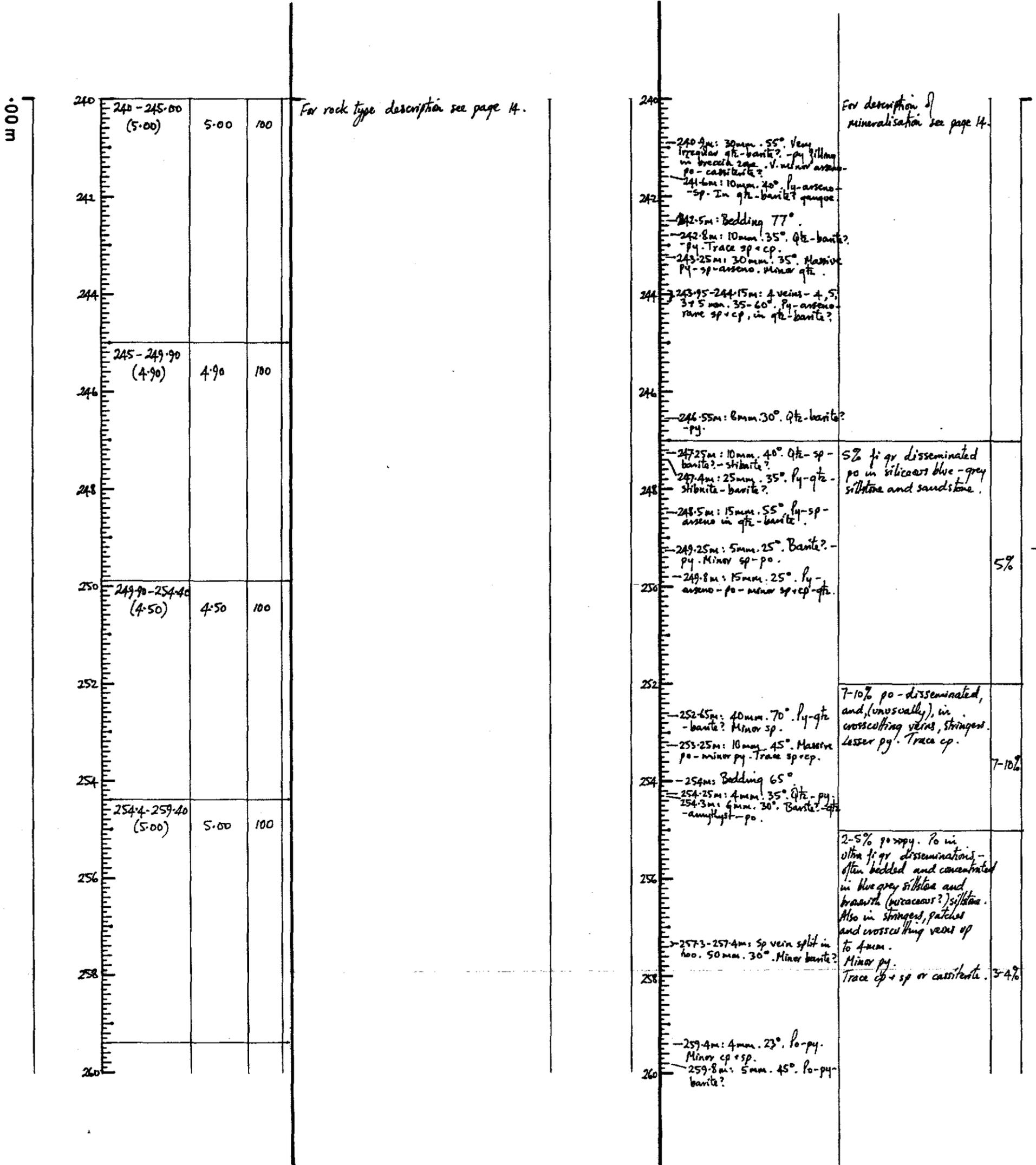
**MINERAL EXPLORATION
DETAILED DIAMOND DRILL LOG**
Scale 1: 80

HOLE No. MBD1-Wedged
Log sheet 14 of 17



207052

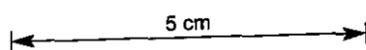
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METALS EXPLORATION LTD. and SUBSIDIARY COMPANIES

MINERAL EXPLORATION DETAILED DIAMOND DRILL LOG Scale 1: 80

HOLE No. MBD1-Wedged Log sheet 15 of 17

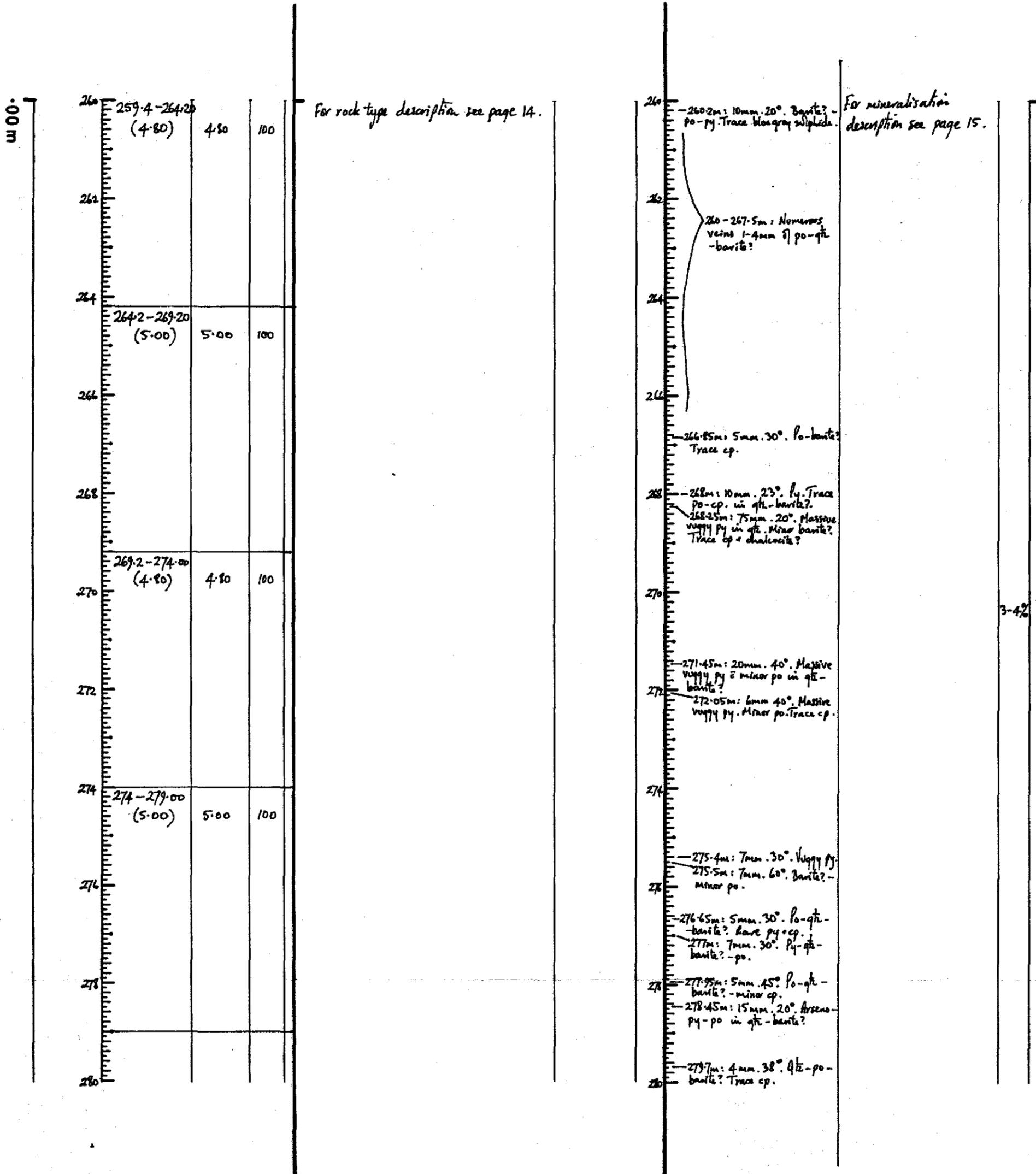


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207053

019

DRILLING NOTES	DRILL ADVANCE (M. METERS) & LENGTH FROM COLLAR (M. METERS)	LENGTH OF CORE RECOVERED (M. METERS)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (M. METERS) & ADOPT. LENGTH FROM COLLAR (M. METERS)	GRAPHIC LOG	BRACKETS & MARKERS (M)	OBSERVATIONS - Commence with length from collar, either point (relates to marker) or 'from-to' (relates to brackets) ATTITUDE OF BEDDING OR FOLIATION; ATTITUDE & SPACING OF JOINTS; ATTITUDE, WIDTH & DESCRIPTION OF SHEARED ZONES [ATTITUDE = angle of structure to long core axis] MINERALIZATION; ETC.	% MINERALIZATION (VISUAL ESTIMATE)
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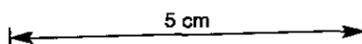


METALS EXPLORATION LTD.
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**MINERAL EXPLORATION
DETAILED DIAMOND DRILL LOG**
Scale 1: 80

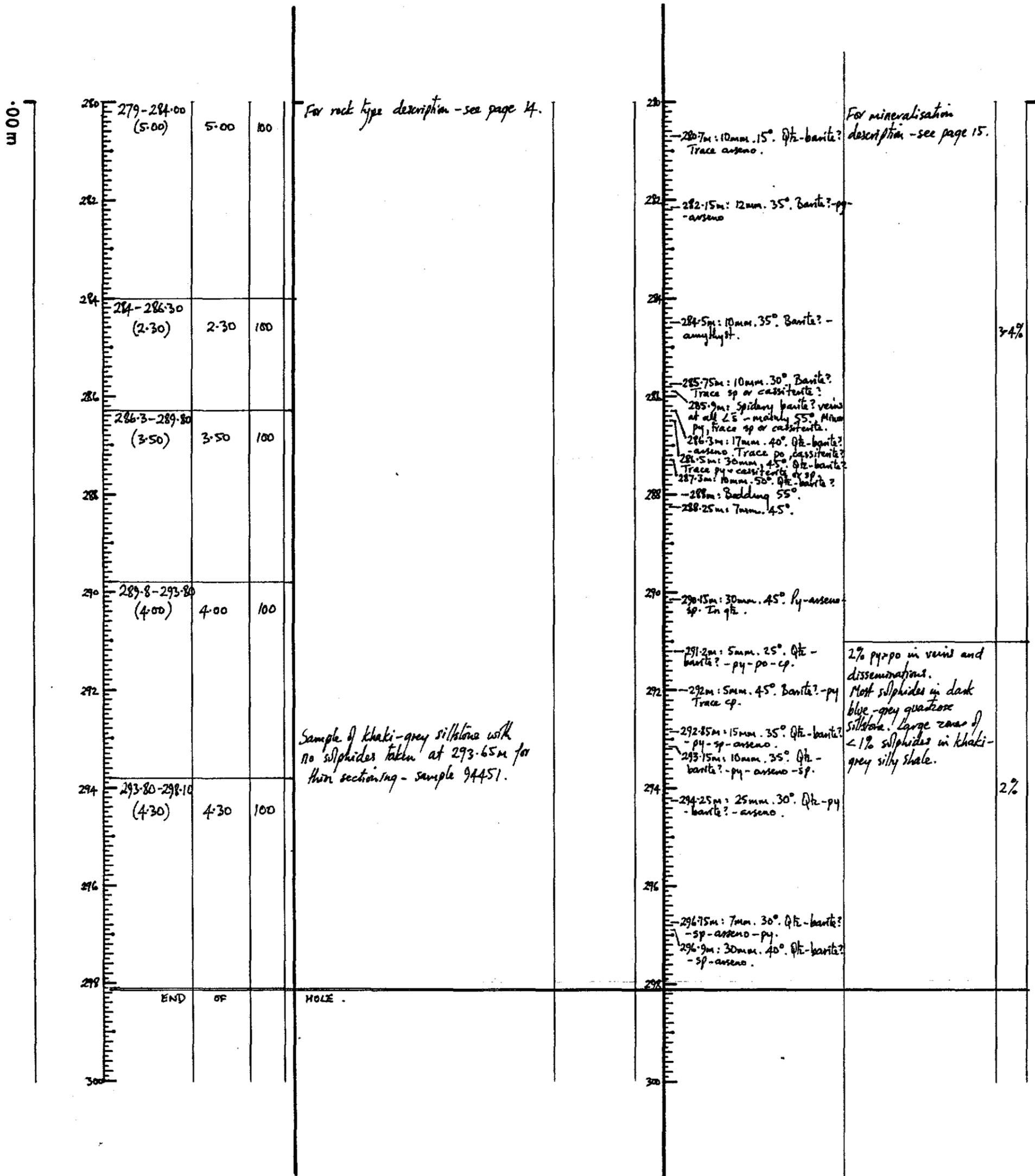
HOLE No. MBD1-Wedged
Log sheet 16 of 17

207054



020

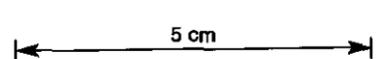
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METALS EXPLORATION LTD.
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**MINERAL EXPLORATION
DETAILED DIAMOND DRILL LOG**
Scale 1: 80

HOLE No. MBD1-Wedged
Log sheet 17 of 17



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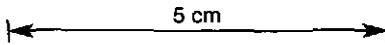
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021

SUMMARY DRILL LOG - MBD2

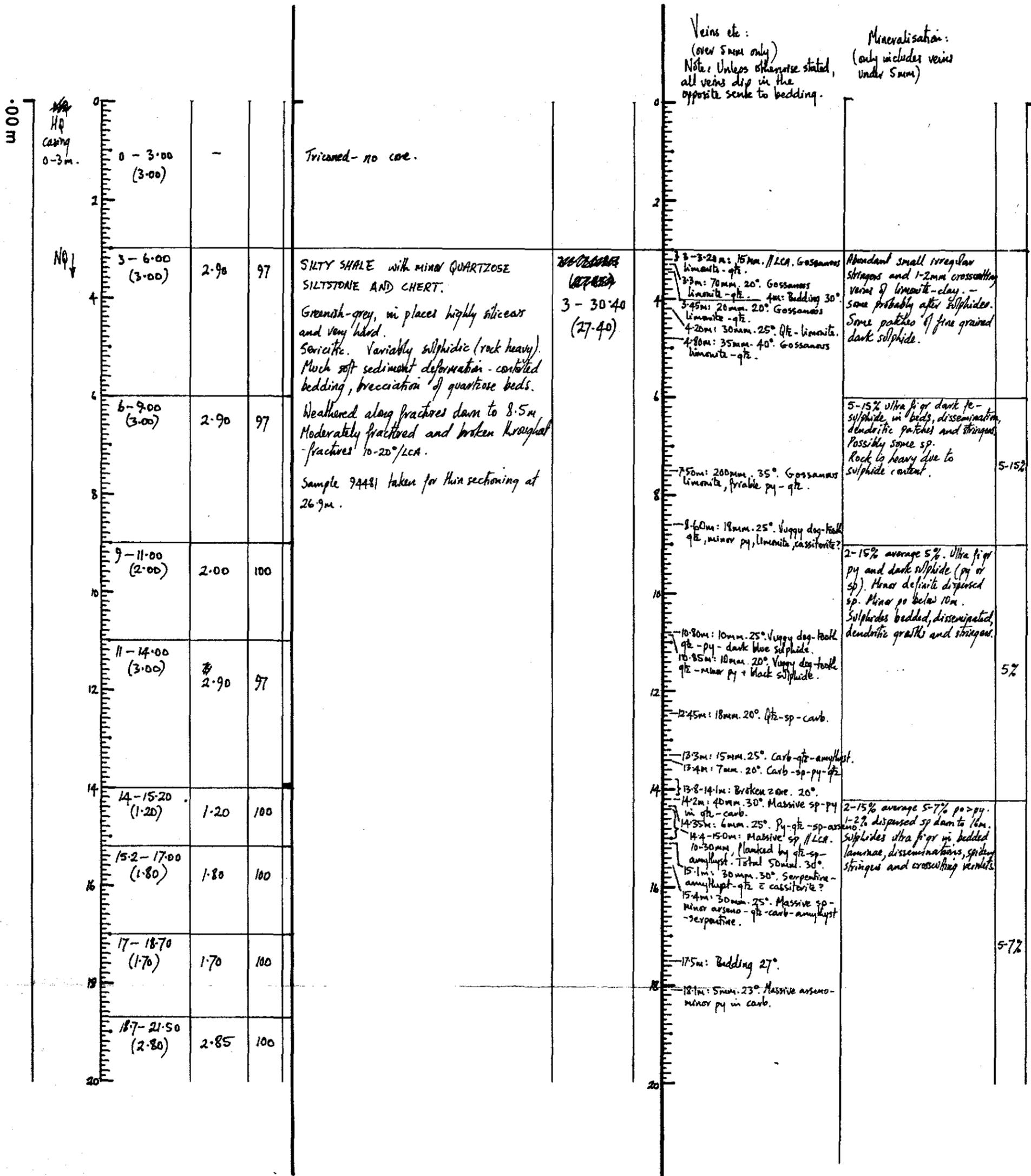
207056

		Major Veins. (over 50mm).	Mineralisation.	
SILICEOUS SILTY SHALE MINOR QUARTZOSE SILTSTONE and CHERT. Greenish-grey, hard, sericitic, sulphidic. Much soft sediment deformation.	0 - 30.85	0-3.3m: 70mm. 20° limonite-gt 7.5m: 200mm. 35° Limonite-py. 14.4-15.0m: 50mm. 30° Sp- qtz-amphylst. 20.4-20.90m: 50° Massive arseno- sp-py-carb-gt-amphylst. 30m: 50mm. 15° py-sp	2-20%, average 7-10% po>py. Mostly in ultra fi gr disseminations generally bedded.	7-10%
BEDDED SILICEOUS SILTSTONE and FINE GRAINED QUARTZOSE SANDSTONE. Minor silty shale and chert. Grey, brownish-grey (tourmaline-bearing), and greenish-grey (sericitic, trace chlorite). All sediments hard and siliceous - basically quartzose especially the sandstones. Much soft sediment disruption.	30.85 - 110.30 (79.45m).	37.4m: 130mm. 32° py-carb- sp-py-cassiterite 52m: Bedding 55° 54.85m: 100mm. 20° py-arseno- sp-po-gt-carb. 60m: 50mm. 45° Sp-carb-py. 71.5m: Bedding 75° 73.15m: 45-100mm. 40° py-gt-carb. 106m: Bedding 57°	2-20%, average 7% po>py. Mainly in bedded disseminations and small irregular stringers.	7%
MASSIVE QUARTZOSE SANDSTONE	110.3 - 116.20		<1-10% po>py.	5-7%
SILICEOUS QUARTZOSE SILTSTONE, MASSIVE FINE GRAINED QUARTZOSE SANDSTONE, MINOR SILICEOUS SILTY SHALE. Rocks increasingly quartzose with depth. Much soft sediment disruption.	116.2 - 146.5 (30.30m)	125.5-126m: 75° py-gt-carb- arseno-amphylst. Trace sp-cassiterite 133m: Bedding 60°	2-10% po>py. Po mostly in ultra fi gr bedded disseminations. Sandstone generally contains py>po.	7%
MASSIVE QUARTZOSE SANDSTONE	146.5 - 153.90		2-10% po>py. Disseminated blebs.	5-7%
BEDDED SILTSTONE, SILTY SHALE and minor SANDSTONE. Pale greenish-grey, brownish-grey + bluish-grey. Rocks predominantly sericitic - tourmaline types rather than very quartzose. Soft sediment disruption.	153.9 - 187.7 (33.80m).	166.5m: Bedding 71° 184.6m: 250mm. 45° Massive py-po. Trace sp-cassiterite?	3-15% po>py. Mostly in ultra fi gr bedded disseminations and abundant spidery stringers. Trace sp+cp.	7-10%
BEDDED QUARTZOSE SILTSTONE, MASSIVE QUARTZOSE SANDSTONE, SILTSTONE AND SILTY SHALE (sericitic, trace chlorite, or tourmaline-rich). Much soft sediment disruption.	187.7 - 240.00 (52.30)	199m: Bedding 60° 238m: Bedding 77° 237.5-240m: Silicification contact 75°	2-20% po>py. Mainly as ultra fi gr bedded disseminations; and as stringers and veinlets. Trace sp-cp. Sulphides increase to 20% below 238m.	7%
PORPHYRY DYKE - Qtz-feldspar porphyry.	240 - 244.70	244.7-248m: Silicification contact 30°	15-20% py in blebs. Trace cassiterite?	15-20%
MASSIVE AND BEDDED SILTSTONE FINE GRAINED QUARTZOSE SANDSTONE MINOR SILTY SHALE. Grey, granish-grey (sericitic & trace chlorite) and brownish-grey (tourmaline-bearing). Rocks generally siliceous (silicified?), quartzose and very hard.	244.7 - 293.10 (48.40m).	257.75m: 125mm. 65° Qtz-py-arseno- sp-carb. 262.45m: 70mm. 35° Carb. 278.5m: Bedding 55° 290m: Fault zone? 40° 304m: silicification contact 60°	<1-10% average 2% py>po. Mainly as veinlets and stringers lower disseminated grains/blebs. Much of core has <1% sulphides. Trace sp-cassiterite.	2%
PORPHYRY DYKE. Creamy-white Qtz-feldspar porphyry. Extremely hard. Slightly fractured.	293.10 - 311.30 (18.20)	contact 55°	10-20%, average 15% py>po. Uniformly distributed oval-like aggregates 2-3mm. Minor arseno-cp. Trace cassiterite in upper 2-3m.	15%
MASSIVE AND BEDDED SILTSTONE. Very minor quartzose sandstone. Rocks are sericitic, quartzose and tourmaline rich. In places rocks highly sericitic - altered tuff?	311.3 - 338.00 (26.70)	316m: Bedding 35° 330.85-333.5m: Fault zone	<1-10%, average 2% py>po. 7-10% sulphides just below porphyry, sulphides declining in depth to <1% at bottom of hole. Disseminated and in sweat-all stringers	2%
END OF HOLE.		340 360 380 400		



023

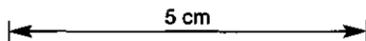
DRILLING NOTES	DRILL ADVANCE (m. mm) & LENGTH FROM COLLAR (m. mm)	LENGTH OF CORE RECOVERED (m. mm)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT LENGTH FROM COLLAR (m. cm)	GRAPHIC LOG	REMARKS (S) & NUMBER (S)	OBSERVATIONS - Commence with length from collar, either point (relates to marker) or 'from-to' (relates to brackets) ATTITUDE OF BEDDING OR FOLIATION, ATTITUDE & SPACING OF JOINTS; ATTITUDE, WIDTH & DESCRIPTION OF SHEARED ZONES [Attitude = angle of structure to long core axis] MINERALIZATION; ETC.	% MINERALIZATION (VISUAL ESTIMATE)
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MINERAL EXPLORATION
DETAILED DIAMOND DRILL LOG
Scale 1: 80

HOLE No. MBD 2
Log sheet 1 of 17

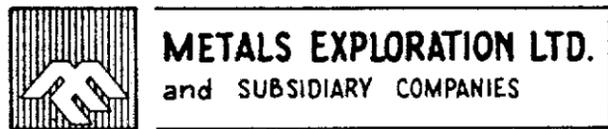
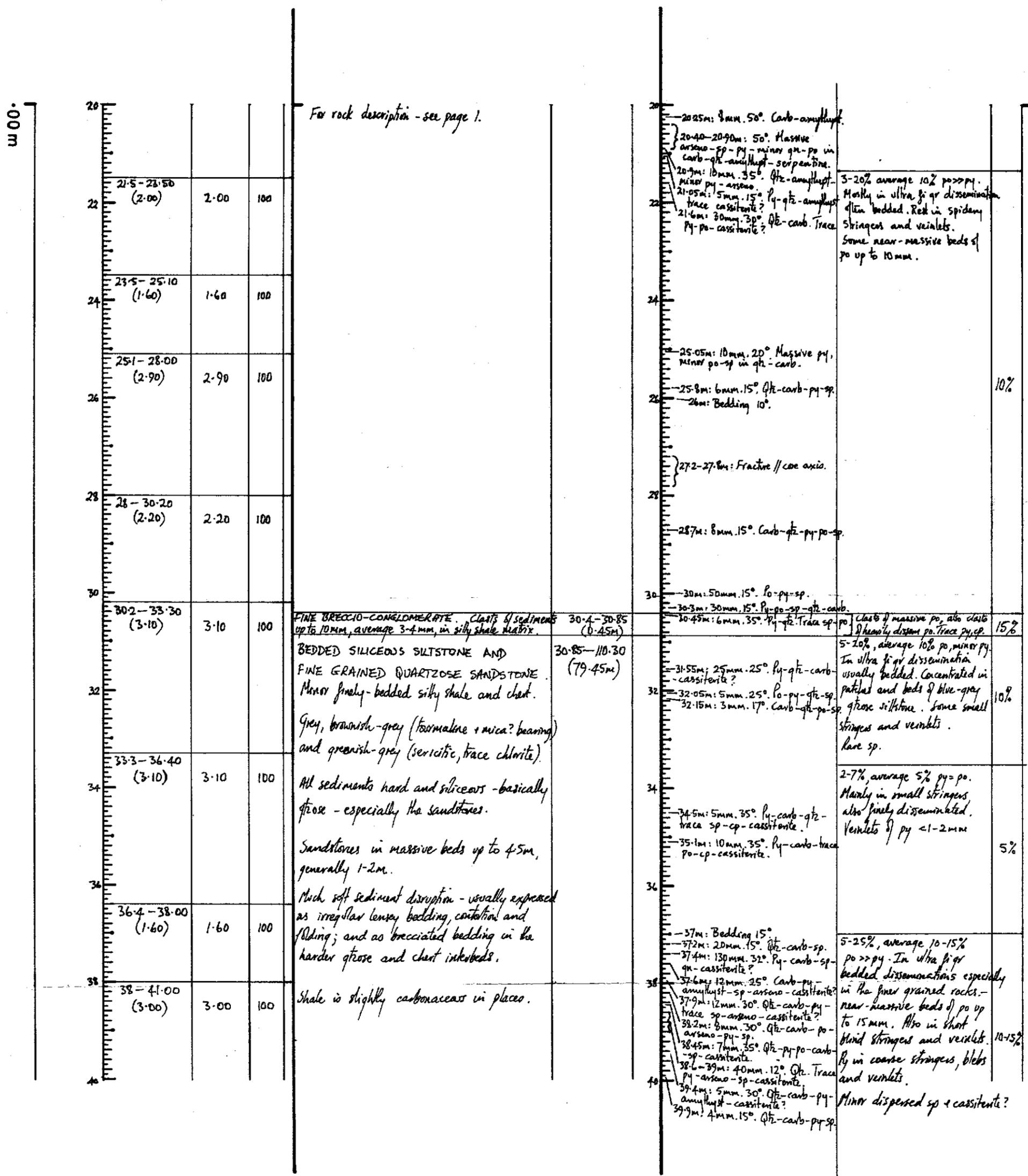


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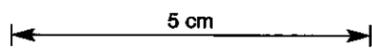
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DRILLING NOTES	DRILL ADVANCE (M. MM) & LENGTH FROM COLLAR (M. MM)	LENGTH OF CORE RECOVERED (M. MM)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (M. CM) & ADOPT. LENGTH FROM COLLAR (M. CM)	GRAPHIC LOG	OBSERVATIONS - Commence with length from collar, either point (relates to marker) or 'from-to' (relates to brackets) ATTITUDE OF BEDDING OR FOLIATION; ATTITUDE & SPACING OF JOINTS; ATTITUDE, WIDTH & DESCRIPTION OF SHEARED ZONES [ATTITUDE = angle of structure to long core axis] MINERALIZATION; ETC.	% MINERALIZATION (VISUAL ESTIMATE)
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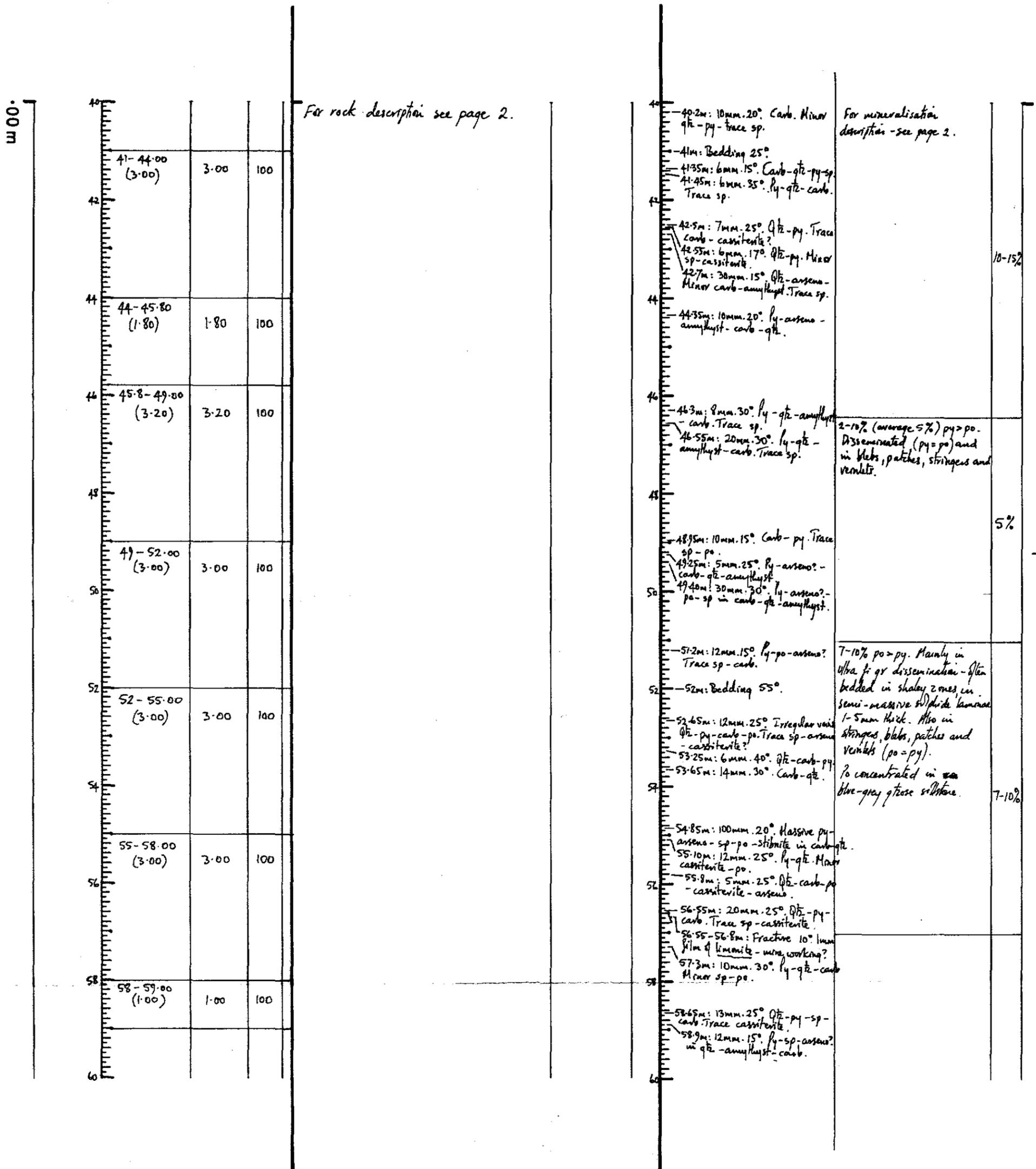
MINERAL EXPLORATION
DETAILED DIAMOND DRILL LOG
 Scale 1: 80

HOLE No. MBD 2
 Log sheet 2 of 17



207059

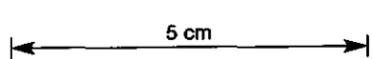
DRILLING NOTES	DRILL ADVANCE (M. mm) & LENGTH FROM COLLAR (M. mm)	LENGTH OF CORE RECOVERED (M. mm)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (M. cm) & ADOPT. LENGTH FROM COLLAR (M. cm)	GRAPHIC LOG	OBSERVATIONS :- Commence with length from collar, either point (relates to marker) or 'from-to' (relates to brackets) ATTITUDE OF BEDDING OR FOLIATION, ATTITUDE & SPACING OF JOINTS; ATTITUDE, WIDTH & DESCRIPTION OF SHEARED ZONES [Attitude = angle of structure to long core axis] MINERALIZATION: ETC.	% MINERALIZATION (VISUAL ESTIMATE)
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MINERAL EXPLORATION
DETAILED DIAMOND DRILL LOG
 Scale 1: 80

HOLE No. MBD2
 Log sheet 3 of 17

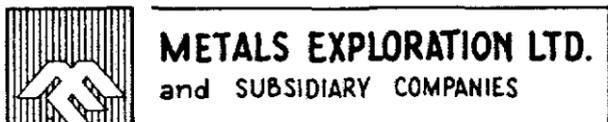
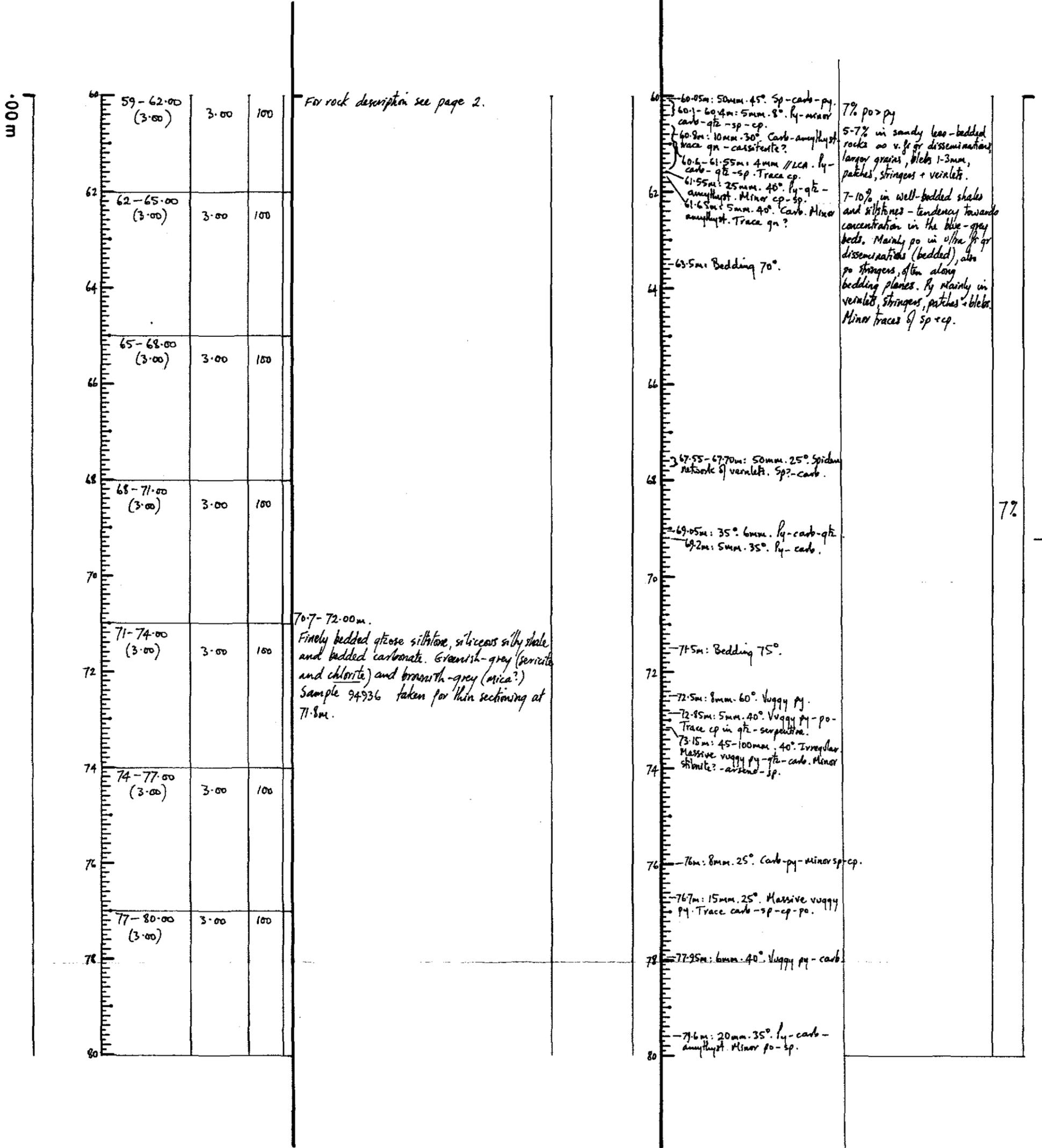
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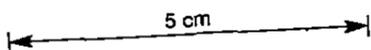
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DRILLING NOTES	DRILL ADVANCE (M. M.) & LENGTH FROM COLLAR (M. M.)	LENGTH OF CORE RECOVERED (M. M.)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (M. CM) & ADOPT. LENGTH FROM COLLAR (M. CM)	GRAPHIC LOG	OBSERVATIONS Commence with length from collar, either point (relates to marker) or 'from-to' (relates to brackets) ATTITUDE OF BEDDING OR FOLIATION; ATTITUDE & SPACING OF JOINTS; ATTITUDE, WIDTH & DESCRIPTION OF SHEARED ZONES [ATTITUDE = angle of structure to long core axis] MINERALIZATION; ETC.	% MINERALIZATION (VISUAL ESTIMATE)
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MINERAL EXPLORATION
DETAILED DIAMOND DRILL LOG
 Scale 1: 80

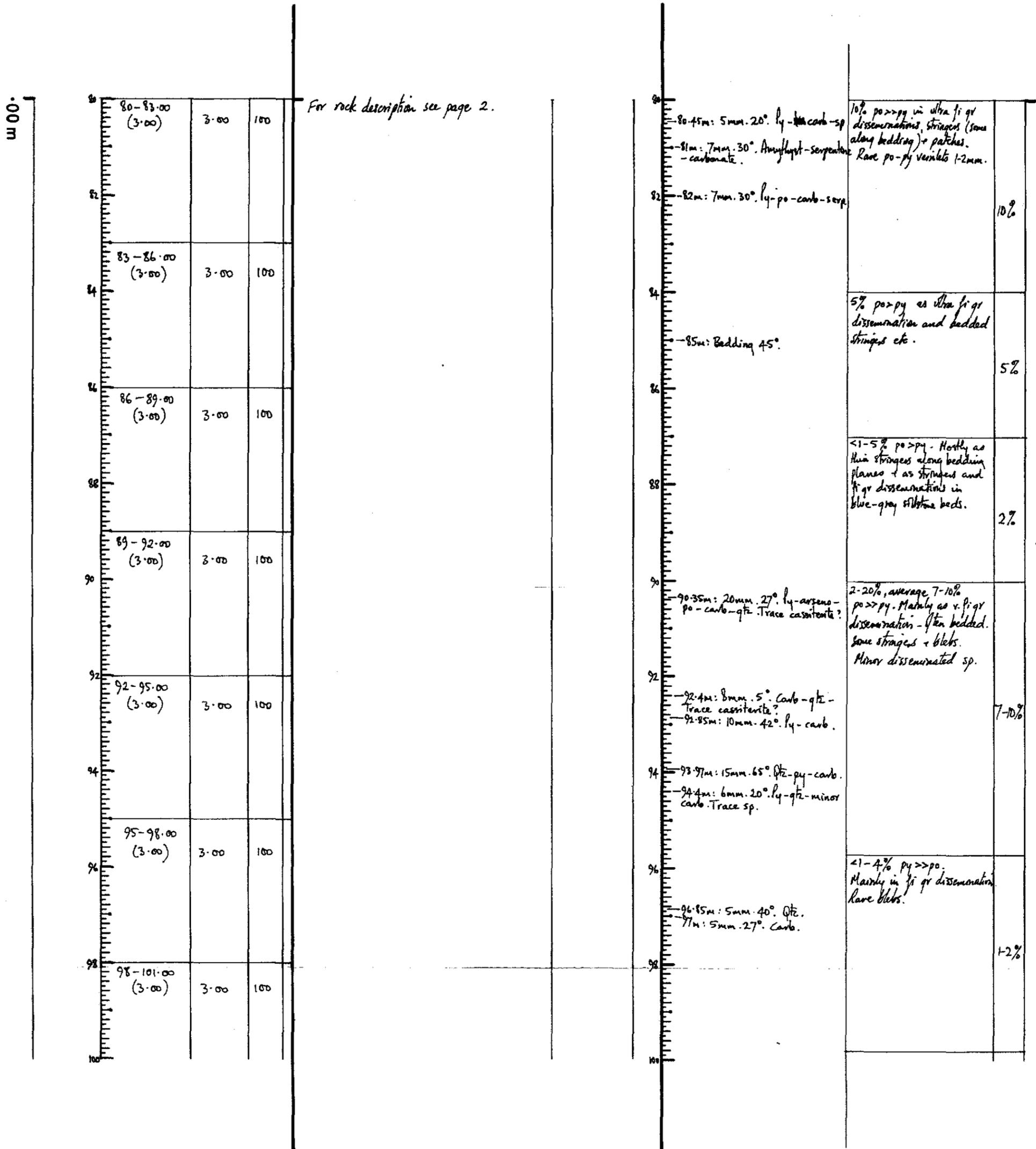
HOLE No. MBD2
 Log sheet 4 of 17



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027

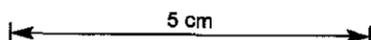
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METALS EXPLORATION LTD.
and SUBSIDIARY COMPANIES

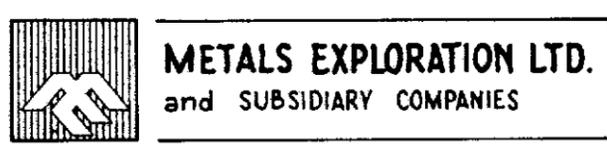
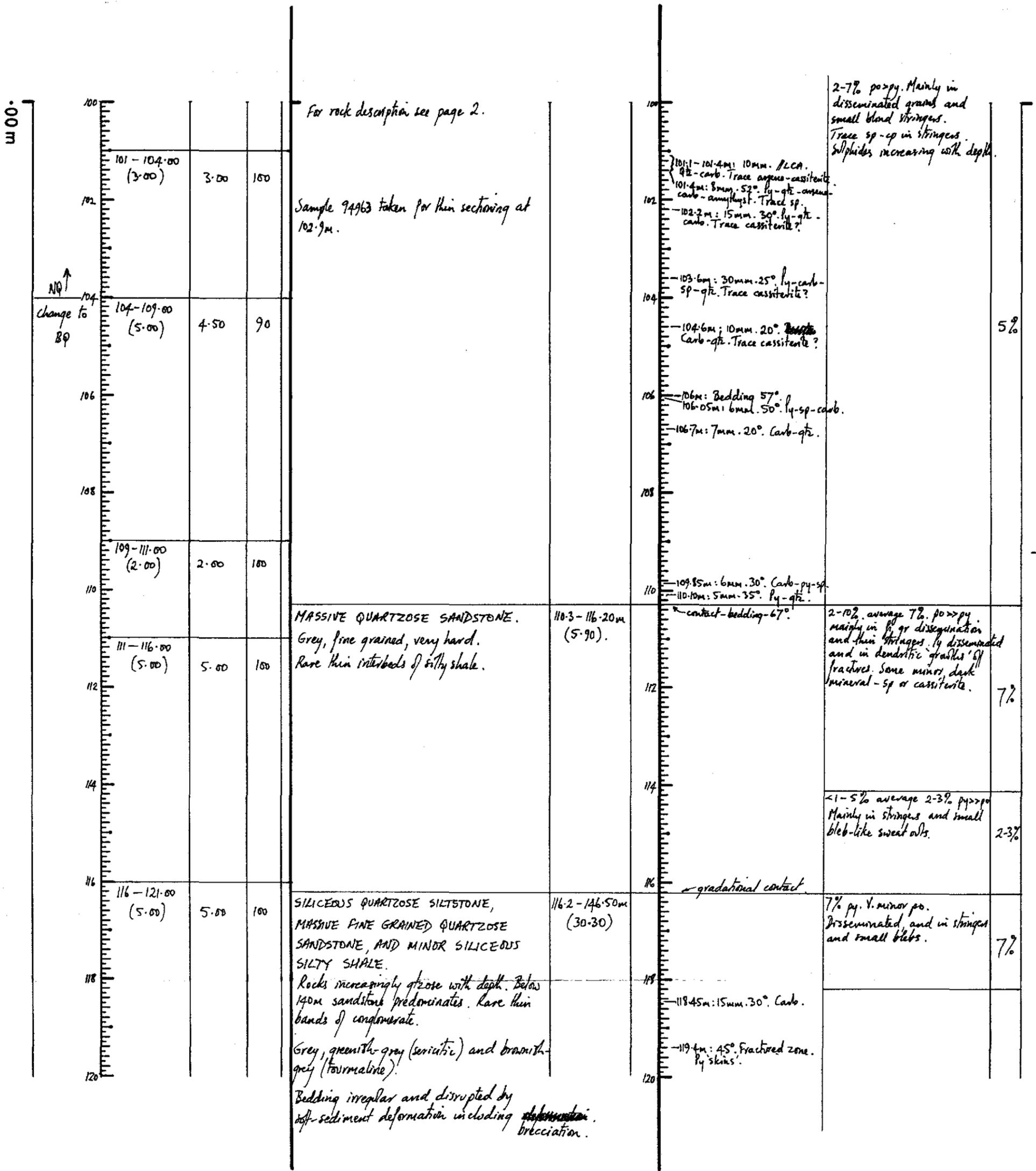
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DETAILED DIAMOND DRILL LOG**
Scale 1: 80

HOLE No. MBD 2
Log sheet 5 of 17



207062

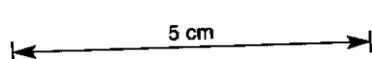
DRILLING NOTES	DRILL ADVANCE (m. m.m.) & LENGTH FROM COLLAR (m. m.m.)	LENGTH OF CORE RECOVERED (m. m.m.)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm.) & ADOPT. LENGTH FROM COLLAR (m. cm.)	GRAPHIC LOG & MARKERS (V)	OBSERVATIONS - Commence with length from collar, either point (relates to marker) or 'from-to' (relates to brackets) ATTITUDE OF BEDDING OR FOLIATION; ATTITUDE & SPACING OF JOINTS; ATTITUDE, WIDTH & DESCRIPTION OF SHEARED ZONES [Attitude = angle of structure to long core axis] MINERALIZATION; ETC.	% MINERALIZATION (VISUAL ESTIMATE)
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**MINERAL EXPLORATION
DETAILED DIAMOND DRILL LOG**
Scale 1: 30

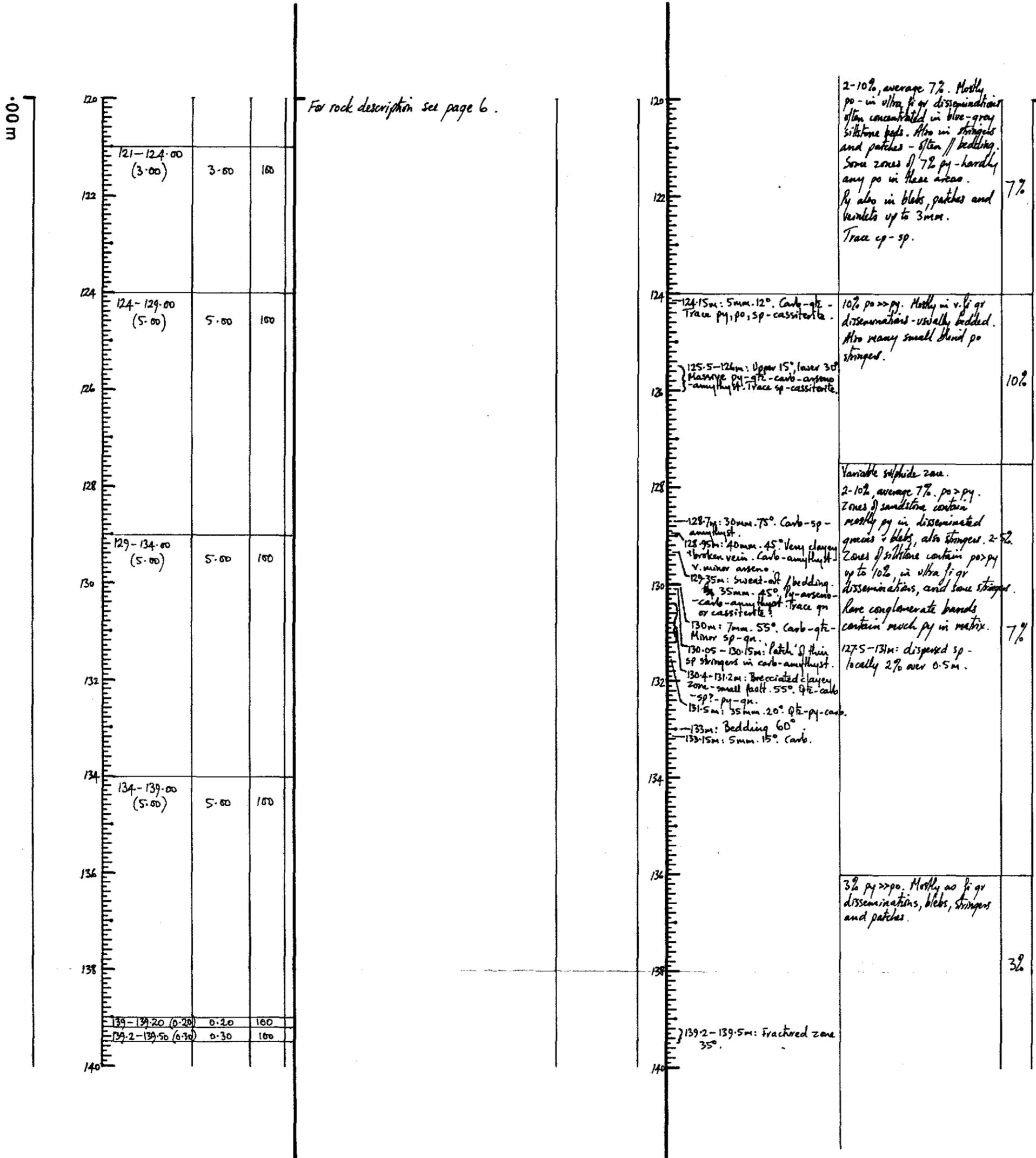
HOLE No. MBD 2
Log sheet 6 of 17

207063



029

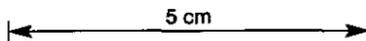
DRILLING NOTES	DRILL ADVANCE (M. MM) & LENGTH FROM COLLAR (M. MM)	LENGTH OF CORE RECOVERED (M. MM)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (M. CM) & ADOPT. LENGTH FROM COLLAR (M. CM)	GRAPHIC LOG	OBSERVATIONS - Commence with length from collar, either point (relates to marker) or 'from-to' (relates to brackets). ATTITUDE OF BEDDING OR FOLIATION; ATTITUDE & SPACING OF JOINTS; ATTITUDE, WIDTH & DESCRIPTION OF SHEARED ZONES [Attitude = angle of structure to long core axis] MINERALIZATION: ETC.	% MINERALIZATION (VISUAL ESTIMATE)
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**MINERAL EXPLORATION
DETAILED DIAMOND DRILL LOG**
Scale 1: 80

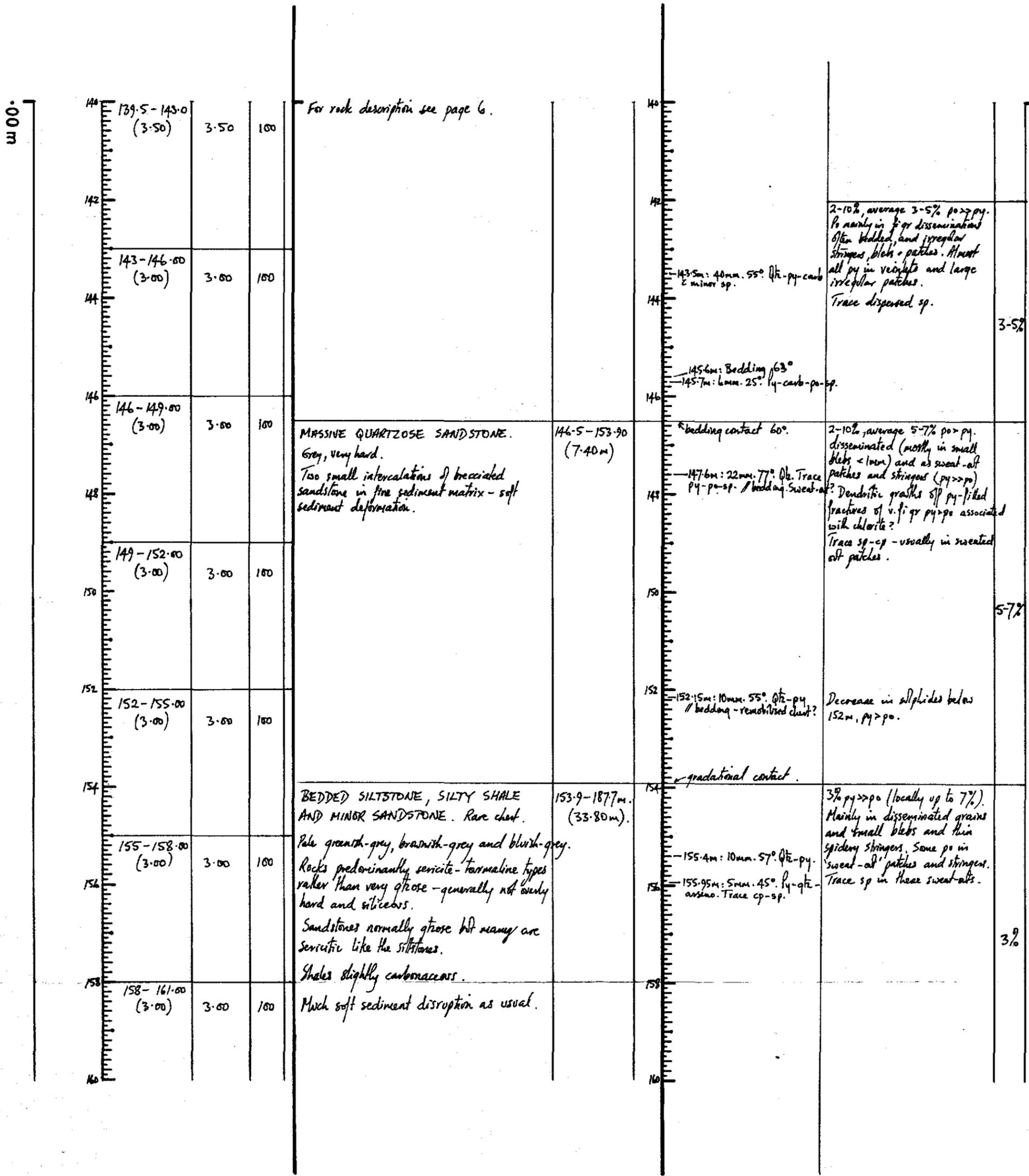
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Log sheet 7 of 17



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030

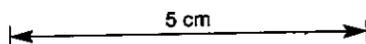
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METALS EXPLORATION LTD.
and SUBSIDIARY COMPANIES

MINERAL EXPLORATION
DETAILED DIAMOND DRILL LOG
Scale 1: 80

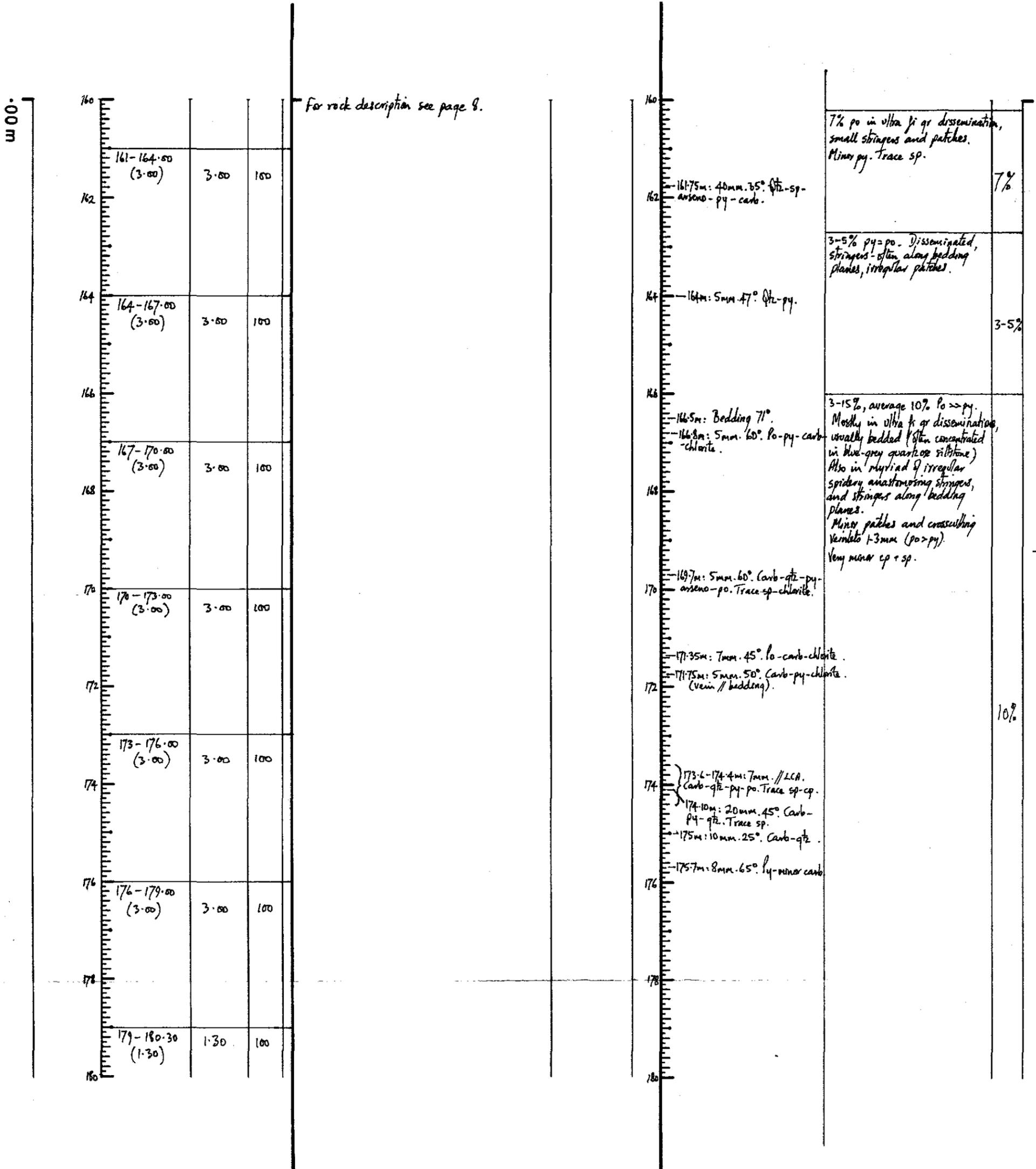
HOLE No. MBD 2
Log sheet 8 of 17



Preliminary Design for Form Aug. 78

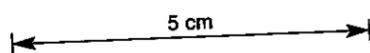
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DRILLING NOTES	DRILL ADVANCE (m. mm)	LENGTH OF CORE RECOVERED	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm)	GRAPHIC LOG & MARKERS (m)	OBSERVATIONS Commence with length from collar, either point (relates to marker) or 'from-to' (relates to brackets) ATTITUDE OF BEDDING OR FOLIATION, ATTITUDE & SPACING OF JOINTS; ATTITUDE, WIDTH & DESCRIPTION OF SHEARED ZONES [Attitude = angle of structure to long core axis] MINERALIZATION; ETC.	% MINERALIZATION (VISUAL ESTIMATE)
	& LENGTH FROM COLLAR m. mm	m. mm			m. cm			



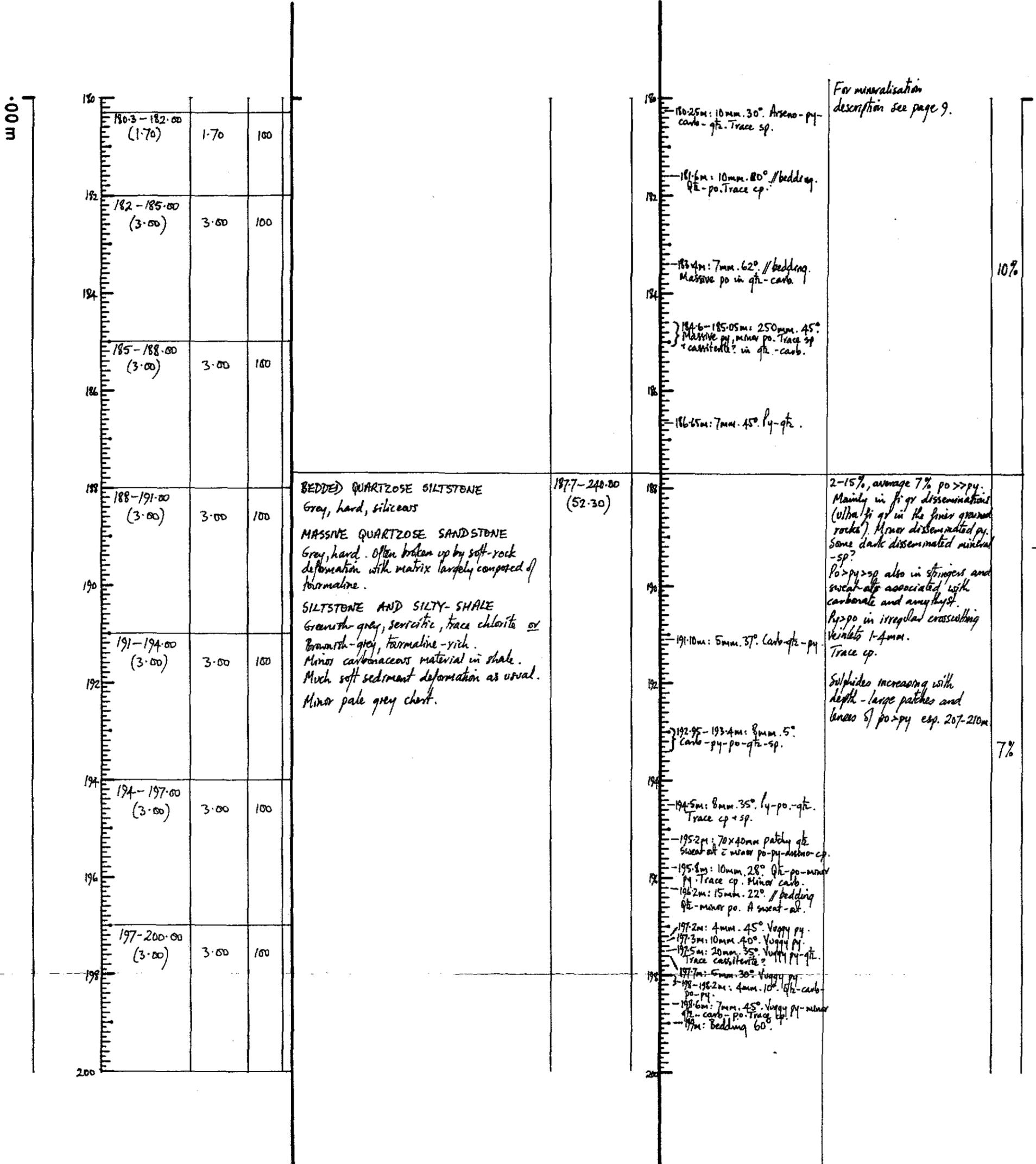
MINERAL EXPLORATION
DETAILED DIAMOND DRILL LOG
 Scale 1: 80

HOLE No. MBD 2
 Log sheet 9 of 17



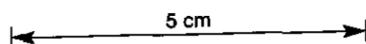
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DRILLING NOTES	DRILL ADVANCE (M. 7772) & LENGTH FROM COLLAR (M. 7772)	LENGTH OF CORE RECOVERED (M. 7772)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (M. CM) & ADOPT. LENGTH FROM COLLAR (M. CM)	GRAPHIC LOG	OBSERVATIONS - Commence with length from collar, either point (relates to marker) or 'from-to' (relates to brackets) ATTITUDE OF BEDDING OR FOLIATION; ATTITUDE & SPACING OF JOINTS; ATTITUDE, WIDTH & DESCRIPTION OF SHEARED ZONES [Attitude = angle of structure to long core axis] MINERALIZATION; ETC.	% MINERALIZATION (VISUAL ESTIMATE)
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MINERAL EXPLORATION
DETAILED DIAMOND DRILL LOG
Scale 1: 80

HOLE No. MBD 2
Log sheet 10 of 17



207067

033

DRILLING NOTES	DRILL ADVANCE (M. M.) & LENGTH FROM COLLAR (M. M.)	LENGTH OF CORE RECOVERED (M. M.)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (M. CM) & ADOPT. LENGTH FROM COLLAR (M. CM)	GRAPHIC LOG	OBSERVATIONS		% MINERALIZATION (VISUAL ESTIMATE)
							BRACKETS & MARKERS (M)	Commence with length from collar, either point (relates to marker) or 'from-to' (relates to brackets) ATTITUDE OF BEDDING OR FOLIATION, ATTITUDE & SPACING OF JOINTS, ATTITUDE, WIDTH & DESCRIPTION OF SHEARED ZONES [Attitude = angle of structure to long core axis] MINERALIZATION: ETC.	

000

200-203.00 (3.00)	3.00	100
203-206.00 (3.00)	3.00	100
206-206.40 (0.40)	(0.40)	100
206.4-209.00 (2.60)	2.60	100
209-212.00 (3.00)	3.00	100
212-215.00 (3.00)	3.00	100
215-218.00 (3.00)	3.00	100
218-221.00 (3.00)	3.00	100

For rock description see page 10.

200.5m: 5mm-50° Py-qtz.
201.6m: 4mm-10° Py-po in qtz-carb.
203.5m: 15mm-58° Qtz-carb-py. Minor po-sp.
204.6m: 5mm-15° Carb-po. V. minor chlorite - cp.
206.65m: 4mm-12° po. Trace py cp in qtz-chlorite-carb.
208.4m: 15mm-35° Qtz-py-arseno-carb. Trace cassiterite?
208.55m: 15mm-45° Waxy, crumbly py-po.
209.50m: 5mm-35° Qtz-po-py.
209.8-210.35m: Fracture // LCN. Rare crystals of kyanite.
210m: 5mm-43° Qtz-py. Trace cassiterite?
210.10m: 12mm-75° // bedding Py-po. Tr. cp.
210.80m: 4mm-40° // bedding Py-po-qtz-carb. Tr. sp.
211m: Bedding 70° Py-po-qtz-carb. Tr. sp.
211.10m: 10mm-45° Irregular multiple veins. Qtz-py-carb. Trace po-sp.
211.65m: 18mm-27° Multiple vein. Py-qtz-carb. Minor po-amphib. Trace sp.
212.10m: 15mm-30° Qtz-py-arseno.
212.6-212.9m: Fracture 5° Carb + cassiterite?
215.25m: 40mm-45° Qtz-py-arseno-carb-amphib.
215.40m: 8mm-38° Py-qtz-carb-arseno-sp.
215.50m: 5mm-35° Py-po-qtz. Trace cassiterite?
217.5m: 15mm-32° Qtz-py-arseno.
218.45m: 5mm-15° Qtz-carb-amphib-py-arseno.
218.65m: 12mm-45° Qtz-py-carb-arseno-sp.
219.3m: 7mm-35° Irregular qtz-sweat-out // bedding. Minor po.

For mineralisation description see page 10.

7%

3-7%, average 5% po → py.
Mostly as fl. qz and small blob (<1mm) dissemination. Minor small stringers and small irregular patches.
Rare dispersed sp.

5%

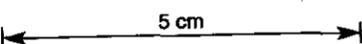


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and SUBSIDIARY COMPANIES

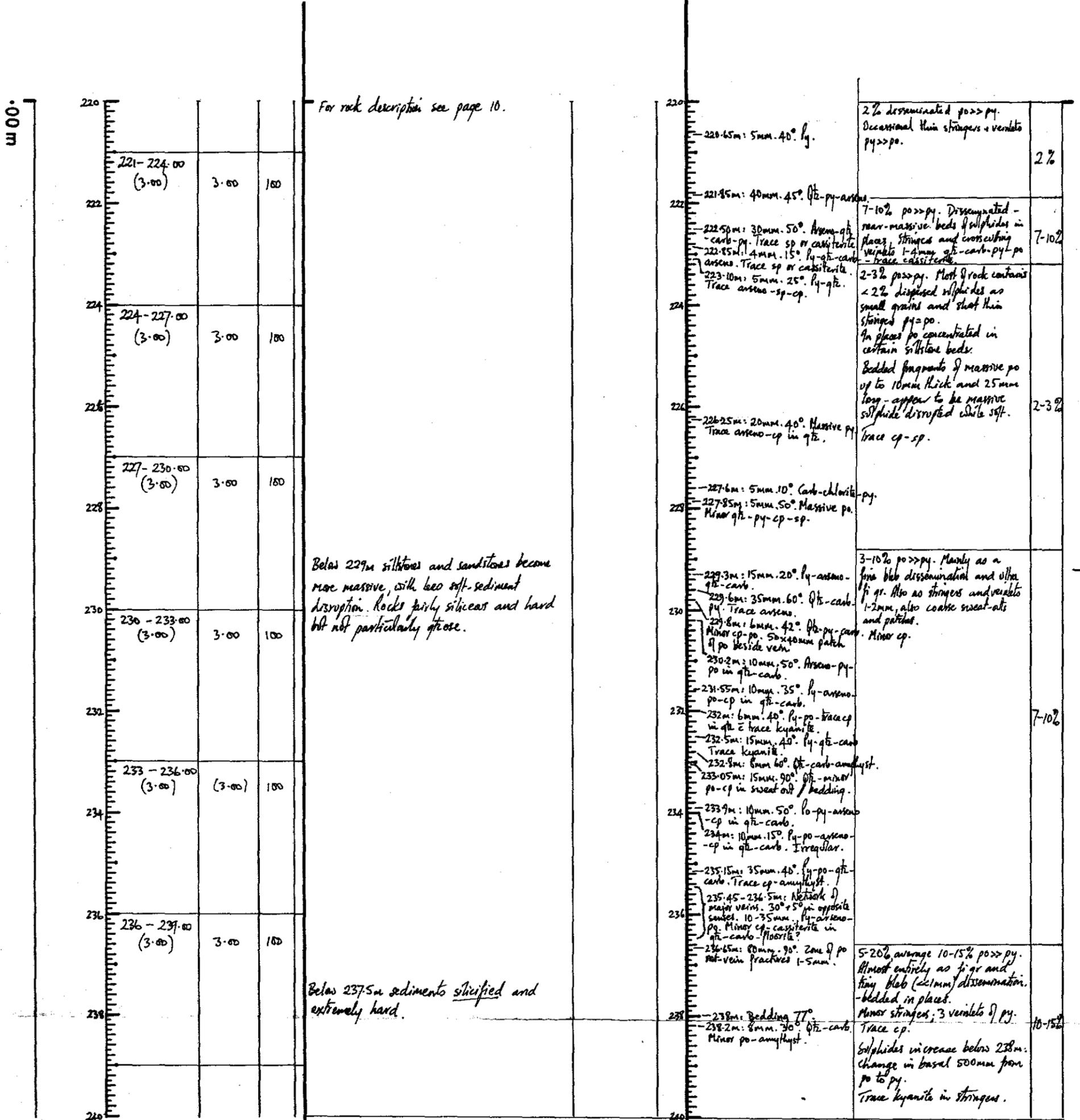
**MINERAL EXPLORATION
DETAILED DIAMOND DRILL LOG**
Scale 1: 80

HOLE No. MBD 2
Log sheet 11 of 17

207068



DRILLING NOTES	DRILL ADVANCE (M. M.M.) & LENGTH FROM COLLAR (M. M.M.)	LENGTH OF CORE RECOVERED (M. M.M.)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (M. M.M.) & ADOPT. LENGTH FROM COLLAR (M. M.M.)	GRAPHIC LOG	REMARKS & MEASUREMENTS (M)	OBSERVATIONS Commence with length from collar, either point (relates to marker) or 'from-to' (relates to brackets) ATTITUDE OF BEDDING OR FOLIATION; ATTITUDE & SPACING OF JOINTS; ATTITUDE, WIDTH & DESCRIPTION OF SHEARED ZONES [Attitude = angle of structure to long core axis] MINERALIZATION: ETC.	% MINERALIZATION (VISUAL ESTIMATE)
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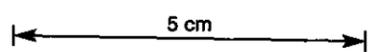


METALS EXPLORATION LTD.
and SUBSIDIARY COMPANIES

**MINERAL EXPLORATION
DETAILED DIAMOND DRILL LOG**
Scale 1: 80

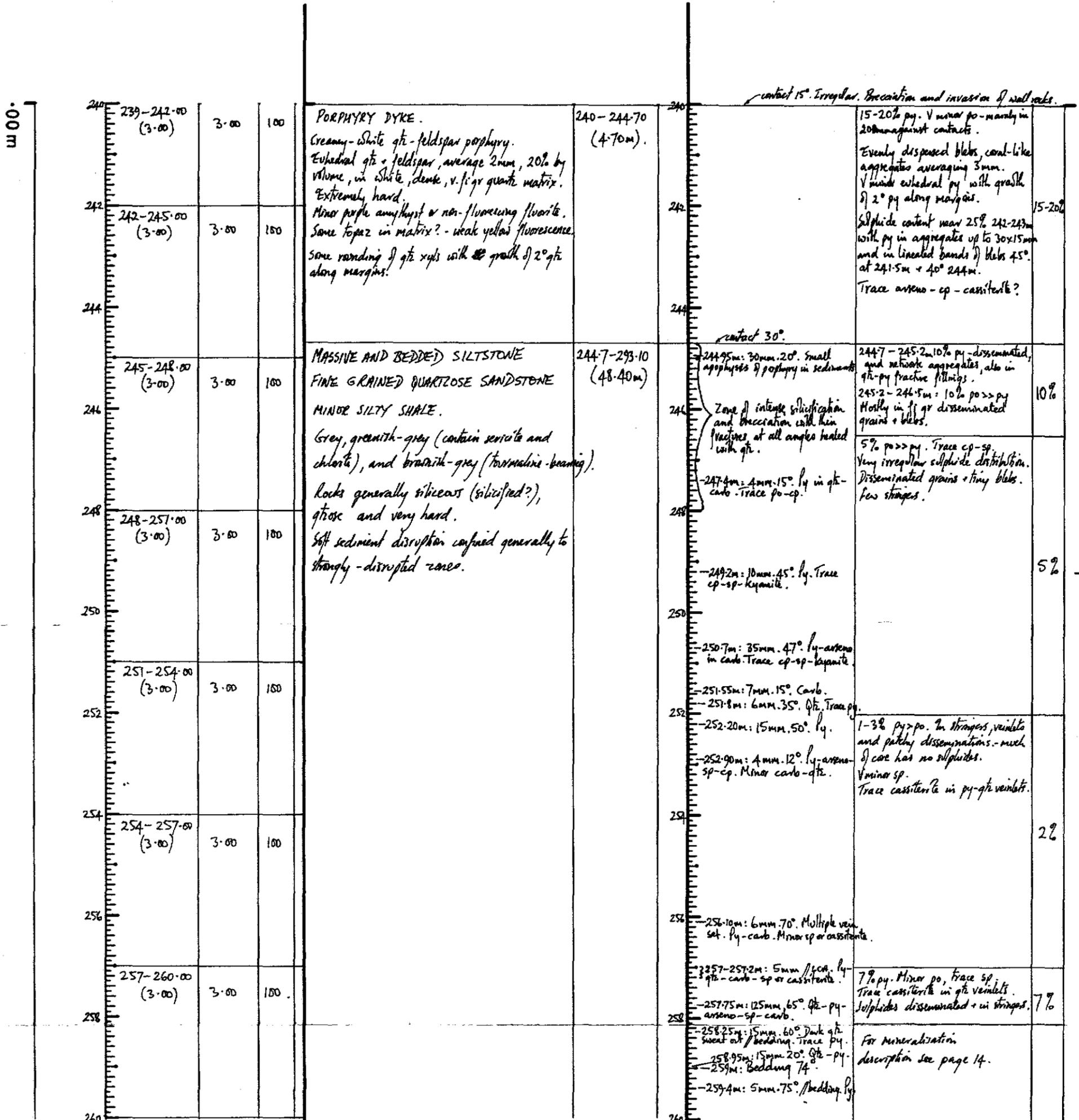
HOLE No. MBD2
Log sheet 12 of 17

207069



035

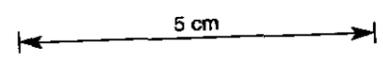
DRILLING NOTES	DRILL ADVANCE (M. M.M.) & LENGTH FROM COLLAR (M. M.M.)	LENGTH OF CORE RECOVERED (M. M.M.)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (M. CM) & ADOPT. LENGTH FROM COLLAR (M. CM)	GRAPHIC LOG	OBSERVATIONS Commence with length from collar, either point (relates to marker) or 'from-to' (relates to brackets). ATTITUDE OF BEDDING OR FOLIATION; ATTITUDE & SPACING OF JOINTS; ATTITUDE, WIDTH & DESCRIPTION OF SHEARED ZONES [Attitude = angle of structure to long core axis] MINERALIZATION; ETC.	% MINERALIZATION (VISUAL ESTIMATE)
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METALS EXPLORATION LTD.
and SUBSIDIARY COMPANIES

**MINERAL EXPLORATION
DETAILED DIAMOND DRILL LOG**
Scale 1: 80

HOLE No. MBD 2
Log sheet 13 of 17

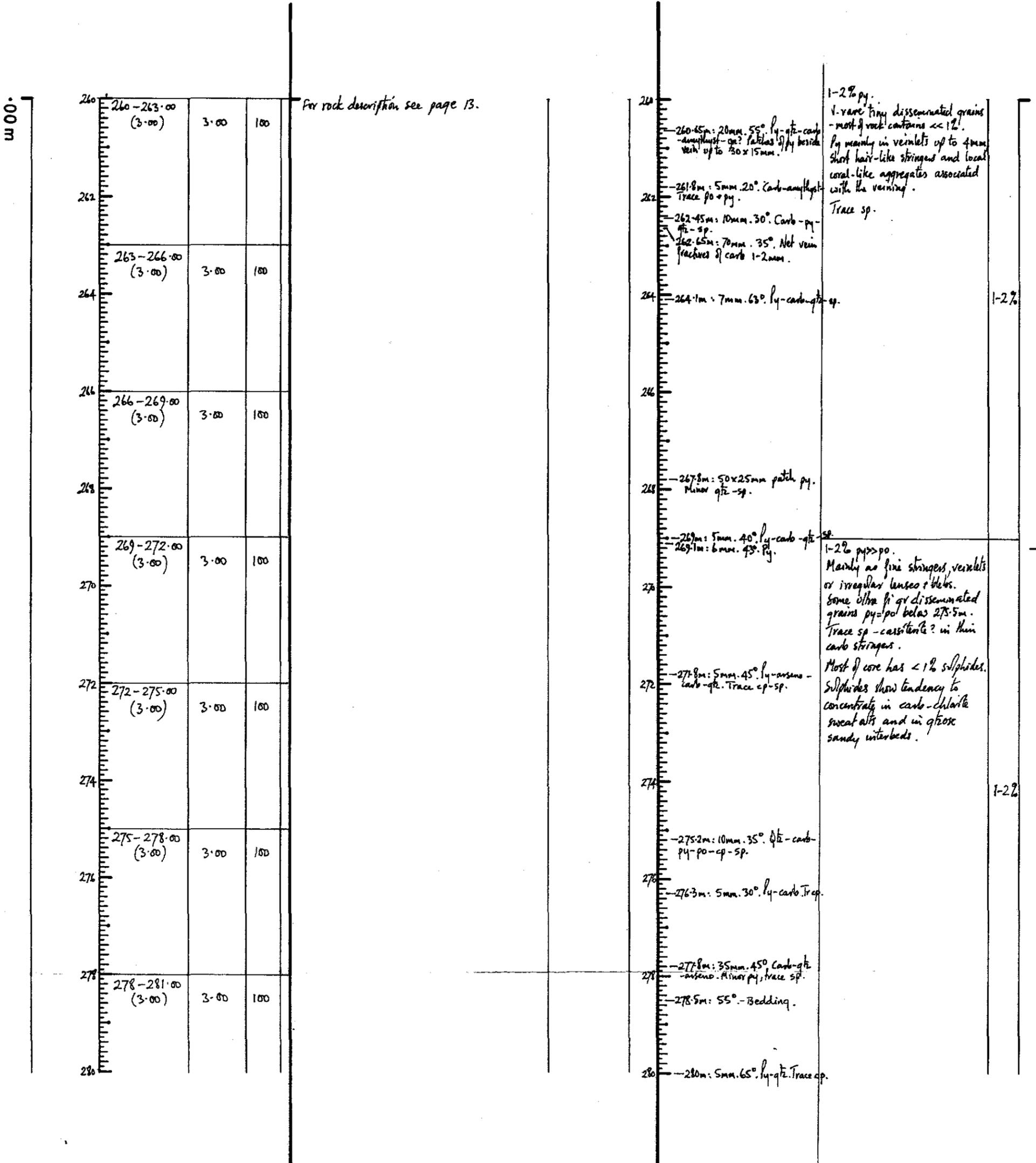


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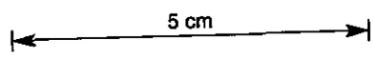
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METALS EXPLORATION LTD.
and SUBSIDIARY COMPANIES

**MINERAL EXPLORATION
DETAILED DIAMOND DRILL LOG**
Scale 1: 80

HOLE No. MBD2.
Log sheet 14 of 17

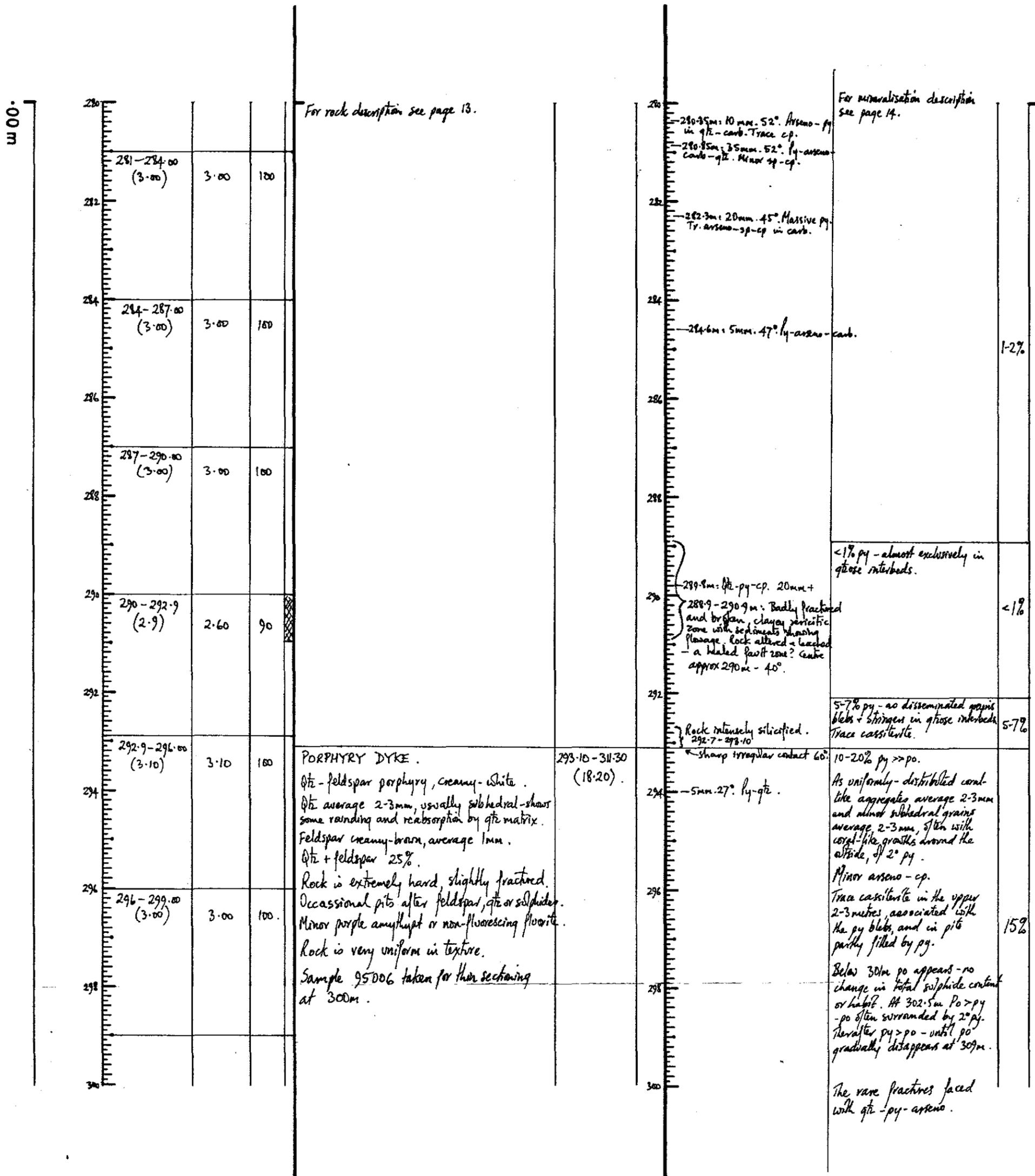


Preliminary Design for Form Aug. 78

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037

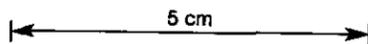
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METALS EXPLORATION LTD.
and SUBSIDIARY COMPANIES

**MINERAL EXPLORATION
DETAILED DIAMOND DRILL LOG**
Scale 1: 80

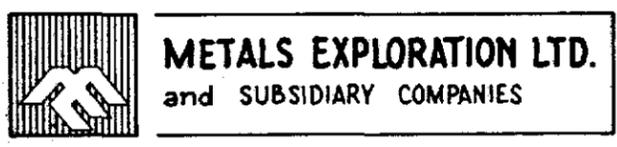
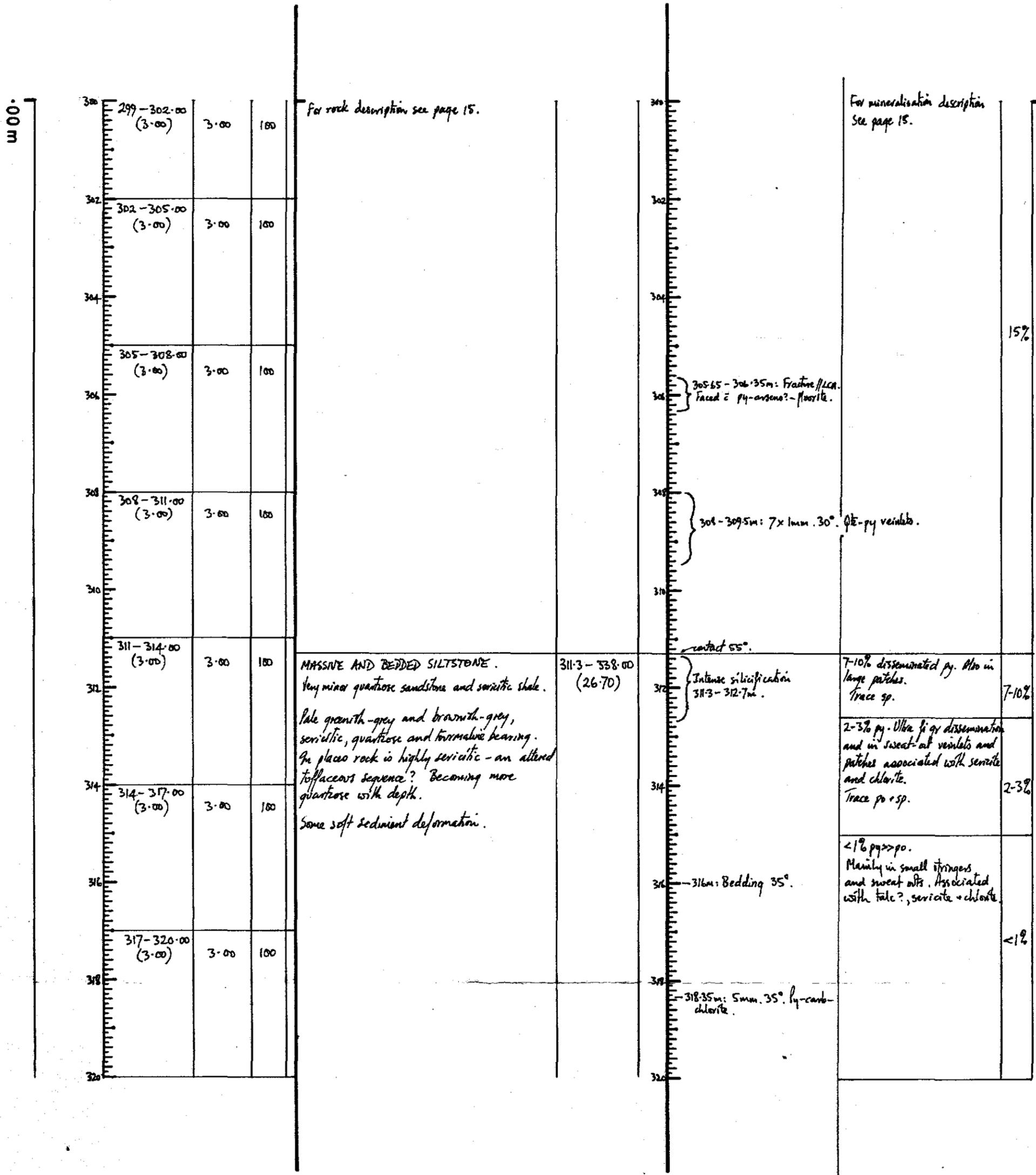
HOLE No. MBD2
Log sheet 15 of 17



207072

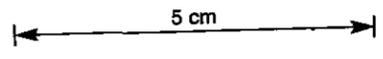
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DRILLING NOTES	DRILL ADVANCE (M. M.) & LENGTH FROM COLLAR (M. M.)	LENGTH OF CORE RECOVERED (M. M.)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (M. CM) & ADOPT. LENGTH FROM COLLAR (M. CM)	GRAPHIC LOG	BRACKETS & MARKERS (M)	OBSERVATIONS Commence with length from collar, either point (relates to marker) or 'from-to' (relates to brackets) ATTITUDE OF BEDDING OR FOLIATION; ATTITUDE & SPACING OF JOINTS; ATTITUDE, WIDTH & DESCRIPTION OF SHEARED ZONES [Attitude = angle of structure to long core axis] MINERALIZATION; ETC.	% MINERALIZATION (VISUAL ESTIMATE)
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MINERAL EXPLORATION
DETAILED DIAMOND DRILL LOG
Scale 1: 80

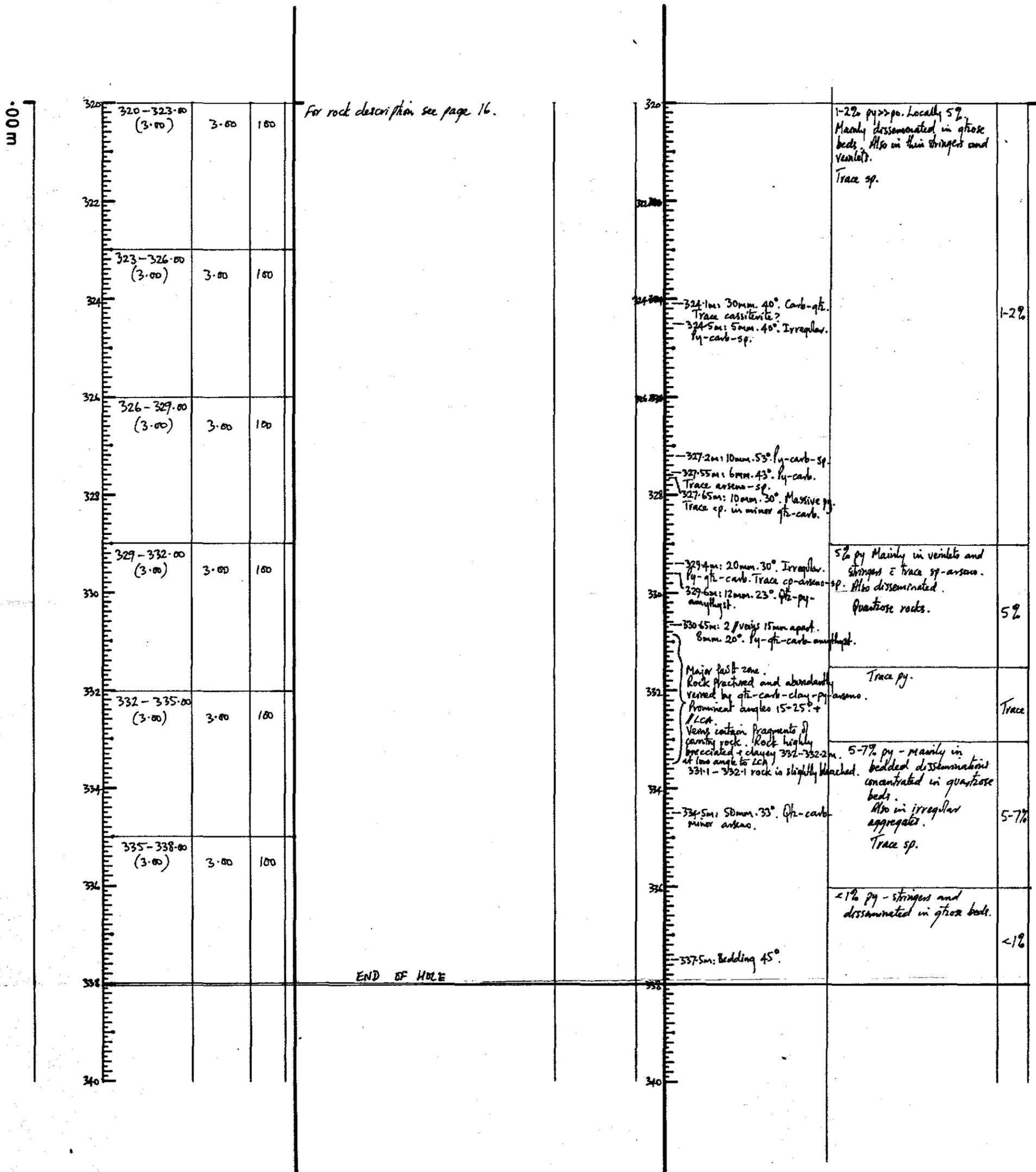
HOLE No. MED 2
Log sheet 16 of 17



207073

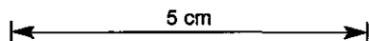
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DRILLING NOTES	DRILL ADVANCE (M. MM) & LENGTH FROM COLLAR (M. MM)	LENGTH OF CORE RECOVERED (M. MM)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (M. CM) & ADOPT. LENGTH FROM COLLAR (M. CM)	GRAPHIC LOG	OBSERVATIONS Commence with length from collar, either point (relates to marker) or 'from-to' (relates to brackets) ATTITUDE OF BEDDING OR FOLIATION; ATTITUDE & SPACING OF JOINTS; ATTITUDE, WIDTH & DESCRIPTION OF SHEARED ZONES [Attitude = angle of structure to long core axis] MINERALIZATION; ETC.	% MINERALIZATION (VISUAL ESTIMATE)
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MINERAL EXPLORATION
DETAILED DIAMOND DRILL LOG
 Scale 1: 80

HOLE No. MSD2
 Log sheet 17 of 17



207074

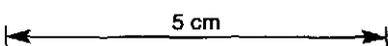
040

Verning etc.
(all veins over 5mm noted).

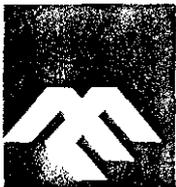
Mineralization.

<p>SILTY SHALE with lesser QUARTZOSE SANDSTONE. Shale - soft, greenish-grey, sericitic and carbonaceous. Finely bedded with much soft sediment disruption. Sandstone - khaki-grey, hard, possibly silicified.</p>	<p>4.50-45.70 (41.20)</p>	<p>0 4.50-28.00 One extremely broken. 14m: Bedding 67° 21: 4mm. 80° Qtz-py. 29.6m: 10mm. 55° Py. 38.5: Bedding 55°. contact 60°</p>	<p>3-5% py. Trace cp-sp. Mainly in the abundant thin spidery fractures. Also disseminations, often concentrated in quartz beds. 3-5%</p>
<p>QUARTZOSE SANDSTONE. Brownish-grey.</p>	<p>45.7-54.50 (8.80)</p>	<p>47.3: 10mm. 55° Py-qtz. 47.6: 50mm. 80° Py.</p>	<p>3-5% py. Mainly filling the abundant thin irregular fractures. Trace cassiterite. 3-5%</p>
<p>SILTY SHALE. Greenish-grey, soft, sericitic, partly carbonaceous. Abundant tiny fractures.</p>	<p>54.5-65.85 (11.35)</p>	<p>54.5-59.3: contact 55° Very broken.</p>	<p>5-7% py. Disseminated-concentrated in quartz beds. Also in the fractures. 5-7%</p>
<p>QUARTZ-FELDSPAR PORPHYRY DYKE. Pale brown, pitted and fractured</p>	<p>65.85-77.30 (11.45)</p>	<p>contact 75° Sharp.</p>	<p>10-15% py in aggregates 1-3mm. Minor dispersed cassiterite: 1-2% at 67-68m; 1% 70-72.50. 10-15%</p>
<p>SILTY SHALE and QUARTZOSE SANDSTONE Dark grey, soft, sericitic, carbonaceous. Finely bedded with much soft sediment disruption. Sandstone: fawn-brown, hard, abundantly fractured.</p>	<p>77.3-108.30 (31.00)</p>	<p>contact 78° Sharp. 78m: Bedding 67°. 84-86-15: Porphyry dyke. 86-15-90-0: Badly broken. 91.75: 20mm. 60° Py. 92.4: 6mm. 70° Py-arseno. 99: 7mm. Py. 102.5: 5mm. 10° Py.</p>	<p>3-5% py. Disseminated, concentrated in quartz beds. Also in the irregular tiny fractures. Trace disseminated cassiterite. Trace sp-gn-arseno. 3-5%</p>
<p>QUARTZ-FELDSPAR PORPHYRY DYKE. Fawn and greenish-grey. Quartz embayed, feldspar often leached out or altered to sericite and clay. Rock pitted throughout due to alteration and leaching - often crumbly and light in weight.</p>	<p>108.30-148.25 (39.95)</p>	<p>108.3-115.7: contact 45° Very broken. 115: 6mm. 25° Qtz-py-cassiterite 115.15: 9mm. 15° Py-qtz-cassiterite 115.8: 9mm. 25° Qtz-py.</p>	<p>10% disseminated py. Trace sp-arseno. or Trace cassiterite-disseminated. 3% disseminated py. Minor sp. Trace cassiterite. 10% disseminated py. Minor disseminated cassiterite - locally 1% below 128.5: none on the numerous fractures. Minor sp-arseno 1-2% py. Minor sp. V. minor cassiterite. 10% 3% 1-2%</p>
<p>SILTY SHALE with interbedded QUARTZOSE SILTSTONE & SANDSTONE Silty shale: dark grey to black, sericitic + carbonaceous. Quartzose rocks also carbonaceous.</p>	<p>148.25-170.00 (21.75)</p>	<p>152: Bedding 45° 153-1: 10mm. 45° Carb-cassiterite 161.9-162.4: 6mm. 0° Py. Trace cassiterite 165.45: 15mm. 85° Py.</p>	<p>5% py, locally 10%. Mainly as stringers, lenses, patches etc in spidery fractures. Also disseminated, concentrated in quartz beds. 5%</p>

END OF HOLE.



207076



METALS EXPLORATION LTD.

20 LITTLE COLLINS STREET MELBOURNE, AUSTRALIA 3000 TELEPHONE 654 4200. TELEX AA32051 TELEGRAM ROCKDOC.

5th July, 1980.

Director of Mines,
Department of Mines,
G.P.O. Box 124B,
HOBART. TAS. 7001

SEARCHED	INDEXED
SERIALIZED	FILED
28 JUL 1980	
DEPT. OF MINES	
REF. No. 5560/80	

Dear Sirs,

Re: Mt. Bischoff Tin Project, Tasmania
Error in Reported Location of D.D.H. MBD3

An error has been found on sheet 1 of the drill log for MBD3 which is contained in the report titled:

METALS EXPLORATION LIMITED
MT. BISCHOFF TIN PROSPECT
(Exploration Area being part of EL 5/63)
TASMANIA
REPORT ON STAGE I PROGRAMME
VOLUME II

by A. Jannink
January 1979

(also known as M.E.L. Report No. 499)

It is located near the top of the sheet on the line marked "(1)". The planar co-ordinates and elevation shown are those for MBD 2 and should be crossed out and replaced with 2146.12mN, 1360.14mE, 690.39m Elevation.

Drawings in the report show MBD 3 in the correct position.

After the Stage I Programme we adopted the magnetic bearing $330^{\circ}00'$ for grid north. Therefore the figures in the top right corner of the sheet should now be $150^{\circ}00'$ magnetic, 180° grid (1). This also applies to the logs of MBD 2 and MBD 4.

For MBD1 and MBD5, a note could be added to the bottom right corner saying Grid North = $330^{\circ}00'$ magnetic.

Yours faithfully,
METALS EXPLORATION LIMITED


J.E. LYNCH,
EXPLORATION MANAGER

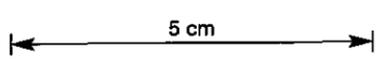
042

METALS EXPLORATION LTD.
 & SUBSIDIARY COMPANIES



MINERAL EXPLORATION
DIAMOND DRILL LOG

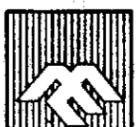
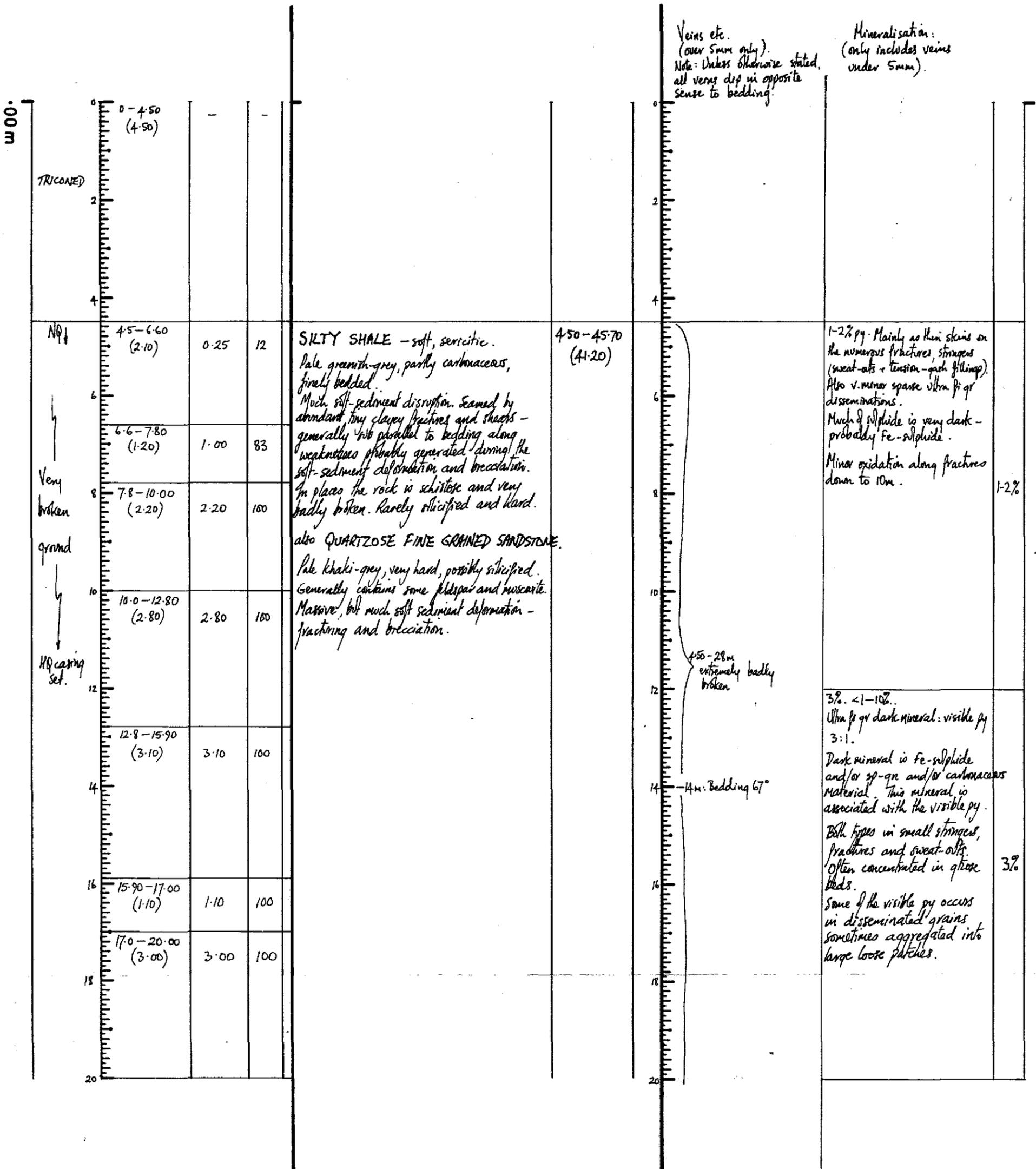
Prospect, area, project or mine. <u>MT BISCHEFF</u>		HOLE No. <u>MBS3</u>	
COLLAR LOCATION		W.C. Bearing from collar <u>150°30'</u> magnetic <u>180°</u> grid (1) <u> </u> grid (2) <u> </u> grid (3) <u> </u> true	
Grid name <u>MBSV</u>	Rectangular space co-ordinates PLANAR CO-ORDINATES (1) <u>2146.12</u> mN <u>1360.14</u> mE <u>690.39m</u> ELEVATION <u>2051.79</u> mN <u>999.91</u> mE <u>683.50m</u> (2) <u> </u> N <u> </u> E <u> </u> (3) Aust. Map Grid <u> </u> mE <u> </u> mN <u> </u> m A.H.D. PRECISE / APPROX.		
1:250 000 Sheet No. <u>BURNIE SK 55-3</u>	1:100 000 Sheet No. <u>MELLYER 2015</u>		State <u>TASMANIA</u>
Mineral Tenement <u>EL 5/63</u>	Holder <u>CONSTANCE PTY LTD</u>	Inclination at collar <u>80°</u>	
Cadastral location and details CROWN LAND/PRIVATE		Total length <u>170m</u>	
Details of down hole location-survey methods. <u>ENTRANCE</u> <u>Single Shot Photo</u> <u>Logging</u>		Commenced: <u>10/9/1978</u> Completed: <u>15/9/1978</u>	
Purpose of drilling and anticipated lengths to targets. <u>To intersect "Stanbury" Porphyry Dyke</u>		Drilling contractor <u>LONGYEAR AUSTRALIA</u> <u>PTY LTD</u> <u>LONGYEAR F38 RIG</u>	
Results of down hole location-survey.		Core size and non-coring (NC)	
LENGTH FROM COLLAR m	W.C. BEARING type magnetic	DIP	
36	142°	80°30'	TRICONE <u>0</u> TO <u>4.5m</u>
60	141°	81°	NQ <u>4.5</u> TO <u>71.0m</u>
90	141°	81°	Rg <u>71.0</u> TO <u>170.0m</u>
120	140°30'	81°30'	TO
150	146°30'	81°30'	TO
168	150°	82°	TO
Comments on drilling. <u>Broken ground was encountered in collaring the hole and 25m of HQ rod was left in the hole</u>		Legend for graphic log column (see drill log for Hole No. <u> </u>) 'DERWENT' PENCIL NO. <input type="checkbox"/> FIELD ROCK NAME, ETC. <input type="checkbox"/> <input type="checkbox"/>	
LOGGED BY <u>J.F. P. Jones</u>	LOGGED BY <u> </u>	LOGGED BY <u> </u>	Symbols and abbreviations for drilling notes column.
FROM <u> </u> TO <u>170m</u>	FROM <u> </u> TO <u> </u>	FROM <u> </u> TO <u> </u>	
DATE <u>09/08/1978</u>	DATE <u> </u>	DATE <u> </u>	
Company managing exploration programme. <u>METALS EXPLORATION LTD</u>		HOLE No. <u>MBS3</u> Log sheet 1 of <u> </u>	



2070777

043

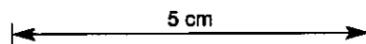
DRILLING NOTES	DRILL ADVANCE (M. MM) & LENGTH FROM COLLAR (M. MM)	LENGTH OF CORE RECOVERED (M. MM)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (M. CM) & ADOPT. LENGTH FROM COLLAR (M. CM)	GRAPHIC LOG & BRACKETS & MARKERS (V)	OBSERVATIONS Commence with length from collar, either point (relates to marker) or 'from-to' (relates to brackets) ATTITUDE OF BEDDING OR FOLIATION; ATTITUDE & SPACING OF JOINTS; WIDTH & DESCRIPTION OF SHEARED ZONES [Attitude = angle of structure to long core axis] MINERALIZATION; ETC.	% MINERALIZATION (VISUAL ESTIMATE)
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METALS EXPLORATION LTD.
and SUBSIDIARY COMPANIES

**MINERAL EXPLORATION
DETAILED DIAMOND DRILL LOG**
Scale 1: 80

HOLE No. MBD3
Log sheet 1 of 9

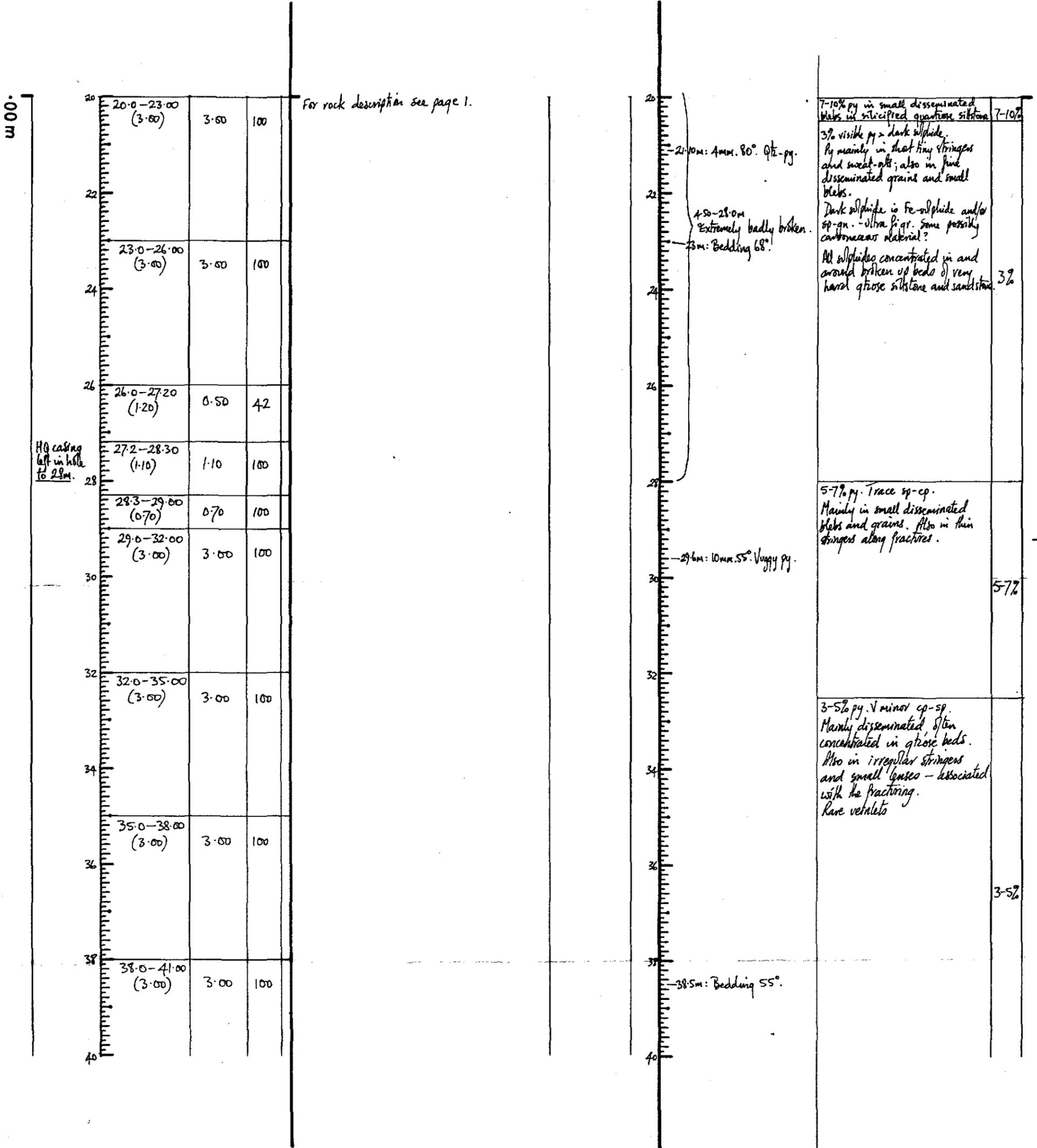


Preliminary Design for Form Aug. 78

207078

044

DRILLING NOTES	DRILL ADVANCE (M. MM) & LENGTH FROM COLLAR (M. MM)	LENGTH OF CORE RECOVERED (M. MM)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (M. CM) & ADOPT. LENGTH FROM COLLAR (M. CM)	GRAPHIC LOG	ROCKETS & MARKERS (M)	OBSERVATIONS - Commence with length from collar, either point (relates to marker) or 'from-to' (relates to brackets) ATTITUDE OF BEDDING OR FOLIATION; ATTITUDE & SPACING OF JOINTS; ATTITUDE, WIDTH & DESCRIPTION OF SHEARED ZONES [ATTITUDE = angle of structure to long core axis] MINERALIZATION; ETC.	% MINERALIZATION (VISUAL ESTIMATE)
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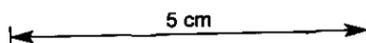
METALS EXPLORATION LTD.
and SUBSIDIARY COMPANIES

**MINERAL EXPLORATION
DETAILED DIAMOND DRILL LOG**

Scale 1: 80

HOLE No. MBD3

Log sheet 2 of 9

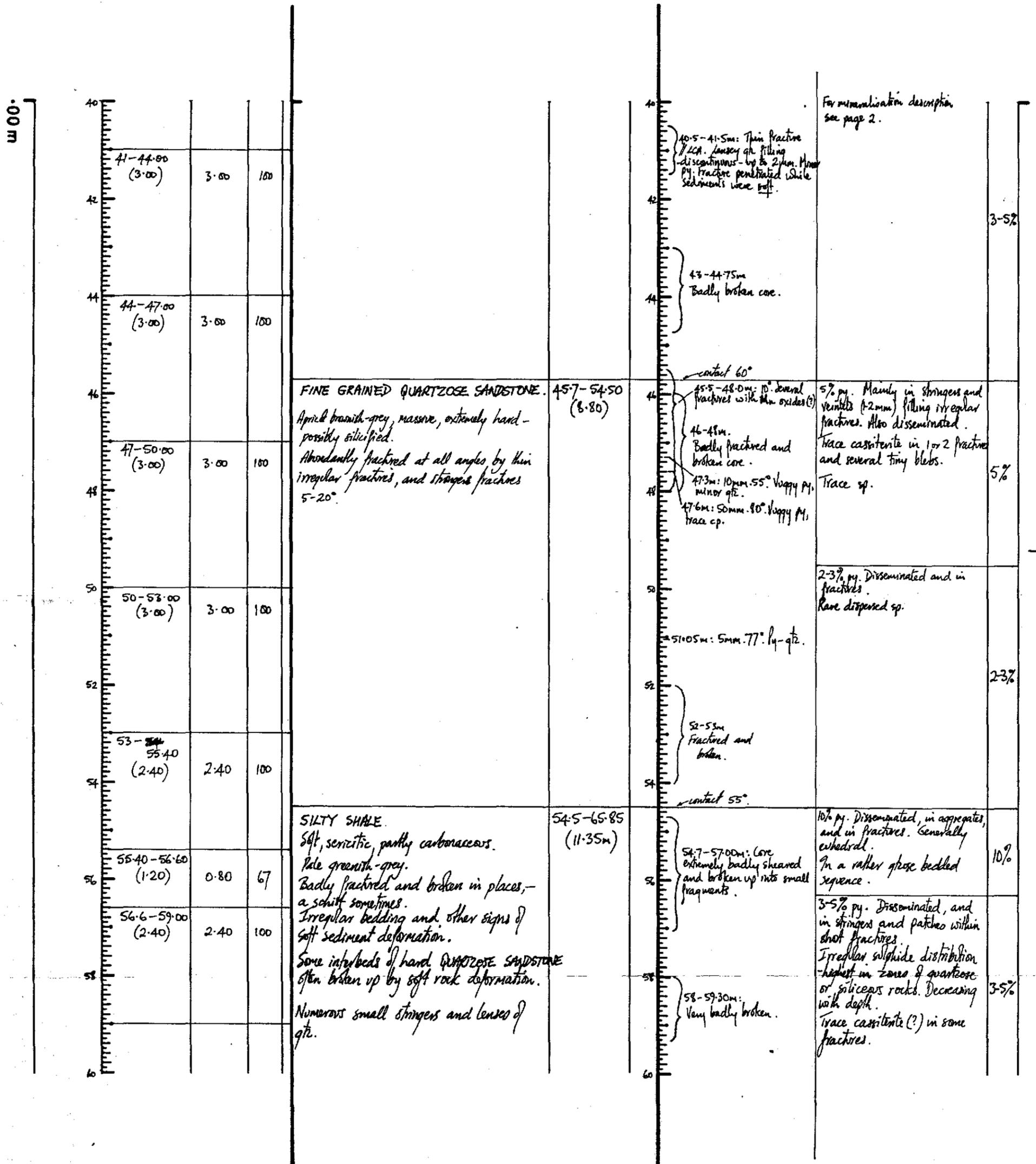


Preliminary Design for Form Aug. 78

207079

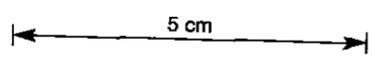
045

DRILLING NOTES	DRILL ADVANCE (M. M.) & LENGTH FROM COLLAR (M. M.)	LENGTH OF CORE RECOVERED (M. M.)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (M. CM.) & ADOPT. LENGTH FROM COLLAR (M. CM.)	GRAPHIC LOG	OBSERVATIONS - Commence with length from collar, either point (relates to marker) or 'from-to' (relates to brackets) ATTITUDE OF BEDDING OR FOLIATION, ATTITUDE & SPACING OF JOINTS, WIDTH & DESCRIPTION OF SHEARED ZONES [Attitude = angle of structure to long core axis] MINERALIZATION; ETC.	% MINERALIZATION (VISUAL ESTIMATE)
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MINERAL EXPLORATION
DETAILED DIAMOND DRILL LOG
Scale 1: 80

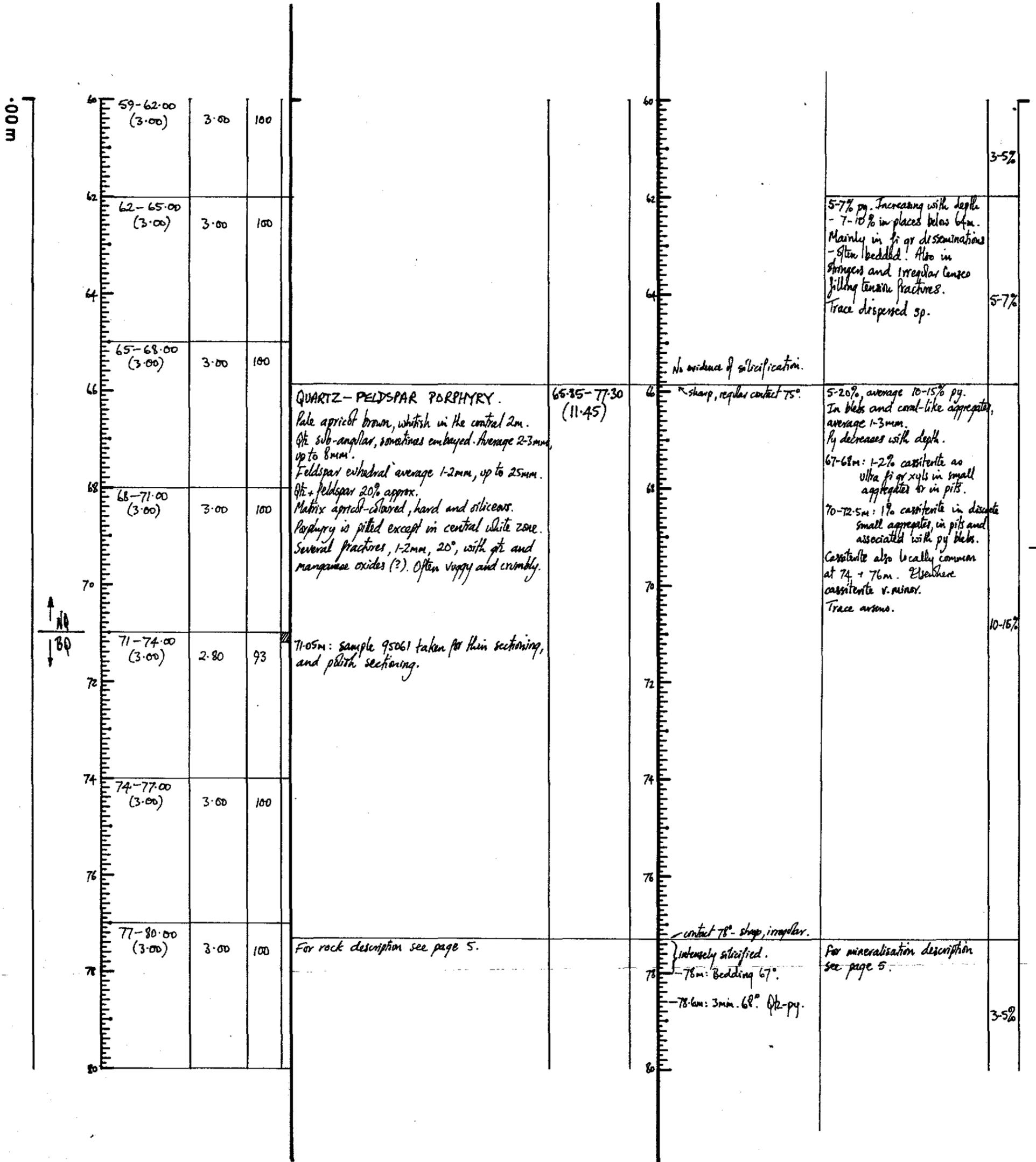
HOLE No. MBD3
Log sheet 3 of 9



207080

046

DRILLING NOTES	DRILL ADVANCE (M. M.) & LENGTH FROM COLLAR (M. M.)	LENGTH OF CORE RECOVERED (M. M.)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (M. CM) & ADOPT. LENGTH FROM COLLAR (M. CM)	GRAPHIC LOG	REMARKS & MARKINGS (B)	OBSERVATIONS - Commence with length from collar, either point (relates to marker) or 'from-to' (relates to brackets) ATTITUDE OF BEDDING OR FOLIATION, ATTITUDE & SPACING OF JOINTS; ATTITUDE, WIDTH & DESCRIPTION OF SHEARED ZONES [Attitude = angle of structure to long core axis] MINERALIZATION; ETC.	% MINERALIZATION (VISUAL ESTIMATE)
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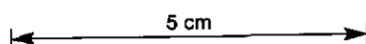


METALS EXPLORATION LTD.
and SUBSIDIARY COMPANIES

**MINERAL EXPLORATION
DETAILED DIAMOND DRILL LOG**
Scale 1: 80

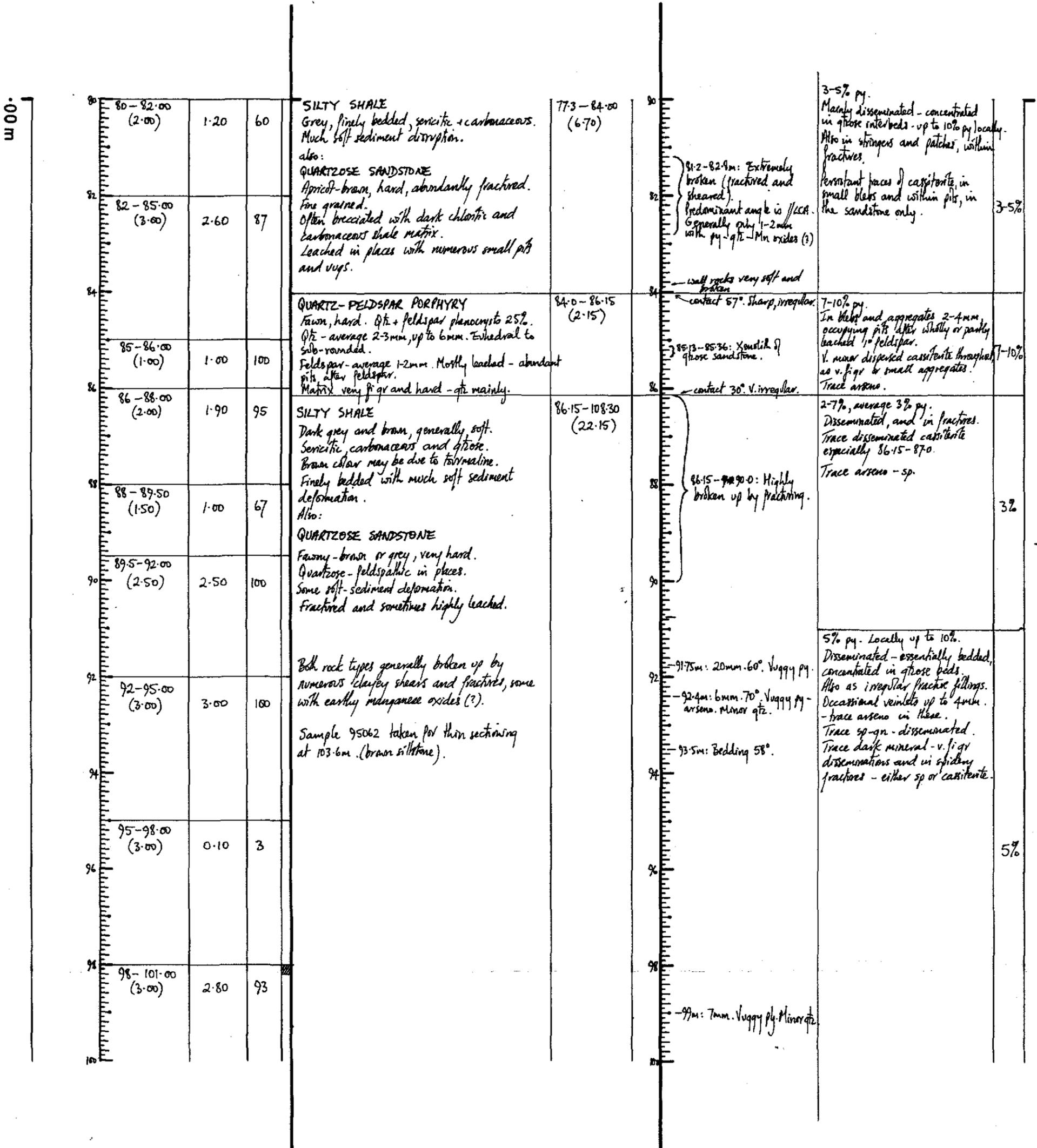
HOLE No. MBD 3
Log sheet 4 of 9

207081



047

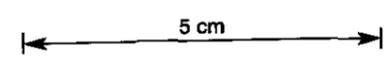
DRILLING NOTES	DRILL ADVANCE (M. MM) & LENGTH FROM COLLAR M. MM	LENGTH OF CORE RECOVERED M. MM	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (M. CM) & ADOPT LENGTH FROM COLLAR M. CM	GRAPHIC LOG	OBSERVATIONS - Commence with length from collar, either point (relates to marker) or 'from-to' (relates to brackets) ATTITUDE OF BEDDING OR FOLIATION; ATTITUDE & SPACING OF JOINTS; ATTITUDE, WIDTH & DESCRIPTION OF SHEARED ZONES [Attitude = angle of structure to long core axis] MINERALIZATION; ETC.	% MINERALIZATION (ORIGINAL ESTIMATE)
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MINERAL EXPLORATION
DETAILED DIAMOND DRILL LOG
Scale 1: 80

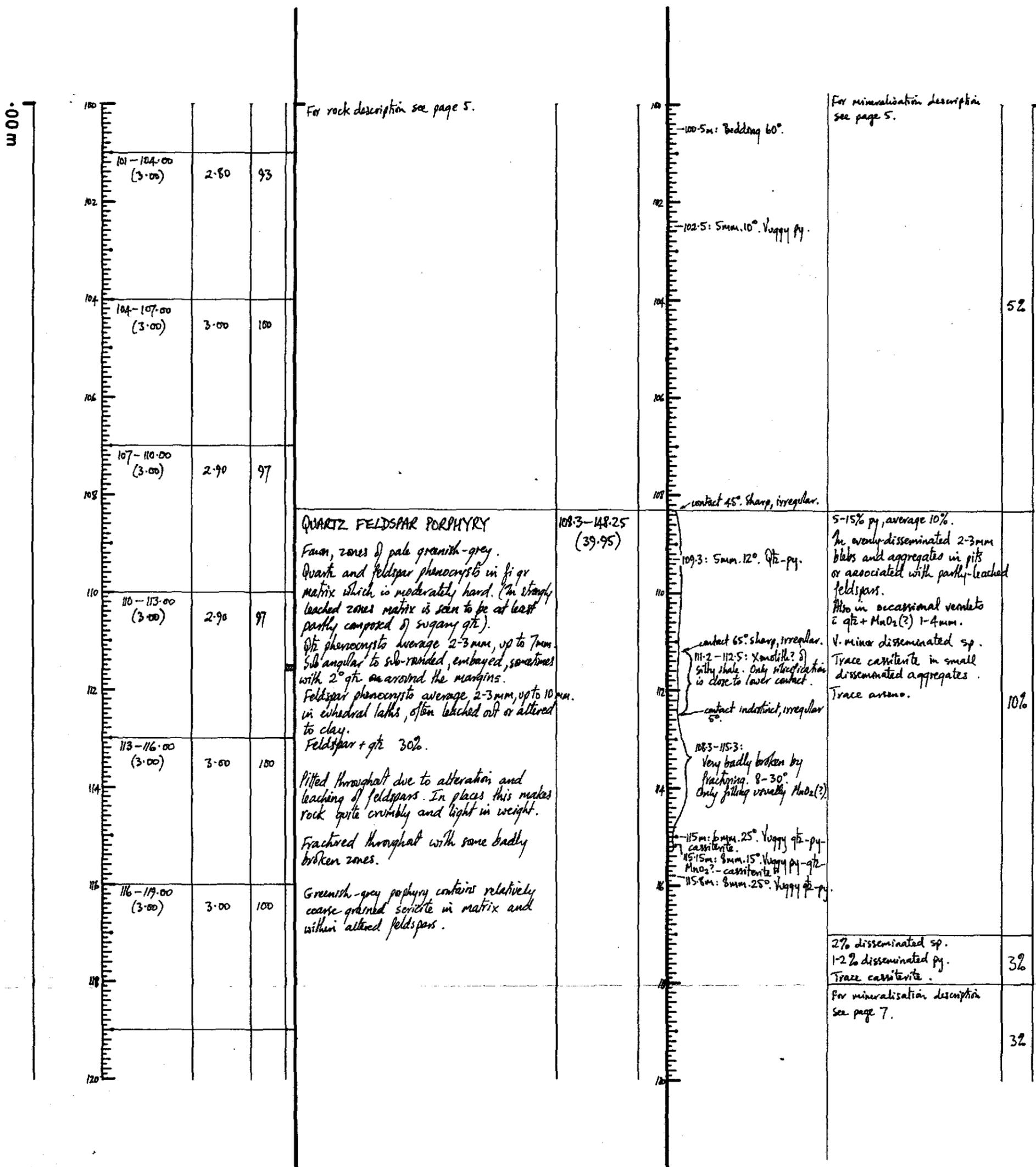
HOLE No. MBD3
Log sheet 5 of 9

207082



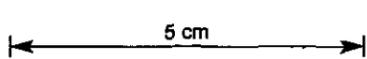
048

DRILLING NOTES	DRILL ADVANCE (M. 7777) & LENGTH FROM COLLAR (M. 7777)	LENGTH OF CORE RECOVERED (M. 7777)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (M. CM) & ADOPT LENGTH FROM COLLAR (M. CM)	GRAPHIC LOG	OBSERVATIONS Commence with length from collar, either point (relates to marker) or 'from-to' (relates to brackets) ATTITUDE OF BEDDING OR FOLIATION; ATTITUDE & SPACING OF JOINTS; ATTITUDE, WIDTH & DESCRIPTION OF SHEARED ZONES [ATTITUDE = angle of structure to long core axis] MINERALIZATION; ETC.	% MINERALIZATION (VISUAL ESTIMATE)
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MINERAL EXPLORATION
DETAILED DIAMOND DRILL LOG
Scale 1: 80

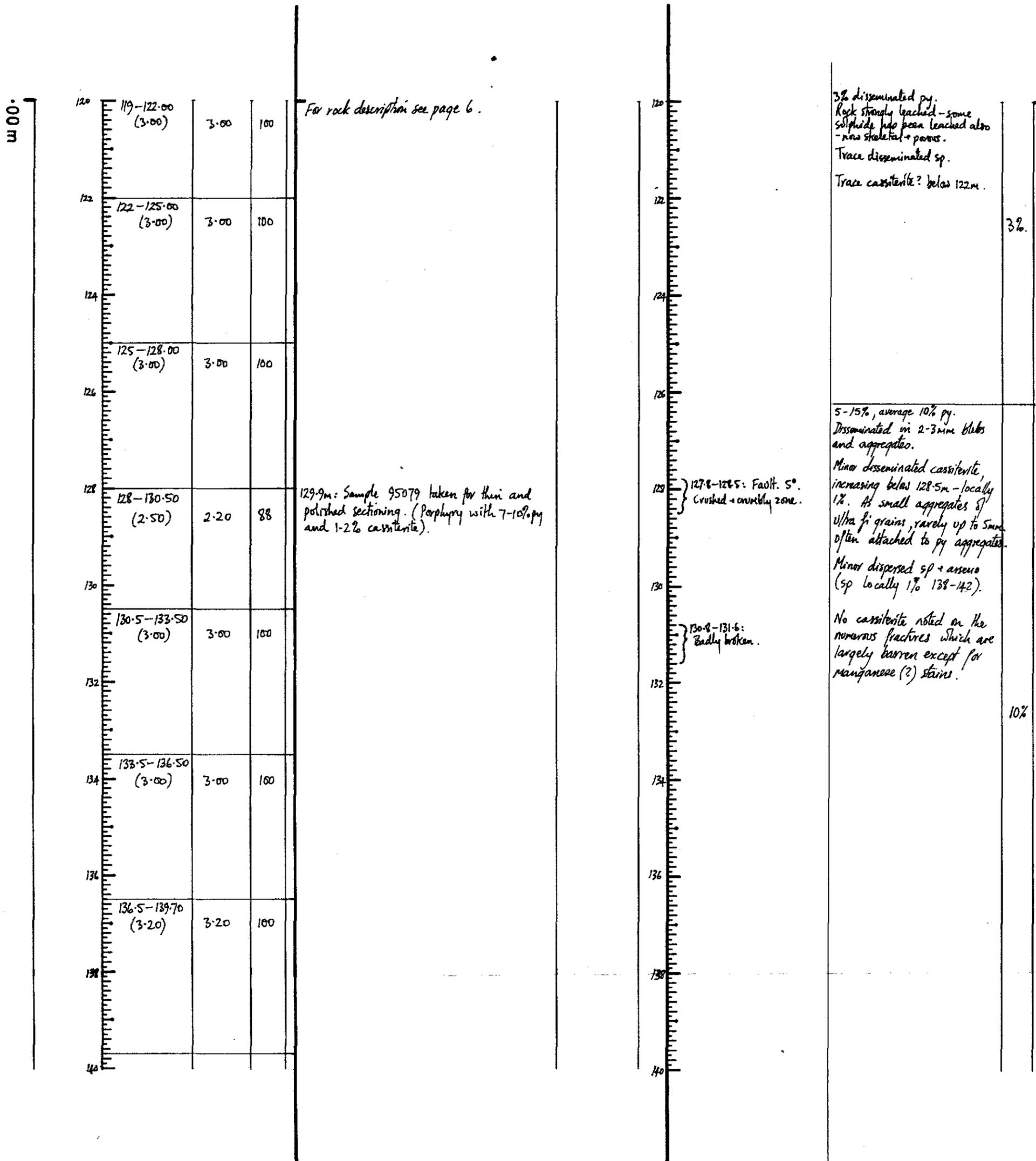
HOLE No. MBD3
Log sheet 6 of 9



207083

049

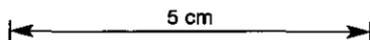
DRILLING NOTES	DRILL ADVANCE (M. mm) & LENGTH FROM COLLAR (M. mm)	LENGTH OF CORE RECOVERED (M. mm)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (M. cm) & ADOPT. LENGTH FROM COLLAR (M. cm)	GRAPHIC LOG	OBSERVATIONS - Commence with length from collar, either point (relates to marker) or 'from-to' (relates to brackets) ATTITUDE OF BEDDING OR FOLIATION; ATTITUDE & SPACING OF JOINTS; WIDTH & DESCRIPTION OF SHEARED ZONES [Attitude = angle of structure to long core axis] MINERALIZATION; ETC.	% MINERALIZATION (VISUAL ESTIMATE)
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and SUBSIDIARY COMPANIES

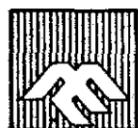
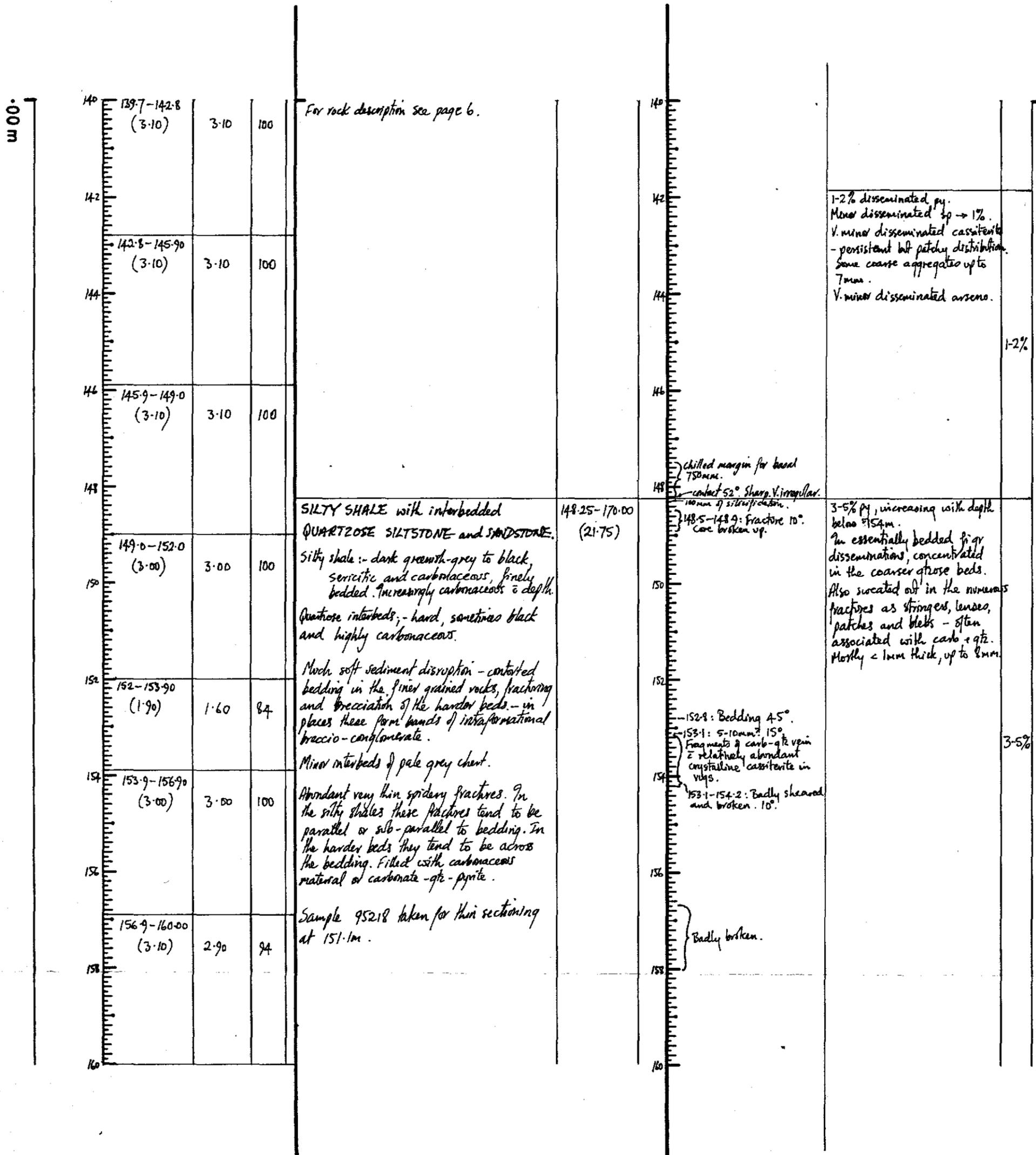
**MINERAL EXPLORATION
DETAILED DIAMOND DRILL LOG**
Scale 1: 80

HOLE No. MBD#3
Log sheet 7 of 9



207084

DRILLING NOTES	DRILL ADVANCE (M. M.) & LENGTH FROM COLLAR M. M.	LENGTH OF CORE RECOVERED M. M.	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (M. CM) & ADOPT. LENGTH FROM COLLAR M. CM.	GRAPHIC LOG	BRACKETS & MARKERS ()	OBSERVATIONS - Commence with length from collar, either point (relates to marker) or 'from-to' (relates to brackets) ATTITUDE OF BEDDING OR FOLIATION; ATTITUDE & SPACING OF JOINTS; ATTITUDE, WIDTH & DESCRIPTION OF SHEARED ZONES [Attitude = angle of structure to long core axis] MINERALIZATION; ETC.	% MINERALIZATION (VISUAL ESTIMATE)
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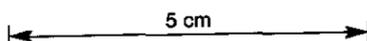


METALS EXPLORATION LTD.
and SUBSIDIARY COMPANIES

**MINERAL EXPLORATION
DETAILED DIAMOND DRILL LOG**

Scale 1: 80

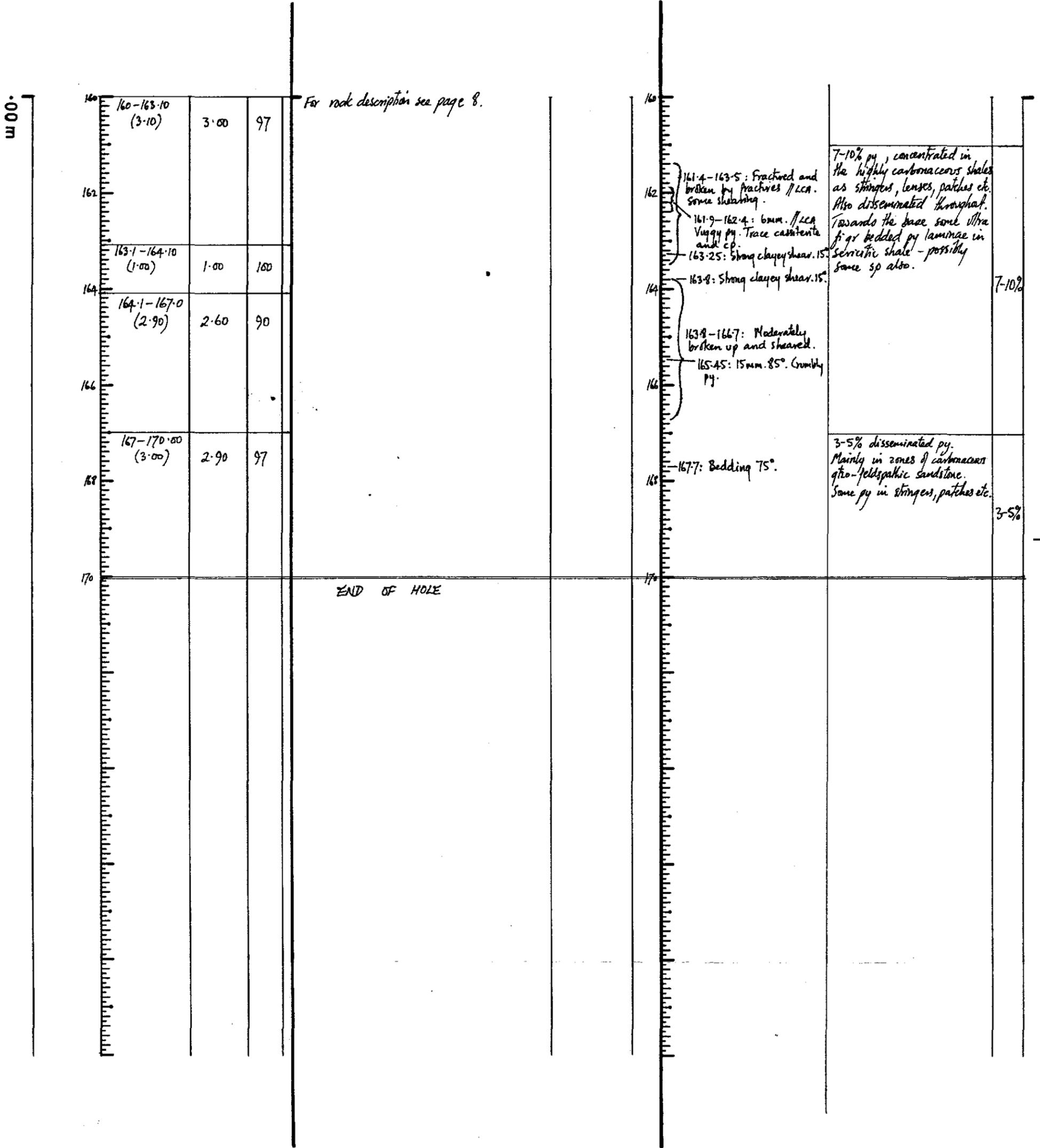
HOLE No. MBD3
Log sheet 8 of 9



Preliminary Design for Form Aug. 78

051

DRILLING NOTES	DRILL ADVANCE (M. M.) & LENGTH FROM COLLAR (M. M.)	LENGTH OF CORE RECOVERED (M. M.)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (M. M.) & ADOPT LENGTH FROM COLLAR (M. M.)	GRAPHIC LOG	OBSERVATIONS - Commence with length from collar, either point (relates to marker) or 'from-to' (relates to brackets) ATTITUDE OF BEDDING OR FOLIATION; ATTITUDE & SPACING OF JOINTS; ATTITUDE, WIDTH & DESCRIPTION OF SHEARED ZONES [Attitude = angle of structure to long core axis] MINERALIZATION: ETC.	% MINERALIZATION (VISUAL ESTIMATE)
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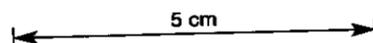


METALS EXPLORATION LTD.
and SUBSIDIARY COMPANIES

**MINERAL EXPLORATION
DETAILED DIAMOND DRILL LOG**
Scale 1: 80

HOLE No. MBD3
Log sheet 9 of 9

207086



Preliminary Design for Form Aug. 78

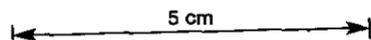
METALS EXPLORATION LTD.
 & SUBSIDIARY COMPANIES



MINERAL EXPLORATION
DIAMOND DRILL LOG

052

Prospect, area, project or mine. <u>MT BISCHOFF</u>		HOLE No. <u>MBD 4</u>																														
<p style="text-align:center;">COLLAR LOCATION</p> Grid name _____ Rectangular space co-ordinates _____ PLANAR CO-ORDINATES _____ ELEVATION _____		W.C. Bearing from collar																														
(1) <u>MBJV</u>	<u>2058.04</u> mN <u>1080.15</u> mE <u>682.57m</u>	<u>150° 30'</u> magnetic																														
(2) _____	_____ N _____ E _____	<u>180°</u> grid (1)																														
(3) Aust. Map Grid _____ mE _____ mN _____ m A.H.D.	PRECISE / APPROX. _____	_____ grid (2)																														
1:250 000 Sheet No. <u>BORNIE SK55-3</u>	1:100 000 Sheet No. <u>MELLYER 8015</u>	State <u>TASMANIA</u>																														
Mineral Tenement <u>EL 5/63</u>	Holder <u>CONSTAFF PTY LTD</u>	Inclination at collar <u>70°</u>																														
Cadastral location and details _____ CROWN LAND/PRIVATE _____		Total length <u>275m</u>																														
Details of down hole location-survey methods. <u>EASTMAN</u> <u>Single shot photo logging</u>		Commenced: <u>16/9/1978</u> Completed: <u>22/9/1978</u>																														
Purpose of drilling and anticipated lengths to targets. <u>To intersect "white's" Porphyry dyke between 180-205 metres</u>		Drilling contractor <u>LONGYEAR AUSTRALIA PTY LTD</u> <u>LONGYEAR F38 RIG</u>																														
Results of down hole location-survey. <table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>LENGTH FROM COLLAR m</th> <th>W.C. BEARING type magnetic</th> <th>DIP</th> </tr> </thead> <tbody> <tr><td>31</td><td>153°30'</td><td>69°</td></tr> <tr><td>61</td><td>151°</td><td>71°30'</td></tr> <tr><td>84</td><td>156°</td><td>72°</td></tr> <tr><td>118</td><td>158°</td><td>76°</td></tr> <tr><td>151</td><td>158°</td><td>76°30'</td></tr> <tr><td>181</td><td>154°</td><td>76°30'</td></tr> <tr><td>208</td><td>163°30'</td><td>77°</td></tr> <tr><td>238</td><td>168°30'</td><td>78°</td></tr> <tr><td>273</td><td>169°30'</td><td>77°</td></tr> </tbody> </table>		LENGTH FROM COLLAR m	W.C. BEARING type magnetic	DIP	31	153°30'	69°	61	151°	71°30'	84	156°	72°	118	158°	76°	151	158°	76°30'	181	154°	76°30'	208	163°30'	77°	238	168°30'	78°	273	169°30'	77°	Core size and non-coring (NC) TRICONE <u>0</u> TO <u>3.0m</u> NQ <u>3.0</u> TO <u>72.0m</u> BQ <u>72.0</u> TO <u>275.0m</u> ____ TO _____ ____ TO _____ ____ TO _____
LENGTH FROM COLLAR m	W.C. BEARING type magnetic	DIP																														
31	153°30'	69°																														
61	151°	71°30'																														
84	156°	72°																														
118	158°	76°																														
151	158°	76°30'																														
181	154°	76°30'																														
208	163°30'	77°																														
238	168°30'	78°																														
273	169°30'	77°																														
Comments on drilling. <u>3.0m HQ rod left in hole</u>		Legend for graphic log column (see drill log for Hole No. _____) 'DERWENT' PENCIL NO. _____ FIELD ROCK NAME, ETC. _____ _____ <input type="checkbox"/> _____																														
LOGGED BY <u>J.G. Purvis</u> FROM <u>0</u> TO <u>275m</u> DATE <u>Oct 1978</u>		LOGGED BY _____ FROM _____ TO _____ DATE _____ LOGGED BY _____ FROM _____ TO _____ DATE _____																														
Company managing exploration programme. <u>METALS EXPLORATION LTD</u>		HOLE No. <u>MBD 4</u> Log sheet 1 of _____																														



207087

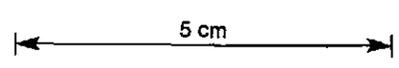
053

207088

Veins etc.
(all veins over 50mm noted)

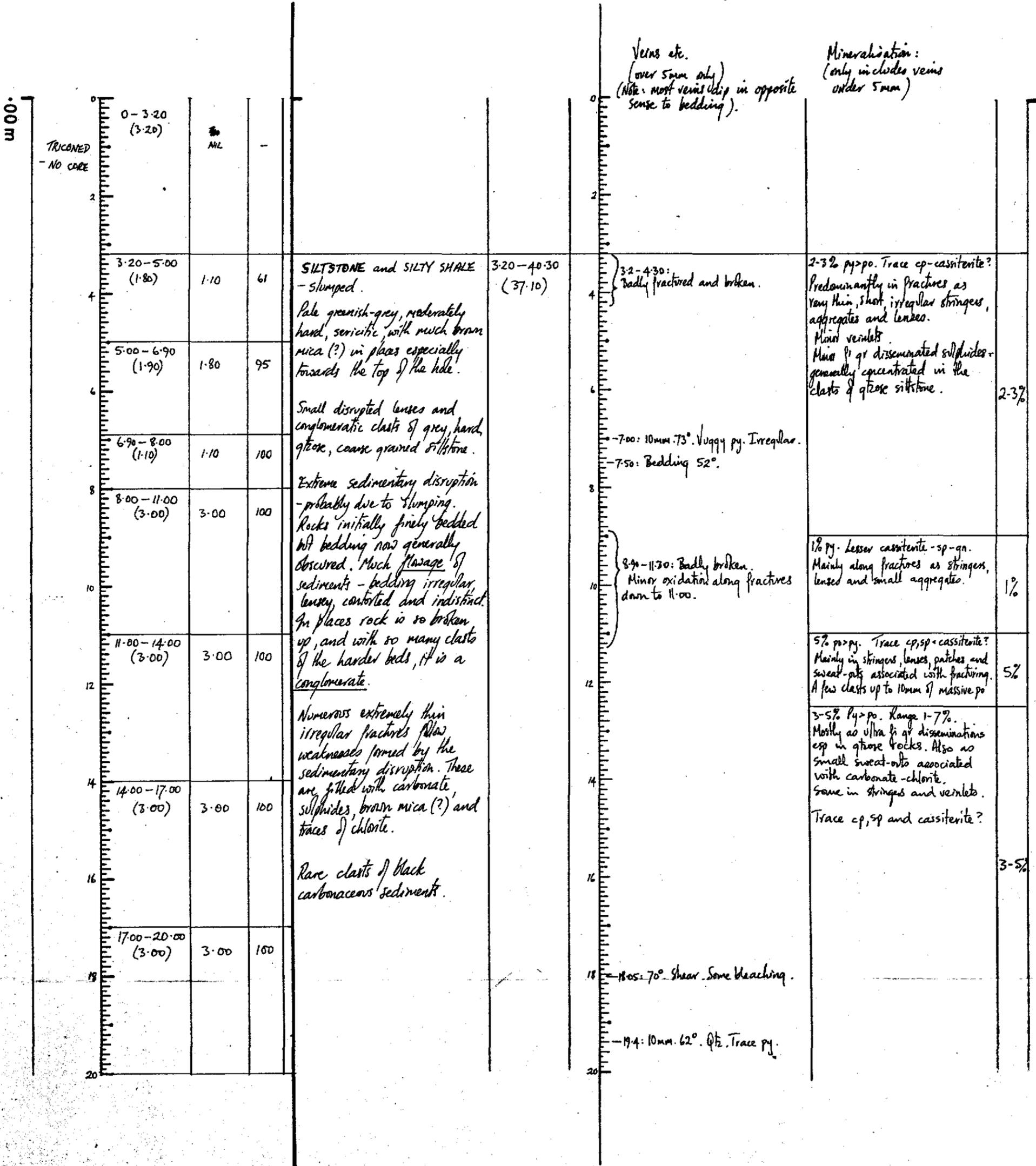
Mineralisation.
(does not include veins over 5mm).

<p>SILTSTONE and SILTY SHALE. Greenish-grey, sericitic. Much sedimentary disruption - probably due to slumping.</p>	<p>3.20-40.30 (37.10)</p>	<p>0</p>	<p>7.5: Bedding 52°.</p>	<p>3-5% py > po. Trace cp, sp, cassiterite. Mainly as fi gr disseminations, but also in sweat-ots as thin stringers, lenses & veinlets.</p>
<p>BEDDED SILTSTONES. Greenish-grey, sericitic. Well bedded with discrete zones of sedimentary disruption.</p>	<p>40.30-75.40 (35.10)</p>	<p>40</p>	<p>36.85: 75mm. 68° qtz-py-sp-arseno-po-carb-cassiterite. 41: Bedding 36°.</p>	<p>10-15% po >> py. Mostly as ultra fi gr bedded disseminations. 10-15% po >> py. As above.</p>
<p>Sericitic SILTSTONE and (leaky) SILTY SHALE with interbeds of QUARTZOSE SANDSTONE.</p>	<p>75.40-96.00 (20.60)</p>	<p>80</p>	<p>76.15: 80mm. 45°. 60-qtz-py-arseno. 82.5: Bedding 65°.</p>	<p>5-7% po >> py. Rare cassiterite. In bedded disseminations, stringers & veinlets. 1% py > po.</p>
<p>QUARTZOSE SANDSTONE Grey, hard, massive - in beds up to 3.5m thick. Leaky SILTSTONE & SILTY SHALE - qtzose with sericite and tourmaline. Rare chert.</p>	<p>96-140.70 (44.70)</p>	<p>100</p>	<p>106.4: Bedding 70°. 128: Bedding 73°.</p>	<p>1-2% py > po. Mainly as small blebs. 7% po >> py. Po mainly as ultra fi gr bedded disseminations, blebs and fine massive sulphide laminae. Py mainly in stringers & veinlets.</p>
<p>MASSIVE SULPHIDE BED</p>	<p>140.7-142.80</p>	<p>140</p>	<p>contact 43° // bedding.</p>	<p>70% sp-py > arseno in carb-qtz.</p>
<p>BEDDED QUARTZOSE SILTSTONE Greenish-grey, hard, sericitic. Lesser QUARTZOSE SANDSTONE and SILTY SHALE. Some sedimentary disruption as usual.</p>	<p>142.8-176.60 (33.80)</p>	<p>160</p>	<p>154.5: Bedding 65°.</p>	<p>5% po > py. As above.</p>
<p>MASSIVE SULPHIDE VEIN</p>	<p>176.6-178.25 (1.65)</p>	<p>170</p>	<p>Antise silification 176.1-176.6.</p>	<p>70% sp-py > arseno in carb-qtz.</p>
<p>BEDDED SULPHIDIC SILTY SHALE</p>	<p>178.25-188.80 (10.55)</p>	<p>180</p>	<p>contact 70° - wts across bedding. 180.75: 120mm. 55° qtz-py-cassiterite-arseno. 184: Bedding 60°.</p>	<p>7% py > po. As fine sulphide laminae & bedded dissemination.</p>
<p>QUARTZ-FELDSPAR PORPHYRY Creamy grey, hard. Qtz and feldspar phenocrysts in fi gr matrix & minor topaz.</p>	<p>188.80-208.90 (20.10)</p>	<p>200</p>	<p>sharp contact 80°.</p>	<p>15% py >> po. Rare cassiterite. In coal-like crystal aggregates 1-4mm evenly distributed. 3% cassiterite 201.8-202.6, 2% 203.3-203.8.</p>
<p>QUARTZOSE SILTSTONES and SANDSTONES. Greenish-grey, sericitic, ± tourmaline and chlorite, in places. Lesser SILTY SHALE, and minor IMPURE QUARTZITE up to 3m thick. Chlorite and carbonate stringers (alteration?).</p>	<p>208.90-275.00 (66.10)</p>	<p>220</p>	<p>sharp contact 50° 210: 200mm. 67° py-arseno-qtz. Minor cassiterite-sp. 210.5: Graded bedding with facing down the hole. 217.35: Bedding 57°. 223.4-224.1: 55°. Massive py-sp. Minor arseno-cp, in qtz-carb-amphibst. Trace cassiterite. 226.2: 75mm. 45°. Arseno-py-sp-gn-qtz-carb-sweat-ots. 249: Bedding 70°.</p>	<p>1-3% py, locally 7%. Trace sp. Mainly as disseminations, particularly within silicified qtzose sandstones, also as stringers and lenses associated with carb-chlorite.</p>
<p>END OF HOLE 275m.</p>	<p></p>	<p>260</p>	<p>274.5: Bedding 50°.</p>	<p></p>



054

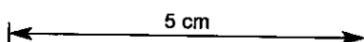
DRILLING NOTES	DRILL ADVANCE (M. 7777) & LENGTH FROM COLLAR (M. 7777)	LENGTH OF CORE RECOVERED (M. 7777)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT. LENGTH FROM COLLAR m. cm	GRAPHIC LOG	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets)	MINERALIZATION	



METALS EXPLORATION LTD.
and SUBSIDIARY COMPANIES

MINERAL EXPLORATION
DIAMOND DRILL LOG
Scale 1:80

HOLE No. MBD 4
LOG SHEET 1 of 14



Preliminary Design for Form Oct 78

207089

055

DRILLING NOTES	DRILL ADVANCE (M. MM) & LENGTH FROM COLLAR M. MM	LENGTH OF CORE RECOVERED M. MM	% RECOVERY	FIELD ROCK NAME and general description over interval marked.	ADOPTED INTERVAL (M. CM) & ADOPT LENGTH FROM COLLAR M. CM	GRAPHIC LOG	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets)	MINERALIZATION	

20	20.00-21.00 (1.00)	1.00	100	for rock description see page 1.
22	21.00-23.00 (2.00)	1.80	90	
24	23.00-26.00 (3.00)	3.00	100	
26	26.00-29.00 (3.00)	3.00	100	
28	29.00-32.00 (3.00)	3.00	100	
32	32.00-35.00 (3.00)	3.00	100	
36	35.00-38.00 (3.00)	3.00	100	
38	38.00-39.60 (1.60)	1.60	100	

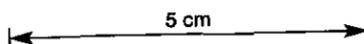
20	20.3: 8mm. 60° Qtz - Trace po-cassiterite? 20.5-21.3: Highly broken vein zone. LCA. Vuggy dog-froth qtz-py-sp-gr. 30mm.	for mineralisation description see page 1.
22	21.95: 6mm. 20°. Carb-py.	
24		
26		
28	10% po>>py Mostly as ultra fi qz dissemination concentrated with quartzite rock fragments and lenses. Some veinlets of py & minor po. Trace sp+cp.	
30	29.8-31.0: Vuggy fracture. 2-3mm/LCA. Trace py + cassiterite?	
32	15% po>>py. Locally 20%. Mostly as ultra fi qz bedded disseminations in silphidic silty shale. Numerous very thin short stringers of po + py. Some veinlets 1-2mm py.	
34	33.9-35.0: Vuggy fracture 2-3mm/LCA.	
36	36.85: 75mm. 68° Qtz-py-sp-arseno-po-carbo-cassiterite? 37.65: 5mm. 35° Py-po-cp-qtz. 38.75: 4mm. 35° Py-po-qtz-cp-sp. 38.35: 5mm. 32° Po-minor cp+py-carbo. 39.2: 6mm. 20°. Carb-cassiterite?-kyanite.	5-15%, average 10% po>>py. Mainly as ultra fi qz dissem as above. Numerous lenses patches, stringers of po > py & trace cp+sp. Many veinlets of py > po 1-4mm.
38		
40		



METALS EXPLORATION LTD.
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**MINERAL EXPLORATION
DIAMOND DRILL LOG**
Scale 1:80

HOLE No. MBD4
LOG SHEET 2 of 14

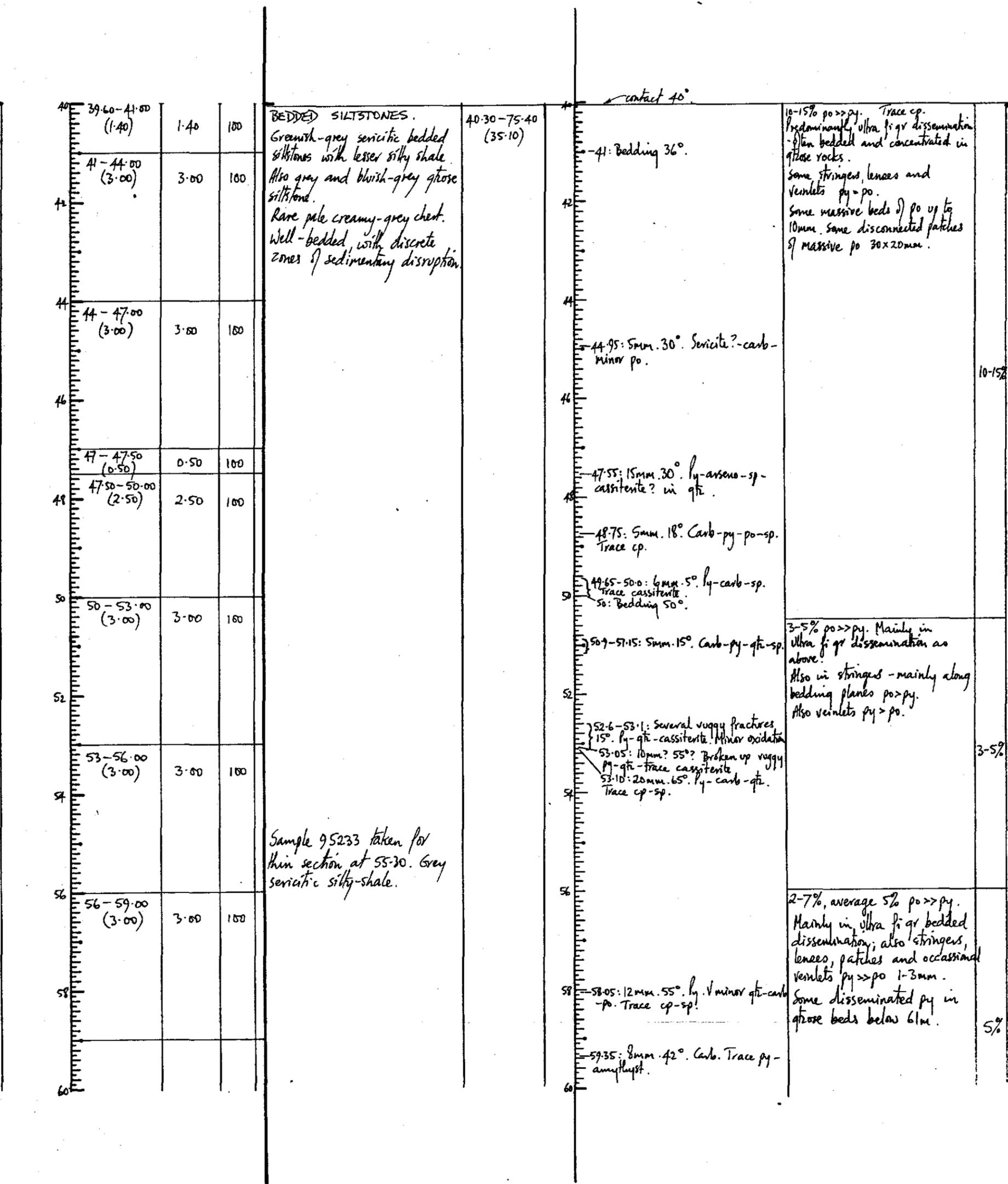


207090

056

DRILLING NOTES	DRILL ADVANCE (M. 777) & LENGTH FROM COLLAR M. 777	LENGTH OF CORE RECOVERED M. 777	% RECOVERY	FIELD ROCK NAME and general description over interval marked.	ADOPTED INTERVAL (m. cm) & ADOPT LENGTH FROM COLLAR m. cm	GRAPHIC LOG	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets)	MINERALIZATION	

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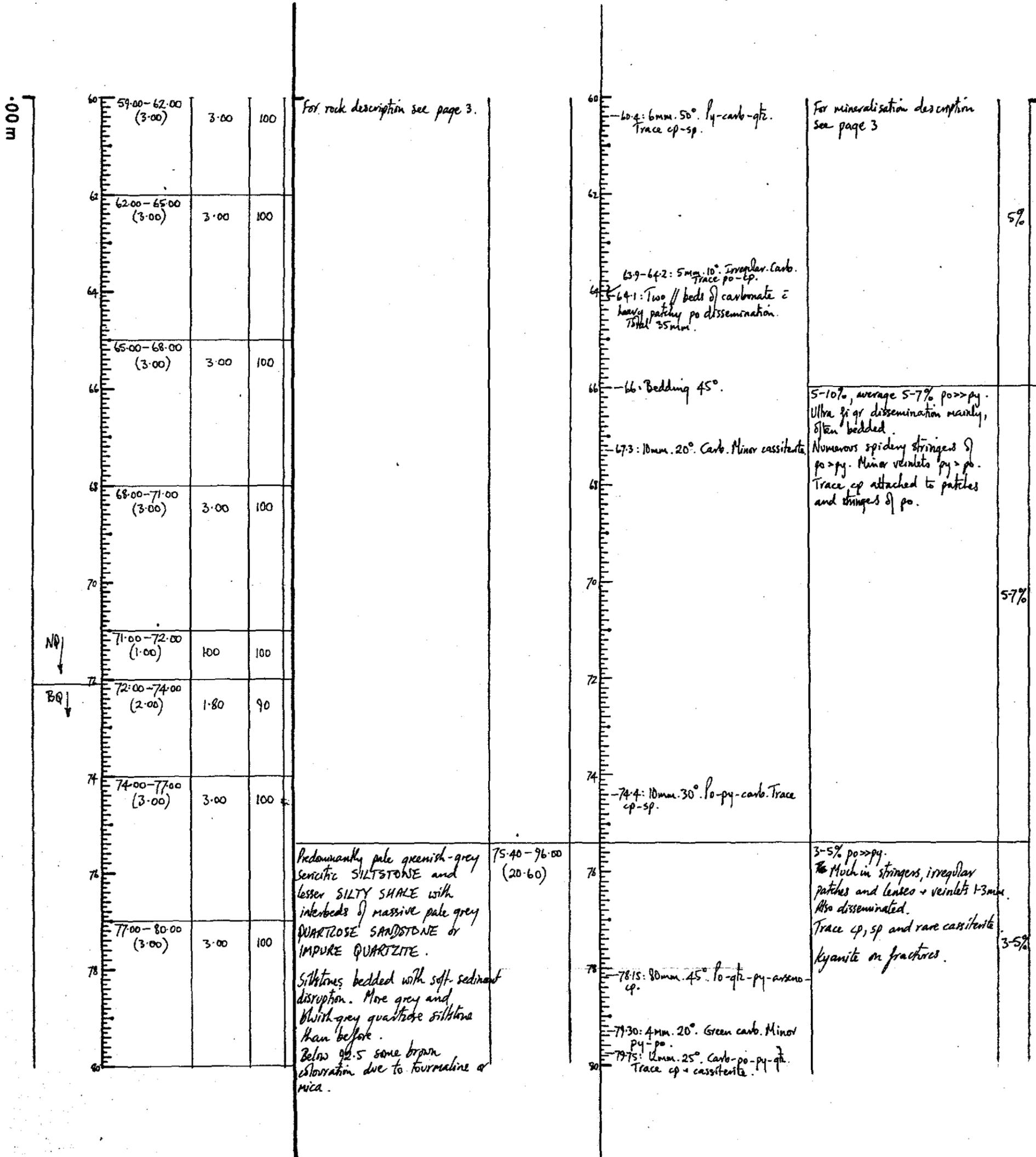
MINERAL EXPLORATION
DIAMOND DRILL LOG
Scale 1:80

HOLE No. MBD 4
LOG SHEET 3 of 14

207091

057

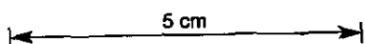
DRILLING NOTES	DRILL ADVANCE (m. mm) & LENGTH FROM COLLAR (m. mm)	LENGTH OF CORE RECOVERED (m. mm)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT. LENGTH FROM COLLAR (m. cm)	GRAPHIC LOG	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets).	MINERALIZATION	



METALS EXPLORATION LTD.
and SUBSIDIARY COMPANIES

MINERAL EXPLORATION
DIAMOND DRILL LOG
Scale 1:80

HOLE No. MBD 4
LOG SHEET 4 of 14

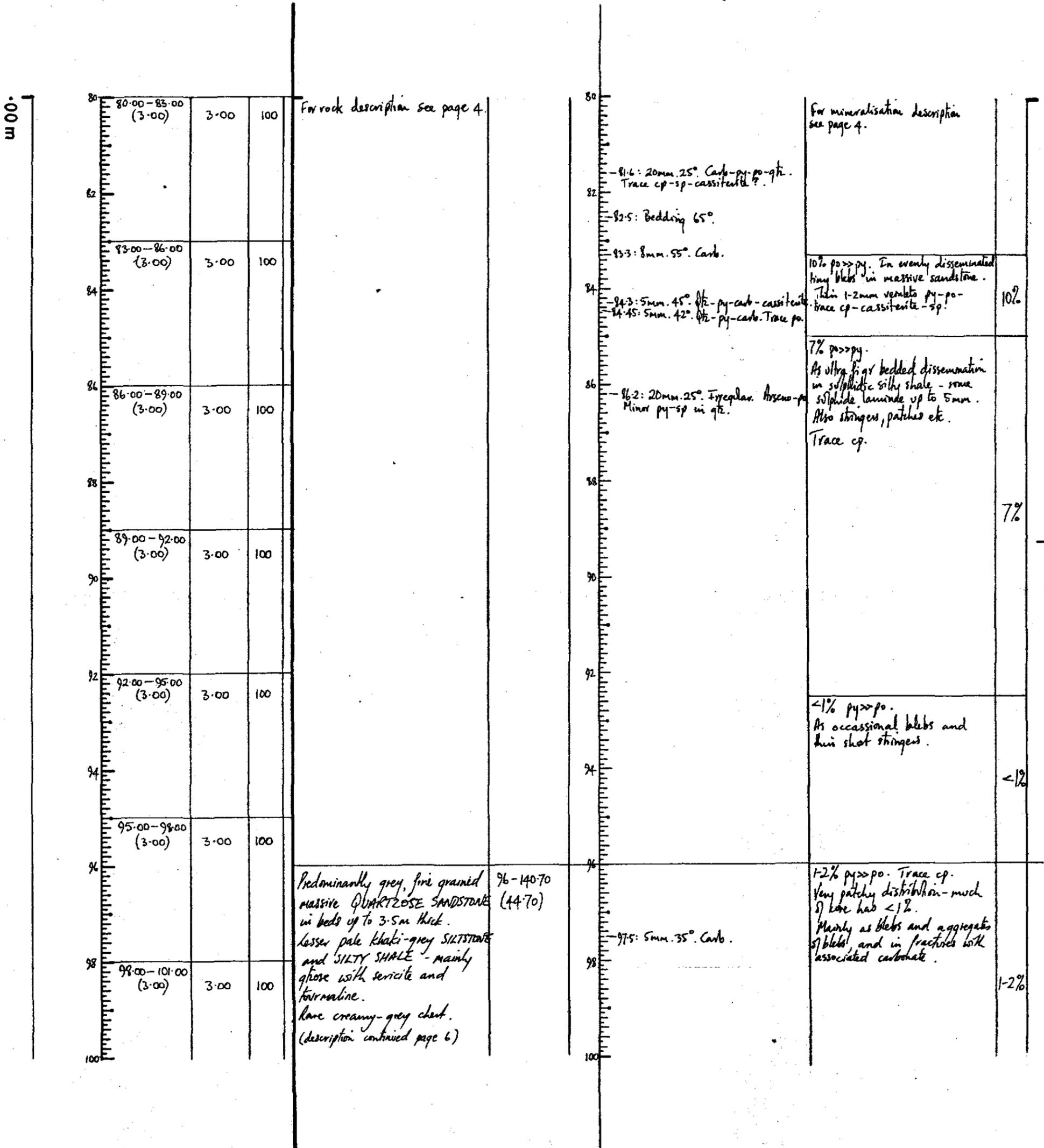


Preliminary Design for Form Oct 78

207092

058

DRILLING NOTES	DRILL ADVANCE (M. 7272) & LENGTH FROM COLLAR (M. 7272)	LENGTH OF CORE RECOVERED (M. 7272)	% RECOVERY	FIELD ROCK NAME and general description over interval marked.	ADOPTED INTERVAL (m. cm) & ADOPT LENGTH FROM COLLAR (m. cm)	GRAPHIC LOG MARKERS & BRACKETS (M)	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar either point (relates to marker) or 'from' to (relates to brackets)	MINERALIZATION	

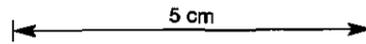


METALS EXPLORATION LTD.
and SUBSIDIARY COMPANIES

MINERAL EXPLORATION
DIAMOND DRILL LOG
Scale 1:80

HOLE No. MBD4
LOG SHEET 5 of 14

207093



059

DRILLING NOTES	DRILL ADVANCE (M. MM) & LENGTH FROM COLLAR (M. MM)	LENGTH OF CORE RECOVERED (M. MM)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (M. CM) & ADOPT. LENGTH FROM COLLAR (M. CM)	GRAPHIC LOG	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets).	MINERALIZATION	

100	101.00-104.00 (3.00)	3.00	100
102	104.00-107.00 (3.00)	3.00	100
104	107.00-110.00 (3.00)	3.00	100
106	110.00-113.00 (3.00)	3.00	100
108	113.00-116.00 (3.00)	3.00	100
110	116.00-119.00 (3.00)	3.00	100
112			
114			
116			
118			
120			

description continued: -
 siltstones are bedded but with much soft sediment disruption - irregular bedding, harder quartz beds often pilled apart. Sandstone beds suffer greatly from bedding deformation, also abundantly fractured. Thin spidery carbonate veining throughout. Ductile 'sweat outs' in the more quartzose rocks.

100								
102	102.3: 15mm. 43° Carb-fluorite.							1-2%
104								
106	106.4: Bedding 70°.							
108	106.9: 6mm. 42° Qtz-py-po.							5-7%
110	107.8: 4mm. 20° Carb-po-py. Trace cp-sp.							
112	109.6: 6mm. 70° // bedding Qtz-po-py.							
114								
116								
118	117.7: 6mm. 10° Carb-minor qtz. Trace py.							7%
120								

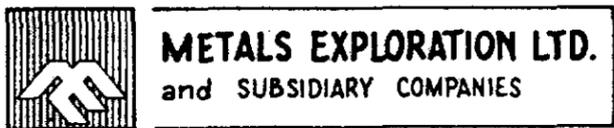
For mineralisation description see page 5.

5-7% po >> py. Trace cp. Mainly as ultra fi. qz dissemination - usually bedded and often concentrated in bluish-grey quartz siltstone. Also in stringers, patches etc.

2-3% py >> po. Mainly as dispersed blebs - sometimes aggregated together. Also stringers and thin irregular veinlets. Minor po. Trace sp-gn.

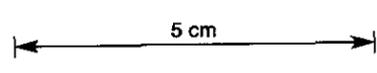
3-5% po >> py. Variable distribution - depends on rock type. Po mainly as ultra fi. qz dissemination concentrated in bluish-grey quartz siltstone beds. Py as tiny blebs and stringers in quartz sandstone interbeds.

7% po >> py. in tiny evenly distributed blebs within quartz sandstone. Py in stringers, dendritic 'growths' off fractures and occasional veinlets. Rare sp in carb veinlets.



**MINERAL EXPLORATION
DIAMOND DRILL LOG**
Scale 1:80

HOLE No. MBD4
LOG SHEET 6 of 14



207094

060

DRILLING NOTES	DRILL ADVANCE (m. mm) & LENGTH FROM COLLAR (m. mm)	LENGTH OF CORE RECOVERED (m. mm)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT. LENGTH FROM COLLAR (m. cm)	GRAPHIC LOG	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets)	MINERALIZATION	

00m

120	119.00-122.00 (3.00)	2.90	97
122	122.00-125.00 (3.00)	2.70	90
124			
126	125.00-128.00 (3.00)	3.00	100
128	128.00-131.00 (3.00)	3.00	100
130			
132	131.00-134.00 (3.00)	3.00	100
134	134.00-137.00 (3.00)	3.00	100
136			
138	137.00-140.00 (3.00)	3.00	100
140			

For rock description see page 5.

120			2-3% po >> py. Trace cp. Mainly disseminated.	2-3%
122				
124	124.1-124.3: 6mm. // LCA. Carb-sp. Trace py + po.		7-10% po >> py. Locally 15%. Mainly as ultra fi gr disseminations concentrated in bluish-grey siltstone and as thin bedded laminae in silty shale. Also as stringers and veinlets (py+po) Beds of near massive po up to 10mm esp 126-129m.	7-10%
126	125: 4mm. 10° Carb-py-sp. 125.1: 8mm. 63° Qtz-py-arseno. 125.35: 7mm. 30° Carb. 125.80: 8mm. 5° Irregular. py-qtz-carb-sp. 126.20: 15mm. 15° Carb-py-sp-qtz.			
128	127.95: 10mm. 30° Qtz-carb: Minor po-sp-py-cassiterite. 128: Bedding 73°.			
130			5% po >> py. Range 2-7%. Mainly in small disseminated grains and tiny blebs. (all po) Also in irregular patches and stringers. (po+py) Some net-vein areas of po.	5%
132	131.45: 5mm. 27° Qtz-carb-amyg. py.			
134	133.45: 20mm. 40° Py. Minor Qtz.			
136	135.8: 15mm. 62° Py-po: Trace arseno-cp-sp. 136.1: 15-50mm. 83° Irregular. Py-qtz-carb-fluorite? v. minor pb-arseno-cassiterite. 136.7: 4mm. 55° // bedding. Qtz. Trace Py-po.		7% po. Mainly as ultra fi gr bedded disseminations in silty shale and siltstone. Some near-massive bedded sulphide laminae 1-2mm. Abundant spiderly stringers, blebs, lenses and patches, often ± kyanite. Occasional 1-2mm veinlets of py	7%
138	139.45: 8mm. 37° Py. Trace cp-sp in Qtz-carb. 139.65: 20mm. 42° Py-minor Qtz-cp-sp.			
140				



METALS EXPLORATION LTD.
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**MINERAL EXPLORATION
DIAMOND DRILL LOG**

Scale 1:80

HOLE No. MBD 4

LOG SHEET 7 of 14

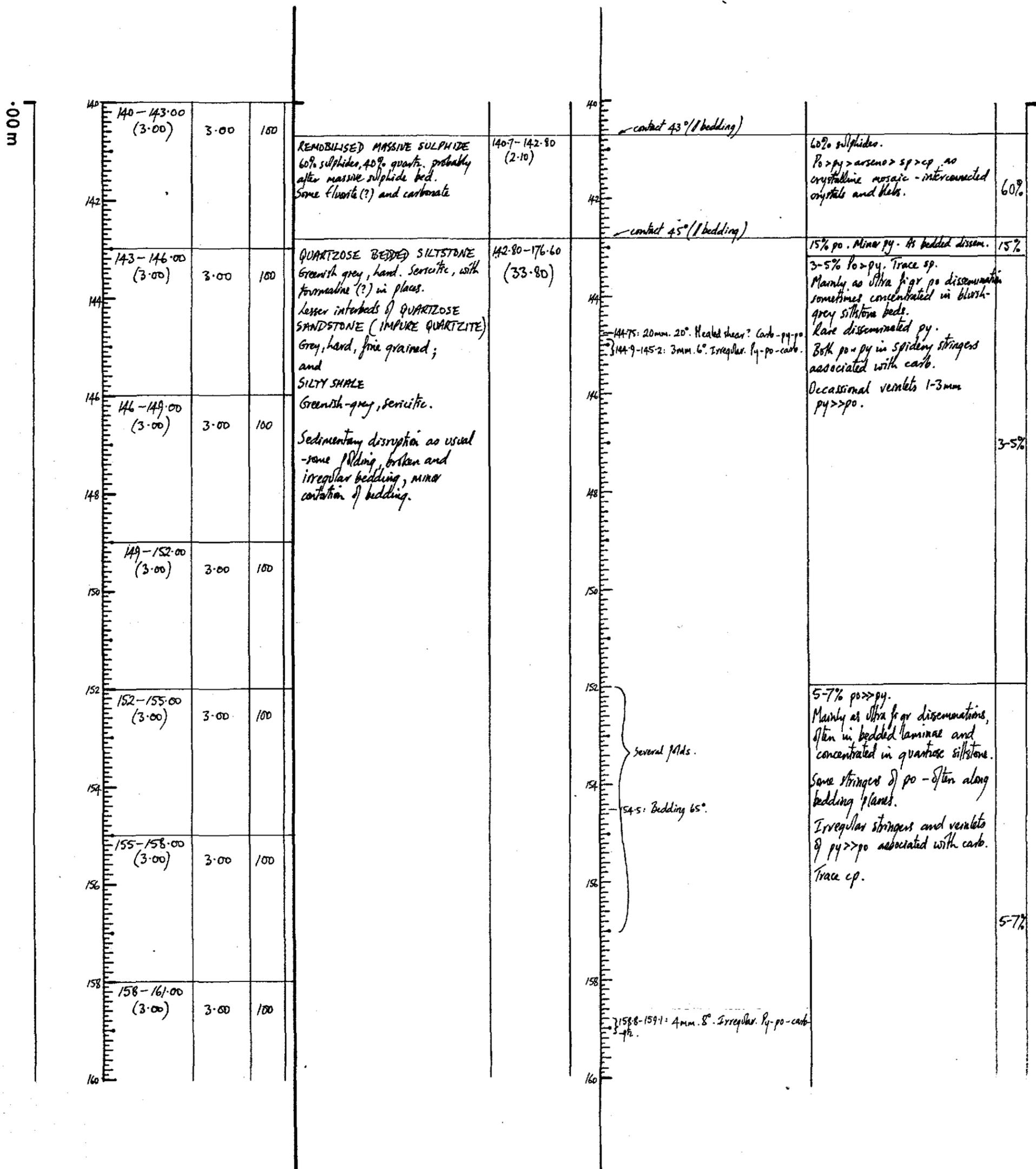
5 cm

Preliminary Design for Form Oct 78

207095

061

DRILLING NOTES	DRILL ADVANCE (m. mm) & LENGTH FROM COLLAR (m. mm)	LENGTH OF CORE RECOVERED (m. mm)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT. LENGTH FROM COLLAR m. cm	GRAPHIC LOG	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets)	MINERALIZATION	

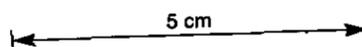


METALS EXPLORATION LTD.
and SUBSIDIARY COMPANIES

**MINERAL EXPLORATION
DIAMOND DRILL LOG**

Scale 1:80

HOLE No. MBD 4
LOG SHEET 8 of 14

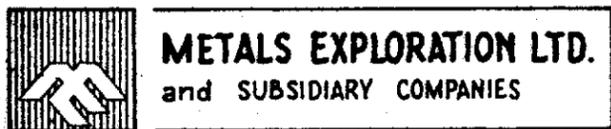
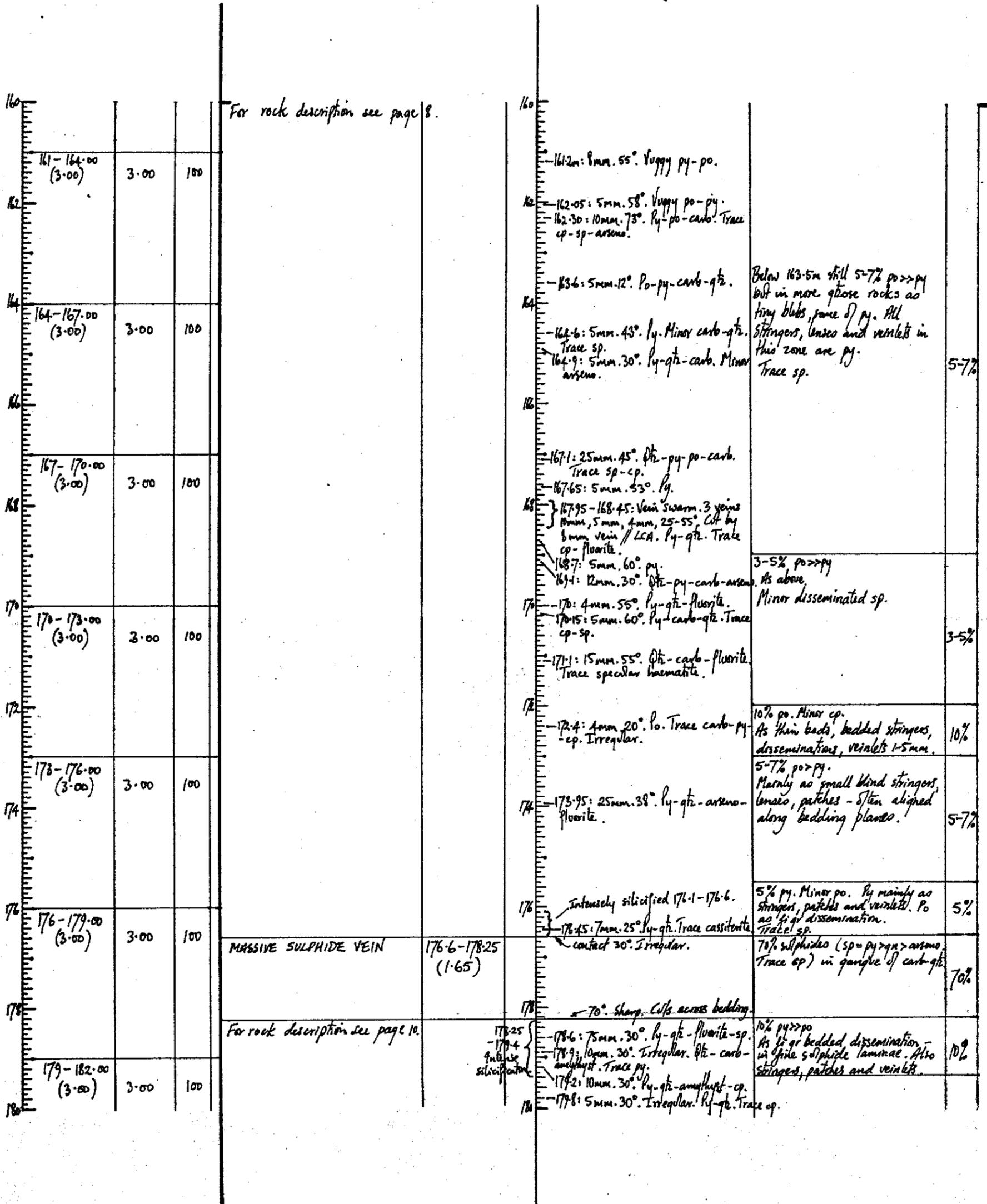


207096

062

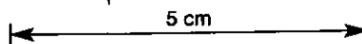
DRILLING NOTES	DRILL ADVANCE (M. 7772) & LENGTH FROM COLLAR (M. 7772)	LENGTH OF CORE RECOVERED (M. 7772)	% RECOVERY	FIELD ROCK NAME and general description over interval marked.	ADOPTED INTERVAL (m. cm) & ADOPT. LENGTH FROM COLLAR m. cm	GRAPHIC LOG	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar either point (relates to marker) or 'from' to (relates to brackets).	MINERALIZATION	

3000



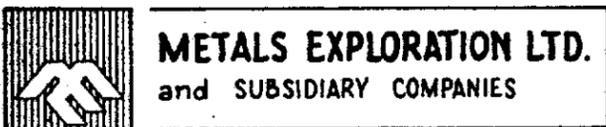
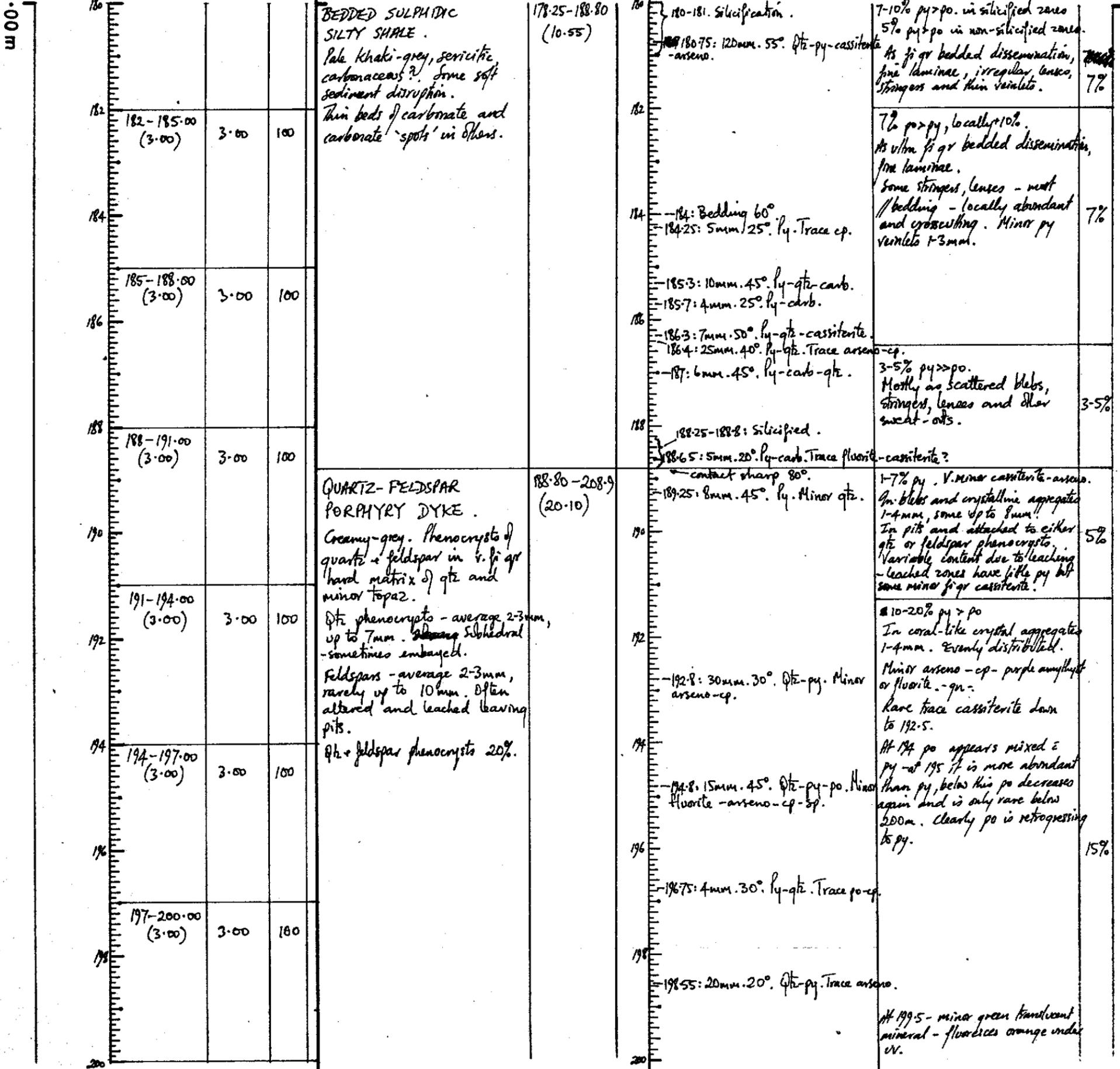
MINERAL EXPLORATION
DIAMOND DRILL LOG
Scale 1:80

HOLE No. MBD4
LOG SHEET 9 of 14



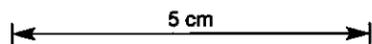
207097

DRILLING NOTES	DRILL ADVANCE (M. M.M.) & LENGTH FROM COLLAR M. M.M.	LENGTH OF CORE RECOVERED M. M.M.	% RECOVERY	FIELD ROCK NAME and general description over interval marked.	ADOPTED INTERVAL (m. cm) & ADOPT. LENGTH FROM COLLAR m. cm	GRAPHIC LOG	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets)	MINERALIZATION	

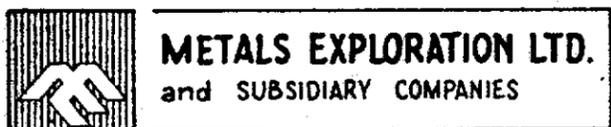
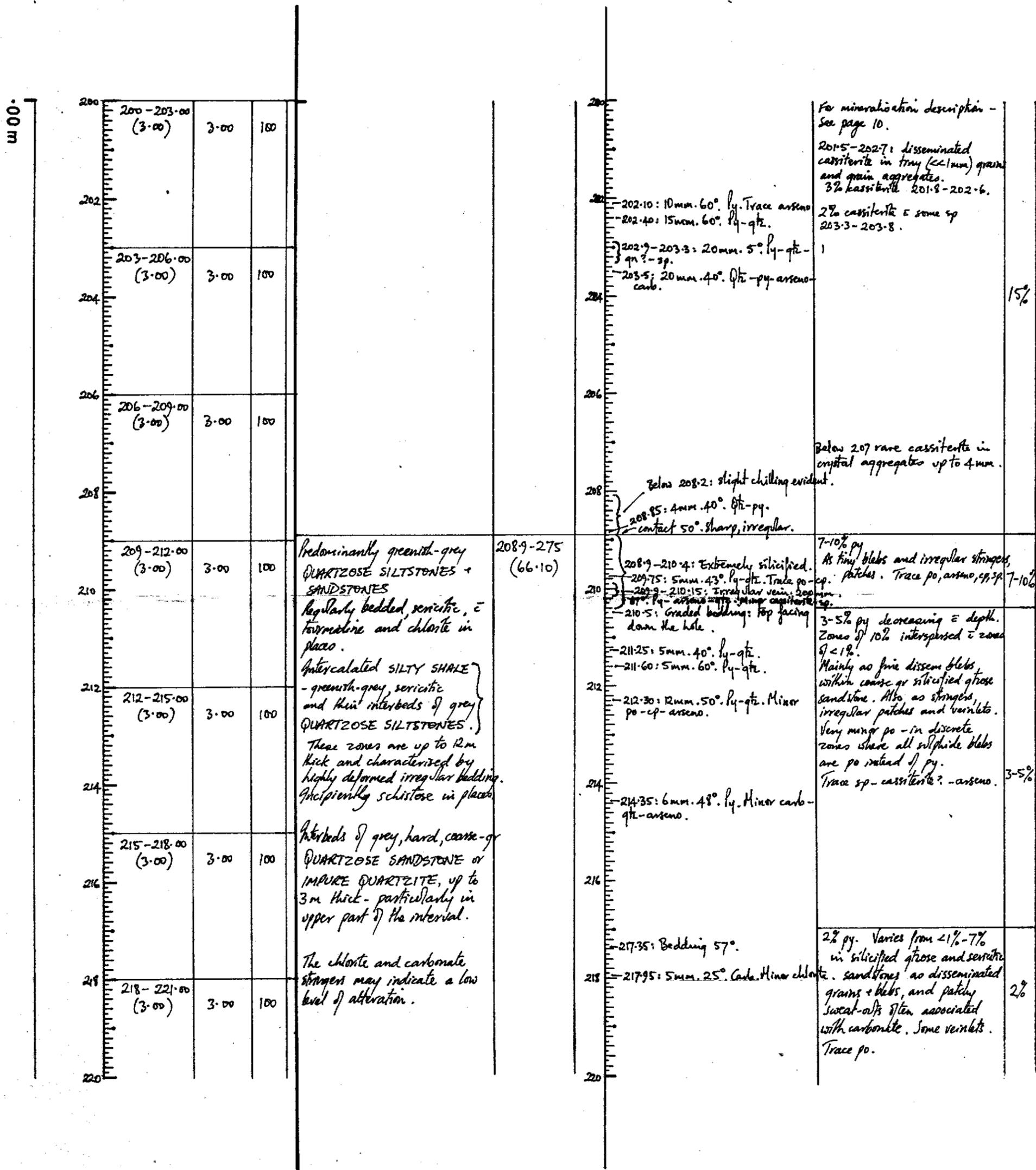


MINERAL EXPLORATION
DIAMOND DRILL LOG
Scale 1:80

HOLE No. MBD 4
LOG SHEET 10 of 14

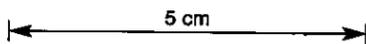


DRILLING NOTES	DRILL ADVANCE (M. 7777) & LENGTH FROM COLLAR M. 7777	LENGTH OF CORE RECOVERED M. 7777	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT. LENGTH FROM COLLAR m. cm	GRAPHIC LOG	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets)	MINERALIZATION	



**MINERAL EXPLORATION
DIAMOND DRILL LOG**
Scale 1:80

HOLE No. HBD 4
LOG SHEET 11 of 14



DRILLING NOTES	DRILL ADVANCE (m. mm) & LENGTH FROM COLLAR (m. mm)	LENGTH OF CORE RECOVERED (m. mm)	% RECOVERY	LOST CORE ZONE	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT LENGTH FROM COLLAR m. cm	GRAPHIC LOG	OBSERVATIONS		% MINERALIZATION (visual estimate)
								Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets).	MINERALIZATION	

220					For rock description see page 11.
221	221-224.00 (3.00)	3.00	100		
224	224-227.00 (3.00)	3.00	100		
226					
227	227-230.00 (3.00)	3.00	100		
228					
230	230-233.00 (3.00)	3.00	100		
232					
233	233-236.00 (3.00)	3.00	100		
234					
236	236-239.00 (3.00)	3.00	100		
238					
239	239-242.00 (3.00)	3.00	100		
240					

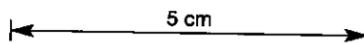
220					For mineralization description see page 11.	
220.7	Bedding 45°					2%
223.4-224.1	55° Massive py-sp-minor arseno-cp in qtz-carb-amphibol. Trace cassiterite.					5-7% py. As heavy patchy dissemination, irregular patches and stringers.
224-225	core broken by fractures/LCA.					Trace sp-cp. Purple fluorite (?) on fractures.
224.95	10mm. 55°. Qtz-py-arseno					5-7%
226.2	75mm. 45°. Arseno-py-sp-qa in qtz-carb.					<1-7% py. As above. Trace sp. Cassiterite in carb-filled fractures at 229.
229.7	6mm. 35°. Py. Minor qtz-carb.					1% py. Mostly concentrated as dissemination in small qtzose beds, fragments and lenses, or in carb stringers and veinlets up to 4mm. Trace sp-po.
230.35	7mm. 52°. Py-carb. Trace po.					
232.65	4mm. 77°. Carb. 5mm. 50°. Qtz. Minor py. // bedding.				1%	
236.3	15mm. 65°. Py-po-trace cp. In qtz-carb.					
238						
238.65	10mm. 33°. Py-carb-qtz. Trace sp-cp-chlorite.				3% py. Trace po. Concentrated in qtzose beds as heavy disseminations and fracture fillings.	
239.65	8mm. 10°. Carb-py-qtz.				1-2% py. Trace sp.	
240						



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**MINERAL EXPLORATION
DIAMOND DRILL LOG**
Scale 1:80

HOLE No. MBD4
LOG SHEET 12 of 14

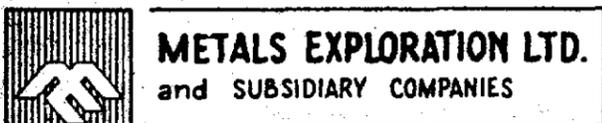


066

DRILLING NOTES	DRILL ADVANCE (M. 777) & LENGTH FROM COLLAR (M. 777)	LENGTH OF CORE RECOVERED (M. 777)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT. LENGTH FROM COLLAR (m. cm)	GRAPHIC LOG	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets)	MINERALIZATION	

240				For rock description see page 11.
242	242-245.00 (3.00)	3.00	100	
244				
246	245-248.00 (3.00)	3.00	100	
248				
248	248-251.00 (3.00)	3.00	100	
250				One large rounded clast of carbonaceous black shale and 60mm thick interbed 250-50.
252	251-252.00 (3.00)	3.00	100	
254				
254	254-257.00 (3.00)	3.00	100	
256				
258	257-260.00 (3.00)	3.00	100	
260				

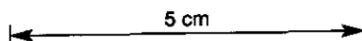
240				1-2%
242			5-7% py. Disseminated in silicified sandstone.	5-7%
244	242.75: 8mm. 40°. ly-qtz-carb Trace sp-cp.		1% py. Some fr of disseminations, but generally associated with sweat-veils of qtz-carb-chlorite.	1%
244	243.8: 22mm. 37°. ly-carb-sp-chlorite. Trace po.		stringers <1mm of bright purple material which does not fluoresce (fluorite?).	
244	244.9: 10mm. 43°. ly-carb-sp.		5-7% py. Disseminated, also stringers.	5-7%
246			<1% py. Trace sp.	
248				<1%
248	249: Bedding 70°.			
250			1-3% py. Trace po. Mostly in small carb sweat-veils and stringers. Also veinlets and fr of disseminations (increasing with depth - locally 5% below 258m)	
250	250.7: 20mm. 65°. Carb. Minor amorphous or fluorite. Irregular.			
250	250.9: 4mm. 45°. Py.			
250	251.5: 30mm. 60°. Qtz-py-carb.			
252	Trace sp-cp.			
252	251.85: 6mm. 55°. ly-carb-chlorite.			
252	Trace sp.			
252	253.3: 10mm. 60°. Irregular. ly.			
252	Trace carb-po-cp.			
254	253.55: 12mm. 50°. ly. Trace arseno-cp in minor carb-qtz.			
254	253.65: 12mm. 55°. Carb-py-arseno.			1-3%
254	Trace cp.			
256	256.15: 15mm. 47°. ly-carb-arseno-sp.			
258	257.10: 10mm. 50°. ly-arseno-sp-cp-carb.			
258	258.45: 30mm. 50°. ly-arseno-carb. V. minor sp.			
260				



MINERAL EXPLORATION
DIAMOND DRILL LOG
Scale 1:80

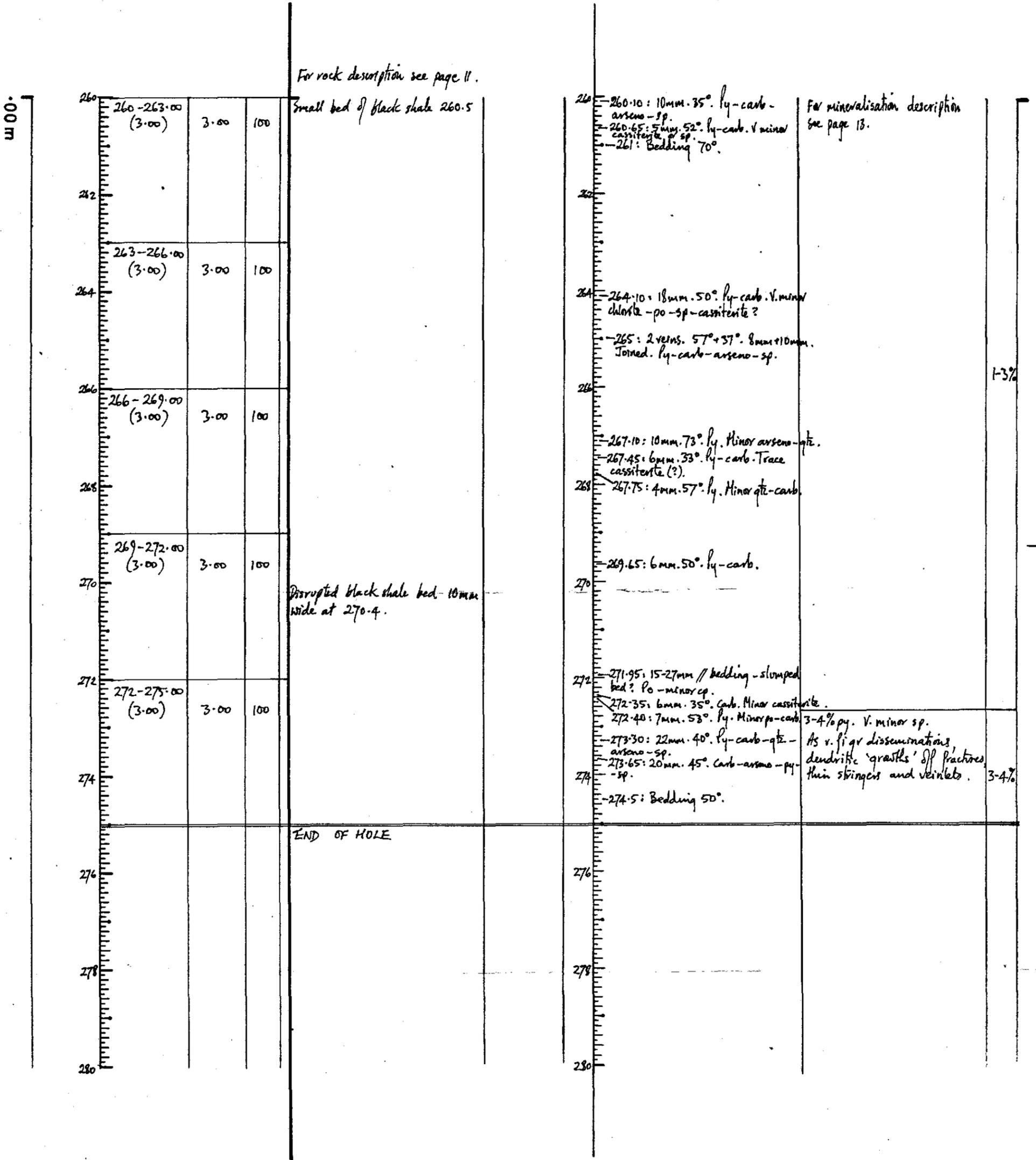
HOLE No. _____
LOG SHEET 13 of 14

207101



067

DRILLING NOTES	DRILL ADVANCE (M. M.M.) & LENGTH FROM COLLAR (M. M.M.)	LENGTH OF CORE RECOVERED (M. M.M.)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT. LENGTH FROM COLLAR (m. cm)	GRAPHIC LOG	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets).	MINERALIZATION	

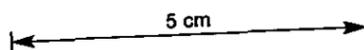


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**MINERAL EXPLORATION
DIAMOND DRILL LOG**
Scale 1:80

HOLE No. MED 4
LOG SHEET 14 of 14

207102



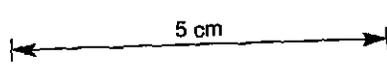
068

SUMMARY DRILL LOG M8D5

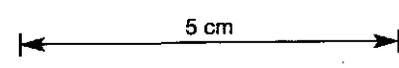
MAJOR VEINS
(Over 50cm)

207103
MINERALIZATION

<p>SILTY SHALE minor FINE GRAINED SANDSTONE/QUARTZITE Greenish grey, sericitic, much soft rock deformation and brecciation Breccia Fault Zone at: 4.7-11.0 30.5-37.5 41.5-42.1 48.0-57.0 55.6-58.0</p>	<p>0-62.4 (62.4)</p>	<p>0 ← 13.3 bedding 75° 20 ← 24.05-24.30, 70°, Pg, trace qtz, po, sph, arsenopy, calcite, jamesonite 40 60</p>	<p>Pyrite in stringers, veinlets and disseminated. 3-5%</p>
<p>BRECCIA FAULT ZONE Puggy dark clay with fragments of shale and sandstone</p>	<p>62.4-91.7 (29.3)</p>	<p>80 ← 78.4-78.6, Pg, minor qtz, arsenopy, chalcopy</p>	<p>Pyrite in stringers 2%</p>
<p>Interbedded SILTY SHALE, SILTSTONE and FINE GRAINED SANDSTONE/QUARTZITE Greenish grey and pale grey, minor soft rock deformation and brecciation</p>	<p>91.7-176.5 (84.8)</p>	<p>100 ← 96.8 bedding 70° 120 ← 132.4-132.62, 55°, Pg, minor qtz, marcasite, arsenopy, trace chalcopy, sph. 140 160</p>	<p>pyrite in stringers, blebs, veinlets occasionally disseminated 1-2%</p>
<p>PORPHYRY DYKE Pale yellow/green qtz-feldspar porphyry</p>	<p>176.5-224.6 (48.1)</p>	<p>180 ← contact 60° 200 220 ← contact 25°</p>	<p>pyrite trace arsenopyrite, pyrrhotite, calcite, disseminated 5%</p>
<p>SILTSTONE and SILTY SHALE slightly carbonaceous</p>	<p>224.6-236.3</p>	<p>← 225.8 bedding 55° ← contact 35°</p>	<p>pyrite in stringers, minor disseminated 7%</p>
<p>PORPHYRY DYKE</p>	<p>236.3-238.6</p>	<p>← contact 20°</p>	<p>pyrite trace calcite 2%</p>
<p>FINE GRAINED SANDSTONE and SILTSTONE Pale grey, deformation and brecciation</p>	<p>238.6-259.5 (20.9)</p>	<p>240 260</p>	<p>pyrite in blebs and veinlets 1-2%</p>
<p>SILTSTONE and SILTY SHALE pale and dark grey, carbonaceous, well bedded</p>	<p>259.5-294.95 (25.45)</p>	<p>280 ← contact 40°</p>	<p>pyrite in stringers, blebs minor disseminated 3-5%</p>
<p>PORPHYRY DYKE</p>	<p>294.95-307.75</p>	<p>← contact 15°</p>	<p>pyrite disseminated 2%</p>
<p>SILTSTONE and SILTY SHALE pale and dark grey, carbonaceous, well bedded</p>	<p>296.75-307.1 (20.35)</p>	<p>300 ← 293.7 bedding 20°</p>	<p>pyrite in stringers 2-3%</p>
<p>PORPHYRY DYKE Pale yellow/green qtz-feldspar porphyry</p>	<p>307.1-324.3 (17.7)</p>	<p>← contact ~40° 320 ← contact 35°</p>	<p>pyrite, trace sphalerite, fluorite, calcite, disseminated 3%</p>
<p>SILTSTONE and SILTY SHALE minor FINE GRAINED SANDSTONE pale and dark grey, slightly carbonaceous, well bedded, folded, minor soft rock deformation and brecciation</p>	<p>324.8-371.8 (47.0)</p>	<p>340 ← 331.35, 60 mm, 45°, qtz, Pg, marcasite minor sph, carbonate trace po 360 ← 369.5-370.2, 55°, qtz, siderite</p>	<p>pyrite in stringers, veins and disseminated 1-3%</p>
<p>FINE GRAINED SANDSTONE/SILTSTONE minor SILTY SHALE pale grey, folded</p>	<p>371.8-412.8 (41.0)</p>	<p>380 ← fluorite trace Pg 400 ← 396.5 bedding 55°</p>	<p>pyrite disseminated, in veinlets <1%</p>



		400			
Stripy SILTSTONE and SHALE, pale green, brown	412.8-419.25	420	← 409.7-409.25, 45° py, minor qtz, chloropy, trace arsenopy		Nil
FINE GRAINED SANDSTONE/QUARTZITE minor SILTSTONE pale grey, often brecciated	419.25-437.6 (18.35)			Pyrite disseminated	<1%
SILTSTONE and FINE GRAINED SANDSTONE Interbedded, minor folding and brecciation	437.6-467.3 (29.7)	440		pyrite trace pyrobitite disseminated	<1%
		460			
Stripy SILTSTONE and SHALE, pale green, brown	467.3-477.3				Nil
PORPHYRY DYKE Creamy, aplitic looking qtz-feldspar porphyry	477.3-491.9 (14.6)	480	← contact 85° ← contact 55°	pyrite disseminated, trace fluorite, arsenopyrite	3-5%
Stripy SILTSTONE and SHALE, pale green, brown	491.9-503.4	500	← 498.0 bedding 20°	pyrite in stringers, veins	<1%
FINE to MEDIUM GRAINED SANDSTONE, grey	503.4-511.2		← contact 35° ← contact 40°	pyrite, disseminated, in veins	1-2%
PORPHYRY DYKE	511.2-511.4			pyrite trace fluorite	2-3%
SILTSTONE minor interbed of SILTY SHALE and FINE GRAINED SANDSTONE grey/green, part stripy, well bedded	511.4-539.1 (27.7)	520		pyrite, trace pyrobitite in veinlets, disseminated	<1%
SILTY SHALE dark carbonaceous	539.1-543.3	540	← contact 65° ← contact 65°	pyrite, bedded in stringers pyrite disseminated	3% 2%
PORPHYRY DYKE	543.3-543.7				
SILTY SHALE minor carbonaceous shale, dark grey, well bedded, pyritic	543.7-584.4 (40.7)	560		pyrite, trace pyrobitite bedded, in stringers	5-7%
		580			
SILTY SHALE and SILTSTONE, greenish grey	584.4-593.8			pyrite, trace pyrobitite, bedded blebs, stringers	7-10%
SILTY SHALE and carbonaceous shale	593.8-604.7	600		po > py bedded blebs and stringers	10%
FINE GRAINED SANDSTONE/SILTSTONE	604.7-611.1			po > py trace chloropy	5%
SILTY SHALE and carbonaceous shale	611.1-617.85			po > py bedded blebs	5%
PORPHYRY DYKE	617.85-620.5	620	← contact 15° ← 627.6 bedding 25°	pyrite trace arsenopy	<1%
SILTSTONE and SILTY SHALE minor carbonaceous shale. Grey, well bedded	620.5-638.5 (18.0)			po > py bedded, veinlets, stringers, disseminated	3-5%
QUARTZITE pale grey	638.5-647.3	640		po > py disseminated	3%
Interbedded SILTSTONE and SILTY SHALE minor fine grained Sandstone towards base pale and dark grey, well bedded, folded	647.3-719.3 (72.0)	660		po > py disseminated, bedded, in stringers, veins and blebs	3%
		680			
		700	← 696.0 bedding 40°		
		720			
QUARTZITE, massive, pale grey	719.3-733.5		← 726.7-726.9, 50° qtz, py, arsenopy, carbonate, trace fluorite	pyrite, disseminated, blebs, veinlets, stringers	1%
PORPHYRY DYKE	733.5-736.0	740	← 733.5 and 736 Fault Zone, black pyritic puggy clay		<0.5%
QUARTZITE and silicified SILTSTONE Pale-medium grey, hard, poorly bedded	736.0-783.7 (47.7)	760	← 758.5, 15cm vein, 40°, brecciated ← 765.3 bedding 45°	pyrite, disseminated, blebs, stringers, veins	3%
		780			
PORPHYRY DYKE Cream + pale green, fine grained, qtz-feldspar porphyry	783.7-808.2 (24.5)	800	← contact 45°	pyrite, minor fluorite, disseminated, veins	7%



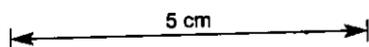
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MINERAL EXPLORATION
DIAMOND DRILL LOG

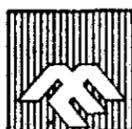
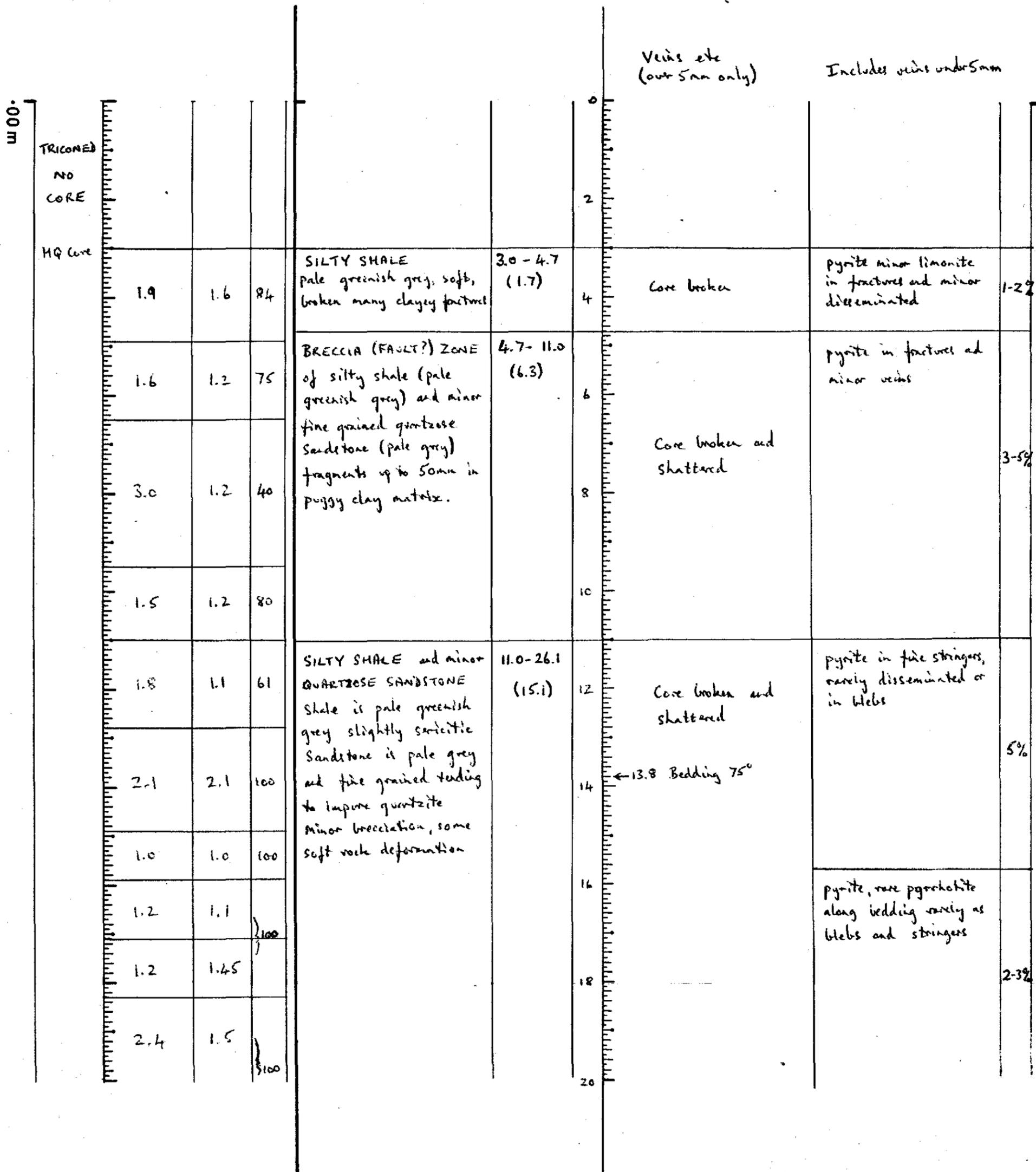
Prospect, area, project or mine. <u>MOUNT BISCHOFF</u>		HOLE No. <u>MBS5</u>
COLLAR LOCATION		W.C. Bearing from collar <u>(Vertical)</u> magnetic _____ grid (1) _____ grid (2) _____ grid (3) _____ true
Grid name	Rectangular space co-ordinates	
	PLANAR CO-ORDINATES ELEVATION	
(1) <u>M B J V</u>	<u>2099.99</u> N <u>1199.57</u> E <u>682.52</u>	
(2) _____	_____ N _____ E _____	
(3) Aust. Map Grid _____ mE _____ mN _____ m A.H.D. PRECISE / APPROX.		
1:250 000 Sheet No. <u>BURNIE SK 55-3</u>	1:100 000 Sheet No. <u>HELLYER 8015</u>	State <u>TASMANIA</u>
Mineral Tenement <u>Part of EL 5/63</u>	Holder <u>COMSTAFF PTY LTD</u>	Inclination at collar <u>Vertical</u>
Cadastral location and details _____ CROWN LAND / PRIVATE _____		Total length <u>972.5m</u>
Details of down hole location-survey methods. <u>Eastman</u> <u>Single shot photo logger</u>		Commenced: <u>25/10/78</u> Completed: <u>17/12/78</u>
Purpose of drilling and anticipated lengths to targets. <u>1. Possible repetition or further dolomite sequences at depth</u> <u>2. Possible mineralized porphyry stock at depth</u> <u>3. Possible mineralized gneissized granite beneath the mountain.</u>		Drilling contractor <u>LONGYEAR AUSTRALIA P.L.</u> <u>FL44 RIG</u>
Results of down hole location-survey.		Core size and non-coring (NC) TRIGONE <u>0</u> TO <u>3.0m</u> HQ <u>3.0</u> TO <u>42.1m</u> NQ <u>42.1</u> TO <u>242.45m</u> BQ <u>242.45</u> TO <u>972.5m</u> ____ TO _____ ____ TO _____
LENGTH FROM COLLAR	W.C. BEARING type Magnetic	DIP
<u>27</u>	<u>(Casing)</u>	<u>89°</u>
<u>61</u>	<u>145°</u>	<u>89°</u>
<u>89</u>	<u>87°</u>	<u>89°</u>
<u>120.5</u>	<u>68°</u>	<u>89°</u>
<u>150.5</u>	<u>104°</u>	<u>88°</u>
<u>201</u>	<u>128°</u>	<u>86°</u>
<u>231</u>	<u>124°</u>	<u>85°40'</u>
<u>261</u>	<u>120°</u>	<u>85°40'</u>
<u>285</u>	<u>122°</u>	<u>88°</u>
<u>320</u>	<u>61°</u>	<u>88°05'</u>
<u>350</u>	<u>52°</u>	<u>87°30'</u>
<u>400</u>	<u>358°</u>	<u>84°30'</u>
<u>437</u>	<u>345°</u>	<u>82°30'</u>
<u>478</u>	<u>341°</u>	<u>79°30'</u>
<u>511</u>	<u>342°</u>	<u>78°30'</u>
<u>541</u>	<u>345°</u>	<u>76°</u>
<u>575</u>	<u>341°</u>	<u>73°30'</u>
<u>601</u>	<u>339°</u>	<u>70°10'</u>
<u>630</u>	<u>337°</u>	<u>67°40'</u>
<u>662</u>	<u>(286°)</u>	<u>65°20'</u>
<u>690</u>	<u>339°</u>	<u>63°</u>
<u>720</u>	<u>338°</u>	<u>59°20'</u>
<u>748</u>	<u>337°30'</u>	<u>56°40'</u>
<u>774</u>	<u>335°30'</u>	<u>54°</u>
<u>806</u>	<u>334°</u>	<u>52°45'</u>
<u>841</u>	<u>331°30'</u>	<u>49°15'</u>
<u>872</u>	<u>333°</u>	<u>47°</u>
<u>905</u>	<u>333°</u>	<u>45°</u>
Comments on drilling. <u>3.0m HW rod left in hole</u> <u>Very broken ground was encountered to 100metres</u>		Legend for graphic log column (see drill log for Hole No. _____) FIELD ROCK NAME, ETC. DERWENT PENCIL NO. _____ _____ <input type="checkbox"/> _____
LOGGED BY <u>A. JANNINK</u>	LOGGED BY _____	LOGGED BY _____
FROM <u>0</u> TO <u>972.5m</u>	FROM _____ TO _____	FROM _____ TO _____
DATE <u>Dec 1978</u>	DATE _____	DATE _____
Company managing exploration programme. <u>METALS EXPLORATION LTD</u>		HOLE No. <u>MBS5</u> Log sheet 1 of <u>50</u>



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072

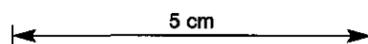
DRILLING NOTES	DRILL ADVANCE (M. mm) & LENGTH FROM COLLAR (M. mm)	LENGTH OF CORE RECOVERED (M. mm)	% RECOVERY	FIELD ROCK NAME and general description over interval marked.	ADOPTED INTERVAL (m. cm) & ADOPT. LENGTH FROM COLLAR m. cm	GRAPHIC LOG	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets)	MINERALIZATION	



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**MINERAL EXPLORATION
DIAMOND DRILL LOG**
Scale 1:80

HOLE No. MBD 5
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207107

073

DRILLING NOTES	DRILL ADVANCE (m. mm) & LENGTH FROM COLLAR (m. mm)	LENGTH OF CORE RECOVERED (m. mm)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT. LENGTH FROM COLLAR (m. cm)	GRAPHIC LOG	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets)	MINERALIZATION	

100m

				See page 2			20	← 20.4 Bedding 55°	See page 2	
	1.0	1.95								
	1.2	1.1	92							
	0.9	0.9	100							
	0.8	0.95								
	1.5	0.7	100	24.8-25.0 Khaki brown puggy clay fault zone			22	22.8: 10mm vein, py, alamp, qtz, trace gl. 23.2: 15mm vein, 20° py minor qtz, po, trace gl, sp, janelomite 23.5: 10mm vein, 65° py, qtz, trace sp, ? cassiterite 24.05-24.30, vein, 70° massive py, trace qtz, carbonate, po, janelomite, sp, arsenopy, cassiterite	pyrite mainly in thin stringers at 22.2m too bedding in sandstone, some disseminated	5%
	1.0	0.45	45	QUARTZOSE SANDSTONE pale grey, fine grained, slightly pitted, brecciated with clay and quartz filling fractures	26.1-29.5 (3.4)		24	Core very broken	pyrite, disseminated, blebs, and stringers	5%
	0.9	0.45	50				26			
	0.8	0.4	50				28			
	0.7	0.45	64				30	← 29.8 Bedding 60° Core very broken	pyrite on joint planes	<1%
	0.8	0.8	100	SILTY SHALE pale greenish grey sl carbonaceous	29.5-30.5 (i.c)					
	0.9	0.7	78	BRECCIA FAULT ZONE Khaki and pale grey puggy clay matrix with fragments usually < 10mm of pale grey silty shale, slightly carbonaceous	30.5-37.5 (7.0)		32	Core very broken	None visible	
	1.8	0.25	14				34			
	1.5	0.9	60				36			
	1.5	0.55	37				38	Core very broken	pyrite and ? marcasite in stringers	<1%
	1.5	0.65	43				40			
	0.9	0.55	61	SILTY SHALE pale grey, slightly carbonaceous	37.5-41.5 (4.0)					
	1.8	0.15	8							

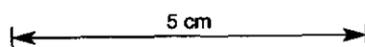


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MINERAL EXPLORATION
DIAMOND DRILL LOG
Scale 1:80

HOLE No. MBDS
LOG SHEET 3 of 50

207108



07A

DRILLING NOTES	DRILL ADVANCE (m. mm) & LENGTH FROM COLLAR m. mm	LENGTH OF CORE RECOVERED m. mm	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT. LENGTH FROM COLLAR m. cm	GRAPHIC LOG MARKERS (m)	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets)	MINERALIZATION	

300m

N.P. core

	1.3	0.25	19	See page 3		40		See page 3	
	0.6	0.35	58	BRECCIA ZONE	41.5-42.1	42	Totally broken	-	
	1.6	0.6	38	fragment of silty shale QUARTZOSE SANDSTONE pale grey, slightly carbonaceous minor pitting, fine grained.	42.1-44.2 (2.1)		Core very broken	pyrite, minor arsenopyrite in stringers, minor disseminated	3-5%
	3.0	1.95	65	SILTY SHALE pale grey, slightly carbonaceous some foliation and soft rock deformation, interbedded with fine grained quartzose sandstone (as above)	44.2-47.0 (2.8)	44	44.1 Bedding 60° Core very broken	pyrite mainly in stringers in sandstone	3-5%
	0.6	0.3	50	QUARTZOSE SANDSTONE fine grained, pale grey, slightly carbonaceous, minor pitting	47.0-48.0 (1.0)	46	Core very broken	pyrite disseminated	3-5%
	0.7	0.1	14	BRECCIA FAULT ZONE matrix of grey puggy clay, slightly carbonaceous, with pale grey fragments generally <10mm of silty shale	48.0-51.0 (3.0)	48		none visible	
	1.3	0.5	38			50			
	1.7	1.5	88	SILTY SHALE pale grey, slightly carbonaceous some brecciation	51.0-55.6 (4.6)	52	Core broken	pyrite, trace chalcopyrite, pyrrhotite along joint and bedding planes rarely disseminated	2-3%
	3.0	2.15	72			54	53.8 Bedding 70°		
	2.0	0.75	38	BRECCIA FAULT ZONE matrix of grey puggy clay, slightly carbonaceous, with pale grey fragments generally <20mm of silty shale	55.6-58.0 (2.4)	56	Core broken	none visible	
	1.6	0.85	53	SILTY SHALE pale grey, slightly carbonaceous some foliation and soft rock deformation interbedded with fine grained quartzose sandstone	58.0-62.4 (4.4)	58	Core broken	pyrite along joint and bedding planes	1-2%
						60			

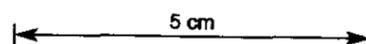


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MINERAL EXPLORATION
DIAMOND DRILL LOG
Scale 1:80

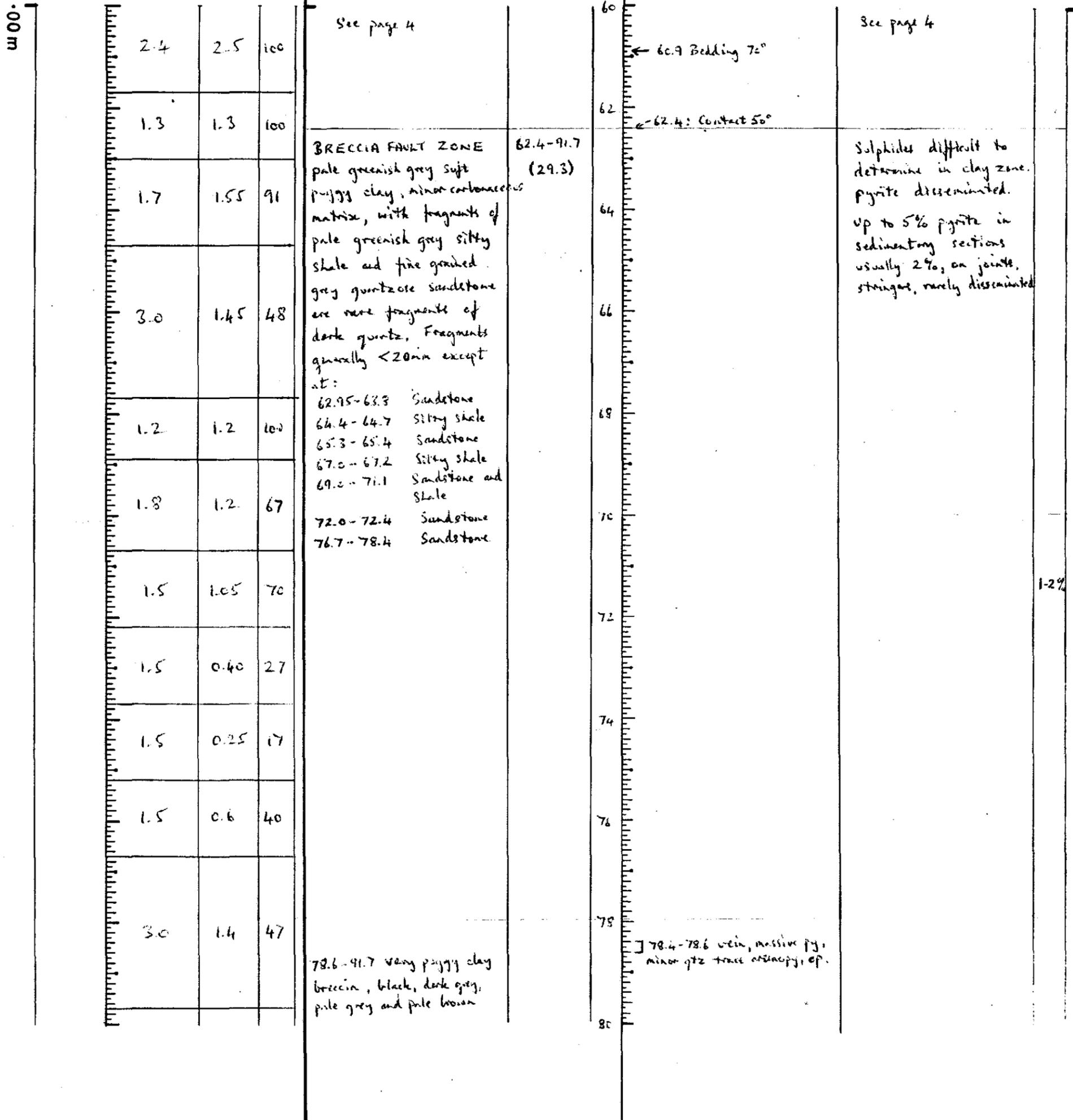
HOLE No. M3D5
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207109



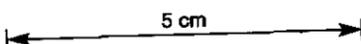
075

DRILLING NOTES	DRILL ADVANCE (m. mm) & LENGTH FROM COLLAR (m. mm)	LENGTH OF CORE RECOVERED (m. mm)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT. LENGTH FROM COLLAR (m. cm)	GRAPHIC LOG	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets)	MINERALIZATION	



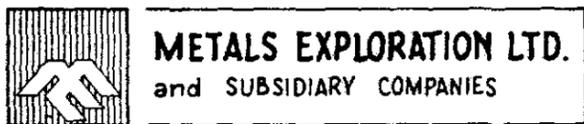
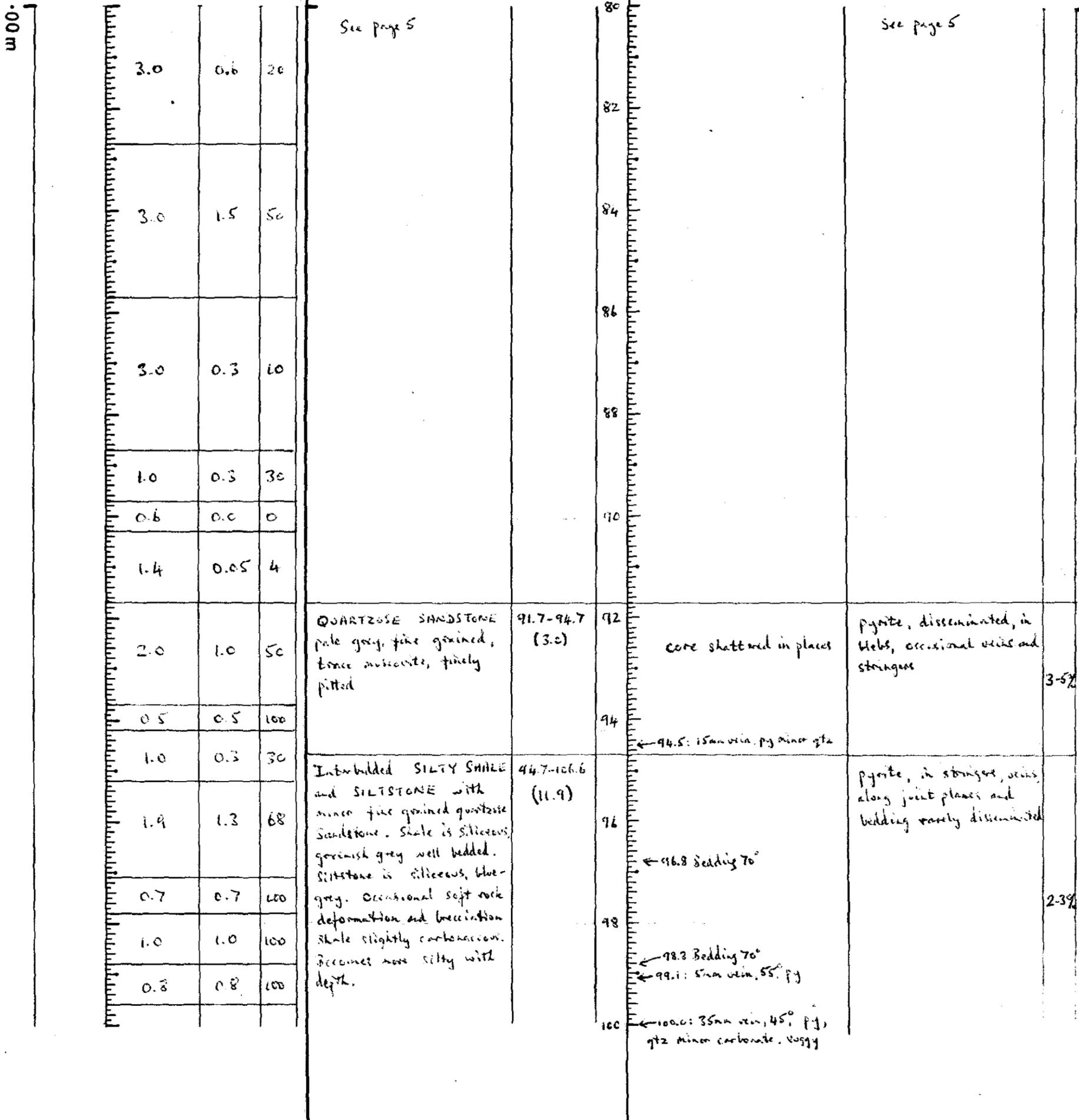
MINERAL EXPLORATION
DIAMOND DRILL LOG
Scale 1:80

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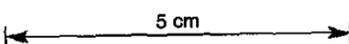
207110

DRILLING NOTES	DRILL ADVANCE (M. 7777) & LENGTH FROM COLLAR (M. 7777)	LENGTH OF CORE RECOVERED (M. 7777)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m cm) & ADOPT LENGTH FROM COLLAR (m. cm)	GRAPHIC LOG	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or from to (relates to brackets)	MINERALIZATION	



MINERAL EXPLORATION
DIAMOND DRILL LOG
Scale 1:80

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207111

077

DRILLING NOTES	DRILL ADVANCE (m. mm) & LENGTH FROM COLLAR (m. mm)	LENGTH OF CORE RECOVERED (m. mm)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT. LENGTH FROM COLLAR (m. cm)	GRAPHIC LOG MARKERS (V)	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets)	MINERALIZATION	

100m

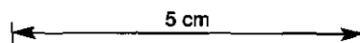
1.2	1.2	100	See page 6		100	← 100.4: 50mm vein, 50° wuggy, py, minor qtz, trace po	See page 6	
0.8	0.8	100			102	← 102.7: 20mm vein, py, trace qtz, marcasite		
1.0	0.9	90			104	← 104.0 Bedding 75°		
1.6	1.6	100			106	← 106.6 Bedding 75°		
0.9	0.9	100			108			
1.6	1.6	100			110	← 110.0: 5mm vein, 20° py, qtz, trace sp, ? calcite		2-3%
3.0	0.9	30	QUARTZITE massive, pale grey, slightly pitted, trace ? tourmaline, feldspar, muscovite minor interbeds of dark grey silty shale and blue grey siltstone	106.6-112.6 (6.0)	112		pyrite, as stringers and blebs, dendritic, sometimes disseminated, up to 5% in places	
2.3	2.3	100	gradual change to		114	← 113.0 Bedding 60° ← 113.7-113.8 Breccia zone qtz, py	pyrite, as stringers, on joint planes, rarely blebs, disseminated, dendritic	
2.1	2.1	100	SILTSTONE less SILTY SHALE as thin interbeds siltstone is pale blue-grey shale is greenish grey, fine fine grained quartzite sandstone. Soft rock deformation and brecciation increasing towards base. Poorly bedded	112.6-117.9 (5.3)	116	← 116.7: 8mm vein, arsenopy, py ← 116.8-10mm vein, 60° py, qtz, arsenopy trace calcite cp. ← 116.95: 5mm vein, 55° py trace cp		1-2%
0.5	0.5	100			118	← 119.3: 10mm vein, 30° py, gl minor qtz, carbonate ← 119.7: 15mm vein, 60° wuggy, qtz, carbonate minor py trace cp, calcite ← 119.75: 20mm vein, 60° wuggy, qtz, carbonate, minor py, trace cp, calcite	pyrite in fine stringers, dendritic, rarely disseminated	1-2%
0.8	1.1	137			120			
0.7	0.6	86						
1.8	1.8	100						
3.1	3.1	100	QUARTZITE massive, pale grey, hard, slightly pitted at start, slightly feldspathic trace ? tourmaline 119.5-121.6 Interbedded silty shale and siltstone	117.7-132.0 (14.3)				



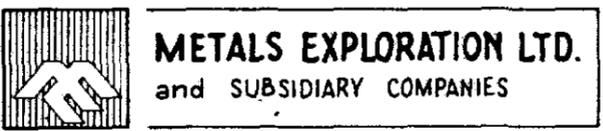
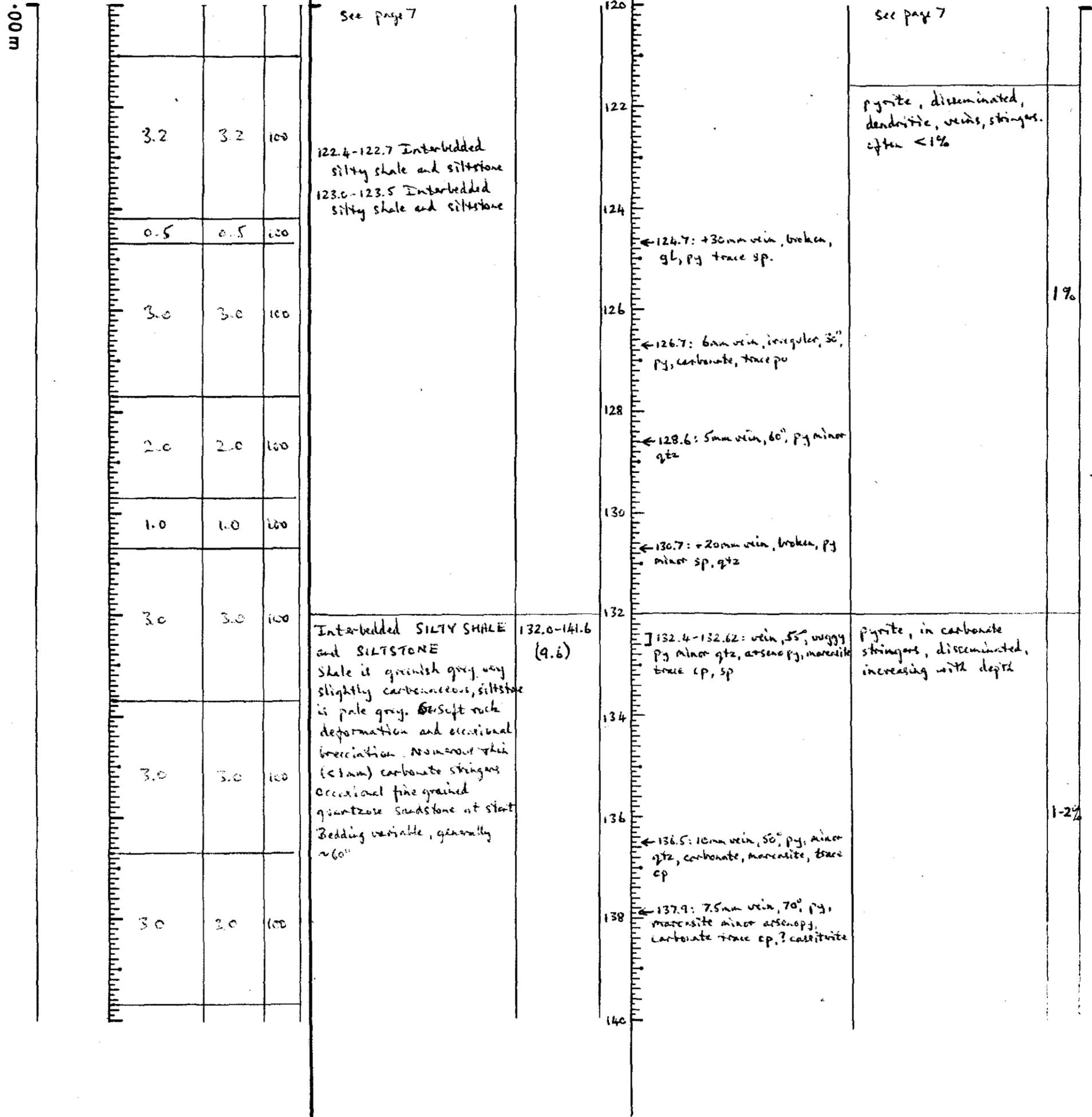
MINERAL EXPLORATION
DIAMOND DRILL LOG
Scale 1:80

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207112

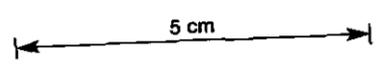


DRILLING NOTES	DRILL ADVANCE (m. mm) & LENGTH FROM COLLAR m. mm	LENGTH OF CORE RECOVERED m. mm	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT LENGTH FROM COLLAR m. cm	GRAPHIC LOG MARKERS (m)	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets)	MINERALIZATION	



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DIAMOND DRILL LOG
Scale 1:80

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207113

079

DRILLING NOTES	DRILL ADVANCE (m. mm) & LENGTH FROM COLLAR (m. mm)	LENGTH OF CORE RECOVERED (m. mm)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT LENGTH FROM COLLAR (m. cm)	GRAPHIC LOG MARKERS & BRACKETS (m)	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets)	MINERALIZATION	

100m

1.9	0.7	37
0.6	0.3	50
2.8	2.2	
1.3	1.8	>100
1.2	1.3	
1.5	1.5	100
0.3	0.3	100
0.6	0.6	100
1.8	1.8	100
1.2	1.0	83
1.0	1.0	100
0.3	0.3	100
0.3	0.3	100
0.4	0.4	100
0.3	0.3	100
3.0	1.9	63
1.0	0.9	90

See page 8

QUARTZITE
massive, pale grey, slightly pitted, fine disseminated ? tourmaline (up to 0.5% in places). Minor fluorite coatings on joint planes

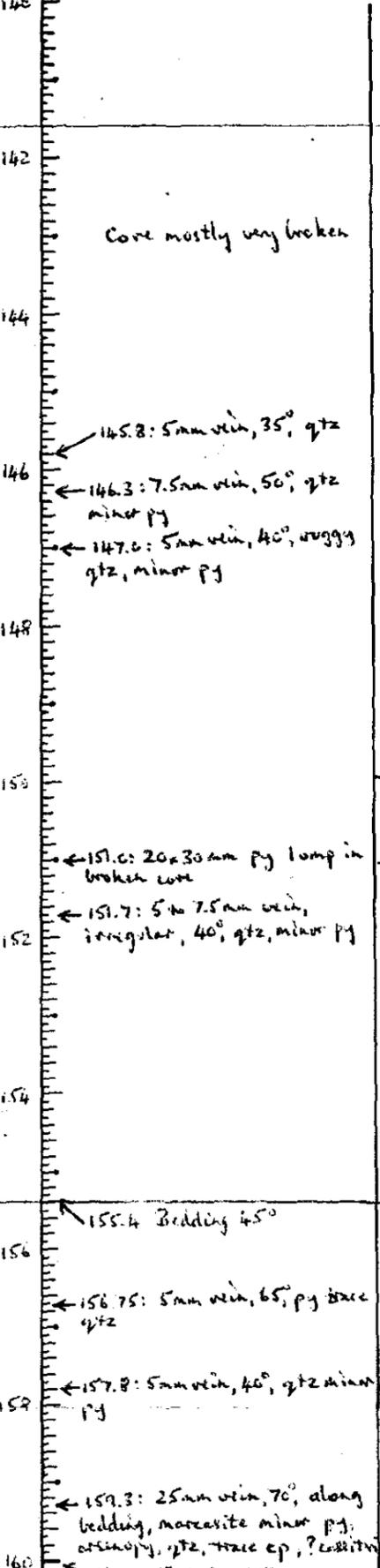
141.6-155.4 (13.8)

Interbedded SILTSTONE and lesser SILTY SHALE
Siltstone is pale grey, fairly hard, siliceous; shale is greenish grey, well bedded. Frequent brecciation and soft rock deformation. Minor quartzite. Bedding is variable with fold axes at eg: 172.6, 174.3, 175.4, 175.5

ADOPTED INTERVAL (m. cm)
ADOPT LENGTH FROM COLLAR (m. cm)

141.6-155.4 (13.8)

155.4-176.5 (21.1)



See page 8

pyrite, marcasite in blebs, minor stringers

Core mostly very broken

1%

pyrite, marcasite in blebs

3%

pyrite, disseminated, occasionally along joint planes

1%

pyrite, disseminated, occasionally in thin carbonate stringers and veins. Sometimes barren. Sometimes up to 7%

3-5%

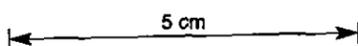


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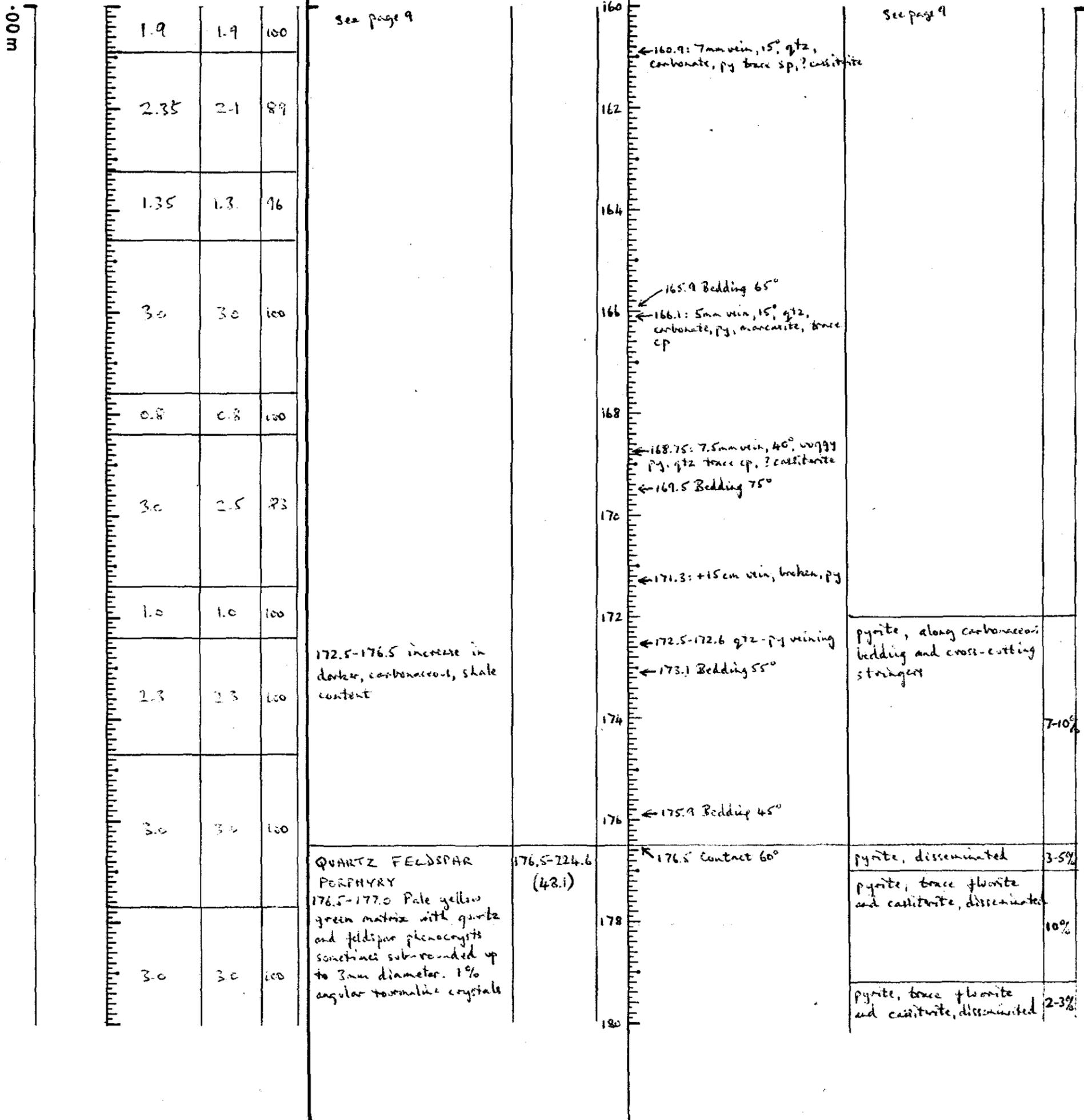
**MINERAL EXPLORATION
DIAMOND DRILL LOG**
Scale 1:80

HOLE No. MBS 5
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207114



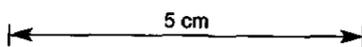
DRILLING NOTES	DRILL ADVANCE (m. mm) & LENGTH FROM COLLAR (m. mm)	LENGTH OF CORE RECOVERED (m. mm)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT LENGTH FROM COLLAR (m. cm)	GRAPHIC LOG MARKERS (V)	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets)	MINERALIZATION	



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DIAMOND DRILL LOG**

Scale 1:80



HOLE No. M3D5

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DRILLING NOTES	DRILL ADVANCE (m. mm) & LENGTH FROM COLLAR (m. mm)	LENGTH OF CORE RECOVERED (m. mm)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT. LENGTH FROM COLLAR (m. cm)	GRAPHIC LOG	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets)	MINERALIZATION	

100m

0.85	0.85	100
2.45	2.45	100
3.0	3.0	100
2.5	2.5	100
3.15	3.15	100
3.15	3.15	100
2.7	2.7	100

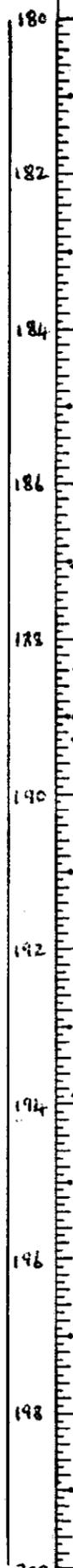
See page 10
 177.0-184.0 White matrix with phenocrysts of quartz, lesser feldspar and topaz angular and sub-rounded up to 5mm diameter. Slightly pitted

184.0-190.8 pale yellow grey matrix with phenocrysts of quartz, feldspar and topaz angular and rounded up to 5mm diameter

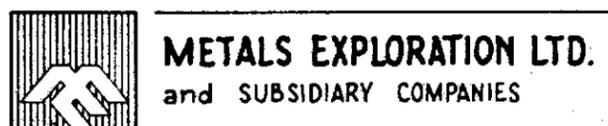
190.8-197.4 Cream white matrix with phenocrysts of quartz, lesser feldspar and topaz, angular and rounded up to 5mm (rarely 10mm) diameter. Occasionally pitted

197.4-198.5 micaceous porphyry shear zone, cream colour, mostly broken

198.5-220.6 Cream white matrix as for 190.8-197.4



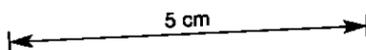
See page 10	
pyrite, trace arsenopyrite, cassiterite, disseminated	7%
pyrite, trace arsenopyrite, cassiterite, disseminated, rarely in veins	
	3%
pyrite, <0.5% cassiterite, trace sphalerite, disseminated	7%
pyrite, <0.5% cassiterite, trace sphalerite, disseminated	1-2%
pyrite, 0.5% cassiterite trace sphalerite, fluorite disseminated. Ranging from 7% at top to 3% at bottom	5%
pyrite, 0.5% cassiterite in micaceous shear zone	2%
pyrite, 0.5% cassiterite, trace pyrrhotite, sphalerite, chalcopyrite, fluorite disseminated	3-5%



MINERAL EXPLORATION
 DIAMOND DRILL LOG
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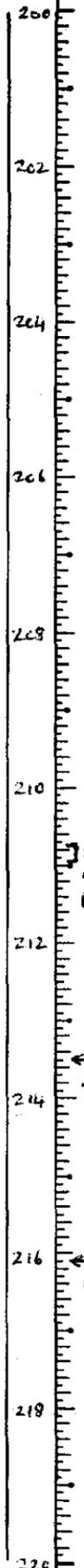


082

DRILLING NOTES	DRILL ADVANCE (m. mm) & LENGTH FROM COLLAR m. mm	LENGTH OF CORE RECOVERED m. mm	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT. LENGTH FROM COLLAR m. cm	GRAPHIC LOG	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets)	MINERALIZATION	

3.1	3.2	
3.15	3.3	
1.25	1.25	
0.9	0.8	
3.1	3.1	100
3.0	3.0	
2.0	1.85	
2.0	2.0	100
1.2	1.2	100
0.6	0.6	100

See pages 10, 11



See page 11	
pyrite, 0.5% cassiterite to 20µm, trace arsenopyrite, chalcopyrite, pyrrhotite disseminated. Range 5% to 20%. Below 20µm trace cassiterite	10%
pyrite, trace cassiterite, disseminated	10-15%
pyrite, trace cassiterite, disseminated	3%
pyrite, up to 0.5% cassiterite, trace chalcopyrite	7%

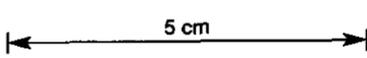


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**MINERAL EXPLORATION
DIAMOND DRILL LOG**
Scale 1:80

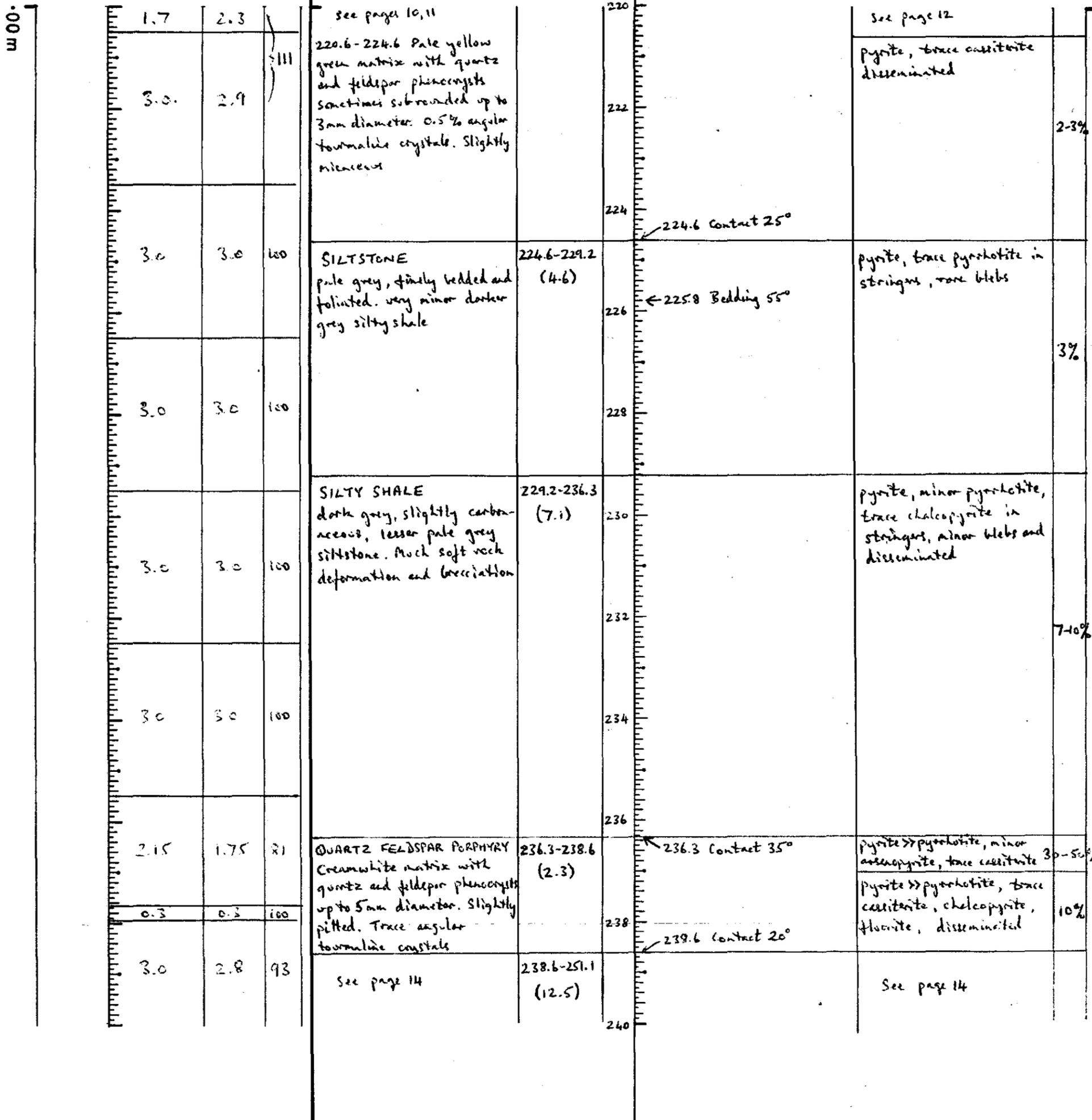
HOLE No. MBS 5
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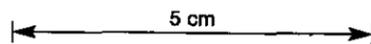
DRILLING NOTES	DRILL ADVANCE (m. mm) & LENGTH FROM COLLAR m. mm	LENGTH OF CORE RECOVERED m. mm	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT. LENGTH FROM COLLAR m. cm	GRAPHIC LOG	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets)	MINERALIZATION	



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**MINERAL EXPLORATION
DIAMOND DRILL LOG**
Scale 1:80

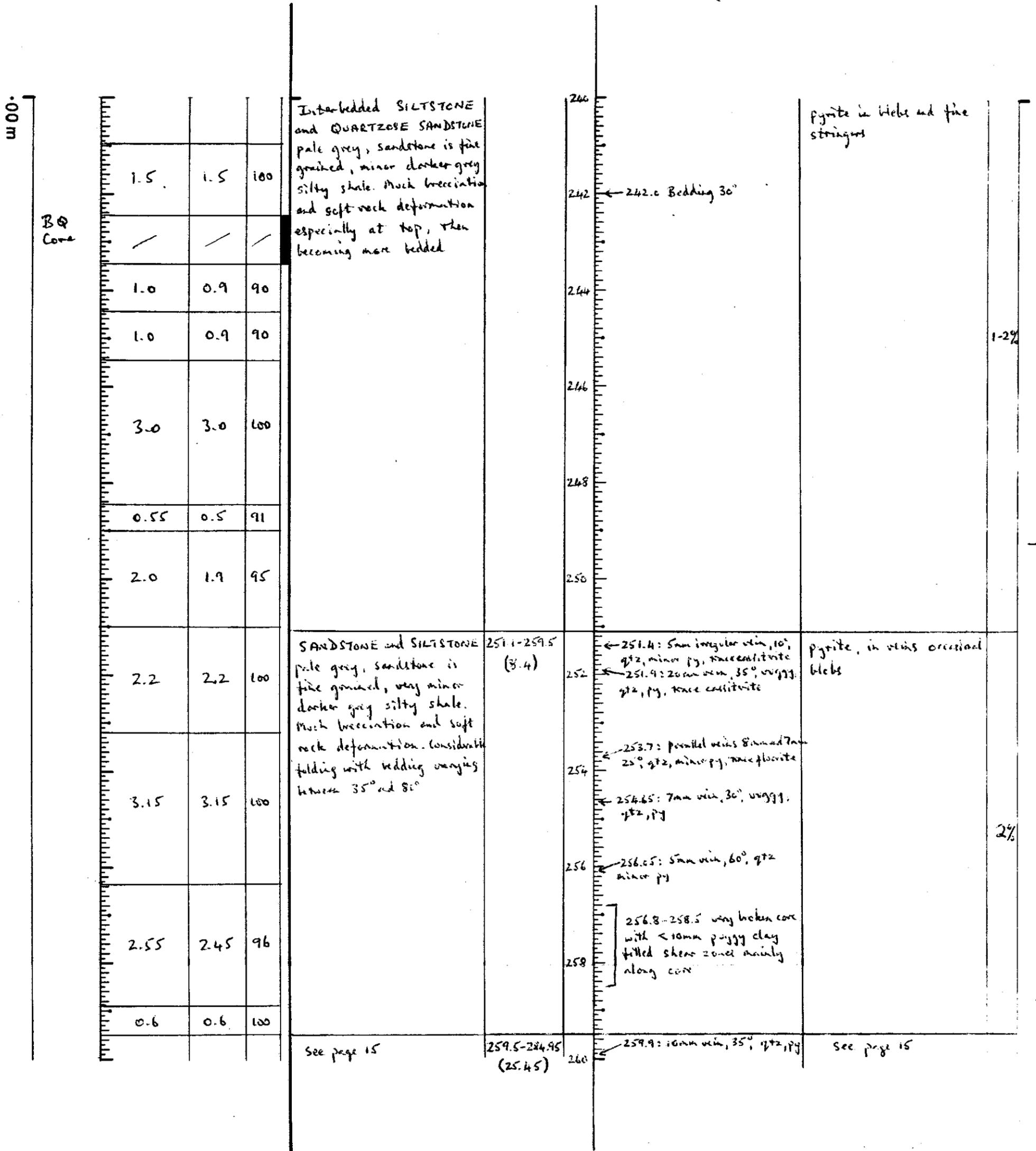
HOLE No. MBDS
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207118

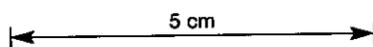
084

DRILLING NOTES	DRILL ADVANCE (m. mm) & LENGTH FROM COLLAR m. mm	LENGTH OF CORE RECOVERED m. mm	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT LENGTH FROM COLLAR m. cm	GRAPHIC LOG	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets)	MINERALIZATION	



**MINERAL EXPLORATION
DIAMOND DRILL LOG**
Scale 1:80

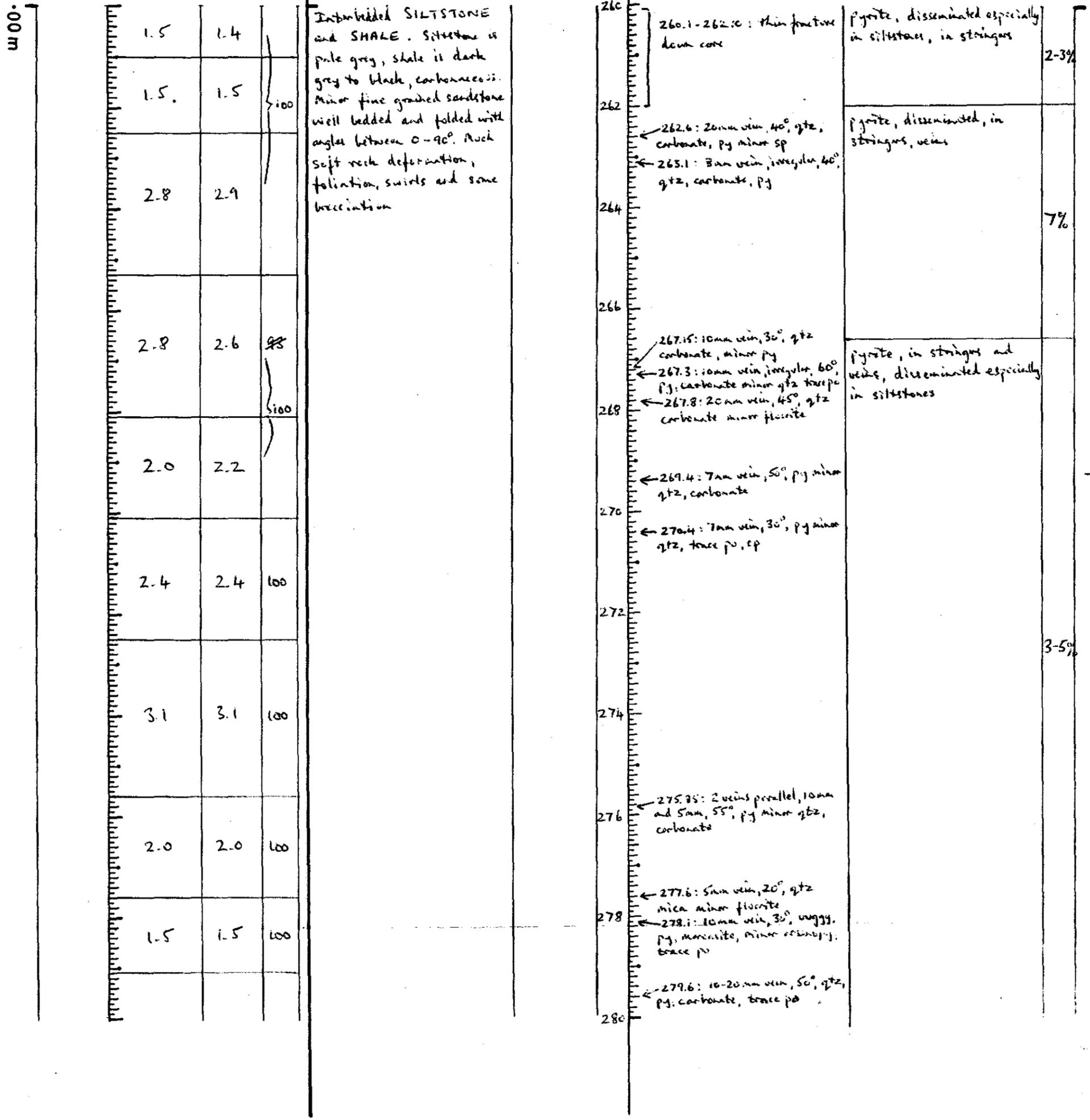
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207119

085

DRILLING NOTES	DRILL ADVANCE (m. mm) & LENGTH FROM COLLAR (m. mm)	LENGTH OF CORE RECOVERED (m. mm)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT LENGTH FROM COLLAR (m. cm)	GRAPHIC LOG MARKERS (m)	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets)	MINERALIZATION	



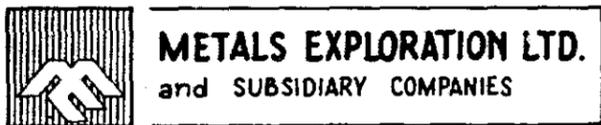
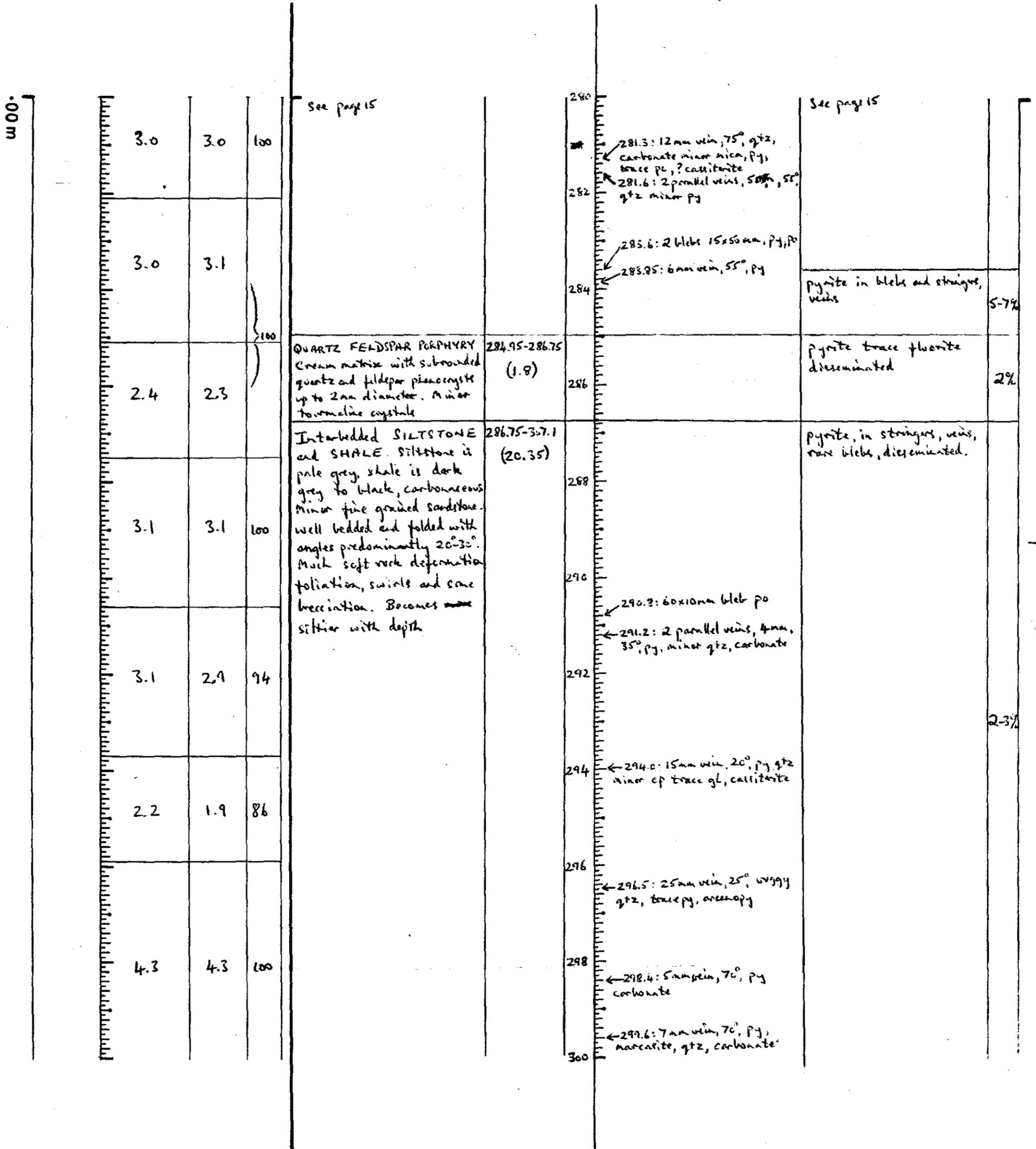
**MINERAL EXPLORATION
DIAMOND DRILL LOG**
Scale 1:80

HOLE No. MB55
LOG SHEET 15 of 50

207120

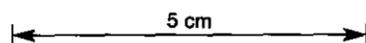
086

DRILLING NOTES	DRILL ADVANCE (M. 7777) & LENGTH FROM COLLAR (M. 7777)	LENGTH OF CORE RECOVERED (M. 7777)	% RECOVERY	FIELD ROCK NAME and general description over interval marked.	ADOPTED INTERVAL (m. cm) & ADOPT. LENGTH FROM COLLAR m. cm	GRAPHIC LOG	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or (from) to (relates to brackets).	MINERALIZATION	



MINERAL EXPLORATION
DIAMOND DRILL LOG
Scale 1:80

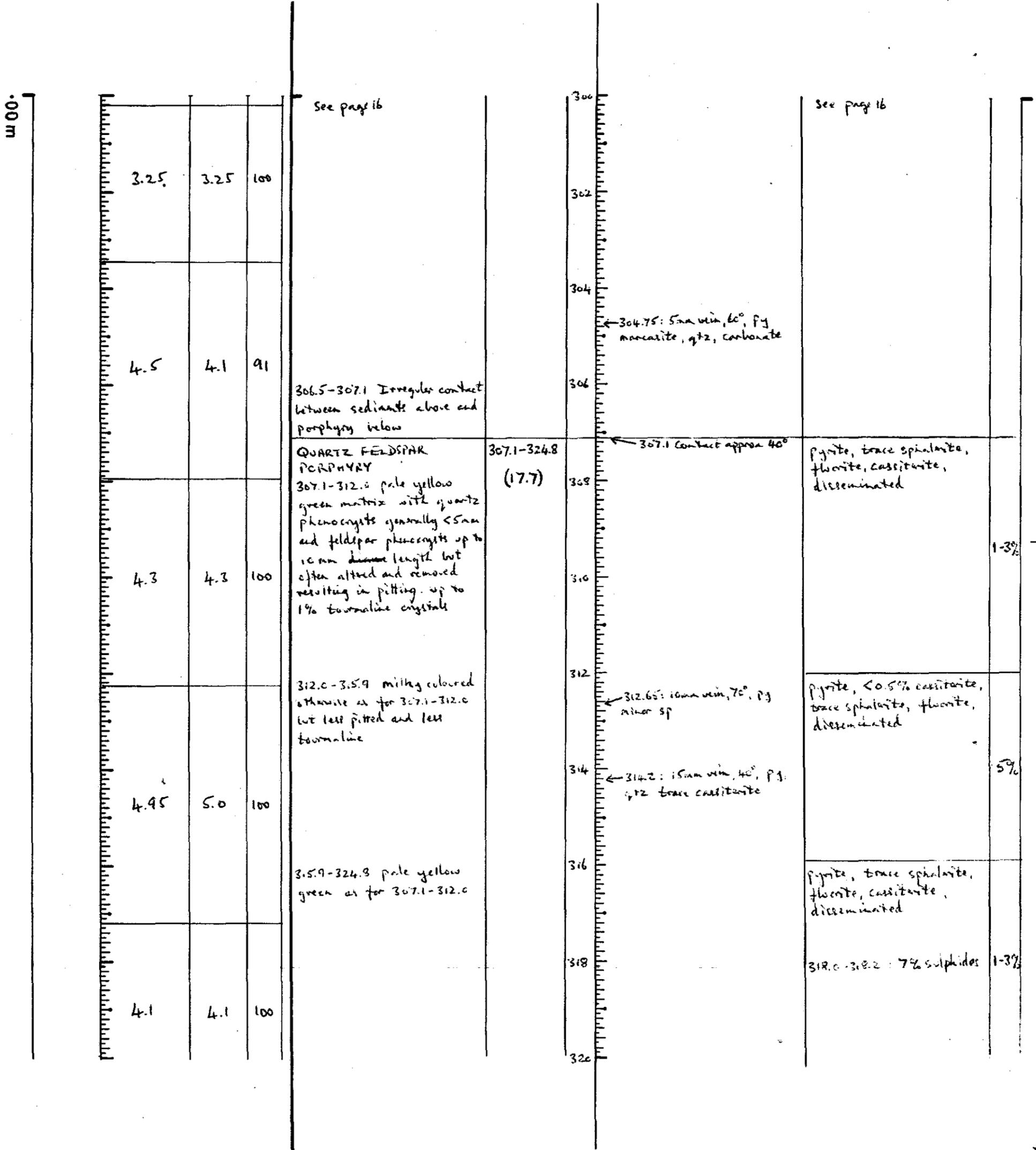
HOLE No. M325
LOG SHEET 16 of 50



207121

087

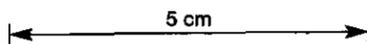
DRILLING NOTES	DRILL ADVANCE (M. mm) & LENGTH FROM COLLAR M. mm	LENGTH OF CORE RECOVERED M. mm	% RECOVERY	FIELD ROCK NAME and general description over interval marked.	ADOPTED INTERVAL (m. cm) & ADOPT. LENGTH FROM COLLAR m. cm	GRAPHIC LOG	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets).	MINERALIZATION	



MINERAL EXPLORATION
DIAMOND DRILL LOG
Scale 1:80

HOLE No. M8D5
LOG SHEET 17 of 50

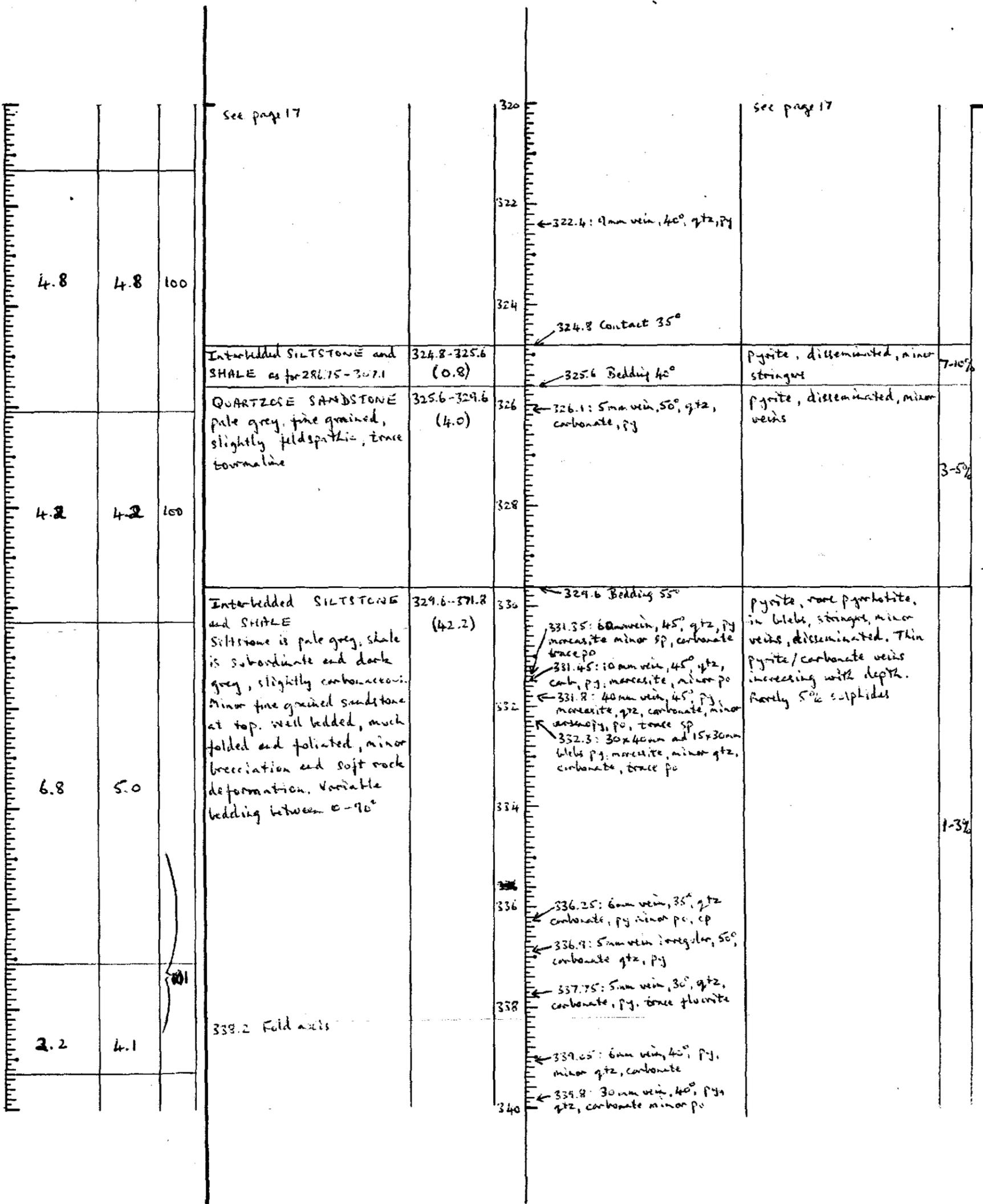
207122



083

DRILLING NOTES	DRILL ADVANCE (M. M.M.) & LENGTH FROM COLLAR (M. M.M.)	LENGTH OF CORE RECOVERED (M. M.M.)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm.) & ADOPT. LENGTH FROM COLLAR (m. cm.)	GRAPHIC LOG	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets)	MINERALIZATION	

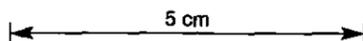
00m



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MINERAL EXPLORATION
DIAMOND DRILL LOG
Scale 1:80

HOLE No. MBD 5
LOG SHEET 18 of 50



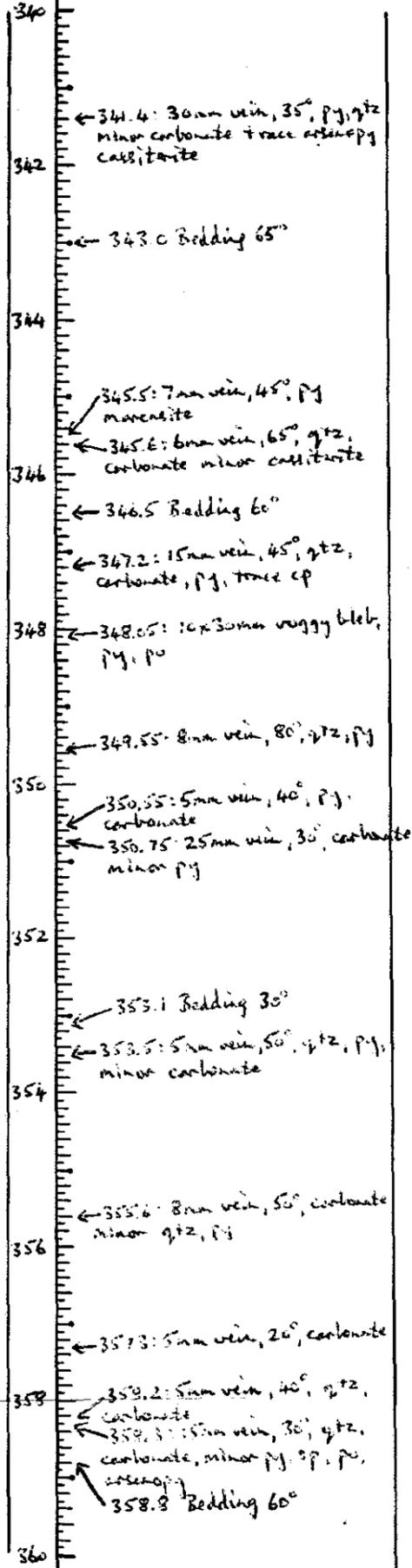
207123

089

DRILLING NOTES	DRILL ADVANCE (M. 7272) & LENGTH FROM COLLAR (M. 7272)	LENGTH OF CORE RECOVERED (M. 7272)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT LENGTH FROM COLLAR (m. cm)	GRAPHIC LOG	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets)	MINERALIZATION	

4.95	4.95	100
4.05	4.05	100
3.1	3.1	100
3.1	3.0	97
5.0	5.0	100

See page 18



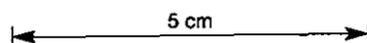
See page 18



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**MINERAL EXPLORATION
DIAMOND DRILL LOG**
Scale 1:80

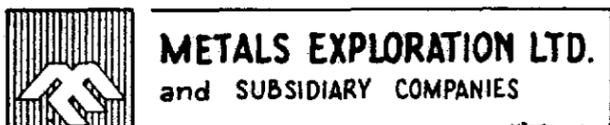
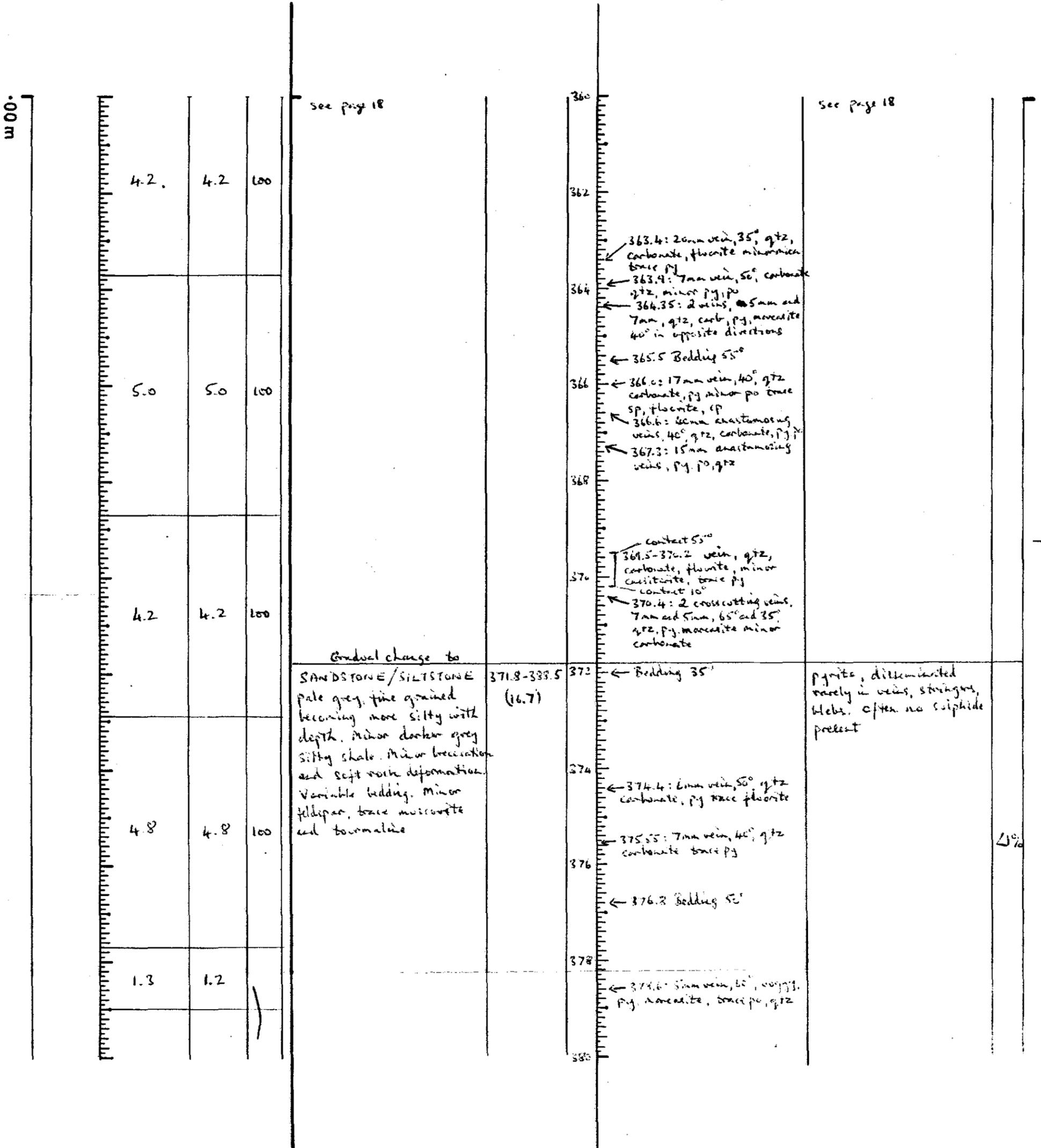
HOLE No. MBS5
LOG SHEET 19 of 50



207124

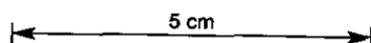
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DRILLING NOTES	DRILL ADVANCE (m. mm) & LENGTH FROM COLLAR (m. mm)	LENGTH OF CORE RECOVERED (m. mm)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT LENGTH FROM COLLAR m. cm	GRAPHIC LOG	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets)	MINERALIZATION	



MINERAL EXPLORATION
DIAMOND DRILL LOG
Scale 1:80

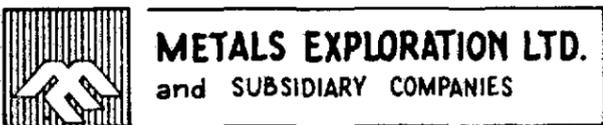
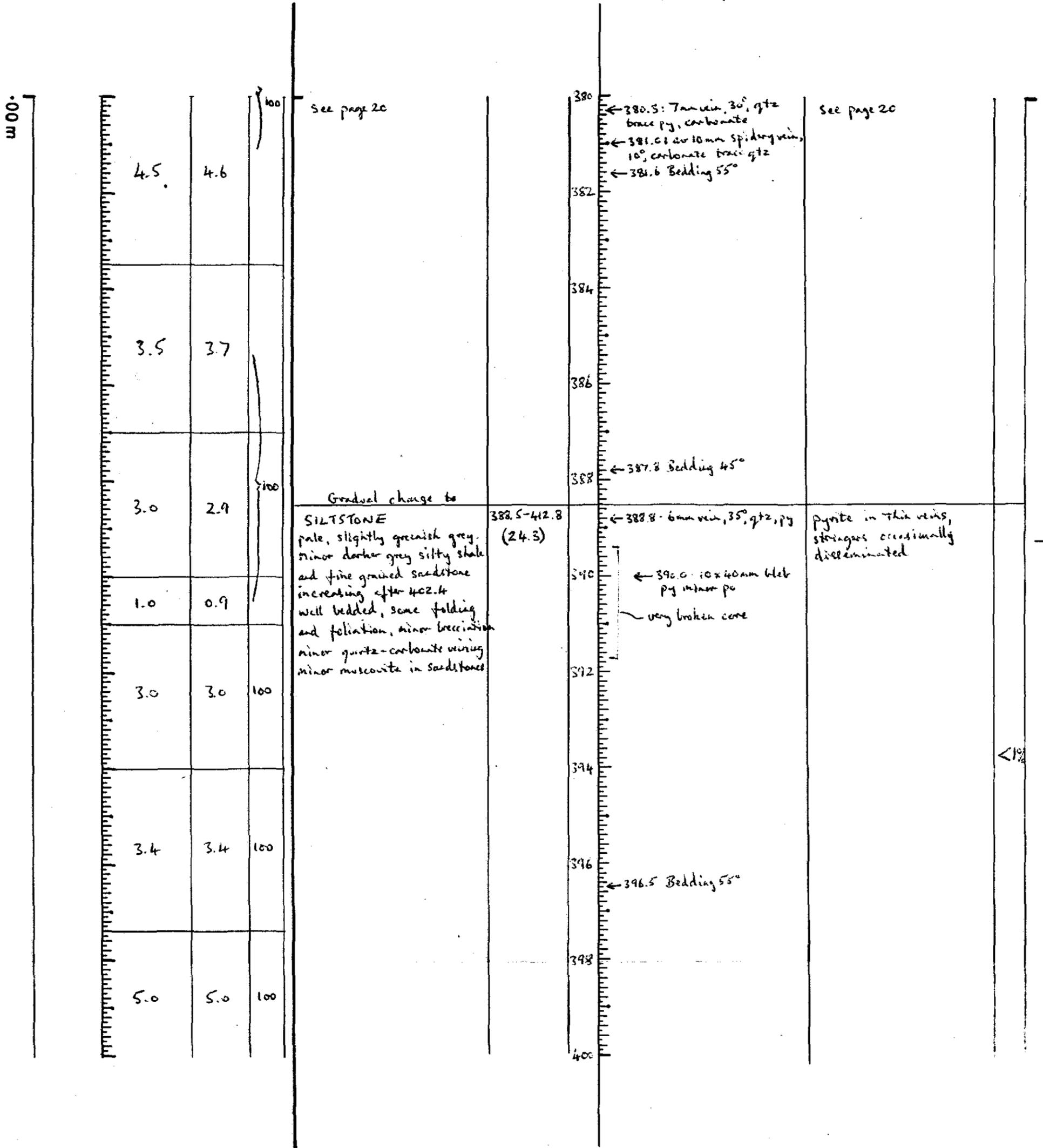
HOLE No. MBDS
LOG SHEET 20 of 50



207125

091

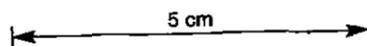
DRILLING NOTES	DRILL ADVANCE (M. M.M.) & LENGTH FROM COLLAR (M. M.M.)	LENGTH OF CORE RECOVERED (M. M.M.)	% RECOVERY	FIELD ROCK NAME and general description over interval marked.	ADOPTED INTERVAL (m. cm) & ADOPT LENGTH FROM COLLAR m. cm	GRAPHIC LOG MARKERS & BRACKETS (M)	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets).	MINERALIZATION	



MINERAL EXPLORATION
DIAMOND DRILL LOG
Scale 1:80

HOLE No. M3D5
LOG SHEET 21 of 50

207126



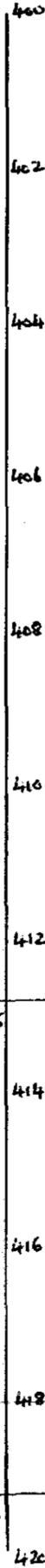
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DRILLING NOTES	DRILL ADVANCE (m. mm) & LENGTH FROM COLLAR m. mm	LENGTH OF CORE RECOVERED m. mm	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT. LENGTH FROM COLLAR m. cm	GRAPHIC LOG	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or from 'to' (relates to brackets)	MINERALIZATION	

00m

2.2	2.2	100	
1.4	1.4	100	
2.15	2.15	100	
3.1	3.1	100	
2.0	2.0	100	
3.6	3.6	100	
2.0	2.0	100	

See page 21



See page 21

Interbedded SILTSTONE and SILTY SHALE
Stripy, pale green, pale brownish grey, pale grey well bedded, brecciated towards base

412.8-419.25
(6.45)

None visible

See page 23

419.25-437.6
(18.35)

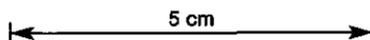
See page 23



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**MINERAL EXPLORATION
DIAMOND DRILL LOG**
Scale 1:80

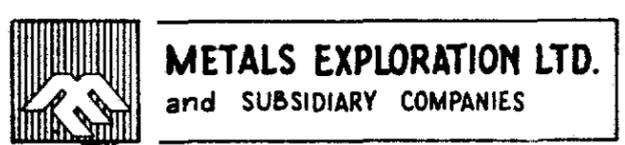
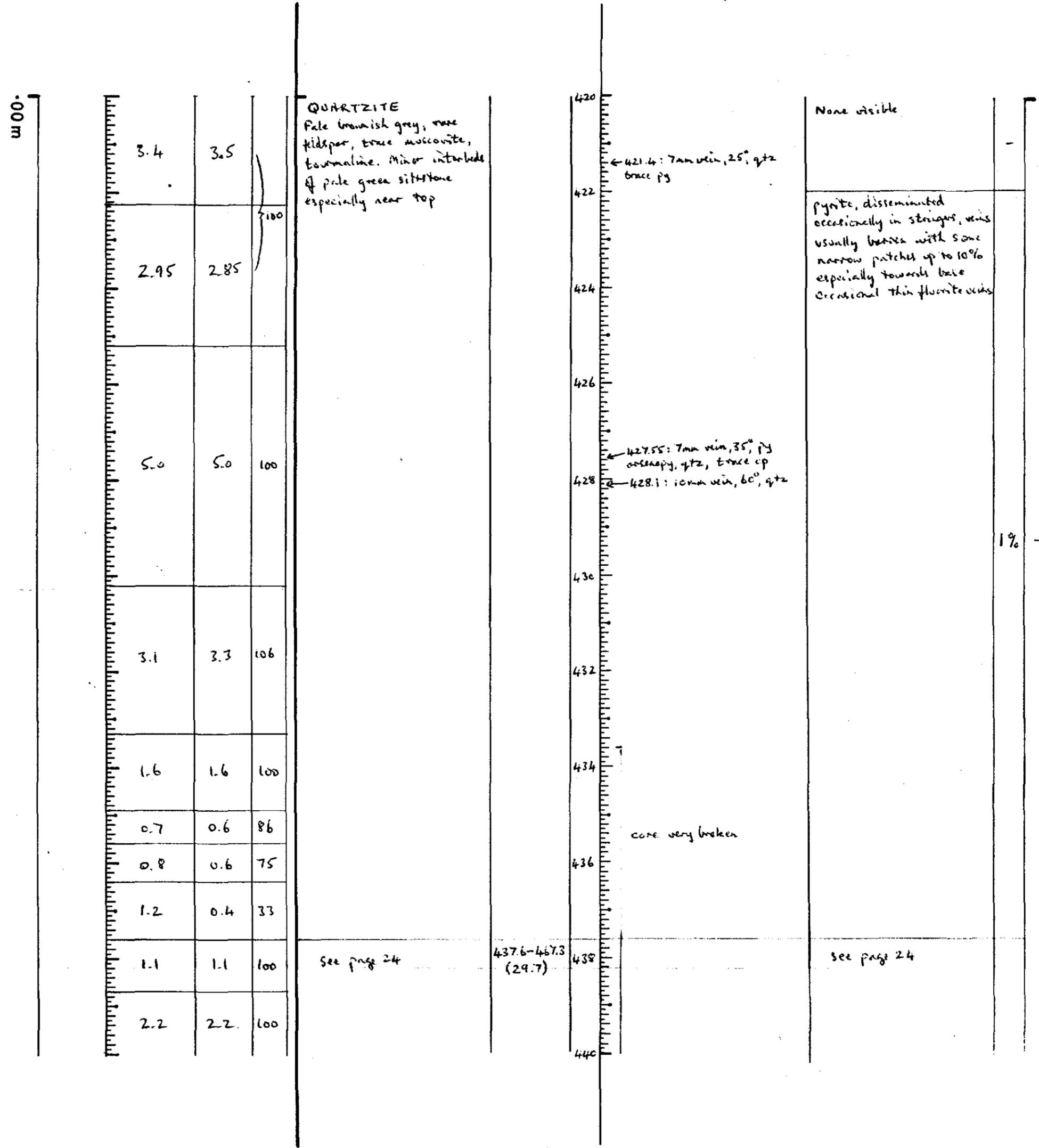
HOLE No. M8D5
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207127

093

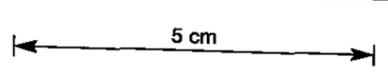
DRILLING NOTES	DRILL ADVANCE (M. M.) & LENGTH FROM COLLAR (M. M.)	LENGTH OF CORE RECOVERED (M. M.)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT LENGTH FROM COLLAR m. cm	GRAPHIC LOG MARKERS (M)	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets)	MINERALIZATION	



**MINERAL EXPLORATION
DIAMOND DRILL LOG**
Scale 1:80

HOLE No. M335
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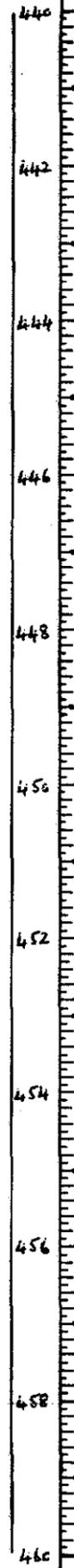
09A

DRILLING NOTES	DRILL ADVANCE (M. 7772) & LENGTH FROM COLLAR (M. 7772)	LENGTH OF CORE RECOVERED (M. 7772)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT LENGTH FROM COLLAR (m. cm)	GRAPHIC LOG MARKERS (M)	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets)	MINERALIZATION	

1000

2.1	2.2	105
4.1	4.1	100
2.2	2.1	95
1.55	1.65	100
0.9	0.8	
0.9	0.9	100
0.75	0.75	100
2.7	2.8	100
1.3	1.3	
0.4	0.4	
0.9	0.8	
1.0	1.0	100

Interbedded SILTSTONE and SANDSTONE
Siltstone is pale grey, minor greenish grey, sandstone is fine grained, pale grey minor brownish grey with trace muscovite, tourmaline. Rare quartz/carbonate stringers



440.6: 8mm vein, 45°, qtz, py, calcopy, minor fluorite
442.0 Bedding 55°
446.0 Bedding 50°
447.4: 7mm vein, 50°, qtz carbonate, trace py, po
447.9: 50mm porous clay breccia fault/shear zone, 45°
452.0 Bedding 50°
458.6 Bedding 50°

core very broken

pyrite, trace pyrochroite, mainly disseminated, occasionally in stringers and veins. Often barren

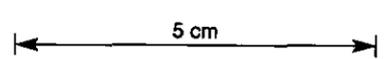
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METALS EXPLORATION LTD.
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**MINERAL EXPLORATION
DIAMOND DRILL LOG**
Scale 1:80

HOLE No. M835
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096

DRILLING NOTES	DRILL ADVANCE (M. M) & LENGTH FROM COLLAR (M. M)	LENGTH OF CORE RECOVERED (M. M)	% RECOVERY	FIELD ROCK NAME and general description over interval marked.	ADOPTED INTERVAL (m. cm) ADOPT. LENGTH FROM COLLAR m. cm	GRAPHIC LOG	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets)	MINERALIZATION	

00m

1.7	1.7	100
3.4	3.4	100
3.9	4.1	105
4.9	5.0	102
3.1	3.1	100
1.0	1.1	110
3.0	3.0	100

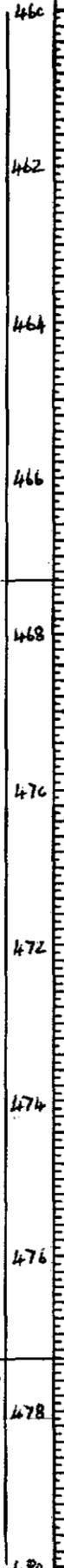
See page 24

Intarbedded SILTSTONE and SILTY SHALE
Stripy pale green and pale brownish grey. Minor fine grained sandstone, well bedded. Foliated towards base. Rare thin quartz/carbonate veins

467.3-477.3 (10.0)

QUARTZ PORPHYRY
very fine grained, cream colour, matrix with occasional phenocrysts of quartz up to 2mm diameter and rare feldspar to 1mm. Sulphides often clustered around veins

477.3-495.3 (8.0)



See page 24

None visible

pyrite, 0.5% fluorite, disseminated and dendritic

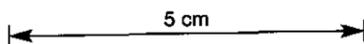
2-3%



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**MINERAL EXPLORATION
DIAMOND DRILL LOG**
Scale 1:80

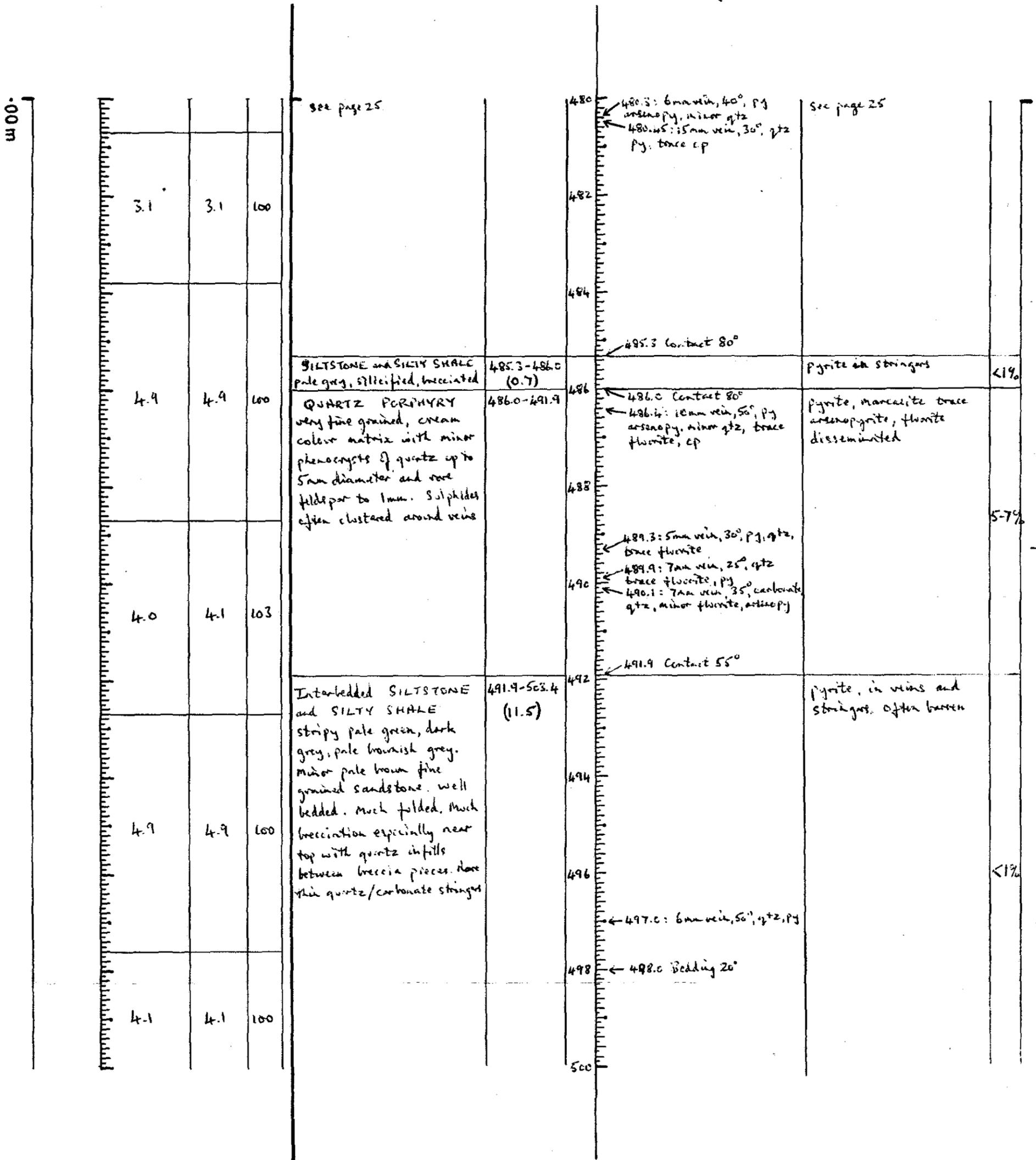
HOLE No. M8D5
LOG SHEET 25 of 50



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097

DRILLING NOTES	DRILL ADVANCE (m. m.m.) & LENGTH FROM COLLAR (m. m.m.)	LENGTH OF CORE RECOVERED (m. m.m.)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT. LENGTH FROM COLLAR (m. cm)	GRAPHIC LOG	OBSERVATIONS		% MINERALIZATION (usual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets)	MINERALIZATION	

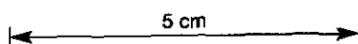


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MINERAL EXPLORATION
DIAMOND DRILL LOG
Scale 1:80

HOLE No. MBD5
LOG SHEET 26 of 50

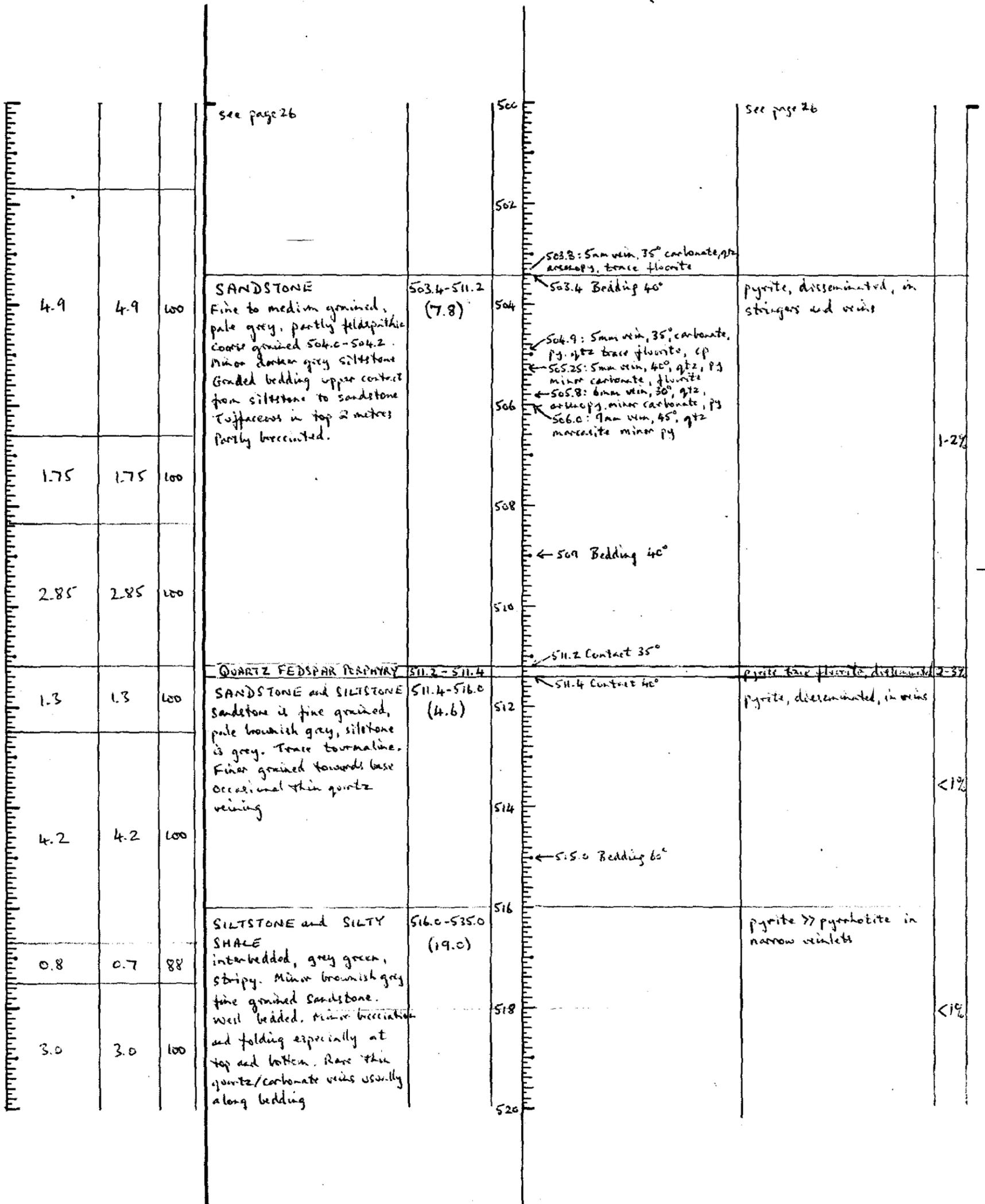
207131



098

DRILLING NOTES	DRILL ADVANCE (m. mm) & LENGTH FROM COLLAR (m. mm)	LENGTH OF CORE RECOVERED (m. mm)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT LENGTH FROM COLLAR (m. cm)	GRAPHIC LOG	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets)	MINERALIZATION	

00m

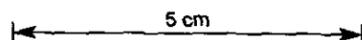


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MINERAL EXPLORATION
DIAMOND DRILL LOG
Scale 1:80

HOLE No. MBDS
LOG SHEET 27 of 50

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Preliminary Design for Form Oct 78

099

DRILLING NOTES	DRILL ADVANCE (m. mm) & LENGTH FROM COLLAR (m. mm)	LENGTH OF CORE RECOVERED (m. mm)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT. LENGTH FROM COLLAR (m. cm)	GRAPHIC LOG	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets)	MINERALIZATION	

100m

1.3	1.3	100
1.9	2.0	
2.2	2.1	100
2.8	2.8	100
2.3	2.2	96
1.1	1.1	100
1.5	1.5	100
1.35	1.3	96
2.25	2.0	84
2.4	2.5	104
0.7	0.7	100

see page 27

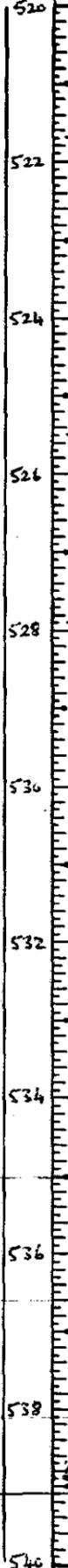
TUFFACEOUS SANDSTONE
fine grained, green-brown

SILTSTONE
pale green becoming greyer with depth (slightly carbonaceous), minor silty shale

535.0-536.6
(1.6)

536.6-539.1
(2.5)

539.1-543.3
(4.2)



521.7 Bedding 40°

524.2: 5mm vein 40°; py minor, arsenopy, carbonate

525.5: 9mm vein, irregular, 30°; qtz minor py

527.0 Bedding 40°

527.2: 10mm vein, irregular, 35°; qtz

527.9: 8mm vein, irregular, 40°; qtz, minor py, trace arsenopy

535.0 Contact 10°

536.6 Contact 75°

538.7 Bedding 65°

538.7: 100x20mm patch of qtz, py trace sp

see page 27

pyrite, disseminated 1%

pyrite in blebs and veins 1%

see page 29

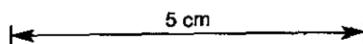


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and SUBSIDIARY COMPANIES

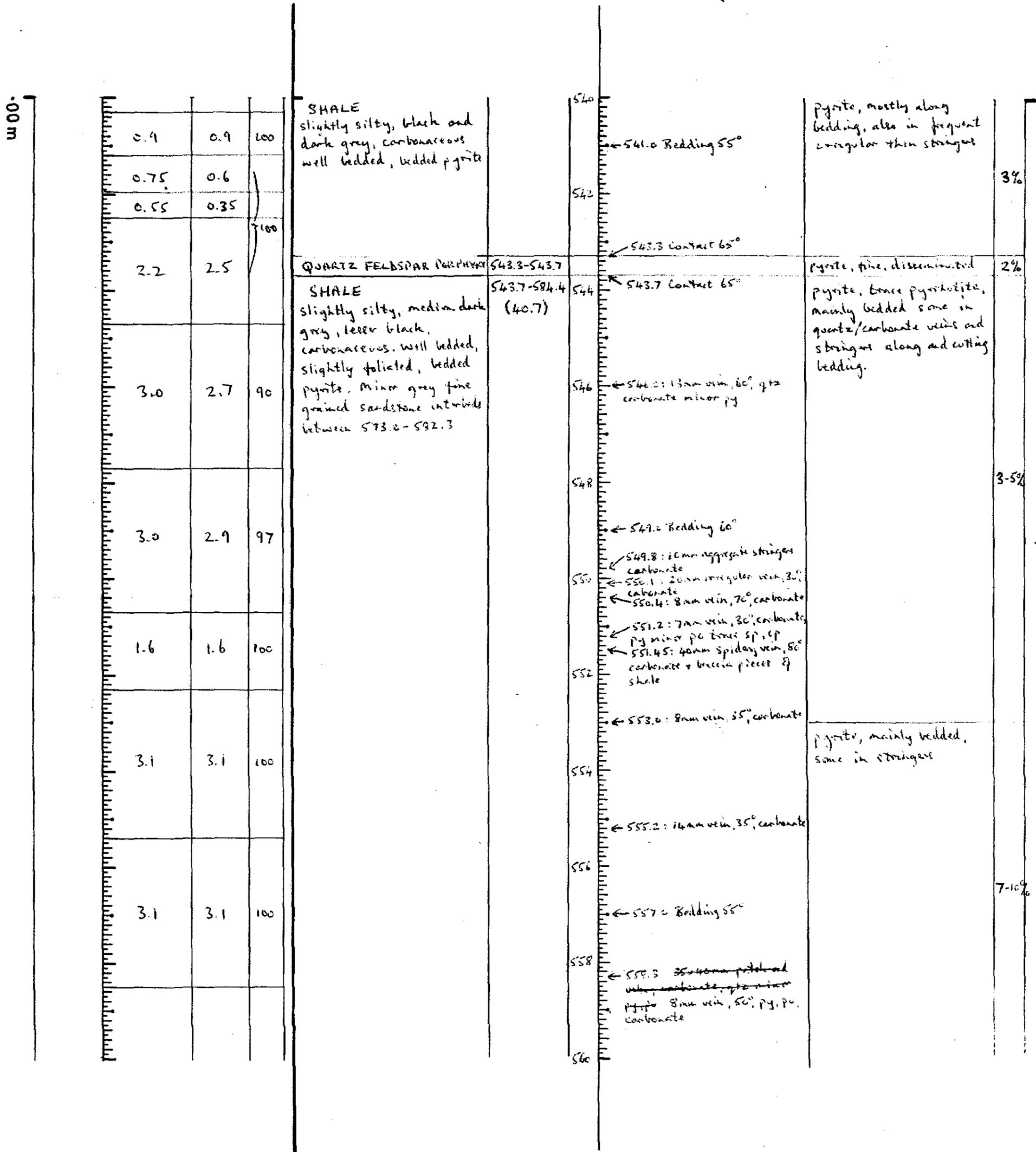
MINERAL EXPLORATION
DIAMOND DRILL LOG
Scale 1:80

HOLE No. MBDS
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DRILLING NOTES	DRILL ADVANCE (m. 777) & LENGTH FROM COLLAR (m. 777)	LENGTH OF CORE RECOVERED (m. 777)	% RECOVERY	FIELD ROCK NAME and general description over interval marked.	ADOPTED INTERVAL (m. cm) & ADOPT. LENGTH FROM COLLAR m. cm	GRAPHIC LOG	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets)	MINERALIZATION	



**MINERAL EXPLORATION
DIAMOND DRILL LOG**
Scale 1:80

HOLE No. M385
LOG SHEET 29 of 50

207134

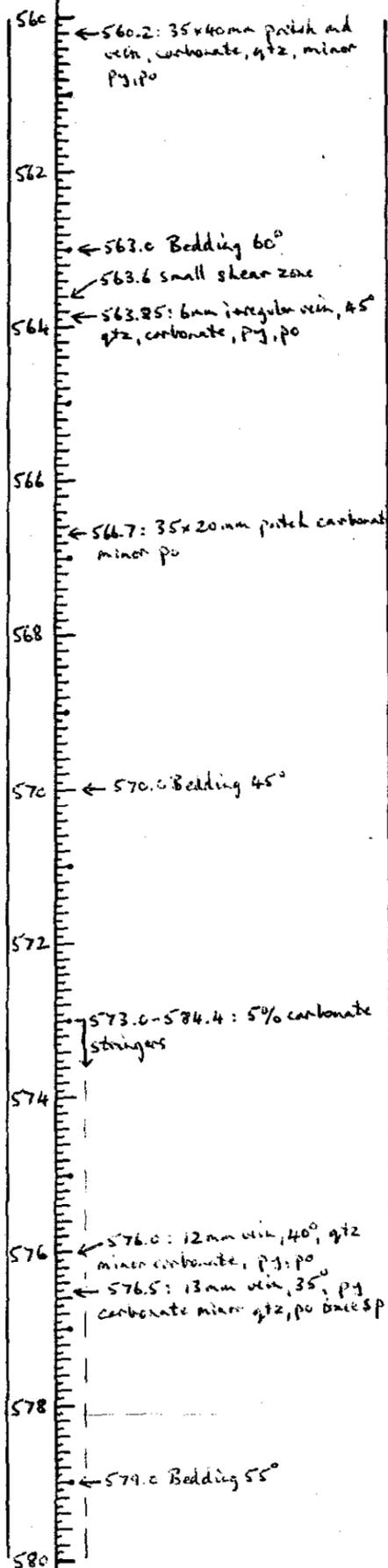
101

DRILLING NOTES	DRILL ADVANCE (m. mm) & LENGTH FROM COLLAR (m. mm)	LENGTH OF CORE RECOVERED (m. mm)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT LENGTH FROM COLLAR (m. cm)	GRAPHIC LOG	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets)	MINERALIZATION	

00m

3.1	3.1	100	} 100
2.4	2.4	100	
3.1	3.1	100	
3.1	3.1	100	
3.1	3.2		
2.5	2.4		
3.0	3.0	100	

see page 29



see page 29

Pyrite, trace pyrrhotite, bedded, in stringers, disseminated in fine grained sandstone

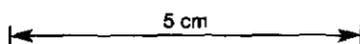
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METALS EXPLORATION LTD.
and SUBSIDIARY COMPANIES

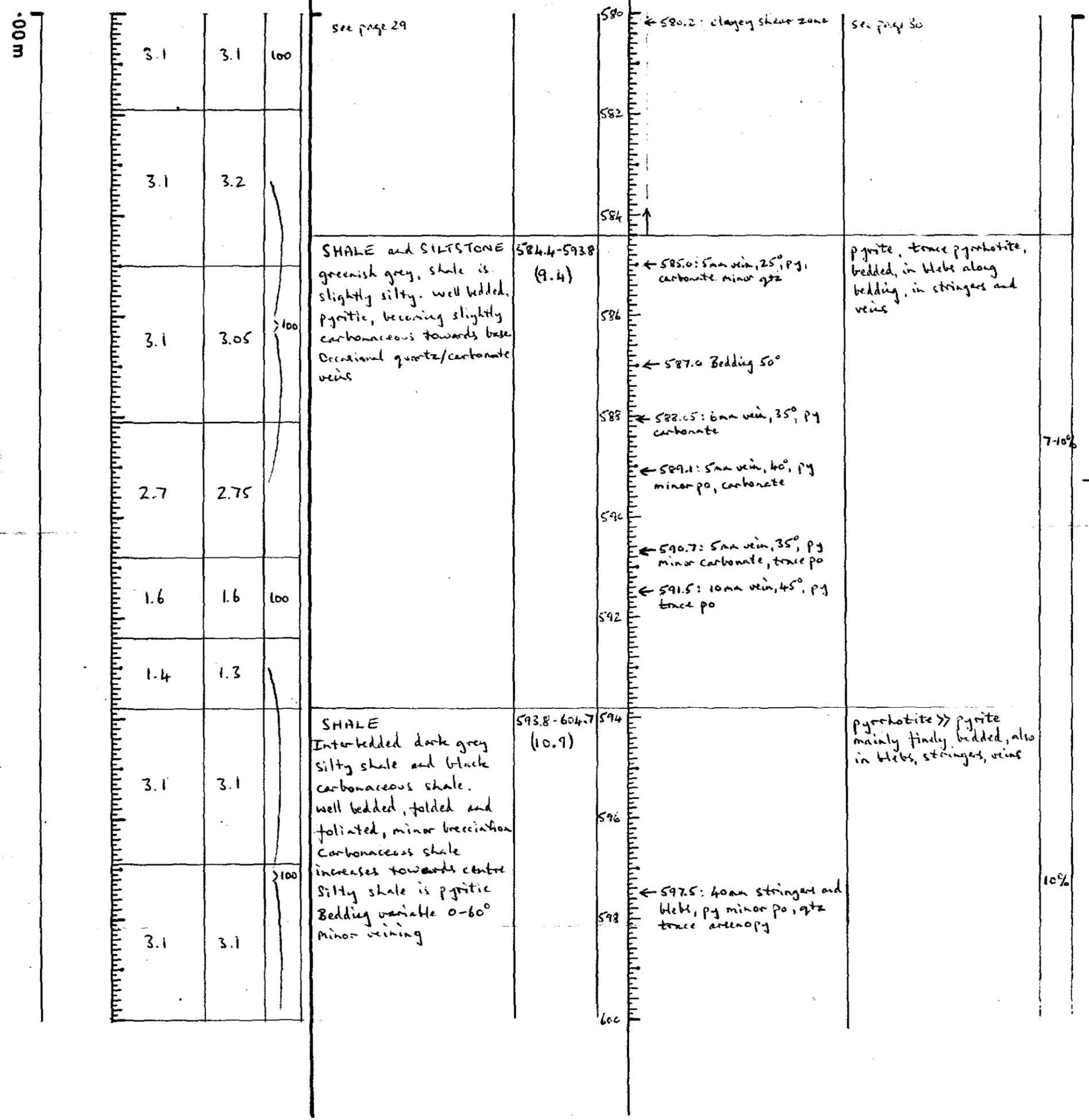
MINERAL EXPLORATION
DIAMOND DRILL LOG
Scale 1:80

HOLE No. 11335
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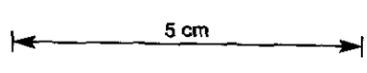
DRILLING NOTES	DRILL ADVANCE (m. mm) & LENGTH FROM COLLAR (m. mm)	LENGTH OF CORE RECOVERED (m. mm)	% RECOVERY	FIELD ROCK NAME and general description over interval marked.	ADOPTED INTERVAL (m. cm) & ADOPT LENGTH FROM COLLAR (m. cm)	GRAPHIC LOG	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets).	MINERALIZATION	



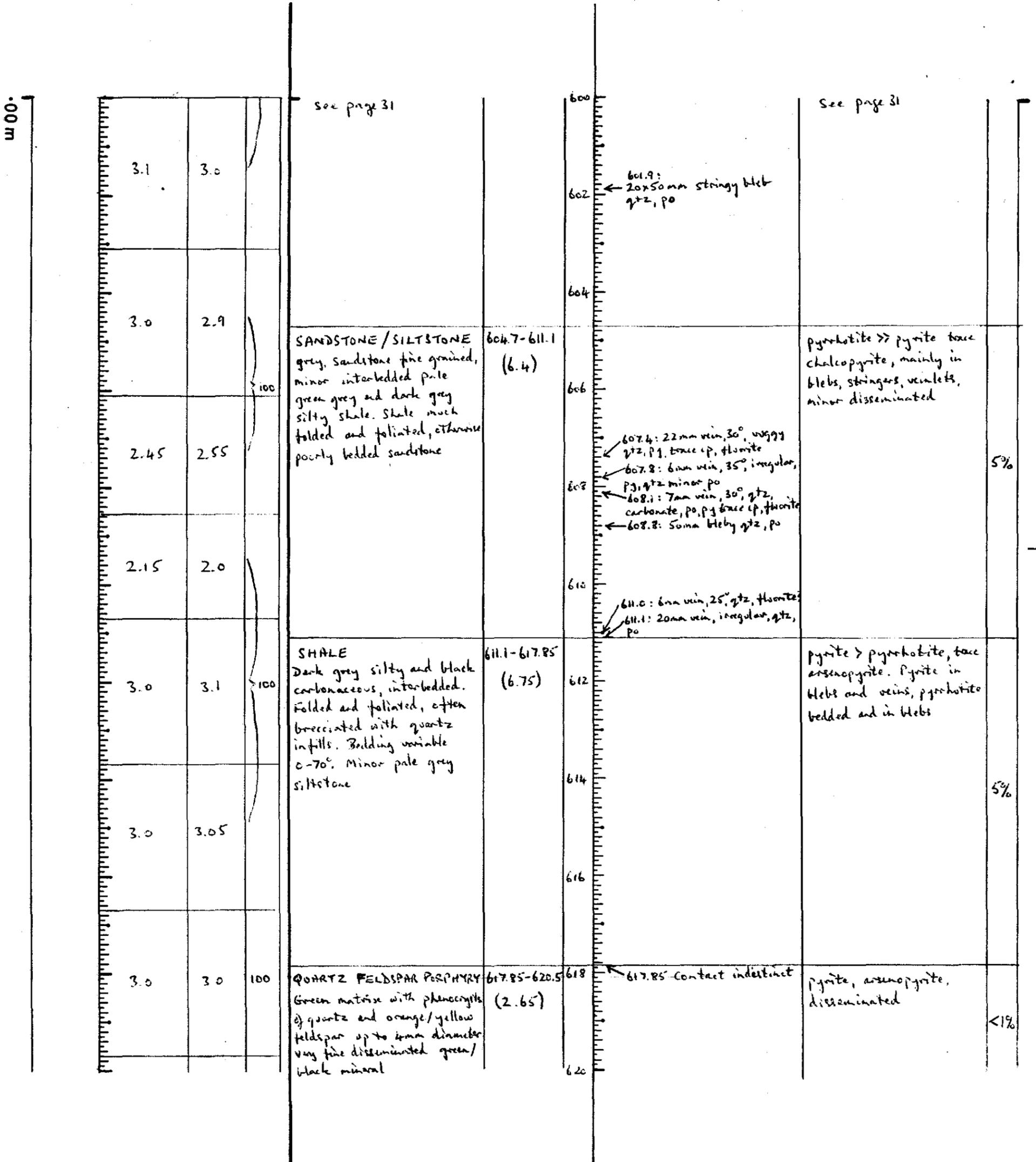
MINERAL EXPLORATION
DIAMOND DRILL LOG
 Scale 1:80

HOLE No. M3D5
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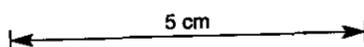


DRILLING NOTES	DRILL ADVANCE (m. mm) & LENGTH FROM COLLAR (m. mm)	LENGTH OF CORE RECOVERED (m. mm)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT. LENGTH FROM COLLAR (m. cm)	GRAPHIC LOG	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets).	MINERALIZATION	



MINERAL EXPLORATION
DIAMOND DRILL LOG
Scale 1:80

HOLE No. 11335
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DRILLING NOTES	DRILL ADVANCE (m. 7272) & LENGTH FROM COLLAR (m. 7272)	LENGTH OF CORE RECOVERED (m. 7272)	% RECOVERY	FIELD ROCK NAME and general description over interval marked.	ADOPTED INTERVAL (m. cm) & ADOPT LENGTH FROM COLLAR m. cm	GRAPHIC LOG MARKERS (V)	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets).	MINERALIZATION	

100m

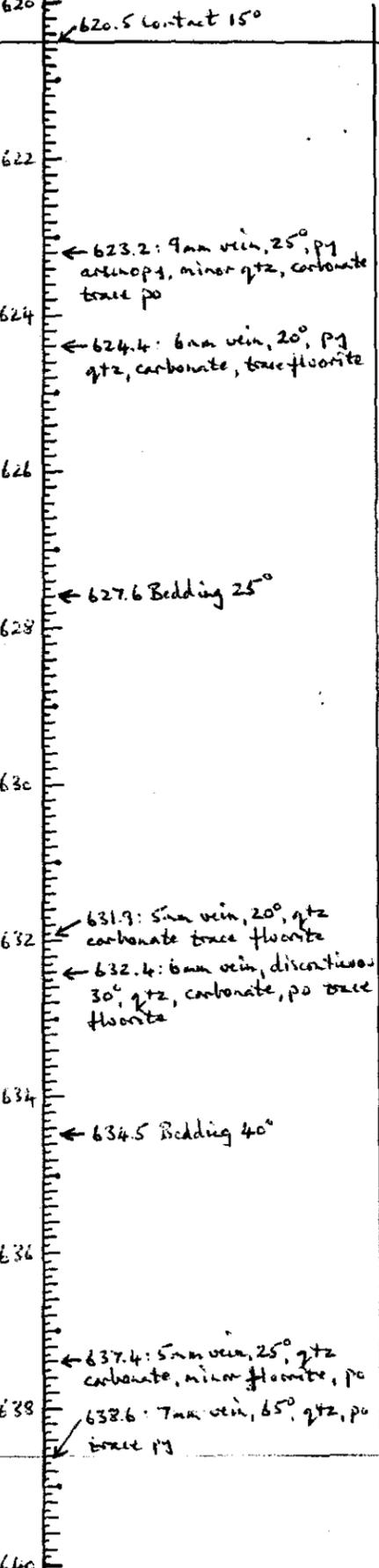
3.0	3.0	100
3.0	2.85	100
3.0	3.10	100
3.0	2.9	100
3.0	3.05	100
3.0	3.05	100
3.0	3.0	100

See page 32

Interbedded SILTSTONE and SHALE
Stripy, siltstone is grey, shale is silty (slightly), dark grey, slightly carbonaceous (less than above).
Minor fine grained sandstone, well bedded. Folded in upper part. Shale sometimes green-grey

620.5-638.6 (8.1)

638.6-647.3 (8.7)



See page 32

pyrochobite > pyrite, mainly bedded, in thin veins along and across bedding, stringers, occasional blebs, rarely disseminated

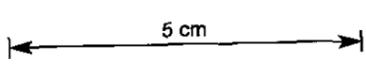
See page 34



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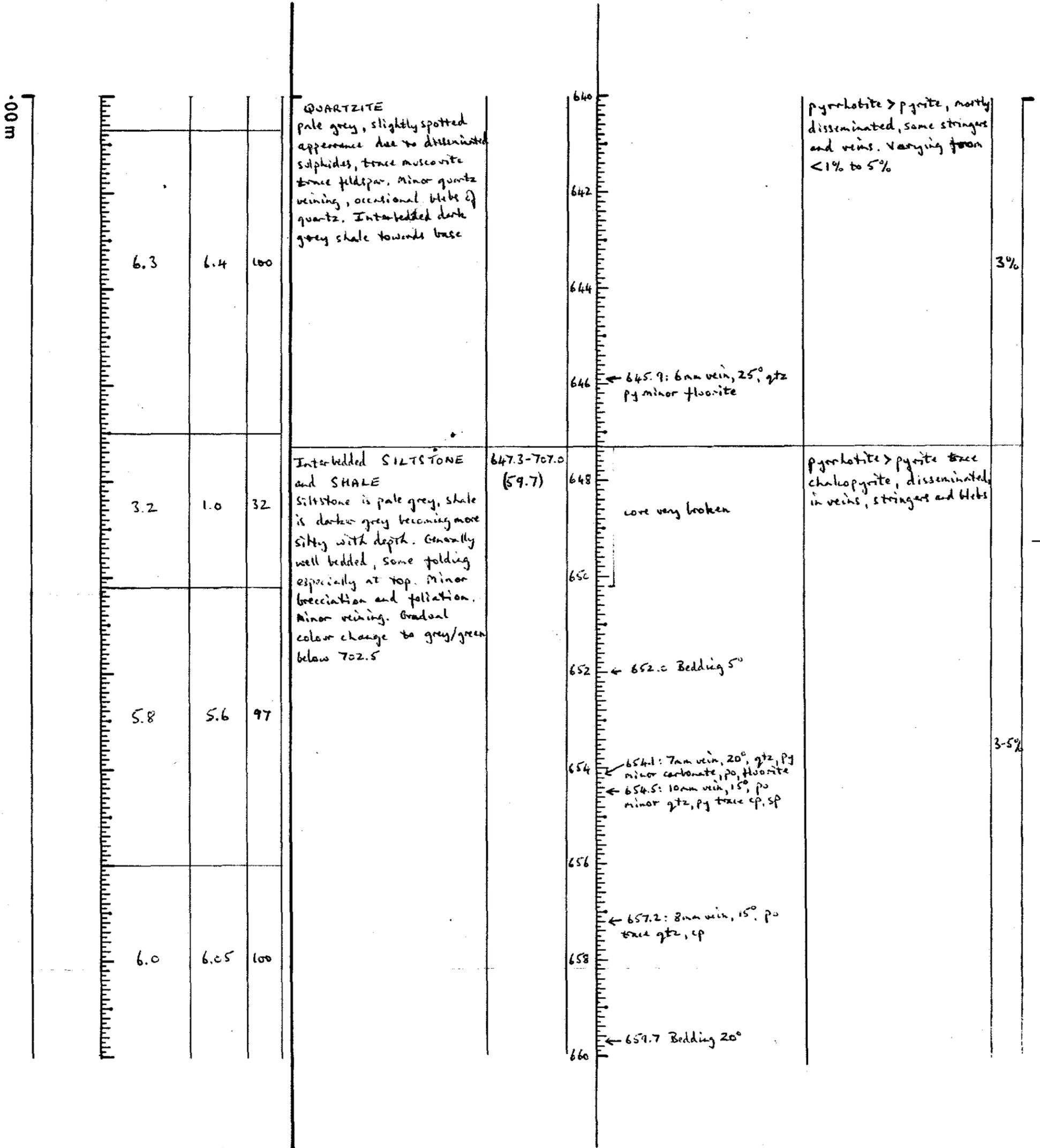
MINERAL EXPLORATION
DIAMOND DRILL LOG
Scale 1:80

HOLE No. MB05
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207138

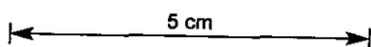
DRILLING NOTES	DRILL ADVANCE (m. mm) & LENGTH FROM COLLAR (m. mm)	LENGTH OF CORE RECOVERED (m. mm)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT LENGTH FROM COLLAR (m. cm)	GRAPHIC LOG	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets)	MINERALIZATION	



METALS EXPLORATION LTD.
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**MINERAL EXPLORATION
DIAMOND DRILL LOG**
Scale 1:80

HOLE No. MBDS
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DRILLING NOTES	DRILL ADVANCE (m. mm) & LENGTH FROM COLLAR m. mm	LENGTH OF CORE RECOVERED m. mm	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT LENGTH FROM COLLAR m. cm	GRAPHIC LOG	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets)	MINERALIZATION	

100m

6.0	6.1	102	
3.0	2.95	600	
1.8	1.75		
3.8	3.9	100	

See page 34

660	← 660.1: 5mm vein, 30°, py, po, qtz, carbonate	
662		
664	← 664.7: 22mm vein, 35°, py, marcasite, qtz minor arsenopy, trace po, cp	
666	← 666.5 Bedding 25° ← 666.6: 9mm vein, 25°, py arsenopy	
668		
670		
672	← 672.0 Bedding 40° ← 672.0: 6mm vein, 10°, qtz py minor po	
674	← 673.25: 9mm vein, 20°, qtz py, minor po, arsenopy ← 673.35: 5mm vein, 20°, qtz py, minor po, arsenopy	
676		
678	← 678.0 Bedding 55° ← 678.2: 13mm vein, 10°, qtz carbonate, trace py, po	
680		

See page 34

pyrrhotite > pyrite, disseminated, in stringers and veins, pyrrhotite also along bedding

1-3%

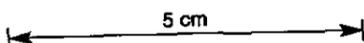


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**MINERAL EXPLORATION
DIAMOND DRILL LOG**
Scale 1:80

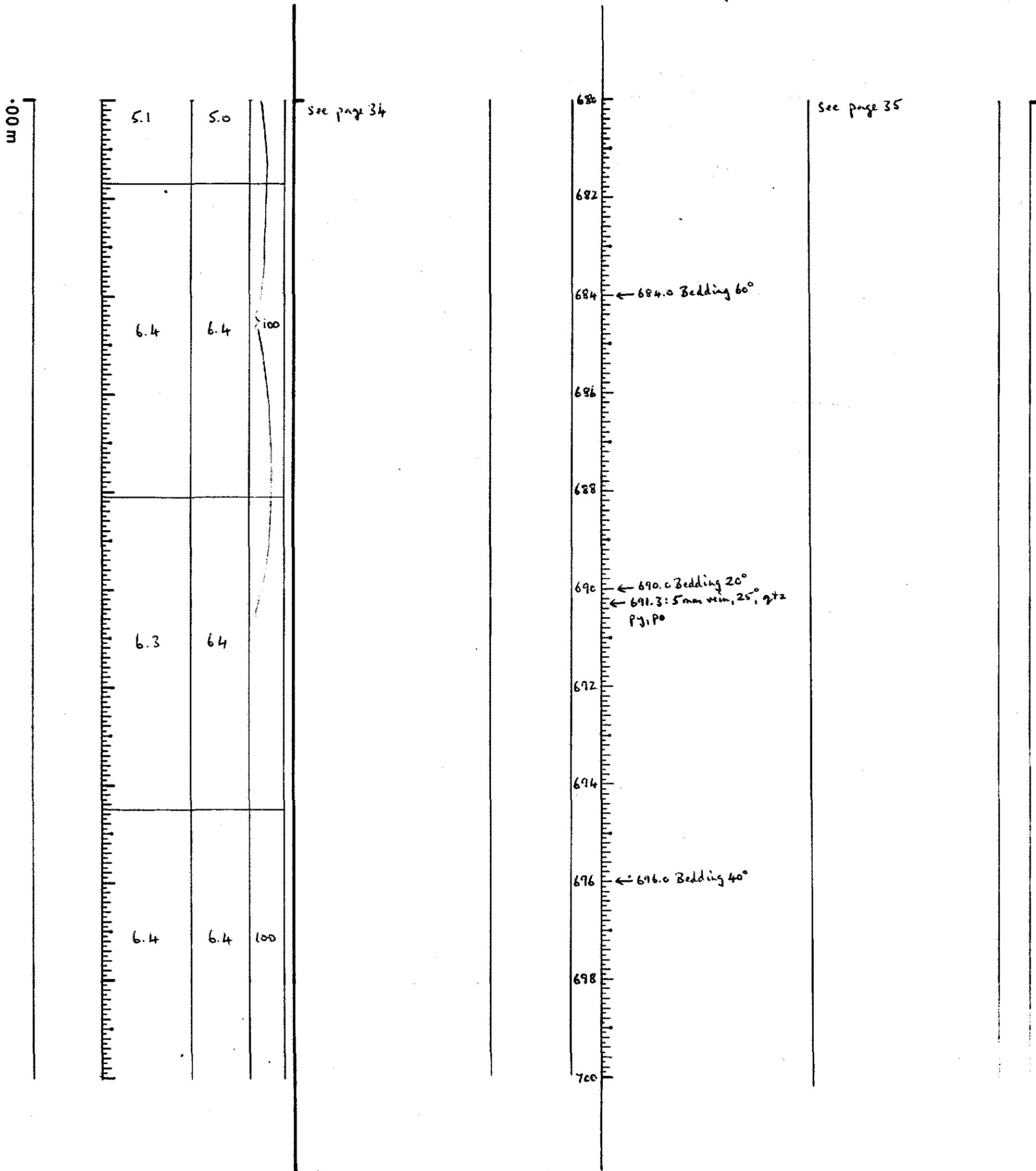
HOLE No. MBDS
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DRILLING NOTES	DRILL ADVANCE (m. mm) & LENGTH FROM COLLAR (m. mm)	LENGTH OF CORE RECOVERED (m. mm)	% RECOVERY	LOST CORE ZONE	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT LENGTH FROM COLLAR (m. cm)	GRAPHIC LOG	OBSERVATIONS		% MINERALIZATION (visual estimate)
								BRACKETS & MARKERS (?)	Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets) Attitude of bedding or foliation, Attitude & spacing of joints, Attitude, width & description of sheared zones, [Attitude = angle of structure to long core axis]	
									MINERALIZATION	

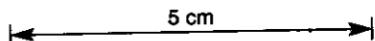


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**MINERAL EXPLORATION
DIAMOND DRILL LOG**
Scale 1:80

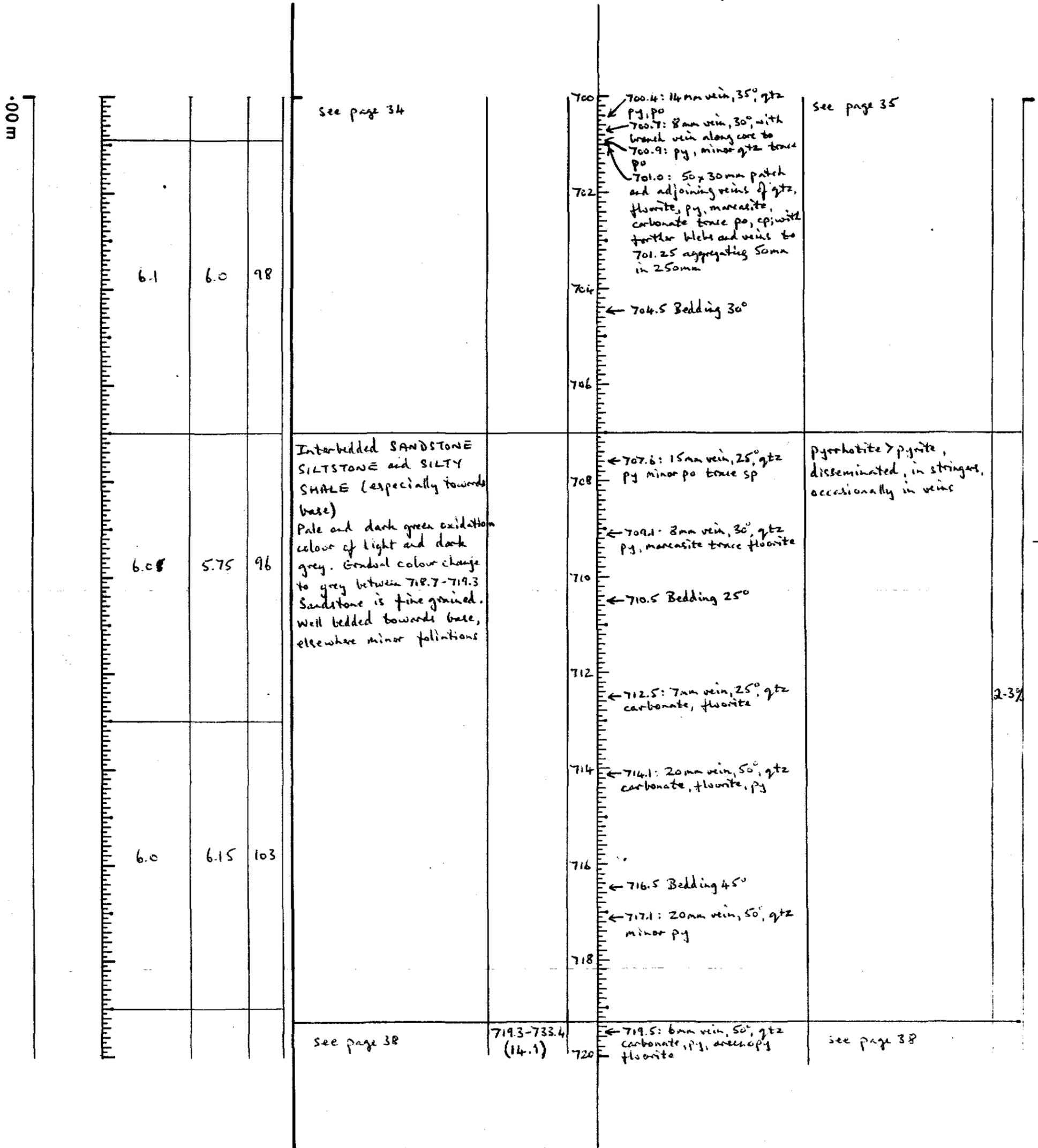
HOLE No. MBDS
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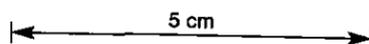
DRILLING NOTES	DRILL ADVANCE (M. 7272) & LENGTH FROM COLLAR (M. 7272)	LENGTH OF CORE RECOVERED (M. 7272)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m cm) & ADOPT LENGTH FROM COLLAR m. cm	GRAPHIC LOG	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets)	MINERALIZATION	



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**MINERAL EXPLORATION
DIAMOND DRILL LOG**
Scale 1:80

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DRILLING NOTES	DRILL ADVANCE (m. mm) & LENGTH FROM COLLAR m. mm	LENGTH OF CORE RECOVERED m. mm	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT. LENGTH FROM COLLAR m. cm	GRAPHIC LOG	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets)	MINERALIZATION	

00m

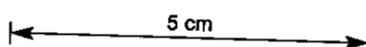
4.2	4.2	100	QUARTZITE pale grey, massive, sometimes spotted and dendritic appearance. Very hard. Trace feldspar towards base. Trace muscovite.	720.3: 8mm vein, 35° py, minor qtz 720.4: 30mm vein, 35° qtz py, minor arsenopy, fluorite 721.0: 15mm vein, 30° py, minor qtz, carbonate trace fluorite	Pyrite, trace pyrochroite at start, disseminated dendritic, minor veins blebs and stringers. Content varies from 0-3%		
4.8	4.7	98		724.25: 5mm vein, 30° qtz sp, carbonate 724.6: 5mm vein, 5° qtz carbonate, sp, py, minor fluorite 726.0: 5mm vein, 10° qtz carbonate, py 726.7-726.9: 200mm vein, 50° qtz, py, arsenopy, carbonate trace fluorite		1%	
1.5	1.45	97					
4.0	3.7	93					
			SHEAR/FAULT ZONE Black pyritic pyritic broken clay	733.4-733.5			
2.5	2.5	100	QUARTZ FELDSPAR PORPHYRY Creamy white fine grained matrix with quartz and feldspar phenocrysts up to 4mm diameter. Soft and broken at top and bottom.	733.5-735.9 (2.4) 735.9-736.0	733.5 Contact indistinct 735.9 Contact ? 15° indistinct	pyrite, weak trace fluorite disseminated	<0.5%
1.0	1.0	100	SHEAR/FAULT ZONE Black pyritic pyritic broken clay		737.0 Bedding 25°	pyrite, disseminated, in blebs, stringers, veins	
5.4	5.2	96	QUARTZITE and SILTSTONE pale medium grey, interbedded. Siltstone is silicified. Hard, poorly bedded. Minor brecciation and foliation. Sometimes dendritic appearance. Occasional veins.	736.0-737.7 (47.7)			3%



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MINERAL EXPLORATION
DIAMOND DRILL LOG
Scale 1:80

HOLE No. MBDS
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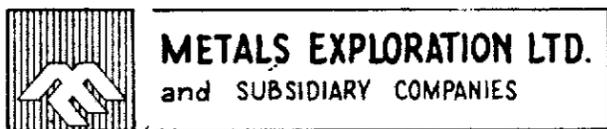
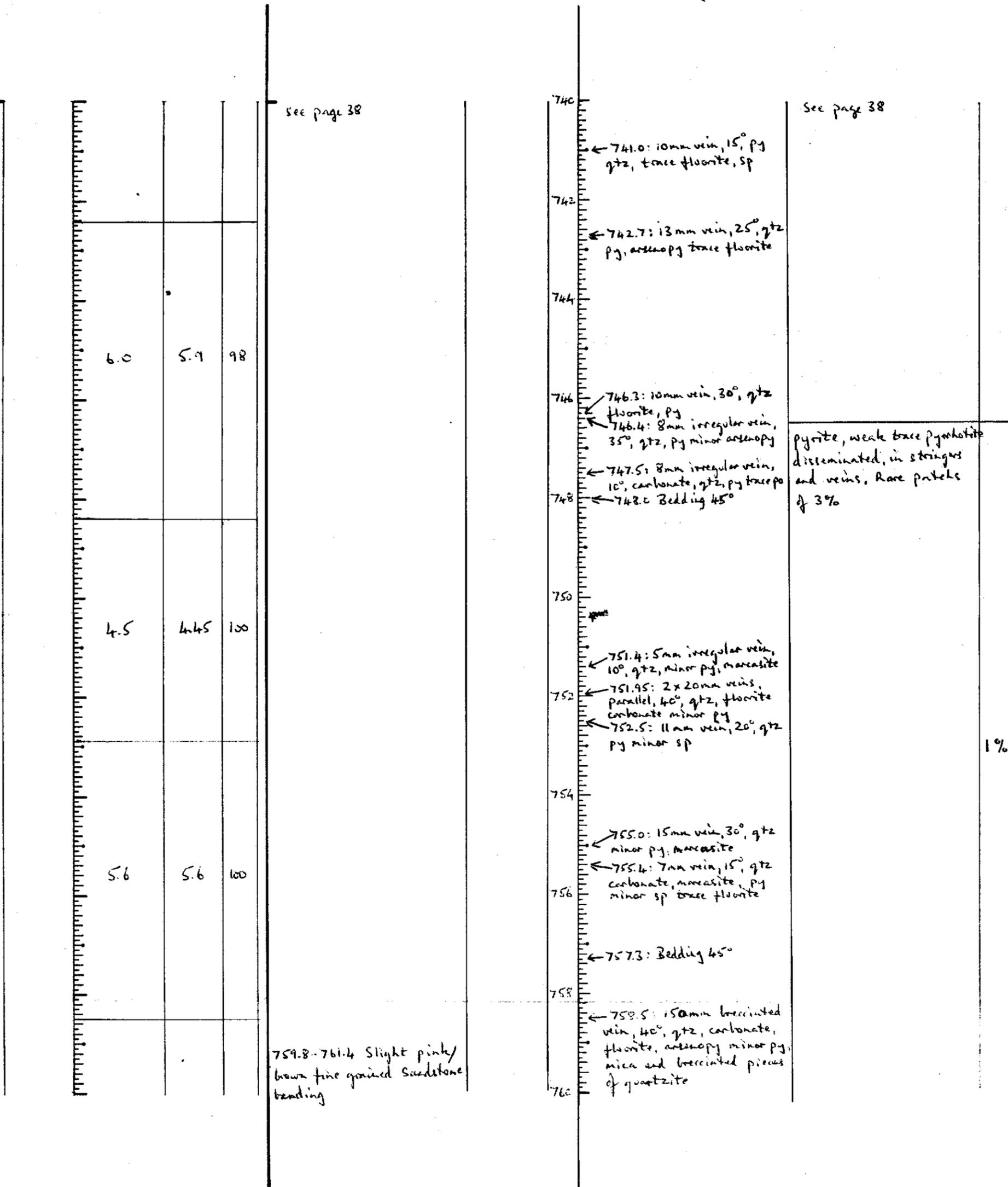


Preliminary Design for Form Oct 78

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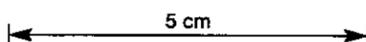
DRILLING NOTES	DRILL ADVANCE (m. mm) & LENGTH FROM COLLAR m. mm	LENGTH OF CORE RECOVERED m. mm	% RECOVERY	FIELD ROCK NAME and general description over interval marked.	ADOPTED INTERVAL (m. cm) & ADOPT LENGTH FROM COLLAR m. cm	GRAPHIC LOG	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets)	MINERALIZATION	

00m



**MINERAL EXPLORATION
DIAMOND DRILL LOG**
Scale 1:80

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DRILLING NOTES	DRILL ADVANCE (m. mm) & LENGTH FROM COLLAR m. mm	LENGTH OF CORE RECOVERED m. mm	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT. LENGTH FROM COLLAR m. cm	GRAPHIC LOG	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets)	MINERALIZATION	

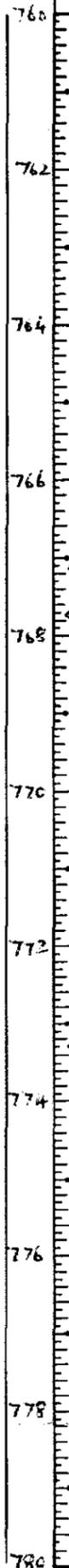
100m

3.9	3.9	100
4.6	4.3	93
1.8	1.7	
2.2	2.1	>100
2.0	2.2	
0.9	0.85	14
5.1	5.0	

See page 38

769.2-776.2 Occasional pink/brown fine grained sandstone patches

772.1-783.7 Poorly bedded, foliated and brecciated



← 765.4: 8mm vein, 5° py, qtz, carbonate minor fluorite

← 767.1: 5mm vein, 15° qtz minor carbonate, py, micaelite
 ← 767.7: 7mm vein, irregular, qtz, minor py, carbonate

772.0 Bedding 40°
 ← 772.3: 35x20mm bleb qtz trace py

← 773.3: 8mm vein, irregular, 45°, qtz minor py, carbonate

See page 39

pyrite, disseminated, in stringers and veinlets. Occasional patches up to 5-7%

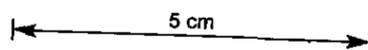
3%



METALS EXPLORATION LTD.
and SUBSIDIARY COMPANIES

**MINERAL EXPLORATION
DIAMOND DRILL LOG**

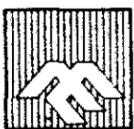
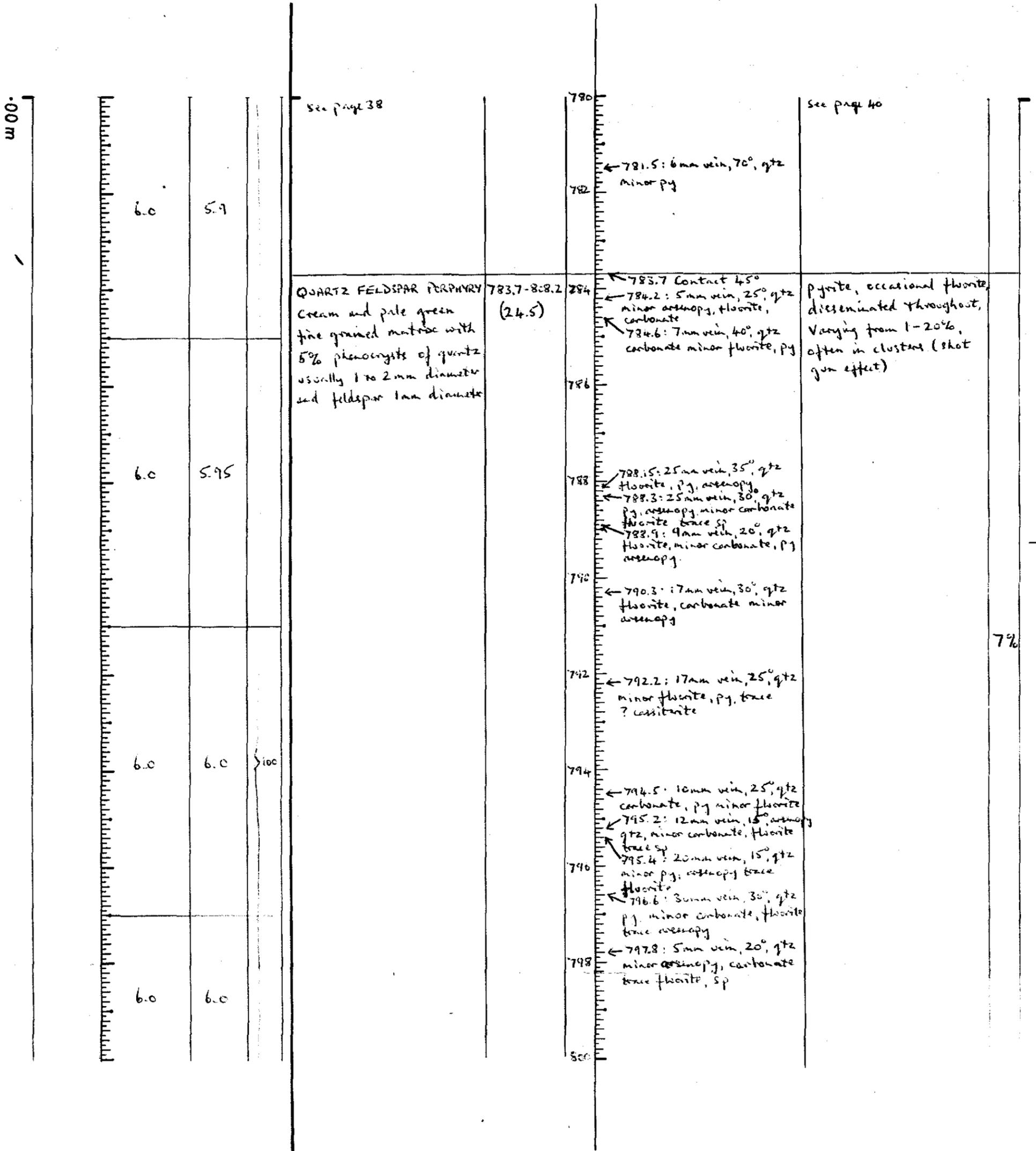
Scale 1:80



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LOG SHEET 40 of 50

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DRILLING NOTES	DRILL ADVANCE (m. mm) & LENGTH FROM COLLAR (m. mm)	LENGTH OF CORE RECOVERED (m. mm)	% RECOVERY	FIELD ROCK NAME and general description over interval marked.	ADOPTED INTERVAL (m. cm) & ADOPT LENGTH FROM COLLAR (m. cm)	GRAPHIC LOG MARKERS (M)	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets)	MINERALIZATION	

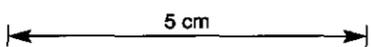


METALS EXPLORATION LTD. and SUBSIDIARY COMPANIES

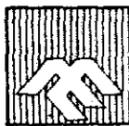
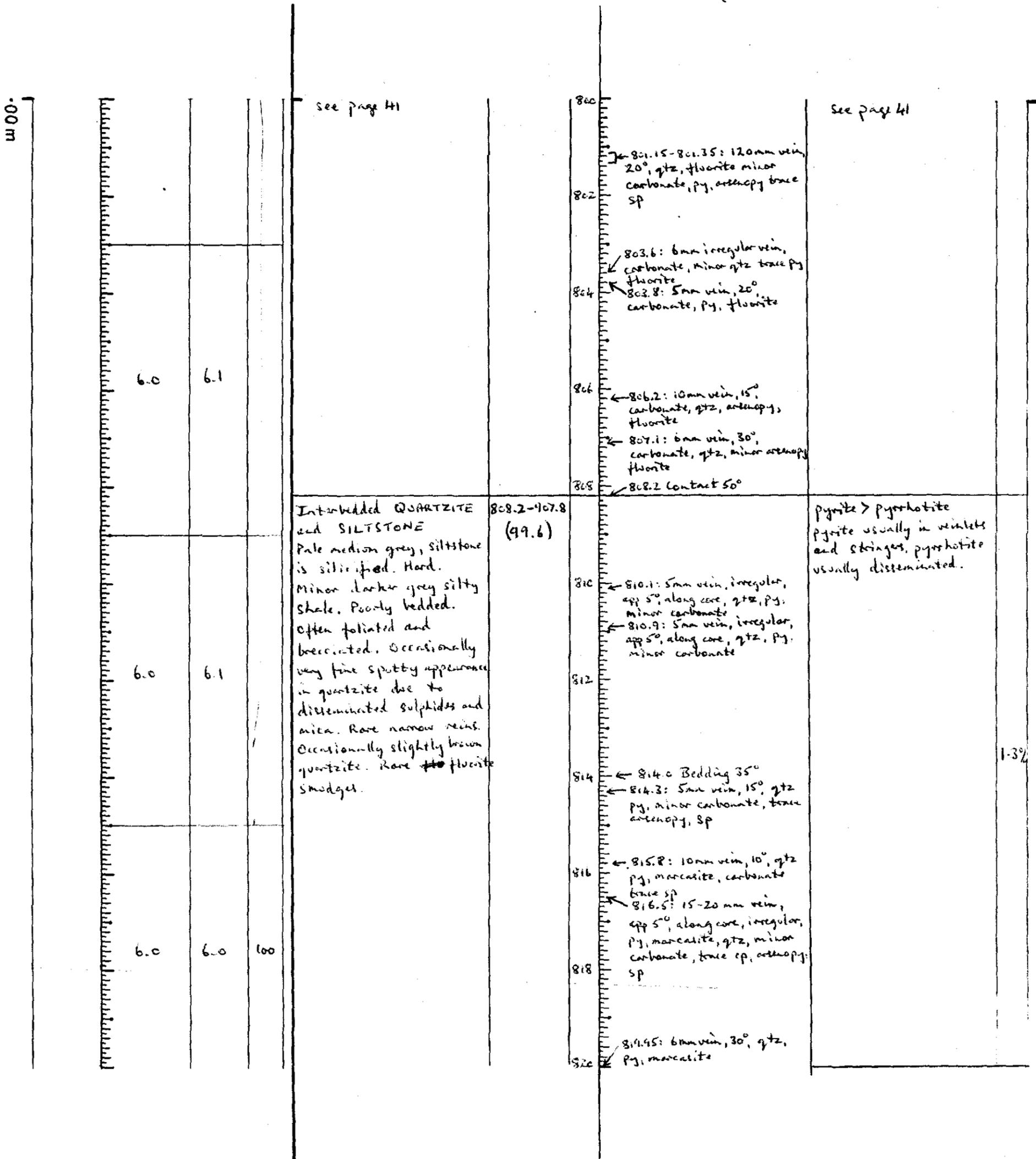
MINERAL EXPLORATION DIAMOND DRILL LOG Scale 1:80

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DRILLING NOTES	DRILL ADVANCE (m. mm) & LENGTH FROM COLLAR m. mm	LENGTH OF CORE RECOVERED m. mm	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT. LENGTH FROM COLLAR m. cm	GRAPHIC LOG MARKERS (M)	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets).	MINERALIZATION	



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and SUBSIDIARY COMPANIES

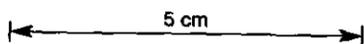
**MINERAL EXPLORATION
DIAMOND DRILL LOG**

Scale 1:80

HOLE No. MB35

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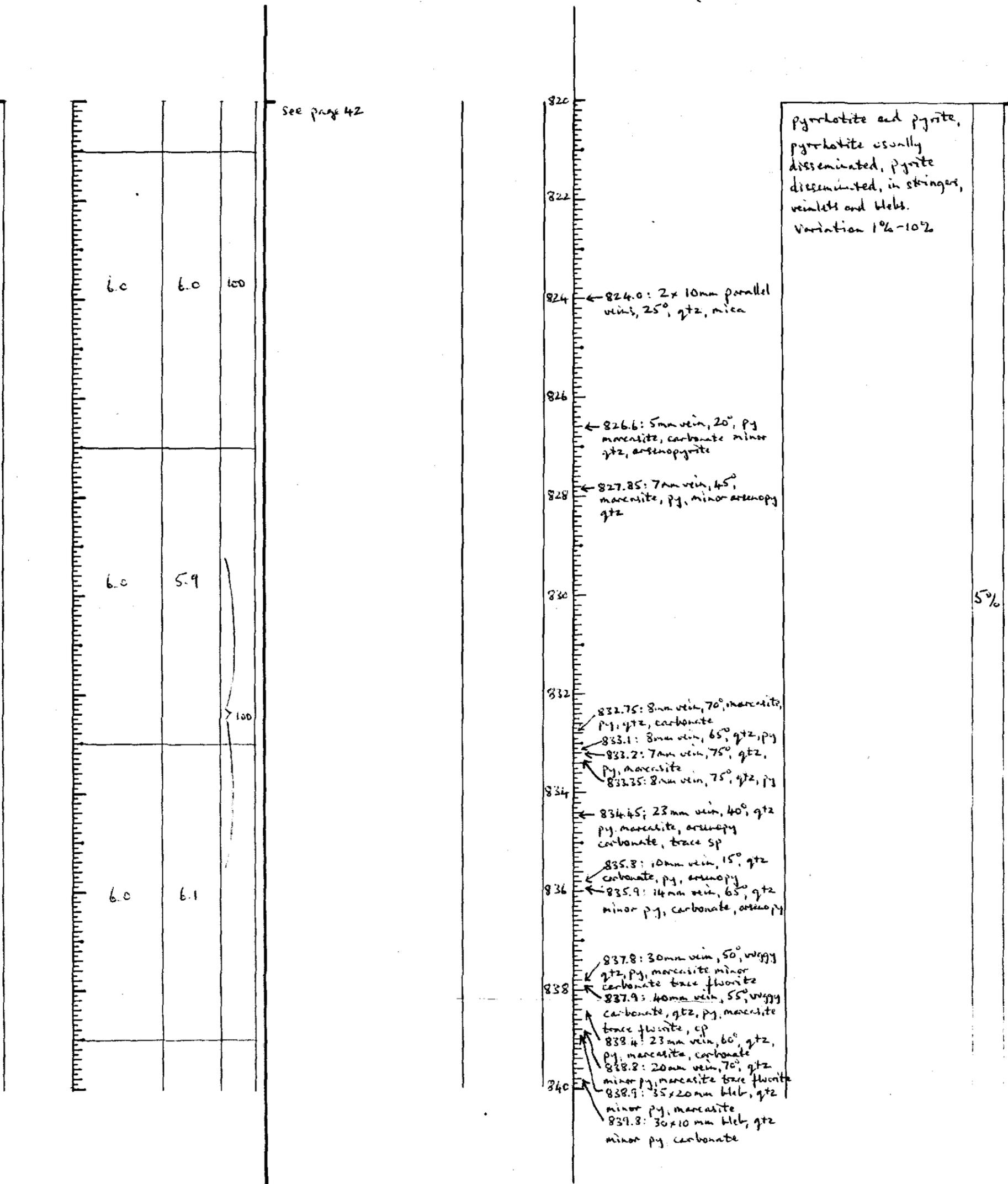
207147



114

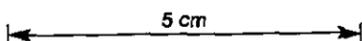
DRILLING NOTES	DRILL ADVANCE (m. m.m.) & LENGTH FROM COLLAR m. m.m.	LENGTH OF CORE RECOVERED m. m.m.	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT. LENGTH FROM COLLAR m. cm	GRAPHIC LOG	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets)	MINERALIZATION	

100m



**MINERAL EXPLORATION
DIAMOND DRILL LOG**
Scale 1:80

HOLE No. PRD 5
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DRILLING NOTES	DRILL ADVANCE (m. mm) & LENGTH FROM COLLAR (m. mm)	LENGTH OF CORE RECOVERED (m. mm)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT LENGTH FROM COLLAR (m. cm)	GRAPHIC LOG	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets)	MINERALIZATION	

6.0	6.1	
5.0	5.0	100
4.3	4.35	
2.0	1.9	
6.1	6.1	100

See page 42

854.0-856.0 pale green and grey stripy shale

840.8: 7mm vein, 15°, qtz, sp, py, arsenopy, carbonate trace ? calcite
841.0 Bedding 20°

845.45: 8mm vein, 20°, qtz, py, arsenopy, carbonate
846.2: 5mm vein, 5° along core, qtz, py, carbonate
846.6: 5mm vein, 5° along core, qtz, py, carbonate arsenopy

850.8: 10mm vein, 80°, qtz, py

853.0: 5mm vein, 55°, qtz, py
853.5: 5mm vein, 60°, qtz, py

855.0 Bedding 30°

857.8: 7mm vein, 65°, qtz trace py, sp
857.9: 7mm vein, 15°, sp, qtz, py, carbonate
858.5: 20mm vein, 70°, qtz, py, minor carbonate
858.9: 8mm vein, 65°, qtz, minor py, carbonate
859.35: 8mm vein, 30°, py
859.5: 5mm vein, 5° along core, qtz, arsenopy, minor py, trace sp

See page 43

pyrite, in veins, minor disseminated

1-3%

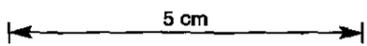


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**MINERAL EXPLORATION
DIAMOND DRILL LOG**
Scale 1:80

HOLE No. M3D5
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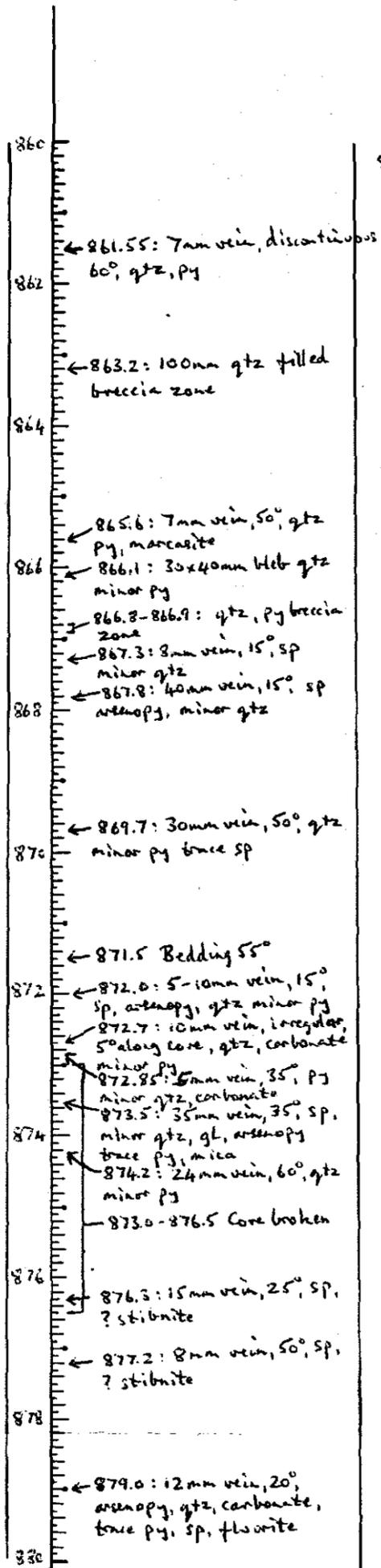


116

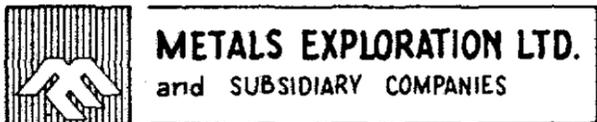
DRILLING NOTES	DRILL ADVANCE (m. mm) & LENGTH FROM COLLAR m. mm	LENGTH OF CORE RECOVERED m. mm	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT. LENGTH FROM COLLAR m. cm	GRAPHIC LOG	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets)	MINERALIZATION	

3.2	3.2	100
6.4	6.1	95
1.2	1.2	100
2.8	2.5	89
3.0	2.0	67
1.5	1.5	100

See page 42



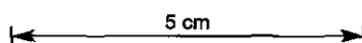
See page 44



**MINERAL EXPLORATION
DIAMOND DRILL LOG**
Scale 1:80

HOLE No. MED 5
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DRILLING NOTES	DRILL ADVANCE (m. mm) & LENGTH FROM COLLAR (m. mm)	LENGTH OF CORE RECOVERED (m. mm)	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT LENGTH FROM COLLAR (m. cm)	GRAPHIC LOG BRACKETS & MARKERS (V)	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either part (relates to marker) or 'from' to (relates to brackets)	MINERALIZATION	

1.8	2.1	117	see page 42
3.7	3.5	95	
5.0	5.1	102	
1.8	1.7	94	
3.4	2.8	68	
0.5	0.6	100	
1.8	2.0		
1.0	0.7		
0.8	0.6	75	
1.0	0.6	60	

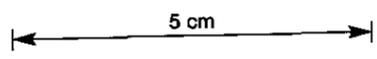
880.1: 2 parallel veins, 10mm, 60°, qtz, trace py, sp (py is late stage)	see page 44
882.3: 5mm vein, 25°, qtz carbonate, py	
882.7: 7mm vein, 90°, qtz minor py, marcasite	
883.7 Bedding 30°	
884.0: 7mm vein, 60°, qtz minor py, marcasite	
885.4-885.7: wuggy brecciated siltstone with carbonate, fluorite, sp	
887.1: 10mm diameter blob po	
893.8-895.0 Core very broken	
895.4 Bedding 35°	
896.3: 15mm vein, 10°, qtz trace py, marcasite	
897.3-900.3 Core very broken	
899.2: 4mm vein, qtz	



MINERAL EXPLORATION
DIAMOND DRILL LOG
Scale 1:80

HOLE No. M 335
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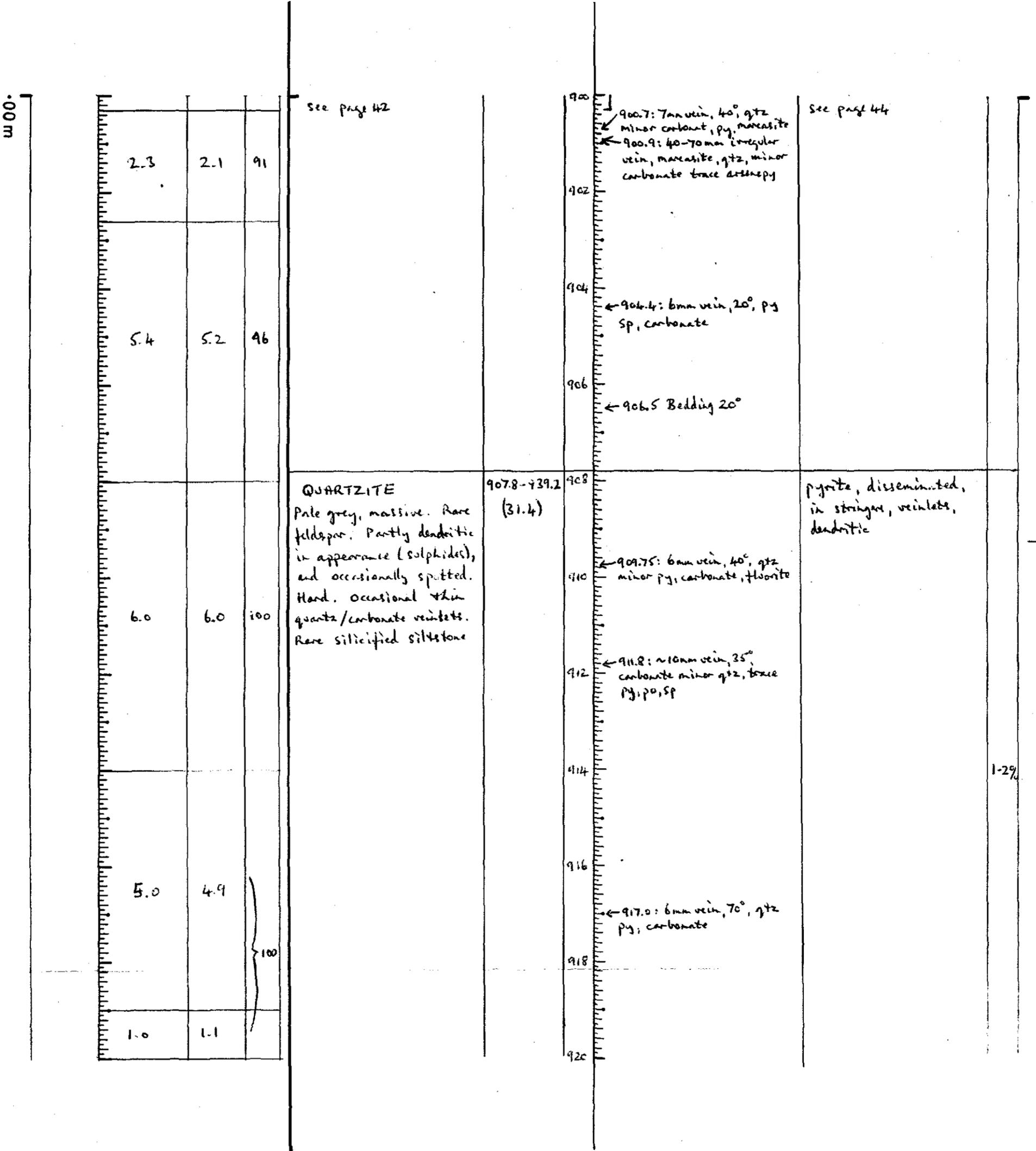
207151



Preliminary Design for Form Oct 78

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DRILLING NOTES	DRILL ADVANCE (m. m.m) & LENGTH FROM COLLAR m. m.m	LENGTH OF CORE RECOVERED m. m.m	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT LENGTH FROM COLLAR m. cm	GRAPHIC LOG MARKERS (V)	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets).	MINERALIZATION	

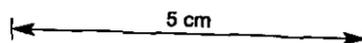


METALS EXPLORATION LTD.
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MINERAL EXPLORATION
DIAMOND DRILL LOG
Scale 1:80

HOLE No. M325
LOG SHEET 47 of 50

207152



Preliminary Design for Form Oct 78

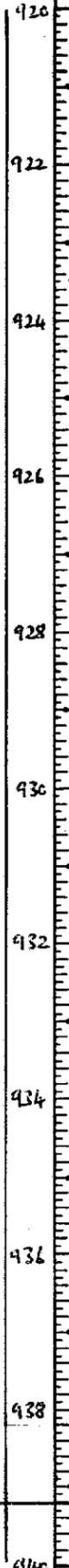
119
GT

DRILLING NOTES	DRILL ADVANCE (m. mm) & LENGTH FROM COLLAR m. mm	LENGTH OF CORE RECOVERED m. mm	% RECOVERY	FIELD ROCK NAME and general description over interval marked.	ADOPTED INTERVAL (m. cm) & ADOPT LENGTH FROM COLLAR m. cm	GRAPHIC LOG	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets)	MINERALIZATION	

00m

2.5	2.3	92
1.6	1.6	100
3.5	3.4	97
3.3	3.3	100
4.1	4.1	100
6.0	6.0	100

See page 47



← 920.5 Bedding 40°

923.4-923.8 Core broken

← 923.5: +40mm vein, 10° qtz carbonate, fluorite, sp, py minor mica

← 924.4: 5mm vein, 5° along core, qtz, py, carbonate

← 934.4: 12mm vein, 5° along core, qtz, carbonate minor fluorite, mica trace py, sp

← 939.3: 12mm vein, 50° py marcasite minor qtz

← 939.7: 6mm irregular vein, 5° along core, py, marcasite qtz, carbonate

See page 47

See page 49

939.2-944.9 (25.7)

See page 49

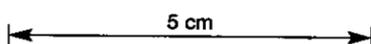


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**MINERAL EXPLORATION
DIAMOND DRILL LOG**
Scale 1:80

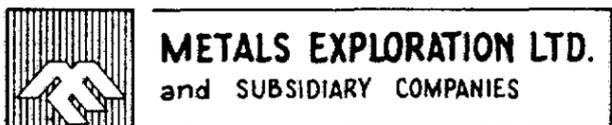
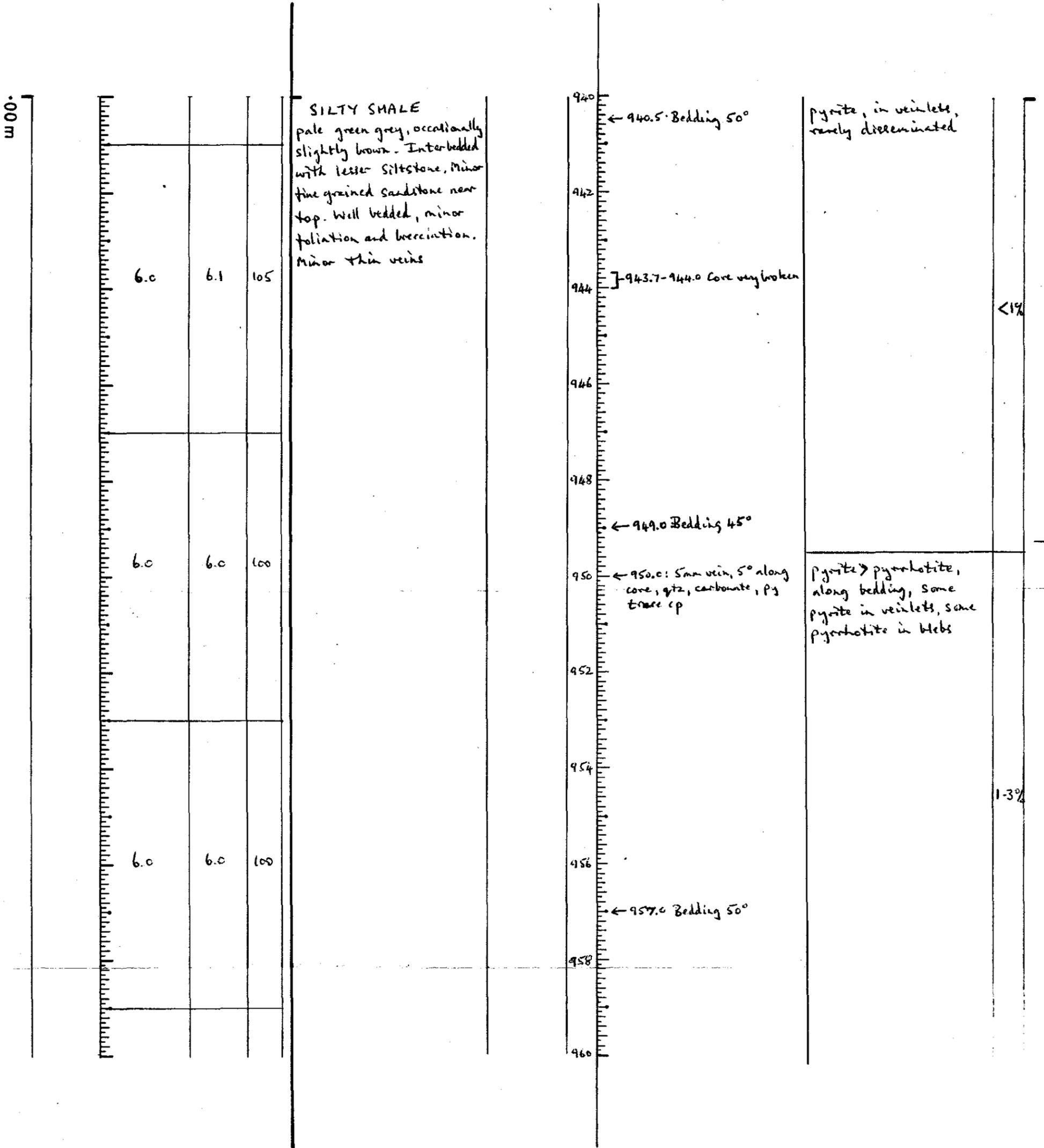
HOLE No. MB05
LOG SHEET 48 of 50

207153



120

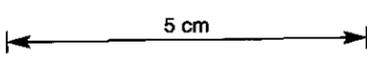
DRILLING NOTES	DRILL ADVANCE (m. mm) & LENGTH FROM COLLAR (m. mm)	LENGTH OF CORE RECOVERED (m. mm)	% RECOVERY	LOST CORE ZONE	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT LENGTH FROM COLLAR (m. cm)	GRAPHIC LOG MARKERS & BRACKETS (V)	OBSERVATIONS		% MINERALIZATION (visual estimate)
								Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets)	MINERALIZATION	



MINERAL EXPLORATION
DIAMOND DRILL LOG
Scale 1:80

HOLE No. M3D5
LOG SHEET 49 of 50

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DRILLING NOTES	DRILL ADVANCE (m. mm) & LENGTH FROM COLLAR m. mm	LENGTH OF CORE RECOVERED m. mm	% RECOVERY	FIELD ROCK NAME and general description over interval marked	ADOPTED INTERVAL (m. cm) & ADOPT. LENGTH FROM COLLAR m. cm	GRAPHIC LOG	OBSERVATIONS		% MINERALIZATION (visual estimate)
							Commence with length from collar, either point (relates to marker) or 'from' to (relates to brackets)	MINERALIZATION	

	4.0	3.5	88	See page 49		960	See page 49	
	5.0	5.0	100	<p>SANDSTONE fine grained, pale brownish grey tending to quartzite. Massive, slightly spotted appearance in places. Minor darker grey interbedded silty shale</p>	964.9-972.5 (7.6)	962	<p>← 962.9: 14 mm vein, 15° qtz Py, arsenopy trace marcasite ← 963.0 Bedding 65°</p>	
	4.5	5.2	116		966	<p>← 965.5: 12 mm vein, 20° qtz carbonate, fluorite minor arsenopy</p>	pyrite > pyrrhotite, disseminated, minor veinlets and blebs	
					968	<p>← 968.2: 5 mm vein, 10° qtz carbonate, trace py, sp</p>	2-3%	
				970	<p>← 970.6: 12 mm vein, 5° along core, fluorite, qtz, carbonate minor sp, py, arsenopy trace po</p>			
				972	<p>← 972.0 Bedding 60°</p>			
				END OF HOLE	972.5m			

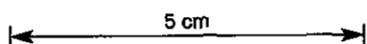


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**MINERAL EXPLORATION
DIAMOND DRILL LOG**
Scale 1:80

HOLE No. M.B.D. 5
LOG SHEET 50 of 50

207155



PETROLOGICAL SAMPLING

CENTRAL MINERALOGICAL SERVICES PTY. LTD.

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

Job No. CMS 78/8/32 Date Received: 28.8.1978

Reference O/N 00183

Sample No. 94404

Nature of Sample: D.D. Core

DESCRIPTION SECTION No. 25269

a. Hand Specimen:

Grey, sericitic, carbonaceous breccia, k-stain negative.

b. Microscopic:

This rock is a sedimentary breccia, essentially unmetamorphosed, strongly sericitic and carbonaceous.

The rock has a soft pebble conglomerate-like fabric with frequent poorly sorted clasts (< 100 μ - 1 cm) of sericitic psammopelite embedded in a random to incipiently orientated sericitic matrix. Clasts are identifiable as shale and quartzose silty shale "grading" into sericitic siltstone and fine-grained quartzose sandstone. The relatively incompetent matrix fraction is essentially a silty shale.

Microtextural evidence indicates the rock was partly consolidated (or lithified) prior to the deformation. Clasts are angular to subround and some show evidence of semi-plastic deformation, while others are weakly microfractured, particularly the more siliceous types. Evidently, the deformation was essentially tectonic, but occurred whilst the sediment was in a "wet", partly consolidated condition. Alternately, the rock may have been softened by an influx of water contemporaneous with the deformation.

Abundant carbonaceous matter is present. This has partly crystallised as graphite, tends to form thin mantles on the breccia clasts, and also frequently occurs as microscopic networks of highly discontinuous films. This material is of primary character, but was clearly mobilised on a local microscale during deformation. Minor traces of ultrafine "syngenetic" Fe-sulphide are also present.

Deformed sericitic comb-structured quartz veins occur sporadically. Marginal areas of the host rock are locally weakly impregnated with very fine colourless tourmaline.

IDENTIFICATION

94404 MBD1, 7.2 m

Sericitic Carbonaceous
Breccia

Page 2

Thus the rock was weakly metasomatised prior to or contemporaneously with the brecciation. This tends to confirm the deformation as a rheomorphic phenomenon and essentially tectonic.

D. Cowan, B. Sc.

CENTRAL MINERALOGICAL SERVICES PTY. LTD.

Date 12th September, 1978

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

Job No. CMS 78/8/32 Date Received: 28.8.1978

Reference O/N 00183

Sample No. 94405

Nature of Sample: D.D. Core

DESCRIPTION SECTION No. 25270

a. Hand Specimen:

Laminated, grey, pyritic ?carbonaceous slate, K-stain negative.

b. Microscopic:

This is a weakly metamorphosed silty shale, pyritic and weakly carbonaceous with some affinities to the shale fraction of 94404.

The rock consists largely of semi-orientated sericite with subordinate, closely intergrown microcrystalline quartz. Relict sub- to millimetric scale bedding laminations persist and are manifest in variations in the quartz/sericite ratio and in the distribution of a sparse silt-sized clastic component of quartz grains, white mica flakes and heavy mineral particles (mainly cloudy, partly metamict zircon). A few bands show vague intraformational breccia structures.

Fine-grained to ultrafine sulphide particles (rarely $> 50 \mu$, typically $< 20 \mu$) are common, comprising from 2-3 to around 25 % of the rock. These are distinctly layered and locally graded in their distribution. Relatively sulphide-rich bands are also weakly but variably carbonaceous.

Carbonaceous matter is partly reorganised into thin discontinuous microscale films of graphite, typically concordant, but also healing discordant microfractures and often with intergrown films of pyrite. The sulphide assemblage comprises mainly pyrrhotite with subordinate pyrite and accessory traces of galena, sphalerite, and very minor chalcopyrite.

Pyrite occurs in two generations, typically as pseudomorphs after pyrrhotite but with subordinate material of syngenetic character, including rare, partly recrystallised and/or overgrown framboids. Similarly, the sphalerite, galena, and chalcopyrite are considered as syngenetic.

Overall textural evidence indicates that the semi-pervasive fine-grained pyrrhotite developed by semi-pseudomorphous replacement of partly recrystallised

IDENTIFICATION

94405 MBD 1, 10.45m

Pyritic Carbonaceous
Slate (Silty Shale)

Page 2

syngenetic pyrite and subsequently partly degraded to secondary pyrite. Similar "Pyrrhotitised", but otherwise unmetasomatised pyritic sediments occur in marginal zones of the NW Tasmanian contact-metasomatic tin situations.

D. Cowan, B. Sc.

CENTRAL MINERALOGICAL SERVICES PTY. LTD.

Date 3rd October, 1978

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

Job No. CMS 78/9/23 Date Received: 18.9.1978Reference D.P.O. No. 00185Sample No. 94447Nature of Sample: D.D. CoreDESCRIPTION SECTION No. 25480

a. Hand Specimen:

Grey quartzite with vein carbonate.
K-stain negative.

b. Microscopic:

This is a metasomatically altered quartzite similar to 94407 (CMS 78/9/12)/

Relict textural features indicate the original sediment was a slightly impure orthoquartzite with a weakly bedded, moderately sorted framework of fine to medium sand sized quartz grains, subordinate (5-10 %) rock fragments comprising shale pellets, and rare chert fragments, thinly dispersed muscovite flakes and a sparse heavy mineral assemblage (zircon, tourmaline). The matrix/cement consists largely of overgrowth quartz with subordinate intergranular cherty to microgranular quartz and minor argillaceous material. Partial recrystallisation is evident and the rock now has a compact metaquartzite fabric. Probably accessory carbonate was present in the matrix.

Metasomatism is marked by development of fine-grained dravite with accessory ankeritic carbonate, fluorite and disseminated fine-grained pyrrhotite (mean 100 μ). The tourmaline develops characteristically by progressive replacement of shale pellets. Pyrrhotite is locally accompanied by accessory traces of sphalerite and stannite and is partly pyritised.

The fawn-coloured veins (hand specimen) consist of coarse-grained ankeritic carbonate with thin selvages of quartz crystals. Accessory phases, largely restricted to marginal portions of the veins, are disseminated patches (to 500 μ) and sub- to euhedral crystals (mean 250 μ) of dark red (high Fe-) sphalerite, sporadic clusters of jamesonite flakes, locally intergrown with fine-grained (mean 50 μ) cassiterite and sparse pyritised pyrrhotite

IDENTIFICATION
94447 MBD 1, 210.5 m
Metasomatised Quartzite

In polished section sphalerite exhibits sparse microscopic (mean $< 5 \mu$) exsolution particles of stannite and chalcopyrite. The sulphosalt flakes show rare corroded inclusions ($< 20 \mu$) of cassiterite, jamesonite-like optical properties but were a little anomolous in terms of colour and habit. Thus an XRD powder photograph was prepared to confirm this phase was jamesonite and not a tin sulphosalt.

D. Cowan, B. Sc.

CENTRAL MINERALOGICAL SERVICES PTY. LTD.

Date 3rd October, 1978

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

Job No. CMS 78,9,23 Date Received: 18.9.1978Reference DPO No. 00185Sample No. 94448Nature of Sample: D.D. CoreDESCRIPTION SECTION No. 25481

a. Hand Specimen:

Grey bedded fractured pelite.

K-stain negative.

b. Microscopic:

This is a weakly fractured and variably tourmalinised pelite, essentially a weakly turbidite-like intercalation of slightly silty shale, argillaceous siltstone and quartzose siltstone. The rock is bedded on a sub- to millimetric scale and weakly graded. Clastic components comprise quartz with accessory white mica flakes and heavy mineral particles. The argillaceous fraction consists of sericitic material. The rock has been weakly recrystallised and some of the more strongly argillaceous bands exhibit an incipient contact metamorphic spotting.

Alteration is marked by semi-pervasive development of extremely fine-grained tourmaline in the shaly bands. Mean grain size is around 10 μ with pale green brown schorl and dravite in varying proportions. Thin tourmaline-healed fractures are common and often displace bedding. Ankeritic carbonate and fine-grained pyrrhotite are accessory alteration phases.

Sulphide is largely restricted to the more siliceous silty bands relatively devoid of tourmaline. Apart from sporadic, relatively coarse clots of carbonate, quartz and (pyritised) pyrrhotite, the sulphide tends to be bedded in the matrix of the siltstone where it may have replaced syngenetic sulphide and/or carbonate.

Late discontinuous veinlets of cloudy sideritic carbonate occur sporadically. The rock may contain minor traces of stannite, but there is no detectable cassiterite.

D. Cowan, B. Sc.

IDENTIFICATION
94448 MBD 1, 206-85 m
Fractured Tourmalinised Pelite

CENTRAL MINERALOGICAL SERVICES PTY. LTD.

Date 3rd October, 1978

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

Job No. CMS 78/9/23 Date Received: 18.9.1978
Reference DPO No. 00185
Sample No. 94449
Nature of Sample: D.D. Core

Table with 2 columns: IDENTIFICATION, 94449 MBD 1, 227.1m, Deformed, Weakly Tourmalinised Pelite

DESCRIPTION SECTION No. 25482

a. Hand Specimen: Grey pelitic breccia. K-stain negative.

b. Microscopic: This is a deformed and weakly altered pelite. In terms of primary features, the rock is very similar to 94448 but in comparison distinctly more argillaceous, comprising essentially a relatively coarsely bedded slightly silty shale with occasional relatively thin interbeds of quartzose siltstone. Bedding has been thoroughly deformed such that the rock now has a soft pebble conglomerate-like fabric.

Microtextural relationships indicate the deformation was a tectonic phenomenon and postdated consolidation and the bulk of the alteration. Frequent deformed and/or segmented microscopic films of cloudy carbonate with disseminations of pyrrhotite are present and are accompanied by subordinate contemporaneous siliceous and sericitic types.

Tourmalinisation, analogous to that in 94448, is evident but is rather incipient. The tourmaline is a colourless to pale green schorl, extremely fine-grained, and difficult to detect optically. It is non-pervasive and predates the carbonate veinlets.

Accessory fine-grained pyrrhotite (sim. 94448) is present in the deformed siltstone bands. This phase is incipiently pyritised. There is no detectable cassiterite and the minor traces of stannite detected under the stereobinocular in 94448 appear to be absent.

D. Cowan, B. Sc.

CENTRAL MINERALOGICAL SERVICES PTY. LTD.

Date 3rd October, 1978

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

Job No. CMS 78/9/23 Date Received: 18.9.1978
 Reference DPO No. 00185
 Sample No. 94451
 Nature of Sample: D.D. Core

IDENTIFICATION
94451 MBD 1, 293.65 m
Deformed, Incipiently Tourmalinised Pelite

DESCRIPTION SECTION No. 25483

a. Hand Specimen:

Grey pelite ?breccia.
 K-stain negative.

b. Microscopic:

This is a deformed and weakly altered pelite and similar to 94448 and 94449.

Relict features indicate the original sediment to be a weakly bedded, slightly silty shale with sparse intercalations of fine sandy quartzose siltstone grading into an impure (argillaceous) fine-grained orthoquartzite (sim. 94447). Bedding has been deformed into disharmonic small-scale folds with irregular displacements around the relatively competent siltstone/sandstone bands. As in 94449, and incipient re-crystallisation/orientation of the argillaceous fraction predates the deformation which is clearly tectonic despite the crudely slump breccia-like gross fabric.

The shale is more or less pervasively spotted with microscopic clots of cloudy sideritic carbonate (mean 30-40 μ), which appear to have developed by replacement of diagenetic carbonate (?dolomite) rhombs. Minor traces of tourmaline, ultrafine colourless and almost undetectable optically, are present but this alteration effect is no more than incipient (confirming a marked decrease in the order 94447-94448, 94449, 94451). Traces of extensively pyritised pyrrhotite are restricted to the more porous sandy areas. Late-stage crosscutting veinlets of sideritic carbonate and microcrystalline pyrite occur sporadically. There is no detectable cassiterite or stannite.

D. Cowan, B. Sc.

REPORT CMS 78/9/12SupplementaryNotes:

Due to technical problems, polished sections were not available when the three rocks (i.e. 94407, 94408 and 94424) were described in this section. Thus, the initial descriptions incorporated notes on the opaques, as detected in the thin sections under a stereobinocular microscope.

Subsequently, polished sections have been prepared and this report summarises the mineralogical observations.

Specimen NO.:

MBD 1
84.9m

94407 Initial observations were confirmed in that the major sulphide phase is secondary pyrite, developing as a semi-pseudomorphous replacement of fine-grained pyrrhotite. These pseudomorphous aggregates show some evidence of partial recrystallisation.

Pyrrhotite persists as minor relics. Apart from extremely rare ultrafine particles of chalcopyrite (typically < 15 μ diameter), no additional sulphides were observed. Similarly, cassiterite is absent at least from the areas sectioned.

MBD 1
135.5m

94408 The polished section revealed sparsely disseminated patches of stannite up to 75 μ diameter. This phase shows a close spatial relationship with pyrrhotite and locally with irregular patches of carbonate.

As in 94407, very minor traces of ultrafine chalcopyrite are present. Stannite occasionally shows microscopic inclusions of rutile, but cassiterite was not detected.

Pyrrhotite has a mean grain size about 30 μ and is typically fresh. Incipient secondary development of pyrite and marcasite is evident locally, but is decidedly less marked than in 94407.

MBD 1
179.4m

94424 This specimen also contains sparsely disseminated (but in comparison with 94408, relatively abundant) patches of stannite. These are sized up to 100 μ diameter with a mean about 50 μ . Distribution is similar to that in 94408, but with a stronger tendency to association with irregular carbonate aggregates (this may have some genetic significance in that the carbonate (and related pyritisation) in Renison-type situations often postdates the pyrrhotitic (+ cassiterite) assemblage).

Pyrrhotite is generally fresh but a few relatively coarse aggregates (to 2.5 mm) are partly altered to lamellar, extremely fine-grained aggregates of marcasite and pyrite. Minor accessory traces of arsenopyrite (to 30 μ) and chalcopyrite (typically < 20 μ) are present.

No additional cassiterite was observed. The main inference from the mineragraphy of this small suite is that stannite is volumetrically (and thus in terms of assay values) more significant than cassiterite. This may be of metallurgical importance and could be verified by determination of acid soluble tin values.

D. Cowan, B. Sc.

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Date 25th September, 1978

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

Job No. CMS 78/9/12 Date Received: 11.9.1978

Reference O/N 00184

Sample No. 94407

Nature of Sample: D.D. Core

DESCRIPTION SECTION No. 25400

IDENTIFICATION
94407 MBD 1, 84.9 m
Tourmalinised Argillaceous Quartzite

a. Hand Specimen:

Grey siliceous ?hornfelsed sediment with disseminated sulphide.
K stain negative.

b. Microscopic:

This rock is a tourmalinised argillaceous quartzite with disseminated Fe-sulphide.

Relict features indicate the original sediment was a weakly bedded and at least locally slumped orthoquartzite with a subordinate clastic component of clay pellets or shale clasts and a sparse detrital heavy mineral suite of zircon and tourmaline. Clastic quartz grains are overgrown, forming a distinctly metaquartzite-like fabric but were clearly well-sorted in the fine sand range with subangular to subrounded detrital shapes.

The clastic clay pellets and a subordinate intergranular argillaceous cement have been virtually completely replaced by fine to ultrafine dravite. Cloudy sellaite (the magnesian analog of fluorite), stuffed with microscopic tourmaline inclusions, and ankeritic carbonate are accessory alteration phases. These secondary phases occur typically in more or less pervasive aggregates (mean 50-75 μ) and discontinuous microscopic films along quartz grain boundaries. They are frequently accompanied by fine-grained disseminations and films of pyrrhotite which have been extensively pyritised, in part at least, contemporaneously with late stage development of carbonate veinlets.

Alteration is typical of the marginal contact-metasomatic tourmalinisation in wall rocks of Renison-type N.W. Tasmanian tin occurrences. The accessory sellaite tends to distinguish this rock as from Mt. Bischoff.

D. Cowan, B. Sc.

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207169

Date 25th September, 1978

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

Job No. CMS 78/9/12 Date Received: 11.9.1978
 Reference O/N 00184
 Sample No. 94408
 Nature of Sample: D.D. Core

IDENTIFICATION
94408 MBD 1, 135.5 m
Hornfelsed Tourmalinised Labile Pelite

DESCRIPTION SECTION No. 25401

a. Hand Specimen:

Grey hornfelsic laminated sediment with disseminated sulphide.
 K stain negative.

b. Microscopic:

This is a hornfelsed and pervasively tourmalinised labile pelite, turbidite-like and probably tuffaceous.

In terms of relict fabric, the rock is essentially a coarsely bedded (i.e. "massive") fine-grained siltstone with occasional relatively coarser and finer-grained graded interbeds of sub- to millimetric dimensions. Clastic components are poorly resolved, being extensively obliterated by contact metamorphic/metasomatic effects, but appear to have comprised mainly feldspathic material with subordinate to accessory quartz. Coarser-grained interbeds are relatively siliceous (quartzose siltstone). Conceivably, the feldspathic component represented altered pelitic ashy (i.e. tuffaceous) material although there is no positive evidence to confirm this.

Finer-grained bands show pervasive development of poorly resolved polygonal poikiloblasts (mean 75 μ diameter). These features are thoroughly clouded with ultrafine, virtually submicroscopic inclusions of tourmaline and are optically indeterminate. However, these are locally graded in their distribution and concentrated at the tops (presumably relatively argillaceous zones initially) of graded beds and on this basis are most likely cordierite. The tourmaline can be recognised from patchy, coarser-grained patches and bands as near colourless to pale green schorl grading into dravite.

Ankeritic carbonate is an accessory alteration phase. Fine-grained pyrrhotite is more or less pervasive throughout the rock. This phase tends to be bedded in its distribution and in the siliceous graded siltstone interbeds is graded in that it is concentrated towards the finer-grained stratigraphic top, where it probably developed by replacement of syngenetic pyrite.

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

Job No. CMS78/9/12 Date Received: 11.9.1978

Reference O/N 00184

Sample No. 94424

Nature of Sample: D.D. Core

DESCRIPTION SECTION No. 25402

a. Hand Specimen:

Grey, hornfelsed/altered laminated sediment with disseminated sulphide.

K stain negative.

b. Microscopic:

This is a hornfelsed and pervasively tourmalinised pelite with minor traces of cassiterite.

General features are similar to 94408, but in comparison this rock is relatively siliceous and less distinctly turbidite-like. It comprises essentially an alternation of metasomatised shaley and less extensively altered siliceous siltstone bands.

Incipient grading is evident. There is some evidence of slumping and small-scale relict scour and fill structures are common. Primary mineralogy appears to have been simple, essentially quartz and argillaceous material now represented by fine to ultrafine dravite.

Thus the rock is characterised by an alternation of (weakly recrystallised) siliceous bands with a relict silty clastic fabric, and finer bands consisting largely of dravite.

The tourmaline tends to exhibit a preferred orientation indicating the rock underwent incipient (burial or load-, subgreenschist) metamorphism prior to the metasomatism.

Incipient hornfelsic spotting is evident in the tourmalinised pelitic bands. Fine-grained, partly pyritised pyrrhotite is common and was introduced in part on discontinuous quartz-dravite veins. Ankeritic carbonate is an accessory alteration phase and poikilitic sellaite is common in places.

IDENTIFICATION
94424 MBD 1, 179.4 m
Hornfelsed Tourmalinised Pelite with traces of Cassiterite

Dark cloudy cassiterite occurs as rare patches up to 150 μ diameter. This phase is closely intergrown with dravite and largely restricted to a thin (200-500 μ) wide band characterised by discontinuous poikilitic lenses of sellaite with minor associated fluorite.

In common with 94407 and 94408, this rock is typical of the weakly hornfelsed but strongly metasomatised psammopelitic wall rocks of Renison-type situations. Tin, if present, in this type of facies is usually fine-grained, spotty in its distribution and non-economic.

D. Cowan, B. Sc.

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

Job No. CMS 78/10/11 Date Received: 12.10.1978

Reference DPO No. 00186

Sample No. 94481

Nature of Sample: D.D. Core

DESCRIPTION SECTION No. 25687

a. Hand Specimen:

Grey aplanitic rock with pyrite carbonate-bearing veins.

K-stain negative.

Microscopic:

This is a fairly typical metasomatised pelite with frequent veins healing straight-walled to irregular fractures.

The rock exhibits relict microscale bedding laminations. It comprises mainly "slate" in thin continuous bands (mean 250 μ) with frequent discontinuous lenses (50-750 μ wide, mean 100 μ) of siltstone, silty shale or rarely impure (argillaceous) chert. Partly recrystallised silt-sized quartz grains represent the only recognisable clastic component. The shaley interbeds were probably deposited chemically. There are no tangible tuffaceous features.

Locally the argillaceous fraction is recognisable as sericite with a preferred orientation reflecting incipient (sub-greenschist) metamorphism. In most of the area sectioned, however, this has been replaced by a metasomatic phase, with ultrafine (< 1-3 μ) grainsize and an inherited preferred orientation. Traces of virtually colourless tourmaline are recognisable but the major phase appears to be topaz.

Intersecting veins range in width from < 1 to around 7.5 mm. The assemblage comprises quartz, sideritic carbonate, fluorite and sellaite with discontinuous selvages of topaz and accessory ultrafine acicular tourmaline (mainly as inclusions in quartz and fluorite). Films of pyritised pyrrhotite occur sporadically and minor traces of sphalerite occur as microscopic inclusions in fluorite and carbonate.

The altered host rock is similarly stained with small clots of carbonate, fluorite and sellaite. Ultrafine particles of Fe-sulphide are sparsely disseminated throughout and there are rare semi-opaque microscopic (< 20 μ) clots of sphalerite. There is no detectable cassiterite.

D. Cowan, B. Sc.

IDENTIFICATION

94481 MBD 2, 26.9m

Metasomatised Pelite

CENTRAL MINERALOGICAL SERVICES PTY. LTD.

Date 23rd October, 1978

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

Job No. CMS 78/10/11 Date Received: 12.10.1978

Reference DPO No. 00186

Sample No. 94936

Nature of Sample: D.D. Core

DESCRIPTION SECTION No. 25688

a. Hand Specimen:

Grey, altered, banded pelite with sulphide-bearing discontinuous veinlets.

K-stain negative.

Microscopic:

This is a metasomatised pelite with similarities to 94481. In comparison, it is less extensively altered and tourmaline and Fe-carbonate are the main alteration phases.

The rock is distinctly turbidite-like on a microscale with a sub- to millimetric scale intercalation of slate, silty shale and argillaceous siltstone. Individual bands are frequently graded and microscale scour and fill structures occur at the base of siltstone bands. Clastic components comprise quartz with relatively minor white mica flakes and a sparse heavy mineral assemblage (mainly leucoxenic semi-opaques). The clay fraction is kaolin-illite recrystallised as weakly orientated sericite in the shale bands.

Metasomatism is marked by non-pervasive development of fine to ultrafine tourmaline (mainly dravite, subordinate colour-variable schorl) and cloudy cryptocrystalline sideritic carbonate. Tourmaline preferentially replaces certain argillaceous bands. The siderite is more widespread but tends to be layered in its distribution and appears to have replaced an earlier carbonate phase (?dolomite, there are no detectable relics). This is most marked in siltstone bands where the secondary carbonate adopts an intergranular matrix-like habit.

Both phases were introduced in part on irregular discontinuous veinlets which displace bedding. These features include disseminations of pyritised pyrrhotite and ?arsenopyrite. Traces of sulphide, including extremely rare microscopic sphalerite particles are also disseminated, throughout the host rock.

A single 200 μ diameter cluster of cassiterite particles (mean 50 μ) was observed partly enclosed in fine-grained pyrite within a tourmaline-carbonate veinlet.

D. Cowan, B. Sc.

IDENTIFICATION

94936 MBD 2, 71.8 m

Metasomatised Pelite

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

Job No. CMS 78/10/11 Date Received: 12.10.1978

Reference DPO No. 00186

Sample No. 95006

Nature of Sample: D.D. Core

DESCRIPTION SECTION No. 25689

a. Hand Specimen:

Grey, altered rhyolite with disseminated sulphides.

K-stain negative.

Microscopic:

This rock is best termed simply a topazised porphyry.

Relict features comprise abundant phenocrysts (to 2 mm) evenly distributed in a micro-granular groundmass. These features indicate a minor intrusive phase, probably a dyke. Inferred primary composition is biotite granitic although feldspars are completely altered and indeterminate.

Numerous quartz phenocrysts resorbed inverted beta habit persist. Feldspar phenocrysts are completely altered pseudomorphously to fine-grained granular to radiating topaz with subordinate intergrown sulphide and quartz. The accessory phenocrystal biotite flakes are represented by topaz aggregates stained with sulphides and accessory carbonate and with microscopic films of leucoxenitic material outlining the original cleavage traces.

Minor traces of biotite persist in the groundmass where feldspar is pseudomorphed by granular to semi-lustre mottled topaz with accessory similarly textured sideritic carbonate and minor traces of fluorite.

Sulphides comprise 5-10 % of the rock as more or less evenly disseminated single grains (from 20 μ) and spongy aggregates (to 2.5 mm). These consist largely (90-95 %) of fine-grained pyrite and marcasite representing altered ("pyritised") pyrrhotite, traces of which persist as relicts. Relatively minor sub- to euhedral primary pyrite (to 75 μ) is present and there are thinly dispersed microscopic particles (< 20 μ) of chalcopyrite.

Cassiterite was detected as extremely rare particles sized in the 5-25 μ range and typically enclosed within the secondary pyrite-marcasite aggregates. Two minute particles of wolframite were also detected within these aggregates, and there are thinly dispersed particles (to 20 μ) of dark rutile. There is no detectable stannite.

D. Cowan, B. Sc.

IDENTIFICATION

95006 MBD 2, 300.0 m

Topazised Porphyry

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CENTRAL MINERALOGICAL SERVICES PTY. LTD.

207175

Date 26TH October, 1978

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

Job No. CMS 78/10/23 Date Received: 18.10.1978

Reference DPO No. 00188

Sample No. 95061

Nature of Sample: D.D. Core

DESCRIPTION SECTION No. 25743

- a. Hand Specimen:
Grey pyritic altered "porphyry".
K-stain negative.

b. Microscopic:

This is a topazized porphyry, very similar and closely related to 95006 (Report CMS 78/10/11).

The original rock comprised abundant phenocrysts of quartz with subordinate feldspar and probably accessory phenocrystal biotite in medium-grained (mean 100 μ) granular quartzofeldspathic groundmass. Quartz persists throughout with the phenocrysts of typical partly resorbed inverted beta habit and sized up to 3.5 mm diameter. Feldspar is completely altered. Biotite persists only as rare microscopic inclusions in quartz.

Alteration is pervasive with groundmass feldspar replaced by fine-grained topaz and feldspar phenocrysts semi-pseudomorphed by topaz-sulphide aggregates (to 4 mm diameter) with accessory secondary quartz weakly stained with inclusions (e.g. very fine muscovite flakes, carbonate, vacuoles).

Disseminated sulphide aggregates (to 2.5. mm) consist almost entirely of lamellar pyrite-marcasite intergrowths with subordinate "birds-eye" pyrite, both types representing altered pyrrhotite. There are rare poikilitic subhedral crystals (to 450 μ) of arsenopyrite and extremely rare microscopic (< 15 μ) particles of chalcopyrite.

Cassiterite is relatively abundant, typically as single grains (25-250 μ) and granular to spongy aggregates (generally < 500 μ , max. observed 3.3 mm), disseminated throughout the altered groundmass and to a lesser extent the pseudomorphs after phenocrystal feldspar. Here cassiterite may be loosely locked with the pyrite-marcasite aggregates.

IDENTIFICATION

95061 MBD 3, 71-05m

Topazized Porphyry
with Cassiterite

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207176

Page 2

CMS 78/10/23

Locally cassiterite occurs as euhedral crystals with microscopic crystal quartz forming selvage zones around the altered feldspars. In thin section cassiterite is colourless to dark brown and red-brown. Sparse microscopic inclusions of (?stanniferous) rutile are present.

D. Cowan, B. Sc.

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

Job No. CMS 78/10/23 Date Received: 18.10.1978

Reference DPO No. 00188

Sample No. 95062

Nature of Sample: D.D. Core

DESCRIPTION SECTION No. 25744

a. Hand Specimen:

Brown laminated pelite with fine-grained sulphides.

K-stain weakly positive (micas).

b. Microscopic:

This rock is a metasomatically altered and partly weathered pelite with disseminated fine-grained sulphide.

The rock is essentially a silty shale, bedded on a sub- to millimetric scale, locally graded, and with occasional shale partings and thin intercalated bands of argillaceous siltstone. Clastic component comprise quartz with subordinate white mica flakes and a sparse heavy mineral assemblage (zircon, tourmaline, semi-opaques).

Bedding is locally disrupted with patchy "soft pebble conglomerate" structures, reflecting slumping in part but enhanced by later cross-cutting fractures and zones of semi-brittle deformation.

The clay fraction consists of brownish semi-sericitic material. Optically this phase appears to be illite representing a degraded (weathered) pale phlogopitic mica and stained with virtually submicroscopic Fe-oxide particles. By analogy with other N.W. Tasmanian tin situations, the Fe-Mg mica developed by metasomatic replacement of the primary clay fraction (probably illite-hydromuscovite).

Subordinate metasomatic fine to ultrafine virtually colourless tourmaline is more or less pervasive throughout the rock. This phase heals the late discontinuous microfractures, where it is often accompanied by fine-grained spongy aggregates of Fe-sulphide.

Elsewhere, Fe-sulphide occurs as an accessory in the deformed and weakly metasomatised silty bands. This phase appears to be mainly pyritised pyrrhotite. The distinctly bedded distribution suggests that it represents altered syngenetic Fe-sulphide.

D. Cowan, B. Sc.

IDENTIFICATION

95062 MBD 3, 103.6m

Metasomatised, Partly
Weathered Pelite

CENTRAL MINERALOGICAL SERVICES PTY. LTD.

207178

Date 26th October, 1978

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

Job No. CMS 78/10/23 Date Received: 18.10.1978

Reference DPO NO. 00188

Sample No. 95079

Nature of Sample: D.D. Core

DESCRIPTION SECTION No. 25745

a. Hand Specimen:

Grey altered porphyry with disseminated sulphides, cassiterite.

K-stain negative.

b. Microscopic:

This is a typical topazized porphyry, closely related to 95061 and 95008.

Frequent relict quartz phenocrysts (to 4.5 mm) of partly resorbed inverted beta habit are present and these are accompanied by sulphide-topaz (+ cassiterite, quartz) semi-pseudomorphs (to 3 mm) after phenocrystal feldspar. The altered groundmass is virtually identical to that in 95061 and requires no special comment, except to note that cassiterite is slightly more abundant.

Accessory phases, occurring as inclusions in phenocrystal quartz include traces of tourmaline, carbonate, biotite, topaz, cassiterite and zircon. Close inspection of topaz, cassiterite and tourmaline inclusions indicates the majority are unrelated to fractures. Cassiterite, for example, is seen as minute particles (rarely $> 10 \mu$) in "trains" of included vacuoles and topaz particles. Thus, microtextural evidence indicates the cassiterite is primary, at least in part. The most likely inference is that the bulk topazization (and cassiterite mineralisation) is an autometasomatic phenomenon.

In polished section cassiterite and sulphide textural relationships are near-identical to those in 95061. Cassiterite occurs largely as granular to spongy aggregates (to 1mm) more or less randomly disseminated throughout the altered groundmass and pseudomorphed feldspar phenocrysts. Minor traces of rutile are present as inclusions. Few cassiterite-sulphide intergrowths are seen. Marcasite is virtually absent with pyrrhotite being almost entirely replaced by granular, or less commonly "birds-eye" textured pyrite aggregates. There is no detectable chalcopyrite (or stannite) and only extremely rare discrete subhedral grains (to 100μ) of arsenopyrite.

IDENTIFICATION
95079 MBD 3, 71-05m
Topazized Porphyry with Cassiterite

D. Cowan, B. Sc.

CENTRAL MINERALOGICAL SERVICES PTY. LTD.

Date 26th October, 1978

SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)

Job No. CMS 78/10/23 Date Received: 18.10.1978

Reference DPO No. 00188

Sample No. 95218

Nature of Sample: D.D. Core

DESCRIPTION SECTION No. 25746

a. Hand Specimen:

Grey, weakly laminated pelite with pyrite films.

K=stain negative.

b. Microscopic:

This rock is a weakly metasomatised pelite. Primary features are very similar to those of 95062, the sediment comprising essentially a silty shale with sub- to millimetric scale bedding reflected in more shaley and relatively silty bands. Bedding is weakly graded and essentially planar, although frequently disrupted by crosscutting microfractures healed with cloudy sideritic carbonate.

Mineralogy comprises quartz, mainly as silt-sized clastic particles, sericite and subordinate to minor trace amount of detrital muscovite. The rock is incipiently carbonaceous and carries minor traces of pyrite of recrystallised syngenetic character. The coarser carbonate veinlets may be strongly pyritic and stereobinocular examination indicates that this represents degraded (pyritised) secondary pyrrhotite.

Metasomatism is marked by the development of carbonate, largely restricted to the veinlets but also as fine clots throughout the host rock, and by development of minor traces of ultrafine, virtually colourless tourmaline. These effects are rather incipient in comparison with previously described metasomatised pelites and this specimen lacks the "flinty" (marginally hornfelsed) nature of those rocks. There is no detectable tin mineralisation.

D. Cowan, B. Sc.

IDENTIFICATION

95218 MBD 3, 151-1m

Weakly Metasomatised
Pelite

REPORT CMS 78/12/23Mt. Bischoff Dyke Rocks

All the samples were examined in thin-section and polished section; a thin-section was inadvertently prepared of 95668. However, this proved to be advantageous since the rock is significantly mineralised, and cassiterite is preferably identified and studied in thin-section.

95664 (T.S., P.S. 26419) K-feldspar stain test negative.

MBD 2
307.7m

This is a greisenised porphyritic microgranite or quartz porphyry, in which all the feldspar has been replaced by topaz; hence a more precise classification is not possible.

Euhedral quartz phenocrysts up to 3-4 mm in size have survived unchanged, but feldspar phenocrysts are represented by matted aggregates of prismatic topaz. The groundmass is medium-grained (verging on fine-grained) and consists of granular quartz and replacive topaz. Occasional mica flakes have also been replaced, by intergrowths of quartz, sulphides, topaz, fluorite.

Small interstitial patches of siderite occur throughout, as well as being associated with the sulphide patches. No cassiterite was detected in this rock, though this may be due to erratic distribution and sampling problems rather than the absence of cassiterite as such.

The sulphides consist of small euhedral pyrite crystals, irregular patches of pyritised pyrrhotite with relict pyrrhotite textures, and traces of chalcopyrite (one patch measured 400 μ). Fine secondary pyrite forms small networks, rims and atolls surrounding carbonate.

95665 (T.S., P.S. 26420) K-stain test negative.

MBD 3
114.65m

Despite its different hand-specimen appearance, this rock is quite similar to 95664; it is slightly finer-grained and is faintly iron-stained.

Well-defined quartz phenocrysts, and feldspars completely replaced by topaz, are randomly distributed through a fine-grained quartz-topaz groundmass containing small, brownish, iron-stained sericite flakes. There are matted-fibrous patches of fine, iron-stained topaz as well as coarser, prismatic crystals. Sulphides form small aggregates, intergrown with topaz, but fluorite and siderite are absent.

Cassiterite occurs as isolated, dark, cloudy pleochroic grains, rather poorly-defined, enclosed in topaz, and ranging in size from 10 μ to 150 μ ; some is intergrown with sulphides.

The dominant sulphide is coarsely-crystalline, euhedral pyrite. There are small patches of pyritised pyrrhotite, and a few irregular masses of sphalerite, up to 700 μ across, with associated traces of stannite (< 50 μ).

95666

(T.S., P.S. 26421) K-stain test negative.

MBD 4
194 m

This is a greisenised microgranite, containing significant cassiterite; texturally it differs from 95664/5 but the greisenising and other alteration is similar. The rock is termed a microgranite in a broad sense; in the absence of feldspars it cannot be accurately classified.

The rock now consists of interlocking patches of weakly stressed quartz, pseudomorphs of acicular topaz aggregates after feldspar, and interstitial topaz. Isolated larger patches can be regarded as phenocrysts but the rock is not distinctly porphyritic.

Composite patches of sulphide/siderite occur throughout, with minor associated cassiterite; textural relationships would suggest that these composite patches replace topaz and are therefore younger. The relationship of the cassiterite is not absolutely clear but would seem to be replacive towards topaz and associated with sulphide/siderite. The cassiterite is a dark, cloudy, pleochroic variety and ranges in size from 10 μ to 300 μ ; the larger patches are granular aggregates. The relatively poor, granular rather than euhedral development, and the cloudiness, suggest lower-temperature formation, which is in accord with its association with sulphides and siderite.

Sulphides comprise coarse pyrite patches, minor fresh and altered pyrrhotite, occasional arsenopyrite crystals and traces of stannite (< 200 μ) as scattered grains. Small vugs occur lined with pyrite crystals.

95667

(T.S., P.S. 26422) K-stain test negative.

MBD 4
202.2 m

The fabric of this rock resembles that of 95666, and it may be termed a greisenised microgranite; it contains minor cassiterite. The composition and paragenesis are also closely similar.

Occasional larger quartz crystals and topaz pseudomorphs after feldspar qualify as phenocrysts, but on the whole the rock is a fairly even-grained assemblage of quartz and topaz patches. Small and large composite sulphide/siderite patches replace topaz. Minor cassiterite is intergrown with sulphide and/or siderite, as cloudy, dark grains with poorly-delineated boundaries, ranging from 20 μ to 150 μ , with rare aggregates up to 400 μ in size. Cassiterite is particularly closely associated with the siderite.

Sulphides include coarse masses of pyrite and pyritised pyrrhotite, occasional crystals of arsenopyrite up to 2-3 mm in size and relatively conspicuous stannite, as loose aggregates of grains, intergrown with carbonate, in which individual grains are up to 200 μ in size. Stannite comprises perhaps $\frac{1}{2}$ to 1 % of the polished section surface.

95668

(T.S., P. S. 26423) K-stain test negative.

B9
153.6m

This is a very well-mineralised, greisenised quartz porphyry or porphyritic microgranite, closely similar to 95664/5 in terms of its (primary) petrography.

Euhedral quartz phenocrysts, and topaz pseudomorphs after feldspar, are randomly scattered through the rock, set in a medium- to fine-grained mass of granular quartz and topaz. There are occasional, relatively large (1-2 mm) patches of colourless fluorite. The only other minerals present are cassiterite and sulphides. It is perhaps significant that siderite is absent, and suggests that a higher-temperature type of mineralisation occurred.

Cassiterite occurs as aggregates up to 3 mm across, composed of individual smokey-brown crystals ranging from 20 μ to 700 μ in size (few are less than 100 μ); many of these aggregates occur by themselves, i.e. few are associated with sulphide though evidently introduced at the same time. The cassiterite is particularly well-crystallized and coarse, in contrast to that in other rocks in this suite; it should be very easy indeed to upgrade, with high recoveries and concentrate grades.

Granular to massive pyrite occurs in places, with traces of associated stannite up to 100 μ across. Some of the pyrite is intergrown with streaks of marcasite and may represent recrystallized, pyritised pyrrhotite.

95669

(T.S., P.S. 26424) K-stain test negative.

B9
130.8m

This is a mineralised, greisenised granite, resembling 95666/7 but coarser-grained, and contrasting with the porphyries. It contains significant cassiterite, but it is the cloudy, granular variety (as in these rocks), not as well-developed as in 95668.

The rock consists of subhedral to interlocking quartz patches 1-2 mm in size, with associated larger crystals, and fibrous-radiating and acicular crystals of topaz replacing feldspar and some primary quartz. Occasional colourless fluorite patches up to 3 mm are seen; smaller patches are more or less pure fluorite but larger ones contain topaz, sulphide and carbonate. There are large and small composite patches of intergrown sulphide and siderite, as well as more complex intergrowths of sulphide, siderite, topaz and cassiterite.

The cassiterite forms patches up to 3 mm across, with cloudy, granular individuals 20-250 μ in size forming larger clusters, intergrown with siderite, quartz, topaz and fluorite.

Sulphides consist principally of euhedral pyrite crystals and generally large patches of pyritised pyrrhotite (intimately intergrown fine pyrite/marcasite with relict pyrrhotite textures). Traces of stannite occur, as small, irregular grains up to 200 μ in size but commonly smaller.

H.W. Fander, M. Sc.

THE AUSTRALIAN MINERAL DEVELOPMENT LABORATORIES

REPORT AN. 1702/79

QUALITATIVE SPECTROGRAPHIC ANALYSIS

Sample No.	Major	Minor	Heavy Trace (0.1--1%)	Trace (0.01--0.1%)	Faint Trace (0.001--0.01%)	Very Faint Trace (0.0001--0.001%)
MBD1. 98-100 (part of) veins only. 94415	Fe Al Si	Mg	Ca Mn Ti Sn K B	Zn As Cr Na Cu V P Pb Zr	Ga Y La Sc Co Yb Sb Ni Ge Ag Bi Rb W Sr Li	Be
MBD1. 98-100 (Part of) sediments only. 94416	Fe	Zn Si Mn Al	As Cu Pb Sb Ca Sn Mg	Cd Ba W K Ti Zr Bi Ag	Cr In V Co Na Ni Ga	Sc Yb Ge Li
MBD2. 307.1-309.1 porphyry 94444	Fe Si	Al	Sn Mn Cu Cr W Mg As Ca	Y Zn Sb V Co Li Ti Pb Zr K Bi	Na Nb Ge Yb Ga	Be Sc B
MBD3. 138.5-140.5 porphyry. 94474	Si Fe	Al K	Sn Zn	As Mg Cu Ti B Rb Na Pb	Cr Mn Bi Ga Nb V Li Ge Y Cd Sb Zr	Co Ag E Yb
MBD4. 176.5-178.25 sulphide vein 94485	Zn Fe	Si Mn Sn Al	As Pb Cd Sb Cu Mg Ca	Ba Ti Cr W Ni V Co Bi In Zr Na Ga B K Ag	Ge Sc Y Li	

Elements not sought: H F. U. Re Hg

Other elements not detected at limits quoted in attached sheet:

SPECTROGRAPHIC ANALYSIS

Detection-Limit Concentrations of Elements
DC Arc Excitation

Element	%	ppm	Element	%	ppm
Ag	0.00001	0.1	Na	0.005	50
Al	0.02	200	Nb	0.02	20
As	0.005	50	Nd	0.03	300
Au	0.0003	3	Ni	0.0005	5
B	0.001	10	Os	0.001	10
Ba	0.005	50	P	0.01	100
Be	0.0001	1	Pb	0.0001	1
Bi	0.0001	1	Pd	0.001	10
Ca	0.002	20	Pr	0.01	100
Cd	0.003	3	Pt	0.001	10
Ce	0.03	300	Rb	0.001	10
Co	0.0005	5	Re	0.001	10
Cr	0.002	20	Rh	0.0002	2
Cs	0.003	30	Ru	0.0002	2
Cu	0.00005	0.5	Sb	0.003	30
Dy	0.01	100	Sc	0.005	50
Er	0.01	100	Si	0.02	200
Eu	0.005	50	Sm	0.03	300
Fe	0.005	50	Sn	0.0001	1
Ga	0.0001	1	Sr	0.001	10
Gd	0.03	300	Ta	0.01	100
Ge	0.0001	1	Tb	0.01	100
Hf	0.02	200	Te	0.002	20
Hg	0.01	100	Th	0.01	100
Ho	0.01	100	Ti	0.01	100
In	0.001	10	Tl	0.0001	1
Ir	0.0002	2	Tm	0.01	100
K	0.0005	5	U	0.1	1000
La	0.01	100	V	0.001	10
Li	0.0001	1	W	0.005	50
Lu	0.03	300	Y	0.001	10
Mg	0.01	100	Yb	0.005	50
Mn	0.001	10	Zn	0.002	20
Mo	0.0003	3	Zr	0.02	200

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207187

MODEL ANALYSIS OF SERVICE (DATA CERTIFICATE)

ILLUSTRATIVE ANALYSIS : CODE #4

308-1702779

ANALYSIS PERCENT

MBD1 Part of 98-100 94415	MBD1 Part of 98-100 94415	MBD 2 299-301-1 94440	MBD 2 313-4-315-4 94450
SI02 55.51	SI02 55.51	SI02 57.55	SI02 61.06
TI02 .51	TI02 .51	TI02 .03	TI02 .02
AL203 20.49	AL203 1.86	AL203 18.62	AL203 18.50
FE203 9.25	FE203 7.18	FE203 11.09	FE203 7.76
FeO	FeO	FeO	FeO
MNO .37	MNO 3.25	MNO .05	MNO .02
MGO 1.12	MGO 2.47	MGO .05	MGO .07
CAO .86	CAO 1.02	CAO .17	CAO 1.25
NA2O .25	NA2O 2.05	NA2O .05	NA2O .05
K2O .31	K2O <.01	K2O <.01	K2O <.01
P2O5 .07	P2O5 <.01	P2O5 .05	P2O5 .03
LOI 1.32	LOI 1.35	LOI 11.78	LOI 11.33
TOTAL 95.15	TOTAL 94.25	TOTAL 99.75	TOTAL 100.09
H2O+	H2O+	H2O+	H2O+
H2O-	H2O-	H2O-	H2O-
CO2	CO2	CO2	CO2
S03	S03	S03	S03

FEDERAL BUREAU OF INVESTIGATION (DATA CERTIFICATE)

SUBSTRATE ANALYSES : CODE 84

QNS 1702779

ANALYSIS PERCENT

MBD 3 140-5-142-5 94478		MBD 4 204-8-206-8 94900	
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SI02	69.52	SI02	61.82
FI02	.03	FI02	.03
AL203	17.05	AL203	14.97
FE203	5.45	FE203	11.10
FF0		FF0	
AB0	.12	AB0	.10
AB0	.11	BB0	.05
CA0	<.01	CA0	.45
CR20	.07	CR20	.05
CR20	1.25	CR20	<.01
PC05	.02	PC05	.04
LO1	5.50	LO1	11.47
TOTAL	92.05	TOTAL	106.09
		H2O+	
		H2O-	
		CO2	
		SO3	

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MINERALOGICAL ASSESSMENT OF SIX TIN ORE
SAMPLES FROM MT. BISCHOFF, TASMANIA

Metals Exploration Limited
Victoria

3/127/0-GS 2743/79 February 1979

MINERALOGICAL ASSESSMENT OF SIX TIN ORE
SAMPLES FROM MT. BISCHOFF, TASMANIA

1. INTRODUCTION

Six samples of tin ore from Mt. Bischoff, Tasmania, were received from Metals Exploration Limited to determine the tin mineralogy and liberation characteristics. The following samples and assay data were received:

Sample No.	% Sn
94413	0.175
94416	0.43
94425	0.25
94469	0.56
95013	0.092
95679	No assay

Samples 94413-95013 were received as crushed core, while sample 95679 consisted of large rock fragments.

2. PROCEDURE

All samples were crushed to -1 mm (16#) and a portion sized at 0.6, 0.3, 0.15, 0.053 and 0.01 mm. For sample 95679 all weathered surfaces with an ochreous coating were removed before crushing. The sizing was carried out by wet sieving (25, 52, 120, 300 #) except for the 10 micron split which was obtained by sedimentation.

Liberation of tin minerals from light gangue was determined by separating all of the size fractions, except for the -10 micron slimes, in heavy liquids (methylene iodide; sp.gr. = 3.3). Similarly, the liberation of tin minerals from magnetic pyrrhotite was determined for four samples (94413, 94416, 94425 and 95013) by separating the heavy products into magnetic and non-magnetic portions with a hand magnet. Sample 94469 contains only traces of pyrrhotite and sample 95679 is very rich in pyrrhotite and, at the coarser size fractions, contains only magnetic grains. The density and magnetic products were analyzed for tin and the distribution of tin in the various products calculated. Tin minerals locked with light gangue minerals in such a manner that the grain has an average specific gravity below 3.3 would report in the light products and tin minerals locked with pyrrhotite would report in the magnetic products. The heavy products would contain liberated tin minerals and tin minerals locked with other minerals in such a manner that the average specific gravity of the composite grain is greater than 3.3; thus any tin minerals locked with other dense minerals (e.g. sulphides) would report in the heavy products.

The relative proportions and liberation of tin minerals in the heavy products was determined by gross counting. The unliberated tin minerals were classified as to whether they were locked with only one other mineral (binary grains) or more than one other mineral (ternary (+) grains). In samples 94416, 94425 and 95013 the proportion of the stannite locked in ternary (+) grains was further subdivided on the presence of sphalerite in these grains since there is an intimate relationship between sphalerite and stannite in these samples. The gross counting gives the relative proportions of tin minerals in volume percentage, from which weight percentages and tin distribution were calculated using specific gravities and tin contents. For cassiterite a stoichiometric tin content (78.6% Sn) was assumed, but for stannite and franckeite tin contents determined with the electron microprobe were used.

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 Mineralogy was determined by X-ray diffraction and microscopic examination of various heavy liquid and magnetic products. Bulk mineralogy was determined by running an X-ray diffractogram of each crushed sample. The separation products were examined by transmitted light in temporary oil mounts. Polished sections (PS27123-72, 27183-8) of the magnetic and heavy products and the -300 +150 micron light products were also examined in reflected light. Selected minerals were identified by X-ray diffraction powder photography or examination with the electron microprobe.

The tin contents of stannite and franckeite were determined by electron microprobe analysis. All other possible tin bearing minerals present in these samples, including sulphides (sphalerite, chalcopyrite, galena, pyrite, pyrrhotite, arsenopyrite), siderite and garnet were also analyzed for tin with the electron microprobe.

3. MINERALOGY

The mineralogy of all six samples is summarized in Table 1 for ease of comparison between samples. The gangue minerals have been classified as major (>20% of sample), minor (about 10% of sample), accessory (about 1% of sample) and trace (below 0.5% of sample) and are listed in decreasing abundance within these categories. Wherever a mineral was identified in a sample it is included in the list but since the emphasis of this report is on tin mineralization, other minerals present at trace to accessory levels were not searched for, so the lack of a mineral in the list of a particular sample would not mean it is not present at such a low level.

3.1 Tin minerals

The two major tin minerals in these samples are cassiterite and stannite, although franckeite is also present in four samples, being of significance only in sample 94416. A small proportion of the sphalerite and chalcopyrite in sample 94416 also contains trace (less than 0.4%) tin.

The proportion of tin minerals in the heavy products is given in Table 2 and demonstrates the variations in cassiterite/stannite ratios. Samples 94416, 94425 and 95013 have similar stannite contents (about 70% of tin minerals by weight) and low cassiterite contents. In addition, franckeite comprises over 20% of the tin minerals by weight in sample 94416. Samples 94413, 94469 and 95679 contain cassiterite as the major tin-bearing phase, with a much smaller proportion of stannite. Due to the high tin content of cassiterite, even those samples with the lowest cassiterite content contain over half of the tin in cassiterite.

Although these data refer strictly to the heavy products, they would also reflect the tin mineralogy of the total sample in a qualitative, if not quantitative, manner. For samples (94416, 94425, 94469 and 95679) in which most of the tin is in the heavy products these data would accurately reflect the mineralogical tin distribution. Samples 94413 and 95013 contain a high proportion of tin in the light products and the cassiterite/stannite ratio determined for the heavy products would only apply to the whole sample if there was not selective concentration of one mineral in the heavy products. The -300 +150 micron light products of each of these two samples were examined and found to have similar cassiterite/stannite ratios to the heavy products, but quantitative work was not carried out to determine whether they are actually the same. It is believed that the assumption that the cassiterite/stannite ratio of the heavy products closely reflects cassiterite/stannite ratio of the whole sample is a valid one for all samples.

The stannite contains some zinc and appears to have a tin content slightly lower than the 27.6% present in stoichiometric Cu_2FeSnS_4 . Electron microprobe point analyses of stannite grains for tin gave the following results:

<u>Sample No.</u>	<u>Point Analyses (%Sn)</u>	<u>Average %Sn</u>
94413	24.8, 25.9, 26.5	25.7
94416	22.8, 24.1, 25.2, 25.4, 25.8, 26.2, 26.5	26.2
94425	25.9	-
95013	26.8, 27.2	27.0
95679	25.5, 26.2, 26.8, 27.2	26.4

Stannites in sample 94469 were not analyzed.

Electron microprobe point analyses for tin in franckeite of sample 94416 gave the following results:

<u>Point Analyses (%Sn)</u>	<u>Av. %Sn</u>
6.8, 7.5, 8.5, 8.9, 9.2	8.2

This gives a much lower tin content than for stoichiometric franckeite ($Pb_5Sn_3Sb_3S_{14}$) which has 17.1% tin and also a lower content than published franckeite analyses which range down to about 12% tin. It is possible that this mineral is a lead, tin, antimony sulphosalt other than franckeite. An X-ray powder photograph gave a very poorly developed pattern similar to franckeite but positive identification could not be made because of the weak character of the pattern.

Some sphalerite grains in sample 94416 contain traces of tin ranging from the detection limit (0.1%Sn) up to 0.4%Sn, although most of the sphalerite in this sample contains no detectable tin. This tin could represent either tin in solid solution (possibly as a stannite molecule) or tin in a very finely exsolved tin mineral below the level of discrimination of the electron microprobe. The stannite in this sample (as well as samples 94425 and 95013) typically show intimate intergrowths with sphalerite, suggesting an exsolution origin.

One chalcopyrite grain in 94416 containing barely detectable tin (0.1%) was also found with the electron microprobe. All the other chalcopyrite in this and other samples contains no detectable tin.

Examination of other minerals in these samples failed to detect any tin. The following minerals were examined and would contain less than 0.1% tin:

<u>Sample No.</u>	<u>Minerals Examined</u>
94413	Pyrite, pyrrhotite, sphalerite, siderite, garnet
94416	Pyrite, pyrrhotite, arsenopyrite, galena, siderite, garnet, jamesonite
94425	Pyrite, pyrrhotite, arsenopyrite, sphalerite, chalcopyrite, siderite
94469	Pyrite, arsenopyrite
95013	Pyrite, pyrrhotite, arsenopyrite, sphalerite, galena, bismuthinite, chalcopyrite, siderite, garnet
95679	Pyrrhotite, sphalerite, chalcopyrite, arsenopyrite

3. Gangue minerals

For this report gangue minerals consist of all minerals which do not contain tin, including minerals of possible economic significance such as base metal sulphides (sphalerite, chalcopryrite, galena), bismuthinite and wolframite.

The samples show a variation in bulk mineralogy with most (94413, 94425, 94469 and 95013) being quartz-rich. Sample 94416 is largely a siderite-pyrrhotite rock and sample 95679 consists mainly of pyrrhotite with smaller amounts of quartz, sellaite and plagioclase.

Pyrrhotite is present in all of the samples but in all shows at least some alteration to a secondary (probably supergene) pyrite and marcasite which exhibits colloform and lamellar structures. Most of the samples also contain 'primary' pyrite and the relative proportions of these pyrite types is highly variable from sample to sample. The pyrrhotite in samples 94416 and 95013 shows incipient marginal alteration to pyrite and the pyrrhotite in sample 95679 shows no marginal alteration. Samples 94413, 94425 and 94469 contain the most highly altered pyrrhotite.

The major base metal sulphide present in these samples is sphalerite which, in samples 94416, 94425 and 95013, tends to form intimate intergrowths with stannite believed to be of exsolution origin. Galena and chalcopryrite are also present in most samples at trace levels. Other minerals of economic significance noted at trace levels are wolframite in sample 95679 and bismuth sulphides in sample 95013.

4. LIBERATION OF TIN MINERALS

The results of the mineral separation and assay procedure are given in Tables 3 to 8. The tables show the size distribution of the crushed samples and the size distribution of tin, as well as the distribution of the sample and tin between the density and magnetic separation products. The calculated head assays agree well with the assays of the head samples given by Metals Exploration.

All of the samples show a general increase in the proportion of tin in the non-magnetic heavy products, reflecting better liberation of tin minerals from both light gangue and magnetic pyrrhotite at finer particle sizes. The proportion of tin locked with light gangue varies greatly between samples being greatest for sample 94413 (46.2% of the tin in light products) and least for sample 94416 which has only 1.5% of the tin in light products. The proportion of tin locked with pyrrhotite in the magnetic products is always low, reaching a maximum of 6.9% for sample 95013. No magnetic separation was carried out on the pyrrhotite-rich sample (95679) and this sample also contains a significant proportion of the tin minerals locked with pyrrhotite.

The locking characteristics of tin minerals in the heavy products are given in Tables 9 to 11. The locking of cassiterite and stannite was determined in all samples and is summarized in Tables 9 and 10 respectively. Table 11 gives the locking of franckeite in sample 94416. In all cases the tin minerals show much better liberation at finer particle sizes and the proportion of unliberated tin minerals in ternary (+) grains decreases at finer particle size. The cassiterite typically shows similar or slightly better liberation than stannite and franckeite, although some size fractions contain a higher proportion of locked cassiterite than locked stannite.

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The unliberated cassiterite is locked mainly with non-opaque gangue minerals, showing significant locking with sulphide minerals only for sample 95679 which is a pyrrhotite-rich sample and contains a significant proportion of the cassiterite locked with pyrrhotite. Except for sample 95679 only negligible amounts of cassiterite are locked in binary grains with sulphide minerals, although most of the cassiterite locked in ternary (+) grains are locked with non-opaques and sulphides.

The unliberated stannite shows somewhat more variable locking characteristics, being locked with non-opaque gangue in samples 94413 and 94469 and pyrrhotite in sample 95679. In these samples the unliberated stannite is locked with the same minerals as cassiterite, but in samples 94416, 94425 and 95013 a large proportion of the unliberated stannite is locked with sphalerite either as binary grains or as ternary (+) grains. The ternary (+) grains in these samples also typically consist of intimate sphalerite-stannite intergrowths locked with other minerals. Except for sphalerite in samples 94416, 94425 and 95013 and pyrrhotite in sample 95679 the stannite in these samples is not locked with other sulphides to any significant degree, other than a small percentage (2%) locked with arsenopyrite in sample 95679.

The unliberated franckeite in sample 94416 is locked mainly with non-opaque gangue.

5. OVERALL TIN DISTRIBUTION

The distribution of tin in liberated minerals and in locked minerals calculated from the data in sections 3 and 4 of this report is summarized in Table 12. This table also shows the tin distribution between locked and liberated tin minerals for each size fraction to demonstrate the changes in liberation with size.

TABLE 1: MINERALOGY OF SAMPLES

Sample No.	Mineralogy ⁽¹⁾				
	Tin Minerals	Other Minerals			
		Major (>20%)	Minor (~10%)	Accessory (~1%)	Trace (<0.5%)
94413	Cassiterite Stannite Franckeite	Quartz Muscovite	Plagioclase Siderite	Pyrrhotite ^(2a) Pyrite Garnet	Rutile Hematite (Martite) Sphalerite Galena Marcasite Fluorite
94416	Stannite Franckeite Cassiterite ⁽³⁾ Sphalerite ⁽³⁾ Chalcopyrite ⁽³⁾	Siderite Pyrrhotite ^(2b)	Quartz Pyrite	Sphalerite Garnet	Marcasite Arsenopyrite Galena Chalcopyrite Fluorite Jamesonite
94425	Stannite Cassiterite Franckeite	Quartz Siderite Muscovite	Pyrrhotite ^(2a) Pyrite	Plagioclase Arsenopyrite Sphalerite	Marcasite Chalcopyrite Galena Sellaite Fluorite
94469	Cassiterite Stannite	Quartz	Pyrite	Calcite Marcasite	Arsenopyrite Pyrrhotite ^(2d)
95013	Stannite Cassiterite Franckeite	Quartz Muscovite Siderite	Plagioclase Pyrrhotite ^(2a)	Fluorite Pyrite Sphalerite Calcite	Garnet Marcasite Arsenopyrite Chalcopyrite Galena Bismuthinite ⁽⁴⁾
95679	Cassiterite Stannite	Pyrrhotite ^(2c)	Quartz Sellaite Plagioclase	Sphalerite Calcite	Chalcopyrite Galena Arsenopyrite Wolframite

Footnotes:

1. Minerals listed in order of decreasing abundance.
2. Pyrrhotite type --
 - 2a - poorly crystalline monoclinic
 - 2b - monoclinic pyrrhotite
 - 2c - about 2/3rds monoclinic and 1/3rd hexagonal
 - 2d - pyrrhotite type not determined
3. Some of sphalerite and chalcopyrite in this sample contains barely detectable tin contents (0.1-0.4%). Other grains of sphalerite and chalcopyrite contain no detectable tin (<0.1%).
4. Bismuthinite is used to include various bismuth sulphides with differing bismuth and sulphur contents.

TABLE 2: TIN MINERALS IN HEAVY PRODUCTS

Sample	Size Fraction (microns)	Relative Proportions of Tin Minerals in Size Fraction						Mineralogical Distribution of Tin					
		Vol. %			Wt. % (1)			In Size Fraction (2)			In Total Heavy Products		
		Cassiterite	Stannite	Franchekite	Cassiterite	Stannite	Franchekite	Cassiterite	Stannite	Franchekite	Cassiterite	Stannite	Franchekite
94413	+600	68	32	-	77	23	-	91	9	-	23	2	-
	-600+300	79	21	-	86	14	-	94	6	-	20	1	-
	-300+150	76	24	-	83	17	-	94	6	-	12	1	-
	-150+53	78	22	-	85	15	-	94	6	-	14	1	-
	-53+10	71	29	-	79	21	-	92	8	-	24	2	-
Total Heavy Pr.	(73)	(27)	(-)	(81)	(19)	(-)	(93)	(7)	(-)	(93)	(7)	(-)	
94416	+600	4	78	18	6	71	23	18	74	8	3	13	2
	-600+300	5	76	19	8	69	23	23	69	8	6	18	2
	-300+150	3	86	11	5	81	14	14	81	5	2	13	1
	-150+53	3	80	17	4	74	22	13	79	8	2	14	1
	-53+10	3	76	21	5	69	26	15	75	10	4	17	2
Total Heavy Pr.	(4)	(78)	(18)	(5)	(72)	(23)	(17)	(75)	(8)	(17)	(75)	(8)	
94425	+600	20	77	3	28	69	3	53	46	1	6	5	-
	-600+300	19	80	1	27	72	1	52	48	-	11	10	-
	-300+150	21	79	-	29	71	-	55	45	-	10	8	-
	-150+53	17	83	-	25	75	-	51	49	-	10	10	-
	-53+10	17	83	-	24	76	-	52	48	-	16	14	-
Total Heavy Pr.	(20)	(77)	(1r)	(28)	(72)	(1r)	(53)	(47)	(1r)	(53)	(47)	(1r)	
94469	+600	96	4	-	98	2	-	99	1	-	8	-	-
	-600+300	92	8	-	95	5	-	98	2	-	13	-	-
	-300+150	94	6	-	96	4	-	99	1	-	16	-	-
	-150+53	93	7	-	96	4	-	98	2	-	30	1	-
	-53+10	80	20	-	86	14	-	95	5	-	30	2	-
Total Heavy Pr.	(91)	(9)	(-)	(94)	(6)	(-)	(97)	(3)	(-)	(97)	(3)	(-)	
95013	+600	19	81	-	27	73	-	52	48	-	6	5	-
	-600+300	17	83	-	25	75	-	49	51	-	8	8	-
	-300+150	26	74	-	35	65	-	62	38	-	8	5	-
	-150+53	21	79	-	30	70	-	56	44	-	10	8	-
	-53+10	22	78	-	30	70	-	56	44	-	23	19	-
Total Heavy Pr.	(20)	(80)	(-)	(29)	(69)	(-)	(55)	(45)	(-)	(55)	(45)	(-)	
95679	+600	67	33	-	76	24	-	90	10	-	18	2	-
	-600+300	75	25	-	82	18	-	93	7	-	22	2	-
	-300+150	77	23	-	84	16	-	94	6	-	13	1	-
	-150+53	80	20	-	86	14	-	95	5	-	15	1	-
	-53+10	83	17	-	89	11	-	96	4	-	25	1	-
Total Heavy Pr.	(75)	(25)	(-)	(82)	(18)	(-)	(93)	(7)	(-)	(93)	(7)	(-)	

1. Calculated from volume percent using 6.9, 4.4 and 5.9 as the specific gravities of cassiterite, stannite and franchekite respectively.
 2. Calculated assuming tin contents of 78.6%, 27% and 9% for cassiterite, stannite and franchekite respectively.

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TABLE 3 . TIN DISTRIBUTION IN SAMPLE 94413

SIZE FRACTION (MILLIMETRES)	SG OR MAG FRACTION	IN SIZE FRACTIONS			IN HEAD SAMPLE		CUMULATIVE DATA		
		WT %	TIN ASSAY %	DISTRN %	WT %	TIN DISTRN %	WEIGHT %	ASSAY %	(U)
+ .600	< 3.30	92.18	.105	66.1	38.82	24.76	38.82	.105	24.
	< .00	.91	.330	2.0	.38	.77	.38	.330	.
	> .00	6.91	.675	31.8	2.91	11.93	2.91	.675	11.
	TOTAL	100.00	(.146)	100.0	42.11	37.45	42.11	.146	37.
.600 + .300	< 3.30	90.89	.089	54.4	24.24	13.11	63.06	.099	37.
	> 3.30 M	1.59	.340	3.6	.42	.88	.81	.335	1.
	> 3.30 NM	7.52	.930	42.0	2.01	10.12	4.91	.738	22.
	TOTAL	100.00	(.149)	100.0	26.67	24.10	68.78	.147	61.
.300 + .150	< 3.30	89.29	.072	41.0	10.37	4.53	73.43	.095	42.
	> 3.30 M	2.58	.275	4.5	.30	.50	1.10	.319	2.
	> 3.30 NM	8.15	1.050	54.5	.95	6.03	5.86	.789	28.
	TOTAL	100.00	(.157)	100.0	11.61	11.07	80.39	.149	72.
.150 + .053	< 3.30	85.25	.054	23.6	7.08	2.32	80.50	.091	44.
	> 3.30 M	3.94	.155	3.1	.33	.31	1.43	.282	2.
	> 3.30 NM	10.81	1.320	73.2	.90	7.19	6.76	.859	35.
	TOTAL	100.00	(.195)	100.0	8.30	9.82	88.69	.153	82.
.053 + .010	< 3.30	73.64	.043	10.1	5.66	1.48	86.17	.088	46.
	> 3.30 M	7.89	.140	3.5	.61	.52	2.04	.239	2.
	> 3.30 NM	18.48	1.460	86.3	1.42	12.60	8.18	.964	47.
	TOTAL	100.00	(.312)	100.0	7.69	14.60	96.38	.166	97.
TOTALS FOR ABOVE		89.40	(.088)	47.6					
SIZE FRACTIONS		2.11	(.239)	3.1					
> 3.30 NM		8.49	(.964)	49.3					
OVERALL TOTALS..		96.38	(.166)	97.0					
SLIMES		3.62	.135	3.0					
TOTAL		100.00	(.165)	100.0					

CALCULATED HEAD ASSAY= .165%

KEY: M = MAGNETIC
 NM = NON-MAGNETIC

TABLE 4. TIN DISTRIBUTION IN SAMPLE 24416

SIZE FRACTION (MILLIMETRES)	SG OR MAG FRACTION	IN SIZE FRACTIONS			IN HEAD SAMPLE		CUMULATIVE DATA		
		WT %	TIN ASSAY %	DISTN %	WT %	TIN DISTN %	WEIGHT %	ASSAY %	DISTN %
.600	< 3.30	18.27	.005	3.4	4.31	.65	4.31	.066	1.0
	> 3.30 M	36.10	.094	9.5	8.51	1.83	8.51	.094	1.0
	> 3.30 NM	45.63	.695	87.2	10.75	16.85	10.75	.685	16.0
	TOTAL	100.00	(.359)	100.0	23.57	19.36	23.57	.359	19.0
.600 + .300	< 3.30	16.22	.055	2.2	4.55	.57	8.85	.060	1.0
	> 3.30 M	36.12	.051	4.5	10.13	1.18	18.64	.071	3.0
	> 3.30 NM	47.66	.805	93.3	13.37	24.65	24.12	.751	41.0
	TOTAL	100.00	(.911)	100.0	28.05	26.41	51.61	.387	45.0
.300 + .150	< 3.30	13.93	.036	1.2	2.29	.19	11.14	.055	1.0
	> 3.30 M	35.34	.022	1.9	5.80	.29	24.44	.059	3.0
	> 3.30 NM	50.73	.800	96.9	8.32	15.26	32.44	.764	56.0
	TOTAL	100.00	(.849)	100.0	16.41	15.74	68.02	.395	61.0
.150 + .053	< 3.30	10.02	.030	.7	1.59	.11	12.73	.052	1.0
	> 3.30 M	34.22	.013	1.1	5.52	.16	29.96	.051	3.0
	> 3.30 NM	55.16	.750	98.2	8.75	15.24	41.19	.763	72.0
	TOTAL	100.00	(.827)	100.0	15.86	15.51	83.88	.401	77.0
.053 + .016	< 3.30	1.79	.023	.1	.25	.02	12.99	.052	1.0
	> 3.30 M	7.03	.011	.1	1.00	.03	30.96	.049	3.0
	> 3.30 NM	91.18	.700	99.8	12.98	20.82	54.17	.748	92.0
	TOTAL	100.00	(.840)	100.0	14.24	20.87	98.12	.435	97.0
TOTALS FOR ABOVE SIZE FRACTIONS		< 3.30	13.24	(.052)	1.6				
		> 3.30 M	31.55	(.049)	3.6				
		> 3.30 NM	55.21	(.748)	94.9				
OVERALL TOTALS..		SANDS	98.12	(.435)	97.9				
		SLIMES	1.88	.490	2.1				
		TOTAL	100.00	(.436)	100.0				

CALCULATED HEAD ASSAY= .436%

KEY: M = MAGNETIC
NM = NON-MAGNETIC

TABLE 5. TIN DISTRIBUTION IN SAMPLE 94425

SIZE FRACTION (MILLIMETRES)	SG OR MAG FRACTION	--- IN SIZE FRACTIONS ---			IN HEAD SAMPLE		CUMULATIVE DATA		
		WT %	TIN ASSAY %	DISTR %	WT %	TIN DISTR %	WEIGHT %	ASSAY %	DISTR %
.600	< 3.30	90.15	.047	39.9	26.10	6.40	26.10	.047	6.4
	> 3.30 M	2.36	.265	5.9	.68	.95	.68	.265	5.9
	> 3.30 NM	7.49	.770	54.2	2.17	8.71	2.17	.770	8.7
	TOTAL	100.00	(.106)	100.0	28.95	16.06	28.95	.106	16.0
.600 + .300	< 3.30	87.67	.043	23.7	24.19	5.43	50.29	.045	11.8
	> 3.30 M	2.95	.205	3.8	.81	.87	1.50	.232	1.8
	> 3.30 NM	9.39	1.230	72.5	2.59	10.63	4.76	1.021	25.3
	TOTAL	100.00	(.159)	100.0	27.60	22.93	56.54	.132	38.9
.300 + .150	< 3.30	84.38	.036	13.4	11.50	2.16	61.79	.043	13.8
	> 3.30 M	3.74	.150	2.6	.51	.43	2.01	.214	2.6
	> 3.30 NM	11.88	1.060	83.9	1.62	13.52	6.38	1.168	38.8
	TOTAL	100.00	(.226)	100.0	13.63	16.10	70.17	.150	55.0
.150 + .053	< 3.30	79.74	.029	7.7	8.75	1.32	70.54	.042	15.0
	> 3.30 M	4.56	.094	1.4	.50	.25	2.51	.190	2.6
	> 3.30 NM	15.70	1.790	90.9	1.72	15.64	8.10	1.289	54.0
	TOTAL	100.00	(.301)	100.0	10.97	17.21	81.14	.171	72.0
.053 + .010	< 3.30	69.70	.029	5.0	8.05	1.22	78.58	.040	16.0
	> 3.30 M	10.37	.099	2.3	1.20	.56	3.70	.158	3.0
	> 3.30 NM	19.94	1.860	92.7	2.30	22.59	10.40	1.420	77.0
	TOTAL	100.00	(.404)	100.0	11.55	24.37	92.69	.200	96.0
TOTALS FOR ABOVE		84.78	(.040)	17.1					
SIZE FRACTIONS		4.09	(.156)	3.2					
> 3.30 NM		11.22	(1.420)	79.7					
OVERALL TOTALS..		SANDS	92.69	(.200)	96.7				
		SLIMES	7.31	.087	3.3				
		TOTAL	100.00	(.192)	100.0				

CALCULATED HEAD ASSAY= .192%

KEY: M = MAGNETIC
NM = NON-MAGNETIC

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TABLE 6. TIN DISTRIBUTION IN SAMPLE 98469

SIZE FRACTION (MILLIMETRES)	SPEC GRAV FRACTION	--- WT %	--- IN SIZE FRACTIONS ---		IN HEAD SAMPLE		CUMULATIVE DATA		DI
			--- TIN ASSAY %	--- DISTN %	WT %	TIN DISTN %	WEIGHT %	ASSAY %	
+ .600	< 3.30	76.17	.074	14.6	9.16	1.29	9.16	.074	1.
	> 3.30	23.83	1.380	85.4	2.87	7.55	2.87	1.380	7.
	TOTAL	100.00	(.385)	100.0	12.03	8.84	12.03	.385	8.
.600 + .300	< 3.30	72.62	.067	10.8	11.50	1.48	20.76	.070	2.
	> 3.30	27.38	1.470	89.2	4.37	12.27	7.24	1.434	19.
	TOTAL	100.00	(.451)	100.0	15.97	13.75	28.00	.423	22.
.300 + .150	< 3.30	72.66	.046	5.6	10.31	.90	31.07	.062	3.
	> 3.30	27.34	2.050	94.4	3.88	15.18	11.12	1.649	38.
	TOTAL	100.00	(.594)	100.0	14.19	16.08	42.18	.480	38.
.150 + .053	< 3.30	74.49	.013	2.1	24.82	.62	55.88	.040	4.
	> 3.30	25.51	1.760	97.9	8.50	28.55	19.61	1.697	63.
	TOTAL	100.00	(.459)	100.0	33.31	29.16	75.50	.471	67.
.053 + .010	< 3.30	42.14	.011	.6	8.95	.19	64.83	.036	4.
	> 3.30	57.86	1.250	99.4	12.28	30.01	31.90	1.537	94.
	TOTAL	100.00	(.745)	100.0	21.23	30.20	96.73	.531	98.
TOTALS FOR ABOVE SIZE FRACTIONS	< 3.30	67.02	(.036)	4.6					
	> 3.30	32.98	(1.537)	95.4					
OVERALL TOTALS..	SANDS	96.73	(.531)	98.0					
	SLIMES	3.27	.315	2.0					
	TOTAL	100.00	(.524)	100.0					

CALCULATED HEAD ASSAY= .524%

7. TIN DISTRIBUTION IN SAMPLE 95013

SIZE FRACTION (MICRONS)	SAND OR MAG FRACTION	--- IN SIZE FRACTIONS ---			IN HEAD SAMPLE		CUMULATIVE DATA		
		WT %	TIN ASSAY %	DISTN %	WT %	TIN DISTN %	WEIGHT %	ASSAY %	DISTN %
+ .600	< 3.30	92.33	.049	69.4	28.60	15.57	28.80	.049	15.5
	> 3.30 M	1.87	.215	6.2	.58	1.38	.58	.215	1.3
	> 3.30 NM	5.60	.275	24.5	1.81	5.49	1.81	.275	5.4
	TOTAL	100.00	(.065)	100.0	31.20	22.44	31.20	.065	22.4
.600 + .300	< 3.30	90.00	.047	54.1	21.35	11.07	50.15	.048	26.0
	> 3.30 M	2.99	.195	7.4	.71	1.52	1.29	.204	2.9
	> 3.30 NM	6.92	.435	38.5	1.64	7.87	3.45	.351	13.3
	TOTAL	100.00	(.076)	100.0	23.70	20.46	54.89	.071	42.4
.300 + .150	< 3.30	84.89	.039	35.2	10.10	4.34	60.25	.047	30.4
	> 3.30 M	5.23	.155	9.2	.62	1.13	1.91	.191	4.0
	> 3.30 NM	9.88	.530	55.7	1.18	6.87	4.63	.397	20.2
	TOTAL	100.00	(.094)	100.0	11.89	12.35	66.79	.075	55.0
.150 + .053	< 3.30	77.32	.030	20.8	7.71	2.55	67.95	.045	33.4
	> 3.30 M	8.54	.116	8.4	.85	1.03	2.77	.166	5.0
	> 3.30 NM	14.14	.500	70.8	1.41	8.70	6.03	.435	28.4
	TOTAL	100.00	(.112)	100.0	9.97	12.29	76.75	.080	67.0
.053 + .010	< 3.30	72.05	.028	14.4	12.68	3.92	80.63	.042	37.4
	> 3.30 M	9.26	.100	6.5	1.63	1.80	4.40	.142	6.0
	> 3.30 NM	18.69	.590	78.9	3.29	21.39	9.32	.489	50.0
	TOTAL	100.00	(.140)	100.0	17.60	27.11	94.35	.091	94.0
TOTALS FOR ABOVE		85.46	(.042)	39.6					
SAND FRACTIONS		4.66	(.142)	7.3					
> 3.30 NM		9.38	(.489)	53.2					
OVERALL TOTALS..		94.35	(.091)	94.6					
SLICES		5.65	.065	5.4					
TOTAL		100.00	(.091)	100.0					

CALCULATED HEAD ASSAY= .091%

M = MAGNETIC
NM = NON-MAGNETIC

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TABLE 8. TIN DISTRIBUTION IN SAMPLE 95679

SIZE FRACTION (MILLIMETRES)	SPEC GRAV FRACTION	--- IN SIZE FRACTIONS ---			IN HEAD SAMPLE		CUMULATIVE DATA		
		WT %	--- TIN --- ASSAY %	DISTN %	WT %	TIN DISTN %	WEIGHT %	ASSAY %	DISTN %
+ .600	< 3.30	13.74	.855	13.3	2.21	2.53	2.21	.855	2.53
	> 3.30	85.26	.865	86.7	13.89	16.46	13.89	.885	16.46
	TOTAL	100.00	(.881)	100.0	16.10	18.99	16.10	.881	18.99
.600 + .300	< 3.30	19.54	.815	19.5	4.56	4.98	6.74	.828	7.41
	> 3.30	80.32	.825	80.5	18.63	20.58	32.52	.851	37.99
	TOTAL	100.00	(.823)	100.0	23.19	25.56	39.29	.847	44.40
.300 + .150	< 3.30	21.80	.600	22.5	4.39	3.53	11.17	.738	11.94
	> 3.30	78.20	.675	77.5	15.76	12.13	48.27	.761	49.87
	TOTAL	100.00	(.660)	100.0	20.15	15.66	59.44	.756	60.81
.150 + .053	< 3.30	19.12	.355	14.0	4.36	2.13	15.53	.633	13.06
	> 3.30	80.88	.530	86.0	18.46	13.10	66.73	.697	62.96
	TOTAL	100.00	(.498)	100.0	22.82	15.23	82.26	.685	75.02
.053 + .010	< 3.30	16.26	.295	4.6	2.74	1.08	18.27	.583	14.14
	> 3.30	83.74	1.200	95.4	14.08	22.63	80.82	.785	84.18
	TOTAL	100.00	(1.053)	100.0	16.82	23.71	99.08	.747	99.32
TOTALS FOR ABOVE SIZE FRACTIONS		18.44	(.543)	14.4					
		81.56	(.785)	85.6					
OVERALL TOTALS..		SANDS	99.08	(.747)	99.2				
		SLIMES	.92	.590	.8				
		TOTAL	100.00	(.747)	100.0				

CALCULATED HEAD ASSAY= .747%

TABLE 9: LOCKING OF CASSITERITE IN HEAVY PRODUCTS

Sample	Size Fraction (microns)	Liberated	Locked in Binary Grains with		Locked in Ternary (+) Grains
			Non-opaques	Pyrrhotite	
94413	+600	-	34	-	66
	-600+300	15	72	-	13
	-300+150	28	62	-	10
	-150+53	54	45	-	1
	-53+10	93	7	-	-
	Total Heavy Products	(40)	(41)	(-)	(19)
94416	+600	-	71	-	29
	-600+300	29	57	-	14
	-300+150	40	60	-	-
	-150+53	33	67	-	-
	-53+10	75	25	-	-
	Total Heavy Products	(30)	(60)	(-)	(10)
94425	+600	7	93	-	-
	-600+300	50	50	-	-
	-300+150	41	59	-	-
	-150+53	70	30	-	-
	-53+10	86	14	-	-
	Total Heavy Products	(57)	(43)	(-)	(-)
94469	+600	-	100	-	-
	-600+300	19	72	-	9
	-300+150	62	38	-	-
	-150+53	84	16	-	-
	-53+10	86	14	-	-
	Total Heavy Products	(65)	(34)	(-)	(1)
95013	+600	-	100	-	-
	-600+300	-	100	-	-
	-300+150	30	59	-	11
	-150+53	64	36	-	-
	-53+10	95	5	-	-
	Total Heavy Products	(57)	(42)	(-)	(1)
95679	+600	2	3	7	88
	-600+300	3	17	17	63
	-300+150	6	29	25	40
	-150+53	15	41	28	16
	-53+10	90	8	2	-
	Total Heavy Products	(29)	(17)	(12)	(42)

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TABLE 10: LOCKING OF STANNITE IN HEAVY PRODUCTS

Sample	Size Fraction (microns)	Locked in Binary Grains with					Locked in Ternary (+) Grains	
		Liberated	Non-opaques	Pyrite or Arsenopyrite	Pyrrhotite	Sphalerite		
94413	+600	-	27	-	-	-	73	
	-600+300	-	79	-	-	-	21	
	-300+150	3	69	-	-	-	28	
	-150+53	36	64	-	-	-	-	
	-53+10	68	32	-	-	-	-	
Total Heavy Products	(23)	(47)	(-)	(-)	(-)	(30)		
94416	+600	-	6	-	-	17	58	19
	-600+300	15	19	-	-	26	33	7
	-300+150	26	8	1	-	33	30	2
	-150+53	44	15	-	-	28	11	2
	-53+10	54	-	1	-	43	2	-
Total Heavy Products	(24)	(11)	(Tr)	(-)	(27)	(31)	(7)	
94425	+600	40	24	4	-	14	11	7
	-600+300	47	-	4	-	28	16	5
	-300+150	70	3	5	-	16	5	1
	-150+53	74	1	-	-	21	3	1
	-53+10	84	-	2	-	14	-	-
Total Heavy Products	(67)	(3)	(2)	(-)	(17)	(8)	(3)	
94469	+600	-	100	-	-	-	-	-
	-600+300	-	100	-	-	-	-	-
	-300+150	73	27	-	-	-	-	-
	-150+53	60	40	-	-	-	-	-
	-53+10	100	-	-	-	-	-	-
Total Heavy Products	(80)	(20)	(-)	(-)	(-)	(-)	(-)	
95013	+600	-	45	-	-	24	10	21
	-600+300	-	17	-	-	31	35	17
	-300+150	7	20	-	-	36	23	14
	-150+53	31	12	-	-	49	4	4
	-53+10	55	5	-	-	39	1	-
Total Heavy Products	(29)	(16)	(-)	(-)	(32)	(13)	(10)	
95679	+600	-	-	-	-	-	-	100
	-600+300	-	-	-	5	-	-	95
	-300+150	9	44	-	17	-	-	30
	-150+53	10	65	-	10	-	-	15
	-53+10	70	12	-	12	-	-	6
Total Heavy Products	17	(18)	(-)	(2)	(-)	-	(63)	

TABLE 11: LOCKING OF FRANCKEITE IN HEAVY PRODUCTS
OF SAMPLE 94416

Size Fraction (microns)	Liberated	Locked in Binary Grains with Non-opaque Gangue	Locked in Ternary (+) Grains
+600	-	29	71
-600+300	-	83	17
-300+150	12	65	23
-150+53	33	56	11
-53+10	84	16	-
Total Heavy Products	(31)	(49)	(20)

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TABLE 12: OVERALL DISTRIBUTION OF TIN

Sample	Size Fraction (microns)	Tin Distribution In Sample						Tin Distribution In Size Fractions					Total Lib. Tin	Tin In Locked Minerals
		% Locked with Light Gauge In Light Products (1)	% Locked with Pyrrhotite In Magnetic Products (1)	In Heavy Products (2)			Liberated Tin In							
				Cassiterite Lib.	Stannite Lock.	Frankelite Lib.	Cassiterite Lib.	Stannite Lock.	Frankelite Lib.					
94413	+600	24.8	0.8	-	10.8	-	1.1	-	-	-	-	-	-	100
	-600+300	13.1	0.9	1.4	8.1	-	0.6	-	-	6	-	-	6	94
	-300+150	4.5	0.5	1.6	4.0	-	0.4	-	-	15	-	-	15	85
	-150+53	2.3	0.3	3.7	3.1	0.1	0.3	-	-	38	1	-	39	61
	-53+10	1.5	0.5	10.8	0.8	0.7	0.3	-	-	74	5	-	79	21
	Total +10 -10 (3)	46.2	3.0	17.5	26.8	0.8	2.7	-	-	18	1	-	19	81
	Total Sample	46.2	3.0	(2.8)	(-)	(0.2)	(-)	(-)	(-)	(93)	(7)	(-)	(100)	(-)
94416	+600	0.65	1.8	-	3.1	-	12.5	-	1.3	-	-	-	-	100
	-600+300	0.6	1.2	0.8	4.8	-	17.1	-	1.9	3	-	-	3	97
	-300+150	0.2	0.3	0.9	1.3	3.2	9.1	0.1	0.7	6	20	1	27	73
	-150+53	0.1	0.2	0.7	1.3	5.3	6.7	0.4	0.8	5	34	3	42	58
	-53+10	0.02	0.03	2.4	0.8	8.4	7.2	1.7	0.3	12	40	8	60	40
	Total +10 -10 (3)	1.6	3.5	4.8	11.3	16.9	52.6	2.2	5.0	5	17	2	24	76
	Total Sample	1.6	3.5	(0.6)	(-)	(1.5)	(-)	(0.2)	(-)	(19)	(71)	(10)	(100)	(-)
94425	+600	6.4	1.0	0.3	4.3	1.6	2.4	-	0.1	2	10	-	12	88
	-600+300	5.4	0.9	4.3	4.3	3.7	4.3	-	-	19	16	-	35	65
	-300+150	2.2	0.4	3.0	4.4	4.3	1.8	-	-	19	27	-	46	54
	-150+53	1.3	0.2	5.6	2.4	5.7	2.0	-	-	33	33	-	66	34
	-53+10	1.2	0.6	10.0	1.8	9.1	1.7	-	-	41	37	-	78	22
	Total +10 -10 (3)	16.5	3.1	23.2	17.2	24.4	12.2	-	0.1	24	25	-	49	51
	Total Sample	16.5	3.1	(1.7)	(-)	(1.6)	(-)	(-)	(-)	(50)	(50)	(-)	(100)	(-)
94469	+600	1.3	-	-	7.4	-	0.1	-	-	-	-	-	-	100
	-600+300	1.5	-	2.3	9.8	-	0.2	-	-	17	-	-	17	83
	-300+150	0.9	-	9.3	5.7	0.1	0.1	-	-	58	1	-	59	41
	-150+53	0.6	-	23.6	4.5	0.3	0.1	-	-	81	1	-	82	18
	-53+10	0.2	-	24.4	4.0	1.6	-	-	-	81	5	-	86	14
	Total +10 -10 (3)	4.5	-	59.6	31.4	2.0	0.5	-	-	61	2	-	63	37
	Total Sample	4.5	-	(1.9)	(-)	(0.1)	(-)	(-)	(-)	(95)	(5)	(-)	(100)	(-)
95013	+600	15.6	1.4	-	2.9	-	2.6	-	-	-	-	-	-	100
	-600+300	11.1	1.5	-	3.8	-	4.1	-	-	-	-	-	-	100
	-300+150	4.3	1.1	1.2	3.0	0.2	2.4	-	-	10	2	-	12	88
	-150+53	2.6	1.0	3.1	1.7	1.2	2.7	-	-	25	10	-	35	65
	-53+10	3.9	1.8	11.3	0.6	5.2	4.3	-	-	42	19	-	61	39
	Total +10 -10 (3)	37.5	6.8	15.6	12.0	6.6	16.1	-	-	16	7	-	23	77
	Total Sample	37.5	6.8	(3.0)	(-)	(2.4)	(-)	(-)	(-)	(55)	(45)	(-)	(100)	(-)
95679	+600	2.5	-	0.3	14.6	-	1.6	-	-	2	-	-	2	98
	-600+300	5.0	-	0.6	18.6	-	1.4	-	-	2	-	-	2	98
	-300+150	3.6	-	0.7	10.7	0.1	0.6	-	-	4	1	-	5	95
	-150+53	2.1	-	1.9	10.5	0.1	0.6	-	-	12	1	-	13	87
	-53+10	1.1	-	19.5	2.2	0.7	0.2	-	-	82	3	-	85	15
	Total +10 -10 (3)	14.3	-	23.0	56.6	0.9	4.4	-	-	23	1	-	24	76
	Total Sample	14.3	-	(0.8)	(-)	(-)	(-)	(-)	(-)	(97)	(3)	(-)	(100)	(-)

Footnotes:

1. From Tables 3-8
2. Calculated from the distribution of tin in the heavy products (Tables 3-8) and the proportion and liberation of tin minerals in the heavy products (Tables 1,2,9-11).
3. Calculated assuming the -10 micron slimes have the same mineralogical tin distribution as the -53+10 micron size fraction and the tin minerals are completely liberated.

OPEN FILEMT. BISCHOFF TIN PROSPECT

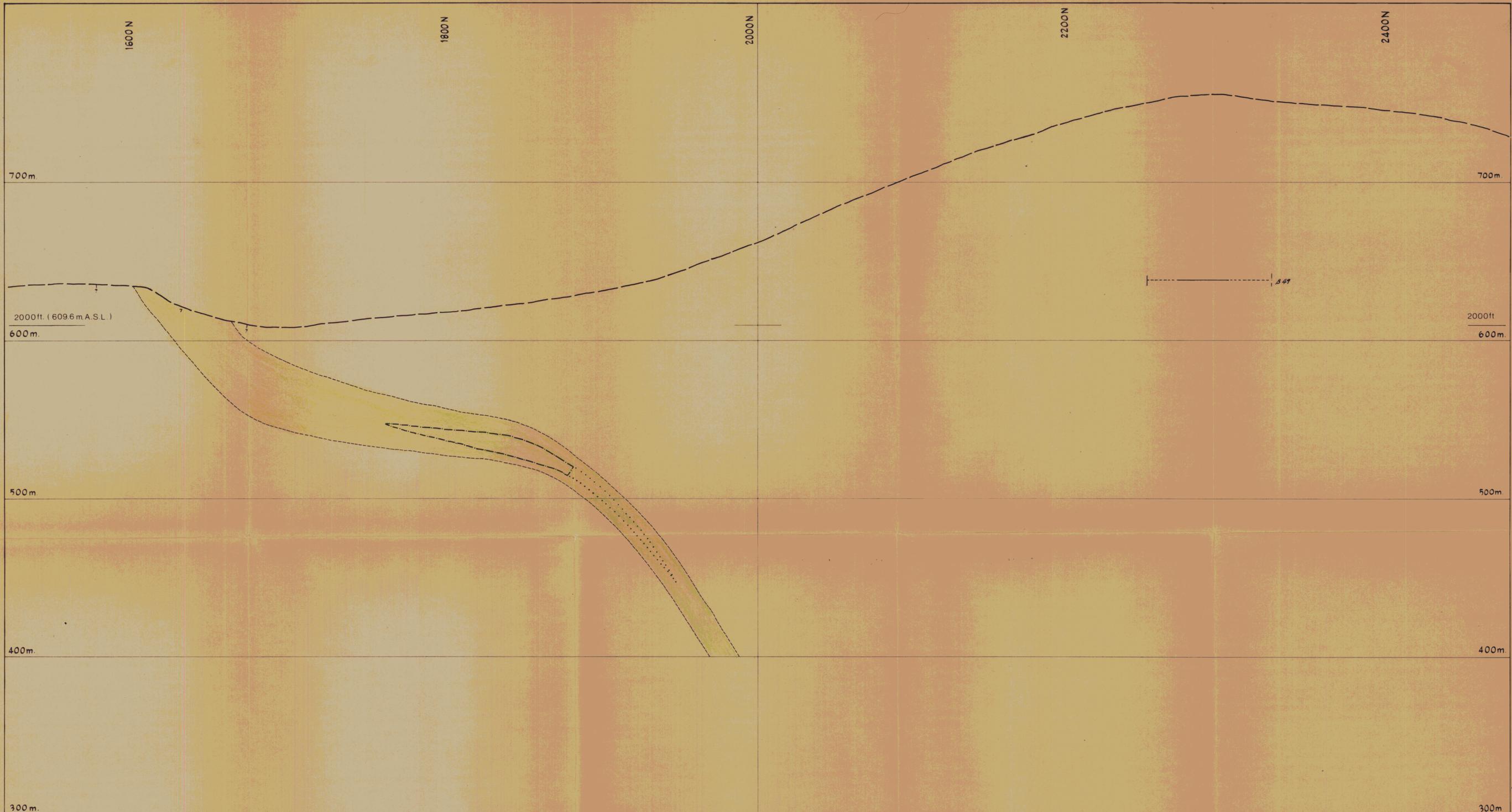
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TASMANIAREPORT ON STAGE I PROGRAMMEVOLUME III

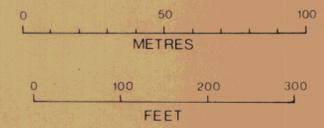
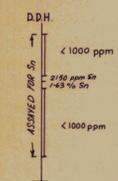
A. Jannink

January, 1979.

GEOLOGICAL SECTIONS



- RESERVE BOUNDARIES 0.3% Sn CUTOFF
- DRILL INDICATED
 - DRILL INFERRED
 - POSSIBLE
 - INTERPRETED GEOLOGICAL CONTACT
 - THEORETICAL PIT OUTLINE
- 2 DOLOMITE
 - 3/4 MINERALIZED DOLOMITE / TIN ZONE
 - 5 ARGILLITES, QUARTZITES AND SHALES
 - 7 PORPHYRY

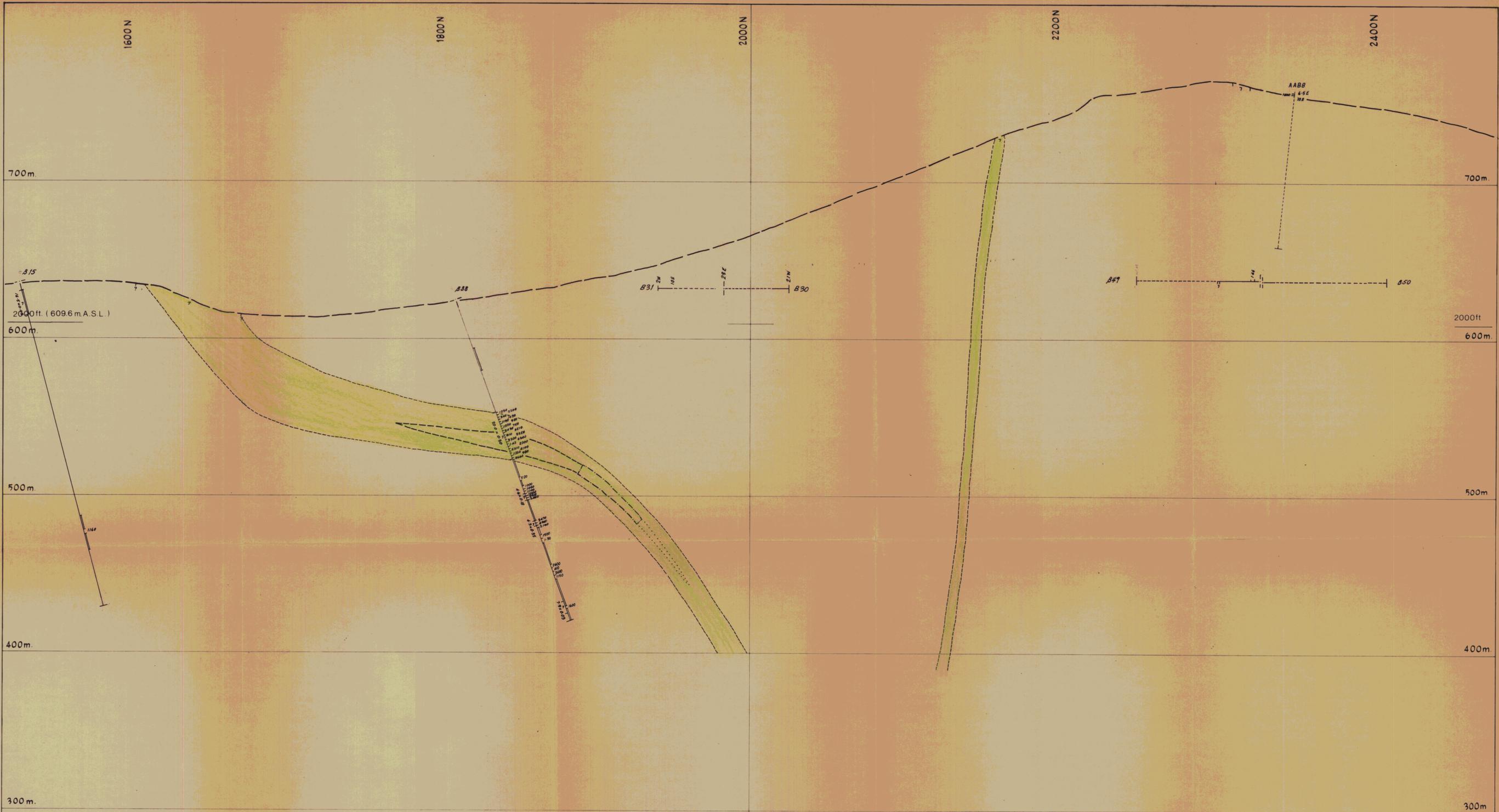


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METALS EXPLORATION LIMITED
MOUNT BISCHOFF TIN PROSPECT
MOUNT BISCHOFF MINE AREA 48-1319
INTERPRETED SECTION App 5
LINE 860 mE
SHOWING RESERVES

SCALE 1:1200 LOOKING TO GRID WEST (240°M)
DATE: DEC 1978 REVISED: DRG. NO. 79-003

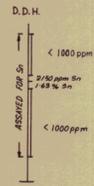




RESERVE BOUNDARIES 0-3% Sn CUTOFF

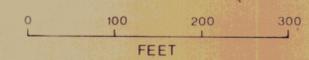
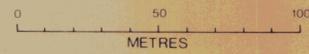
- DRILL INDICATED
- DRILL INFERRED
- POSSIBLE
- INTERPRETED GEOLOGICAL CONTACT
- THEORETICAL PIT OUTLINE

- DOLOMITE
- MINERALIZED DOLOMITE / PYRRHOTITE / TIN ZONE
- ARGILLITES, QUARTZITES AND SHALES
- PORPHYRY



200m

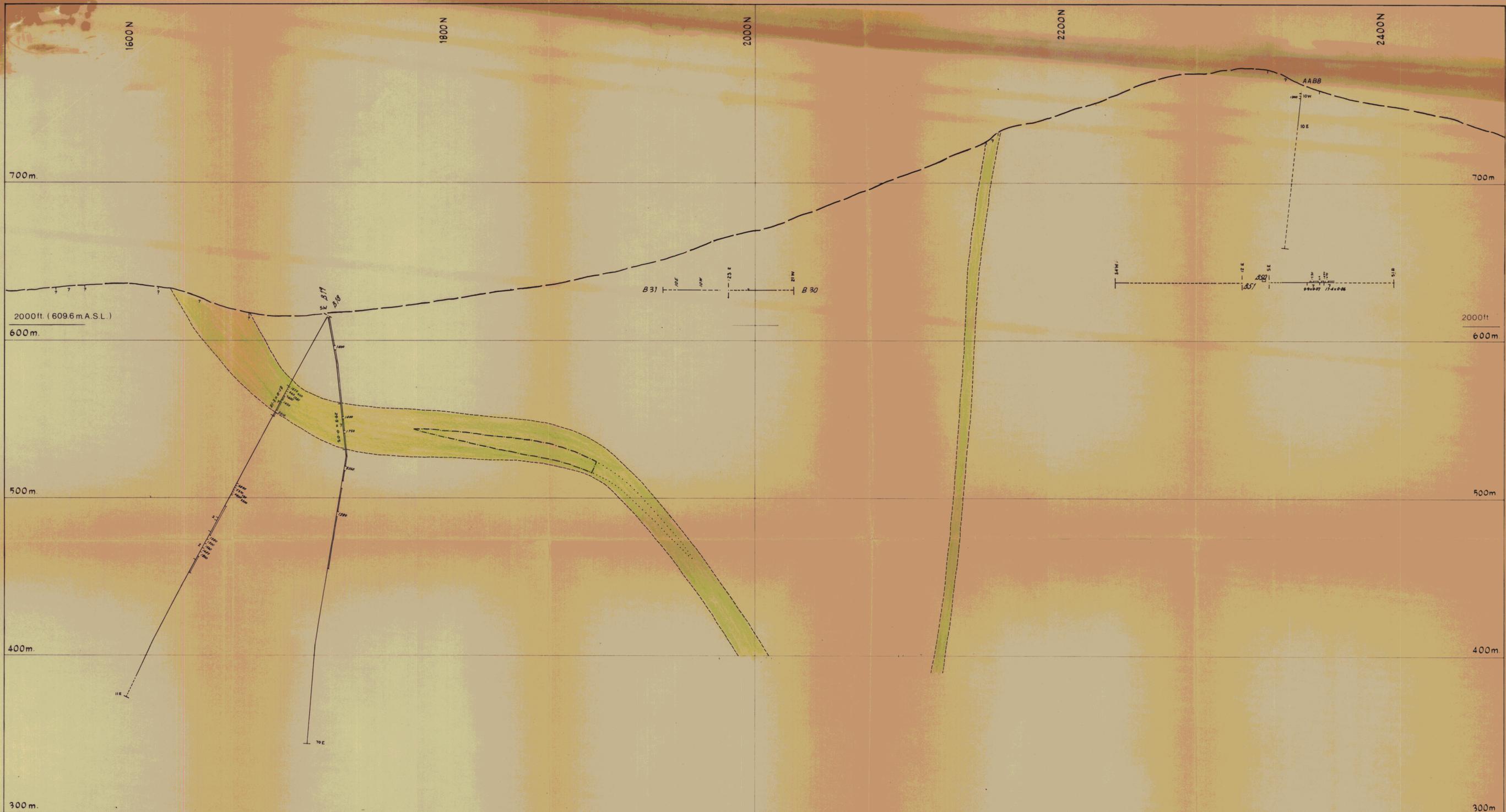
200m



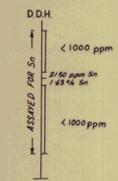
METALS EXPLORATION LIMITED
 MOUNT BISCHOFF TIN PROSPECT
 MOUNT BISCHOFF MINE AREA 78-1319
 INTERPRETED SECTION 9 pp 5
LINE 880 mE 207210
 SHOWING RESERVES



SCALE 1:1200 LOOKING TO GRID WEST (240°M)
 DATE: DEC 1978 REVISED: DRG. NO. 79-004

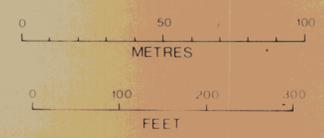


- RESERVE BOUNDARIES 0.3% Sn CUTOFF
- DRILL INDICATED
 - DRILL INFERRED
 - POSSIBLE
 - INTERPRETED GEOLOGICAL CONTACT
 - THEORETICAL PIT OUTLINE
- DOLOMITE
 - MINERALIZED PYRRHOTITE DOLOMITE / TIN ZONE
 - ARGILLITES QUARTZITES AND SHALES
 - PORPHYRY



200m

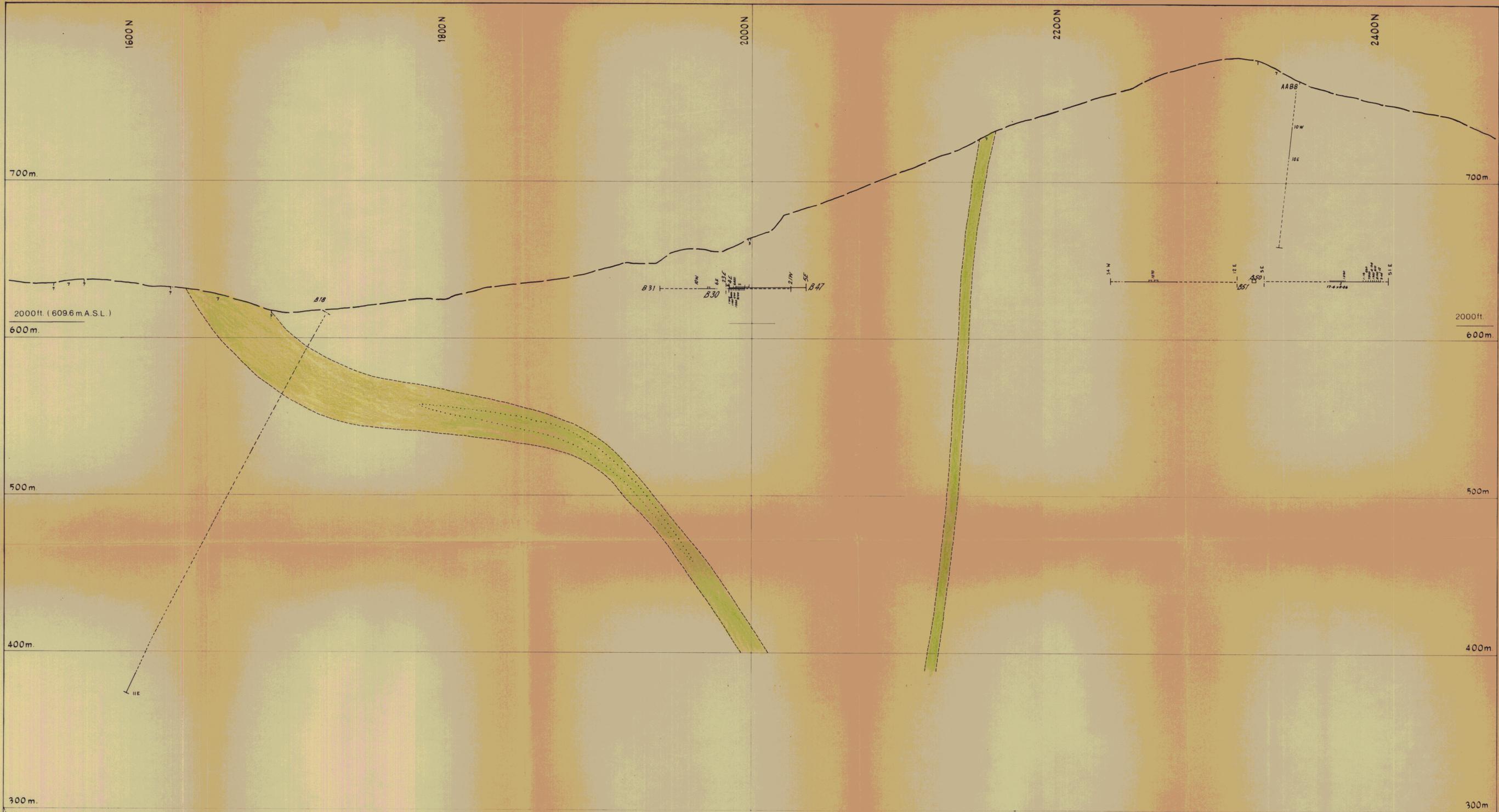
200m



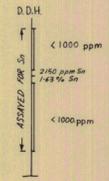
METALS EXPLORATION LIMITED
 MOUNT BISCHOFF TIN PROSPECT
 MOUNT BISCHOFF MINE AREA 78-1319
 INTERPRETED SECTION App 5
LINE 900 mE
 SHOWING RESERVES 207211



SCALE 1:1200 LOOKING TO GRID WEST (240°M)
 DATE: DEC 1978 REVISED: DRG. NO. 79-095



- RESERVE BOUNDARIES 0.5% Sn CUTOFF
- DRILL INDICATED
 - DRILL INFERRED
 - POSSIBLE
 - INTERPRETED GEOLOGICAL CONTACT
 - THEORETICAL PIT OUTLINE
- DOLOMITE
 - MINERALIZED PYRRHOTITE
 - ARGILLITES, QUARTZITES AND SHALES
 - PORPHYRY



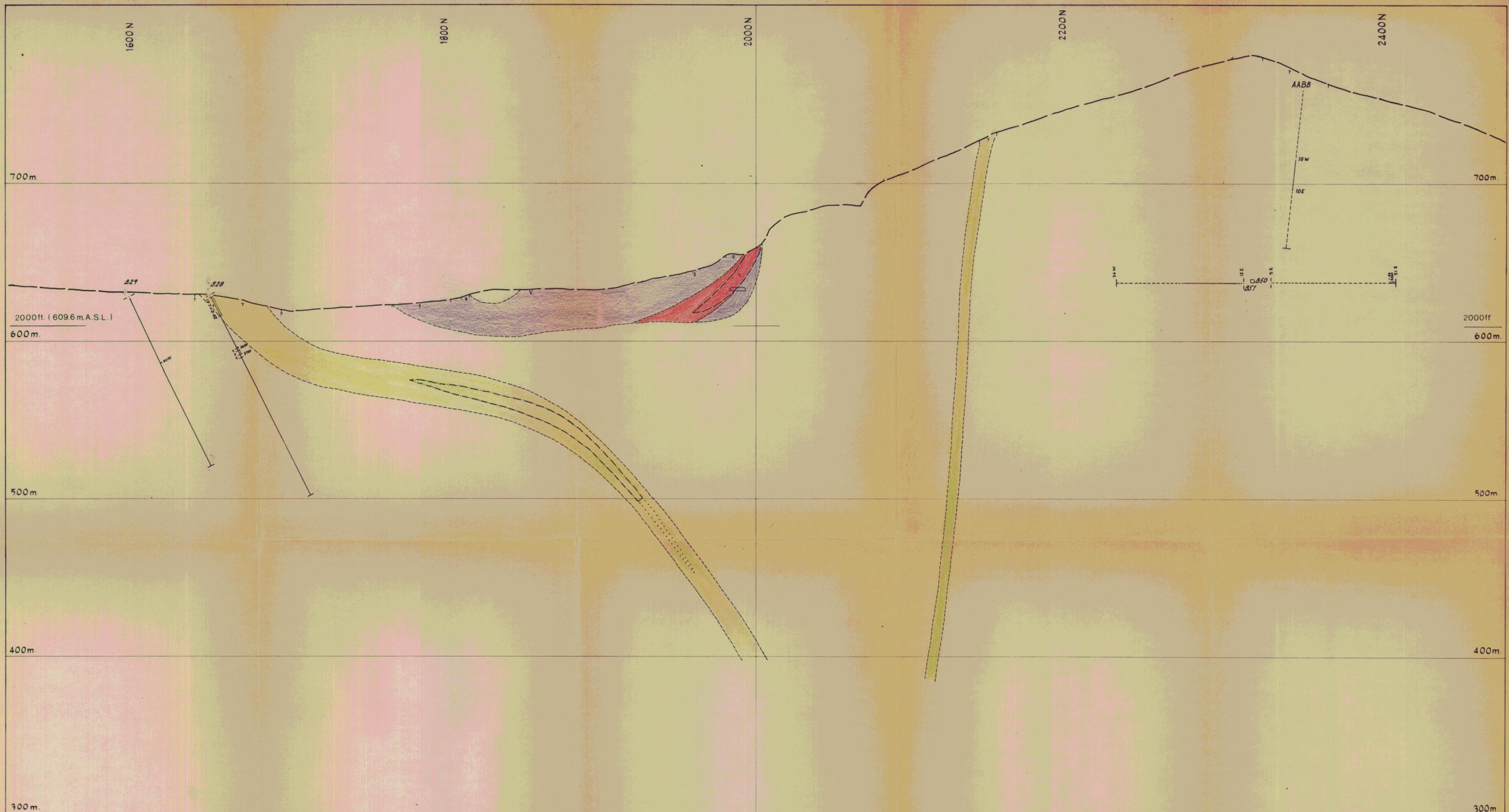
METALS EXPLORATION LIMITED
 MOUNT BISCHOFF TIN PROSPECT
 MOUNT BISCHOFF MINE AREA 78-1319
 INTERPRETED SECTION App B

LINE 920 mE

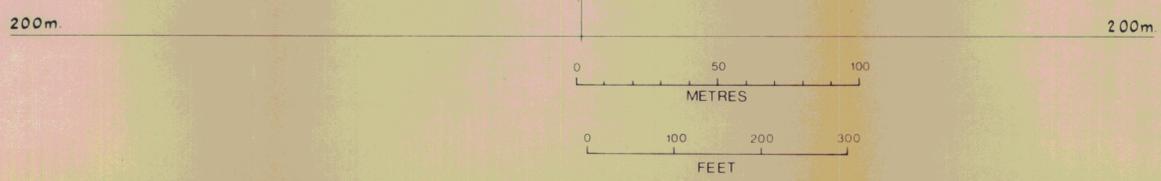
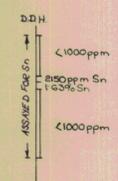
SHOWING RESERVES 207212

SCALE 1:1200 LOOKING TO GRID WEST (240°M)

DATE: DEC 1978 REVISED DRG NO. 79-096



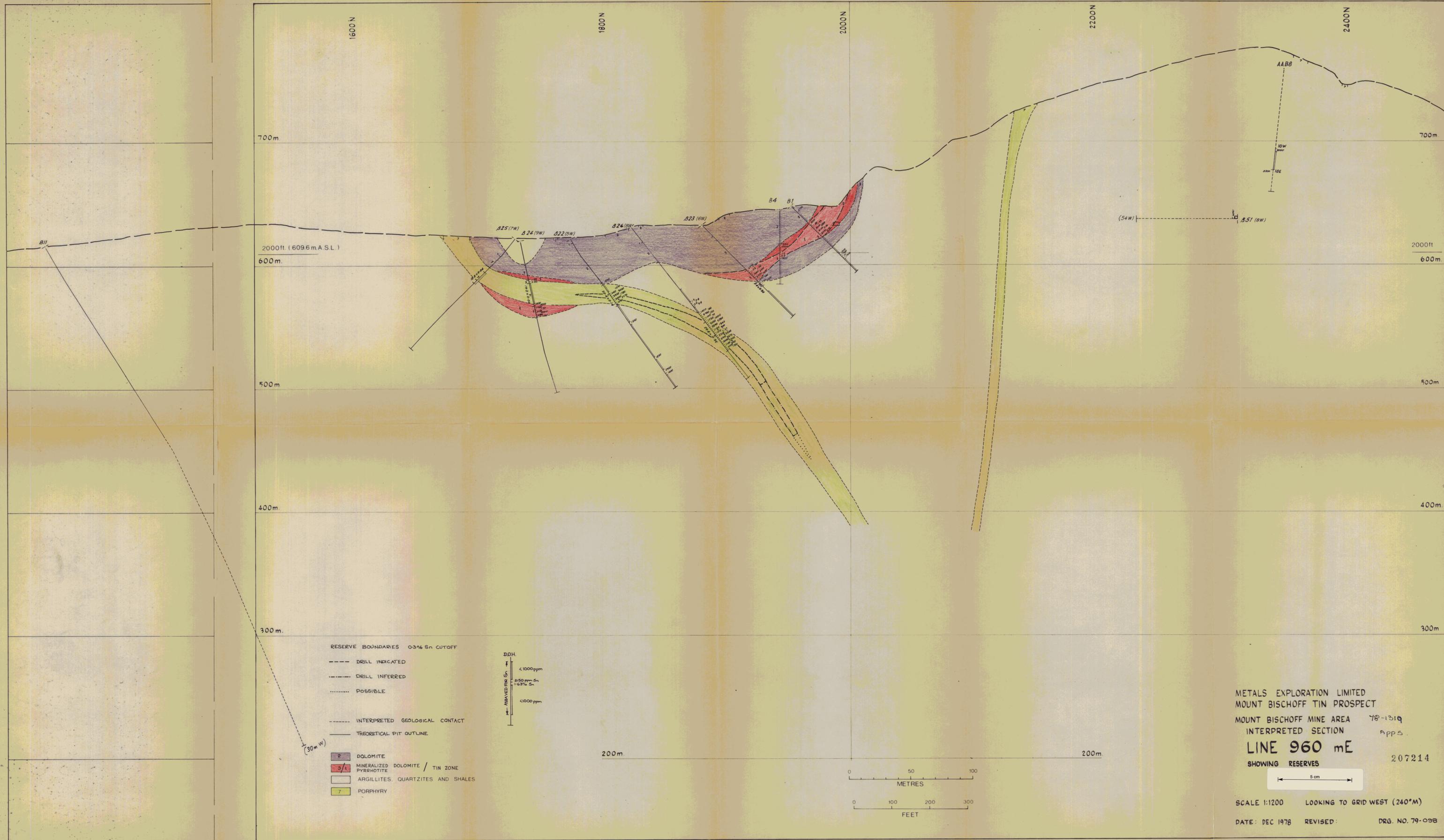
- RESERVE BOUNDARIES 0.3% Sn CUTOFF
- DRILL INDICATED
 - DRILL INFERRED
 - POSSIBLE
 - INTERPRETED GEOLOGICAL CONTACT
 - THEORETICAL PIT OUTLINE
 - DOLOMITE
 - MINERALIZED PYRRHOTITE
 - DOLOMITE / TIN ZONE
 - ARGILLITES, QUARTZITES AND SHALES
 - PORPHYRY



METALS EXPLORATION LIMITED
 MOUNT BISCHOFF TIN PROSPECT
 MOUNT BISCHOFF MINE AREA 78-1319
 INTERPRETED SECTION App 5
LINE 940 mE
 SHOWING RESERVES



SCALE 1:1200 LOOKING TO GRID WEST (240°M)
 DATE: DEC 1978 REVISED: DRG. NO. 79-007



RESERVE BOUNDARIES 0.3% Sn CUTOFF

--- DRILL INDICATED

--- DRILL INFERRED

..... POSSIBLE

----- INTERPRETED GEOLOGICAL CONTACT

— THEORETICAL PIT OUTLINE

2 DOLOMITE

3/4 MINERALIZED DOLOMITE / TIN ZONE

ARGILLITES, QUARTZITES AND SHALES

7 PORPHYRY

DDH

↑

< 1000 ppm

250 ppm Sn

1000 ppm Sn

< 1000 ppm

↓

RESERVED FOR Sn

0 50 100

METRES

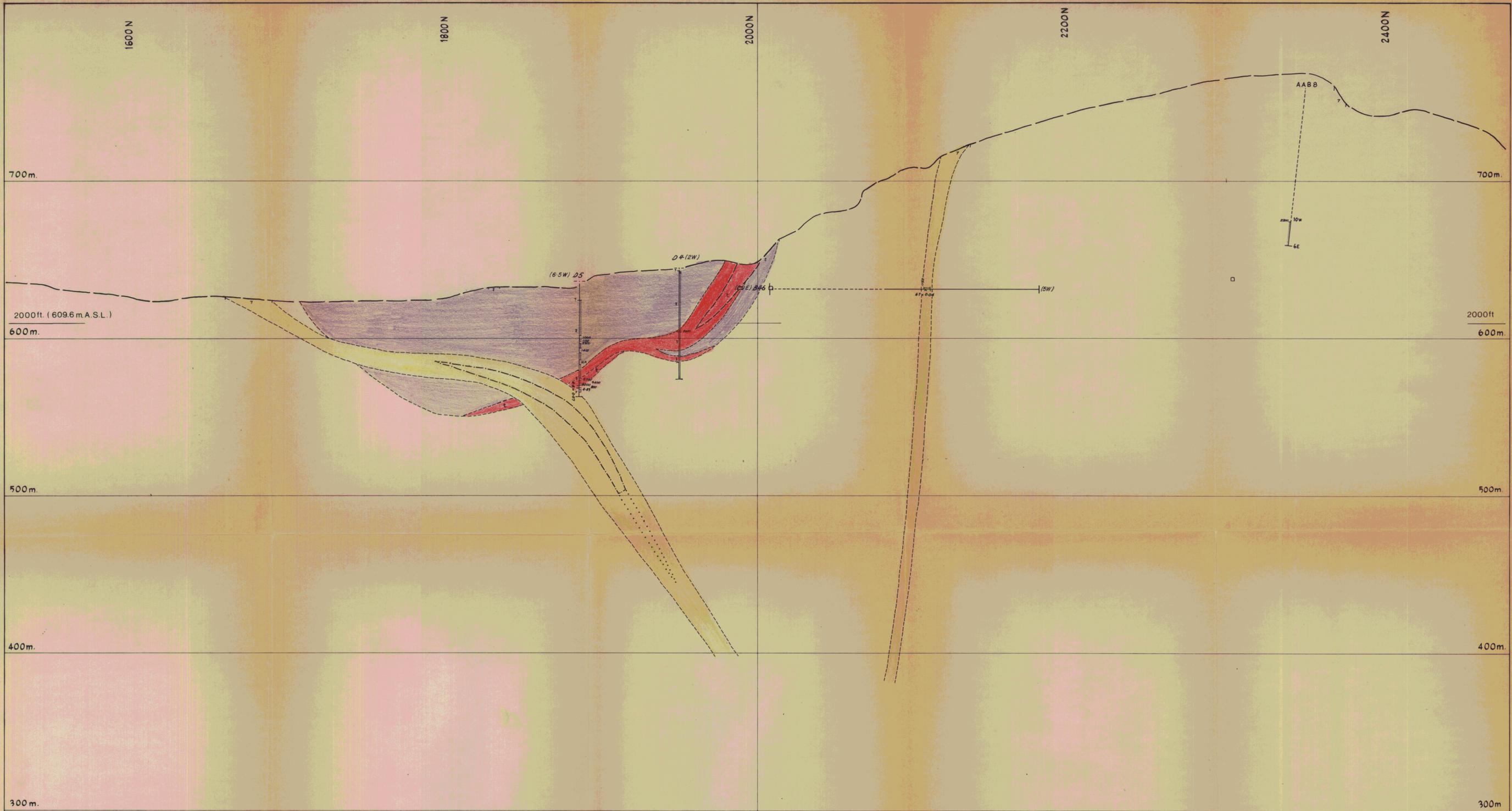
0 100 200 300

FEET

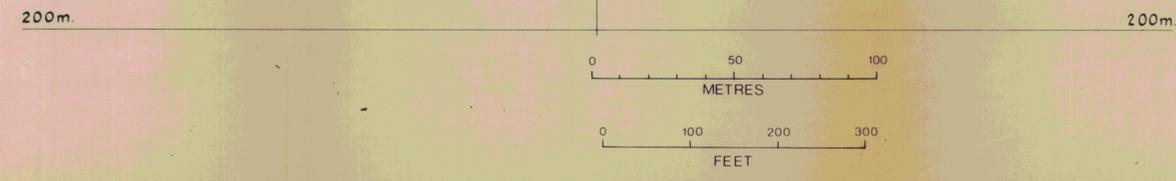
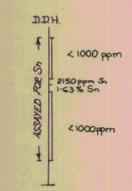
METALS EXPLORATION LIMITED
 MOUNT BISCHOFF TIN PROSPECT
 MOUNT BISCHOFF MINE AREA 78-131q
 INTERPRETED SECTION App. 5.
LINE 960 mE
 SHOWING RESERVES 207214

5cm

SCALE 1:1200 LOOKING TO GRID WEST (240°M)
 DATE: DEC 1978 REVISED: DRG. NO. 79-098

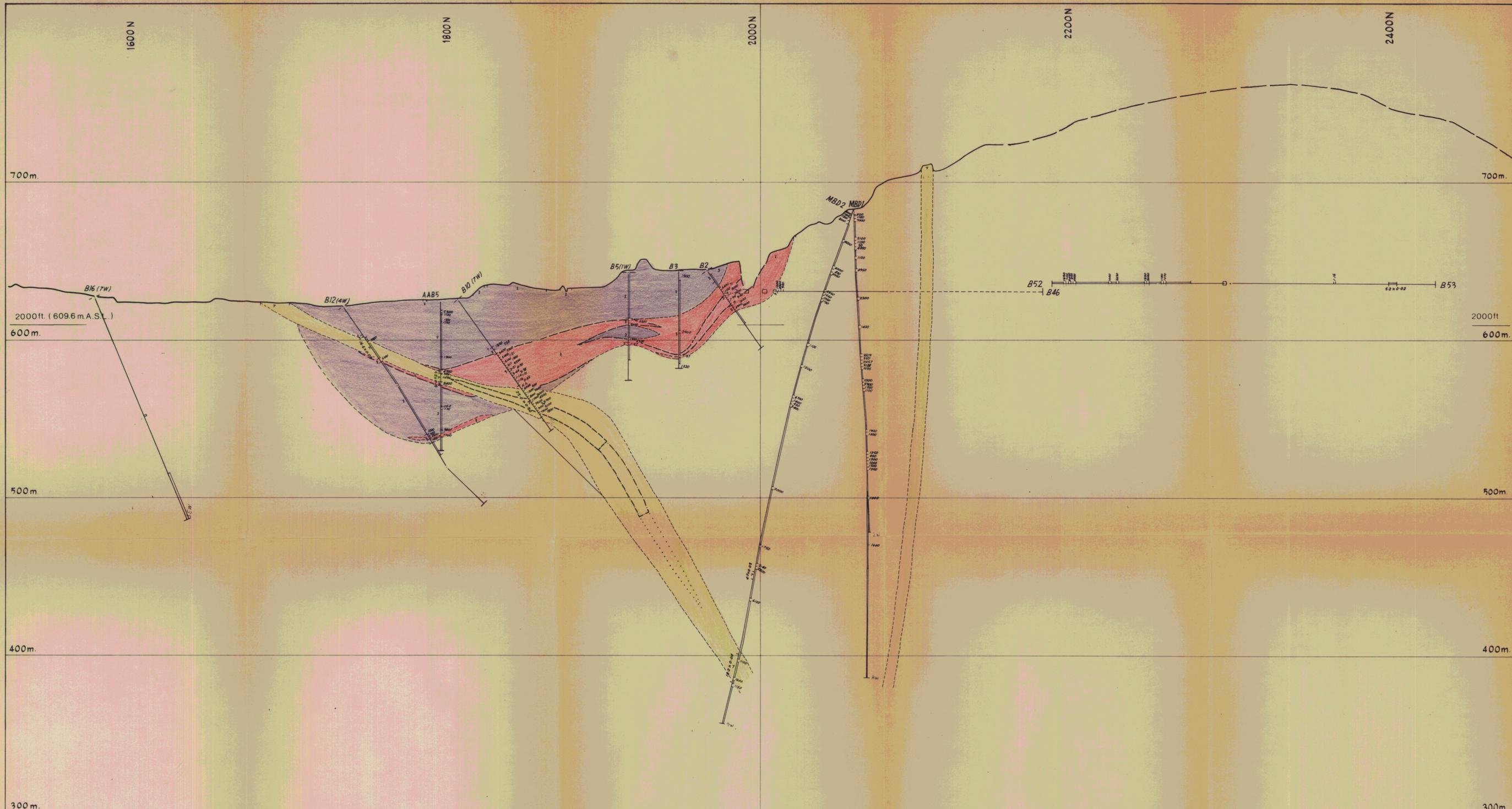


- RESERVE BOUNDARIES 0.3% Sn CUTOFF
- DRILL INDICATED
 - - - DRILL INFERRED
 - POSSIBLE
 - INTERPRETED GEOLOGICAL CONTACT
 - THEORETICAL PIT OUTLINE
- 2 DOLOMITE
 - 3/t MINERALIZED DOLOMITE / TIN ZONE
 - ARGILLITES, QUARTZITES AND SHALES
 - 7 PORPHYRY



METALS EXPLORATION LIMITED
MOUNT BISCHOFF TIN PROSPECT
MOUNT BISCHOFF MINE AREA 78-1319
INTERPRETED SECTION App 5.
LINE 980 mE
SHOWING RESERVES 207215

SCALE 1:1200 LOOKING TO GRID WEST (240°M)
DATE: DEC 1978 REVISED: DRG. NO. 79-099



RESERVE BOUNDARIES 0.3% Sn CUTOFF

- DRILL INDICATED
- DRILL INFERRED
- POSSIBLE
- INTERPRETED GEOLOGICAL CONTACT
- THEORETICAL PIT OUTLINE

- DOLOMITE
- MINERALIZED DOLOMITE/TIN ZONE
- ARGILLITES, QUARTZITES AND SHALES
- PORPHYRY

D.D.H.

↑ 1000 ppm

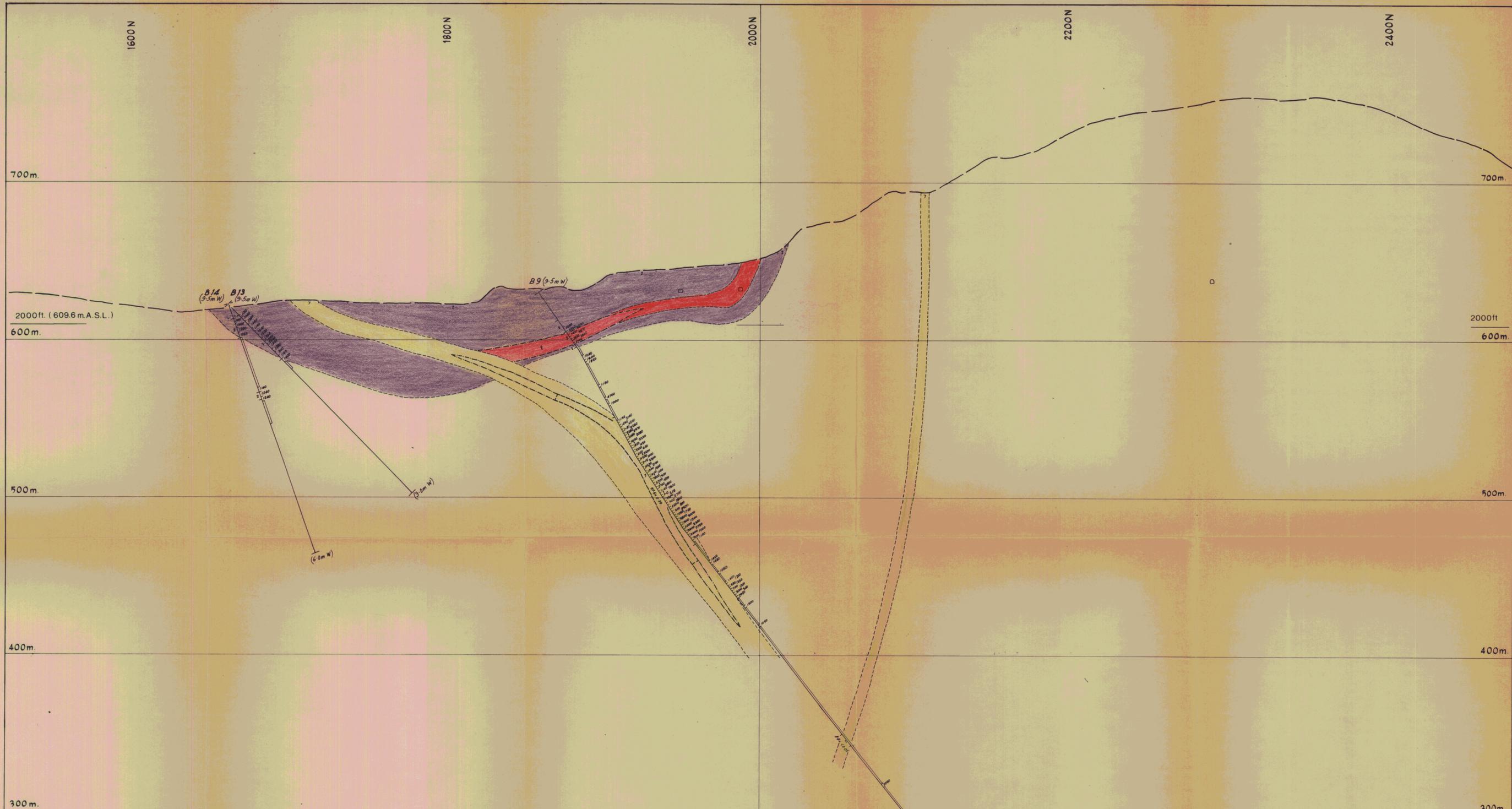
↓ 2140 ppm Sn

↓ 749% Sn

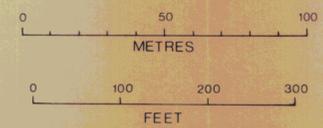
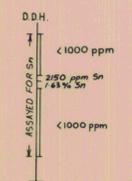
↓ 1000 ppm

METALS EXPLORATION LIMITED
 MOUNT BISCHOFF TIN PROSPECT
 MOUNT BISCHOFF MINE AREA 78-1319
 INTERPRETED SECTION App 5.
LINE 1000 mE
 SHOWING RESERVES 207216

SCALE 1:1200 LOOKING TO GRID WEST (240°M)
 DATE: DEC 1978 REVISED: DRG. NO. 79-100



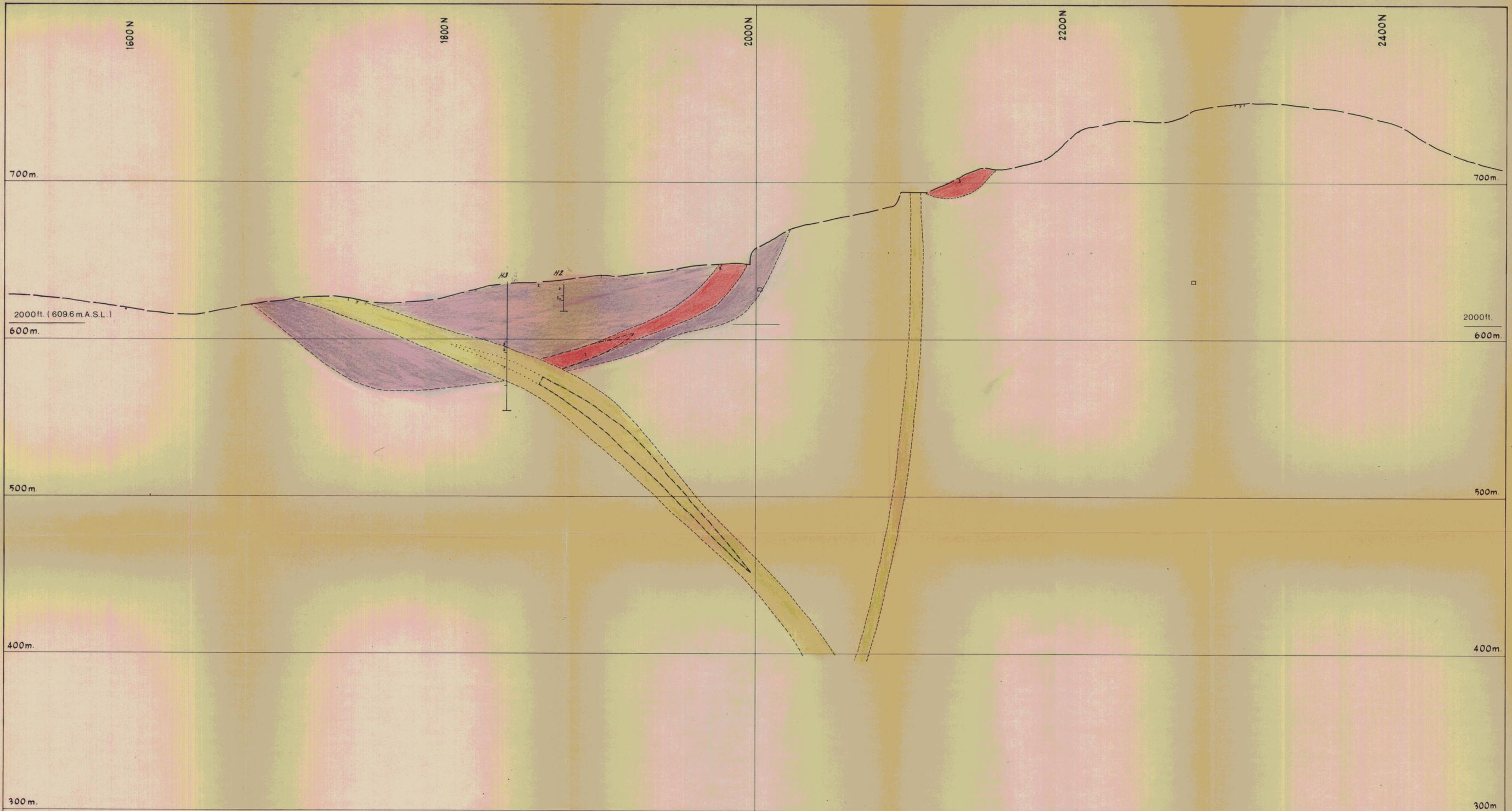
- RESERVE BOUNDARIES 0.5 % Sn CUTOFF
- DRILL INDICATED
 - DRILL INFERRED
 - POSSIBLE
 - INTERPRETED GEOLOGICAL CONTACT
 - THEORETICAL PIT OUTLINE
 - 2 DOLOMITE
 - 3/4 MINERALIZED DOLOMITE / TIN ZONE
PYRRHOTITE
 - ARGILLITES, QUARTZITES AND SHALES
 - 7 PORPHYRY



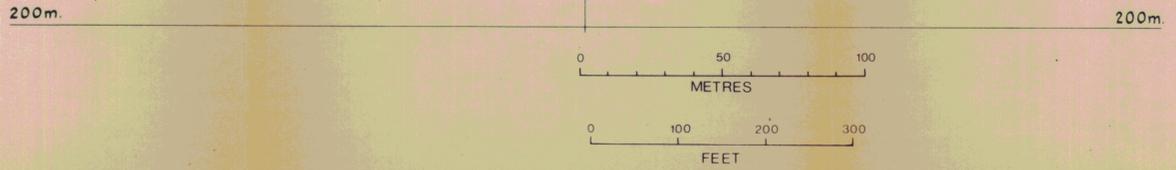
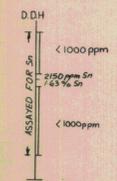
METALS EXPLORATION LIMITED
 MOUNT BISCHOFF TIN PROSPECT
 MOUNT BISCHOFF MINE AREA 78-1319
 INTERPRETED SECTION App 5
LINE 1020 mE
 SHOWING RESERVES 207217



SCALE 1:1200 LOOKING TO GRID WEST (240°M)
 DATE: DEC 1978 REVISED: DRG. NO. 79-101



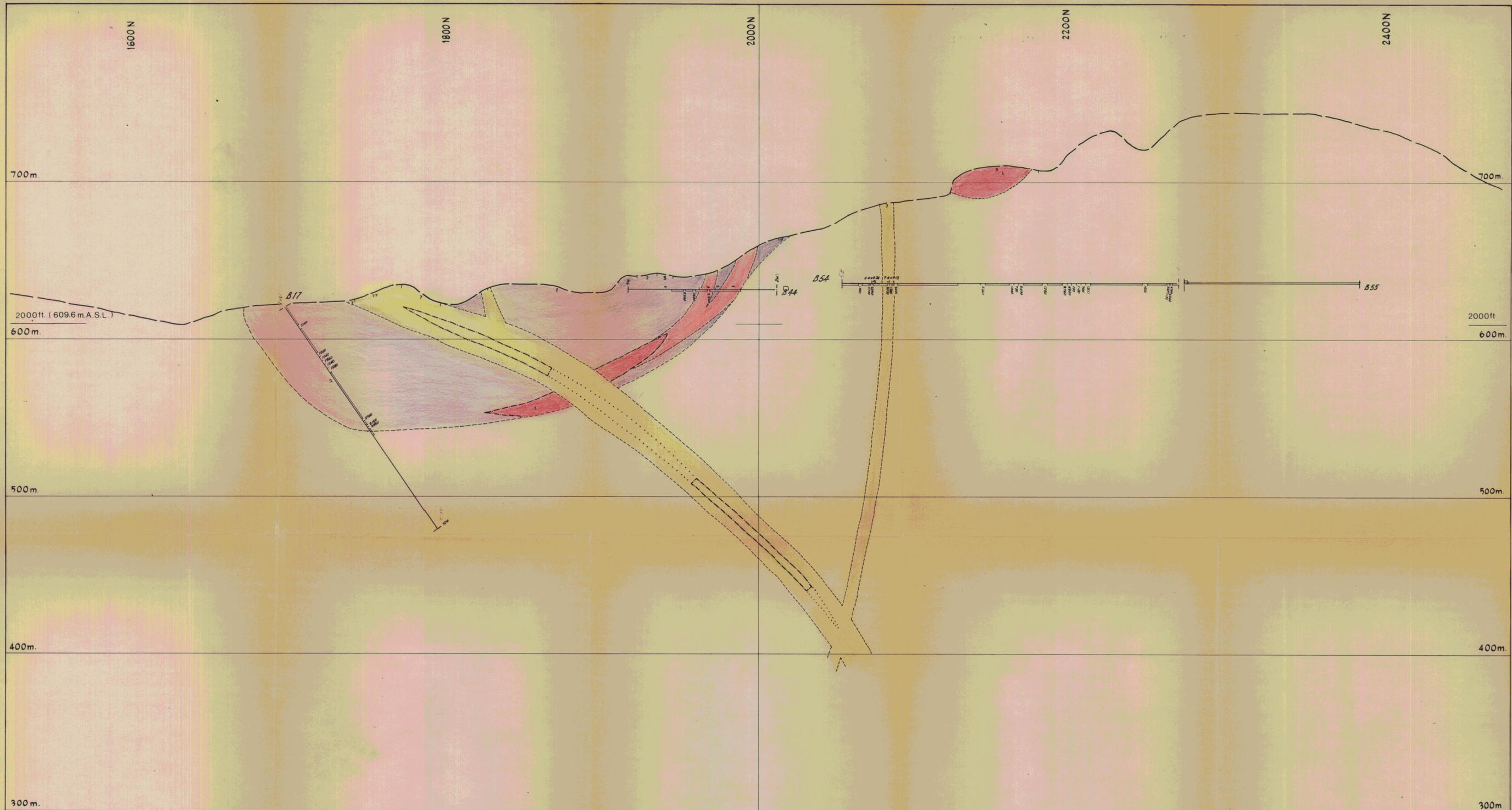
- RESERVE BOUNDARIES 0.3% Sn CUT OFF
- DRILL INDICATED
 - DRILL INFERRED
 - POSSIBLE
 - INTERPRETED GEOLOGICAL CONTACT
 - THEORETICAL PIT OUTLINE
- 2 DOLOMITE
 - 3/4 MINERALIZED DOLOMITE / TIN ZONE
PYRRHOTITE
 - ARGILLITES, QUARTZITES AND SHALES
 - 7 PORPHYRY



METALS EXPLORATION LIMITED
MOUNT BISCHOFF TIN PROSPECT
MOUNT BISCHOFF MINE AREA 78-1219
INTERPRETED SECTION APP5
LINE 1040 mE
SHOWING RESERVES 207218



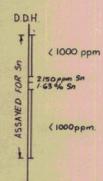
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DATE: DEC 1978 REVISED: DRG. NO. 79-102



RESERVE BOUNDARIES 0.3% Sn CUT OFF

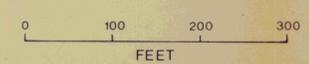
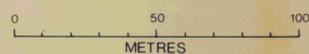
- DRILL INDICATED
- DRILL INFERRED
- POSSIBLE
- INTERPRETED GEOLOGICAL CONTACT
- THEORETICAL PIT OUTLINE

- 2 DOLOMITE
- 3/4 MINERALIZED DOLOMITE / TIN ZONE
- 5 ARGILLITES, QUARTZITES AND SHALES
- 7 PORPHYRY



200m.

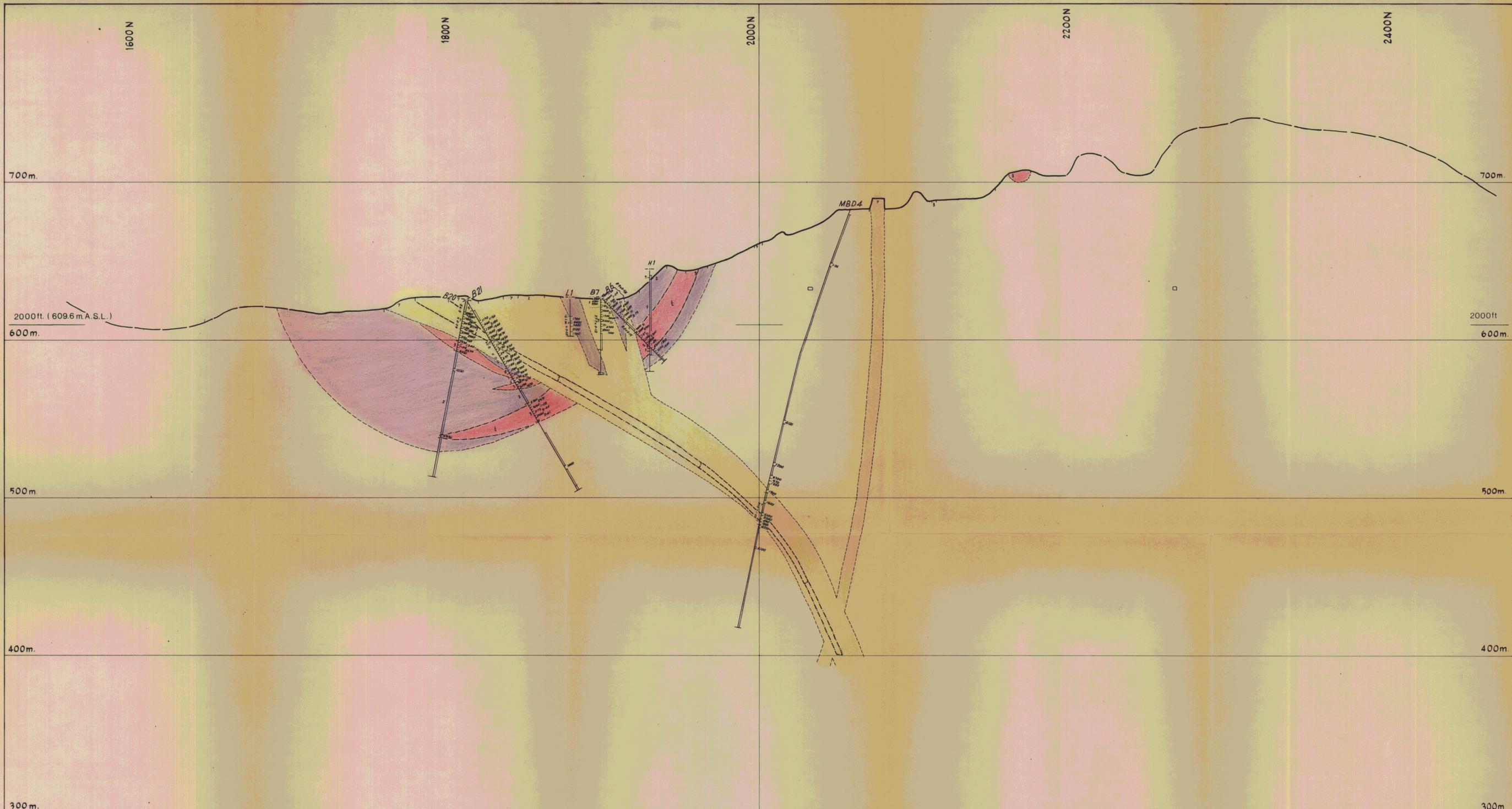
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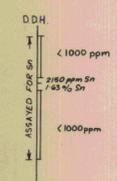
METALS EXPLORATION LIMITED 48-1319
 MOUNT BISCHOFF TIN PROSPECT
 MOUNT BISCHOFF MINE AREA App 5
 INTERPRETED SECTION
LINE 1060 mE 207219
 SHOWING RESERVES



SCALE 1:1200 LOOKING TO GRID WEST (240°M)
 DATE: DEC 1978 REVISED: DRG. NO. 79-103

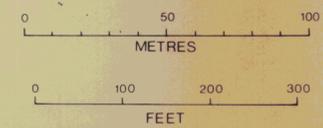


- RESERVE BOUNDARIES 0.3% Sn CUT OFF
- DRILL INDICATED
 - DRILL INFERRED
 - POSSIBLE
 - - - - INTERPRETED GEOLOGICAL CONTACT
 - THEORETICAL PIT OUTLINE
- 2 DOLOMITE
 - 3/2 MINERALIZED DOLOMITE/TIN ZONE
 - ARGILLITES, QUARTZITES AND SHALES
 - 7 PORPHYRY



200m

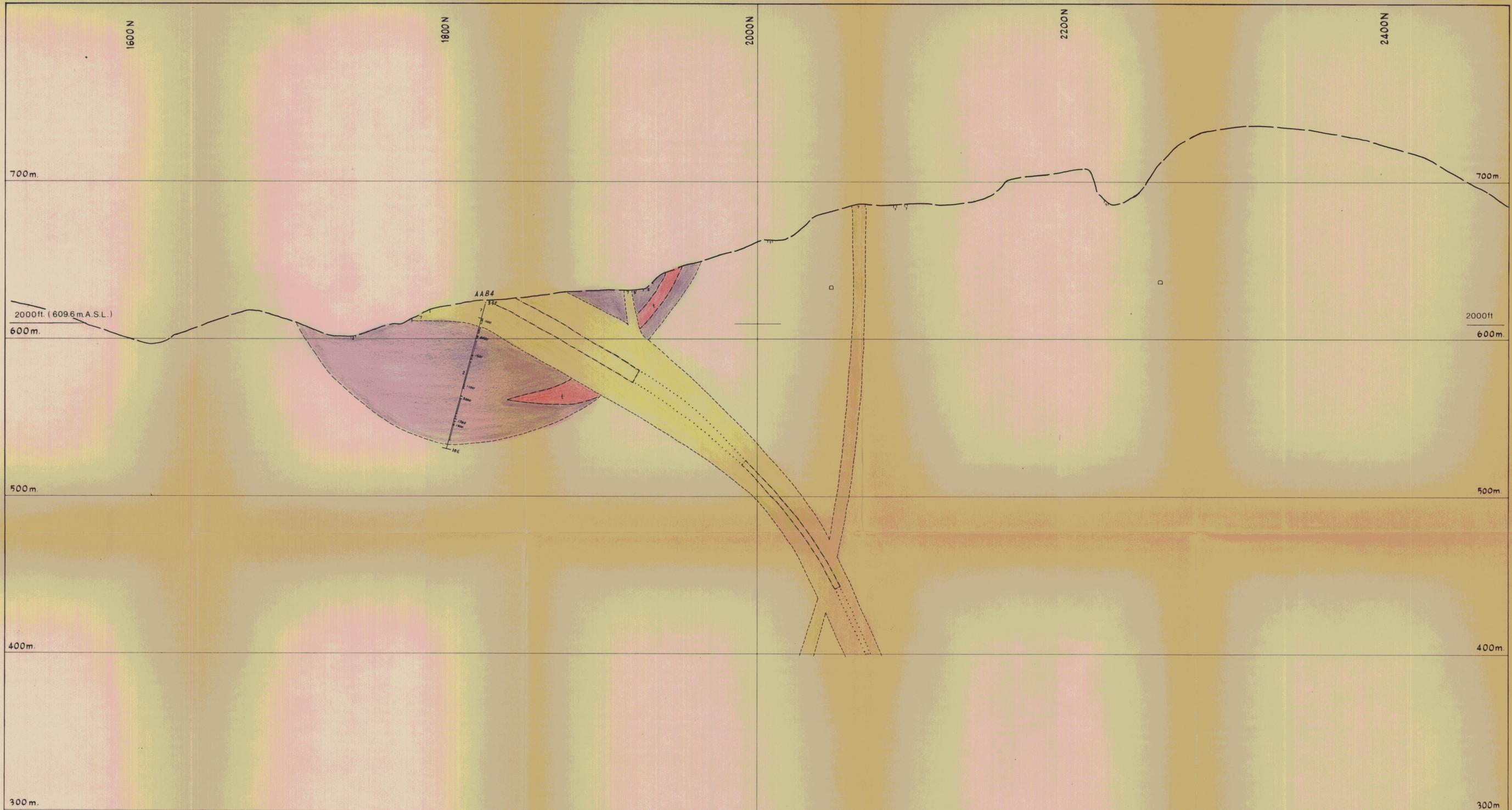
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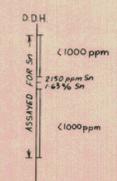
METALS EXPLORATION LIMITED
MOUNT BISCHOFF TIN PROSPECT
MOUNT BISCHOFF MINE AREA 48-1319
INTERPRETED SECTION App 5
LINE 1080 mE
SHOWING RESERVES 207220



SCALE 1:1200 LOOKING TO GRID WEST (240°M)
DATE: DEC 1978 REVISED: DRG. NO. 79-104

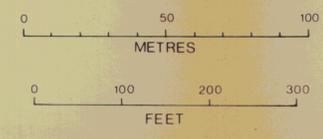


- RESERVE BOUNDARIES 0.3% Sn CUT OFF
- DRILL INDICATED
 - DRILL INFERRED
 - POSSIBLE
 - INTERPRETED GEOLOGICAL CONTACT
 - THEORETICAL PIT OUTLINE
- 2 DOLOMITE
 - 3/4 MINERALIZED DOLOMITE / PYRRHOTITE / TIN ZONE
 - ARGILLITES, QUARTZITES AND SHALES
 - 7 PORPHYRY



200m

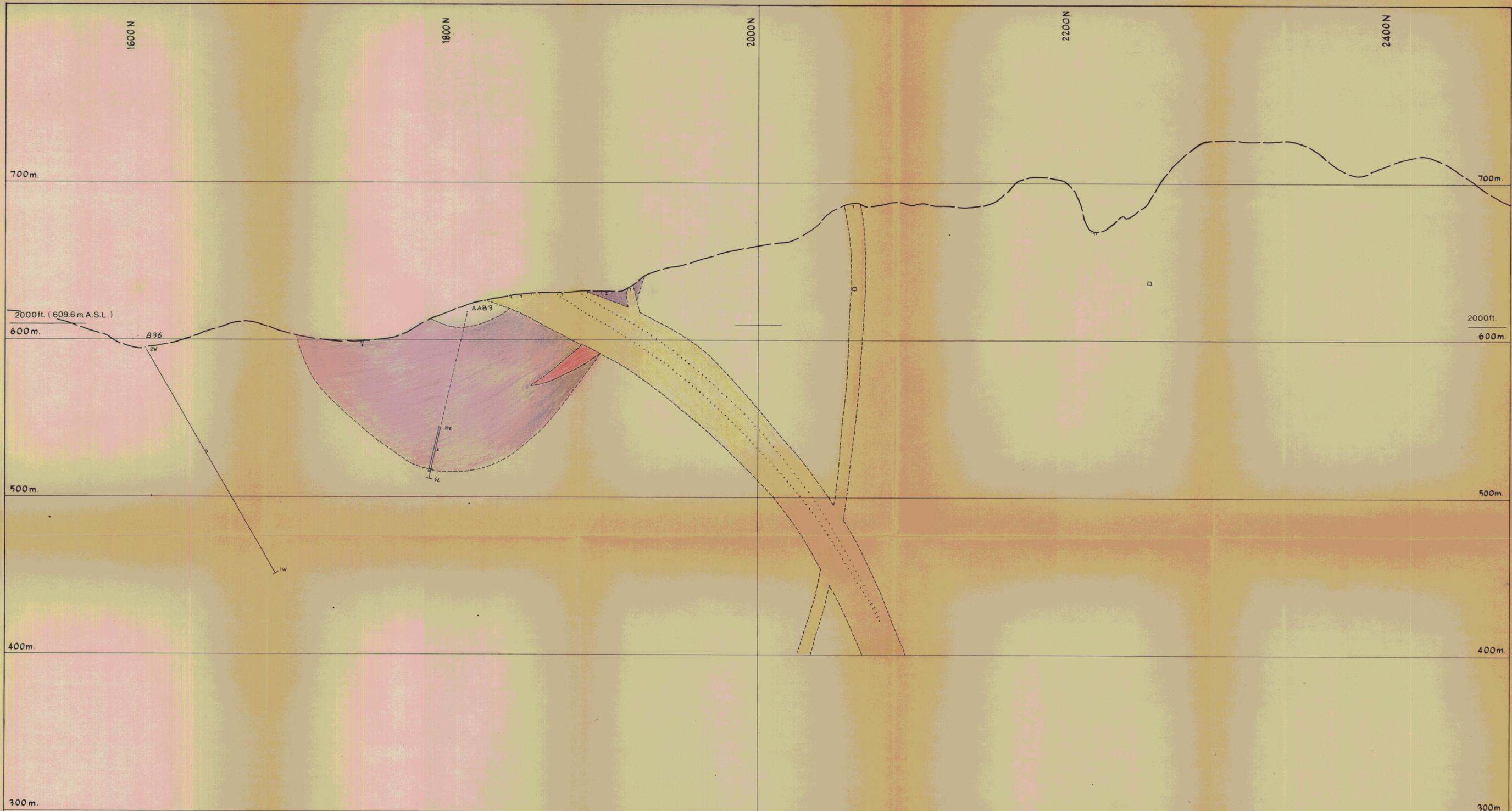
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METALS EXPLORATION LIMITED
MOUNT BISCHOFF TIN PROSPECT
MOUNT BISCHOFF MINE AREA Y8-1319
INTERPRETED SECTION App 5
LINE 1100 mE
SHOWING RESERVES 207221



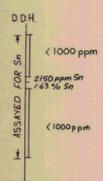
SCALE 1:1200 LOOKING TO GRID WEST (240°M)
DATE: DEC 1978 REVISED: DRG. NO. 79-105



RESERVE BOUNDARIES 0.3% Sn. CUT OFF

- DRILL INDICATED
- DRILL INFERRED
- POSSIBLE
- INTERPRETED GEOLOGICAL CONTACT
- THEORETICAL PIT OUTLINE

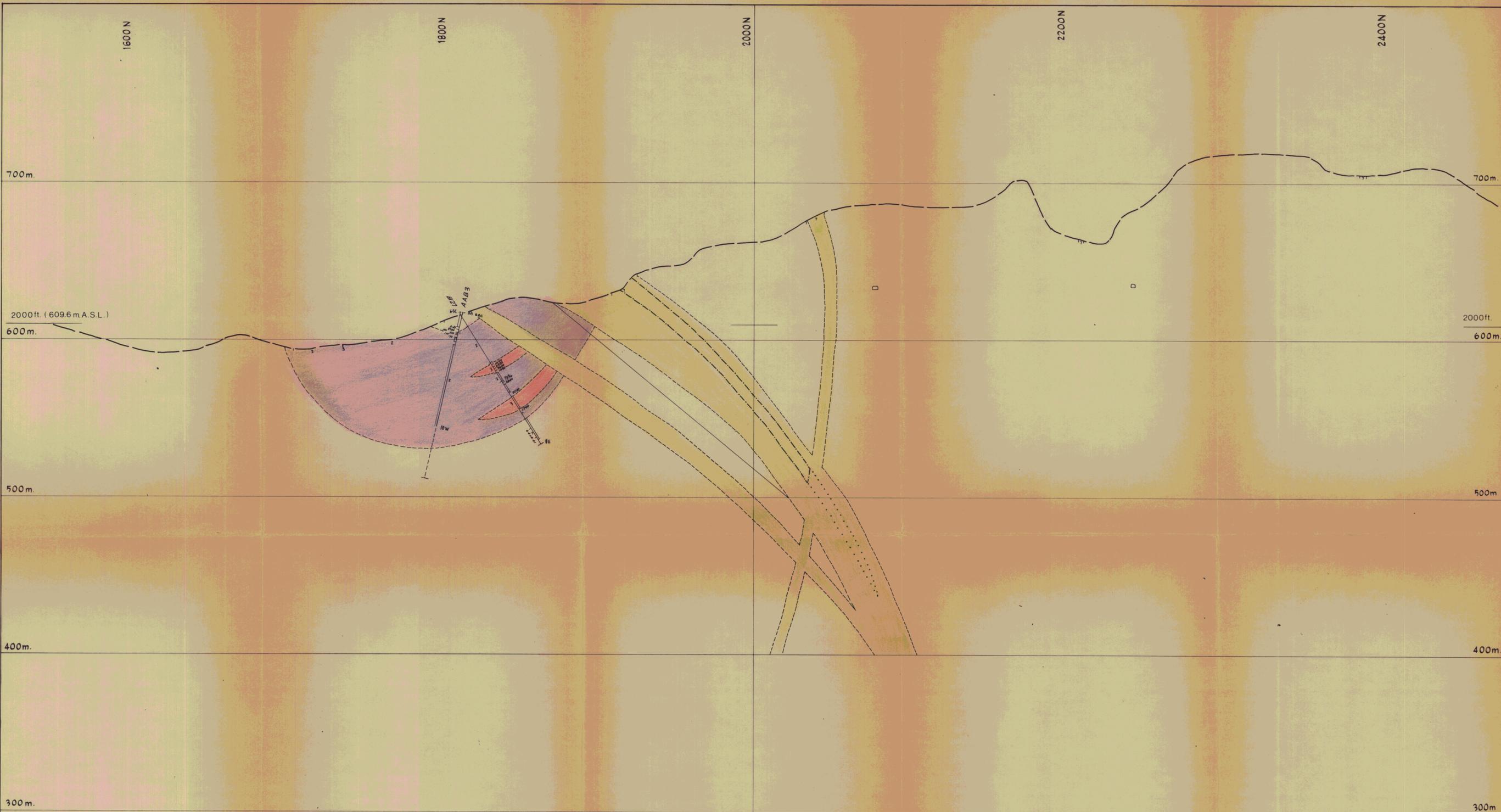
- 2 DOLOMITE
- 3/1 MINERALIZED DOLOMITE / TIN ZONE
- ARGILLITES, QUARTZITES AND SHALES
- 7 PORPHYRY



METALS EXPLORATION LIMITED 207222
 MOUNT BISCHOFF TIN PROSPECT
 MOUNT BISCHOFF MINE AREA 78-1319
 INTERPRETED SECTION App 5
LINE 1120 mE
 SHOWING RESERVES



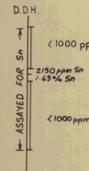
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 DATE: DEC 1978 REVISED: DRG. NO. 79-106



RESERVE BOUNDARIES 0.3% Sn CUT OFF

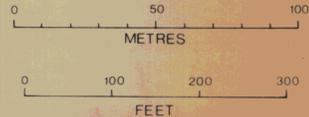
- DRILL INDICATED
- - - DRILL INFERRED
- POSSIBLE
- - - - INTERPRETED GEOLOGICAL CONTACT
- THEORETICAL PIT OUTLINE

- 2 DOLOMITE
- 3/4 MINERALIZED DOLOMITE / TIN ZONE
PYROXENITE
- ARGILLITES, QUARTZITES AND SHALES
- 7 PORPHYRY

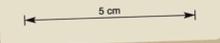


200m.

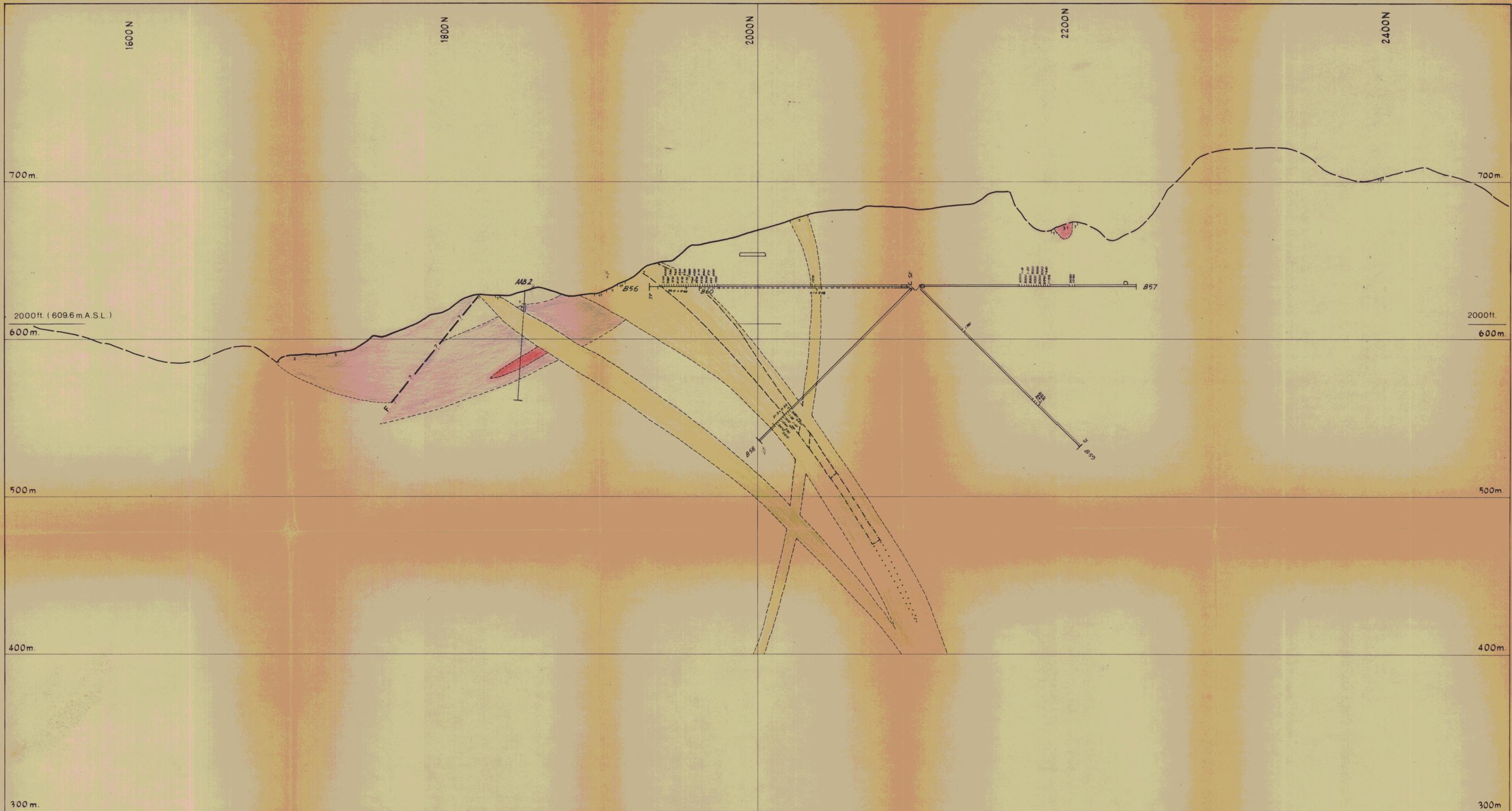
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METALS EXPLORATION LIMITED
MOUNT BISCHOFF TIN PROSPECT
MOUNT BISCHOFF MINE AREA 78-1319
INTERPRETED SECTION App. 5
LINE 1140 mE
SHOWING RESERVES 207223



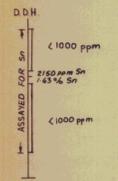
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DATE: DEC 1978 REVISED: DRG. NO. 79-107



RESERVE BOUNDARIES 03% Sn CUT OFF

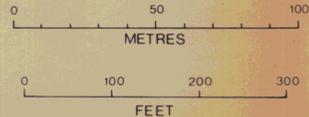
- DRILL INDICATED
- - - DRILL INFERRED
- POSSIBLE
- INTERPRETED GEOLOGICAL CONTACT
- THEORETICAL PIT OUTLINE

- 2 DOLOMITE
- 3/1 MINERALIZED DOLOMITE/TIN ZONE
PIRRHÖTITE
- ARGILLITES, QUARTZITES AND SHALES
- 7 PORPHYRY



200m.

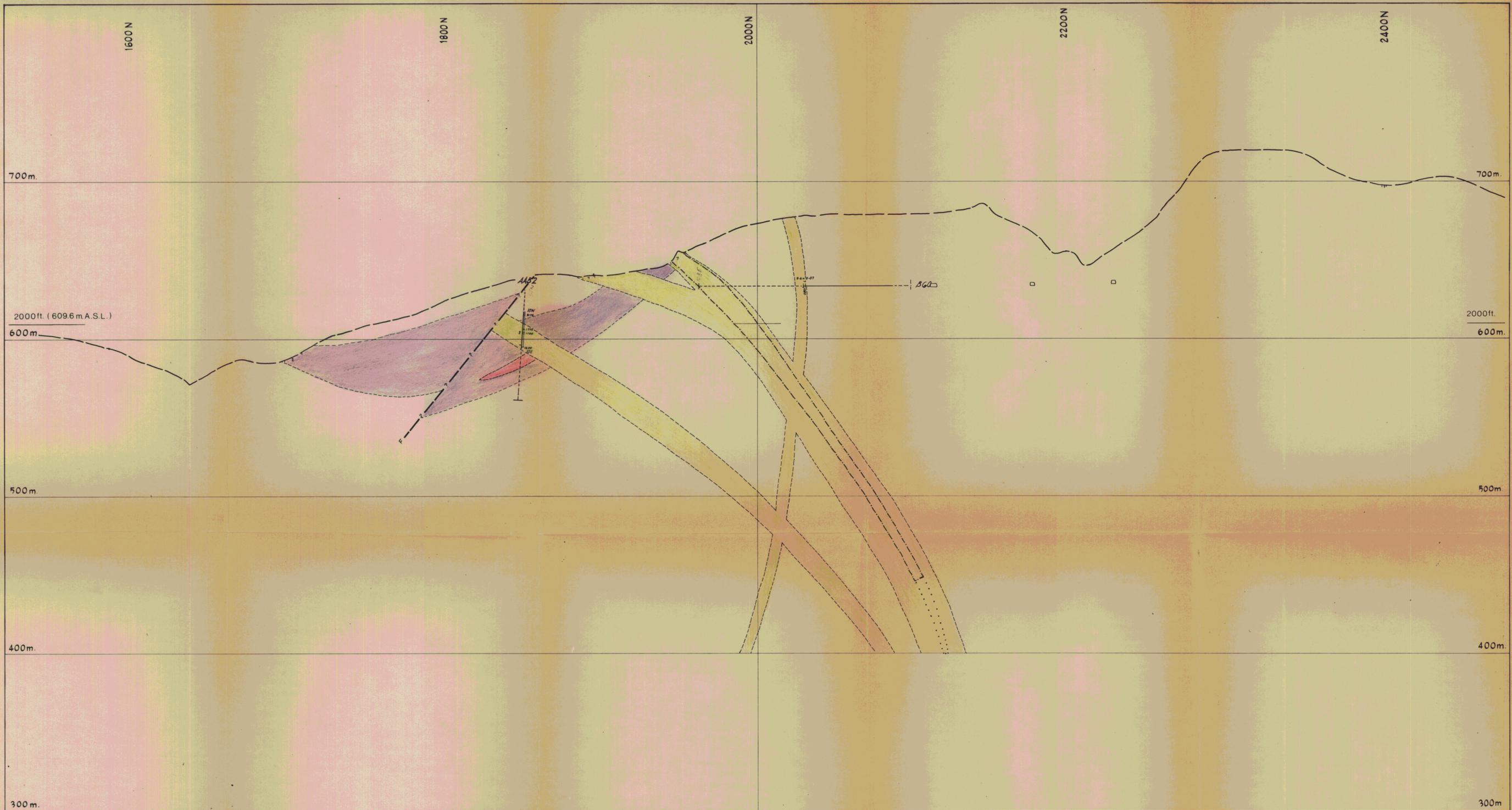
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METALS EXPLORATION LIMITED
 MOUNT BISCHOFF TIN PROSPECT
 MOUNT BISCHOFF MINE AREA 48-1319
 INTERPRETED SECTION Apr 5.
LINE 1160 mE 207224
 SHOWING RESERVES



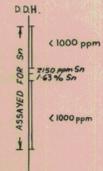
SCALE 1:1200 LOOKING TO GRID WEST (240°M)
 DATE: DEC 1978 REVISED: DRG. NO. 79-108



RESERVE BOUNDARIES 0.3% Sn CUT OFF

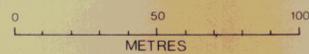
- DRILL INDICATED
- DRILL INFERRED
- POSSIBLE
- INTERPRETED GEOLOGICAL CONTACT
- THEORETICAL PIT OUTLINE

- 2 DOLOMITE
- 3/6 MINERALIZED DOLOMITE / TIN ZONE
PYRROTHITE
- ARGILLITES, QUARTZITES AND SHALES
- 7 PORPHYRY



200m.

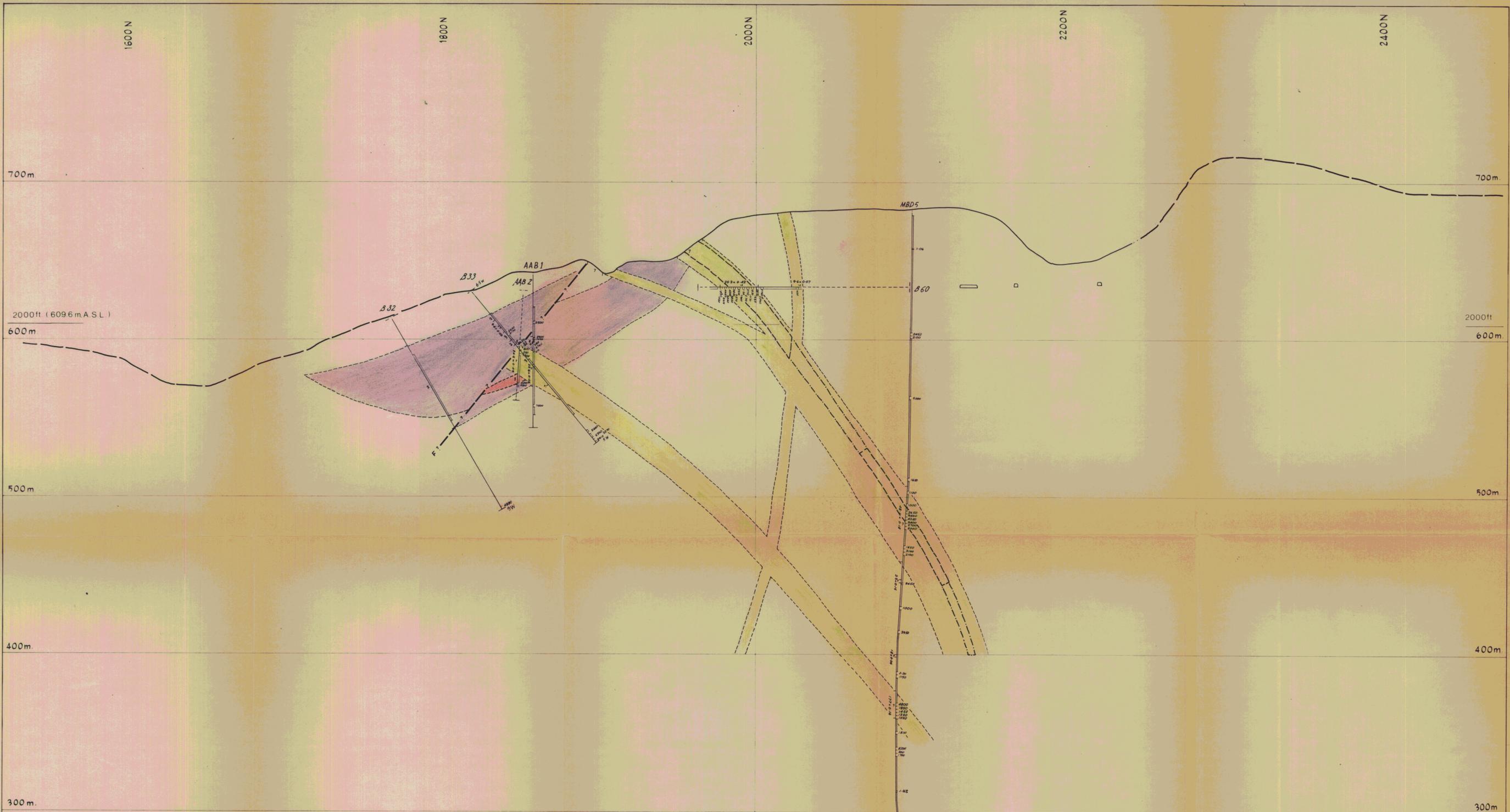
200m.



207225
 METALS EXPLORATION LIMITED
 MOUNT BISCHOFF TIN PROSPECT
 MOUNT BISCHOFF MINE AREA 45-1219
 INTERPRETED SECTION App 5.
LINE 1180 mE
 SHOWING RESERVES



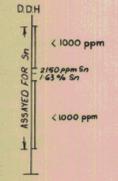
SCALE 1:1200 LOOKING TO GRID WEST (240°M)
 DATE: DEC 1978 REVISED: DRG. NO. 79-109



RESERVE BOUNDARIES 0.3% Sn CUT OFF

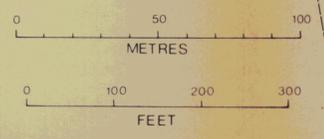
- DRILL INDICATED
- - - DRILL INFERRED
- POSSIBLE
- - - INTERPRETED GEOLOGICAL CONTACT
- THEORETICAL PIT OUTLINE

- 2 DOLOMITE
- 3/A MINERALIZED DOLOMITE/TIN ZONE
PYRROTITE
- ARGILLITES, QUARTZITES AND SHALES
- 7 PORPHYRY



200m

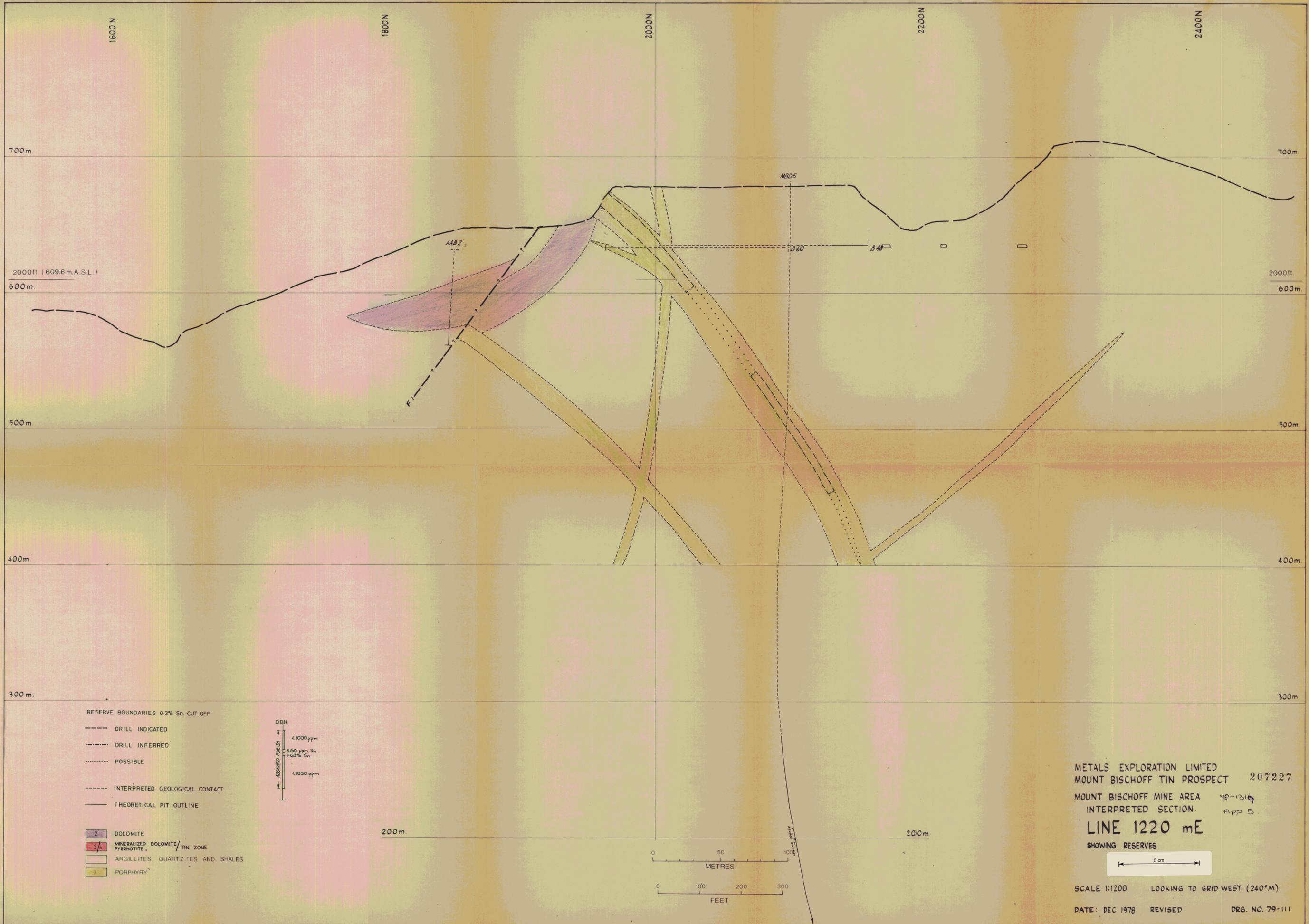
200m



207226
 METALS EXPLORATION LIMITED
 MOUNT BISCHOFF TIN PROSPECT
 MOUNT BISCHOFF MINE AREA 78-1319
 INTERPRETED SECTION App 5
LINE 1200 mE
 SHOWING RESERVES



SCALE 1:1200 LOOKING TO GRID WEST (240°M)
 DATE: DEC 1978 REVISED: DRG. NO. 79-110



1600 N

1800 N

2000 N

2200 N

2400 N

700m

700m

2000ft (609.6m A.S.L.)

600m

2000ft

600m

500m

500m

400m

400m

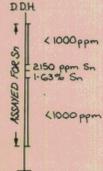
300m

300m

RESERVE BOUNDARIES 0.3% Sn CUT OFF

- DRILL INDICATED
- DRILL INFERRED
- POSSIBLE
- INTERPRETED GEOLOGICAL CONTACT
- THEORETICAL PIT OUTLINE

- 2 DOLOMITE
- 3/4 MINERALIZED DOLOMITE/TIN ZONE
PYRRHOTITE
- 5 ARGILLITES, QUARTZITES AND SHALES
- 7 PORPHYRY



200m

200m

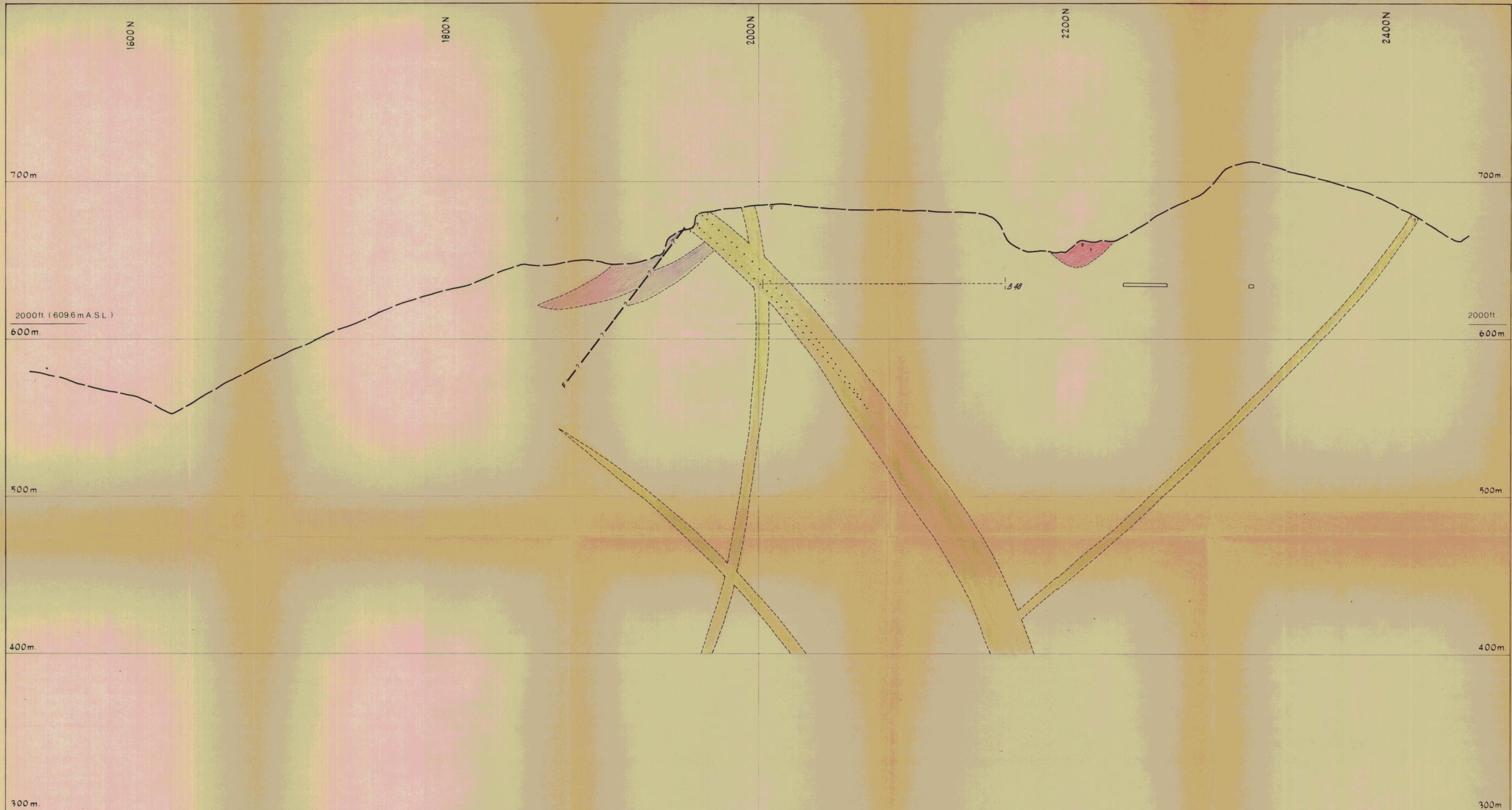
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METRES

0 100 200 300
FEET

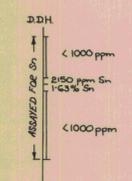
METALS EXPLORATION LIMITED
MOUNT BISCHOFF TIN PROSPECT 207227
MOUNT BISCHOFF MINE AREA 48-1316
INTERPRETED SECTION App 5
LINE 1220 mE
SHOWING RESERVES



SCALE 1:1200 LOOKING TO GRID WEST (240°M)
DATE: DEC 1978 REVISED: DRG. NO. 79-111

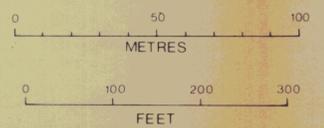


- RESERVE BOUNDARIES 0.3% Sn CUT OFF
- DRILL INDICATED
 - - - DRILL INFERRED
 - POSSIBLE
 - - - - INTERPRETED GEOLOGICAL CONTACT
 - THEORETICAL PIT OUTLINE
- 2 DOLOMITE
 - 3 MINERALIZED DOLOMITE / TIN ZONE
 - 4 ARGILLITES, QUARTZITES AND SHALES
 - 7 PORPHYRY



200m

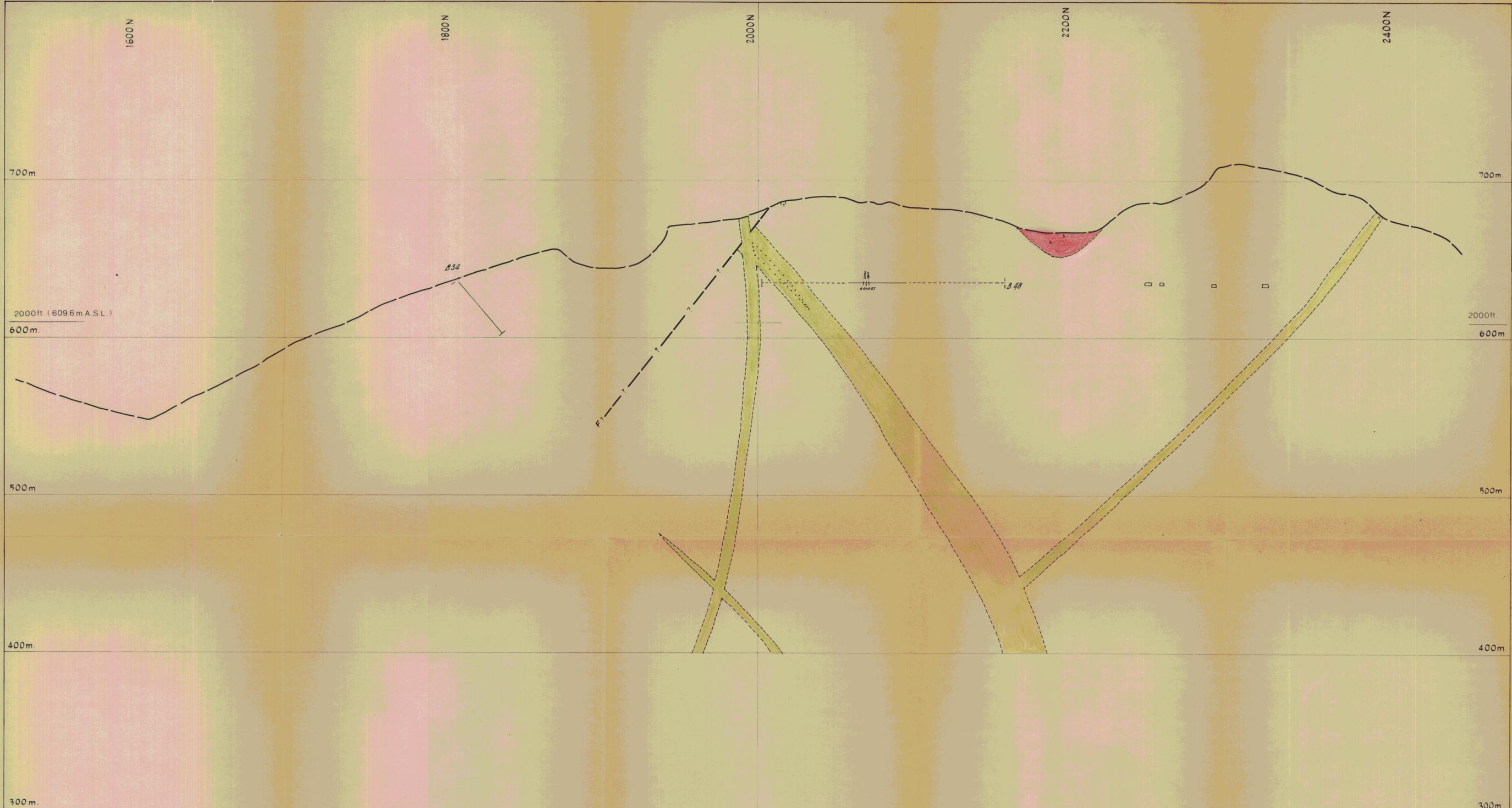
200m



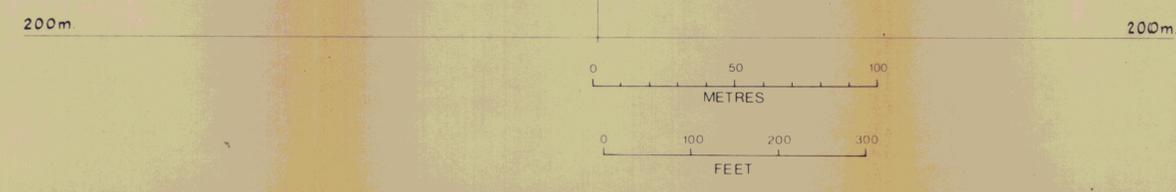
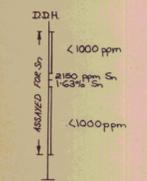
207228
 METALS EXPLORATION LIMITED
 MOUNT BISCHOFF TIN PROSPECT
 MOUNT BISCHOFF MINE AREA 78-1319
 INTERPRETED SECTION App 5.
LINE 1240 mE
 SHOWING RESERVES



SCALE 1:1200 LOOKING TO GRID WEST (240°M)
 DATE: DEC 1978 REVISED: DRG. NO. 79-112

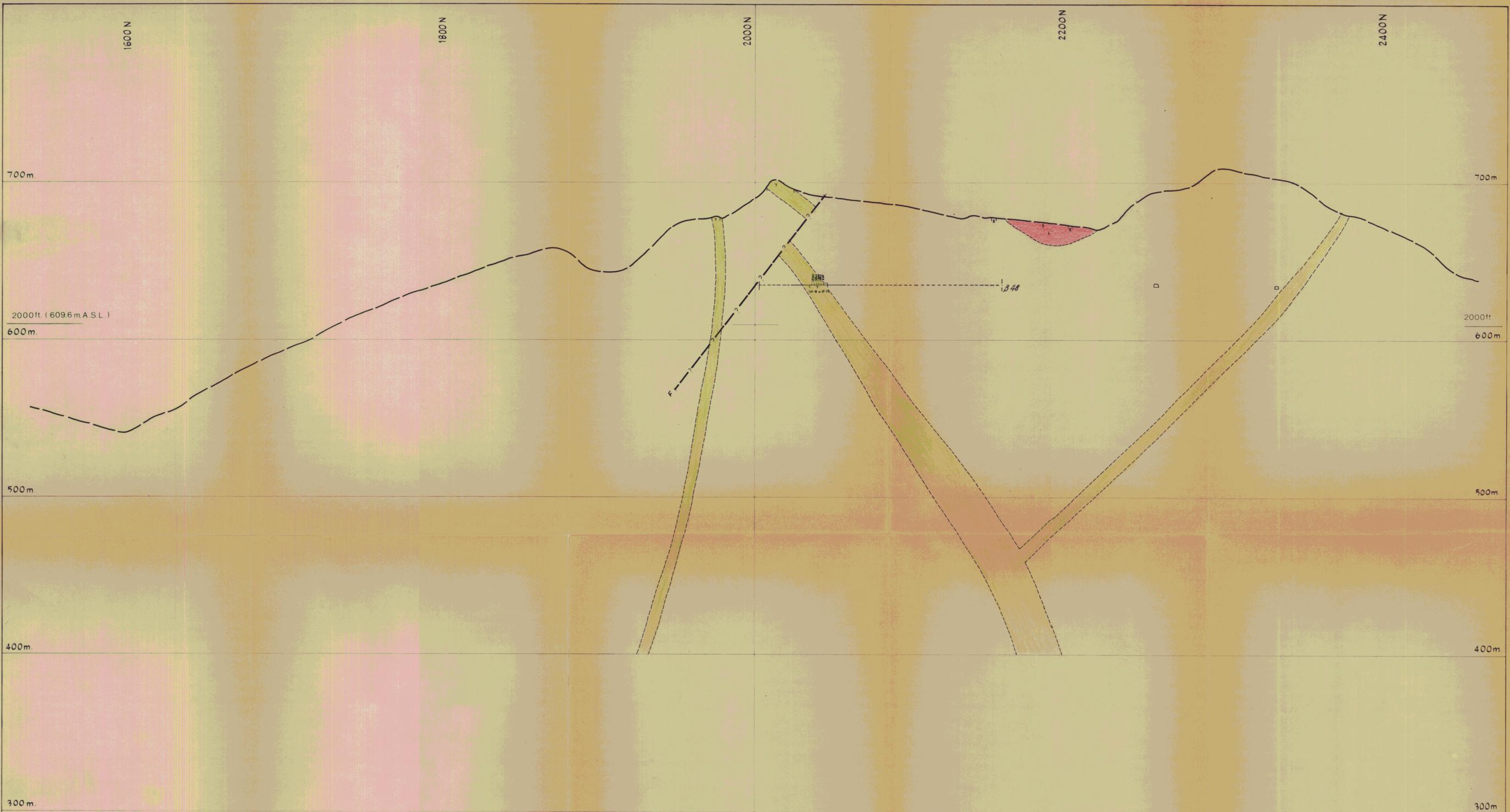


- RESERVE BOUNDARIES 0.3% Sn CUT OFF
- DRILL INDICATED
 - DRILL INFERRED
 - POSSIBLE
 - INTERPRETED GEOLOGICAL CONTACT
 - THEORETICAL PIT OUTLINE
- 2 DOLOMITE
 - 3/4 MINERALIZED DOLOMITE / TIN ZONE
PYRRHOTITE
 - ARGILLITES QUARTZITES AND SHALES
 - 7 PORPHYRY

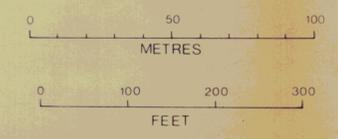
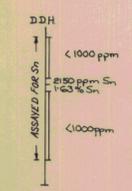


METALS EXPLORATION LIMITED
MOUNT BISCHOFF TIN PROSPECT
MOUNT BISCHOFF MINE AREA 48-1319
INTERPRETED SECTION App. 207229
LINE 1260 mE
SHOWING RESERVES

SCALE 1:1200 LOOKING TO GRID WEST (240°M)
DATE: DEC 1978 REVISED DRG. NO. 79-113



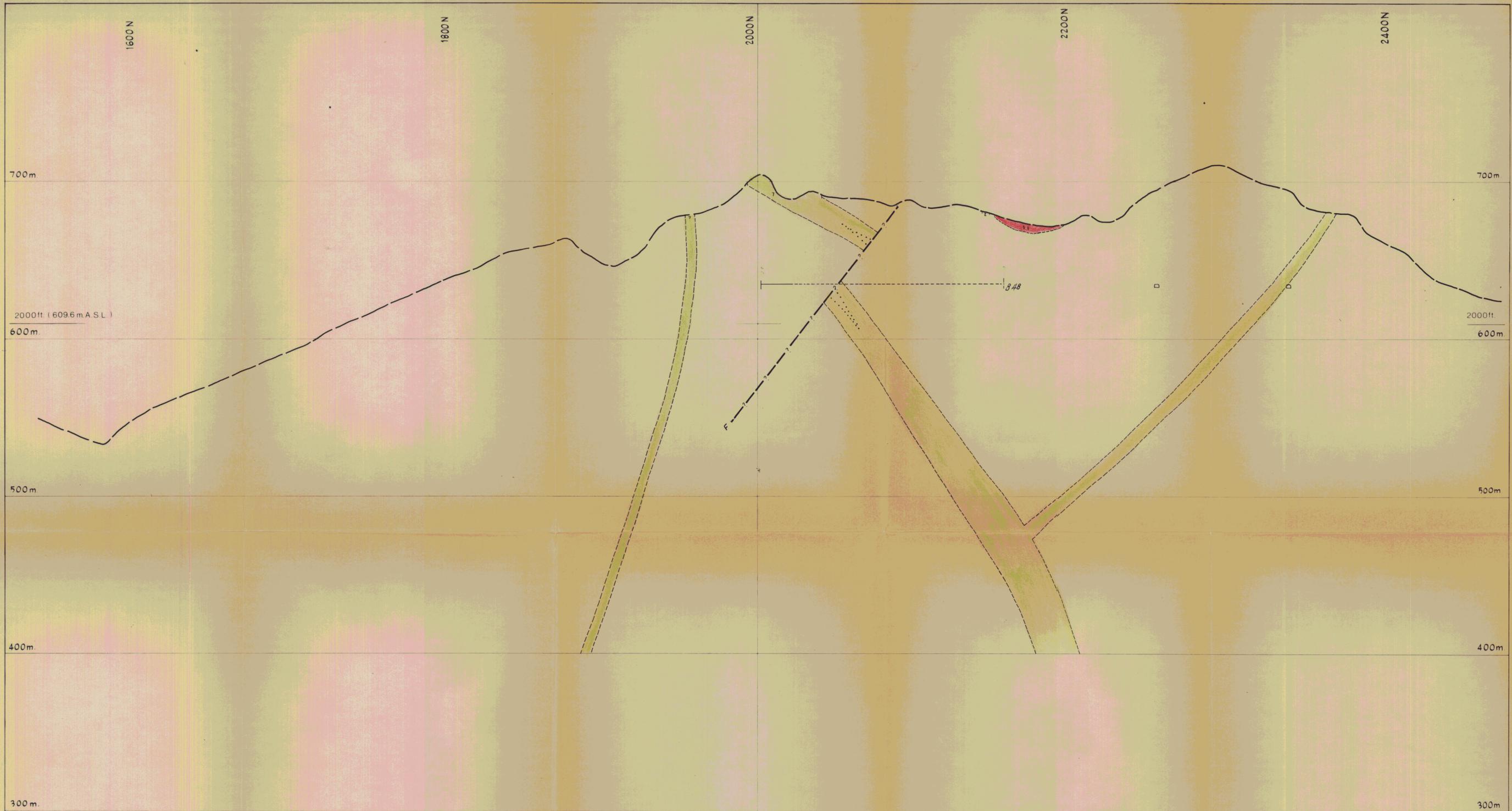
- RESERVE BOUNDARIES 0.3% Sn CUT OFF
- DRILL INDICATED
 - - - DRILL INFERRED
 - POSSIBLE
 - - - - INTERPRETED GEOLOGICAL CONTACT
 - THEORETICAL PIT OUTLINE
- 2 DOLOMITE
 - 3/6 MINERALIZED DOLOMITE/TIN ZONE
 - ARGILLITES, QUARTZITES AND SHALES
 - 7 PORPHYRY



METALS EXPLORATION LIMITED 207230
 MOUNT BISCHOFF TIN PROSPECT
 MOUNT BISCHOFF MINE AREA 78-1319
 INTERPRETED SECTION App 5
LINE 1280 mE
 SHOWING RESERVES



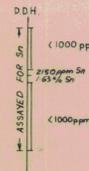
SCALE 1:1200 LOOKING TO GRID WEST (240°M)
 DATE: DEC 1978 REVISED DRG. NO. 79-114



RESERVE BOUNDARIES 0.3% Sn CUT OFF

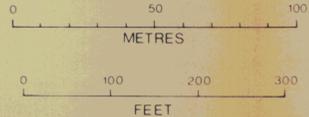
- DRILL INDICATED
- - - DRILL INFERRED
- POSSIBLE
- - - - INTERPRETED GEOLOGICAL CONTACT
- THEORETICAL PIT OUTLINE

- 2 DOLOMITE
- 3/1 MINERALIZED DOLOMITE / TIN ZONE
PIRRHOTITE
- ARGILLITES, QUARTZITES AND SHALES
- 7 PORPHYRY



200m

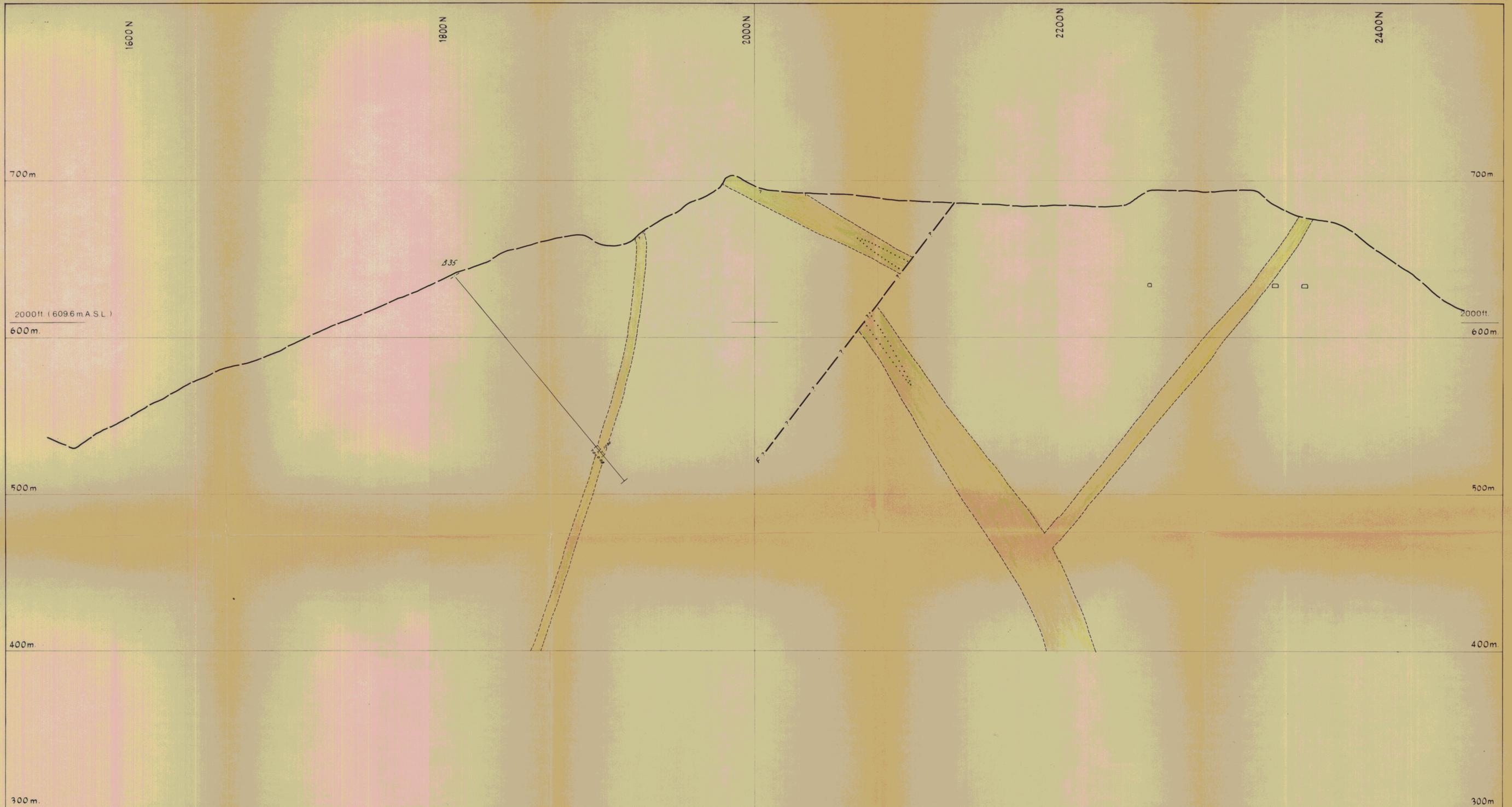
200m



METALS EXPLORATION LIMITED 207231
 MOUNT BISCHOFF TIN PROSPECT
 MOUNT BISCHOFF MINE AREA 78-319
 INTERPRETED SECTION App 5
LINE 1300 mE
 SHOWING RESERVES



SCALE 1:1200 LOOKING TO GRID WEST (240°M)
 DATE: DEC 1978 REVISED DRG. NO. 79-115



RESERVE BOUNDARIES 0.3% Sn CUT OFF

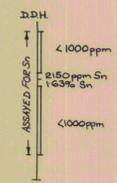
--- DRILL INDICATED

--- DRILL INFERRED

..... POSSIBLE

--- INTERPRETED GEOLOGICAL CONTACT

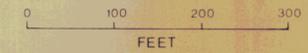
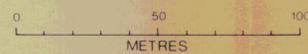
— THEORETICAL PIT OUTLINE



- DOLOMITE
- MINERALIZED PYROXENITE
- ARGILLITES QUARTZITES AND SHALES
- PORPHYRY

200m

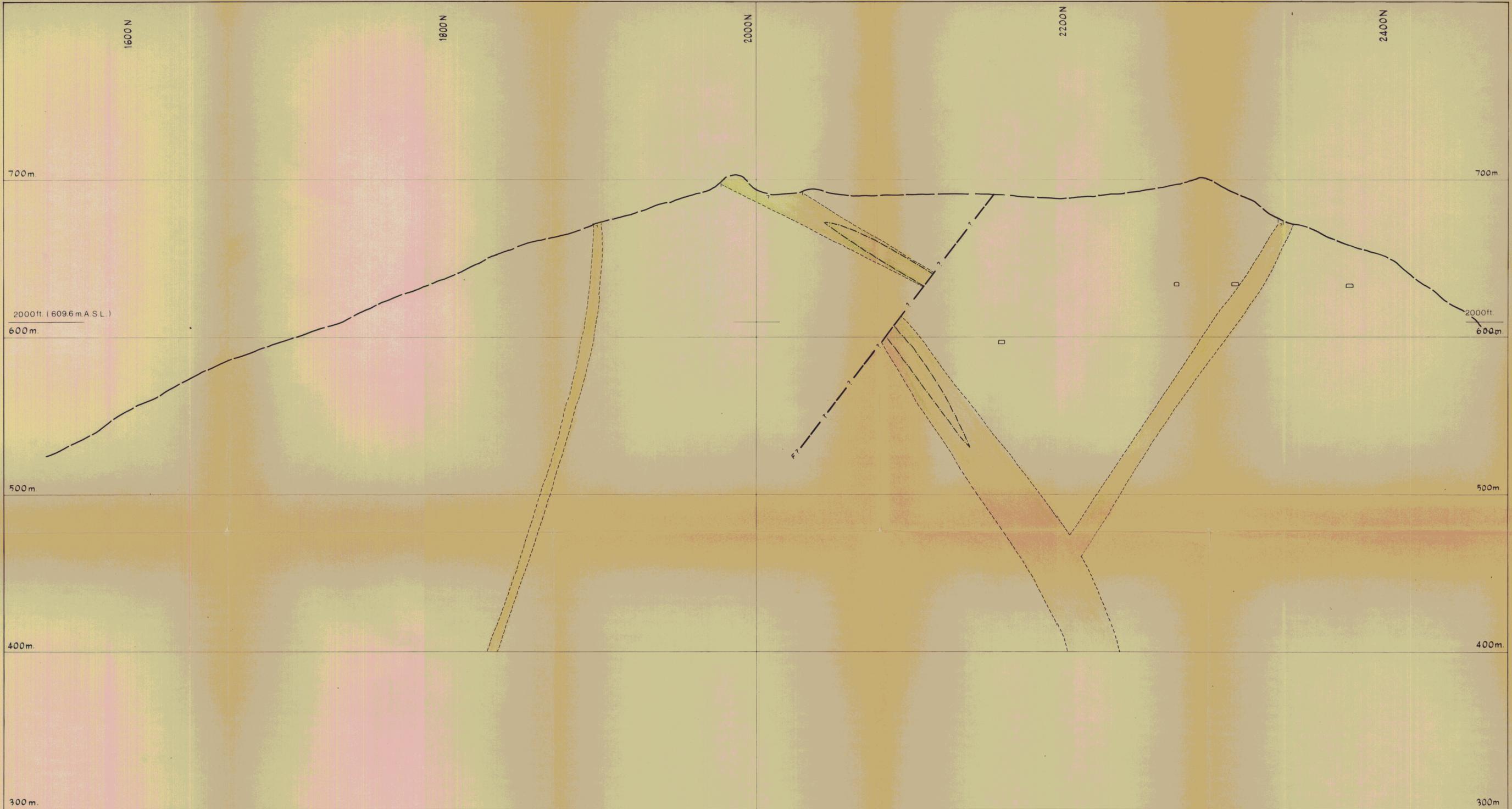
200m



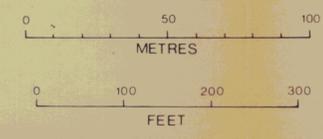
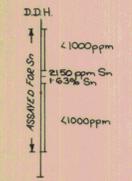
METALS EXPLORATION LIMITED 207232
 MOUNT BISCHOFF TIN PROSPECT
 MOUNT BISCHOFF MINE AREA 78-1319
 INTERPRETED SECTION App 5
LINE 1320 mE
 SHOWING RESERVES



SCALE 1:1200 LOOKING TO GRID WEST (240°M)
 DATE: DEC 1978 REVISED: DRG. NO. 79-116



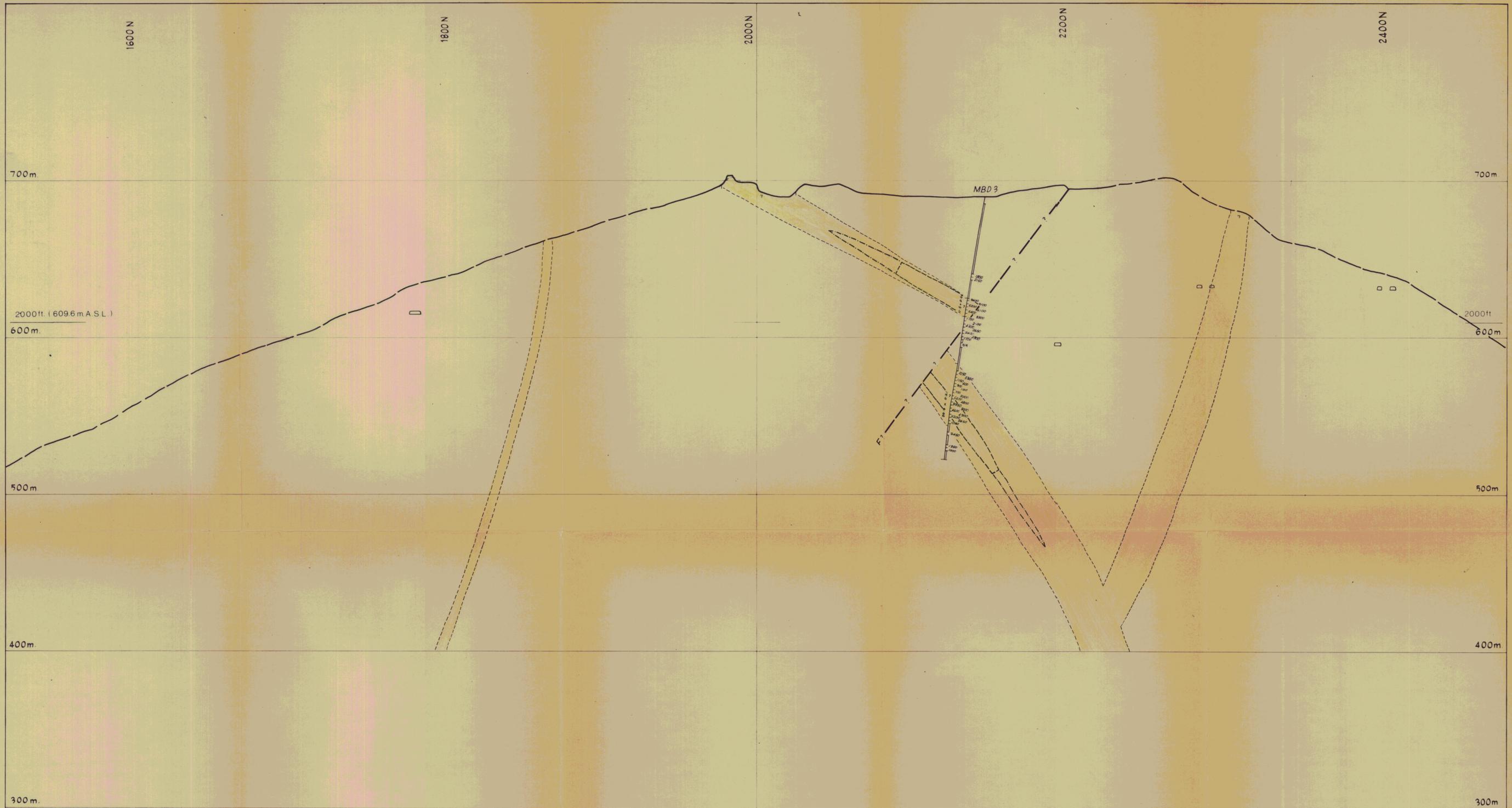
- RESERVE BOUNDARIES 0.3% Sn. CUT OFF
- DRILL INDICATED
 - DRILL INFERRED
 - POSSIBLE
 - INTERPRETED GEOLOGICAL CONTACT
 - THEORETICAL PIT OUTLINE
 - 2 DOLOMITE
 - 3 MINERALIZED DOLOMITE / TIN ZONE
PYRRHOTITE
 - ARGILLITES, QUARTZITES AND SHALES
 - 7 PORPHYRY



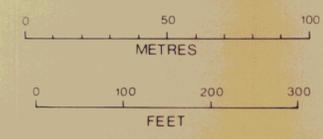
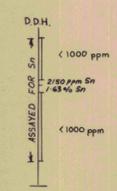
METALS EXPLORATION LIMITED
MOUNT BISCHOFF TIN PROSPECT
MOUNT BISCHOFF MINE AREA 78-1319
INTERPRETED SECTION APPS
LINE 1340 mE 207233
SHOWING RESERVES



SCALE 1:1200 LOOKING TO GRID WEST (240°M)
DATE: DEC 1978 REVISED: DRG. NO. 79-117



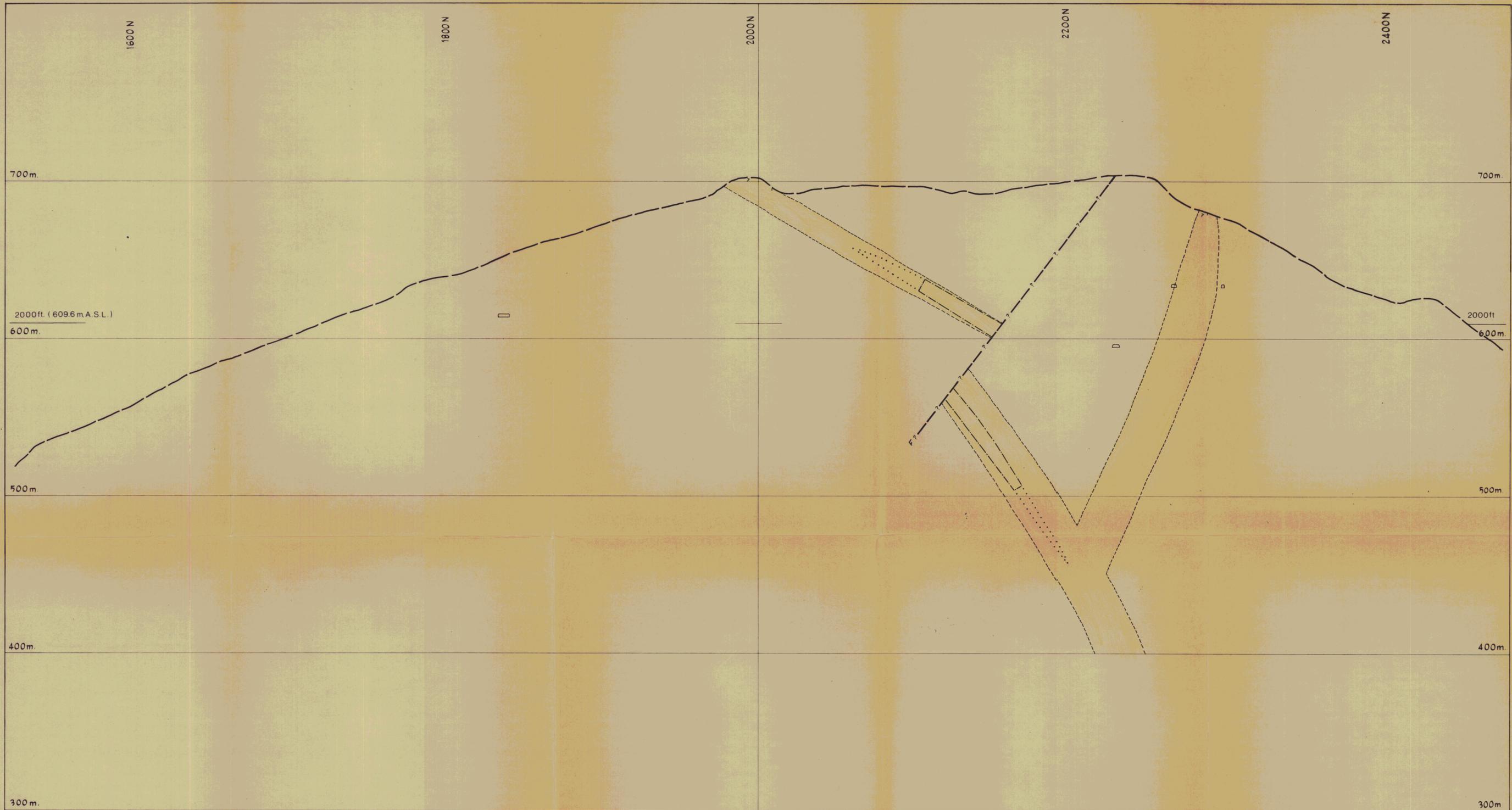
- RESERVE BOUNDARIES 0.3% Sn CUT OFF
- DRILL INDICATED
 - - - DRILL INFERRED
 - POSSIBLE
 - - - - INTERPRETED GEOLOGICAL CONTACT
 - THEORETICAL PIT OUTLINE
-
- 2 DOLOMITE
 - 3/A MINERALIZED DOLOMITE / TIN ZONE
PYRRHOTITE
 - ARGILLITES, QUARTZITES AND SHALES
 - 7 PORPHYRY



METALS EXPLORATION LIMITED 207234
 MOUNT BISCHOFF TIN PROSPECT
 MOUNT BISCHOFF MINE AREA 48-1219
 INTERPRETED SECTION App 5
LINE 1360 mE
 SHOWING RESERVES



SCALE 1:1200 LOOKING TO GRID WEST (240°M)
 DATE: DEC 1978 REVISED: DRG. NO. 79-11B



RESERVE BOUNDARIES. 0.3% CUTOFF

--- DRILL INDICATED
 - - - - - DRILL INFERRED
 POSSIBLE
 - - - - - INTERPRETED GEOLOGICAL CONTACT
 ——— THEORETICAL PIT OUTLINE

2 DOLOMITE
 3/1 MINERALIZED DOLOMITE / PYRRHOTITE / TIN ZONE
 4 ARGILLITES, QUARTZITES AND SHALES
 7 PORPHYRY

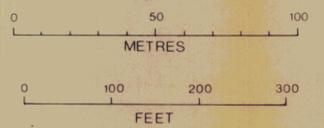
DDH.

ASSAYED FOR Sn

< 1000 ppm
 250 ppm Sn
 43% Sn
 < 1000 ppm

200m.

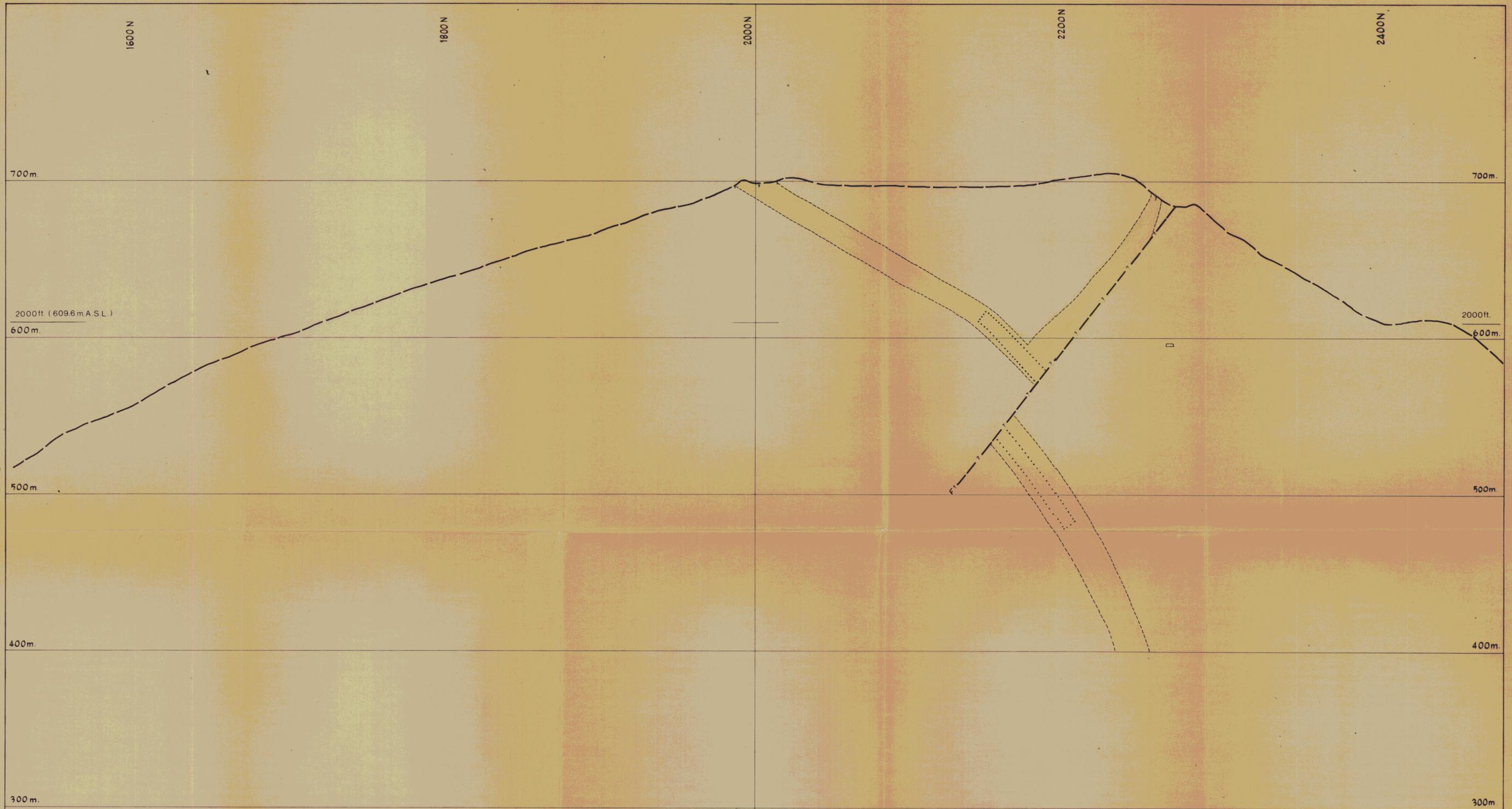
200m.



METALS EXPLORATION LIMITED 207235
 MOUNT BISCHOFF TIN PROSPECT
 MOUNT BISCHOFF MINE AREA 78-1219
 INTERPRETED SECTION App 5
LINE 1380 mE
 SHOWING RESERVES



SCALE 1:1200 LOOKING TO GRID WEST (240°M)
 DATE: DEC 1978 REVISED: DRG. NO. 79-119

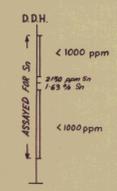


RESERVE BOUNDARIES 0.3% Sn CUTOFF

--- DRILL INDICATED
 - - - DRILL INFERRED
 POSSIBLE

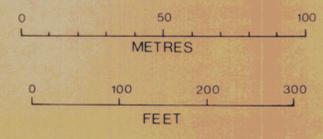
----- INTERPRETED GEOLOGICAL CONTACT
 _____ THEORETICAL PIT OUTLINE

2 DOLOMITE
 3/1 MINERALIZED DOLOMITE / TIN ZONE
 ARGILLITES, QUARTZITES AND SHALES
 7 PORPHYRY



200m.

200m.



METALS EXPLORATION LIMITED 207236
 MOUNT BISCHOFF TIN PROSPECT
 MOUNT BISCHOFF MINE AREA Y8-1319
 INTERPRETED SECTION App 5
LINE 1400 mE
 SHOWING RESERVES



SCALE 1:1200 LOOKING TO GRID WEST (240°M)
 DATE: DEC 1978 REVISED: DRG. NO. 79-120