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FINAL REPORT  
ON EXPLORATION LICENCE 27/76,  
ELLIOTT BAY, TASMANIA

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1. INTRODUCTION

This final report on Exploration Licence 27/76 summarizes the objectives, methods, results and conclusions of eight summer field seasons of mineral exploration undertaken by Geopeko in the Elliott Bay area of SW Tasmania.

It is essentially a summary of the great volume of previously documented information and is based upon the many cited references.

The details under sub-sections entitled "Exploration Summary" and "Conclusions" are presented in chronological sequence, summer by summer, to elucidate the development of the exploration programs and to assist the reader in accessing the more complete information in previous progress reports.

I wish to acknowledge the painstaking efforts of previous workers and authors of the many references.

On behalf of Geopeko I also pay tribute to the numerous people of all ranks and many disciplines who contributed to and gave up their lifestyles to participate in a great exploration project.

2. SUMMARY

Mineral exploration of EL 27/76, spanning eight summer field seasons from 1976-77 to 1983-84, has been principally directed toward discovery of volcanogenic massive sulphide and stratabound gold deposits within the (Cambrian) Lewis River Volcanics - the southernmost extension of the highly mineralized Mt Read Volcanic Belt of western Tasmania.

The methods applied in regional appraisal involved reconnaissance geological mapping, drainage geochemical sampling and ground follow up of airborne detected magnetic and electromagnetic anomalies. Of these, geological reconnaissance has been most effective in delineating areas for follow-up; drainage geochemistry has been useful in defining gold anomalies but generally insensitive to base metal mineralization. Follow up of airborne geophysical features has been generally unrewarding.

At prospect/anomaly evaluation stage the methods of gridding, C-Horizon soil geochemistry, 1:2,500 geological mapping, magnetic intensity, VLF-EM, gradient array and dipole-dipole IP/Resistivity, SP, Gravity and UTEM III geophysical techniques have been applied on a systematic basis.

Shallow trenching and diamond drilling methods have been used to test anomalies of significance.

The most successful method of target definition has undoubtedly been C-Horizon geochemistry although there is characteristically very little primary or secondary geochemical dispersion in this environment.

Little success has attended the testing of geophysical anomalies although to some degree this has been due to a want of strong responses rather than weaknesses of the geophysical methods.

As the exploration project and geological understanding of the area evolved it became possible to recognize subdivisions within the Lewis River Volcanics akin to Corbett's (1981) division of the Mt Read Volcanics; namely the "Central Lava Belt", "Western Sequence" and "Tyndal Correlates".

In EL 27/76, rocks correlating with the upper part of the "Central Lava Belt", a group of rhyolite (meta) quartz crystal tuffs, agglomerates and lavas with minor clastic interbeds informally named the "Wart Hill Pyroclastics" were recognized as having greatest prospectivity for the target mineralization.

Detailed investigations on extensive grids over this group of rocks climaxed in the discovery, at surface just north of Wart Hill, of two small lenses of massive galena-sphalerite mineralization carrying grades of around 10% Pb, 20% Zn, 0.2% Cu, 0.6 g/t Au and several hundred grams/tonne of Ag.

Subsequent detailed gravity survey and diamond drill testing led to the disappointing conclusion that the lenses were isolated pods of only a few metres depth extent.

Concurrent detailed evaluation and some drilling of other prospects in the sequence had revealed numerous geochemical anomalies and occurrences of minor mineralization including an extensive, apparently stratabound, gold drainage geochemical anomaly.

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The discovery of the massive sulphide lenses had established the "pedigree" of the "Wart Hill Pyroclastics" as an ore forming environment and subsequently major geophysical surveys including some 100 line km of dipole-dipole IP/Resistivity and 40 line km of UTEM III were carried out over the most prospective zones of the formation but unfortunately failed to indicate outstanding drilling targets.

Diamond drill testing of the geochemical forms of the gold drainage anomaly indicated broad zones of low grade (0.15-0.2 g/t Au) with occasional higher grade veinlets, apparently stratabound within a rhyolitic lithic crystal tuff unit close to the stratigraphic top of the Wart Hill Pyroclastics.

Although further potential exists within as yet unexplored northward extensions of the Wart Hill Pyroclastics, Geopeko was obliged to relinquish the licence prior to its scheduled expiry due to rationalization of exploration projects within the company and the failure to attract a joint venture partner.

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### 3. TENURE HISTORY

Exploration Licence 27/76 occupied an area of 329 square kilometres in the Moore's Valley-Low Rocky Point-Elliott Bay region of south-west Tasmania.

It was granted to Geopeko on 17 January 1977 and was explored by that company each summer from 1976-77 to 1981-82.

During late 1982 Aquitaine Australia Minerals Ltd entered a joint venture partnership with Geopeko and contributed to a major Induced Polarization survey during the summer of 1982-83. Aquitaine, however, withdrew from the joint venture in mid 1983 without attaining equity in the project.

Geopeko persisted in exploration and evaluation in the area during the summer 1983-84.

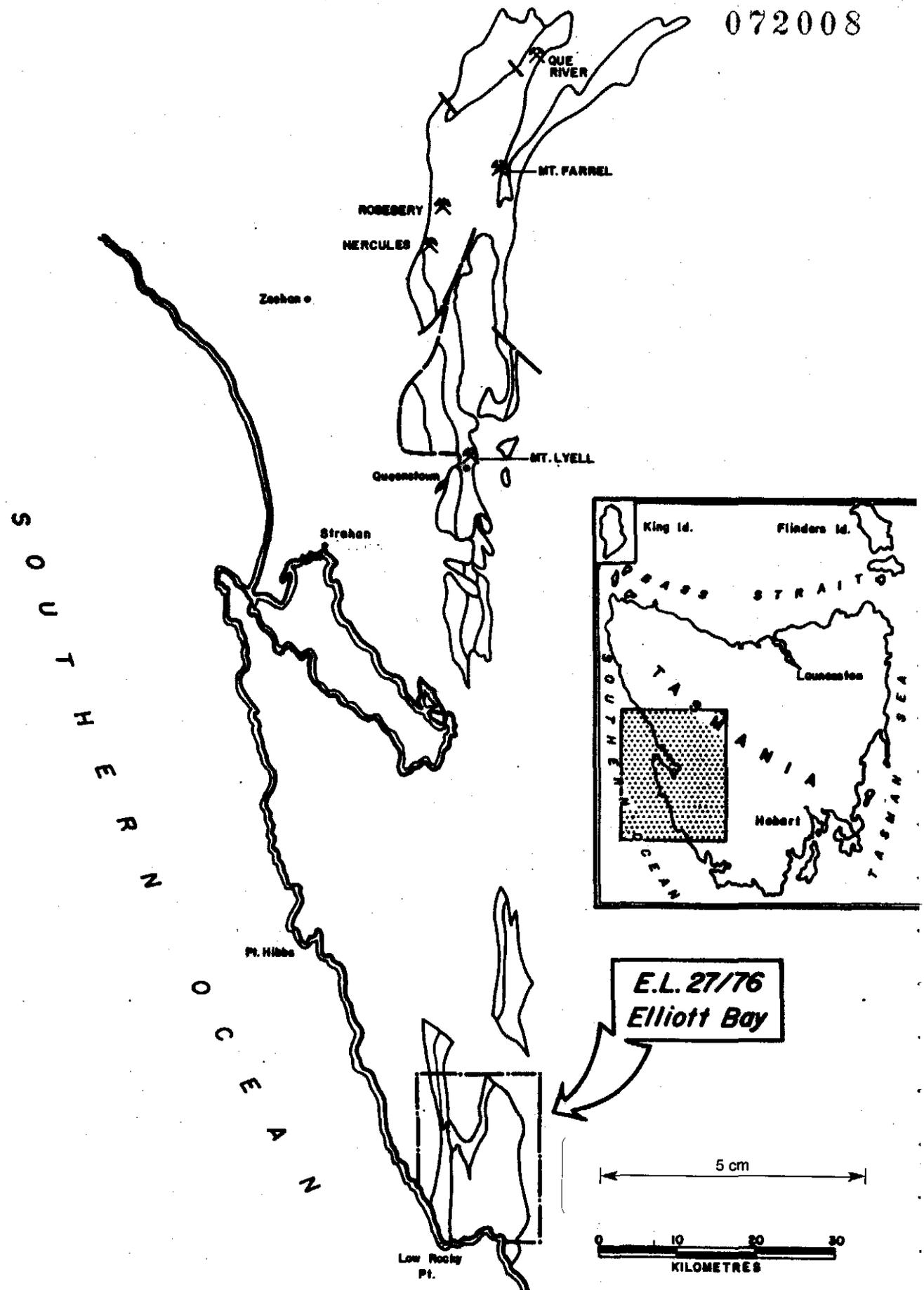
Subsequent to Geopeko's decision to withdraw from an active role in Tasmanian exploration in early 1984, the project was again offered for joint venture.

In accordance with regulations of the Department of Mines the area of the licence was reduced to 125 square kilometres in January 1985.

Geopeko, having been unsuccessful in arranging a new joint venture partnership, allowed the licence to lapse in July 1985.

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**LEGEND: MT. READ VOLCANICS**

	Tyndal Group & Correlates
	Central Belt
	Western Sequence

DATE: 11/6/82  
 GEOL: R.R.L  
 DWN: R.J.Tog  
 CHKD:

**GEOPEKO**  
 A DIVISION OF PEKO-WALLSEND

Figure 1

**E.L.27/76 ELLIOTT BAY  
 LOCALITY MAP**

4. EXPLORATION PHILOSOPHY

The principal exploration interest in EL 27/76 has been focussed on the acid volcanic rock assemblage known as the Lewis River Volcanics. These represent the southernmost exposure of the middle Cambrian Mt Read Volcanic Belt which, further north, are host to several world class volcanogenic massive sulphide deposits.

The primary exploration target at Elliott Bay has been the discovery of volcanogenic massive sulphide deposits of the "Rosebery" type. Minimum target size was set at 10 million tonnes of ore carrying around 20% combined lead-zinc with significant quantities of silver and gold.

The best potential for this type of deposit was considered to be in the upper part of the acid volcanic succession close to the boundary with the overlying dominantly epiclastic formation known (locally) as the Western Sequence.

Exploration methods were based on follow up of (pre-existing) airborne EM/Magnetic data, stream sediment sampling and geological mapping with emphasis on recognition of hydrothermal alteration, as the primary means of initial target selection. The prospect evaluation stage involved use of extensive C-Horizon soil geochemical sampling, detailed mapping, geophysical techniques including magnetics, SP, VLF-EM, gradient array and dipole-dipole IP-Resistivity, gravity and UTEM followed by selective surface trenching and diamond drilling.

A secondary exploration target was the discovery of a disseminated/fumarolic gold resource in the range 5-10 million tonnes carrying 5-15 g/t gold.

Panned concentrate stream geochemical sampling proved to be a very effective means of delineating gold anomalous zones. Soil geochemical sampling, mapping and stratigraphic diamond drilling were methods applied to test extent and grades of mineralization.

Some effort was expended, mainly during the early years, on prospecting for and evaluation of tin-tungsten anomalies. Economic interest in these metals waned during the early 'eighties.

5. EXPLORATION SUMMARY

5.1 1976-77 FIELD SEASON (Ref: Strickland, 1978  
: Deakin, 1977)

A party of Geopeko explorationists carried out a reconnaissance program (called Phase I) during the period 19/3/77 to 7/4/77.

The program consisted of:

- \* Preparation of 1:10,000 Base Maps
- \* Collection of (545) stream sediment samples from prospective acid volcanic terrain in the southern part (approx. 51 sq km) of the Licence. Average sample density approximately 11 per square kilometre. -80 mesh fractions were analysed for Cu, Pb, Zn, Ag, Mn, Fe by AAS and Ba, Sn by Emission Spectrography. Selected (16) samples were analysed for Sn, W by XRF and (27) samples with moderately anomalous Pb, Zn results were reanalysed by semi-quantitative Emission Spectrography giving analyses for 42 elements including gold.
- \* Reconnaissance geological mapping at 1:10,000 scale.
- \* Collection of (358) rock "specimens" in conjunction with mapping.
- \* Thin sectioning and petrographic description of (21) representative rock specimens.
- \* Geochemical analysis of (80) rock samples having significant chlorite or sericite alteration or visible sulphide mineralization. Analyses were Cu, Pb, Zn, Ag, Mn, Cd, Fe by AAS  
As: Modified Cutzeit  
Sn: Emission Spectrography  
(19) Selected samples were reanalysed for Sn by XRF.  
(7) Samples anomalous in As were reanalysed for Au by Carbon Rod AAS.  
(4) Samples with interesting Pb-Zn results were reanalysed by semiquantitative Emission Spectrography schemes ES 1-4 and E5.6 (42 elements).
- \* Collection of (94) samples of C-Horizon soil from (83) holes augered at 25 or 12.5 metre intervals on reconnaissance lines over the Voyager 1 (Penders Cu Prospect) and Voyager 2 (Lewis River Prospect).  
  
Samples were analysed for Cu, Pb, Zn, Ag, Fe, Mn, Ba and Sn. Emission spectrographic analyses of (6) Pb-Zn anomalous samples was also carried out.
- \* Ground follow up of (4) electromagnetic anomalies defined by previous (1975 GEOEX) H400 airborne survey. Investigations involved VLF-EM and magnetometer traversing over AEM Anomalies 3 (Voyager 3), 7, 18 (Voyager 4) and 25 (Voyager 2).
- \* Ground magnetic and VLF-EM traversing over Two (1975 GEOEX) aeromagnetic anomalies (called Voyagers 5 and 6).
- \* VLF-EM traversing and one line of IP/Resistivity and SP survey over reconnaissance grid at Voyager 1 (Penders copper prospect).

5.2 1977-78 FIELD SEASON (Ref: Strickland, 1978  
: Mudge, 1978)

The 1977-78 exploration program was concentrated on more detailed evaluation of some of the anomalies and prospects identified during the previous season.

The work involved:

- \* Gridding of the Voyagers 1, 2, 3 and 9 prospects. (Total: 48.13km, line clearing and pegging).
- \* Collection of (262) rock specimens.
- \* Collection of (934) C-Horizon soil samples from (855) auger holes on the Voyagers 1, 2, 3 and 9 prospects. Analysis of -80 fractions was carried out for Cu, Pb, Zn, Ag, Mn, Fe by AAS and Ba and Sn by semiquantitative Emission Spectrography.
- \* Geophysical surveys on Voyagers 1, 2, 3 and 9 grids to a total of 25km dipole-dipole IP; 42.9km magnetic anomaly; 4km of Schlumberger vertical electrical sounding; 4.4km of VLF-EM and 1.4km of SP survey.
- \* Detailed geochemical follow-up including drainage sediment sampling, auger sampling, trenching and mapping, of the Voyager 8 area in which anomalous tin values had been discovered during the previous season (Ref: Burlinson, 1978).

5.3 1978-79 FIELD SEASON (References: Strickland, 1980 - 3 volumes  
: Strickland & Herrmann, 1980  
: Mudge, 1979)

Exploration during the 1978-79 season included extension of reconnaissance work north of the Lewis River as well as detailed evaluation of prospects defined by the previous two season's reconnaissance.

Details of the work are briefly summarized as follows:

A. Regional

- \* Continuation of reconnaissance mapping (mainly of outcrops in streams) at 1:10,000 scale.
- \* Continuation southwards of stream sediment sampling over prospective volcanic sequence. Total of 263 samples were collected and analysed for Cu, Pb and Zn by AAS method. (Average sample density about 10/sq km.)
- \* Continuation of ground follow up of (GEOEX, 1975) Airborne EM anomalies north of the Lewis River. Follow-up work based on reconnaissance traversing with Geonics EM 16 VLF receiver and back-up dipole dipole IP and SP was carried out on AEM's 16, 35, 36, 40, 41, 43, 44, 45, 46 and 62.

Hand auger geochemical soil sampling with AAS analysis for CU, Pb, Zn was carried out over one traverse at AEM 41.

B. Prospect Evaluation

VOYAGER 1-5:

- \* Gridding with lines spaced at 200m intervals.
- \* Magnetic Intensity survey over grid area.
- \* VLF-EM and dipole-dipole IP over selected traverses.
- \* Drilling of two short AQ (Jacro) auger-diamond drill holes to test magnetic target.
- \* Schlumberger vertical electrical sounding.

VOYAGER 2:

- \* Drilling of five short (up to 54.75m) AQ diamond drill holes to test various targets summarised below:

- DDH V2/1, 33m : coincident IP, Pb soil geochemical anomaly
- DDH V2/2, 47m : Cu-Pb soil geochemical anomaly
- DDH V2/3, 42m : coincident IP, VLF-EM, Pb soil geochemical anomaly
- DDH V2/4, 30.7m : coincident IP, Cu soil geochemical anomaly
- DDH V2/5, 54.75m: designed to intersect Lewis River lode at depth

VOYAGER 3:

- \* Extensions to area of grid (5.4 line km).
- \* Geological mapping at 1:2,500 scale.
- \* Auger sampling of C-Horizon soils on 100 x 25m centres; total of 228 holes. -80 fractions analysed for Cu, Pb, Zn.
- \* Geophysical surveys including dipole-dipole IP, VLF-EM, TURAM and SP.
- \* Conductivity measurements of groundwater in (270) auger holes.
- \* Diamond drilling of two short AQ holes to test soil geochemical targets.

- DDH V3/1 of 30.5 metres
- DDH V3/2 of 30.7 metres

VOYAGER 10:

- \* Gridding (total of 7 line km).
- \* 1:2,500 scale geological mapping.
- \* C-Horizon geochemical (auger) sampling on 200 x 25m centres; total of 247 holes. Analysis of -80 fraction for Cu, Pb, Zn by AAS.
- \* Geophysical surveys including dipole-dipole IP and SP.

- \* Conductivity survey of groundwater in auger holes. (Partial coverage only).

VOYAGER 12: (Refer to: Large, 1981)

Geological reconnaissance of an area of anomalous stream geochemistry in several small tributaries of the Lewis River led to discovery of several small gossanous outcrops containing highly anomalous contents of base metals, gold and silver (up to 265 g/t and 440 g/t respectively).

Evaluation of the prospect undertaken late in the 1978-79 season comprised:

- \* Gridding of 800 x 1000m area.
- \* Geological mapping of grid.
- \* Rock chip sampling of gossans etc and analysis for Cu, Pb, Zn, Ag, As, Au.
- \* "C-Horizon" soil sampling (by hand auger) at 100 x 25m centres over the grid. Analysis for Cu, Pb, Zn by AAS.
- \* Geophysical survey coverage with SP VLF-EM and dipole-dipole IP methods.
- \* Drilling of three short AQ diamond drill holes to test below the gossanous outcrops for gold mineralization.
 

DDH V12/1	Depth 30.6m	Recovery < 40%
DDH V12/2	Depth 17.3m	Recovery ≈ 50%
DDH V12/4	Depth 47.5m	Recovery ≈ 38%
- \* Drilling of an additional AQ diamond drill hole to test strong SP anomaly and coincidence weak IP anomaly on line 300S.
 

DDH 3	Depth 90m	Recovery ≈ 40%
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- \* Analysis of drill core for Cu, Pb, Zn, Ag, As, Au.

#### 5.4 1979-80 FIELD SEASON (Ref: Large, 1981)

The 1979-80 season saw a considerable escalation of exploration activity in EL 27/76. Up to four geologists and ten field assistants were deployed from December to April in two separate teams operating in eastern and western parts of the licence.

The work undertaken during the season comprised:

##### A. Regional Prospecting

- \* Completion of reconnaissance geological mapping (1:100,000 scale) over the north eastern and south western parts of the licence effectively delineating and subdividing the most prospective zones

of Cambrian acid volcanics collectively known as the Lewis River Volcanics.

- \* Completion of stream sediment sampling over the favourable volcanic rock sequence. Analysis of -80 fractions was for Cu, Pb, Zn, Fe, Sn, W and Au.

B. Prospect Evaluation

VOYAGER 1:

- \* Infill gridding with lines at 50m intervals.
- \* Magnetic intensity and VLF-EM surveys over infill grid lines.
- \* Turam (EM) survey on four lines covering a magnetic anomaly.

VOYAGER 2:

- \* Drilling of one diamond drill hole (DDH V2/6 of 200.35 m. depth) designed to test for down dip extension of anomalous lead geochemistry and IP chargeability previously tested by shallow drill hole DDH V2/1.
- \* Geological logging and analysis (Cu, Pb, Zn, Ag, Fe, selective Au) of DDH V2/6 core.

VOYAGER 6:

(An aeromagnetic anomaly located on the northern contact of Low Rocky Point granite pluton; defined by 1975 Geoex Airborne survey).

- \* Gridding (4.7 line km).
- \* Geological mapping of grid area.
- \* Magnetic Intensity and VLF-EM Survey.
- \* Hand auger soil sampling at 25m centres on one line across the magnetic anomaly. Analysis for Cu, Pb, Zn, Fe, W, Sn.

VOYAGER 7:

(An aeromagnetic anomaly defined by 1975 Geoex survey).

- \* Gridding (7.5 line km) with line spacing of 200m.
- \* Magnetic intensity and VLF-EM survey over the grid.
- \* C-Horizon (Jacro machine auger) soil sampling at 25m centres on two lines over the magnetic anomaly. Analysis for Cu, Pb, Zn, Fe, Sn, W and Au.

VOYAGER 9:

(A 1975 Geoex aeromagnetic anomaly previously reconnoitred with magnetic intensity and dipole dipole IP survey on two traverses during the 1977-78 season).

of Cambrian acid volcanics collectively known as the Lewis River Volcanics.

- \* Completion of stream sediment sampling over the favourable volcanic rock sequence. Analysis of -80 fractions was for Cu, Pb, Zn, Fe, Sn, W and Au.

B. Prospect Evaluation

VOYAGER 1:

- \* Infill gridding with lines at 50m intervals.
- \* Magnetic intensity and VLF-EM surveys over infill grid lines.
- \* Turam (EM) survey on four lines covering a magnetic anomaly.

VOYAGER 2:

- \* Drilling of one diamond drill hole (DDH V2/6 of 200.35 m. depth) designed to test for down dip extension of anomalous lead geochemistry and IP chargeability previously tested by shallow drill hole DDH V2/1.
- \* Geological logging and analysis (Cu, Pb, Zn, Ag, Fe, selective Au) of DDH V2/6 core.

VOYAGER 6:

(An aeromagnetic anomaly located on the northern contact of Low Rocky Point granite pluton; defined by 1975 Geox Airborne survey).

- \* Gridding (4.7 line km).
- \* Geological mapping of grid area.
- \* Magnetic Intensity and VLF-EM Survey.
- \* Hand auger soil sampling at 25m centres on one line across the magnetic anomaly. Analysis for Cu, Pb, Zn, Fe, W, Sn.

VOYAGER 7:

(An aeromagnetic anomaly defined by 1975 Geox survey).

- \* Gridding (7.5 line km) with line spacing of 200m.
- \* Magnetic intensity and VLF-EM survey over the grid.
- \* C-Horizon (Jacro machine auger) soil sampling at 25m centres on two lines over the magnetic anomaly. Analysis for Cu, Pb, Zn, Fe, Sn, W and Au.

VOYAGER 9:

(A 1975 Geox aeromagnetic anomaly previously reconnoitred with magnetic intensity and dipole dipole IP survey on two traverses during the 1977-78 season).

- \* Gridding of 1200 x 1000m area with cross lines at 50 or 100m spacings.
- \* Detailed geological mapping of grid.
- \* Rock chip geochemical sampling with analysis for Cu, Pb, Zn, Fe, Ag, Au, Sn, W and Ba.
- \* Magnetic intensity and VLF-EM survey over the grid.
- \* C-Horizon (Jacro machine auger) sampling at 25m centres on four northern grid lines. Analysis for Cu, Pb, Zn, Fe, Au, Sn, W.
- \* Drilling of one AQ diamond drill hole (DDH V9/1 of 60 metres depth) to test the peak of the magnetic anomaly.

## VOYAGER 10:

- \* Extensions to Grid (1000 m).
- \* Magnetic intensity survey (4.8 line km)

## VOYAGER 12:

- \* Re-mapping of grid area.
- \* Magnetic Intensity Survey
- \* Drilling of one diamond drill hole (DDH V12/5 of 163.65m) to test a strong anomaly.

## VOYAGER 14:

(An aeromagnetic anomaly defined by 1975 airborne survey).

- \* Reconnaissance gridding.
- \* Magnetic intensity survey.

## VOYAGER 17:

- \* Cutting of one reconnaissance line.
- \* Magnetic survey and hand auger geochemical sampling along the line.

## VOYAGER 18:

(Disseminated copper mineralization in dolomites interbedded with basic volcanics at mouth of Copper Creek).

- \* Rock chip sampling and analysis for Cu, Pb, Zn, Fe, Au, Sn, W.

## VOYAGER 20:

(Area of anomalous stream geochemistry and sub-gossanous outcrop in Wanderer River).

- \* Rock chip sampling and analysis for Cu, Pb, Zn, Ag, Mn, Au, Ba.

VOYAGER 21:

(Northern strike extension of Voyager 1 area).

- \* Gridding with lines spaced 200m apart.
- \* Magnetic intensity and VL-EM survey.
- \* C-Horizon (Jacro machine auger) sampling at 25m centres along four lines.

VOYAGER 23:

(Dolomitic siltstones with minor copper mineralization, stratigraphic equivalent of Voyager 18.

- \* Rock chip sampling over 115m wide stratigraphic section and analysis for Cu, Pb, Zn and Fe.

5.5 1980-81 FIELD SEASON (Refer to: Wilson et al, 1981)

The 1980-81 exploration program was concentrated on assessment of alteration zones (V9, V19, V22 and extensions: V29) which had been reported from reconnaissance mapping in the previous season.

Considerable effort was also directed to investigation of gold drainage anomalies (V24 and V30).

Lesser priorities were follow up of some existing stream geochemical anomalies and extension of reconnaissance mapping/stream sampling over the northern part of the Mainwaring Group.

The program comprised the following work.

VOYAGER 3:

- \* Geological mapping of the grid, coastline and stratigraphic extensions to northward.
- \* One line of 50m dipole-dipole IP.
- \* Drilling of one diamond drill hole (DDH V3/3 of 201.1m depth) to test IP chargeability anomaly.

VOYAGER 9:

- \* Re-appraisal of geological outcrops.
- \* Collection of (approximately 450) C-Horizon soil samples per Jacro machine auger. Analysis of -80 fraction for Cu, Pb, Zn, Fe, Mn and Ag.
- \* Gradient Array IP survey totalling 16 line km.

- \* Follow up dipole-dipole IP survey (9 arrays).
- \* Drilling of one diamond drill hole (DDH V9/2 of 232.15m depth) to test a copper soil anomaly.

## VOYAGER 16:

- \* (An area of anomalous Pb-Zn stream geochemistry coincident with a large circular (1975 Geoex) aeromagnetic anomaly).
- \* Gridding (lines spaced at 400m intervals).
- \* Geological mapping of grid.
- \* Collection of (156) C-Horizon soil samples (per Mate portable power auger) and analysis for Cu, Pb, Zn, Ag, Fe and Mn.
- \* Collection of (15) panned concentrate stream sediment samples.
- \* Magnetic intensity survey of grid.

## VOYAGER 19:

- \* Gridding of 1.3 x 1.8km area with lines at 100m spacing.
- \* Geological mapping of grid at 1:2500 scale.
- \* Collection of (625) C-Horizon soil geochemical samples at 100 x 25m centres by Jacro machine auger. Collection of (161) soil samples by hand auger on 200 x 25m centres over forested parts of the grid.
- \* Infill C-Horizon Jacro auger sampling at 50 x 25m centres over a most prospective 400 x 500m area of the grid.
- \* Infill C-Horizon sampling by Jacro auger at 2m centres across two anomalous zones.
- \* Gradient array IP survey.
- \* Follow up dipole-dipole IP survey on three lines.
- \* Magnetic intensity survey of the grid.
- \* Selective SP, MST (EM) and gravity surveys were conducted on several lines across the zone of main geochemical interest.
- \* Manual excavation of six shallow trenches over soil geochem. peaks.
- \* Logging and channel-chip sampling, over 1 metres of the trenches; analysis for Cu, Pb, Zn, Ag, Au.

## VOYAGER 22:

- \* Gridding of 1.2 x 1.6km area.
- \* Reconnaissance mapping.

- \* Rock chip geochemical sampling (18 samples) with analysis for Cu, Pb, Zn, Ag, Fe, Mn.
- \* Collection of (262) C-Horizon soil samples (per Jacro and Mate machine augers) at 200 x 25m centres.

## VOYAGER 29:

(immediate southern extension of Voyager 19 area)

- \* Gridding of 1.6 x 1.0km area with lines spaced at 200m.
- \* Geological mapping at 1:2,500 scale.
- \* C-Horizon geochemical sampling (by Jacro machine auger on 200 x 25m centres. Analysis of -80 fraction for Cu, Pb, Zn, Ag, Fe, Mn.
- \* Gradient array IP survey.

## VOYAGER 31:

- \* Reconnaissance mapping.
- \* Stream sediment sampling.
- \* Rock chip sampling of mineralized outcrops.

## VOYAGER 26:

(Zone of anomalous aeromag/EM defined by 1975 Geoex Survey; located within Mainwaring Group possibly along strike from Voyager 18 dolomite-copper association).

- \* Gridding of 800 x 1000m area. (3 lines spaced at 400m intervals).
- \* Geological mapping.
- \* Collection of (127) C-Horizon soil samples by Mate portable power auger at 25m centres along lines. Analysis of -80 fraction for Cu, Pb, Zn, Ag, Fe, Mn, Sn and W.
- \* Total magnetic intensity survey.

## VOYAGER 28:

- \* Reconnaissance mapping along old (BHP) Cypress Creek Track.
- \* C-Horizon (?) sampling at 50m centres by Mate portable power auger, along the Cypress Creek Track.
- \* Selected follow up sampling by Jacro power auger in attempt to verify gold soil anomaly from above.
- \* Total magnetic intensity survey along Cypress Creek Track.

**RECONNAISSANCE EXPLORATION OF MAINWARING GROUP:**

- \* Stream sediment sampling and reconnaissance mapping along the Mainwaring River and tributaries. Analysis of -80 fractions of sediments for Cu, Pb, Zn, Fe, Mn, Ag, Au, Sn, W.
- \* Reconnaissance mapping and soil sampling at 50m centres along the old Cypress Creek Track which cuts the Mainwaring Sequence in an east-west direction.

**VOYAGER 24-30 AREA GOLD EXPLORATION:**

- \* Panned concentrate sampling over approx. 6km strike length of the upper part of the Wart Hill Pyroclastic Formation.
- \* Gridding of V24 area (strongest drainage gold anomalies) and establishment of three traverse grid lines across V30 to the south.
- \* Mapping, hand auger soil sampling, rock chip sampling and stream bank sampling of Voyager 24 grid.
- \* Jacro auger sampling and excavation of two pits on the Voyager 30 area.
- \* Reconnaissance dipole-dipole IP, gradient array IP, SP and magnetics over the V24 grid.
- \* Drilling of one "stratigraphic" diamond drill hole (DDH V24/1 of 129.3m) to test a zone of quartz veining at Voyager 24.

**5.6 1981-82 FIELD SEASON (Refer to Wilson et al, 1982)**

Exploration during the 1981-82 season was concentrated on detailed evaluation of a number of prospects located within the Wart Hill Pyroclastics around the hinge of the Mt Osmond Syncline. Additional work was put into evaluation of gold (-tin) anomalies in the upper part of the Wart Hill Pyroclastics; Pb-Zn-As-Ag-Au mineralization within the overlying western sequence and follow-up of several stream geochemical anomalies in the Hudson River Pyroclastics to the east.

The work completed during the season include:

**Evaluation of Prospects in the Wart Hill Pyroclastics****VOYAGER 9:**

- \* Minor eastern extensions to grid.
- \* Infill C-Horizon sampling to give 50 x 25m sample spacing across the eastern Pb-Zn anomaly.
- \* Gravity survey over the central part of the grid.
- \* Magnetic Intensity resurvey and magnetic modelling.
- \* Drilling of one diamond drill hole (DDH V9/3 of 158.33m) to test a dipole-dipole IP anomaly on the north east part of the grid.

## VOYAGER 19:

- \* Detailed gravity survey of the grid.
- \* Infill gridding and C-Horizon sampling to give 50 x 25m sample spacing over a south-eastern portion of the grid.
- \* Selected lines of dipole-dipole IP over south-eastern and central portions of the grid.
- \* VLF-EM Survey.
- \* Excavation of two shallow trenches in vicinity of outcropping massive sulphide lenses and possible extensions.
- \* Infill C-Horizon sampling at 5m centres over two geochemical anomaly peaks.
- \* Drilling of five diamond drill holes (to total of 884m) were bored into a variety of targets on V19.

DDH V19/1 of 200.36m designed to test for down dip extension of massive sulphide lens at 13300N/10085E.

DDH V19/2 of 160.2m designed to test down plunge extension of massive sulphide outcrop on 13040N on assumption of southerly plunge.

DDH V19/3 of 301.2m designed to intersect the source of a broad, weak gravity anomaly coincident with the main zone of hydrothermal alteration on Wart Hill.

DDH V19/4 of 70.6m designed to pass 30m vertically below massive sulphide lens on 13045N.

DDH V19/5 of 150.2m designed as a partial test of broadly coincident IP chargeability/geochemical zone in the south eastern part of the grid.

## VOYAGER 22:

- \* Infill gridding to provide 100m line spacing.
- \* Detailed 1:2,500 scale geological mapping.
- \* C-Horizon soil sampling to give 100 x 25m sample spacing.
- \* Magnetic Intensity survey.

## VOYAGER 29:

- \* C-Horizon infill sampling over southern part of grid to give 100 x 25m sample spacing.
- \* Close spaced (5m) C-Horizon sampling, pitting and trenching over selected geochemical anomaly peaks.
- \* Magnetic Intensity and VLF-EM survey.
- \* Six lines of dipole-dipole IP over the main Pb-Zn geochemical anomaly at the southwest corner of the grid.

- 021
- \* Gravity survey over the main Pb-Zn geochem anomaly.
  - \* SP survey on selected lines.

## VOYAGER 29 WEST:

- \* Gridding at 200m line spacing.
- \* C-Horizon geochemical sampling at 25m centres on grid lines. Analysis for Cu, Pb, Zn, Ag and Fe.
- \* Geological mapping.
- \* Magnetic Intensity and VLF-EM survey.

## VOYAGER 30:

- \* Additional gridding to give coverage at 100m line spacings.
- \* Geological mapping.
- \* Collection of (380) C-Horizon soil samples to give coverage at 100 x 25 or 200 x 25m sample spacing. One line was sampled at 12.5m spacing. Analysis was for Cu, Pb, Zn, Ag, Fe, Au, As of -80 fraction.
- \* Trenching and pitting of two geochemical anomalies defined during the previous season. Samples were analysed for Cu, Pb, Zn, Ag, As, Au, Fe, Ba, W and Sn.
- \* Magnetic intensity, VLF-EM surveys over the grid.
- \* Reconnaissance traverses of dipole-dipole IP, SP and gravity.

## VOYAGER 31:

- \* Gridding by five east-west lines spaced at 400m apart.
- \* Geological mapping of grid lines and stream traverses.
- \* C-Horizon soil sampling at 25m centres on grid lines.
- \* Magnetic and VLF-EM survey along grid lines.
- \* Rock chip sampling of mineralized outcrops along Copper Creek.

## VOYAGER 33:

(Northward strike extension of V19, favourable stratigraphy).

- \* Gridding of 1200 x 1300m area with cross lines at 200m intervals.
- \* Geological mapping of grid lines at 1:2,500 scale.

- 022
- \* Collection of (379) C-Horizon soil samples at 25m centres on grid lines, per Mate portable power auger. Samples analysed for Cu, Pb, Zn, Ag and Fe.
  - \* Magnetic intensity survey.

VOYAGER 34:

(Extensions of Wart Hill Pyroclastic sequence northward from Voyager 22 area on eastern limits of Mt Osmond Syncline).

- \* Gridding of 2 x 0.7km area with cross lines spaced at 200m intervals.
- \* Geological mapping of grid.
- \* Collection of (330) C-Horizon soil samples on 200 x 25m sample spacing.
- \* Partial completion of magnetic survey.

Evaluation of Prospects within Hudson River Pyroclastics

VOYAGER 16:

- \* 3.5km of gridding over previously outlined zone of anomalous magnetism and Pb-Zn soil geochemistry.
- \* Geological mapping on grid extensions.
- \* Collection of C-Horizon samples at 25m centres, analysis for Cu, Pb, Zn, Ag, Fe and Mn.
- \* Stream sediment and panned concentrate sampling of streams draining the gridded area. (Analysis of panned concentrates included analysis of gold).
- \* Magnetic intensity and VLF-EM survey of grid lines.

VOYAGER 20:

- \* Gridding to total of 9.4km with lines spaced at 400m intervals.
- \* Geological mapping.
- \* Collection of (330) C-Horizon soil samples at 25m centres along all grid lines. Analysis of -80 fraction for Cu, Pb, Zn, Ag and Fe.
- \* VLF-EM survey and partial completion of magnetic intensity survey.

Evaluation of Gold Prospects

VOYAGER 24:

- \* Investigation of morphology and geochemistry (including microprobe analysis) of gold particles from Gerrard Creek.

- \* Excavation of trench on black shale outcrop horizon in Steele Creek.
- \* Excavation of trench to investigate a Pb-Zn-Au (B-Horizon) soil anomaly.
- \* Extensions of DDH V24/1 to 281.5m to test beneath above anomaly.
- \* Bank sampling program to determine points of gold input into streams.
- \* Trial mercury geochemistry survey.

VOYAGER 30:

- \* Analysis of soil and rock geochemical samples for gold.

5.7 1982-83 FIELD SEASON (Refer to: Herrmann, 1983)

Previous exploration and discovery of high grade sulphide lenses near Wart Hill (V19) had indicated that the greatest potential for the target (VMS) mineralization existed within the "Wart Hill Pyroclastics" apparently representing the uppermost and youngest section of the acid volcanic sequence exposed in EL 27/76.

Although diamond drilling beneath the exposed sulphide lenses at Voyager 19 had proved disappointing the concept was maintained during the 1982-83 exploration program which was designed to define drilling targets within the Wart Hill Pyroclastics.

It was considered that this could best be achieved by an extensive, systematic dipole-dipole IP survey on the basis that a large galena-sphalerite body could be expected to be chargeable but not necessarily conductive.

The 1982-83 exploration thus consisted of:

- \* Approximately 100 line km of 50m dipole-dipole IP survey on east west traverses spaced 200m apart.

This gave coverage of approximately 25 sq km of Wart Hill Pyroclastic rocks extending from just north of the Lewis River in the Voyager 30 area, northwards along both sides of the Mt Osmond syncline as far as Voyager 33 and Voyager 34.

- \* Completion of C-Horizon geochemical sampling over the same area covered by the IP survey. This involved a total of 2690 additional samples giving a sampling spacing of no greater than 200 x 25 metres.
- \* Detailed geological mapping/remapping at 1:2,500 or 1:1,250 scales of the Voyager 9, 24, 30, 33 and 34 areas.
- \* Approximately 55 line km of magnetic intensity survey over the southern part of the IP grid.
- \* Infill dipole-dipole IP survey, close spaced C-Horizon sampling and trenching over some IP/geochemical anomalies defined by the above mentioned work.

- \* Extension to heavy concentrate drainage sampling around the Story Creek Microgranite intrusion.
- \* Resampling/follow up of (spurious) Pb-Zn drainage sample anomalies in middle part of Copper Creek.
- \* Investigations into lead isotopic character of mineralization types and geochemical anomalies of the Elliott Bay area.

5.8 1983-84 FIELD SEASON (Ref: Herrmann & Sumpton, 1984)

The previous 1982-83 season's work based on an extensive dipole-dipole IP survey over much of the favourable part of the "Wart Hill Pyroclastics", culminated in recommendations for drill testing of the four or five best targets having massive sulphide potential and the extension of regional prospecting over possible continuation of favourable rock units northwards along the western limb of the Mt Osmond Syncline.

Geopeko was unable to implement the full recommendations and instead opted to execute a smaller programme designed primarily to test known gold anomalies and secondarily to use a UTEM (large loop transient electromagnetic) survey to explore the most prospective sectors of Wart Hill Pyroclastics at depths of 100-200m, beyond the "reach" of previous IP and gravity surveys.

Accordingly the following work was completed during December 1983 to March 1984:

- \* Extension of hand auger (B-Horizon) geochemical sampling and gold analysis in the Voyager 24 area.
- \* Analysis for gold (of previously collected samples) of C-Horizon soils from the zone of anomalous gold drainage geochemistry north of Voyager 24.
- \* Drilling of three diamond drill holes (total 638 metres) to test the strongest gold (soil) anomalies at Voyager 24.
- \* Drilling of two diamond drill holes (total 201.8 metres) to test exposed Pb-Zn-Ag-Au mineralization at Voyager 33.
- \* Induced Polarization re-survey and infill of strong chargeability anomaly on Voyager 29 West, line 11400N.
- \* Small dipole IP survey (10 and 20m dipole spacings) over exposed massive Pb-Zn sulphide lenses at Voyager 19.
- \* UTEM III survey to provide deep penetration/high resolution electromagnetic coverage over Voyager 9, 19, 29 and 29 West areas. (Four transmitter loops for total of about 40 line km of survey).

## 6. CONCLUSIONS (in chronological sequence)

### 6.1 CONCLUSIONS FROM 1976-77 AND 77-78 PROGRAMS

The reconnaissance work had indicated that the Lewis River Volcanics were equivalents of the Mt Read Volcanics, were predominantly of rhyolitic composition and appeared to be prospective for volcanogenic massive sulphide mineralization.

Initial prospect evaluation had shown that four (4) prospects appeared favourable for massive sulphide mineralization.

These were:

- Voyager 3 which had favourable geological environment, highly anomalous Cu, Pb, Zn C-Horizon geochemical anomalies and significant dipole-dipole IP anomalies.
- Voyager 1, 5, 11 area which occupied a favourable geological environment adjacent to the Low Rocky Point granite pluton and encouraging magnetic characteristics suggesting large scale strata form mineralization.
- Voyager 2 which was notable for its favourable geological environment within volcanoclastic sediments, highly anomalous Cu, Pb, Zn soil geochemistry, visible siderite lode over 400m in (surface) strike length and an IP chargeable zone.
- Voyager 10 which was favoured due to its apparent along strike position from Voyager 2 and anomalous stream sediment values in the vicinity of the (not investigated) Airborne EM anomaly No. 16.

Detailed recommendations were given outlining further evaluation of prospects and extension of the regional mapping, stream sampling and AEM/Magnetic anomaly ground follow up.

### 6.2 CONCLUSIONS FROM 1978-79 PROGRAM

#### Regional Prospecting

Considerable effort was expended in attempting to locate and evaluate airborne EM anomalies. Results were generally inconclusive. It was recommended that in future emphasis should be placed on extension of reconnaissance mapping and drainage survey which would help to delineate favourable geological zones and enable some screening of the multitude of AEM anomalies.

#### Prospect Evaluations

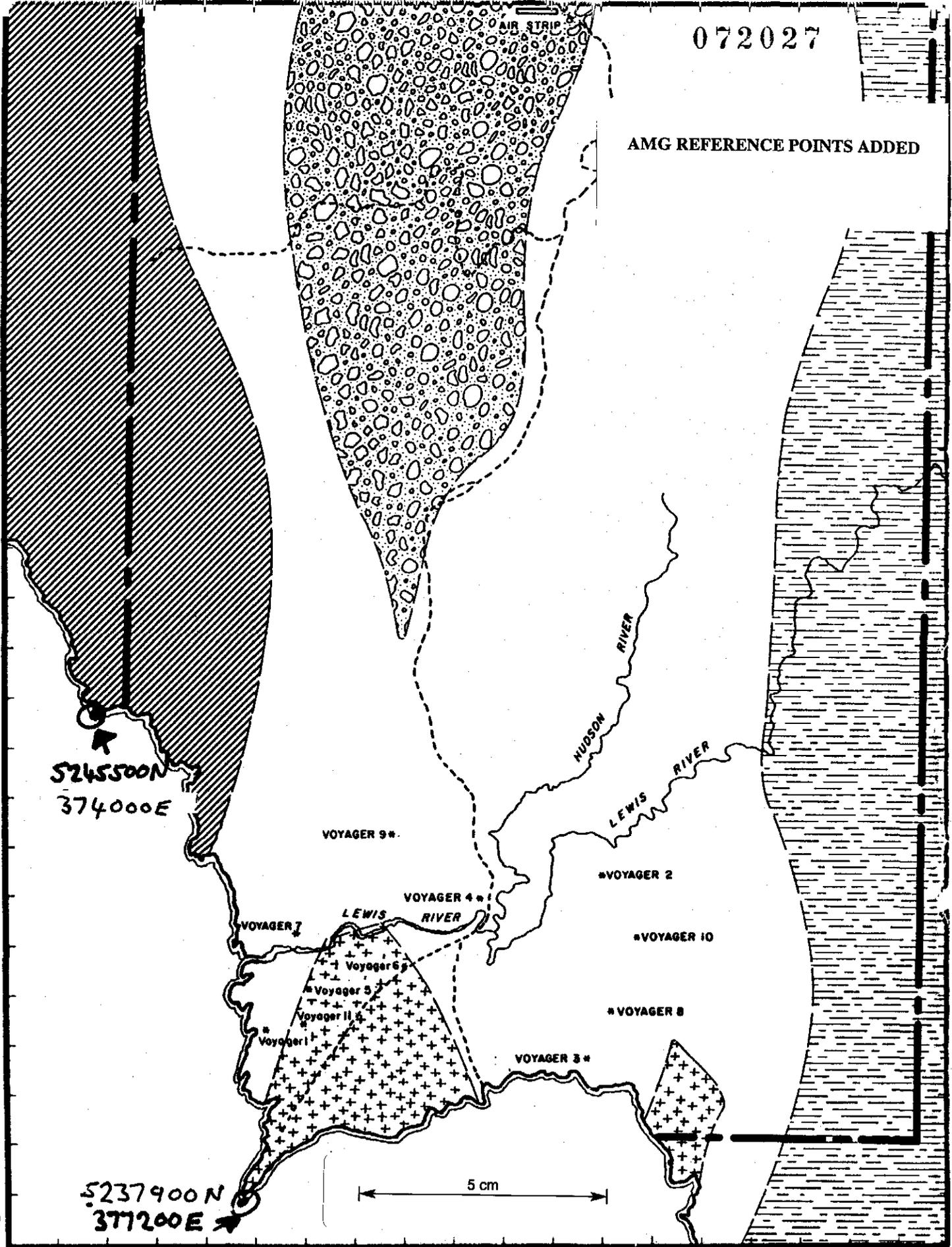
VOYAGER 1, 5:

Magnetic survey showed a narrow NS linear anomaly extending northward from Pender's Prospect. Minor IP and VLF anomalies were associated.

026

072027

AMG REFERENCE POINTS ADDED



**LEGEND**

	Ordovician conglomerate
	Granite
	Mt READ volcanics
	Dundas group
	P.C. quartzite

DATE May '79  
 DRAWN C.D.S.  
 CHECKED J.P.M.  
 SCALE 1:100,000

GEOLSCO LIMITED  
 MISSISSAUGA

Scale 1:100,000

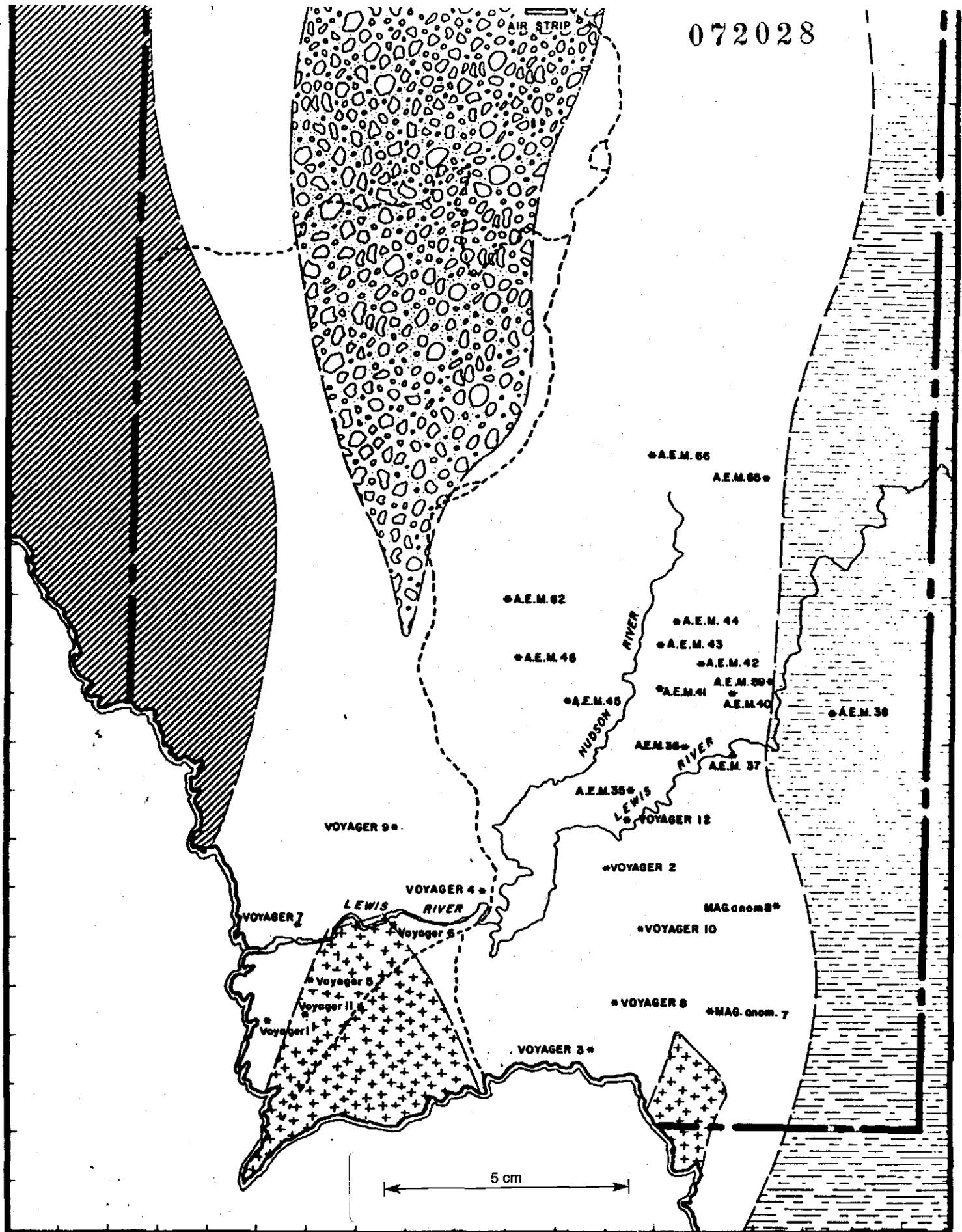
Fig 2

**ELLIOTT BAY  
 E.L. 27/76**

**Prospect Location Map**

027

072028



LEGEND	
	Ordovician conglomerate
	granite
	Mt READ volcanics
	Dundas group
	P.C. quartzite

DATE: Oct. 79  
 GEOL: C.D.S.  
 DWN: J.P.M.  
 CHKD: CCG.

GEOPEKO	
1:100,000	Fig 3
<b>ELLIOTT BAY</b> <b>E.L. 27/76</b> <b>Prospect Location Map</b>	

Drilling of Magnetic targets one kilometre north of Pender's resulted in intersection of magnetite-pyrite formation (interpreted as a conformable "chemical sediment" horizon) carrying traces of scheelite.

VOYAGER 2:

Shallow diamond drilling of five AQ holes indicated that geochemical and geophysical anomalies were attributable to minor "erratic" lenses of mineralization. However, it was suggested that the north trending suite of volcanoclastic sediments and tuffs extending through Voyager 2 was anomalous in base metal content and was possibly continuous with Voyager 3 to the south and likely extended to the north.

VOYAGER 3:

Mapping of coastal exposures succeeded in identification of three styles of mineralization:

- \* Chalcopyrite-malachite in narrow shear zones parallel to (N-S) regional foliation.
- \* Minor galena-sphalerite in irregular cross cutting quartz veinlets.
- \* Broad stratiform zones of disseminated pyrite-hematite and traces of malachite in fine volcanoclastic greywackes and shales.

The latter was considered a favourable host environment for massive sulphide mineralization.

Anomalous zones detected by geochemical soil survey and tested by two short AQ drill holes remained unexplained (inadequately tested).

A significant IP anomaly with geochemical and VLF-EM support remained open to the west.

VOYAGER 10:

Mapping of Voyager 10 area showed that the favourable sedimentary lithologies of the V2, V3 area were not present.

No geophysical anomalies were detected.

Some geochemical anomalous values were present but of uncertain significance due to gaps in the data due to limitations of hand auger sampling.

VOYAGER 12:

Rock chip sampling and analysis of several small gossanous outcrops revealed high base metal silver and gold values (max: 0.36% Cu, 0.68% Pb, 0.70% Zn, 440 g/t Ag and 265 g/t Au).

Subsequent surveys showed weak and spotty soil geochemical character and succeeded in defining weak IP, VLF-EM and strong SP geophysical anomalies without particular correlation to gossanous outcrops.

Three short AQ diamond drill holes designed to test beneath the gossan were rendered partly inconclusive by very poor core recovery but

appeared to intersect only minor gossanous veinlet mineralization with disappointing assay results. It was concluded that the surface gossans represented magnified reflections of minor subsurface veinlet mineralization and that their depth extent was not sufficient to constitute a significant oxidized gold resource.

An additional hole to test the strong SP anomaly intersected only minor disseminated and veining pyrite mineralization without significant metal grades.

### 6.3 CONCLUSIONS FROM 1979-80 PROGRAM

#### Regional Prospecting

Completion of reconnaissance mapping over the Lewis River Volcanics enabled subdivision and selection of the most prospective zones. Recognition of extensive areas of sericite-pyrite or chlorite alteration in the Wart Hill Pyroclastic unit led to reassessment of exploration priorities for the future field seasons.

Large (1981) described six styles of mineralization associated with distinct lithological and structural settings.

These styles, in approximate order of target priority, were as follows:

- (1) Cu (Pb-Zn) mineralization associated with extensive zones of pyrite hydrothermal alteration within the Wart Hill Pyroclastic unit - analogous to Mt Lyell type Cu-Au mineralization.
- (2) Anomalous gold values in stream sediments reflecting a stratabound zone of gold mineralization in the upper part of the Wart Hill Pyroclastic unit.
- (3) Broad disseminated zones of disseminated galena-sphalerite within the Hudson River Pyroclastic Unit indicating potential host rocks for Rosebery type massive sulphide mineralization.
- (4) Gold-silver-base metal epigenetic veinlet mineralization probably related to contact zones of (intrusive?) Elliott Point Porphyry.
- (5) Copper-tungsten mineralization associated with thin magnetite-pyrite-chlorite-siderite horizons (chemical sediments?) within Penders tuffs at the southwestern part of the licence.
- (6) Probably syngenetic, low grade copper mineralization in dolomitic horizons within the basic volcanic sequence of the Mainwaring Group.

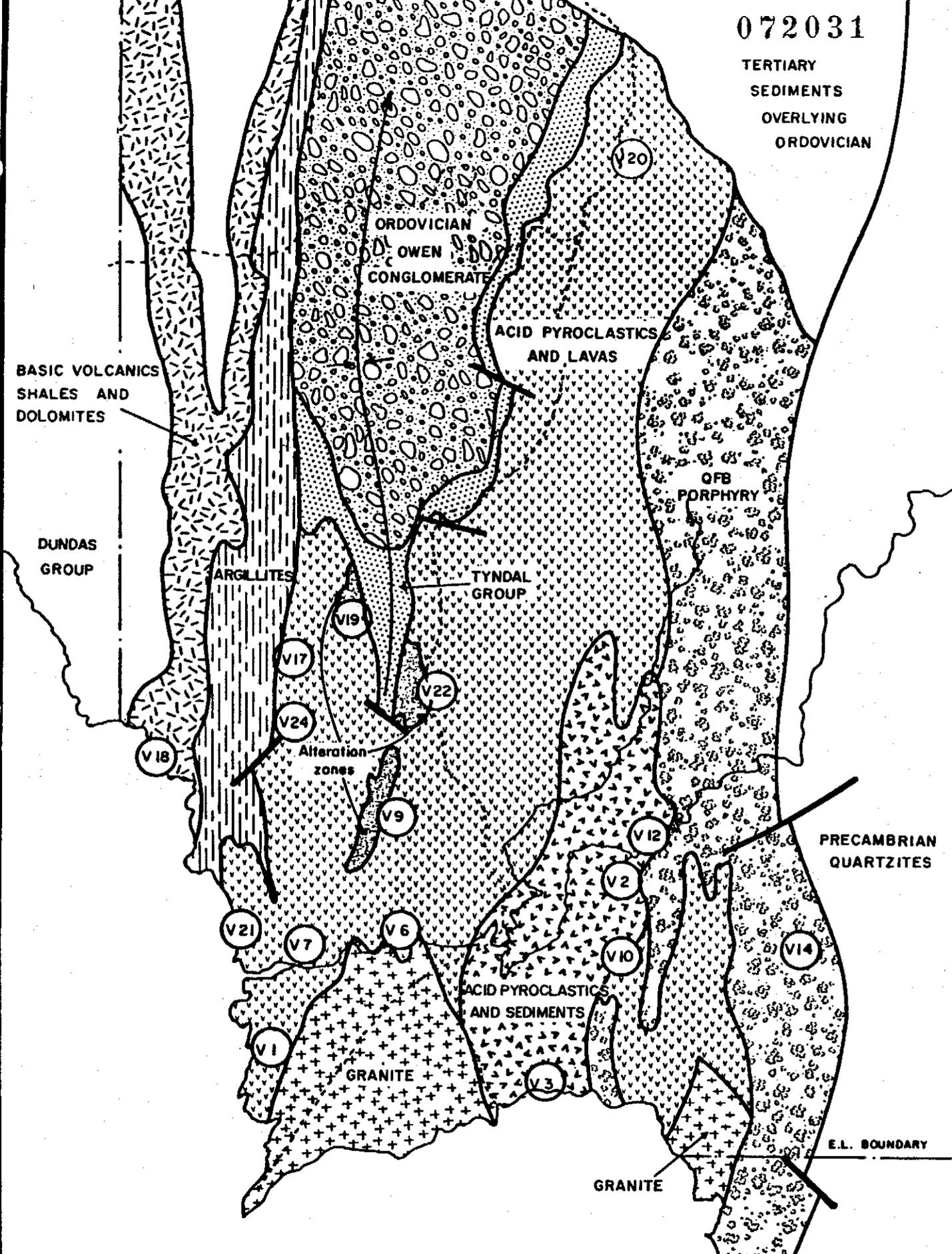
The latter three styles were considered to have low economic potential.

A total of twenty six defined prospects and anomalies were listed in order of exploration priority. Two of these (V9, V19) were regarded as having very good potential for Type 1 mineralization (above) and one (V24) for Type 2 stratabound gold mineralization. Five prospects (V2, V3, V4, V16, V20) were considered to have good potential for Type 3 Pb-Zn-Cu massive sulphide mineralization.

030

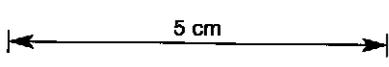
072031

TERTIARY  
SEDIMENTS  
OVERLYING  
ORDOVICIAN



**LEGEND**

(V10) Location of Voyager 10 prospect.



DATE:  
 GEOL:  
 DWN:  
 CHKD:

GEOPEKO



Fig. 4

ELLIOTT BAY  
E.L. 27/76

PROSPECT LOCATION MAP

031

The completion of regional stream geochemical survey led to definition of several areas of Pb-Zn drainage anomalies; most notably those entitled Voyager 4, Voyager 16 and Voyager 20.

Prospect Evaluation

VOYAGER 1:

Infill gridding with Magnetic, VLF-EM and Turam surveys results in definition of a magnetic feature possibly representative of a "folded and thickened portion of the mineralized chemical sediment" [horizon] which was recommended as a (low priority) drill target.

VOYAGER 2:

DDE V2/6 intersected a sequence of rhyolite crystal tuffs and fine tuffaceous siltstone-greywackes containing both disseminated and veinlet low grade Pb-Zn mineralization.

Although the best grades (9m @ 1.61% Pb, 0.24% Zn and 21.2 g/t Ag) were associated with fine galena-sphalerite veinlets the common presence of fine disseminated sphalerite-galena throughout suggested that the metals might be of syngenetic origin having been partly re-mobilized into fracture veinlets perhaps during deformation.

The tuff-sediment sequence of this area was therefore regarded as having potential for Type 3 (Rosebery style) mineralization and further work to define northern and southern extensions was recommended.

VOYAGER 6:

Magnetic survey at Voyager 6 indicated a likely magnetic source could be a narrow dyke like body containing 10-15% magnetite associated with a granite "tongue" intruding pyroclastics. Although soil sampling was inconclusive due to gravel cover it was concluded that the anomaly had little potential for the target mineralization types.

VOYAGER 7:

Magnetic survey suggested that the aeromagnetic feature was caused by widely distributed disseminated magnetite (<5%). Geochemical sampling indicated no significant anomalies and the area was concluded to be unprospective.

VOYAGER 9:

Surveys at Voyager 9 showed a complex magnetic anomaly; widespread chlorite-magnetite and sericite-pyrite alteration zones anomalous in base metals and a significant copper soil geochemical anomaly at the northern end of the altered zone.

A short drill hole into the peak of the magnetic anomaly intersected sericitized crystal tuffs with zones of disseminated pyrite and veining and disseminated magnetite.

It was concluded that Voyager 9 was highly prospective for volcanogenic Cu-Au (Pb-Zn-Ag) mineralization (of Mt Lyell type). Further IP survey and drill testing of the copper anomalous zone was recommended.

VOYAGER 10:

Magnetic intensity survey failed to detect significant anomalies.

It was recommended that no further work should be carried out.

VOYAGER 12:

Magnetic survey showed no significant character.

DDH V12/6 intersected a sequence of chloritic quartz crystal tuffs and minor tuffaceous siltstones before passing into dacitic quartz-feldspar biotite porphyry. Minor gossanous and pyritic veinlets occurred throughout the hole and analysis indicated maximum values of 0.4 g/t Au and 43 g/t Ag.

It was concluded that the SP anomaly had been adequately tested and found wanting. It was suggested that downhole IP logging of DDH 5 might be useful but no additional work could be recommended.

VOYAGER 14:

Ground magnetic survey indicated several "spiky" magnetic anomalies probably reflecting shallow sources of small dimension apparently related to local patches of disseminated magnetite in quartz-feldspar-biotite porphyry (Elliott Point Porphyry).

No further work was recommended.

VOYAGER 17:

Magnetic traverse showed weak broad feature probably related to lithotype "rather than mineralization". Soil geochemical values were low. No further work was proposed.

VOYAGER 18:

Rock chip sampling indicated copper grades around 0.1% in dolomites indicating potential for greater concentrations in favourable structures along strike.

VOYAGER 20:

Rock chip sampling indicated potential for lead-zinc mineralization at contact of hematitic tuff and underlying chloritic quartz-feldspar crystal tuffs. Stream geochemical anomalies suggested some N-S strike extensions.

VOYAGER 21:

Magnetic survey indicated the "chemical sediment" horizon was narrower than at Voyager 1 and the absence of soil geochemical anomalies confirmed that no further work was warranted.

## VOYAGER 23:

Rock chip sampling showed average of only 150 ppm copper in dolomitic shales which was not considered significant to warrant further work.

6.4 CONCLUSIONS FROM 1980-81 PROGRAM

## VOYAGER 3:

DDH V3/3 intersected a varied sequence of acid pyroclastics and lavas with ubiquitous disseminated pyrite (1-3%) and minor local zinc mineralization, (8m @ 0.37% Zn). It was considered that the pyrite was the source of the chargeability anomaly but the soil geochemical anomaly had not been adequately tested.

Costeaming of the soil anomaly and extensions of the grid to the north were proposed.

## VOYAGER 9:

DDH V9/2 failed to intersect significant copper mineralization although the presence of local chloritic alteration was considered a favourable indication of disseminated Mt Lyell type mineralization.

## VOYAGER 16:

Magnetic and geological character suggested similarities to Voyager 9 area. Further work was recommended to investigate Cu-Pb-Zn-Fe-Au soil and panned concentrate geochemical anomalies.

## VOYAGER 19:

C-Horizon sampling located several small but intense anomalies (peaking at 2.1% Pb and 8.8% Zn). Subsequent excavation of trenches exposed a small (4m wide) massive pyrite-sphalerite-galena lens with average grade of 10.23% Pb, 17.94% Zn and 138 gm/t Ag and 0.6 g/t Au.

Although the electrical and gravity geophysical techniques had not provided strong encouragement, this discovery was regarded as a major breakthrough. Recommendations included a detailed gravity survey and diamond drill testing of geochemical/gravity anomalies.

## VOYAGER 22:

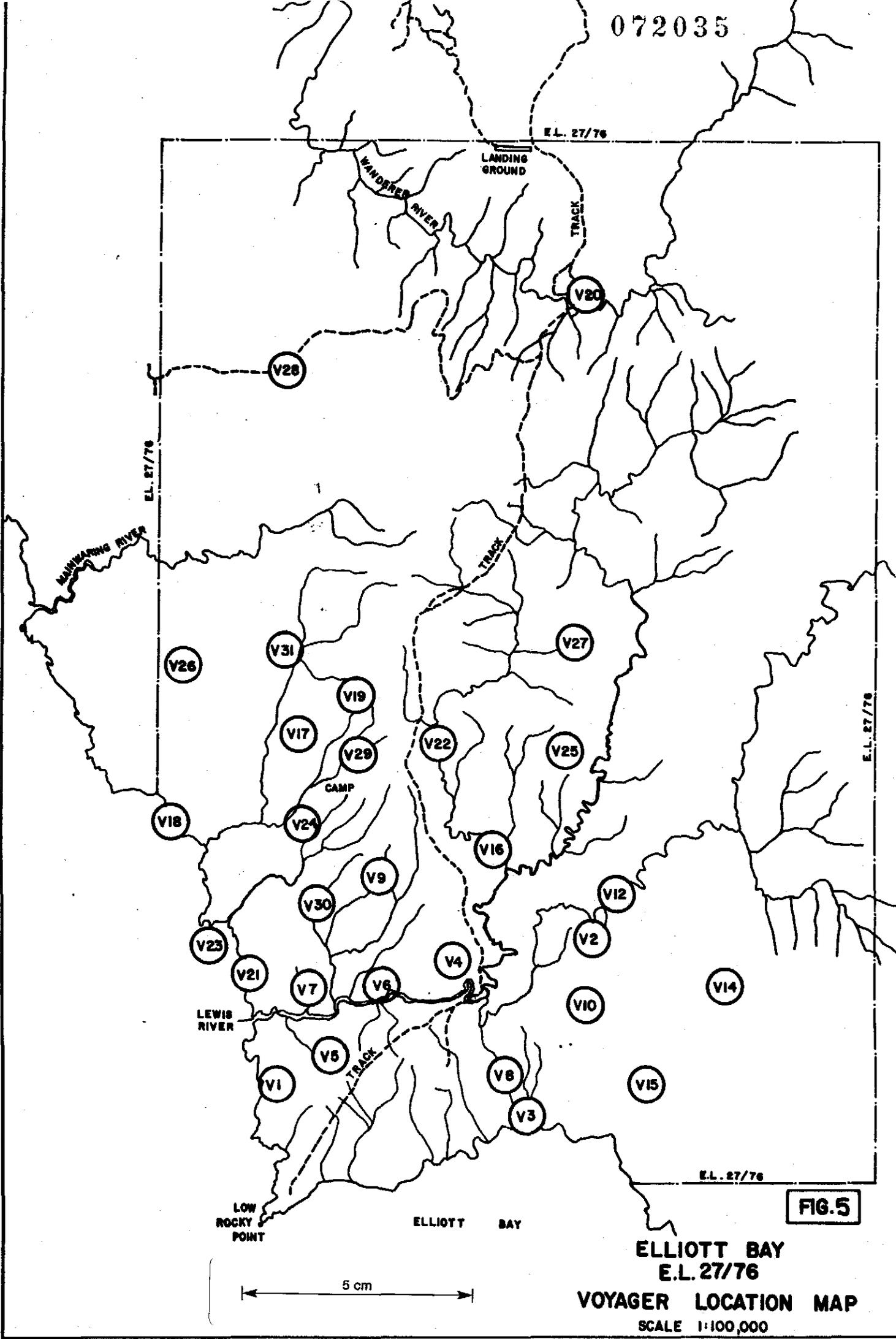
Recognition of broadly similar lithological sequence to Voyager 19 and moderate Pb-Zn soil geochemical anomalies led to recommendations for more detailed mapping, grid extensions along strike and trenching of anomaly peaks.

## VOYAGER 29:

C-Horizon sampling indicated several anomalous zones which would require further infill sampling and trenching of anomaly peaks.

034

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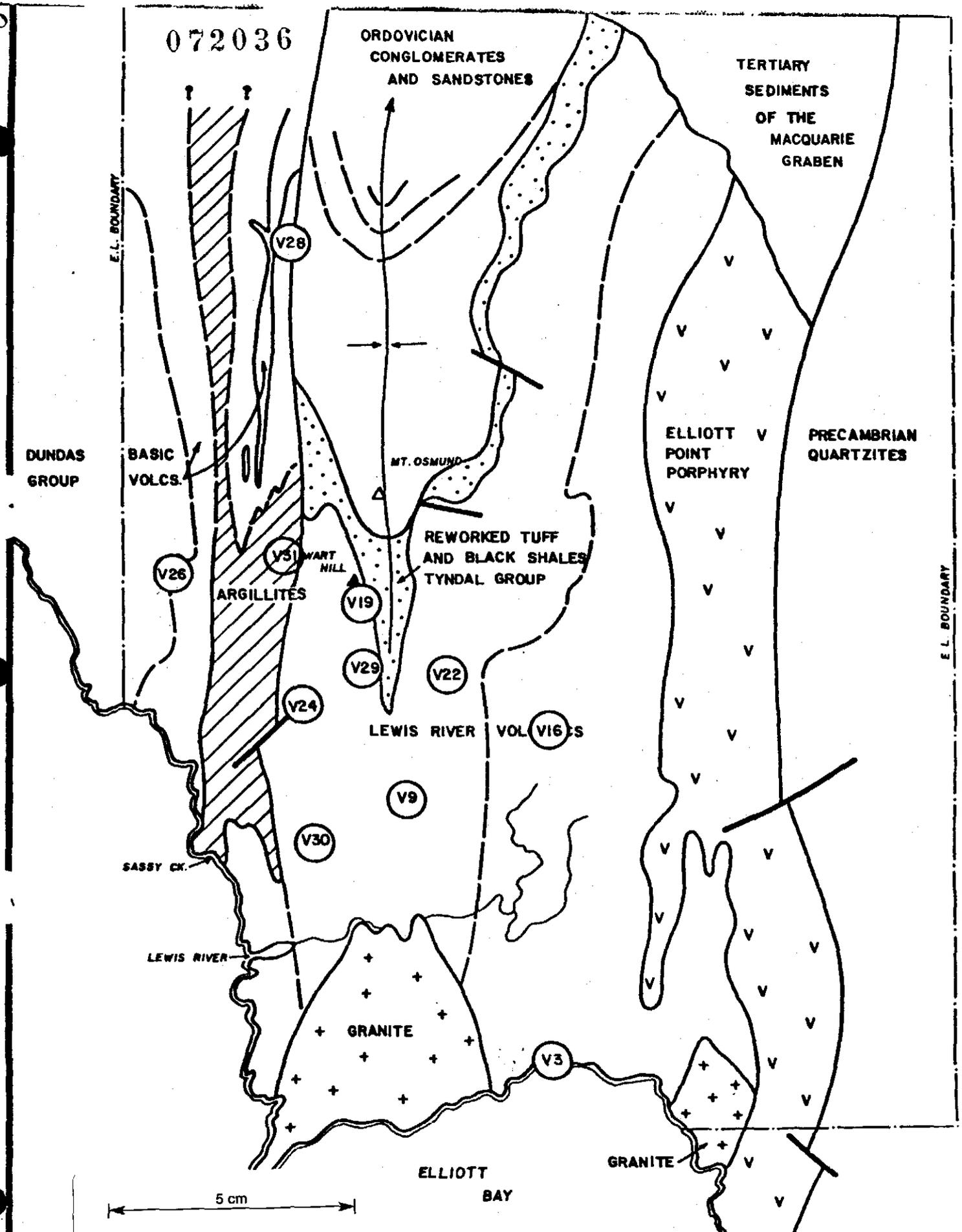


**FIG. 5**

**ELLIOTT BAY**  
**E.L. 27/76**  
**VOYAGER LOCATION MAP**  
 SCALE 1:100,000

035

072036



**LEGEND:**

Generalized geological map of E.L.27/76 showing:

e.g. (V9) Location of Voyager 9

DISTRIBUTION OF THE HUDSON RIVER VOLCANICS





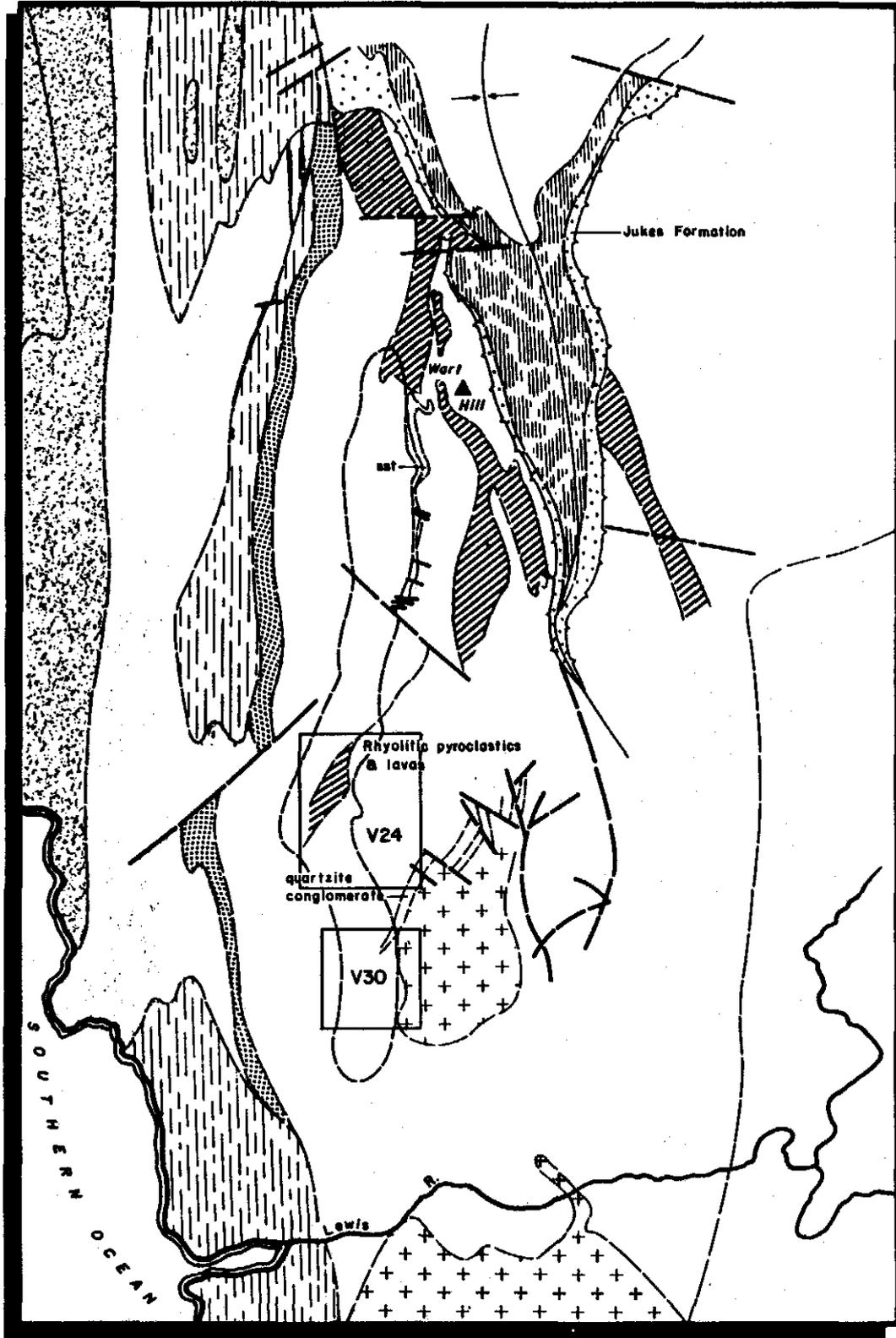
DATE: 20/10/81  
 GEOL: W.H. PAW  
 DWN: R.TOB.  
 CHKD:

GEOPEKO



Fig. 6

**ELLIOTT BAY**  
**E.L. 27/76**  
**VOYAGER LOCATION MAP.**



**Legend:** zone of anomalous Au drainage geochemistry (>0.5 gm/t in panned concentrate)

5 cm

- |  |                            |  |                     |  |                                   |
|--|----------------------------|--|---------------------|--|-----------------------------------|
|  | <b>MAINWARING GROUP</b>    |  | <b>Tyndal Group</b> |  | <b>Reworked tuff</b>              |
|  | <b>MT. READ CORRELATES</b> |  |                     |  | <b>Blackshale/sandstone</b>       |
|  | <b>Western Sequence</b>    |  |                     |  | <b>Argillite</b>                  |
|  |                            |  |                     |  | <b>Rhyolite tuff</b>              |
|  |                            |  |                     |  | <b>Sandstone-conglomerate</b>     |
|  |                            |  | <b>Central Belt</b> |  | <b>Rhyolite tuffs &amp; lavas</b> |
|  |                            |  |                     |  | <b>Quartz porphyritic lava</b>    |
|  |                            |  |                     |  | <b>Granite</b>                    |

Figure 7

E.L.27/76  
 ELLIOTT BAY, TASMANIA  
 GEOLOGY OF MT. OSMUND SYNCLINE  
 0 1 2 3  
 KILOMETRES  
 LOCATION OF GOLD DRAINAGE ANOMALY.  
 GEOPEKO-DEVONPORT BASE

037

**VOYAGER 31:**

Reconnaissance mapping and stream sediment sampling of Copper Creek resulted in discovery of Ag-Au-As bearing pyrite-galena-sphalerite vein style mineralization within breccia zones localized along a major pyroclastic/shale contact, possibly extending over 1.7km of strike length. Gridding, mapping and geochemical sampling were proposed for future work.

**VOYAGER 26:**

Grid mapping indicated that the presence of a thick dolomite sequence was unlikely. It was recommended that ground EM survey should be completed prior to abandoning the prospect.

**VOYAGER 28:**

"Mate" portable power auger sampling along the BHP track had indicated anomalous gold values (to 0.7 g/t) adjacent to the Mainwaring River.

Follow up sampling by Jacro auger failed to verify the anomalies suggesting that the "Mate" auger had not penetrated to bedrock and that the anomalous horizon was related to flooding of the Mainwaring River which contains anomalous gold in stream sediments further upstream.

**RECONNAISSANCE EVALUATION OF MAINWARING GROUP:**

Reconnaissance mapping allowed construction of a skeletal geological map of the thickly forested NW portion of the licence.

Stream sediment sampling of Mainwaring River system indicated low order gold anomalies in upper reaches as well as a couple of low order Cu-Fe-Zn anomalies associated with basic volcanics in the western part of the area.

None of these rated as high priority for follow up.

**VOYAGER 24 AND VOYAGER 30 AREA GOLD EXPLORATION:**

Panned concentrate sampling showed that anomalous gold (greater than 500 ppb Au) occurred, sometimes in association with anomalous tin and tungsten, over some 6km of strike length of the upper part of the Wart Hill Pyroclastics. Drilling of one hole at Voyager 24 intersected siliceous-pyritic volcanic breccias carrying minor galena-sphalerite mineralization and widespread gold values suggesting a quartz veinlet stockwork style of Au-Ag (Pb-Zn) mineralization.

Recommendations were given for further drilling and extension of gridding and geochemical sampling.

**6.5 CONCLUSIONS FROM 1981-82 FIELD SEASON**

**VOYAGER 9:**

Gravity survey failed to detect any "near surface bodies of dense material" over the central part of the grid but results were consistent

072039

Ordovician Conglomerates & Sandstones

Tertiary Sediments of the Macquarie Graben

Precambrian Quartzites

CAMBRIAN SEQUENCES

MAINWARRING GROUP

MT. READ CORRELATES

Western Sequence

Tyndal Group Correlates

LEWIS RIVER VOLCANICS (Central Belt)

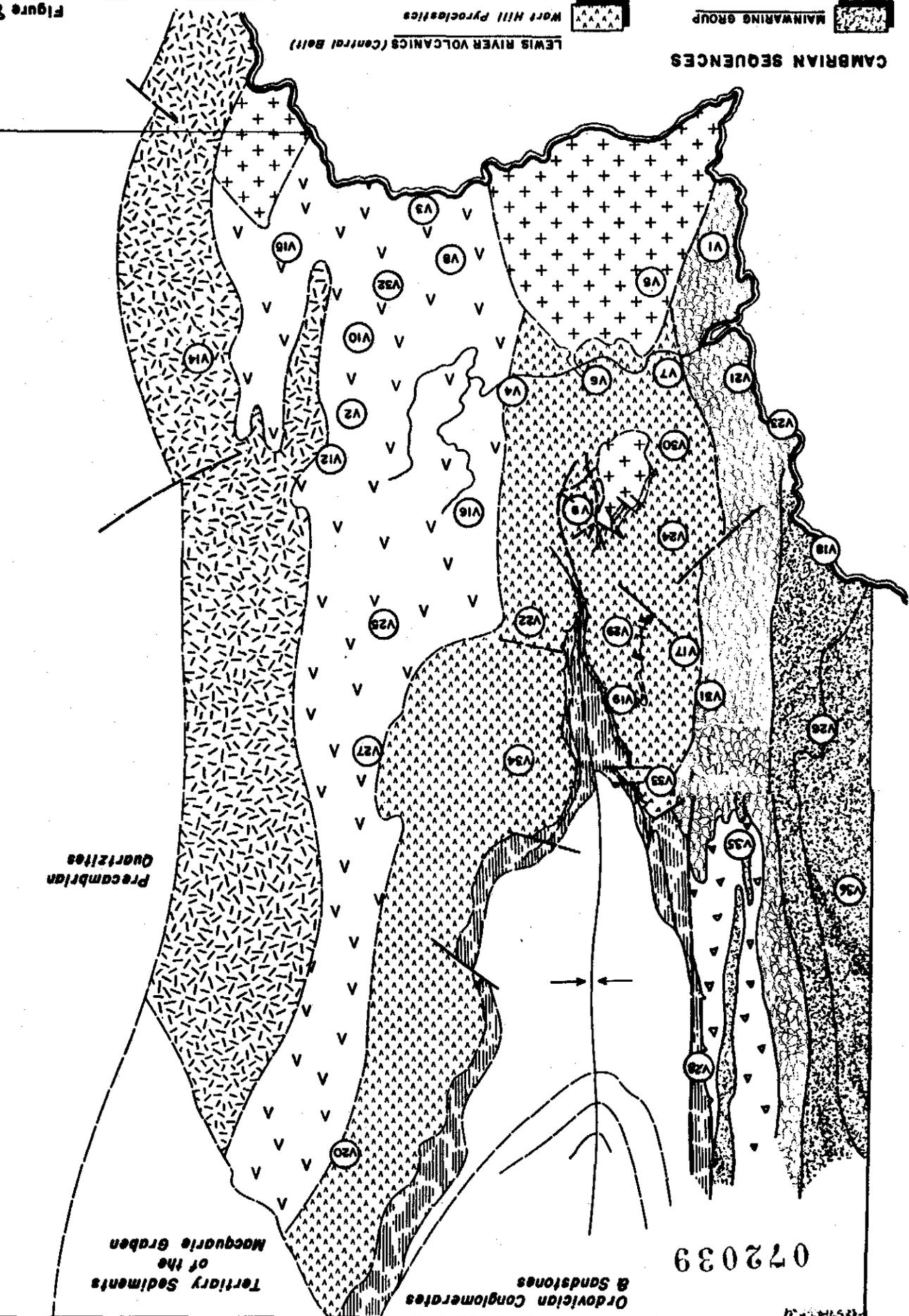
Wart Hill Pyroclastics

Hudson River Pyroclastics

Elliott Point Porphyry

Granite

Undifferentiated Acid Volcanics



E.L.27/76  
GEOLOGY & PROSPECT LOCATIONS  
ELLIOTT BAY, TASMANIA



GEOPKO-DEVONPORT BASE

Figure 8

039

with the magnetic interpretation of a large mass of magnetic rock at depth of about 500m.

DDH V9/3 intersected a sequence of crystal tuffs with interbedded sandstones, siltstones, cherty siltstones and pyritic black shale units. Though no significant mineralization was encountered, the pyritic sediments, formed under reducing marine conditions with intermittent vulcanicity, were regarded as a favourable ore forming environment which was worthy of along-strike investigation per IP/geochemical prospecting.

**VOYAGER 19:**

Shallow trenching revealed a second small (3m wide) massive sulphide lens (approximately 250m south of the lens discovered late in the previous season). Average grade of the second lens was 13.94% Pb, 21.9% Zn, 0.2% Cu, 680 g/t Ag and 0.84 g/t Au over 3m width.

The gravity survey essentially negated the possibility of a large near surface massive sulphide body. Drilling of five holes into various targets failed to intersect significant mineralization forcing a conclusions that the exposed galena-sphaerlite lenses were of very small extent.

However, it was considered the lenses had identified a favourable stratigraphic horizon at which ore forming processes were active.

It was recommended that an EM system (such as SIROTEM) should be systematically applied to search for conductive mineralization down to a depth of about 200m.

**VOYAGER 22:**

Detailed mapping indicated geological similarities to Voyager 19. However, fairly low geochemical responses downgraded the prospectivity of the area. It was recommended that two lines of dipole-dipole IP should be surveyed as a last fling measure.

**VOYAGER 29:**

Detailed surveys showed an area of strong C-Horizon Pb-Zn-Fe geochemical anomalies with localized visible Pb-Zn mineralization, moderate IP chargeability response and weak gravity anomaly.

It was recommended that the anomalous zones should be drill tested during the following exploration season.

**VOYAGER 29 WEST:**

Survey results supported the adjacent V29 anomaly and indicated extensions of favourable stratigraphy to the north.

**VOYAGER 30:**

**(a) Base Metal Search**

Surveys showed a series of soil geochemical anomalies related to hydrothermally altered granite, pyritic tuffs and quartz sulphide veins with complex, inconclusive but encouraging dipole-dipole IP results.

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Recommendations were given for southward extension of the grid, more detailed infill IP survey and drill testing of best anomalies.

(b) Gold Search

Results of gold analyses of soils and rock chip samples were generally of fairly low order and somewhat inconsistent.

It was recommended that future gold exploration on Voyager 30 area should await the outcome of investigations into Voyager 24 gold mineralization.

VOYAGER 31:

Mapping and sampling showed that the Copper Creek Pb-Zn-Ag-As mineralization was of narrow width confined to siliceous veins erratically developed along a linear contact between volcanic epiclastics and black shales.

The style and relatively low grades of mineralization (max: 1.6% Pb, 2.85% Zn and 18 g/t Ag over 5m length) downgraded the occurrence to low prospectivity.

VOYAGER 33:

Geochemical survey delineated two significant zones of Pb-Zn anomalism, one in the Sassy Creek Argillite sequence and the other within Wart Hill Pyroclastics. The western anomaly within argillaceous sediments suggested potential for sediment hosted massive sulphide deposits.

Recommendations were given for infill gridding, closer spaced geochemical sampling and geophysical (IP) surveys.

VOYAGER 34:

Surveys succeeded in outlining several moderately anomalous zones of Pb-Zn geochemistry within rhyolitic lenses and tuffs. Disseminated galena-sphalerite was observed in auger chips from anomaly peaks.

Recommendations were given outlining infill gridding, geochemical sampling, dipole-dipole IP survey and trenching of best anomalies.

VOYAGER 16:

Geochemical survey defined several coincident Pb-Zn anomalies unrelated to magnetic horizons.

It was recommended that trenching be carried out to investigate the source of geochemical anomalies.

VOYAGER 20:

Surveys outlined "numerous" Pb-Zn geochemical anomalies within a quartz-biotite lava unit and along its contact with rhyolitic (quartz) crystal tuff.

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Recommendations were given for future extensive infill gridding, geochemical sampling, geophysical surveys and trenching of anomalies.

VOYAGER 24:

Electron microprobe analyses of alluvial gold grains showed that the gold was of primary origin probably associated with subvolcanic base metal mineralization. It was speculated that the gold had a fumarolic origin occurring as disseminations in a rhyolitic lithic tuff unit at a number of stratigraphic horizons representing rock-sea water interfaces.

Results of gold analyses of trench samples and diamond drill core from the lower part of DDH V24/1 were generally disappointing.

Recommendations were given for further drilling and trenching.

6.6 CONCLUSIONS FROM 1982-83 FIELD SEASON

The major dipole-dipole IP survey provided chargeability/resistivity information over approximately 25 sq km of the most prospective Wart Hill Pyroclastics. The method was considered to be effectively scanning to a depth of at least 50 metres and the traverse line spacing of 200m made it unlikely that any significant occurrences of target mineralization type (around 10 million tonnes) would go undetected. Complete geological mapping and C-Horizon geochemical coverage was available to assist in interpretation of IP data.

Although many anomalies were recognized most were of unfortunately subtle character.

However, largely on the basis of IP data and in consideration of accumulated geological, geochemical and other geophysical information, three anomalies were selected as worthy of diamond drilling in the following (1983-84) field season. An additional eight anomalies were identified as requiring further infill IP and geochemical sampling to evaluate their prospectivity and define drilling targets if justified.

The results of panned concentrate sampling in the southern part of the (IP) grid area appeared to confirm the presence of a tin geochemical halo around the Stony Creek Microgranite as well as significant extensions of the gold drainage anomaly area. Further sampling to define the limits of these anomalies was recommended.

A review of accumulated Lead Isotope analyses of Elliott Bay samples led to the conclusion that the lead isotopic ratios probably were effective in distinguishing vein style epigenetic mineralization (unprospective) from the volcanic associated stratiform and/or stratabound veinlet mineralization. There was no firm evidence to indicate that comparison with known isotopic ratios of significant (Tasmanian) deposits such as Rosebery and Que River could be confidently used as a screening process for selection of drilling targets.

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TABLE: I SUMMARY OF PROGRESS ON VOYAGER PROSPECTS, ELLIOTT BAY E.L. 27/76

AUGUST 1983

PROSPECT	DEFINITION	STYLE OF MINERALIZATION	WORK COMPLETED	SIGNIFICANT RESULTS	PRIORITY RATING
Voyager 1	Old Cu prospect	Cu-W Chemical Sediment	<ul style="list-style-type: none"> <li>. Grid</li> <li>. Mapping</li> <li>. Soil geochem</li> <li>. IP</li> <li>. Turam</li> <li>. Magnetics</li> <li>. 2 JDM</li> </ul>	<ul style="list-style-type: none"> <li>. Magnetic anomaly</li> <li>. Turam anomaly</li> </ul>	C
Voyager 2	Old Cu prospect	Stratiform Pb-Zn-Ag	<ul style="list-style-type: none"> <li>. Grid</li> <li>. Mapping</li> <li>. Soil geochem</li> <li>. IP</li> <li>. 5 JDM</li> <li>. 1 200m DDH</li> </ul>	<ul style="list-style-type: none"> <li>. 5m at 2.22Pb, 29g/tAg in drill hole</li> </ul>	B
Voyager 3	Old prospect	Stratiform Pb-Zn-Cu	<ul style="list-style-type: none"> <li>. Grid</li> <li>. Mapping</li> <li>. Soil geochem</li> <li>. IP</li> <li>. VLF-EH</li> <li>. 2 JDM</li> <li>. 1 200m DDH</li> </ul>	<ul style="list-style-type: none"> <li>. Good soil Pb-Zn anomalies with coincident IP.. Drill holes intersected low grade mineralization</li> </ul>	B
Voyager 4	A.E.M. anomaly Drainage Anomalies	Unknown	<ul style="list-style-type: none"> <li>. Recy line of VLF-EH</li> </ul>	<ul style="list-style-type: none"> <li>. Anomaly not located</li> </ul>	C
Voyager 5	Aeromagnetic Anomaly	Unknown	<ul style="list-style-type: none"> <li>. Gridding</li> <li>. Magnetics</li> <li>. IP</li> <li>. 2 JDM</li> </ul>	<ul style="list-style-type: none"> <li>. No mineralization Located</li> </ul>	C
Voyager 6	Aeromagnetic Anomaly	Granite Contact Skarn?	<ul style="list-style-type: none"> <li>. Gridding</li> <li>. Magnetics</li> <li>. VLF-EH</li> </ul>	<ul style="list-style-type: none"> <li>. Magnetic anomaly</li> <li>. Rock chip Cu, Pb, Au anomaly</li> </ul>	C
Voyager 7	Aeromagnetic Anomaly	Unknown	<ul style="list-style-type: none"> <li>. Gridding</li> <li>. Magnetics</li> <li>. Sampling</li> <li>. Soil</li> </ul>	<ul style="list-style-type: none"> <li>. No significant results</li> </ul>	C
Voyager 8	Tin Stream Anomalies	Unknown	<ul style="list-style-type: none"> <li>. Mapping</li> <li>. Pit sampling</li> </ul>	<ul style="list-style-type: none"> <li>. Source of Sn in Tertiary gravels</li> </ul>	C
<u>Voyager 9*</u>	Aeromagnetic Anomaly Alteration zone	Stratiform Cu-Pb-Zn	<ul style="list-style-type: none"> <li>. Gridding</li> <li>. Mapping</li> <li>. Magnetics</li> <li>. VLF-EH</li> <li>. Soil Sampling</li> <li>. IP</li> <li>. Gravity</li> <li>. 2 DDH</li> <li>. 1 JDM</li> </ul>	<ul style="list-style-type: none"> <li>. Good soil anomalies for Cu and for Pb + Zn. Chlorite stringer zone in drill core</li> <li>. IP anomalies revealed 1982/83 survey</li> </ul>	A
Voyager 10	Pb-Zn Stream anomaly	Stratiform Pb-Zn-Cu	<ul style="list-style-type: none"> <li>. Gridding</li> <li>. IP</li> <li>. Sampling</li> <li>. Soil</li> </ul>	<ul style="list-style-type: none"> <li>. No IP anomalies</li> <li>. Weak soil anomalies</li> </ul>	C
Voyager 11	Airborne EH	Unknown	<ul style="list-style-type: none"> <li>. Recy lines of VLF-EH</li> </ul>	<ul style="list-style-type: none"> <li>. Anomaly not located</li> </ul>	C
Voyager 12	Au-Ag gossans	Epigenetic Au-Ag veins	<ul style="list-style-type: none"> <li>. Gridding</li> <li>. Geology</li> <li>. IP</li> <li>. SP</li> <li>. VLF-EH</li> <li>. 4 JDM</li> <li>. 1 160m DDH</li> </ul>	<ul style="list-style-type: none"> <li>. Weak mineralization located</li> </ul>	C
Voyager 14	Aeromagnetic Anomaly	Unknown	<ul style="list-style-type: none"> <li>. Recy lines of magnetics</li> </ul>	<ul style="list-style-type: none"> <li>. Narrow anomaly located</li> </ul>	C
Voyager 15	Aeromagnetic Anomaly	Unknown	<ul style="list-style-type: none"> <li>. No work to date</li> </ul>		C
Voyager 16	Aeromagnetic Anomaly Drainage Pb-Zn Anomaly	Stratiform Pb-Zn-Cu	<ul style="list-style-type: none"> <li>. Gridding</li> <li>. Geology</li> <li>. Soil Sampling</li> <li>. Au panning</li> <li>. Magnetics</li> </ul>	<ul style="list-style-type: none"> <li>. Anomalous Au in streams</li> <li>. Good Cu Pb Zn Fe soil anomaly</li> </ul>	C

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PROSPECT	DEFINITION	STYLE OF MINERALIZATION	WORK COMPLETED	SIGNIFICANT RESULTS	PRIORITY RATING
Voyager 17	Aeromagnetic Anomaly	Unknown	<ul style="list-style-type: none"> <li>One grid line</li> <li>Magnetic</li> <li>Soil Sampling</li> </ul>	<ul style="list-style-type: none"> <li>Weak magnetic anomaly</li> </ul>	C
Voyager 18	Copper bearing outcrops	CPY-dolomite in basic volcanics	<ul style="list-style-type: none"> <li>Mapping</li> <li>Rock chip sampling</li> </ul>	<ul style="list-style-type: none"> <li>15m of 0.1% Cu in shales</li> </ul>	C
Voyager 19*	Large alteration zone Anomalous rock chip samples	Stratiform Cu-Pb-Zn-Ag	<ul style="list-style-type: none"> <li>Gridding</li> <li>Mapping</li> <li>Magnetic</li> <li>VLF-EM</li> <li>Gravity</li> <li>Soil Sampling</li> <li>IP</li> <li>Costeining</li> <li>5 DDH</li> </ul>	<ul style="list-style-type: none"> <li>Massive galena-sphalerite mineralization located in two zones 250m apart</li> <li>Weak IP anomaly revealed 1982/83</li> </ul>	A
Voyager 20	Cossanous zone Pb-Zn stream anomaly	Stratiform Pb-Zn-Cu	<ul style="list-style-type: none"> <li>Reconnaissance</li> <li>Gridding</li> <li>Mapping</li> <li>Soil Sampling</li> <li>Magnetic</li> </ul>	<ul style="list-style-type: none"> <li>Soil geochemical anomalies located at favourable stratigraphic position</li> </ul>	B
Voyager 21	A.E.M. Anomaly	Cu chemical Sediment	<ul style="list-style-type: none"> <li>Gridding</li> <li>Magnetics</li> <li>Turam</li> <li>Soil Sampling</li> </ul>	<ul style="list-style-type: none"> <li>Linear magnetic anomaly</li> <li>Weak turam anomaly</li> </ul>	C
Voyager 22	Sericite-chlorite Alteration Zone	Stratiform Cu-Pb-Zn	<ul style="list-style-type: none"> <li>Gridding</li> <li>Soil Sampling</li> <li>Magnetics</li> <li>Mapping</li> </ul>	<ul style="list-style-type: none"> <li>Moderate soil geochemical anomaly located</li> <li>No significant IP</li> </ul>	B
Voyager 23	Copper bearing outcrops	CPY-dolomite in basic tuffs	<ul style="list-style-type: none"> <li>Mapping</li> <li>Rock chip sampling</li> </ul>	<ul style="list-style-type: none"> <li>Weak Cu mineralization located</li> </ul>	C
Voyager 24*	Au drainage anomaly	Vein or porphyry gold in rhyolitic agglomerates and tuffs	<ul style="list-style-type: none"> <li>Gridding</li> <li>Mapping</li> <li>Panned concentrate sampling</li> <li>Soil sampling</li> <li>Costeining</li> <li>Resistivity</li> <li>300m DDH</li> </ul>	<ul style="list-style-type: none"> <li>Gold source traced to rhyolitic tuffs and silicified agglomerates.</li> <li>Coincident base metal anomalies</li> <li>IP anomalies revealed 1982/83</li> </ul>	A
Voyager 25	Pb-Zn-W drainage anomaly	Stratiform Pb-Zn-Cu	<ul style="list-style-type: none"> <li>Reconnaissance mapping only</li> </ul>		C
Voyager 26	Airborne E.M. anomalies	Cu-dolomite type	<ul style="list-style-type: none"> <li>Gridding</li> <li>Mapping</li> <li>Soil Sampling</li> <li>Magnetics</li> </ul>	<ul style="list-style-type: none"> <li>No significant mineralization Anomaly caused by black shales?</li> </ul>	C
Voyager 27	Pb-Zn drainage anomaly	Stratiform Pb-Zn-Cu	<ul style="list-style-type: none"> <li>No work done</li> </ul>		B
Voyager 28	Anomalous Au in soil sampling	Vein style Au?	<ul style="list-style-type: none"> <li>Geological reconnaissance</li> <li>Soil sampling</li> </ul>	<ul style="list-style-type: none"> <li>Gold believed to have a source in Tertiary gravel cover. Good single station base metal anomaly located</li> </ul>	C
Voyager 29*	Anomalous Ag-Pb-Zn in reconnaissance soil samples	Stratiform Pb-Zn-Ag	<ul style="list-style-type: none"> <li>Gridding</li> <li>Soil sampling</li> <li>Mapping</li> <li>VLF-EM</li> <li>Magnetics</li> <li>IP</li> <li>Gravity</li> <li>Pitting</li> </ul>	<ul style="list-style-type: none"> <li>Good soil geochemical Pb Zn Ag anomalies, highest value of 7% Cu, Pb, Zn.</li> <li>The best geochemical anomaly has coincident IP, gravity and SP response</li> <li>Deep IP anomaly on western side of grid</li> </ul>	A
Voyager 30*	Anomalous Au-Sn in streams	Gold vein style	<ul style="list-style-type: none"> <li>Panned concentrate sampling</li> <li>Gridding</li> <li>Mapping</li> <li>Pitting</li> <li>VLF-EM</li> <li>Magnetics</li> <li>Soil sampling</li> <li>IP</li> </ul>	<ul style="list-style-type: none"> <li>Au source related to tuff horizon within Wart Hill pyroclastics.</li> <li>Coincident IP, SP VLF-EM magnetic and base metal soil anomaly Pb-Zn-Ag-Au mineralization located in quartz veins</li> <li>Complex IP zone from</li> </ul>	A

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PROSPECT	DEFINITION	STYLE OF MINERALIZATION	WORK COMPLETED	SIGNIFICANT RESULTS	PRIORITY RATING
Voyager 31	Stream geochemical anomaly	Vein As-Pb-Zn-Ag mineralization along major lineament	<ul style="list-style-type: none"> <li>. Gridding</li> <li>. Mapping</li> <li>. Soil sampling</li> <li>. Rock chip sampling</li> </ul>	<ul style="list-style-type: none"> <li>. Mineralization located in pyroclastics over a 1km length, erratic grade distribution, structurally controlled</li> </ul>	B
Voyager 32	Area between Voyager 3 and Voyager 10 favourable stratigraphy	Stratiform Pb-Zn-Cu	<ul style="list-style-type: none"> <li>. Regional geological mapping</li> <li>. Rock chip sampling</li> </ul>	<ul style="list-style-type: none"> <li>. Anomalous Cu in gossanous material from volcanic-sediment interface</li> </ul>	B
<u>Voyager 33*</u>	Favourable stratigraphy N of V19 in western flank of the Mt Osmond syncline	Stratiform Pb-Zn-Cu	<ul style="list-style-type: none"> <li>. Gridding</li> <li>. Geological mapping</li> <li>. Soil sampling</li> <li>. VLF-EH</li> <li>. Magnetics</li> <li>. Pitting</li> </ul>	<ul style="list-style-type: none"> <li>. Two good Pb-Zn-Ag soil geochemical anomalies located</li> <li>. Costean revealed mineralization of 8m width @ 1.1% Pb, 96g/t Ag.</li> <li>. Strong coincident IP anomaly</li> </ul>	A
<u>Voyager 34*</u>	Area having favourable stratigraphy on E of Mt Osmond syncline	Stratiform Pb-Zn-Cu	<ul style="list-style-type: none"> <li>. Gridding</li> <li>. Mapping</li> <li>. Soil geochemistry</li> <li>. Magnetics</li> <li>. IP</li> </ul>	<ul style="list-style-type: none"> <li>. Area of good Cu-Pb-Zn-Ag soil geochemistry located</li> <li>. Weak IP character</li> </ul>	A
Voyager 35*	Drainage anomalies in Mainwaring group	Unknown	<ul style="list-style-type: none"> <li>. No follow up</li> </ul>		B
	<u>PRIORITY RATING</u>	A - Good Potential B - Medium Potential C - Low Potential			
		* Prospects recommended for follow-up in 1983/84 season.			

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## 6.7 CONCLUSIONS FROM 1983-84 FIELD SEASON

Results from three additional diamond drill holes at Voyager 24 confirmed that low grade gold mineralization of around 0.15 to 0.2 g/t Au occurs over significant intersected widths (up to 50m) predominantly within a distinctive rhyolite lithic crystal tuff unit over a strike length of at least 500 metres.

Within these low grade zones, only occasional one metre intersections exceed values of 0.5 g/t Au and these instances can usually be attributed to presence of small galena-sphalerite veinlets, some of which contain visible specks of gold. This coarse gold is undoubtedly the source of the nuggety gold in the extensive drainage sediment anomaly.

Although testing had been confined to only a small area of the approximately 6km strike zone, outlined by drainage geochemistry, the indications were that gold grades were one to two orders of magnitude below expected profitable bulk mining grades.

It was recommended that petrological-geochemical studies on available data and drill core should be conducted in an attempt to define the genesis of the gold mineralization and in turn to assess the likelihood for the existence of economic bodies within the broad low grade zone.

Drilling at the Voyager 33 prospect had shown that Pb-Zn-Ag-Au-As mineralization is essentially vein style, confined to a narrow fault breccia zone marking the contact between fine argillaceous siltstones and coarser epiclastic sediments within the "Western Sequence". Consistent low grades (eg 1.24% Pb, 0.89% Zn, 56 g/t Ag, 0.06 g/t Au and 0.1% As over 7.6m in DDH V33/1) and narrow widths indicated low economic potential and no further work was recommended.

The UTEM III survey over Voyager 9, 19, 29 and 29 West areas failed to detect any significant conducting bodies.

A regrettable overall conclusions from geophysical evidence was that there are no sizeable (10 million tonne) massive sulphide bodies within approximately 100 metres of the surface in the greater area covered by the 1982-83 dipole-dipole IP survey.

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**7. LOGISTIC ASPECTS AND REHABILITATION**

The relative remoteness, inaccessibility and unfavourable climate of the Elliott Bay area has required large amounts of exploration budgets and effort to cope with the logistic aspects of exploration.

In early summer seasons of field work, Geopeko (following the example of Union Oil Development Corp at Birch Inlet EL 9/74 and previous pioneering by the Lighthouse Commission Bombardier-borne maintenance crews) relied heavily on the use of two or three Bombardier tracked vehicles to transport camping equipment, supplies and personnel to and within the Licence area.

Bombardiers were shipped by barge across Macquarie Harbour from Strahan to a swampy landing near the mouth of the Sorell River at the head of Birch's Inlet. From there they would travel south along the Low Rocky Point Track pioneered by the Lighthouse Commission and graded by previous exploration companies in the early 'seventies as far as Moore's Valley. Apart from the crossing of the swamps at the landing site and the Conder River (hazardous after rainfall) the route was over gravelly country and fairly easy going.

Beyond Moore's Valley, however, the track was unformed, mostly boggy and obstructed by numerous creek crossings. The major streams, Wanderer and Lewis Rivers, were bridged (by the Lighthouse Commission) by steel framed and wooden decked structures which due to decay of the decking represented potential minor disasters (the Wanderer River bridge was re-constructed by Geopeko in 1981).

A Bombardier trip from Birch Inlet to Elliott Bay represented about 65km and 10 hours travelling time.

Once within the exploration areas, field parties established temporary base camps (tents) which were supplied with provisions by helicopter on a once weekly or fortnightly basis.

Bombardiers were extensively used for daily transport between base camps and work areas, also for line clearing and auger soil sampling. As a consequence, the open heathlands of the district were crossed by a sparse network of Bombardier tracks, many of which were used for only a few trips and represented only minor damage to vegetation.

The main arterial tracks, with repeated Bombardier travel, in some cases became boggy resulting in churning of the soil and local destruction of vegetation. In the worst instances, on slopes, the tracks became channelways for surface water run off and minor erosion of the peaty soils occurred.

With increasing environmental awareness, intensity of exploration and declaration of the South-West Conservation area in the early 1980's less use was made of Bombardiers and field parties came to rely more on use of environmentally less damaging helicopters and fixed wing aircraft.

Fixed wing aircraft ranging from Cessna 206's to Britton Norman Islanders were extensively used to ferry personnel and equipment to the pre-existing Moore's Valley Airstrip. Helicopters completed the shuttle service between Moore's Valley and the base camps.

In December 1980 the company established a semi-permanent Base Camp 2km southwest of Wart Hill. It consisted (and remains) of several prefabricated "site construction" huts and galvanised sheds all of which were flown in by helicopter from Strathgordon. From that time onward, Bombardiers were used only for transport of heavy equipment such as auger and diamond drilling machinery, geophysical generators, fuel and so on. Daily personnel transport between camp and workplace was accomplished on foot.

A brief survey by officers of the Department of Mines and National Parks and Wildlife Service in December 1984 found that many of the older less used tracks had substantially revegetated by natural processes. It was noted that revegetation was slow where surface water accumulated in the tracks and a recommendation for limited drainage work on tracks in the Wart Hill area was carried out during April 1985.

Other facets of exploration having lesser environmental/aesthetic effect on the area are as follows:

- (a) Grid line clearing/cutting: Over open heathlands generally only involved placement of 1m x 25mm x 25mm wooden pegs at 50m intervals along lines. In forested areas lines were hand cut (with chain saw and bush hook) and pegged. It is estimated that a total of approx. 150 line km of gridding was carried out during the licence's history. No rehabilitation was considered necessary as natural revegetation will obliterate the extensive but superficial effects within a decade.
- (b) Diamond drilling was carried out by Bombardier or helicopter transported machinery. All drill sites were cleaned up and sumps backfilled at the conclusion of drilling.
- (c) Excavation of narrow trenches over selected geochemical/geophysical anomalies was carried out by manual tools or Bombardier mounted mini-backhoe. Most trenches were backfilled and an attempt made to replant vegetation sods immediately after mapping and sampling. The only exceptions are in the Voyager 19 (Wart Hill) and Voyager 33 areas where three or four trenches have been left uncovered because of their geological significance to future mineral exploration of the area.
- (d) Campsites: A total of nine temporary but based campsites were occupied for short periods at various locations. All of these camps were cleared up, rubbish removed, burned or buried and apart from superficial "trampling" of the sites and arterial Bombardier tracks leading to them, little trace remains.

The main Wart Hill Base Camp, actually some 2km southwest of Wart Hill, consisting of several huts and galvanised store sheds with tools, canned provisions, furniture and appliances, remains in good condition and is now under the administration of the Department of Mines.

A small galvanized iron shelter shed established by Geopeko at the Moore's Valley Airstrip during late 1981, and maintained with stocks of provisions, first aid and cooking gear has also been left intact as a refuge for stranded travellers.

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