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GEOPEKO

A DIVISION OF PEKO-WALLSEND OPERATIONS LIMITED

ELLIOTT BAY AREA - TASMANIA

MICROFILMED

PROGRESS REPORT: EXPLORATION LICENCE 27/76

VOYAGER 3 PROSPECT

by

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OPEN FILE

DEVONPORT, TASMANIA.

JUNE, 1980

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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 the Voyager 3 prospect evaluation programme carried out during the summer of 1978-79. The programme was designed as a fill-in extension of the 1977-78 reconnaissance survey and involved additional gridding, geological mapping, C-horizon auger sampling and ground geophysics. The survey culminated with the shallow diamond drilling of two geochemical targets.

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INTRODUCTION

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

Reconnaissance evaluation at Voyager 3 (See Fig 2) was first carried out by Geopeko during the 1977-78 field season and is fully reported in STRICKLAND C.D. 1978.

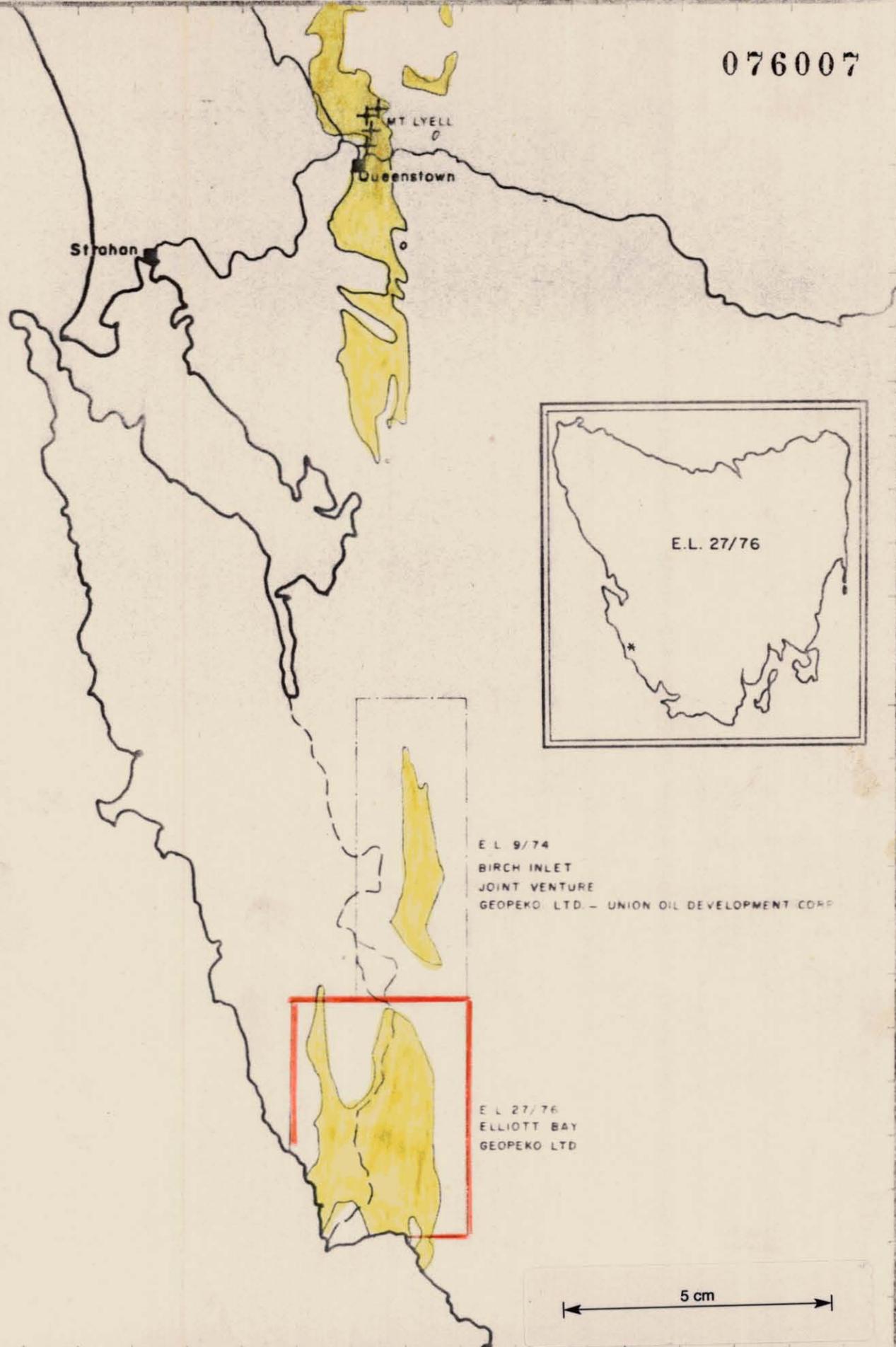
This report reviews the detailed geological geochemical and geophysical evaluation programme carried out during 1978-79 and discusses the results and onward proposals generated from that exercise.

The 1978-79 exploration programme consisted of:

- a) Gridding: 5,450 metres of theodolite gridding.
- b) Geological mapping at 1:2500 scale.
- c) C-Horizon auger sampling at 100m x 25m centres, a total of 228 holes.
- d) Geophysical surveys utilizing Dipole-Dipole I.P., V.L.F. (E.M.), Turam and S.P. Techniques.
- e) Conductivity measurements of auger hole groundwater, a total of 270 sites.
- f) Diamond drilling
 - Voyager 3/1, 4.5m - 30.8m
 - Voyager 3/2, 1.8m - 30.7m
- g) Reporting

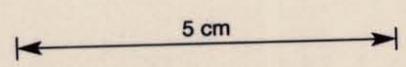
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E.L. 9/74
 BIRCH INLET
 JOINT VENTURE
 GEOPEKO LTD. - UNION OIL DEVELOPMENT CORP

E.L. 27/76
 ELLIOTT BAY
 GEOPEKO LTD



LEGEND	
	Significant Basemetal Mineralization
	Mt Reed Acid Volcanics
	Road
	Track

DATE 18-4-78
GEOL CDS
DWN JPM
CHKD CBS

GEOPEKO LIMITED
 KING ISLAND

SCALE 1:500000

Fig No. 1

LOCATION MAP
 E.L. 27/76

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TERTIARY
SEDIMENTS
OVERLYING
ORDOVICIAN

BASIC VOLCANICS
SHALES AND
DOLOMITES

DUNDAS
GROUP

ORDOVICIAN
OWEN
CONGLOMERATE

ACID PYROCLASTICS
AND LAVAS

QFB
PORPHYRY

ARGILLITES

TYNDAL
GROUP

Alteration
zones

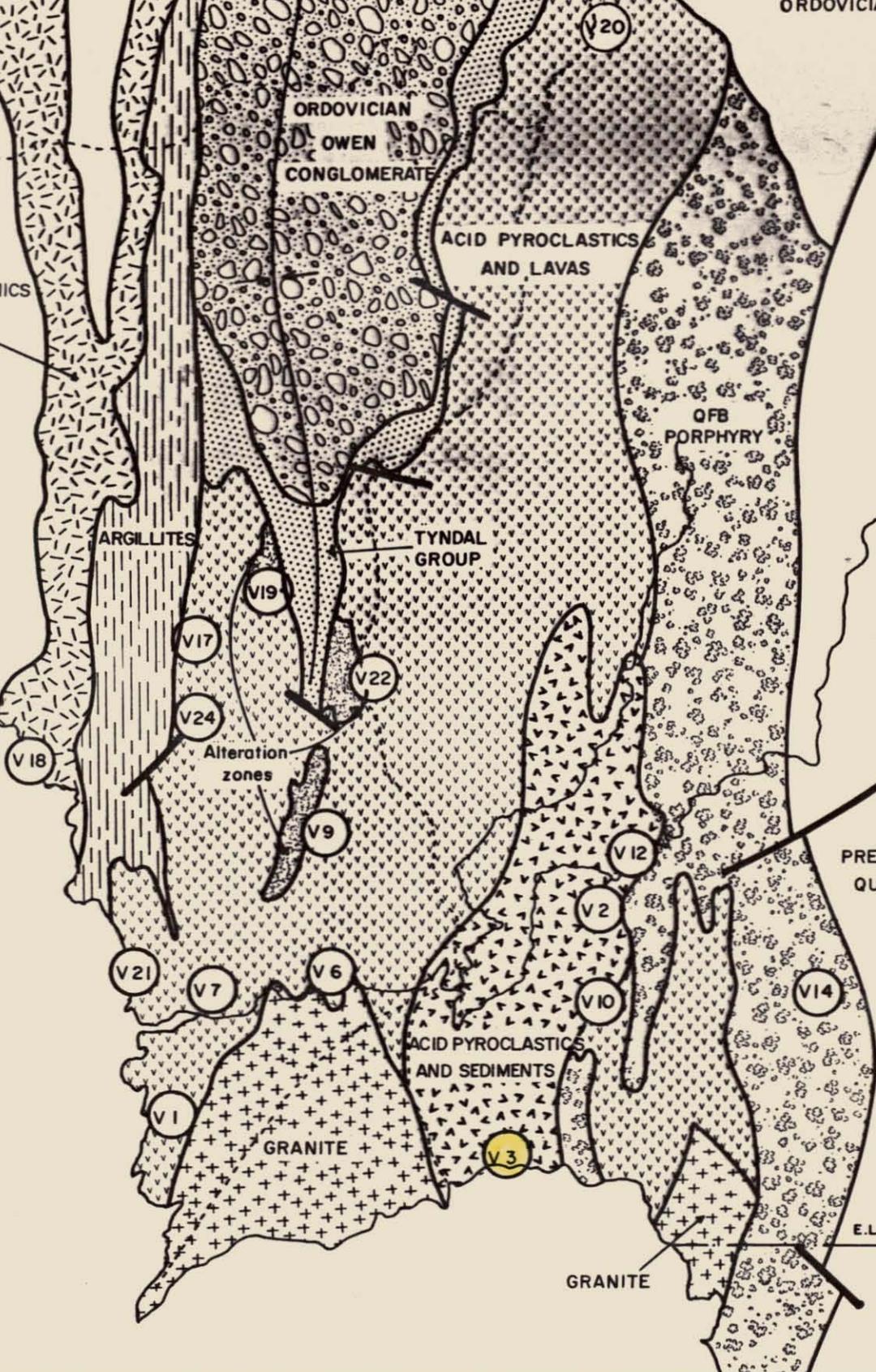
PRECAMBRIAN
QUARTZITES

E.L. BOUNDARY

ACID PYROCLASTICS
AND SEDIMENTS

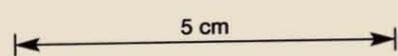
GRANITE

GRANITE



LEGEND

(V10) Location of Voyager 10 prospect.



DATE: _____
 GEOL: _____
 DWN: _____
 CHKD: _____

GEOPEKO

SCALE: 1:100 000

Fig. 2

ELLIOTT BAY
E.L. 27/76

PROSPECT LOCATION MAP

CONCLUSIONS

1. Three distinct styles of mineralization have been identified within the Voyager 3 area during coastal mapping traverses.
 - a) Chalcopyrite-malachite mineralization within narrow (0.5m) shear zones striking predominantly north-south, parallel to the regional schistosity.
 - b) Minor galena-spalerite mineralization within irregular quartz veins which seem to generally cross cut the regional schistosity.
 - c) Broad stratiform zones of disseminated pyrite and hematite with trace malachite within the fine grained volcanoclastic greywackes and shales.

Styles (a) and (b) have no economic potential, however the stratiform zones represent favourable host environments for massive sulphide mineralization.

2. C-horizon geochemical auger sampling has defined a major zone of anomalous Cu, Pb and Zn geochemistry which at present remains inadequately examined at depth.
3. The broad north-south trending suite of sediments and tuffs which contains the Voyager 3 prospect is very similar lithologically and geochemically to the Voyager 2 environment and both zones may be continuous, i.e. stratigraphic equivalents, although hidden in part by Tertiary deposits.

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4. On the western edge of the grid a significant yet incompletely closed off I.P. zone is associated with Cu, Pb and Zn geochemical anomalies. This zone is highlighted also by a linear V.L.F. (E.M.) response.

RECOMMENDATIONS

1. Dipole-Dipole I.P. west of 8750E between 9500N-10 000N to 'close-off' the significant I.P. anomalies already defined. Read this grid extension with V.L.F. (E.M.) techniques and C-horizon auger geochemistry.
2. Deeper diamond drill testing of any significant I.P./geochemistry anomaly developing from (1) above.
3. With the aid of air photo techniques (to avoid Tertiary Deposits) and ground follow up, investigate geochemically, with traverses at 400 metre intervals, the northern extension of this dominantly sedimentary facies. This zone is postulated from existing air photo interpretations to extend north to Voyager 2 and to continue north of the Lewis River immediately west of Voyager 12.

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ACTION SHEET

GRIDDING

A baseline was established at 9000E and extended from 9400N to 10200N using theodolite gridding techniques. A series of 100 metre spaced traverses were then theodolite gridded between 8750E and 9400E, namely 9500N, 9700N, 9800N, 9900N, 10100N and 10200N.

Later in the programme the grid was extended a further 100m north to 10300N. A small off-set was made between 9100E-9200E in order to avoid a local concentration of Tertiary deposits.

Rapid gridding progress was achieved in this area of flat open button grass. Dense forest however lies immediately to the west of the existing grid and as experienced with lines 9600N and 10000N very slow progress can be anticipated in these areas.

GEOLOGY

Based upon the recommendations outlined by Strickland, C.D. 1978 an intensive geological, geochemical and geophysical investigation was carried out in the Voyager 3 area between 8750E-9400E. This programme was centered around an infilled grid at 100m x 25m spacings and culminated in the diamond drilling of two shallow holes targeted on C-horizon geochemical anomalies.

Voyager 3, D.D.H. 1	10 000N, 8875E.
	Coincident Cu, Zn geochemical anomaly.
Voyager 3, D.D.H. 2	9500N, 9235E.
	Coincident Pb, Zn geochemical anomaly.

The Voyager 3 grid is situated west of Barrel Creek immediately north of the Elliott Bay coastline. The area is dominated by a low flat coastal plain with less than 10% outcrop. The geological interpretation is based largely upon the coastal outcrops which supplied excellent exposures of the fine grained tuffaceous greywackes and shales.

Unlike the Voyager 1 area which displays up to three phases of deformation the Voyager 3 environment shows clearly only one. The stratigraphic horizons dip generally to the west, however large scale folding with amplitudes up to 100-200 metres are present within the finely laminated tuffaceous pyroclastics and sediments.

Sheet TS 27/76 V3-2 in the folder of this report presents the geological interpretation of the Voyager 3 prospect and displays the major zones of anomalous sulphide mineralization based upon the coastal geological mapping and the C-horizon auger geochemistry.

A detailed examination of the coastal geology indicates three distinct styles of mineralization.

- a) Chalcopyrite-malachite mineralization within narrow (0.5m) shear zones striking predominantly north-south, parallel to the regional schistosity.
- b) Minor galena-sphalerite mineralization within irregular quartz veins which seem to generally cross cut the regional schistosity.
- c) Broad stratiform zones of disseminated pyrite and hematite with trace malachite within the fine grained volcanoclastic greywacke and shales.

Styles (a) and (b) have no economic potential, however the stratiform zones represent favourable host environments for massive sulphide mineralization.

Sheets TS 27/76 V3-8 and TS 27/76 V3-9 present the geological and geochemical summaries of the two shallow diamond drill holes in the Voyager 3 area.

GEOCHEMISTRY

C-horizon soil sampling was carried out on all traverses at 25 metre intervals using a Jacro 200 auger rig mounted on the rear of a J5 Bombardier. As with previous C-horizon sampling within E.L. 27/76 an optimum depth of 2.0 metres or bedrock was used as a guide line for sample collection.

Originally traverses 9400N, 9600N and 10 000N were sampled on a 50 metre spacing, to fully close up the survey the intermediate 25 metre sample locations were drilled.

All soil samples were dried and rebagged (as necessary) prior to despatch to A.C.S. Laboratories, Adelaide. The -80 mesh fraction was separated and analysed for Cu, Pb and Zn only. This limited spectrum was chosen to enable rapid analysis and communication of results back to the field programme.

The sample book numbers (KS series), method of preparation and analysis and assay results are enclosed as appendix 1.

Sheets TS 27/76 V3-3 to TS 27/76 V3-5 in the folder of this report present in contoured form the Cu, Pb and Zn results obtained from the C-horizon soil sampling.

Close spaced auger drilling defined and intensified the 1977-78 anomalies and allowed greater control for diamond drill testing. Peak values for Cu, Pb and Zn in the Voyager 3 area grid are 1300, 4700 and 10,000ppm respectively.

A Beckman Model MG conductivity meter was used to test quantities of water from the C-horizon auger holes drilled during both the 1977-78 and 1978-79 seasons. In this damp environment approximately 90% of the auger holes contained groundwater and contouring of the conductivity results was realistic. Peak values of 0.55 millimohs/cm occurred at 9900N/8775E and 9400N/9050E.

Sheet TS 27/76 V3-7 presents in contoured from the conductivity results.

On lines 9500N and 9600N pH was read for orientation purposes with little success. The laboratory instrument was found unsuitable for field operation with calibration and contamination problems being experienced.

GEOPHYSICS

A detailed report on the geophysical surveys carried out during the 1978-79 season at Voyager 3 is presented by Mudge, S.T. 1979.

Field investigations involved Dipole-Dipole I.P., V.L.F. (E.M.), Turam and S.P. techniques.

1. Dipole-Dipole I.P. was conducted on lines 9500N to 10200N inclusive, excluding 10 000N. The survey was aimed at defining the original (1977-78) I.P. anomaly on line 9600N and to detect any along strike extent.
A 50m dipole array provided better resolution than the 100m array used during 1977-78.
The anomaly on line 9600N was seen to extend north to 9900N.
The anomalies at 9900N/9200E and those to the west on lines 9900N, 9800N and 9700N are well developed, the latter having coincident V.L.F. (E.M.) anomalies.
2. The V.L.F. (E.M.) located two main anomalous zones. The largest zone crosses the entire grid and has little associated I.P. character although is coincident with the major Cu, Pb and Zn C-horizon geochemistry trend. This V.L.F. (E.M.) zone is considered to be either ionic conduction or weak mineralization in a subsurface structural feature. The second major zone occurs between 9600N and 9900N at approximately 8850E and has well developed I.P. anomalies associated with it.

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3. Turam was read on lines 9600N and 9800N to further test the coincident V.L.F. (E.M.)/I.P. anomalies at 9600N/8850E, however no significant response was recorded. No additional survey lines were considered warranted.

 4. Two single traverse S.P. surveys were conducted on lines 9600N and 9800N to further test the coincident V.L.F. (E.M.)/I.P. anomalies at 9600N/8850E. No anomaly was detected during the survey and, thus no additional lines were read.

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 1-2 for details of the drill hole logs, and Sheets TS 27/76 V3-8 and TS 27/76 V3-9 for the geological and geochemical summaries of drill holes No 1 and 2.

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DISCUSSION OF RESULTS

The C-horizon geochemistry contours show a close coincidence between Cu, Pb and Zn. The geological interpretation sheet No TS 27/76 V3-2 shows the major zones of anomalous sulphide (Cu, Pb and Zn) mineralization. This zone has been interpreted from both the C-horizon auger hole results and the geological mapping. The major feature of this anomalous zone is the SE-NW trend. The V.L.F. (E.M.) survey shows a coincident trend extending across the grid from 10 300N to 9400N. Mudge S.T. 1979 considers this trend may be a major subsurface structural feature. The characteristics of a shear zone are not present from geological mapping or photo interpretation, however the linear nature of both the geochemical results and the geophysical survey (V.L.F.(E.M.)) results suggest a remobilization of sulphides along a fracture or shear zone.

It is unclear, with the data available, whether the numerous other V.L.F. (E.M.) trends are also structural features or not, these lesser V.L.F. (E.M.) trends do not closely coincide with geochemical contours.

Geological mapping along the coastal zone has indicated clearly defined folding. Recent photo geological investigations by Dr. Large R.R. (pers comm) have shown a great fold complexity within portions of E.L. 27/76. Thus until more details are known of the local stratigraphy within the Voyager 3 area it is not possible to relate the geochemical trends to fold axes.

Shallow diamond drill testing of the geochemical anomalies within the Voyager 3 area have shed little light on the prospect.

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D.D.H. 1 indicated a volcanoclastic stratigraphy composed of both siltstones and greywackes. No significant mineralization was intersected apart from one metre interval between 10.0m-11.0m containing 0.34% Pb and 0.66% Zn. This mineralization is contained within minor fractures and as such could fall into the shear zone theory.

D.D.H. 2 can not be considered as an effective geochemical evaluation of a zone having a true thickness of approximately 100m (+). Within the 30.7m that the hole tested, no significant mineralization was encountered and the lithologies varied between siltstones, vitric crystal tuffs and crystal lithic tuffs. Details of bedding orientations and grading within the greywackes and tuffs suggests a moderate westerly dip to the stratigraphy, this corresponds to the coastal geological mapping.

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GEOPEKO.



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ANALYTICAL RESULTS

SAMPLE NUMBER		Cu ppm	Pb ppm	Zn ppm			
KS	1239	5	30	40			
	40	5	60	40			
	1*	5	60	40			
	2	5	30	35			
	3	5	40	50			
	4	(2	40	30			
	5	5	20	15			
	6	(2	30	20			
	7	5	40	30			
	8	55	580	85			
	9	15	340	80			
	50	40	140	70			
	50**	40	140	70			
	1	35	130	75			
	2	5	20	30			
	3	20	70	25			
	4	40	210	450			
	5	65	980	900			
	6	55	830	450			
	7	40	350	1050			
	8	10	20	240			
	9	5	370	160			
	60	5	70	500			
	1*	(2	30	270			
	2	5	20	25			
	3	10	200	75			
	4	50	120	245			
	5	20	130	950			
	6	20	170	550			
	7	10	50	50			
	8	35	80	110			
	9	20	480	650			
	70	30	50	215			
	1*	25	60	230			
	2	10	20	30			
	2**	10	20	35			
	3	40	630	750			
	4	30	100	260			
	5	20	170	230			
	6	20	60	230			
	7	25	100	340			
	8	15	190	170			
	9	(2	30	285			
	80	20	180	240			
	1*	20	160	230			
KS	1282	20	50	45			

* Denotes duplicate of previous sample.

** Denotes repeat and check.

(Denotes less than.

SAMPLE NUMBER		Cu ppm	Pb ppm	Zn ppm			
KS	1283	35	340	230			
	4	15	160	355			
	5	15	280	1050			
	6	10	150	55			
	7	10	260	260			
	8	5	(20	25			
	9	15	80	90			
	90	10	60	105			
	1*	10	60	110			
	2	65	220	9250			
	3	(2	120	50			
	4	5	70	40			
	5	5	20	10			
	6	5	380	500			
	7	(2	60	20			
	8	5	40	45			
	9	(2	200	395			
	1300	(2	60	105			
	1*	(2	90	90			
	2	560	140	7500			
	3	55	360	4250			
	3**	55	350	4250			
	4	5	340	750			
	5	(2	90	30			
	6	20	130	240			
	7	30	490	750			
	8	20	940	80			
	9	80	80	70			
	10	10	80	700			
	1*	10	90	600			
	2	5	40	270			
	3	15	150	550			
	4	(2	20	40			
	5	25	400	650			
KS	1316	30	120	170			
KS	1319	5	100	60			
	20	55	210	20			
	21*	40	160	30			
	2	15	50	180			
	3	10	20	150			
	4	10	240	400			
	5	5	90	500			
	6	5	40	100			
	7	40	140	110			
	8	10	300	230			
	9	10	230	550			
	30	70	1280	1150			
	1*	60	1200	1050			
	2	30	1400	400			
	3	15	500	340			
KS	1334	10	160	140			

● Denotes duplicate of previous sample

●● Denotes repeat and check.

(Denotes less than.

SAMPLE NUMBER		Cu ppm	Pb ppm	Zn ppm			
KS	1334**	10	180	140			
	5	10	100	330			
	6	110	780	3000			
	7	55	60	650			
	8	5	110	340			
	9	10	160	380			
	40	(2	60	90			
	1*	(2	60	90			
	2	25	200	300			
	3	15	130	220			
	4	10	140	200			
	5	(2	40	25			
	6	10	80	260			
	7	10	380	250			
	8	5	40	70			
	9	10	220	150			
	50	(2	30	55			
	1*	5	40	65			
	1**	5	50	55			
	2	5	40	15			
	3	5	110	250			
	4	10	180	100			
	5	30	1140	300			
	6	(2	100	50			
	7	40	340	1350			
	8	5	20	35			
	9	5	40	25			
	60	85	320	310			
	1*	60	260	260			
	2	5	20	30			
	3	10	210	200			
	4	3500	120	240			
	5	20	30	25			
	6	10	60	30			
	7	5	60	40			
	8	5	140	100			
	9	10	60	70			
	70	(2	80	120			
	71*	(2	90	100			
	2	10	80	100			
	3	10	60	45			
	4	(2	70	220			
	5	10	100	90			
	6	80	110	75			
	7	5	40	85			
	8	10	100	180			
	9	5	70	55			
	80	25	120	160			
	1*	20	120	160			
	1**	20	120	150			
	2	5	40	25			
	3	50	220	230			
KS	1384	30	540	1200			

● Denotes duplicate of previous sample

●● Denotes repeat and check.

(Denotes less than.

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SAMPLE NUMBER		Cu ppm	Pb ppm	Zn ppm			
KS	1385	20	140	120			
	6	15	80	95			
	7	35	300	1300			
	8	(2	40	45			
	9	10	40	25			
	90	35	130	150			
	1	40	140	220			
	2	10	90	800			
	3	5	30	65			
	4	(2	100	180			
	5	10	100	150			
	6	10	80	120			
	7	(2	40	60			
	8	5	70	20			
	8**	(2	70	10			
	9	15	195	200			
	1400	(2	50	40			
	1*	(2	50	40			
	2	(2	40	15			
	3	10	120	30			
	4	5	80	180			
	5	(2	120	180			
	6	5	120	280			
	7	10	1240	1200			
	8	60	530	260			
	9	15	100	50			
	10	25	50	130			
	1*	20	40	120			
	2	10	180	1200			
	3	10	200	190			
	4	10	40	70			
	5	(2	60	600			
	6	240	350	350			
	7	1000	300	1250			
	8	650	3500	270			
	9	380	1400	240			
	20	70	1180	320			
	1*	65	1200	320			
	2	60	380	160			
	3	200	1460	700			
	4	310	4700	3750			
	5	10	100	45			
	6	5	80	110			
	7	5	100	35			
	8	25	220	550			
	8**	20	220	600			
	9	10	100	60			
	30	15	360	140			
	1*	20	330	130			
	2	(2	40	20			
	3	(2	60	25			
	4	(2	40	15			
KS	1435	5	60	30			

● Denotes duplicate of previous sample

●● Denotes repeat and check.

(Denotes less than.

SAMPLE NUMBER		Cu ppm	Pb ppm	Zn ppm			
KS	1436	10	50	30			
	7	25	60	120			
	8	20	260	35			
	9	20	520	250			
	40	10	250	40			
	1	(2	60	20			
	5	5	60	20			
KS	1444	10	310	140			
	5	5	70	15			
	6	(2	180	260			
	6**	(2	180	260			
	7	(2	30	20			
	8	20	300	120			
	9	20	1120	1000			
	50	(2	150	85			
	1*	5	140	90			
	2	10	200	190			
	3	15	100	55			
	4	(2	30	20			
	5	5	30	10			
	15	15	80	65			
	KS	1459	(2	20	15		
60		140	460	140			
KS	1461*	150	480	150			
KS	1736	5	40	10			
	7	5	40	10			
	8	5	20	10			
	9	5	30	10			
	40	10	60	20			
	1*	10	80	20			
	2	(2	20	10			
	2**	5	20	10			
	3	5	50	10			
	10	10	300	90			
KS	1746	25	920	1130			
	7	20	140	110			
	8	10	40	30			
	9	140	360	740			
	50	20	360	1300			
	1*	20	280	1160			
	2	10	60	750			
	3	(2	30	25			
	4	5	20	20			
	5	(2	40	30			
KS	1756	110	540	180			

* Denotes duplicate of previous sample

** Denotes repeat and check.

(Denotes less than.

SAMPLE NUMBER		Cu ppm	Pb ppm	Zn ppm			
KS	1757	(2	130	80			
	7**	(2	140	80			
	8	45	840	230			
	9	(2	40	20			
	60	10	1580	600			
	1*	10	1280	540			
	2	(2	20	10			
	3	(2	30	10			
	4	5	60	(2			
KS	1765	10	20	20			

• Denotes duplicate of previous sample

•• Denotes repeat and check.

(Denotes less than.

028

029

GEOPEKO

A DIVISION OF PEKO-WALLSEND OPERATIONS LTD.

LOG. OF VOYAGER 3 D.D.H. 1 ELLIOTT BAY E.L. 27/76

PLANNING

Proposer: C.D. Strickland
 Depth: 30m
 Location: Voyager 3 Grid

Purpose of hole: Evaluation of a coincident Cu, Zn
 geochemical anomaly.

Co-ordinates: 10,000N, 8875E.
 Inclination: -60°
 Bearing: 090° T.N.
 Approved by: M.C. Rogers
 Date: 5-2-1979

SUMMARY

Logged by: C.D. Strickland
 Results: 1m & 0.34%Pb, 0.66%Zn between
 10.0-11.0m.

DRILLING

Date terminated: 7-2-1979
 Driller: M.W. Longmore

Core: A.Q. 4.5m - 30.8m

Final depth: 30.8m
 Reasons for termination: Tested anomaly

Water: Normal water return

Comments on Drilling Conditions:
 Slow drilling in soft broken ground.
 Poor core recovery throughout.

030

076031

A8

VOYAGER 3 DIAMOND DRILLING PROGRAMMEGeochemical Results

D.D.H. 1

Co-ordinates 10,000N, 8,875E

Bearing 090°TN

Dip -60°

Depth 4.5m - 30.8m

KR No	Interval	Core Recov- ered	Cu ppm	Pb ppm	Zn ppm	Ag ppm
5356	4.5-8	0.7	5	100	330	1
57	8-10	0.6	20	700	820	2
58	10-11	0.75	290	0.34%	0.66%	4
59	11-13	0.8	2	40	240	-1
5360	13-15	0.8	2	400	340	1
61	15-17	0.85	2	60	190	-1
62	17-20	0.5	5	90	230	-1
63	20-23	0.55	5	30	130	-1
64	23-25	0.9	2	45	220	-1
65	25-26	0.9	2	30	270	-1
66	26-28	0.85	2	35	195	-1
67	28-29	0.75	-2	10	240	-1
68	29-30	0.7	-2	30	350	1
5369	30-30.8	0.7	2	40	260	1

031

VOYAGER 3 D.D.H. 1 Geological Log

0m - 4.5m No Core

4.5m - 9.0m Greywacke

Green fine grained chloritic greywacke rubble. The average fragment size is 1mm and larger lenses of sericite and particularly chlorite occur irregularly throughout. Core recovery poor, approximately 10%, rubble only remains.

9.0m - 23.5m Volcaniclastic Siltstone

This unit consists of broken grey-green chloritic to semi-chloritic ultrafine grained siliceous siltstone representative of well reworked tuffs.

Throughout this unit very poor core recoveries were obtained varying from 30 - 50%. The remaining core occurs in the form of rubble with the largest solid portions only 4cm in length.

Disturbed sedimentary features are present, however no obvious bedding is recognisable. Jointing and micro faulting features are common with the joints orientated at approximately 45° to L.C.A.

Between 10.3m - 10.5m within the chloritic siltstones narrow 1mm wide veinlets of pyrite-sphalerite-galena are present cutting the core at approximately 50° to L.C.A. This zone is characterized by anomalous geochemistry and represents the same order of magnitude as the soil geochemistry. It is considered that this style and quantity of mineralization is responsible for the geochemical anomaly.

032

Between 17.2m - 20.0m a pale brown bleached section of fine siltstone occurs.

23.5m - 30.8m Greywacke

Dominantly a semi-chloritic fine grained greywacke unit intercalated with several minor zones of siltstone.

The greywacke as above contains numerous "lenses" or zones of more chloritic matrix generally aligned at approximately 50° to L.C.A.

Major siltstone units occur between 24.8m - 25.2m and 25.8m - 28.0m.

A well defined graded bedding feature occur at 30.0m the bedding is aligned at 60° to L.C.A. and the grain size is increasing in size down the hole, thus the sequence is normal and dipping to the west.

No evidence of mineralization, or quartz veining is visible throughout this greywacke unit.

E.O.H. 30.8m

033

076034

GEOPEKO

A DIVISION OF PEKO-WALLSEND OPERATIONS LTD.

LOG. OF VOYAGER 3 D.D.H. 2 ELLIOTT BAY E.L. 27/76

PLANNING

Proposer:	C.D. Strickland
Depth:	30m
Location:	Voyager 3 grid
Purpose of hole:	Evaluation of a coincident Pb, Zn geochemical anomaly.
Co-ordinates:	9500N, 9235E
Inclination:	-60°
Bearing:	090° T.N.
Approved by:	R.R. Large
Date:	21-3-1979

SUMMARY

Logged by:	C.D. Strickland
Results:	

DRILLING

Date terminated:	24-3-1979
Driller:	M.W. Longmore
Core:	AQ 1.8m - 30.7m
Final depth:	30.7m
Reasons for termination:	Tested geochemical anomaly
Water:	Normal water return. Drilled with salt water.
Comments on Drilling Conditions:	Average core recovery throughout.

034

VOYAGER 3 DIAMOND DRILLING PROGRAMMEGeochemical Results

D.D.H. 2

Co-ordinates 9500N, 9235E

Bearing 090° TN

Dip -60°

Depth 1.8m - 30.7m

KR No	Interval	Core Recov-ered	Cu ppm	Pb ppm	Zn ppm	Ag ppm
5129	1.8-3	1.2	10	5	50	-1
5130	3-4	0.8	2	10	40	-1
31	4-5	0.9	2	15	90	-1
32	5-6	1.0	2	10	105	-1
33	6-7	1.0	15	5	40	-1
34	7-8	0.9	40	40	65	-1
35	8-9	1.0	5	65	95	-1
36	9-10	1.0	-2	35	90	-1
37	10-12	0.5	5	100	175	-1
38	12-14	0.8	10	35	90	-1
39	14-16	0.6	25	170	170	-1
5140	16-18	0.5	25	60	135	-1
41	18-20	1.1	10	40	70	-1
42	20-21	0.9	5	135	140	-1
43	21-22	1.0	5	110	140	-1
44	22-23	1.0	85	0.11%	0.11%	4
45	23-24	1.0	10	30	250	-1
46	24-25	1.0	5	10	185	-1
47	25-26	1.0	2	40	210	-1
48	26-27	1.0	2	10	130	-1
49	27-28	1.0	25	15	360	-1
5150	28-29	0.9	5	55	130	-1
5151	29-30.7	1.3	-2	70	195	-1

VOYAGER 3 D.D.H. 2 Geological Log

0m - 1.8m No core1.8m - 18.0m Crystal Tuff Pyroclastics

This unit consists of a pale brown siliceous fine grained vitric crystal tuff containing disseminated pyrite and fractures up to 1-2mm containing fine grained pyrite. The total sulphide content is very low however.

The core recovery within this unit is excellent (considering AQ coring techniques) and is approximately 85 - 95%.

A distinct colour layering is present within this vitric-crystal tuff, and a vague grain size layering can be also seen paralleling the colour change. The layering is interpreted as bedding and the beds are approximately 0.5cm thick in places. The bedding is aligned at approximately 65° to L.C.A.

18.0m - 23.0m Siltstone

Pale-brown very fine grained siliceous siltstone (vitric tuff) showing fine grain size variations. This unit is interpreted as a volcanoclastic sediment representing a reworked tuff horizon. Several minor clay zones occur within this section, however generally the core recovery is 90%. Minor sulphide (pyrite) occurs as narrow fracture fillings irregularly throughout the fine grained sediments.

036
23.0m - 28.3m Crystal-lithic tuff

A pale green non-homogeneous unit of medium grained to coarse grained pyroclastics. The crystal component dominates, however the lithic component is obvious as dark green chloritic fragments generally showing well rounded outlines. These fragments average 3mm, however a larger pale green lithic fragment at 23.3m is up to 1.5cm across. At 25.2m a quartz filled fracture contains minor pyrite, a small bleb of pyrite also occurs at 27.8m associated with a zone of increased chlorite, possible another small fracture zone.

Core recovery averages 100%.

28.3m - 30.7m Siltstone

As above, pale fine grained siltstone (vitric tuff) containing random grain size variations. Bedding is visible at 30.5m orientated at approximately 60° to L.C.A.

Average core recovery is 90%.

E.O.H. 30.7m.

037

076038

OPERATION OF LEGEND

1. Capital letter - indicates primary classification eg S - sedimentary rock, A - acid rock, M - basic rock
2. Lower case letters - indicate the following
 - (i) Colours - e.g. pk/grnA = pink fragments in an acid igneous rock with a green matrix
 - (ii) Textural or structural features - e.g. xtA = crystal tuff of acid composition, eg pA = porphyritic acid rock, e.g. oxA = oxidised acid rock.
3. As suffixes in progressive order:
 - (i) Categorized - e.g. pAr = rhyolite, eg. Ia = intermediate rock of andesitic composition
 - (ii) Mineralogy - e.g. pArf = porphyritic (rhyolite) with feldspar phenocrysts, e.g. 1st f/b = lithic crystal tuff with feldspar (phenocrysts component) and biotite (prominent matrix component), e.g. 1st fq = lithic crystal tuff with (major) feldspar crystals and (minor) quartz crystals, e.g. fb mg pArqf (black specks) = flow banded porphyritic 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

STRUCTURAL

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

COLOURS

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

SEDIMENTARY

Ssh	shale
Siltst	siltstone
Ssst	sandstone
Sqtz	quartzite
Scongl	conglomerate
Sv	volcaniclastic sediment

SILICATE MINERALOGY

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

GRAIN SIZE

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

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

SULPHIDE MINERALOGY

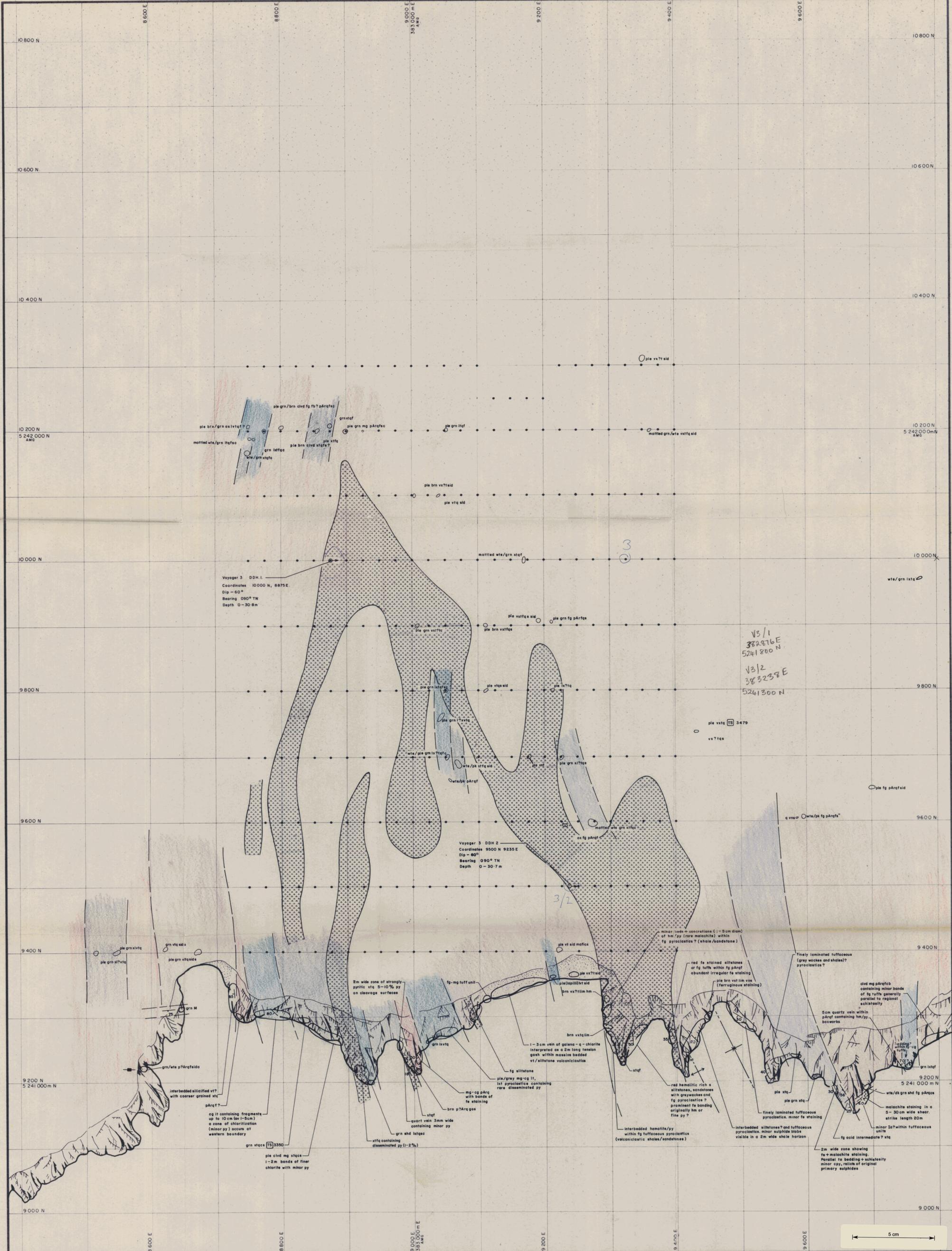
s	sulphides
py	pyrite
cpy	chalcopyrite
gn	galena
hm	hematite
mag	magnetite
gos	gossan
lim	limonite

MISCELLANEOUS

	3033 Thin section and rock No
	1112 Geochemical analysis and rock No
	Grid traverse
	Anomaly centre (approximate)
	Old workings
	Compsite

GEOLOGICAL INTERPRETATION

Pencil No			
19-1		TERT	(Macquarie Beds)
19-6		L ORDO	Conglomerate (Owen type), sandstones (Scongl, Ssst)
19-50		Ia	Andesite
19-67		M	Basic dyke
19-10		U&P	Granite (Gr)
19-13		C	Sandstone (Ssst)
19-17		C	Fine grained volcaniclastic sediments (fg Sv(ss), Sv(Ssh))
19-18		C	Coarse grained sedimentary breccia (cg S(brec))
19-19		C	Porphyritic quartz - feldspar rhyolitic lava (fbpArqf)
19-21		C	Feldspar - quartz - biotite porphyry (cg pArqfb)
19-24		C	Rhyolitic vitric pyroclastics Vitric tuff, vitric crystal tuff (vtq, vtaq)
19-28		C	Rhyolitic crystal pyroclastics Crystal tuff, crystal lithic tuff (xtq, xltq)
19-32		C	Rhyolitic lithic pyroclastics Lithic tuff, lithic crystal tuff, lithic vitric tuff, (cg ltaf, mg lxtaf, lvtaf)
19-70		PRE C	Undifferentiated quartzite, quartz mica schist. (Sqtz, fg lam sch Seh mus)

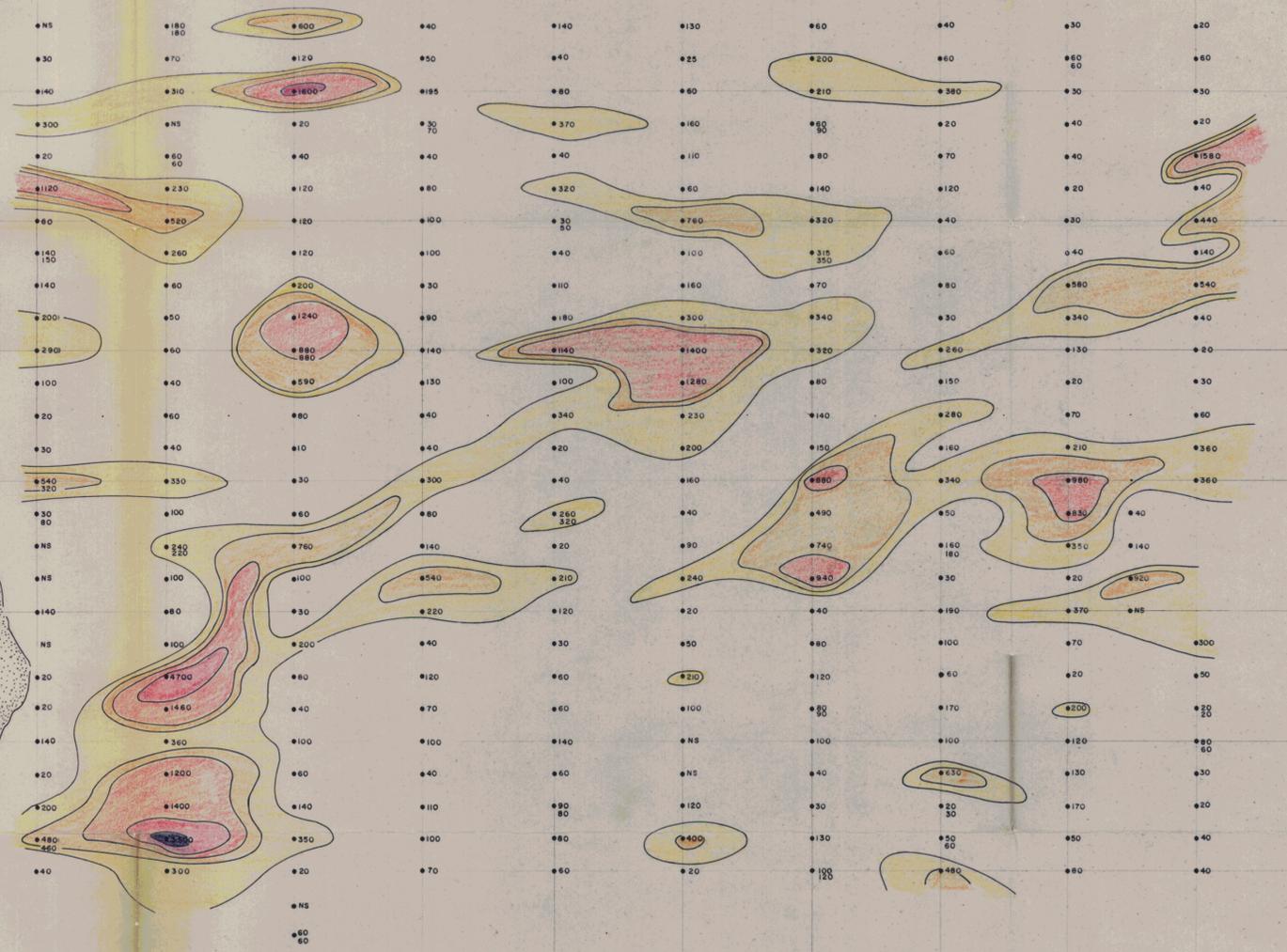


LEGEND:
For details of the abbreviations used for the geological interpretations refer to appendix no. 4.

Zones of anomalous sulphide mineralization. Based upon geological mapping and C-Horizon geochemistry.

Diamond drill hole. (showing drilling direction)
 Power auger hole
 Hand auger hole
 Grid position

GEOPEKO A DIVISION OF PEKO-WALLSEND OPERATIONS LTD.	
MAY 1980	No TS 27/76-V3-2
E. L. 27/76 ELLIOTT BAY, TASMANIA	
VOYAGER 3 001	
GEOLOGICAL INTERPRETATION	
80-1447	076039



*480 480 ppm Pb original sample
 480 480 ppm Pb duplicate sample

ANALYTICAL METHODS
 Pb by AAS following hot conc.
 HCL and HCL/HNO₃ wash in later
 stages for 1 hour at 0.25g sample.
 A.C.S. Laboratory, Adelaide

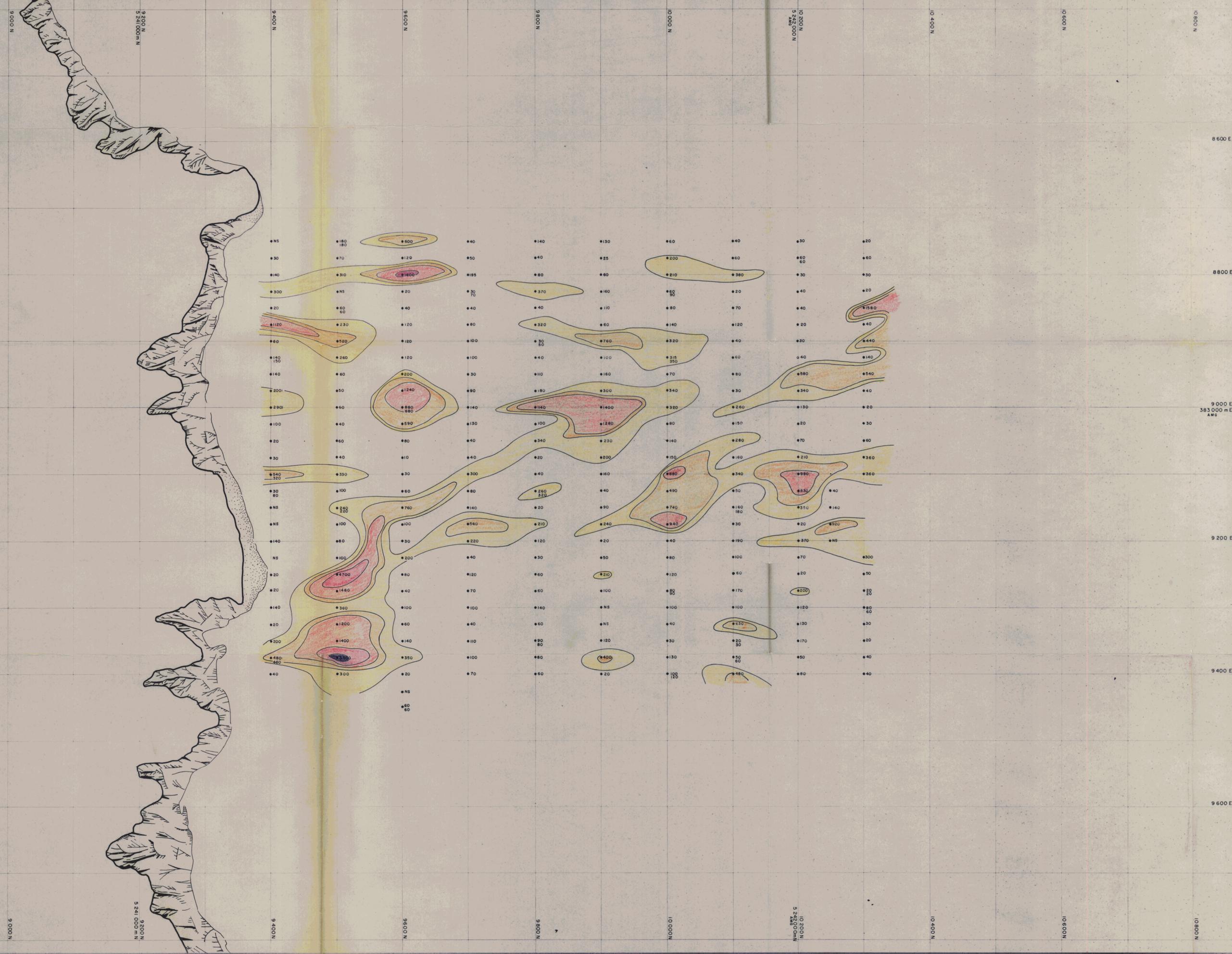
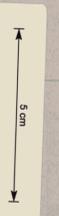
CONTOUR INTERVAL
 Contour No. 13 - 6
 13 - 10 200 - 400
 12 - 10 400 - 600
 11 - 10 600 - 800
 10 - 10 800 - 1000
 9 - 22 1000 - 3000
 19 - 28 > 3200

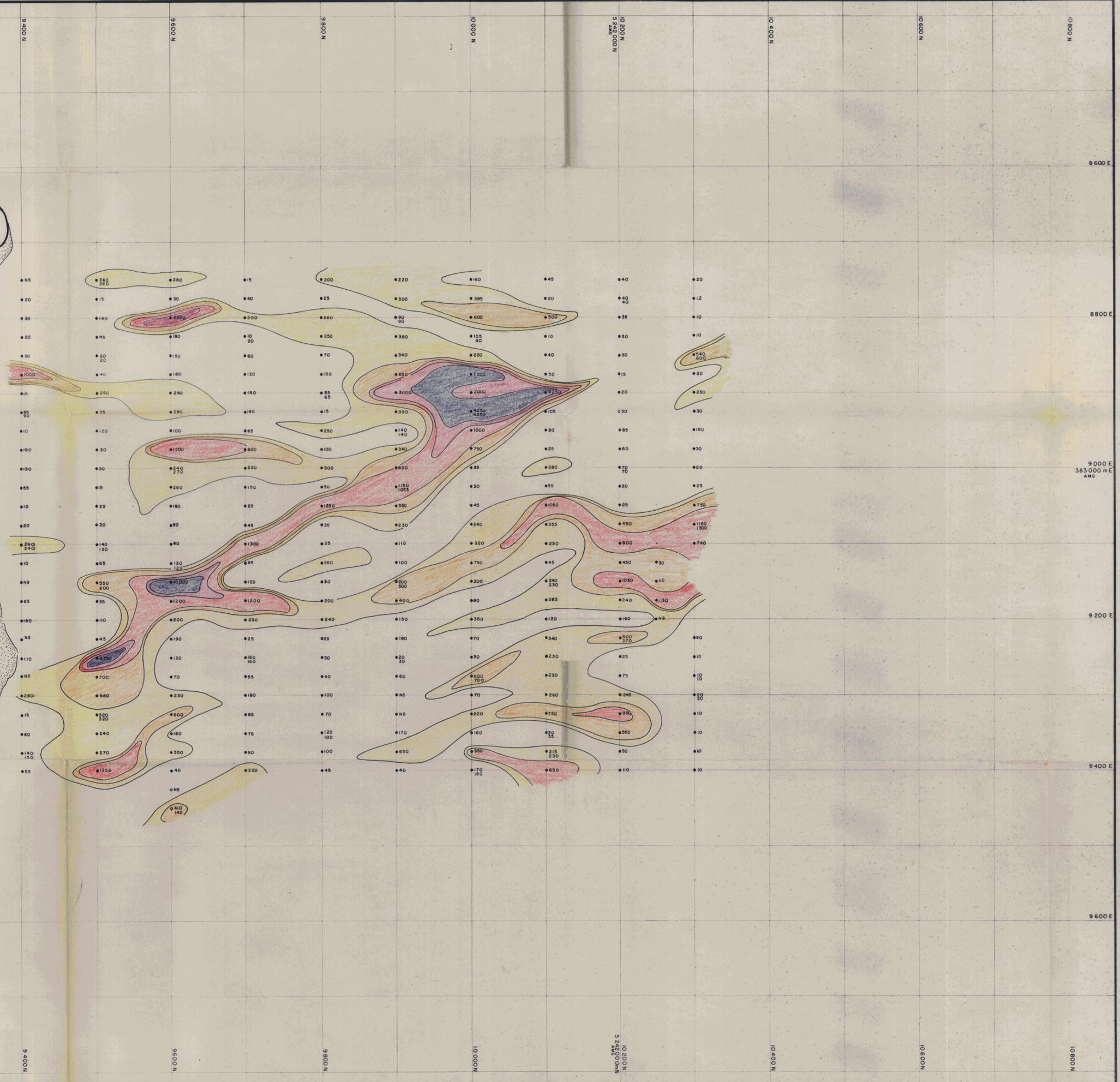
Power outage hole
 Hand outage hole
 Grid position



DATE: NOV 75
 DRAWN: J.P.M.
 CHECKED: GMS

GEOPERCO
 A DIVISION OF PEKCO-WALLSEND OPERATIONS LTD.
 E.L. 27/76 ELLIOTT BAY, TASMANIA
 VOYAGER 3
 C-HORIZON GEOCHEMICAL RESULTS
 LEAD Contours
 076041





LEGEND

* 260 ppm Zn original sample
 * 260 ppm Zn duplicate sample

ANALYTICAL METHODS:
 Zn by AAS following hot conc.
 HCL and HCL/HNO₃ leech in leecher
 stages for 1 hour at 0°C sample
 A.C.S. LABORATORY APPLICABLE

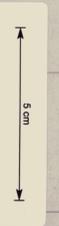
CONTOUR INTERVAL
 Parallel No. 19 - 6
 19 - 10
 19 - 15
 19 - 22
 19 - 28

200 - 400
 400 - 800
 800 - 1600
 1600 - 3200
 > 3200

• Power auger hole
 • Hand auger hole
 ○ Grid position

DATE NOV '78
 GEOLOGIST D.S.
 DRAWN J.P.M.
 CHECKED C.M.S.

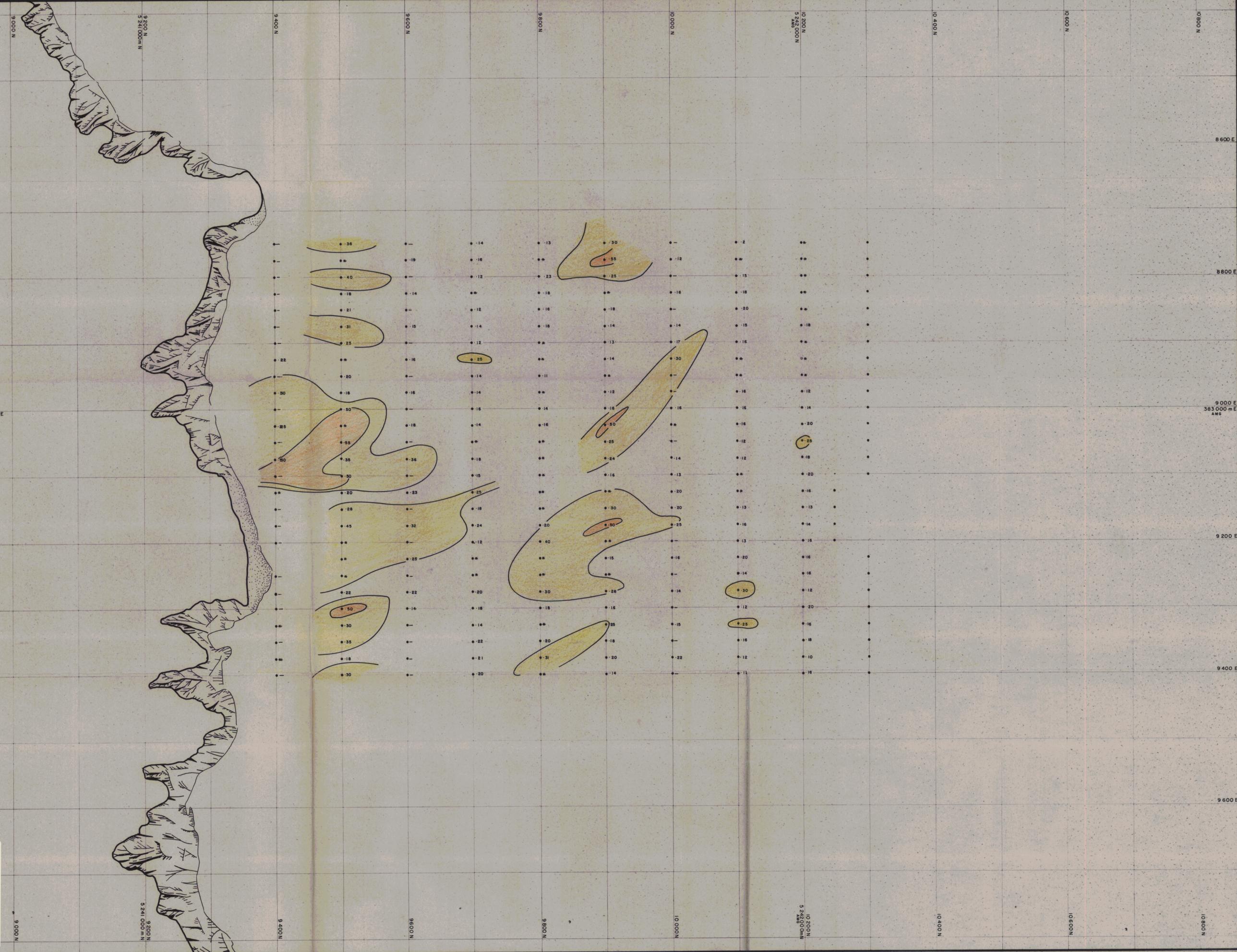
GEOPRO OPERATIONS LTD
 A DIVISION OF PERKO-WALLENBUND
 No. TS27/76-V3-5
 E. L. 27/76 ELLIOTT BAY, TASMANIA
 VOYAGER 3
 C-HORIZON GEOCHEMICAL RESULTS
 ZINC CONTOURS
 004
 076042



9 000 N
 9 200 N
 9 400 N
 9 600 N
 9 800 N
 10 000 N
 10 200 N
 10 400 N
 10 600 N
 10 800 N

8 600 E
 8 800 E
 9 000 E
 9 200 E
 9 400 E
 9 600 E

383 000 m E
 383 000 m E
 383 000 m E
 383 000 m E
 383 000 m E
 383 000 m E



LEGEND:
 Conductivity Survey
 1. Bedrock model M.G. conductivity meter.
 2. Ground water samples obtained from C-horizon holes.

CONTOUR INTERVAL:
 1. 0.5 - 0.50 millimhos/cm
 2. 0.50 - 0.75 millimhos/cm
 3. 0.75 - 1.00 millimhos/cm

Auger Hole Condition:
 - Hole covered
 * Insufficient ground water
 - Power outage hole
 - Hand auger hole
 - Grid position

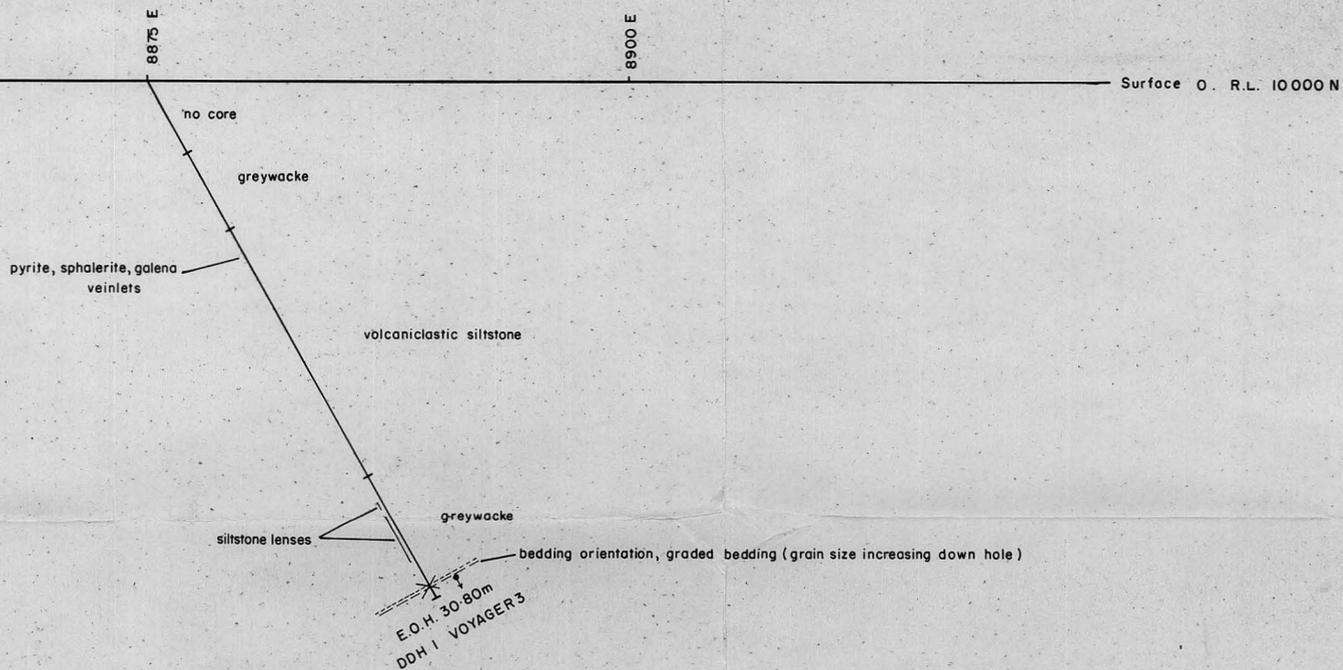
DATE: MAY 1980
GEODESIST: C.D.S.
DRAWN: J.P.M.
CHECKED: J.P.M.

GEOPRO
 A DIVISION OF PERD. MULLISBRO. OPERATIONS LTD.
 E.L. 27/76 ELLIOTT BAY, TASMANIA
 VOYAGER 3
 GROUND WATER CONDUCTIVITY RESULTS
 MILLIMHOS/cm CONTOURS
 006

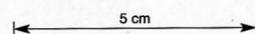
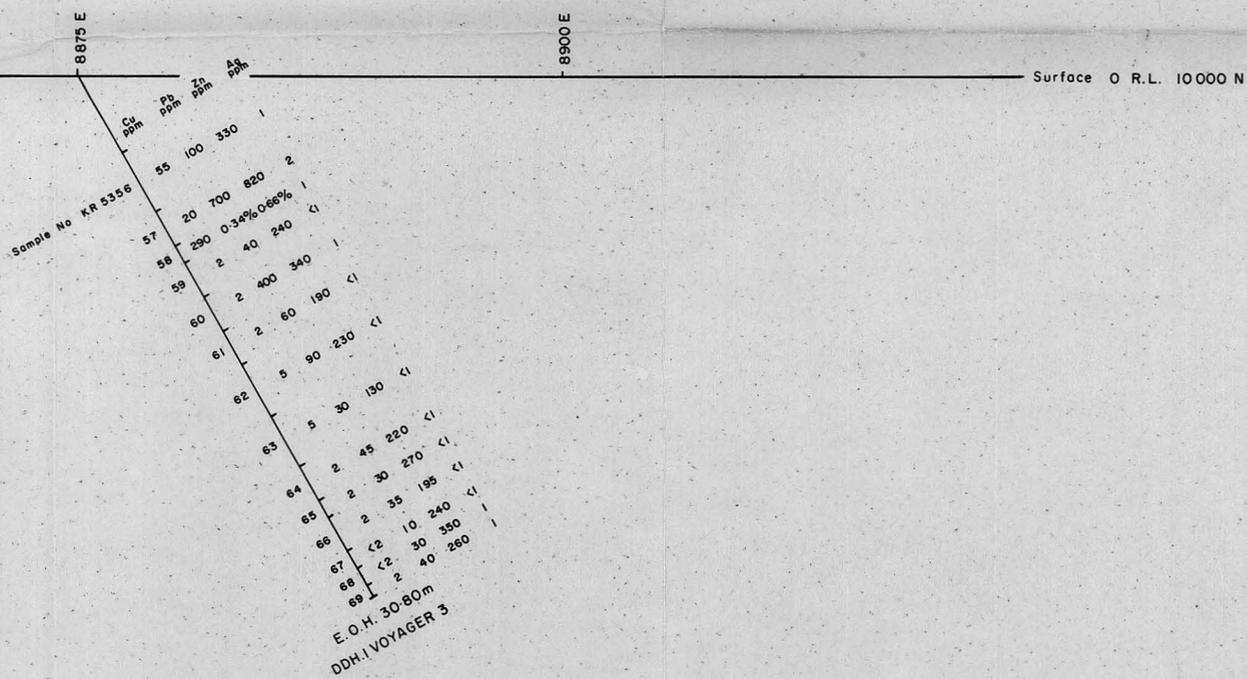
004



80-74-47



GEOLOGICAL LOG



GEOCHEMICAL RESULTS

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)



DATE MAY 1980

GEOLOGIST C. D. S.

DRAWN J. P. M.

CHECKED CDR.

GEOPEKO
 DEVONPORT BASE, TASMANIA

SCALE 1:250 No. TS 27/76 V3-8

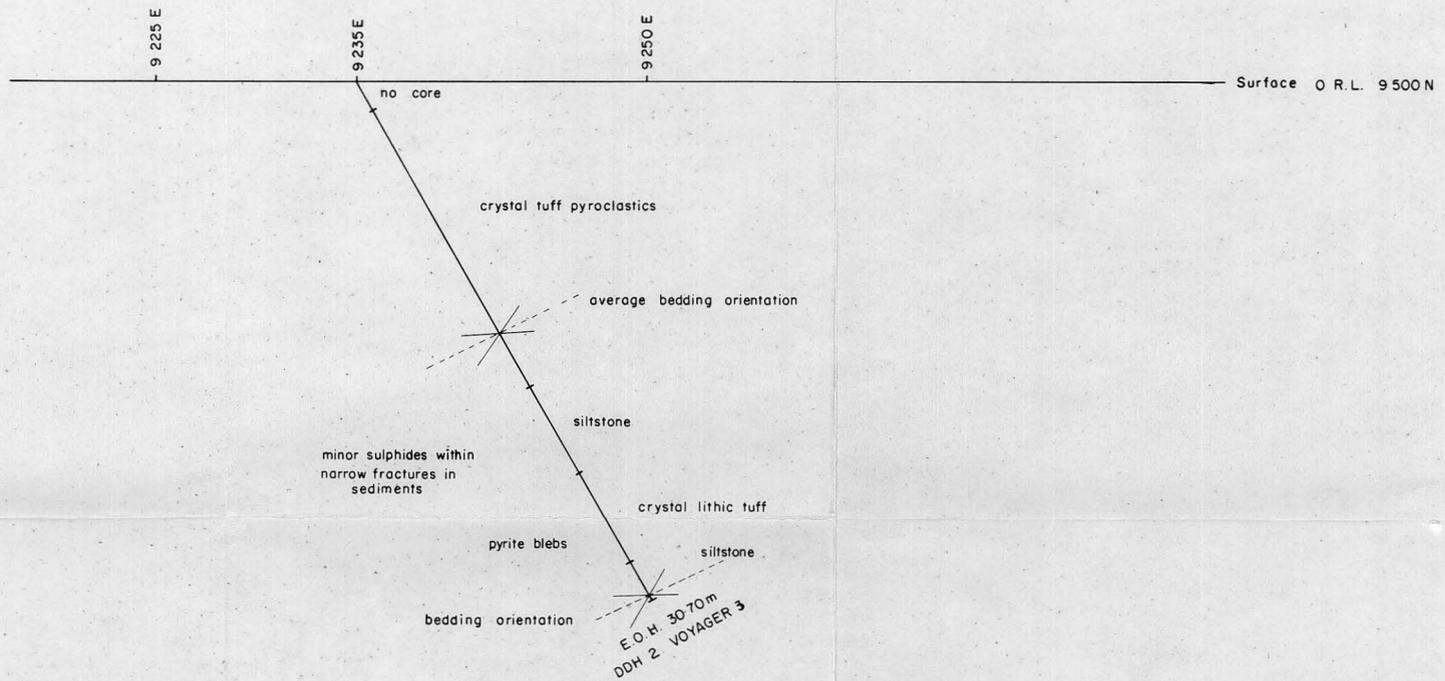
E.L. 27/76 ELLIOTT BAY, TASMANIA

VOYAGER 3 DDH 1 007

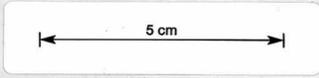
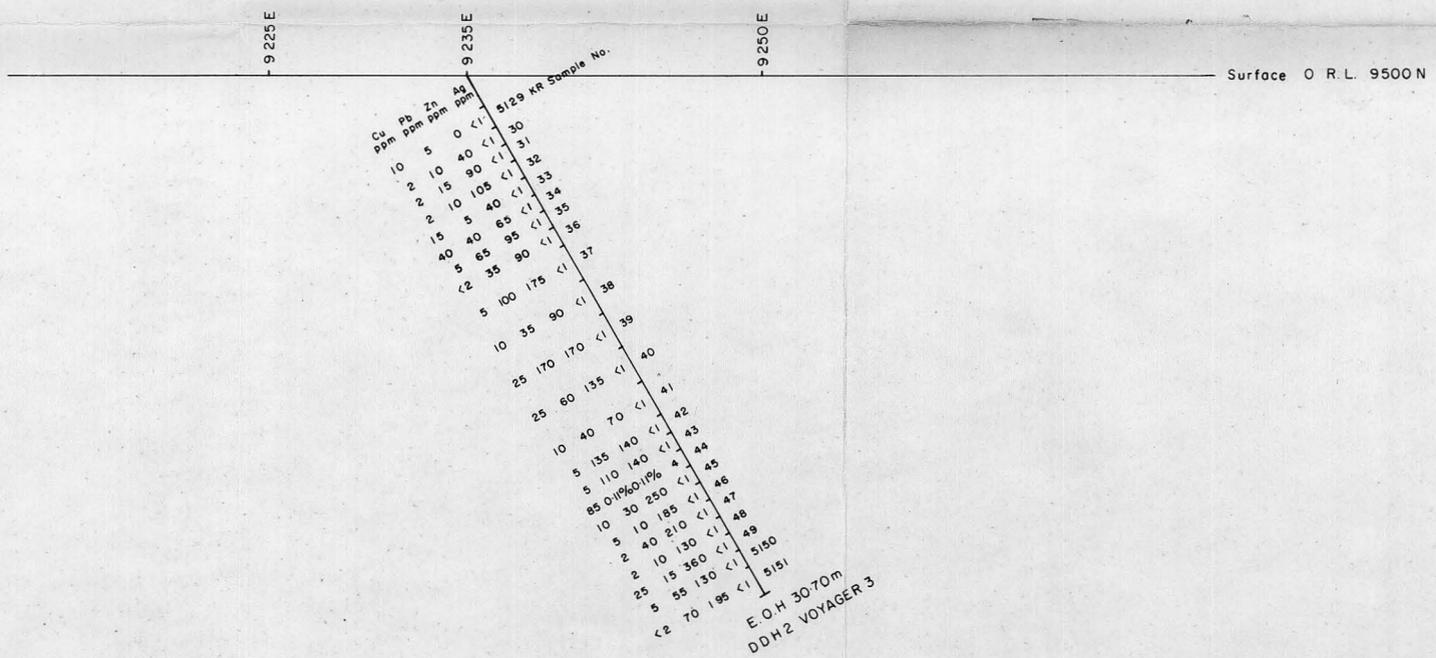
GEOLOGICAL/GEOCHEMICAL SUMMARY

80-1447

076045



GEOLOGICAL LOG



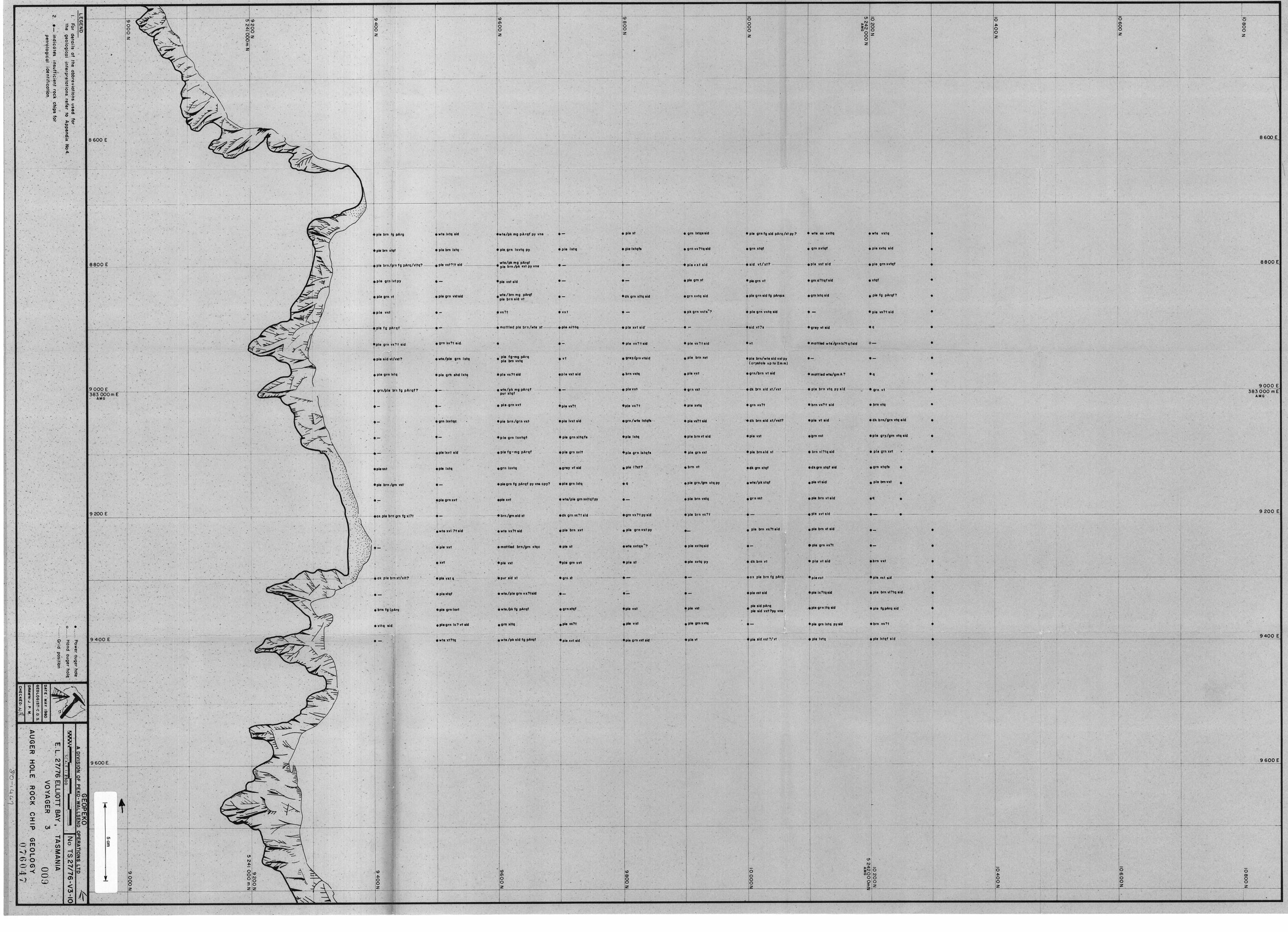
GEOCHEMICAL RESULTS

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)



DEVONPORT BASE, TASMANIA
 SCALE 1:250
 No TS 27/76-V3-9
 E.L. 27/76 ELLIOTT BAY, TASMANIA
 VOYAGER 3 DDH 2 008
 GEOLOGICAL/GEOCHEMICAL SUMMARY

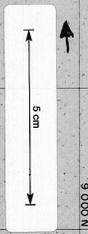


LEGEND
 1. For details of the observations used for the geological interpretations refer to Appendix No. 4
 2. — indicates insufficient rock chips for petrological identification

Power ouzel hole
 Hand ouzel hole
 Grid position

DATE: MAY 1980
 DRAWN BY: P. M.
 CHECKED BY: J. J.

GEOPEKO
 A DIVISION OF PERKO WALSLEND OPERATIONS LTD.
 E. L. 2776 ELLIOTT BAY, TASMANIA
 VOYAGER 3
 AUGER HOLE ROCK CHIP GEOLOGY
 076047



30-1477