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GEOPEKO

A DIVISION OF PEKO-WALLSEND OPERATIONS LIMITED.

ELLIOTT BAY AREA - TASMANIA

PROGRESS REPORT: EXPLORATION LICENCE 27/76

VOYAGER 1 AND VOYAGER 5 PROSPECTS.

1978-79 FIELD SEASON

by

C.D. STRICKLAND

DEVONPORT, TASMANIA. OCTOBER, 1979.

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SUMMARY

Exploration Licence 27/76 is currently held by Geopeko, a Division of Peko-Wallsend Operations Limited and occupies a total area of 329 square kilometres.

This report details the nature and results of a brief diamond drilling programme carried out during the summer of 1978-79 at the Voyager 1 and 5 prospects.

It discusses the significance of two styles of mineralization located at Penders workings, namely a magnetite and a sulphide facies and describes the significance of tungsten mineralization located to date in the northern extension of the magnetite facies.

Exploration to date has concluded that the magnetic horizons are strataform in origin and that potential for economic mineralization may occur along strike in fold axes.

The expenditure incurred by Geopeko for this project cannot be compiled as a separate cost account and as such is reported in Strickland C.D. 1979 "Progress Report, Regional Evaluation: 1978-79 Field Season". as a financial statement incorporating all facets of that seasons exploration activities.

Recommendations for the onward exploration programme are presented in this report.

INTRODUCTION

Exploration Licence 27/76 termed Elliott Bay, currently held by Geopeko, occupies an area of 329 square kilometres in the land district of Montgomery, south west Tasmania. (See Fig 1)

Reconnaissance and prospect evaluation within the Voyager 1 and 5 areas was first carried out by Geopeko during the 1976-77 and 1977-78 summer seasons. That evaluation is fully reported in STRICKLAND C.D. 1978.

This report reviews a limited diamond drilling programme carried out during 1978-79 at Voyager 1 and 5 and discusses the onward proposals resulting from this that drilling evaluation. (See Fig 2)

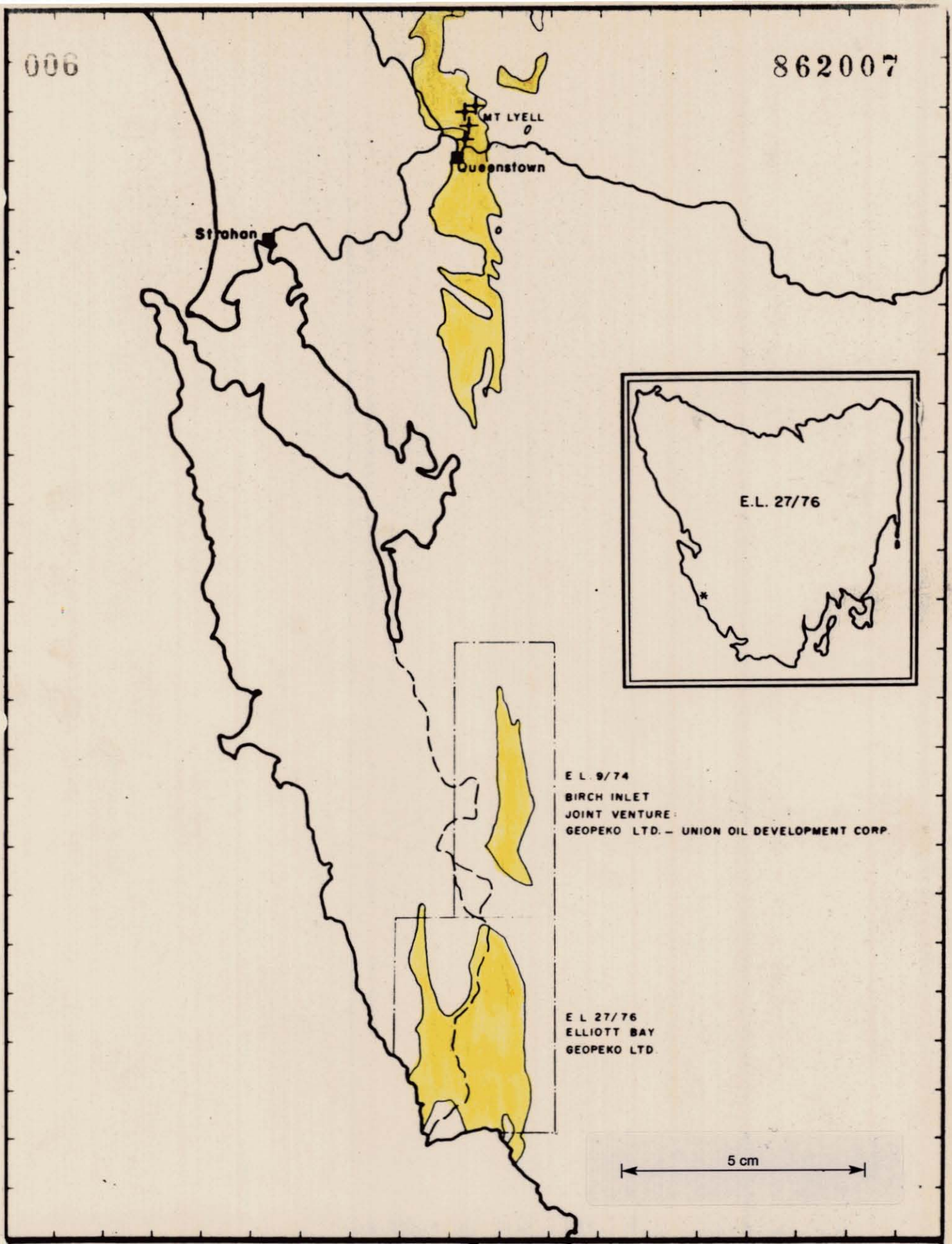
The 1978-79 exploration programme consisted of:

a) Diamond drilling:

Voyager 1/1	8.2m	- 30.8m
Voyager 1/2	0m	- 30.9m
Voyager 5/1	9.0m	- 30.0m
Voyager 5/2	3.2m	- 30.6m

b) Geological, geochemical and geophysical evaluation of drill core.

c) Reporting.



LEGEND

- Significant Basemetal Mineralization
- Mt Read Acid Volcanics
- Road
- Track

DATE 18-4-78
GEOL C D S
DWN J P M
CHKD CDS

GEOPEKO LIMITED
KING ISLAND
Scale 1 500 000
Fig No. 1

LOCATION MAP
E.L. 27/76

CONCLUSIONS

Voyager 1

1. Two distinct styles of mineralization are present at the old Penders workings.

   a) Sulphide facies: chlorite, pyrite, carbonate minor chalcopyrite: "Penders 1"

   b) Magnetite facies: magnetite, chlorite, carbonate: "Penders 2"

2. Ground magnetics has successfully delineated the northern extensions of the Penders 2 type lode and diamond drilling of magnetic features has intersected magnetite chlorite in both holes.

3. Petrographically the mineralized horizons appear to be strataform and representative of a chemical sediment horizon.

4. The magnetite-chlorite horizon intersected in V1/DDH2 contains anomalous tungsten mineralization in the form of fine grained scheelite. Considerable potential exists within the Voyager 1 area for an enriched tungsten zone particularly within fold axes - to date the strike length of the magnetic zones is approximately 1.5 kilometres and a northern extension across the Lewis River is programmed for evaluation.

Voyager 5

1. Diamond drilling has indicated that the Voyager 5 prospect is situated on the contact between the Low Rocky Point granite and the Lewis River volcanics.

2. The minor amounts of disseminated magnetite within the core from V5/DDH 1 and V5/DDH 2 do not appear to account for the Voyager 5 magnetic anomaly.

3. The I.P. anomaly located in this area during the prospect survey of 1977-78 has not been satisfactorily explained by the drill evaluation.

4. The magnetic trends, based upon the wide spaced Voyager 1 grid survey, cross cut the granite contact yet 600 metres to the west similiar magnetic trends have been shown to be strataform:- this feature is yet to be adequately explained.

RECOMMENDATIONS

1. For the purpose of investigating potential skarn and strataform deposits containing tungsten the Voyager 1, 7, and 9 area magnetic anomalies should be more closely examined.

2. Reconnaissance on the north side of the Lewis River is recommended, utilizing tape and compass traverses for the purpose of defining a northerly extension to the Penders 2, magnetite lode-strataform horizon.

3. Carry out fill in gridding at 50 metre centres between 11600N - 12400N and 9400E - 9800E for the purpose of detailed ground magnetics at 5 metre centres. Magnetic modelling would be used to generate the best drill target.

4. Locate and grid the Voyager 7 magnetic anomaly prior to detailed geology, magnetics and C-horizon geochemistry. Auger-core testing of anomalous results as warranted.

5. Model Voyager 5 magnetics and drill core susceptibilities in an attempt to explain the magnetic anomaly and trend structures.

6. Shallow auger core testing of the Voyager 9 prospect.

ACTION SHEET

GEOLOGY

Based upon the recommendations outlined by Strickland, C.D., 1978, a brief diamond drilling programme involving 4 holes was implemented for the purpose of:

a) Testing the narrow linear magnetic anomaly extending northwards from the Voyager 1 prospect (Penders Prospect) for a possible mineralized strataform horizon.

b) Testing to define the Low Rocky Point granite/ Lewis River volcanics contact and to test the coincident magnetic and I.P. anomalies at Voyager 5.

The geology of the Voyager 1 Area is described in detail in Strickland, C.D., 1978, and presented as an updated geological interpretation at 1:5,000 scale on Sheet KT 27/76 V1-2 in the folder of this report.

A re-evaluation of the Voyager 1 prospect, involving further field observations has defined two distinct styles of mineralization separated by 50 metres and both parallel to the dominant regional cleavage.

The main lode called Penders 1 is representative of a sulphide facies style of mineralization and is composed of pyrite (30%), chlorite (40%), siderite (20%) and chalcopyrite (1%). This style of mineralization would be expected to give both I.P. and geochemical responses. Due to its coastal location and limited width systematic geophysical coverage of this zone is impractical.

The second lode, Penders 2, is situated approximately 50 metres south-east of Penders 1 and is composed of magnetite (40%), chlorite (40%), siderite (5%) and quartz (15%). No visible chalcopyrite is present in this lode and has been confirmed by the previous geochemical sampling. This magnetite facies has a strong magnetic response (1976-77 reconnaissance magnetometer traverses).

Two major phases of deformation affect the Voyager 1 lithologies, unlike Voyager 2 and 3 where only one deformation phase is recognised. The mineralization styles at Penders is pre-deformation and suggests that it may have been originally strataform in nature, although both lode zones are now strongly deformed and dominated by the main structural element.

Due to the scarsity of outcrop in the north-eastern portion of the Voyager 1 area grid, the western margin of the Low Rocky Point granite was based largely on the geological interpretation of the rock chips from the C-horizon auger holes, and the Voyager 5 magnetic anomaly was thus originally located within the granite.

The 1977-78 I.P. resistivity interpretation suggested that the granite contact could be in fact further east and the suggestion generated additional potential for the Voyager 5 coincident I.P. and magnetic anomalies with that prospect located within the Lewis River volcanics adjacent to the granite contact.

Sheet KT 27/76 V1-2 shows the revised granite contact and the details and positions of the 4 diamond holes drilled for the purpose of testing points (a) and (b) above. The interpretation geological map also shows

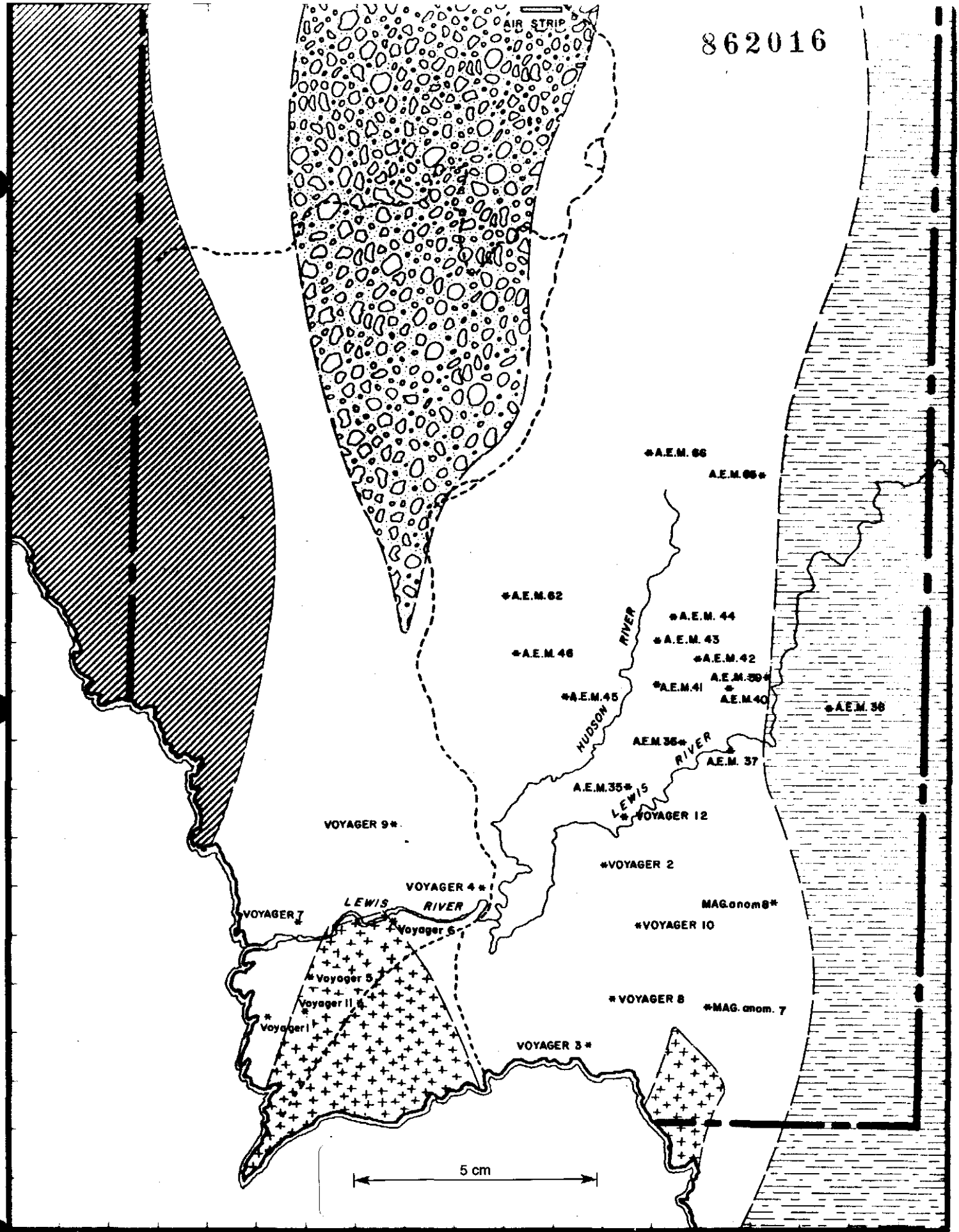
in symbolic format the major magnetic horizons based upon the results of the ground magnetic survey. The positioning of these magnetic trends has been aided by a study of the Fe and Mn C-horizon geochemical results which can be seen on Sheet TS 27/76 V1-13 to be related to the magnetite horizons. The 200 metre spacing of the grid traverses together with the rapid variation in the magnetic response prevents these trends from being anything but interpretative.

DIAMOND DRILLING

Prospect diamond drilling was undertaken by Geopeko utilizing a converted Jacro 200-27 hydraulic rig mounted on and powered by a Muskeg Tractor Bombardier. Pre collaring with 3 inch diameter auger proved unsatisfactory allowing serious collar deviation to occur, so diamond drilling from the surface was adopted as the standard technique wherever possible. Diamond drilling was carried out using AQ wireline equipment and impregnated bits. A portable water pump and up to 600 metres of lay-flat hose provided lubricating and cooling water for the drilling, the water sources varying from small creeks to sea water as available. An auxiliary water tank mounted on the side of the Bombardier provides a limited on site storage facility.

The versatile rig has a maximum AQ capacity of 90m, however core recoveries in soft volcano-sedimentary lithologies are barely acceptable and a severe lack of solid core is reflected in the geological interpretation of the drill holes.

Refer to Appendices 1-4 for details of the drill hole logs.



Ordovician conglomerate

C granite

C Mt READ volcanics

C Dundos group

PC quartzite

GEOPEKO

Scale 1:100 000

Fig 2

DATE: Oct. '79

GEOL: C.D.S.

DWN: J.P.M.

CHKD: cds.

ELLIOTT BAY
E.L. 27/76
Prospect Location Map

DISCUSSION OF RESULTS

Voyager 1

Diamond drill holes V1/DDH 1 and V1/DDH 2 have demonstrated that the linear magnetic anomalies are due to narrow magnetic horizons comparable with the Penders 2 lode.

Petrographic examination has suggested that the magnetite-chlorite-carbonate lode is of chemical sediment origin and thus strataform. The linear extent, based upon ground magnetics, of these horizons also suggests a strataform nature rather than a vein occurrence.

Structural deformation on a small scale is well developed in the drill core and the parallel repitition of the magnetic features may represent a regional deformation of a single strataform horizon or several independant horizons.

Significant tungsten (220ppm, XRF analysis) was intersected between 18m-19m in V1/DDH 2 associated with the magnetite-chlorite-carbonate lode. A chip sample taken across the Penders 2 lode at the site of the old workings analysed 90ppm W. Chip and grab samples of the Penders 1 lode analysed 110ppm and 90ppm W respectively. As the diamond drill holes are situated between 800m-1000m north along strike from the Penders workings considerable potential exists for the development of a W enrichment zone, particularly in the fold axes where remobilization may have taken place. Potential also exists north of the diamond drill holes, a grab sample of chloritic volcaniclastic shale containing pyrite from approximately 12,500N 9800E on the southern bank of the Lewis River analysed 60ppm W. Additional

ground magnetics is required in this locality to confirm the presence of extensions to the Voyager 1 magnetic trends.

The presence of anomalous W within the Penders 1 lode (non-magnetic, sulphide rich horizon) is important, yet targeting this horizon is yet to be attempted. This zone would be expected to produce both I.P. and geochemical anomalies, however the existing traverse spacing of 200 metres x 25 metres coupled with the narrow dimensions of the lode has not generated any significant targets. In contrast the Penders 2 lode type characterized by up to 40% magnetite is well defined by ground magnetics and in addition is outlined by both Fe and Mn geochemistry. (See Sheet TS 27/76 V1-13.)

Voyager 5

Diamond drilling has established that the Voyager 5 prospect is situated adjacent to the Low Rocky Point granite contact within chloritic and siliceous crystal tuff rhyolitic pyroclastics containing minor zones of disseminated magnetite. Although considerable core loss occurred at the contact of the granite, based upon the degree of silicification and alteration within V5/DDH 1 and V5/DDH 2 together with the marked loss of relect deformation effects it is considered that the western boundary of the Low Rocky Point granite is not a faulted contact.

It is questionable if the amount of disseminated magnetite within the Voyager 5 core could explain the magnetic anomaly centred at Voyager 5, the minor pyrite in V5/DDH 2 certainly does not explain the I.P. anomaly.

Magnetic susceptability plots are presented in the folder of this report.

The magnetic trends in the Voyager 5 area, based upon the wide spaced Voyager 1 grid survey, appear to cross cut the granite contact, this feature is yet to be adequately explained.

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C.D. STRICKLAND.
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LOG. OF VOYAGER 1, D.D.H. 1. ELLIOTT BAY E.L. 27/76.

PLANNING

Proposer:	C.D. Strickland
Depth:	30m
Location:	Voyager 1 Area Grid
Purpose of hole:	Evaluation of narrow linear magnetic anomaly
Co-ordinates:	11800N, 9540E
Inclination:	-60^{o}
Bearing:	090^{o} TN
Approved by:	M.C. Rogers
Date:	30-1-1979

SUMMARY

Logged by:	C.D. Strickland
Results:	11.0m - 13.8m Magnetite-chlorite

DRILLING

Date terminated:	2-2-1979
Driller:	M.W. Longmore
Core:	A.Q. 8.2m - 30.8m
Final depth:	30.8m
Reasons for termination:	Intersected magnetite horizon
Water:	Normal water return throughout Hole drilled with sea water

Comments on Drilling Conditions:

1. Augered to 8.2m
2. Slow drilling in broken ground.

02

VOYAGER 1 D.D.H. 1 Geological Log.

0 - 8.2m No core. Auger pre-collared section.

8.2m - 11.0m Semi oxidized crystal tuff

Pale brown-green semi-oxidized rhyolitic pyroclastic extensively silicified with only small portions of the core showing any diagnostic relict textures. Sericitization occurs throughout this unit, and a rare pyrite crystal occurs within a quartz fragment at approximately 9.0m. Between 9.5m - 11.0m the chlorite content of the core increases, and at 11.0m a 1.5cm quartz vein occurs at 70° to L.C.A. This quartz vein is associated with magnetite, chlorite and minor pyrite. Core recovery throughout this interval is approximately 40%.

11.0m - 13.8m Magnetite-chlorite

Dark green-black massive Magnetite-chlorite containing bedded? horizons of pyrite mineralization irregularly throughout. The pyrite occurs predominantly as crystals varying from microscopic size up to angular fragments 5mm in diameter.
Bedding of pyrite units is as follows:

11.5m	46°	to L.C.A.
12.2m	52°	" "
12.5m	55°	" "
13.0m	52°	" "
13.8m	40°	" "

This unit is characterised by strong magnetics throughout, with the exception of the unit between 13.3m - 13.5m.
Carbonate (Dolomite) may be a constituent of this chemical sediment?
Core recovery throughout this interval is approximately 60%.

13.8m - 14.2m Chloritic Pyroclastics

Dark green non magnetic unit containing dominantly chlorite with bedded? pyrite crystals up to 2mm aligned at 45° to L.C.A. The chlorite content rapidly decreases through to 14.2m at which point relict pyroclastic textures (particularly quartz phenocrysts or crystals) are evident.
Core recovery approximately 50%.

14.2m - 30.8m Foliated Crystal Tuff

This massive unit consists of a semi chloritic green highly foliated (crenulated) pyroclastic. The original texture of the rock is almost destroyed by the intense foliation, the rock appears in part almost schistose. This unit is interpreted to be a crystal tuff pyroclastic based upon the quartz fragments within the rock and the banded nature of the texture, as distinct from the flow banded nature of a lava unit. The crenulations generally have a wavelength of between 4-6mm and the folation is aligned to the L.C.A. as follows:

15.1m - 45° to L.C.A.
16.5m - 45° " "
18.7m - 30° " "
20.0m - 70° " "
22.6m - 60° " "

The rock consists predominantly of quartz crystals up to 2mm, with also relict feldspar crystals now largely sericitized, both in fine grained semi chloritic-sericitic matrix, with a distinct foliation highlighted by chlorite and sericite.
Quartz veining occurs at 15.1m, 15.4m and 15.6 - 15.7m.
These white secondary quartz veins are aligned at approximately 90^{o} to the L.C.A.

The core recovery between 15m - 20m is excellent, averaging 95%, however considerable core loss occurs between 20m - 24m, and approximately 60% of the core is available.

Irregular increases in the chlorite occur over narrow zones up to 1cm parallel to the foliation and on a small scale can be seen to be crenulated. Examples of these chloritic zones occur at 16.15m, 17.15m, 17.85m, 18.0m, 23.4m, 23.7m, 24.6m and 26.8m.

The interval between 26.8m - 30.8m (E.O.H.) is similiar to the above zone, however is more intensly chloritzed and has a greater variation in grain size. The chloritization commonly is present in zones up to 10cm and within these units rare pyrite crystals occur parallel to the dominant foliation direction. Textured vaiations are subtle giving an overall interbedded nature to the unit with variations from pyroclastics with crystals up to 2mm abruptly changing to fine grained volcaniclastic greywackes - siltstones. Throughout this unit the dominant foliation is aligned at 60^{o} - 70^{o} to L.C.A.

E.O.H. 30.8m

02

VOYAGER 1 DIAMOND DRILLING PROGRAMME

Geochemical Results

D.D.H. 1

Co-ordinates 11800N, 9540E

Bearing 090° TN

Dip -60°

Depth 8.2m-30.8m

KR No	Interval	Core Recovered	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ba ppm	Au ppb	Sn ppm	W ppm
5213	8.2-10	0.8	-2	10	90	-1		-3	-5	10
14	10-12	0.65	5	10	105	1		-3	5	30
15	12-13	0.6	30	20	120	2		-3	-5	50
16	13-14	0.95	30	15	90	1		-3	-5	30
17	14-15	1.0	2	5	65	-1		3	-5	10
18	15-16	1.0	-2	10	40	-1		3	-5	10
19	16-17	1.0	5	5	50	-1		3	-5	10
5220	17-18	1.0	2	5	40	-1				
21	18-19	1.0	-2	5	30	-1				
22	19-20	0.9	2	15	20	-1				
23	20-21	0.9	-2	40	10	-1				
24	21-22	0.7	2	10	40	-1				
25	22-23	0.8	2	5	35	-1				
26	23-24	0.9	5	5	50	-1				
27	24-25	1.0	-2	5	10	-1				
28	25-26	0.9	-2	5	30	-1				
29	26-27	0.95	-2	5	10	-1				
5230	27-28	0.95	2	-5	30	-1				
31	28-29	1.0	-2	5	40	-1				
32	29-30	1.0	Sample Not Received							
5233	30-30.8	0.8	-2	5	45	-1				

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LOG. OF VOYAGER 1, D.D.H. 2. ELLIOTT BAY E.L. 27/76

PLANNING

Proposer:	R.R. Large
Depth:	30m
Location:	Voyager 1 Area Grid
Purpose of hole:	Evaluation of proposed sulphide facies mineralization zone.
Co-ordinates:	12000N, 9580E
Inclination:	-60^{o}
Bearing:	090^{o} TN
Approved by:	R.R. Large
Date:	17-3-1979

SUMMARY

Logged by:	C.D. Strickland
Results:	13.8m - 15.0m Magnetite-chlorite
	18.3m - 19.2m Magnetite-chlorite
	18.0m - 19.0m 220ppm W (XRF analysis)

DRILLING

Date terminated:	20-3-1979
Driller:	M.W. Longmore
Core:	AQ 0m - 30.9m
Final depth:	30.9m
Reasons for termination:	Intersected magnetic horizon
Water:	Normal water return throughout Hole drilled with sea water

Comments on Drilling Conditions:

1. Diamond drilled from surface
2. Steady drilling in partly broken ground.

020

862027

Voyager 1 D.D.H.2 Geological Log

0 - 0.3 No core

0.3m - 0.4m Quartz rubble

Dominantly rounded core pieces of secondary quartz vein rubble together with fragments of acid volcanic rubble.

4.0m - 12.0m Vitric crystal tuff

This homogeneous unit consists of a fine grained siliceous groundmass containing crystals of rounded quartz and eroded sericitized feldspars. The crystals, particularly the quartz crystals range in size from 1mm - 3mm. A dominant foliation occurs throughout this unit with distinct wispy sericite streaked parallel to the foliation. More intense foliation occurs on a local scale, often over intervals of up to 5cm where contorted crenulations are present, again outlined by sericite and also minor chlorite. Quartz veining is rare, and veins are narrow (2mm) where present.
Alignment of the foliation is as follows:

5m 60° to L.C.A.
6m 60° " "
7m 60° " "
10m 65° " "

Between 9.5m - 12.0m a marked increase in sericite occurs with the development of weathered out sericite lined veins and cavities throughout the core.
Core recovery throughout this unit is approximately 80%.

12.0m - 13.8m Crystal tuff

Consisting of dominantly crystal tuff pyroclastics and containing significant chlorite and sericite. In contrast to the unit above the crystal content is more abundant and dominates the groundmass. The quartz crystals range in size from approx. 1mm - 4mm and rare well developed pyrite crystals are in the more chlorite zones. The unit still displays a major foliation; 13.5m 55° to L.C.A.
Core recovery approximately 100%.

13.8m - 15.0m Magnetite - chlorite

This dark massive unit consists predominantly of magnetite and contains also chlorite, carbonate (dolomite?) talc, quartz and pyrite all in a distinctly banded texture. Massive pyrite is occassionally present in zones up to 2cm wide, it however prefers to occur as well formed discrete crystals in distinct horizons. Narrow chlorite-non magnetic pyroclastic zones occur within this interval e.g. 14.6 - 14.8m. Foliation to L.C.A. approximately 45°.

15.0m - 18.3m Chloritic crystal tuff

This highly variable unit consists of a chloritic foliated-sheared crystal tuff containing significant chlorite throughout and in part magnetite. The core contains magnetite-chlorite zones at 15.1m, 15.4 - 15.6m, 15.8m and minor magnetite between 17.4 - 17.7m. Massive white secondary quartz veins associated with chlorite occur at 16.25m and between 16.5 - 16.7m. These veins are aligned at approximately 60° to L.C.A. The well developed foliation within this unit is aligned at 55° to L.C.A. at 17.5m
Core recovery approximately 80%.

862029

020

18.3m - 19.2m Magnetite - chlorite

Dark massive magnetite - chlorite unit similiar to that above however although horizons of pyrite occur it is less abundant than previously. Sample No KR 4083 (19.1m) was described in detail by W. Fander, C.M.S. (See Appendix No. 5). This unit consists predominantly of magnetite, carbonate (dolomite?), chlorite, talc and quartz with a distinctly banded distribution. This banding is aligned at 55° to L.C.A., e.g. 18.8m. Traces of scheelite (fluorescent spots) are visible, the grains are very small 20 - 60μ and the rounded grain are associated with all the other minerals, embedded in the quartz, chlorite, carbonate, talc and on the surfaces of the magnetite crystals.
Interval 18 - 19m analysed 220ppm W (X.R.F) .
Core recovery approximately 90%

19.2m - 30.9m Crystal tuff

This interval consists of a chloritic - semi chloritic sequence of foliated crystal tuff pyroclastics containing irregular zones of magnetite and chlorite and very rare pyrite crystals throughout. Dominantly the foliation occurs as a persistant banding throughout the core aligned at 50 - 60° to L.C.A, however at 22m an intensly crenulated example occurs appearing to related to micro faulting. The quartz crystals range in size from 0.5mm - 3mm and well formed pyrite cubes occur up to 1mm. A massive zone of quartz occurs between 20.1m - 20.4m representing either a vein or a zone of intense silicification. Sericitization is well developed, with associated broken and lost core between 22.6m - 23.0m.

862030

This unit continues through to 30.9m with a consistant foliation alignment of approx 50^{o} - 60^{o} to L.C.A.
Grain size differentiation is obvious between 28m - 30m and bands? of finer tuffs (0.5mm diam crystals of quartz) in a vitric matrix up to 15cm thick occur within the dominant coarser (1mm - 3mm diam quartz crystals) crystal tuff.
Core recovery approx. 95 - 100%.

30.9m E.O.H.

VOYAGER 1 DIAMOND DRILLING PROGRAMME

Geochemical Results

D.D.H. 2

Co-ordinates 12,000N, 9,580E

Bearing 090° TN

Dip -60°

Depth 0m - 30.9m

KR No	Interval	Core Recovered	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Ba ppm	Au ppb	Sn ppm	W ppm
5101	0-4	0.5	5	20	145	-1		5		
02	4-5	1.0	15	10	40	-1		3		
03	5-6	1.0	10	10	35	-1		5		
04	6-7	1.0	2	10	45	-1		3		
05	7-8	1.0	-2	10	80	-1		3		
06	8-9	1.0	-2	10	40	-1		-3		
07	9-10	1.0	-2	15	45	-1		3		
08	10-11	1.0	-2	5	50	-1		-3		
09	11-12	1.0	2	5	65	-1		3		
5110	12-13	1.0	-2	-5	35	-1	880	3	5	10
11	13-14	1.0	20	15	135	1	580	3	-5	20
12	14-15	1.0	65	60	210	2	300	5	-5	70
13	15-16	1.0	2	10	160	1	340	3	-5	20
14	16-17	0.8	-2	10	130	1	330	-3	5	20
15	17-18	0.75	-2	5	65	-1	260	3	-5	10
16	18-19	0.9	2	10	95	1	670	5	10	220
17	19-20	1.0	2	10	140	1	450	3	5	80
18	20-21	1.0	-2	5	90	-1	100	3	5	20
19	21-22	1.0	-2	-5	70	-1	320	5	-5	10
5120	22-23	1.0	-2	-5	70	-1	300	3	-5	10
21	23-24	1.0	-2	-5	25	-1	290	5	-5	10
22	24-25	1.0	-2	5	40	-1	360	5	-5	10
23	25-26	1.0	5	-5	60	-1	390	5	-5	10
24	26-27	1.0	-2	-5	45	-1		20		
25	27-28	1.0	-2	-5	50	-1		15		
26	28-29	1.0	-2	5	20	-1		-3		
27	29-30	1.0	-2	5	20	-1		-3		
5128	30-30.9	0.9	-2	-5	15	-1		3		

031

GEOPEKO

A DIVISION OF PEKO-WALLSEND OPERATIONS LTD.

LOG. OF VOYAGER 5. D.D.H. 1. ELLIOTT BAY, E.L. 27/76

PLANNING

Proposer:	C.D. Strickland
Depth:	30m
Location:	Voyager 1 Area Grid
Purpose of hole:	To evaluate the local geology with respect to the Low Rocky Point granite contact.
Co-ordinates:	12,000N, 10075E
Inclination:	-60°
Bearing:	090° TN
Approved by:	M.C. Rogers
Date:	8-1-1979

SUMMARY

Logged by:	C.D. Strickland
Results:	Voyager 5 within Lewis River volcanics. Minor magnetic zones throughout core.

DRILLING

Date terminated:	16-1-1979
Driller:	M.W. Longmore
Core:	A.Q. 9.0m - 30.0m
Final depth:	30.0m
Reasons for termination:	Hole sufficient depth to confirm that Voyager 5 within the Lewis River volcanics.
Water:	Normal water return

Comments on Drilling Conditions:

1. Very slow drilling in extremely broken ground.
2. Core bit and barrel continually "plugging off".

032

Voyager 5 D.D.H. 1 Geological Log.

0m - 9.0m No core. Auger precollaring.

9.0m - 30.0m Crystal tuff pyroclastics

This unit consists predominantly of a semi chloritic silicified quartz feldspar crystal tuff. The section between 9.0 - 13.5m is partly oxidized and displays considerable sericitization, core loss throughout the interval is approximately 20%.
Below 13.5m the core is significantly greener and in addition to chlorite contains irregular quantities of magnetite including small discrete magnetite crystals. This magnetite content, mainly between 17 - 25m is reflected in the susceptabilies shown attached.
Minor isolated microscopic pyrite crystals are occassionally associated with these magnetic zones, the most massive pyrite section however occurs at 21.2m in a chloritic non-magnetic zone.
Between 21.8m - 28.0m the core is silicified and together with a milky clouding of the pyroclastic texture irregular quartz veins up to 4mm are common.
Although not as well defined as in Voyager 1 D.D.H. 1, this core displays a consistant foliation, it is not visible throughout especially in the highly siliceous zones, but is generally aligned at approximately 60° to L.C.A.
Core recovery varies between 60 - 80%, however between 28 - 30m the recovery is 100%.

30.0m E.O.H.

VOYAGER 5 DIAMOND DRILLING PROGRAMME

Geochemical Results

D.D.H. 1

Co-ordinates 12000N, 10,075E

Bearing 090° TN

Dip -60°

Depth 9.0m-30.0m

KR No	Interval	Core Recovered	Cu ppm	Pb ppm	Zn ppm	Ag ppm
5174	9-10	1.0	25	10	30	1
75	10-11	0.75	50	5	25	-1
76	11-12	0.75	5	10	20	-1
77	12-13	0.9	30	10	20	1
78	13-14	0.8	10	10	25	-1
79	14-15	0.75	20	5	25	-1
5180	15-16	0.75	2	5	30	-1
81	16-17	0.6	30	-5	10	-1
82	17-18	0.5	10	5	5	-1
83	18-19	0.75	10	5	25	-1
84	19-20	1.0	5	5	20	-1
85	20-21	1.0	2	5	20	-1
86	21-22	0.95	2	10	10	-1
87	22-23	0.9	15	-5	10	-1
88	23-24	0.9	5	-5	15	-1
89	24-25	0.85	5	5	5	-1
5190	25-26	0.85	5	-5	5	-1
91	26-27	0.8	5	-5	15	-1
92	27-28	0.9	5	10	15	-1
93	28-29	1.0	2	5	15	-1
5194	29-30	1.0	2	5	10	-1

034

GEOPEKO

A DIVISION OF PEKO-WALLSEND OPERATIONS LTD.

LOG. OF VOYAGER 5, D.D.H. 2 ELLIOTT BAY, E.L. 27/76

PLANNING

Proposer:	C.D. Strickland
Depth:	30m
Location:	Voyager 1 Area Grid
Purpose of hole:	To define the Low Rocky Point granite contact and to further evaluate the source of the coincident magnetic and I.P. anomalies.
Co-ordinates:	12000N, 10 125E
Inclination:	-60^{o}
Bearing:	090^{o} TN
Approved by:	M.C. Rogers
Date:	16-1-1979

SUMMARY

Logged by:	C.D. Strickland
Results:	Low Rocky Point granite contact between 24 - 26.1m. Minor disseminated magnetite within Lewis River Volcanics

DRILLING

Date terminated:	23-1-1979
Driller:	M.W. Longmore
Core:	A.Q. 3.2m - 30.6m
Final depth:	30.6m
Reasons for termination:	Intersected target at 26.1m
Water:	Fresh water obtained from nearby intermittant creek

Comments on Drilling Conditions:

1. Slow drilling in very broken ground.
2. Core bit and barrel continually "plugging off".

Voyager 5 D.D.H. 2 Geological Log

0 - 3.2m No core

3.2m - 22.0m Crystal tuff pyroclastics

This unit of broken poorly recovered core is characteristic of an altered crystal tuff. It is chloritic throughout and highly silicified to the detriment of the pyroclastic texture.
Irregular sericite-quartz veins up to 1mm cross-cut the unit and fine grained magnetite crystals are also present irregularly e.g. 8.2m.

The quartz and feldspar crystals which make up the fabric of the core range from 0.5mm - 2mm, however large 3 - 5mm semi rounded clear quartz phenocrysts are common, particularly between 2 - 5m and 11 - 13m, this quartz may represent a lithic component.

Between 14.5 - 15.6m the core is highly silicified and contains approximately 80% quartz with irregular sericite veinlets.

At 20.0m a well defined fracture at 10^{o} to L.C.A. is coated with hematite and minor pyrite is present in the host rock.

22.0m - 24.0m No core

Minor chlorite rubble only was obtained throughout this interval.

030

24.0m - 26.1m Altered contact zone

This unit consists of a highly silicified and sericitized crystal tuff merging into the Low Rocky Point granite at 26.1m. Core recovery is approximately 50% and the rubble recovered is relatively non-diagnostic.

26.1m - 30.6m Granite

This unit is a coarse grained white-green mottled granite composed dominantly of interlocking quartz and feldspar and containing abundant wispy chlorite and cloudy sericite. Core recovery approximately 60%.

30.6m E.O.H.

862038

031

VOYAGER 5 DIAMOND DRILLING PROGRAMME

Geochemical Results

D.D.H. 2

Co-ordinates 12,000N, 10,125E

Bearing 090° TN

Dip -60°

Depth 3.2m - 30.6m

KR No	Interval	Core Recovered	Cu ppm	Pb ppm	Zn ppm	Ag ppm	Au ppb	Sn ppm	W ppm
5195	3.2-5	1.0	5	10	15	-1			
96	5-6	0.75	2	5	15	-1			
97	6-7	0.75	20	5	10	-1			
98	7-8	0.8	15	5	20	-1			
99	8-9	0.75	5	-5	25	-1			
5200	9-10	0.6	2	5	40	-1			
01	10-11	0.55	2	-5	35	-1			
02	11-12	0.5	2	-5	20	-1			
03	12-13	0.5	2	-5	30	-1			
04	13-15	0.75	2	-5	15	-1	-3	-5	-10
05	15-17	0.8	2	5	10	-1	3	-5	10
06	17-18	0.6	2	5	15	-1	3	-5	-10
07	18-20	0.6	15	5	10	-1	-3	-5	-10
08	20-24	0.85	30	5	25	-1	5	5	10
09	24-26	0.8	2	5	20	-1	3	5	-10
5210	26-27	0.55	10	10	5	-1	-3	-5	10
11	27-29	0.8	55	10	10	-1	3	-5	10
5212	29-30.6	0.85	35	5	5	-1	5	-5	10

PETROLOGICAL REPORT

Sample No KR 4083
Diamond Drill Core Voyager1 D.D.H. 2. 19.1m.

KR 4083 (T.S. 28646) Small fluorescent spots (short-wave UV).
This rock is regarded as a recrystallized chemical sediment; it contains traces of scheelite. The banding is thought to be primary, and although the rock is schistose in part, its fabric is more hornfelsic.

The major minerals are magnetite, carbonate (?dolomite), chlorite, talc and quartz, with banded distribution. The quartz tends to occur as lenses of coarse and finer grains, and very probably represents original chert nodules. Talc forms bands of contorted, matted flakes, and chlorite bands contain numerous small magnetite euhedra. Carbonate is distributed throughout the rock, but favours quartzose lenses. The original rock is thought to have been a banded chemical sediment, with an assemblage of Mg-Fe silicates, carbonates and chert.

In view of this interpretation, it is quite conceivable that the scheelite was of syngenetic origin, especially as the rock is not a normal skarn assemblage. The scheelite occurs as very small (20-60 μ) rounded grains associated with all other minerals, embedded in quartz, chlorite, carbonate and talc, sometimes deposited on the surfaces of magnetite crystals. Physical separation/beneficiation would present problems.

Petrological Description by W. Fander. C.M.S. Adelaide.

039 GEOPEKO: APPENDIX 6. 862040 A20

GEOLOGICAL LEGEND. E.L. 27/76

OPERATION OF LEGEND:

1. Capital letter — indicates primary classification e.g. S - sedimentary rock, A - acid rock, M - basic rock

2. Lower case letters — indicate the following
   (i) Colours - e.g. pk/grn A = pink fragments in an acid igneous rock with a green matrix
   (ii) Textural or structural features - e.g. xtA = crystal tuff of acid composition, e.g. pA = porphyric acid rock, e.g. oxA = oxidised acid rock

   b. As suffixes in progressive order:
   (i) Categorised - e.g. pAr = rhyolite, e.g. Ia = intermediate rock of andesitic composition
   (ii) Mineralogy - e.g. pArf = porphyritic (rhyolite) with feldspar phenocrysts, e.g. lxt f/b = lithic crystal tuff with feldspar (phenocrysts component) and biotite (prominent matrix component), e.g. lxt fq = lithic crystal tuff with (major) feldspar crystals and (minor) quartz crystals, e.g. fb mg pArqfs (black specks) = flow banded porphyitic rhyolite with quartz (major phenocryst component, size range 1mm - 5mm), feldspar (minor phenocryst component), sericite (prominent matrix component), and black specks (minor undifferentiated accessory mineral).

SYMBOLS:

IGNEOUS:

A	acid igneous unclassified
Ar	rhyolite
I	intermediate igneous unclassified
Ia	andesite
Id	dacite
M	basic igneous unclassified
Mv	basalt
Md	dolerite
Gr	granite

SEDIMENTARY:

Sch	shale
Sstst	siltstone
Sst	sandstone
Sqtz	quartzite
Scongl	conglomerate
Sv	volcaniclastic sediment

STRUCTURAL and TEXTURAL:

t	tuff unclassified
lt	lithic tuff
xt	crystal tuff
vt	vitric tuff
fb	flow banding
p	porphyritic
clvd	cleaved
shd	sheared
ox	oxidized
vns	veins
lam	laminated
brec	brecciated
sch	schistose

STRUCTURAL:

	outcrop limit
	rubble boundary
	interpretative contact
	bedding
	joint
	cleavage
	primary foliation
	fault
	unconformity

SILICATE MINERALOGY:

q	quartz
f	feldspar
mus	muscovite
b	biotite
c	chlorite
s	sericite
cb	carbonate
mafics	mafics
hb	hornblende
sid	silicified
ferromag	ferromagnesians

SULPHIDE MINERALOGY:

s	sulphides
py	pyrite
cpy	chalcopyrite
gn	galena
hm	hematite
mag	magnetite
gos	gossan
lim	limonite

COLOURS:

pk	pink
grn	green
brn	brown
ple	pale
dk	dark
wte	white
gry	grey
pur	purple

GRAIN SIZE:

fg	fine grained (<1mm)
mg	medium grained (1mm - 5mm)
cg	coarse grained (5mm - 5cm)

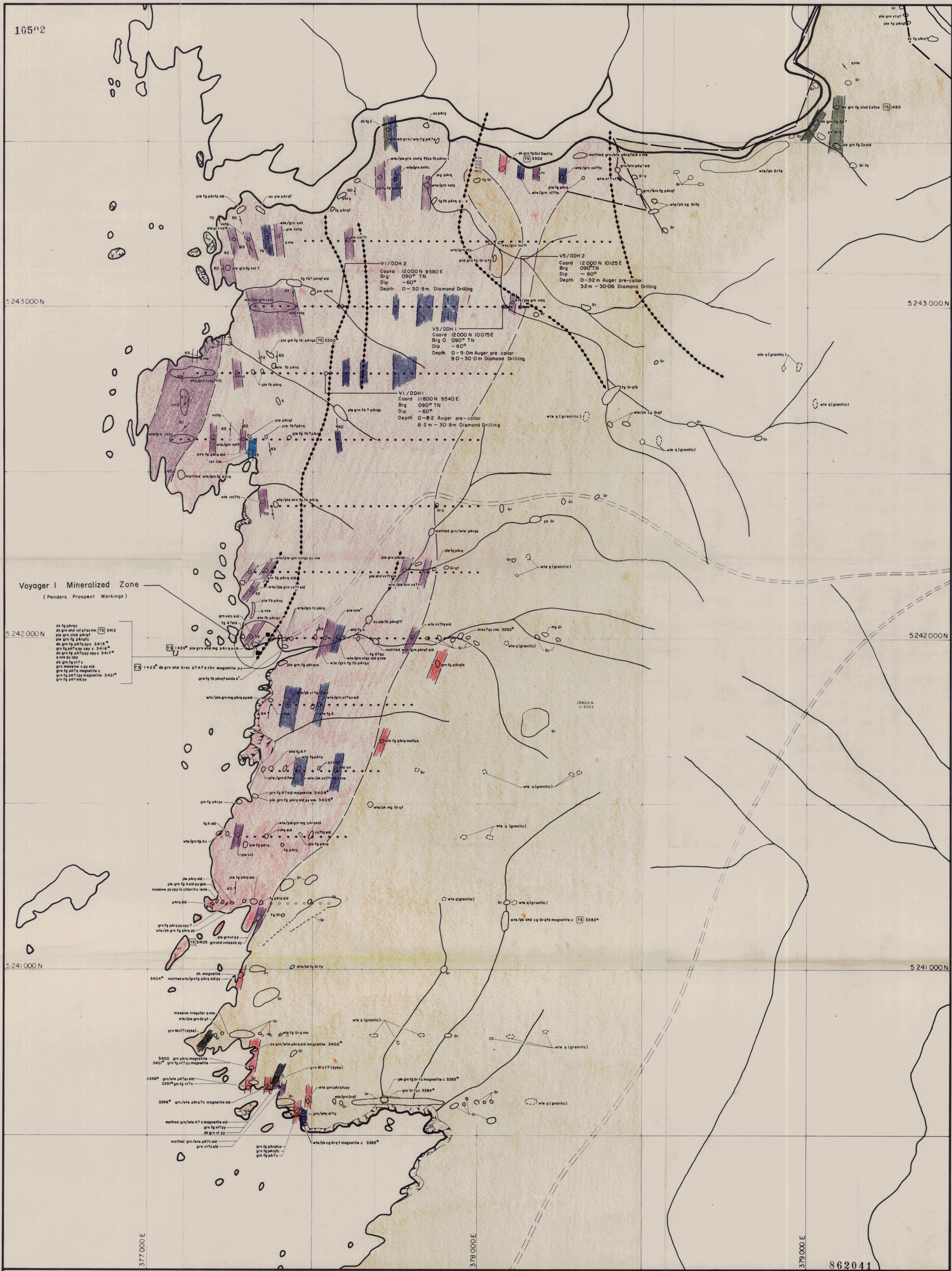
MISCELLANEOUS:

TS 3033	Thin section and rock No.
* 1112	Geochemical analysis and rock No.
	Grid traverse
	Anomaly centre (approximate)
	Old workings
	Campsite

GEOLOGICAL INTERPRETATION:

Pencil No.		
19-1	TERT.	(Macquarie Beds)
19-6	L. ORDO.	Conglomerate (Owen type), sandstones (Scongl, Sst)
19-50	Ia	Andesite
19-67	M	Basic dyke
19-10	U€ P	Granite (Gr)
19-13	€	Sandstone (Sst)
19-17	€	Fine grained volcaniclastic sediments. (fg Sv(sst), Sv(Sch),)
19-18	€	Coarse grained sedimentary breccia (cg S(brec))
19-19	€	Porphyritic quartz - feldspar rhyolitic lava. (fb pArqf)
19-21	€	Feldspar - quartz - biotite porphyry. (cg pArfqb)
19-24	€	Rhyolitic vitric pyroclastics. Vitric tuff, vitric crystal tuff (vtq, vxtq)
19-28	€	Rhyolitic crystal pyroclastics. Crystal tuff, crystal lithic tuff (xtq, xltqf.)
19-32	€	Rhyolitic lithic pyroclastics. Lithic tuff, lithic crystal tuff, lithic vitric tuff, (cg ltqf, mg lxtqf, lvtqf)
19-70	PRE €	Undifferentiated quartzite, quartz mica schist (Sqtz, fg lam sch Sch mus.)

10502



LEGEND:

1. For details of abbreviations used for geological interpretations refer to appendix 6

◆◆◆◆◆◆◆ Magnetic anomaly trends

⊙➔ Location and direction of diamond drill hole

81-1640.

862041

GEOPEKO LIMITED
KING ISLAND GROUP

SCALE 1:5000

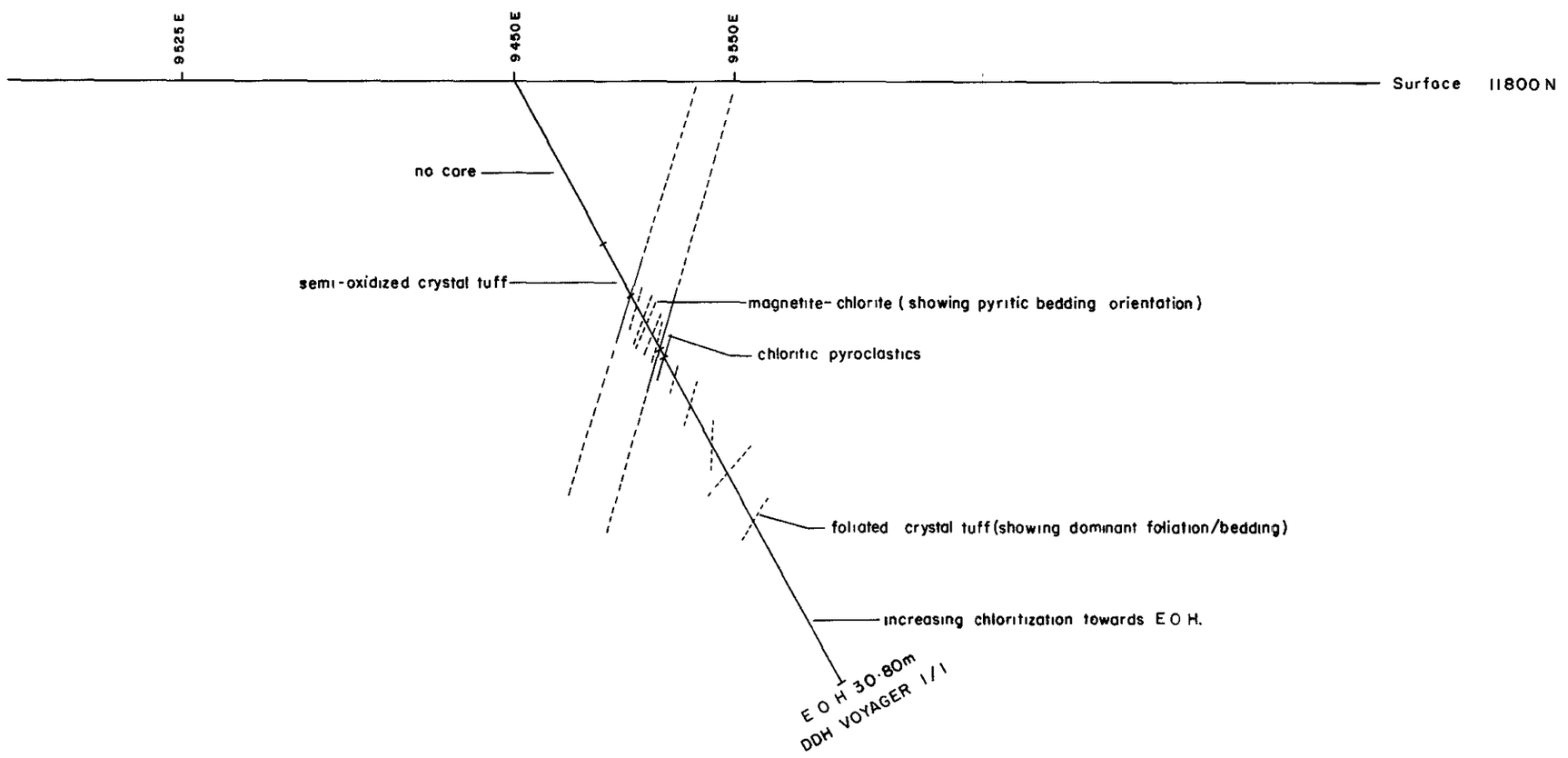
No. KT 27/76 VI-2

DATE NOV '79
GEOLOGIST C D S
DRAWN J P M
CHECKED CDS

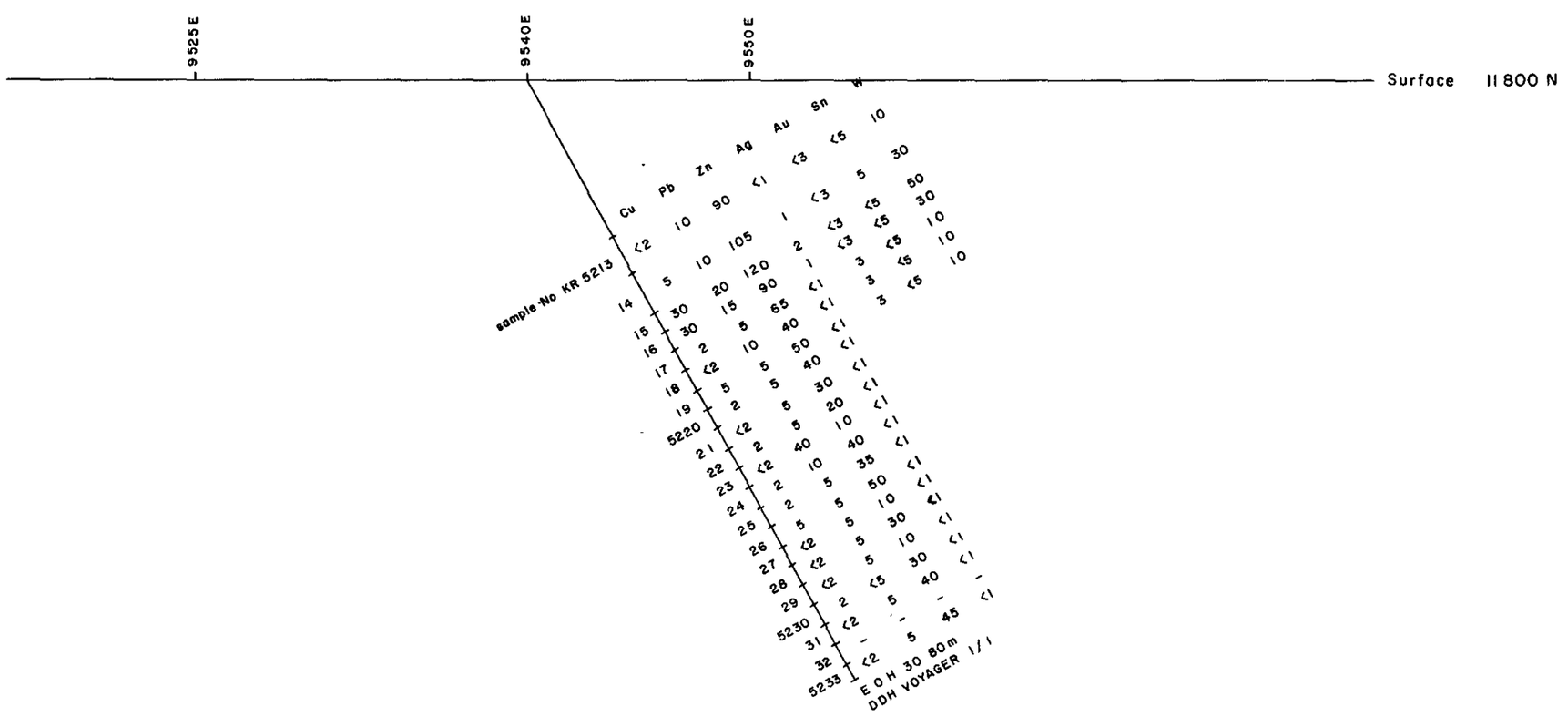
E.L. 27/76 ELLIOTT BAY TASMANIA
VOYAGER I – VOYAGER 5
GEOLOGICAL INTERPRETATION

Showing magnetic features and drill hole locations

10503



GEOLOGICAL LOG



81-1640.

GEOCHEMICAL RESULTS

862042

LEGEND

ANALYTICAL METHODS

Cu, Pb, Zn, Ag – AAS (method 1)
Ba* XRF (method 9a)
Au* AAS - CARBON ROD (method 120a)
Sn*, W* XRF (method 9a)

* where applicable.

Australian Laboratory Services – Brisbane QLD

UNITS

Cu, Pb, Zn, Ag, Ba, Sn, W — ppm
Au — ppb
(unless otherwise stated)

5 cm

DATE OCT '79
GEOLOGIST C D S
DRAWN J P M
REVISED C&S

GEOPEKO
DEVONPORT BASE TASMANIA

SCALE 1 250

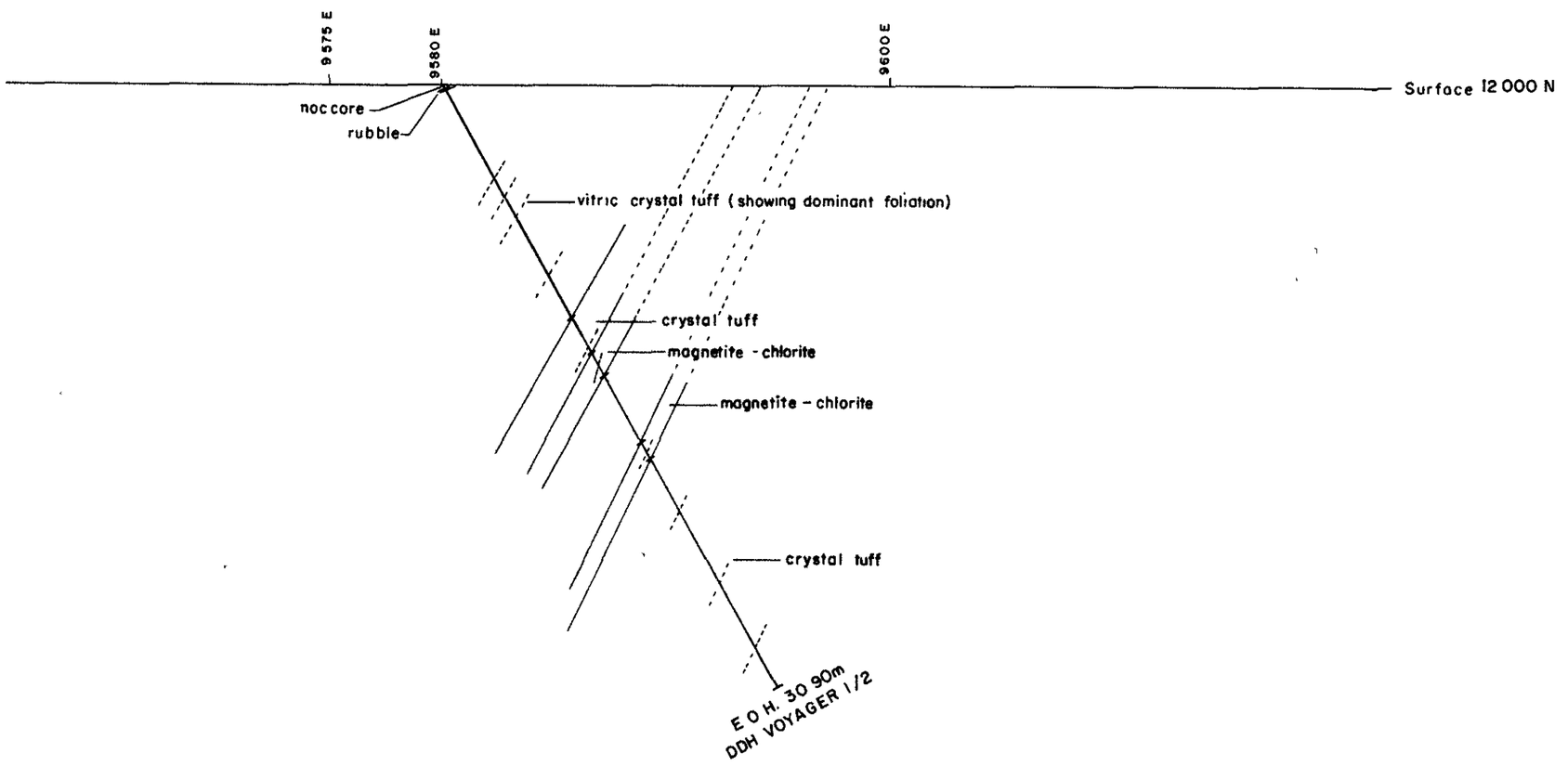
No TS27/76 VI-9

E.L. 27/76 ELLIOTT BAY, TASMANIA

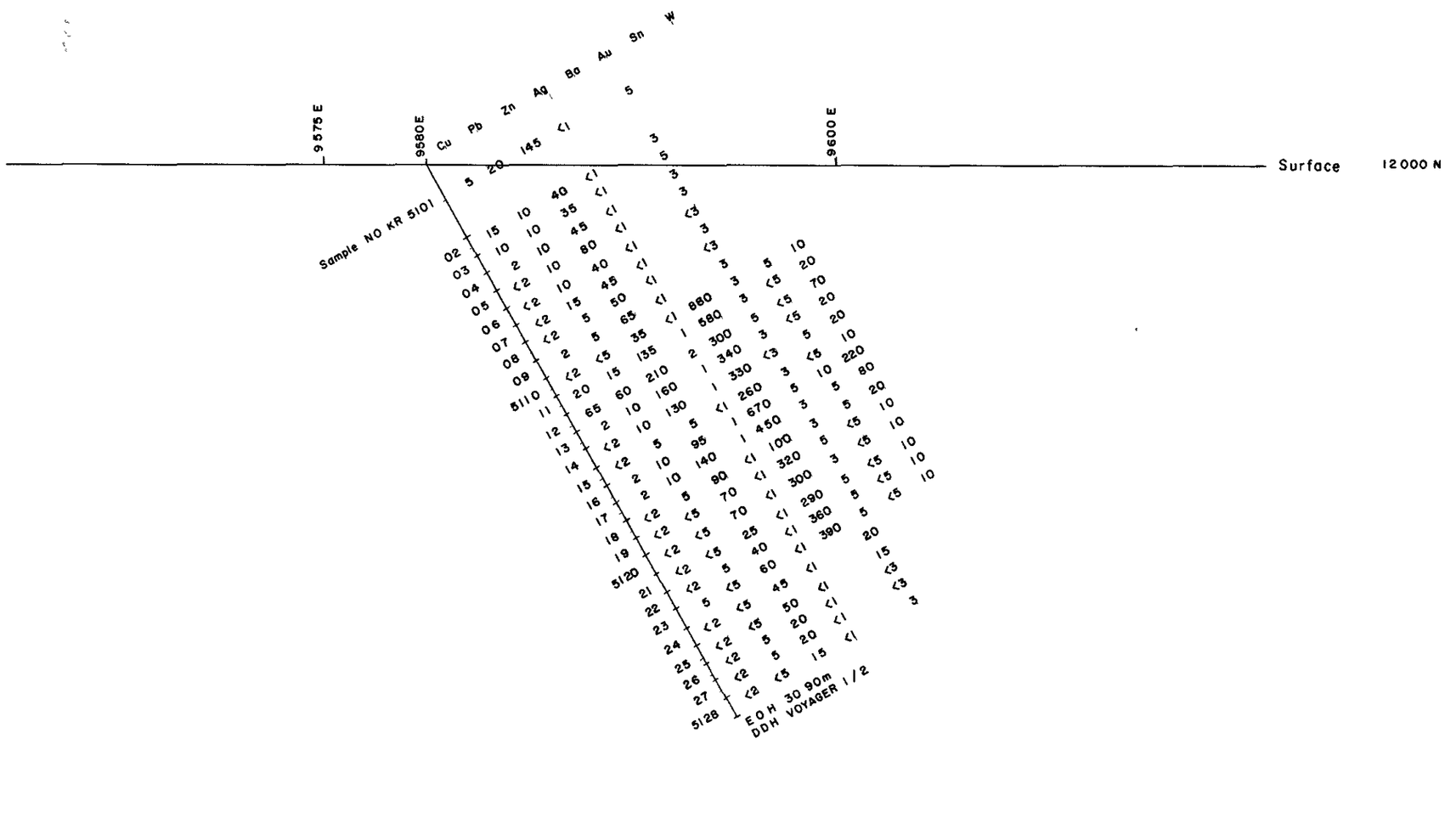
VOYAGER 1 DDH 1

GEOLOGICAL/GEOCHEMICAL SUMMARY

10504



GEOLOGICAL LOG



81-1640.

GEOCHEMICAL RESULTS

862043

LEGEND

ANALYTICAL METHODS

Cu, Pb, Zn, Ag – AAS. (method 1)
Ba* X.R F (method 9a)
Au* A.A S - CARBON ROD (method 120a)
Sn*, W* X R.F (method 9a)
* where applicable
Australian Laboratory Services – Brisbane QLD.

UNITS

Cu, Pb, Zn, Ag, Ba, Sn, W — ppm
Au — ppb
(unless otherwise stated)

5 cm

DATE OCT '79
GEOLOGIST C. D S.
DRAWN J P M
CHECKED CDS

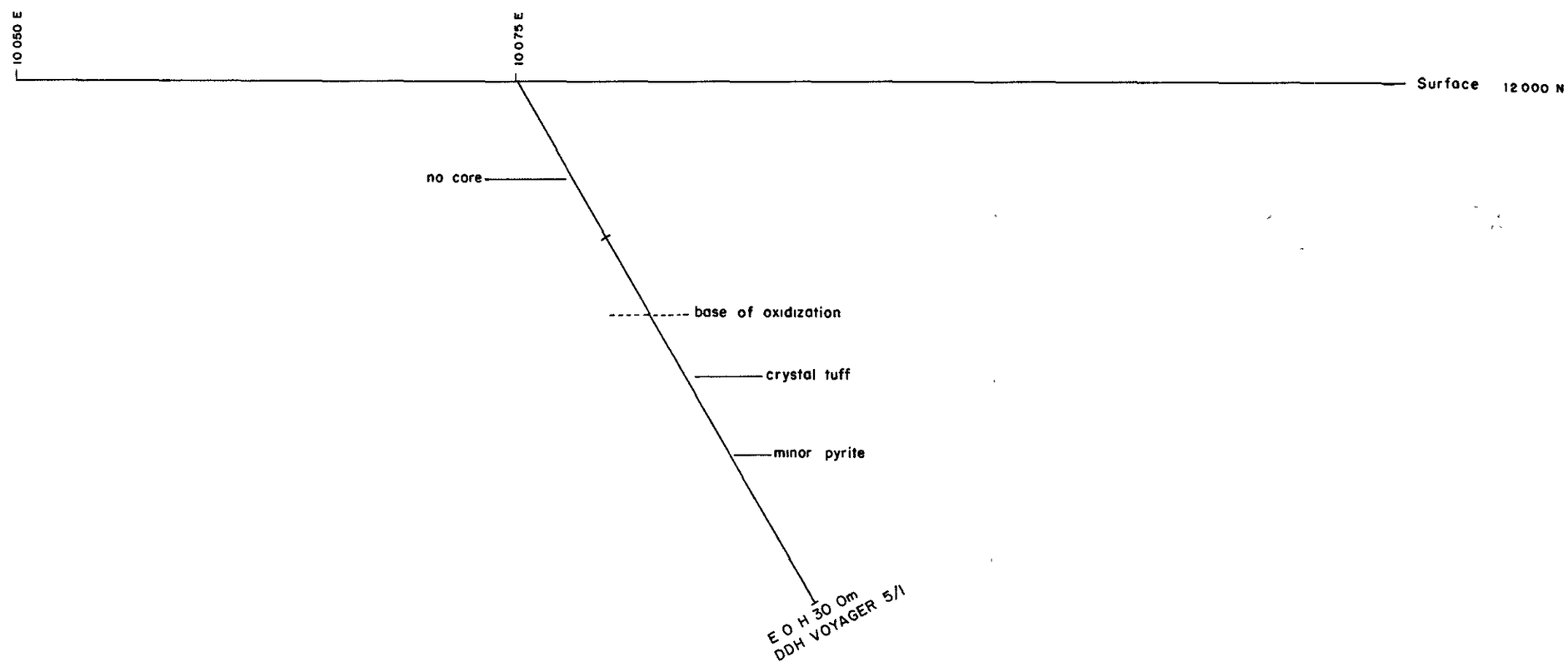
GEOPEKO
DEVONPORT BASE, TASMANIA
SCALE 1 250
No TS 27/76 VI-10

E.L. 27/76 ELLIOTT BAY, TASMANIA

VOYAGER 1 DDH 2

GEOLOGICAL/GEOCHEMICAL SUMMARY

16513



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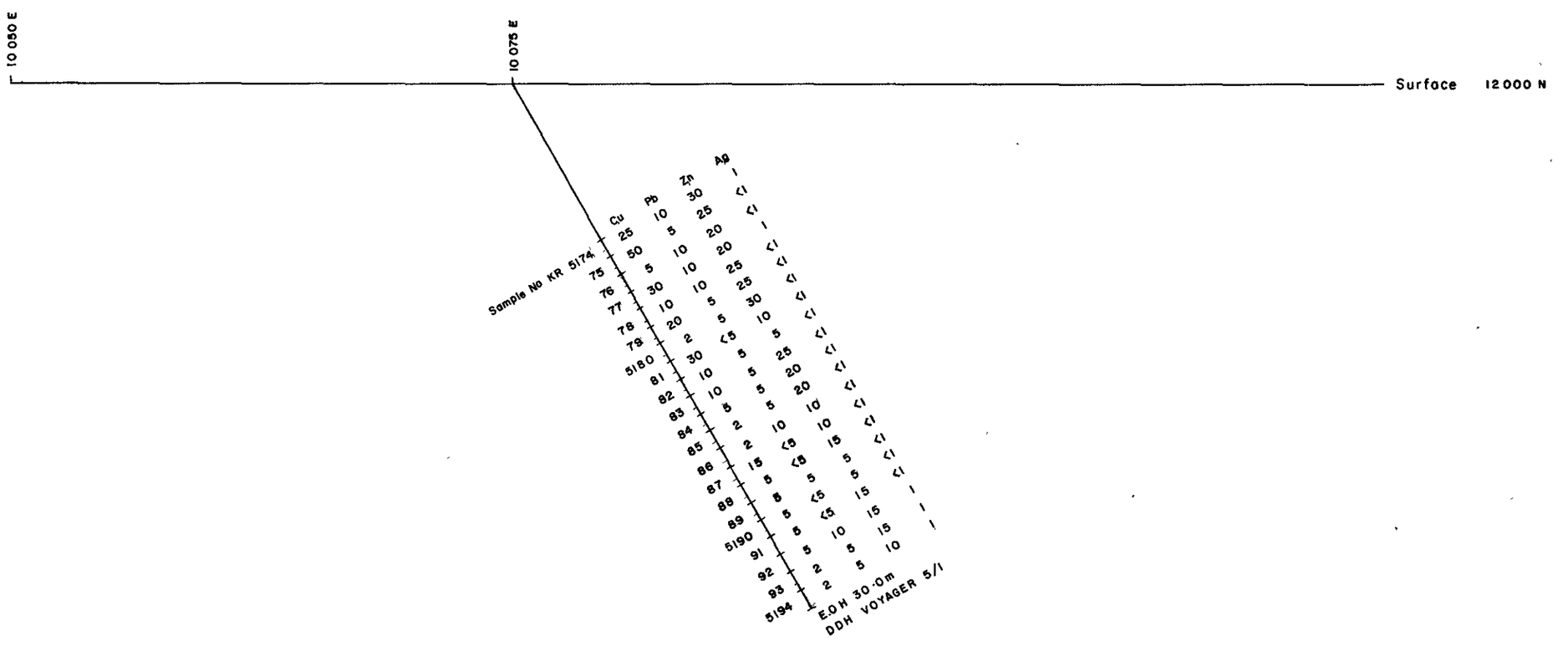


81-1640.

GEOCHEMICAL RESULTS

862044

LEGEND

ANALYTICAL METHODS

Cu, Pb, Zn, Ag – AAS (method 1)
Ba* XRF (method 9a)
Au* A.A.S - CARBON ROD (method 120a)
Sn*, W* XRF (method 9a)
* where applicable

Australian Laboratory Services – Brisbane QLD.

UNITS

Cu, Pb, Zn, Ag, Ba, Sn, W — ppm
Au — ppb
(unless otherwise stated)

5 cm

DATE NOV '79
GEOLOGIST C.D.S.
DRAWN J.P.M.
CHECKED CDS

GEOPEKO
DEVONPORT BASE, TASMANIA

SCALE 1 250

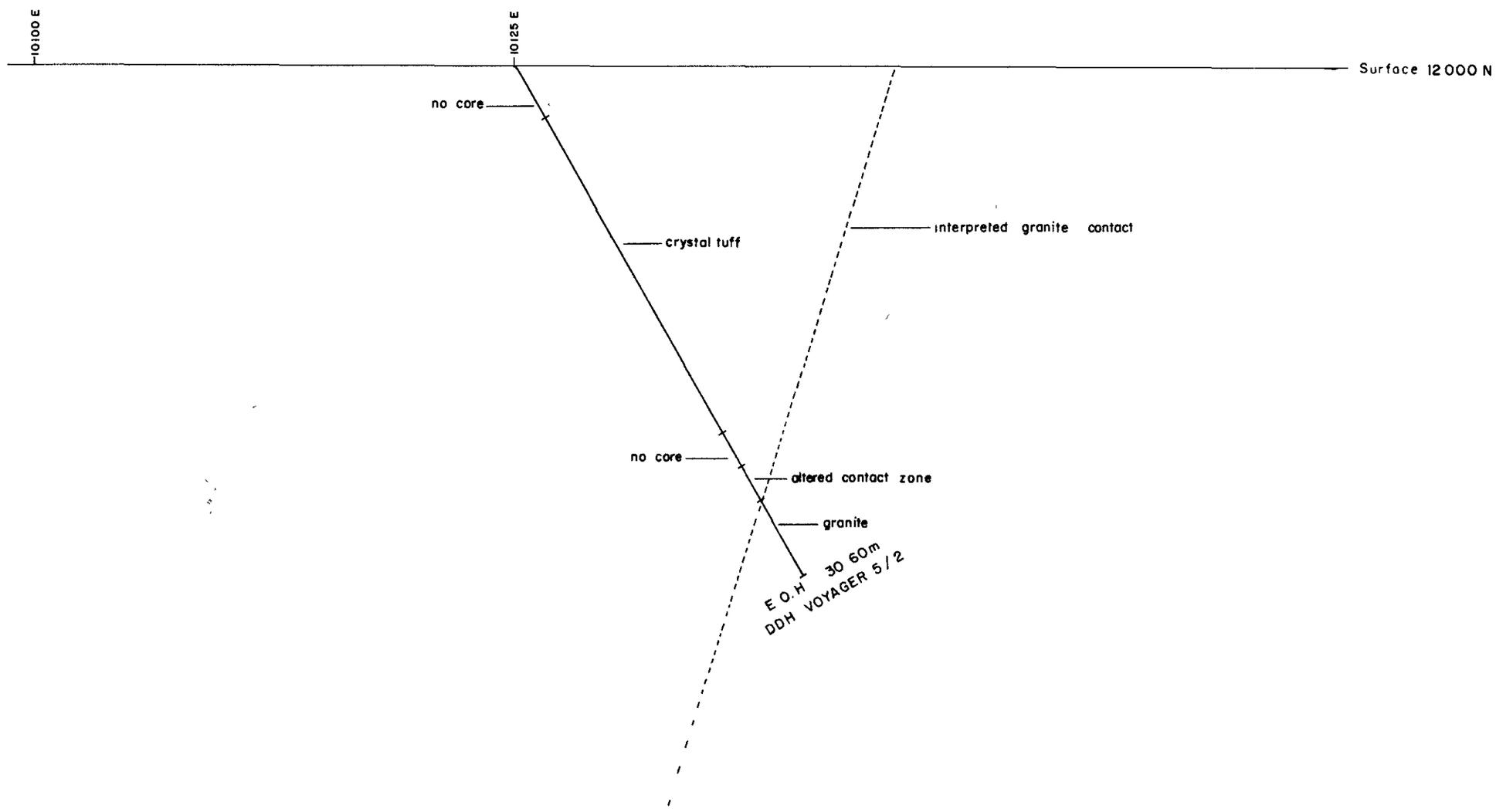
No TS 27/76 VI-11

E.L. 27/76 ELLIOTT BAY, TASMANIA

VOYAGER 5 DDH 1

GEOLOGICAL/GEOCHEMICAL SUMMARY

10506



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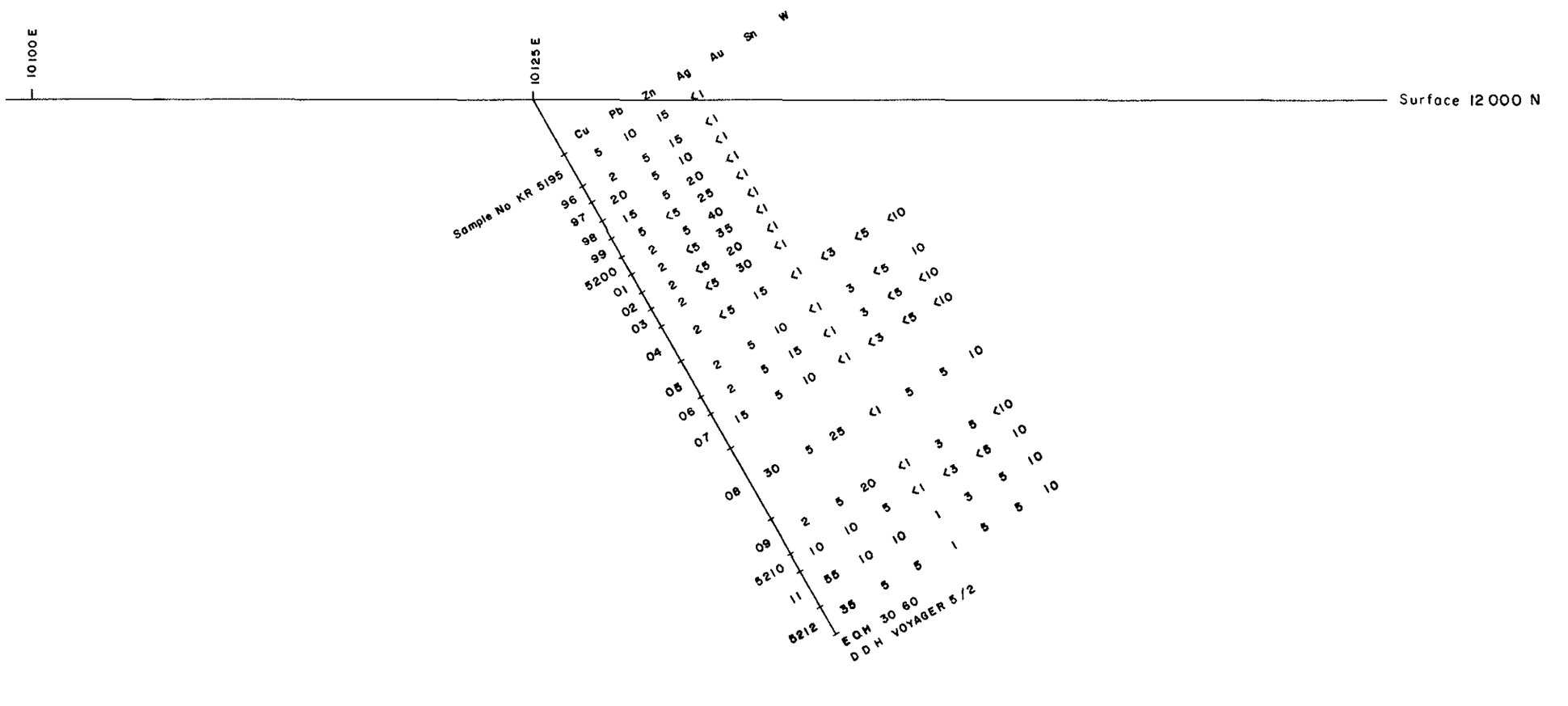


81-1640.

GEOCHEMICAL RESULTS

862045

LEGEND

ANALYTICAL METHODS

Cu, Pb, Zn, Ag – AAS (method 1)
Ba* XRF (method 9a)
Au* AAS - CARBON ROD (method 120a)
Sn*, W* XRF (method 9a)

* where applicable

Australian Laboratory Services – Brisbane QLD

UNITS

Cu, Pb, Zn, Ag, Ba, Sn, W — ppm
Au — ppb
(unless otherwise stated)

5 cm

DATE NOV. '79
GEOLOGIST C D S
DRAWN J P M
DRAFTED CDS

GEOPEKO
DEVONPORT BASE, TASMANIA

SCALE 1:250

No TS 27/76 VI-12

E.L 27/76 ELLIOTT BAY, TASMANIA

VOYAGER 5 DDH 2

GEOLOGICAL/GEOCHEMICAL SUMMARY

10597

8 05%Fe

1650 ppm Mn

600
550 2 00
500 1 75
450 1 50
400 1 25
350 1 00
300 0 75
250 0 50
200 0 25
150 0
100
50

Cu, Pb, Zn, Mn (ppm) F(%)

64 000
63 800
63 600
63 400
63 200
63 000
62 800

W analysis (XRF) results (10 ppm)

12000 N

magnetite - chlorite

VI. DDH. 2

9 350 E | 9 400 E | 9 450 E | 9 500 E | 9 550 E | 9 600 E | 9 650 E | 9 700 E

2 00
1·75
1 50
1 25
1 00
300 0 75
250 0 50
200 0·25
150
100
50

Cu, Pb, Zn, Mn (ppm) Fe(%)

64 600
64 400
64 200
64 000
63 800
63 600
63 400
63 200
63 000
63 800

W analysis (XRF) results (<10 ppm)

11800 N

magnetite - chlorite

VI. DDH. 1

9 350 E | 9 400 E | 9 450 E | 9 500 E | 9 550 | 9 600 E | 9 650 E | 9 700 E

81-1640.1

862046

LEGEND

VERTICAL SCALE

Total Magnetic Field Intensity · 1cm = 200 nT

Cu ---------- 1cm = 50 ppm
Pb —— — —— " "
Zn —— · — —— " "
Mn —————— " "
Fe ····· 1cm = 0 25 %
W —×—×— all results <10 ppm

5 cm

DATE OCT' '79
GEOLOGIST C S
DRAWN J P M
CHECKED-CDS

GEOPEKO
DEVONPORT BASE, TASMANIA

HORIZ SCALE 1 1000

N 27/76-VI-13

E L 27/76 ELLIOTT BAY, TASMANIA

VOYAGER I DDH1 and DDH2

COMPARATIVE PROFILES

TOTAL MAGNETIC INTENSITY

Cu, Pb, Zn, Mn, Fe, W GEOCHEMISTRY

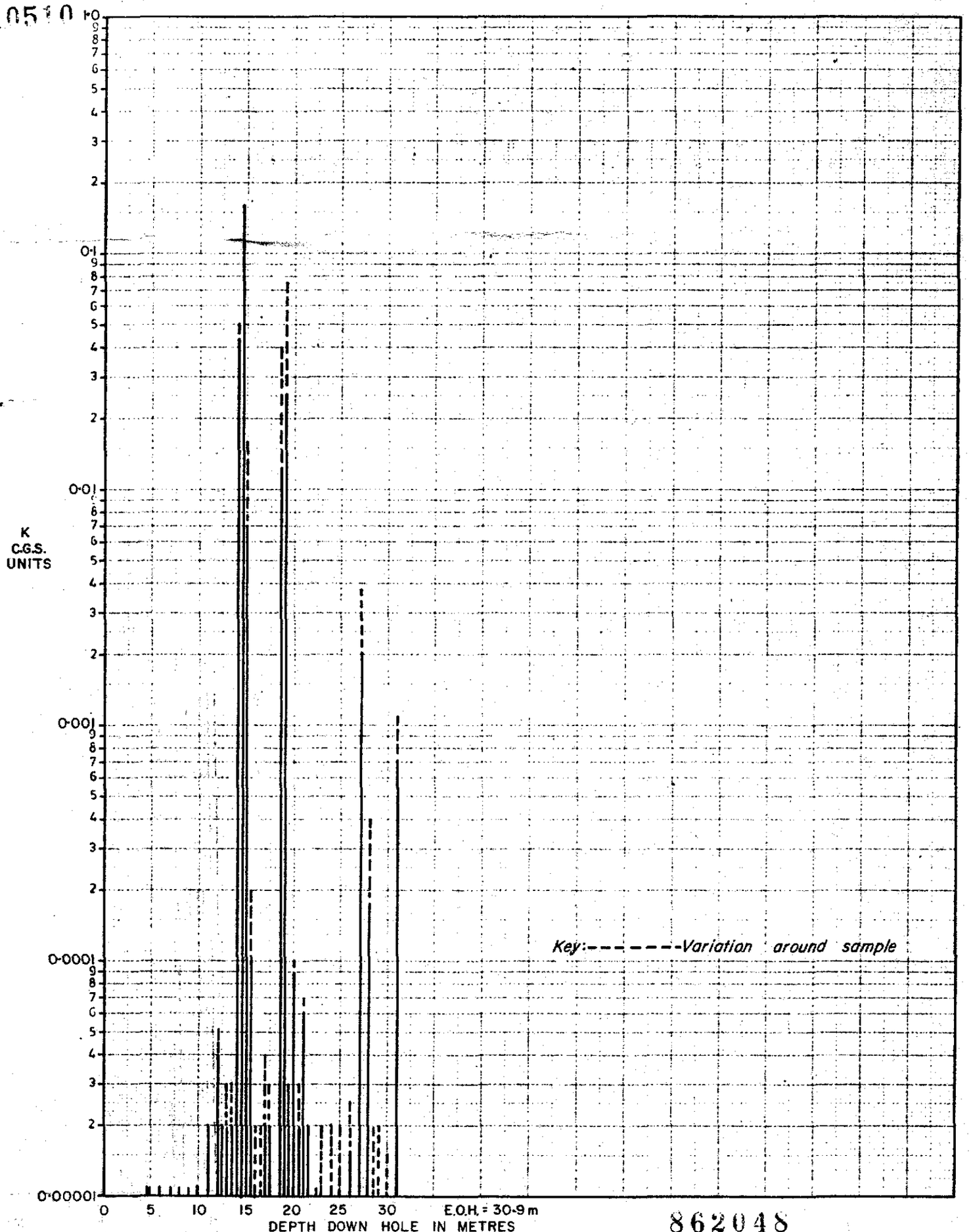
862047

GEOPEKO LTD.	DRAWN	S.T.M.	DATE	May 1979
Geophysical Survey	AREA	Elliott Bay — Tasmania		
Inst. CTU-2 (104025)	PROSPECT	VOYAGER 1		
Report No.	PLAN SHOWS	Magnetic Susceptibility DDH VOY. 1-1		

Plan No. TS 27/78 VI-14

5 cm

10510

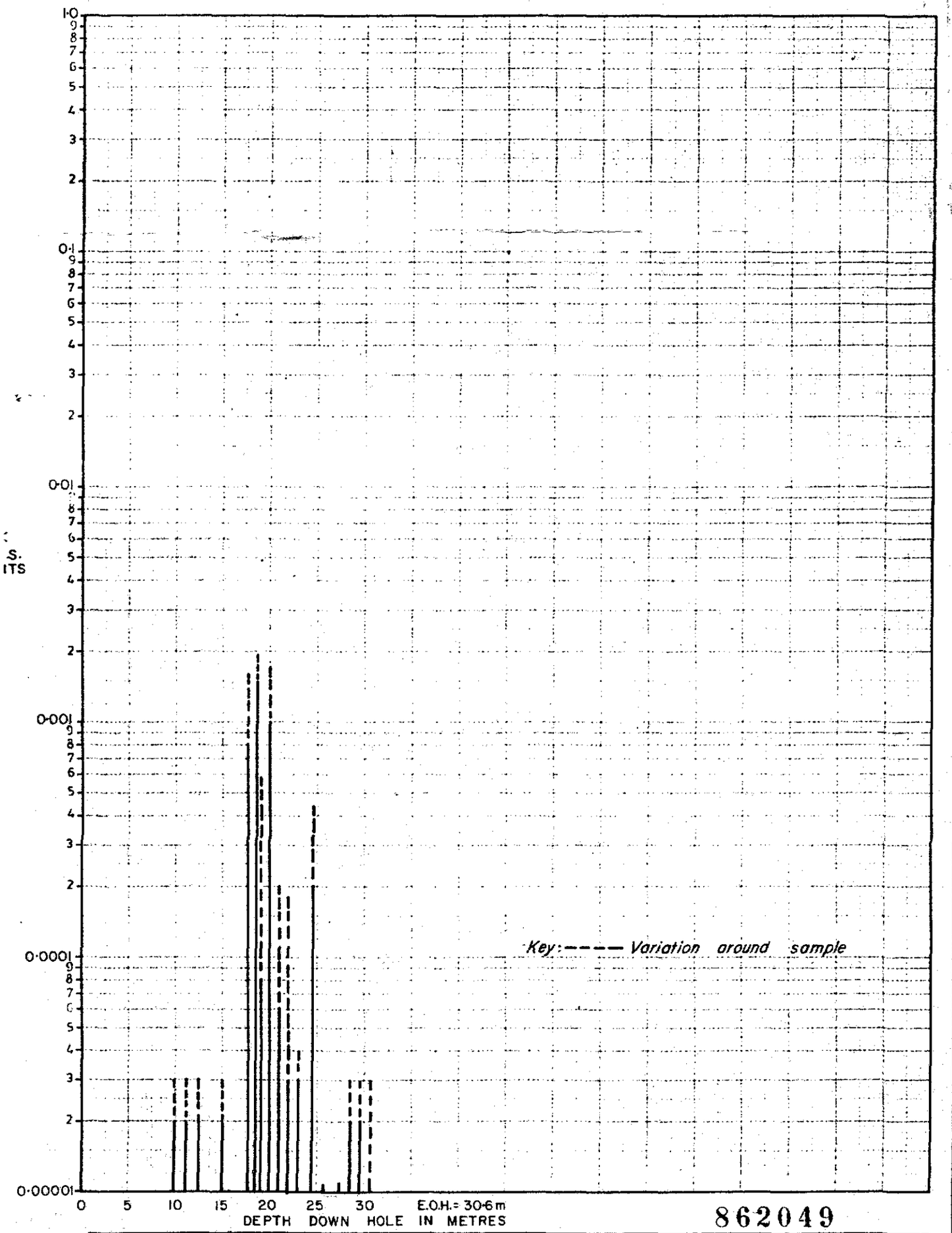


862048

GEOPEKO LTD. Geophysical Survey Inst. CTU-2 (104025) Report No.	DRAWN	S.T.M.	DATE	May 1979
	AREA	Elliott Bay – Tasmania		
	PROSPECT	VOYAGER 1		
	PLAN SHOWS	Magnetic Susceptibility D.D.H. VOY. 1-2		Plan No. TS 27/76 VI-15

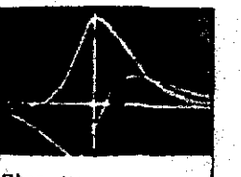
5 cm

10511



862049

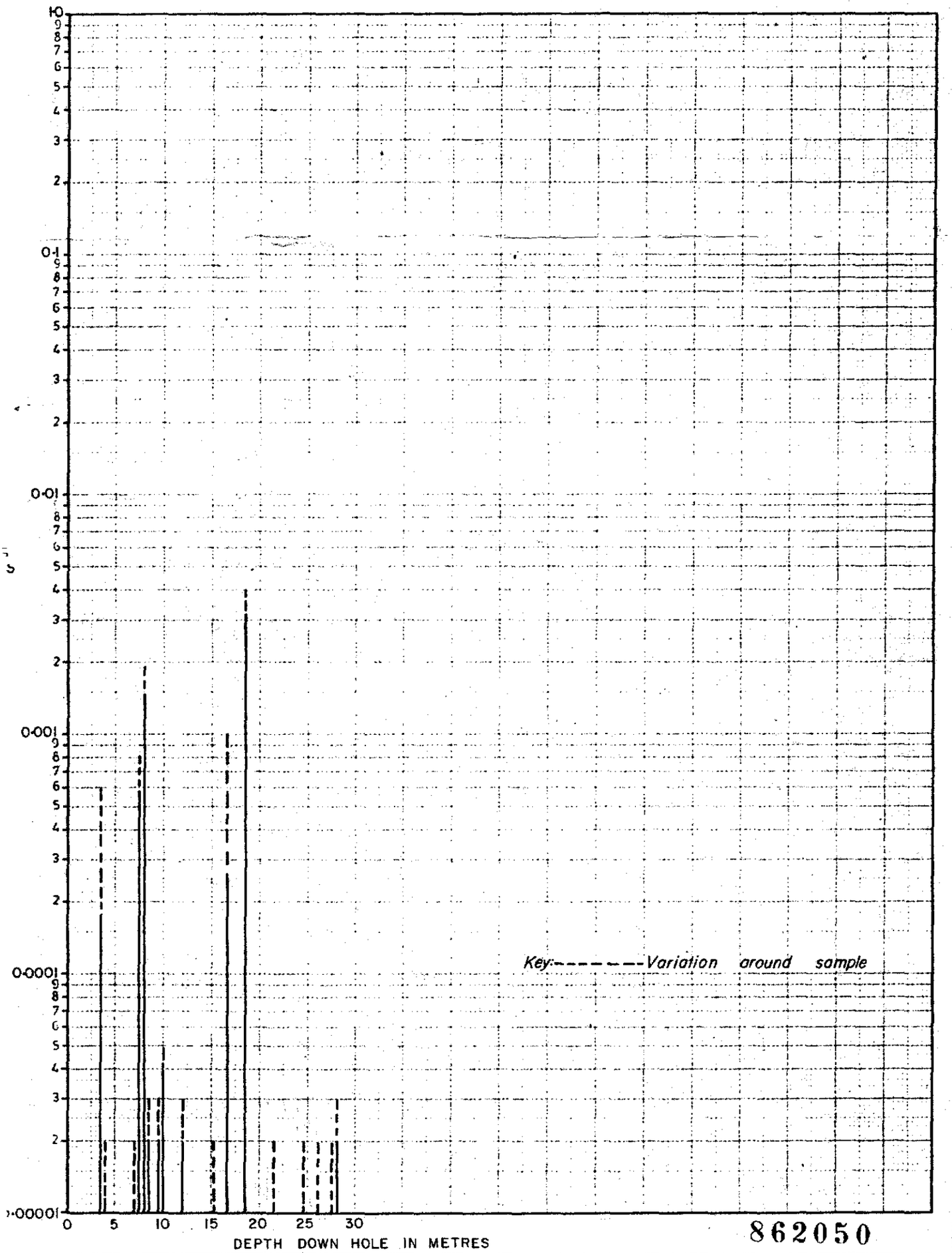
GEOPEKO LTD. Geophysical Survey Inst. CTU-2 (104025) Report No.	DRAWN	STM	DATE	May 1979
	AREA	Elliott Bay — Tasmania		
	PROSPECT	VOYAGER 5		
	PLAN SHOWS	Magnetic Susceptibility DDH VOY.5—1		



Plan No. TS 27/76 V1-16

5 cm

1051a



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GEOPEKO LTD. Geophysical Survey Inst. CTU-2 (104025) Report No.	DRAWN	S.T.M.	DATE	May 1979
	AREA	Elliott Bay – Tasmania		
	PROSPECT	VOYAGER 5		
	PLAN SHOWS	Magnetic Susceptibility D.D.H. VOY. 5-2		

Plan No. TS 27/76 V1-17

5 cm