

026001

PROJECT A-85-121

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Cyprus Minerals Australia Company

INDUSTRIAL

PROGRESS REPORT

DECEMBER 1985 TO JUNE 1986

MACKINTOSH EAST

EXPLORATION LICENCE 2/70

TASMANIA

P A JONES
PHIL JONES AND ASSOCIATES

JUNE 1986

REPORT 486

CYPRUS

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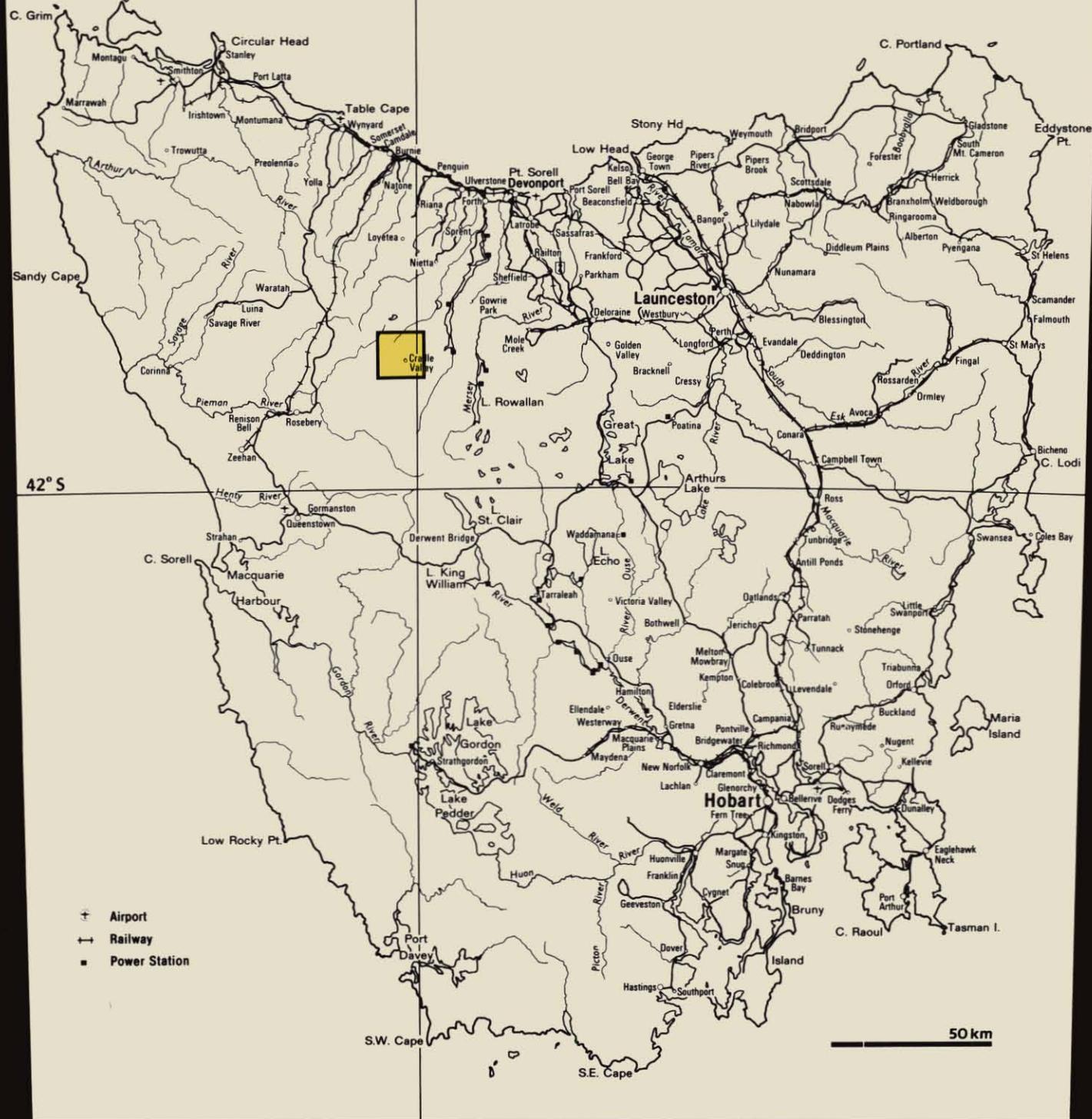
1	PDH Locations and Regional Traverse Locations	1:25000 10 000
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026005

TASMANIA

BASS STRAIT



- ✈ Airport
- 🚊 Railway
- Power Station

50 km

Project Location

5 cm

SUMMARY AND CONCLUSIONS

The primary exploration target on the Mackintosh East tenement is a volcanic hosted massive sulfide deposit of the Rosebery or Hellyer style. There is subordinate potential for volcanic hosted gold deposits.

Four EM-37 responses defined by Mitre Geophysics and recommended for drilling were detail sampled and geologically mapped to precisely locate the proposed drillhole collars.

Two of the proposed drillholes were abandoned due to the poor results from these surveys, however two remained to be tested. PDH-1 will test an EM-37 response blanketed by Tertiary basalts and PDH-2 will test a coincident EM-37, base metal and gold geochemical zone. Downhole EM surveys will be conducted to test for offhole responses and further drilling is planned should any encouragement be forthcoming from the initial drilling program.

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TARGET CONCEPT AND OBJECTIVES

The Cambrian Mount Read Volcanics within the tenement have excellent potential for hosting a +20 million tonne exhalitive volcanogenic massive sulfide deposit grading +20% lead/zinc with highly significant gold and silver credits.

Detailed EM-37 surveys were conducted over previously defined (Paringa-Geopeko) prospective volcanic sequences with numerous very weak responses being delineated. Three such responses were associated with strongly anomalous base metal geochemistry and a fourth was blanketed by Tertiary basalts. Further more detailed sampling led to two zones being targeted for diamond drilling.

RECOMMENDATIONS

Cyprus and Geopeko should undertake the proposed program of diamond drilling on the Speeler Creek prospect. Concurrently downhole EM surveys should be conducted to screen for possible 'offhole' responses.

Dependent upon favorable results of the program further drilling may be required. The budget proposed will enable 500 meters of diamond drilling to be conducted (three holes) as well as downhole EM surveys.

DESCRIPTION OF THE PROPERTY AND OWNERSHIP

Cyprus Minerals Australia Company (formerly Amoco Minerals Australia Company) was approached by Geopeko in June 1984 with a farm-in proposal for part EL 2/70 Mackintosh East, which embraces potential host rocks for volcanogenic massive sulfide type deposits. A joint venture was negotiated whereby Cyprus could earn up to a 51% interest in the property.

Geopeko had previously entered into a joint venture (1979) with Cleveland Tin (a subsidiary of Aberfoyle) and Paringa to acquire a 60% interest. Exploration Licence 2/70 is held in two parts designated Mackintosh West (encompassing both the Que River and Hellyer deposits) and Mackintosh East by Aberfoyle Limited. The licence was reduced from 232 square kilometers to 125 square kilometers on December 30, 1984 due to new rules governing exploration licences introduced July 1, 1982. The Mackintosh East portion of the tenement (Enclosure 1) dropped in area from

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58 square kilometers to approximately 29 square kilometers with a further three years exploration available prior to the cessation of tenure. The prospective volcanic sequence is untouched by the reduction.

One pre-existing mining lease 38M/78 is present within the tenement. It occupies a square block of 49 hectares and encompasses lead/silver bearing quartz veinlets in a major fracture zone within Precambrian gneisses and schists (Tyennan Block).

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LOCATION AND ACCESS

The Mackintosh East area is located in the central northwest of Tasmania approximately 55 kilometers south of the sea port of Burnie and 35 kilometers southeast of Waratah.

A formed gravel road to Waldheim in the Cradle Mountain - Lake St Clair National Park passes through the eastern portion of the tenement. This allows near to all-weather access to Pencil Pine Lodge which has been used in the past for accommodation for field crews. A new all-weather road the Cradle Mountain Link Road, which will connect the West Coast Highway with the Cradle Mountain Road has been commissioned. The eastern section commences at Leary's Corner and traverses the northern portion of the licence in the vicinity of the Speeler Creek grid. A four-wheel drive track heading southwest from a junction approximately one kilometer east of the Speeler Creek grid leads into the cleared baseline of the extensive survey grid established during

the early 1970's.

No difficulties would be anticipated with respect to power, water and transport should a mine be developed. The area has an annual rainfall of 250 centimeters, a large proportion of which falls as snow during the winter months due to the average elevation of 800 to 1100 meters above sea level. This necessitates fieldwork being completed where possible during the summer season.

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HISTORY AND EXPLORATION TO DATE

A full account of previous work was detailed in Cyprus Report 470
- Progress Report December 1984 to November 1985.

REGIONAL SETTING

The joint venture area lies at the northern end of the highly prospective Mount Read Volcanic Belt of Lower to Middle Cambrian age. The northeast trending sequence of rhyolitic to intermediate volcanics and epiclastics lies between Precambrian metasediments to the south and Ordovician sediments to the north. The Hellyer deposit (15 kilometers to the east) lies within a similar belt of northeast trending rocks to the west of the Ordovician sediments. To the southwest the Belt is host to further world class volcanogenic massive sulfide deposits listed in the following table.

MASSIVE SULFIDE DEPOSITS WITHIN THE MOUNT READ VOLCANIC BELT

Deposit	Mined and Gross	
	Reserves (million tonnes)	Grades
Hellyer	+25	7% Pb, 14% Zn, 0.3% Cu, 180 g/t Ag, 2.5 g/t Au
Que River	6	7% Pb, 12.5% Zn, 0.4% Cu, 170 g/t Ag, 3.5 g/t Au
Rosebery	18.4	5.6% Pb, 18.2% Zn, 0.7% Cu, 187 g/t Ag, 3.4 g/t Au
Mount Lyell	120	1.5% Cu, 8 g/t Ag, 0.4 g/t Au

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GEOLOGY OF THE PROPERTY

The tenement covers a portion of the northwestern margin of the Precambrian 'Tyennan' Craton, the flanking Cambrian island arc volcanic assemblage known as the Mount Read Volcanics and the overlying conglomeratic sandstone (Mount Owen Conglomerate correlate) and limestone (Gordon River Limestone) of Ordovician age. Remnants of Tertiary basaltic flows cover part of the northeastern area.

The Precambrian rocks outcropping in the southeast consist principally of laminated and massive quartzites, psammopelitic and minor carbonaceous mica schists and show multiple deformation textures and metamorphism to that of greenschist facies.

The metasedimentary basement is unconformably overlain by a Cambrian rhyolitic volcanic sequence of massive fine grained quartz crystal tuffs with interbedded massive or finely laminated

vitric tuffs, tuffaceous siltstones, cherts and fine grained porphyritic lavas. Occasionally observed soft sediment loading structures in the laminated vitric tuffs suggest subaqueous deposition in comparison to the more massive crystal tuffs which appear to be more subaerial. The highly anomalous host sequence is confined to a narrow (100-1500 meters) northeasterly to easterly striking belt, paralleling the margin of the metasedimentary block and dipping moderately to steeply to the northwest and north.

The volcanics are structurally overlain by a broadly conformable massive body of coarse grained quartz-feldspar-biotite porphyry. This 'unit' which is regarded as a large synvolcanic intrusive, is at least two kilometers wide in the central region and appears to extend the length of the tenement with great textural and compositional uniformity.

In the valley of Fleece Creek and the unnamed creek north of Speeler Creek, Ordovician siliceous sandstone and conglomeratic sandstone (Owen Conglomerate equivalent) is well exposed in sharp unconformable contact with the massive Cambrian porphyry. Disseminated blobs of pyrite are a minor constituent in some of the sandstone and pebbly bands with dark hematic matrix being locally prominent. The rocks dip gently to the northwest at 20-30° forming the eastern limb of an open synclinal fold which has a gently northeasterly plunging axis running approximately along the Vale River.

The sandstones pass upwards into a poorly exposed sequence of fine grained silty sediments and karstified mixture limestones (Gordon River correlate) which occupy the Vale of Belvoir.

Portions of the north and eastern sections of the licence are covered by remnants of flat lying Tertiary basaltic flows. Coarse grained hornblende gabbro outcropping south of the Iris River near the eastern boundary suggest the presence of basic volcanic vents in that area.

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Recent fluviatite and Pleistocene glacial erosion have produced the present topography.

MINERALIZATION

Minor galena-sphalerite-chalcopyrite-pyrite mineralization is observed associated with small discontinuous quartz veins, stockworks and breccia zones within faulted Precambrian metasediments (Carters) within a quartz chlorite veined altered Cambrian rhyolitic quartz crystal tuff and as fine disseminations in sheared and chloritized rocks close to the structurally emplaced quartz-feldspar-biotite porphyry.

This style of mineralization would appear to have little economic potential, however it is possible it has been derived by remobilization of metals from the Cambrian volcanic sequence. Highly significant assays from finely layered pyritic vitric tuffs suggest a volcanic exhalative environment containing base metal values was active during the deposition of the anomalous host volcanic sequence.

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WORK CONDUCTED BY CYPRUS

Following the initial geophysical 'attack' four of the best anomalous areas were targeted by Mitre Geophysics for diamond drilling (Cyprus Report 449). The four zones were sampled and mapped in detail to more accurately position the drillhole collars with both the bedrock soil (at 10 meter spacings) and rock chip samples being dispatched to Amdel in Adelaide and analyzed for copper, zinc, silver (AAS), lead, arsenic (XRF) and gold (Fire assay 50 gram charge/AAS finish). Results are included as Appendix 13.

Initial results from the Speeler Creek grid, PDH-4 (Report 449) proved highly anomalous with a 50 meter zone coincident with the EM-37 response assaying from 0.25 g/t to 0.35 g/t gold with associated high lead and zinc values (0.22% lead, 0.08% zinc).

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These promising gold values prompted Cyprus to assess the potential of the remaining anomalous base metal zones delineated by both Geopeko (Heap of Rocks, Carters and Speeler Creek grids) and Paringa. Previous workers had either failed to or randomly assessed the gold potential of the licence. Hence a program of bedrock soil sampling with samples being taken at 20 to 25 meter intervals along lines at 50 to 200 meter spacings as well as individual traverses were implemented. Rock chip samples were also taken where outcrop permitted in the general area of the anomalous zones.

The following is a summary of each prospect explored during the period.

Heap of Rocks

Purpose: To conduct detailed bedrock soil and rock chip sampling surveys over a previously defined EM-37 response to more accurately position a drillhole collar. Further surveys included detailed gold sampling over a linear base metal zone as well as over isolated values delineated by Geopeko.

Work Completed: Line cutting and rehabilitation of existing lines totalling one kilometer was completed over the grid prior to the follow-up sampling (Enclosure 1).

Geochemistry: Initially ten meter spaced samples were taken over the geophysical target zone PDH-1 (Report 449) to rate the area for drilling (Appendices 1, 2, and 3). Results proved inconclusive and further sampling was conducted on lines 50 meters to the east and west with samples being taken at 20 meter intervals along lines. In addition linear geochemical zones delineated by Geopeko were also resampled specifically to assess their gold potential. Lines 9400E to 10200E (spaced at 200 meter intervals) were sampled at 20 meter intervals with the center of the anomaly closed down to ten meters. Sporadic anomalous values to 0.4 g/t gold were obtained roughly coincident with high tenor

base metal zones. The assay values of soils at the proposed drill site showed isolated values to 0.27 g/t gold however overall poor results lead to the hole being dropped from the initial program.

Geology: Limited outcrop made precise boundary identification difficult, however four separate units were delineated. The geology youngs to the north and appears highly cleaved. The geology varies from coarse lapilli tuffs to fine vitric tuffs with minor associated pyritic siliceous fine tuffs and possible epiclastics within unit two (Figure 1).

Recommendations: The proposed drillhole PDH-1 has been dropped from the initial program however further sampling for gold to the west of line 9400E may be necessary (anomalous values to 0.4 g/t not closed off).

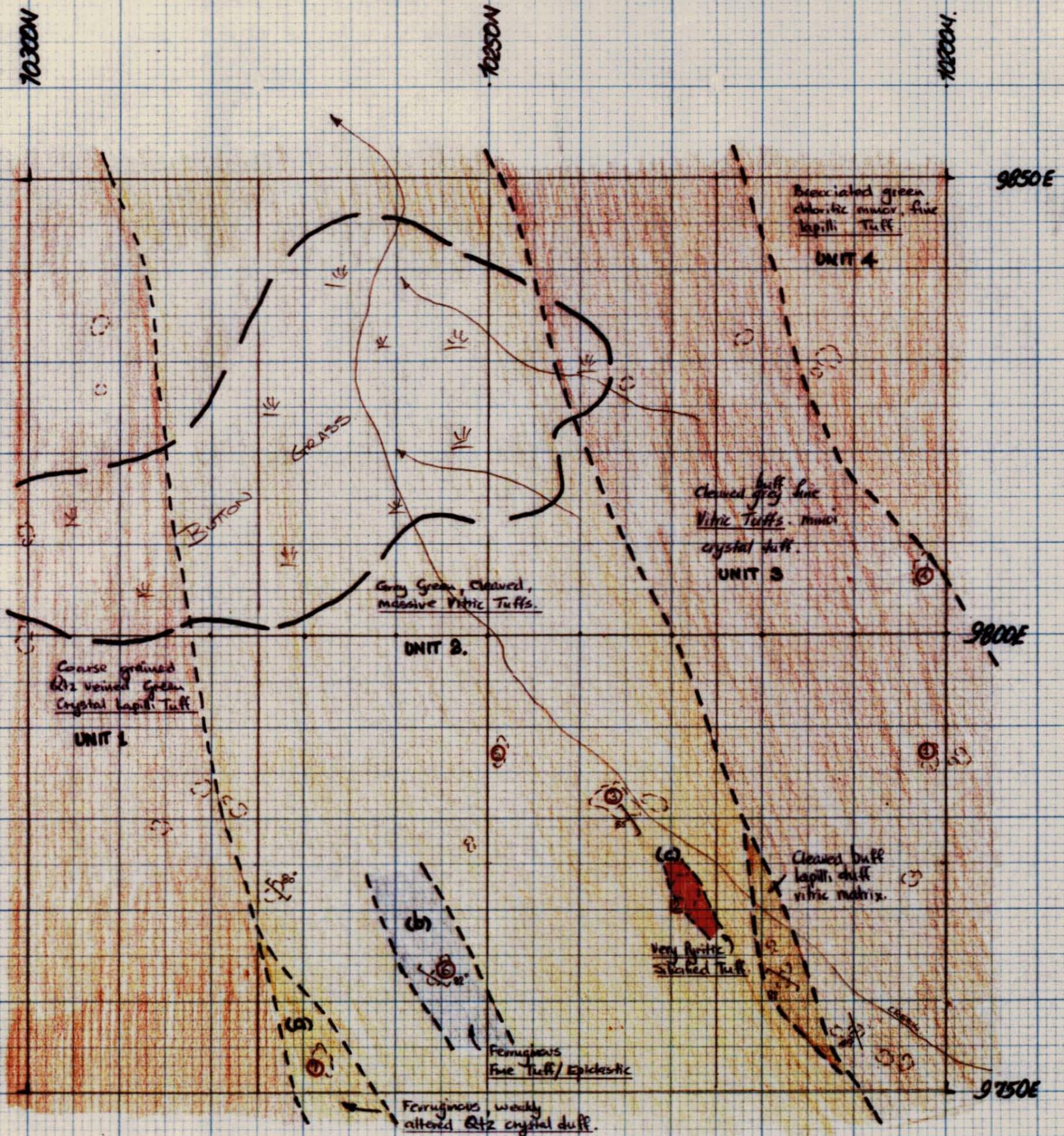
Carters

Purpose: To accurately position a drillhole collar by detailed bedrock and rockchip sampling of the target EM-37 response. In addition a number of anomalous base metal zones delineated previously by both Geopeko and Paringa were detail gold sampled.

Work Completed: Line cutting and rehabilitation of existing lines totalling 0.5 kilometers were completed over the grid prior to the follow-up sampling.

Geochemistry: As the area around PDH-2 (Report 449) had been covered only by Paringa's sampling, it was thought to be prudent to resample at ten meter intervals along the proposed drill section (Appendices 4, 5 and 6). Minor sporadic lead and zinc values (to 0.05% lead, 0.03% zinc) were returned which when viewed in conjunction with the uninteresting massive sequence of volcanics lead to PDH-2 being abandoned. Both rockchips and soils proved negative for gold however two additional lines, 9950E and 10150E, were sampled as they showed discrete base metal anomalies (Paringa sampling) similar to that at Speeler Creek.

CYPRUS



HEAP OF ROCKS.
(Detailed Geology.)

ROCK CHIP ASSAY RESULTS. ppm.

	Cu	Pb	Zn	Ag	Ba	Au.
1	13	230	110	<1	1620	0.01
2	43	96	52	1	280	<0.005
3	10	770	120	1	640	<0.005
4	28	345	180	<1	1400	0.005
5	25	910	155	1	810	<0.005
6	13	365	140	<1	510	<0.005
7	16	295	35	<1	540	<0.005

5 cm

SCALE 1:500

Grid East 040° Magnetic (BL)

FIGURE 1

W. 1024 r-1
E.C.O.

024
01-2

ORPALS

GORMACK GRAPH PAPERS · CHRISTCHURCH N.Z. COS2X 40 cm x 28 cm x 2 mm.

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CARTER'S
(Detailed Geology)

ROCK CHIP ASSAY RESULTS

	Cu	Pb	Zn	Ag	Ba	Au.
1.	20	185	210	< 1	1600	< 0.005
8.	47	810	200	< 1	1760	< 0.005
3.	31	200	90	1	280	< 0.005
4.	13	175	170	< 1	1140	< 0.005

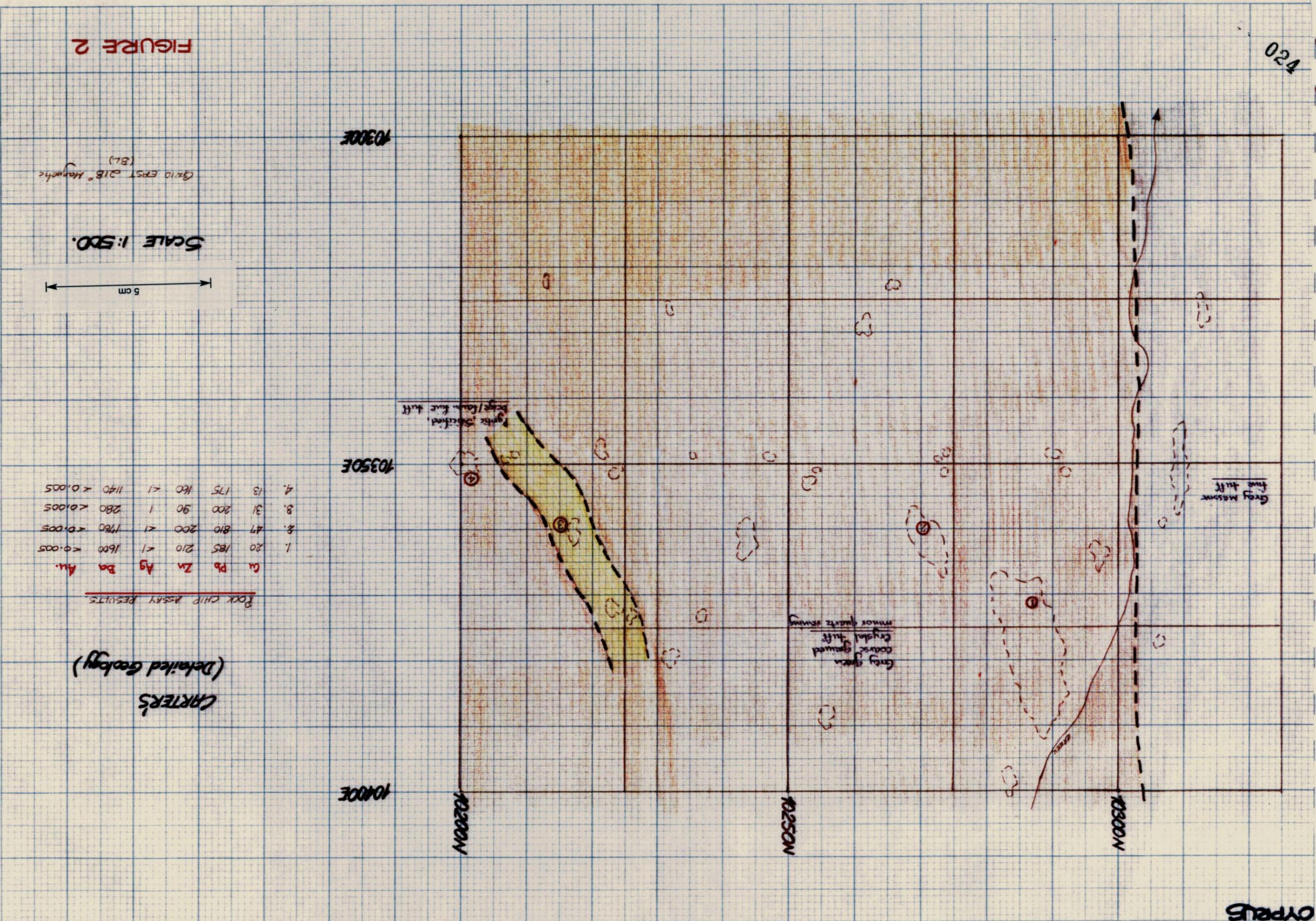
10350E

10300E

SCALE 1:500.

5 cm

GRID EAST 218° Magnetic
(BL)



CYPRUS

SPEELER CREEK GRID.
(Detailed Geology)



* ROCK CHIP GEOCHEMISTRY ppm

	Cu	Pb	Zn	Ag	Ba	Au.
1	16	20	42	<1	870	<0.005
2	18	190	200	<1	1000	<0.005
3	37	750	70	<1	350	<0.005
4	37	130	125	<1	410	0.010
5	32	680	325	<1	1180	<0.005
6	33	250	145	<1	1260	<0.005
7	32	44	74	<1	15	0.035

5 cm

SCALE 1:500

Grid East 521 Magnetic (E.A.)

R. 484. F.3
025

FIGURE 3

MACKINTOSH EAST - PROPOSED DIAMOND DRILLHOLE DETAILS

Prospect: SPEELER CREEK

Proposed Hole Number: PDH-1

Anomaly Center: 11700E/9875N

Size: >500m

Depth: Approx 60m

Dip: 60°S?? Geology 70°N

Depth Extent: <100m??

Geochemistry: Acid volcanic sequence here overlain by Tertiary basalt, however 300m along strike to the east (quarry) are highly altered

Geology: sericite/chlorite, pyroclastics with disseminated pyrite assaying up to 315ppm lead (background 40-50ppm)

Access: Very good as new Cradle Mountain Link Road only 200m distant from drillsite, rest open button grass.

Length of Hole: 150 meters

10000 N.

9900N

9800N

9700

No geochemistry due to Basalt cover!!

PDH-1

Basalt cover

Basalt cover

* approximate topographic profile.

Cambrian

Predominantly Quartz crystal tuff
minor crystal lithic tuff.

approximate bedding dips
vary from 45° to 55°
(Geopex)

NB Quarry Altitudes
300m to NNE
020/65N, 030/59N

Quartz Feldspar Biotite Porphyry

CONDUCTOR

150m

FIGURE 4

* Perpendicular to Geology

Color Coordinates¹ 11700E - 9940N
azimuth¹ 132.5°
Declination¹ -45°

SPEELER CREEK
PDH-1 X-SECTION 11700E
1:1000 Scale

5 cm

120

MACKINTOSH EAST - PROPOSED DIAMOND DRILLHOLE DETAILS

Prospect: SPEELER CREEK

Proposed Hole Number: PDH-2

Anomaly Center: 10800E/9775N

Size: >400m

Depth: <100M

Dip: ??

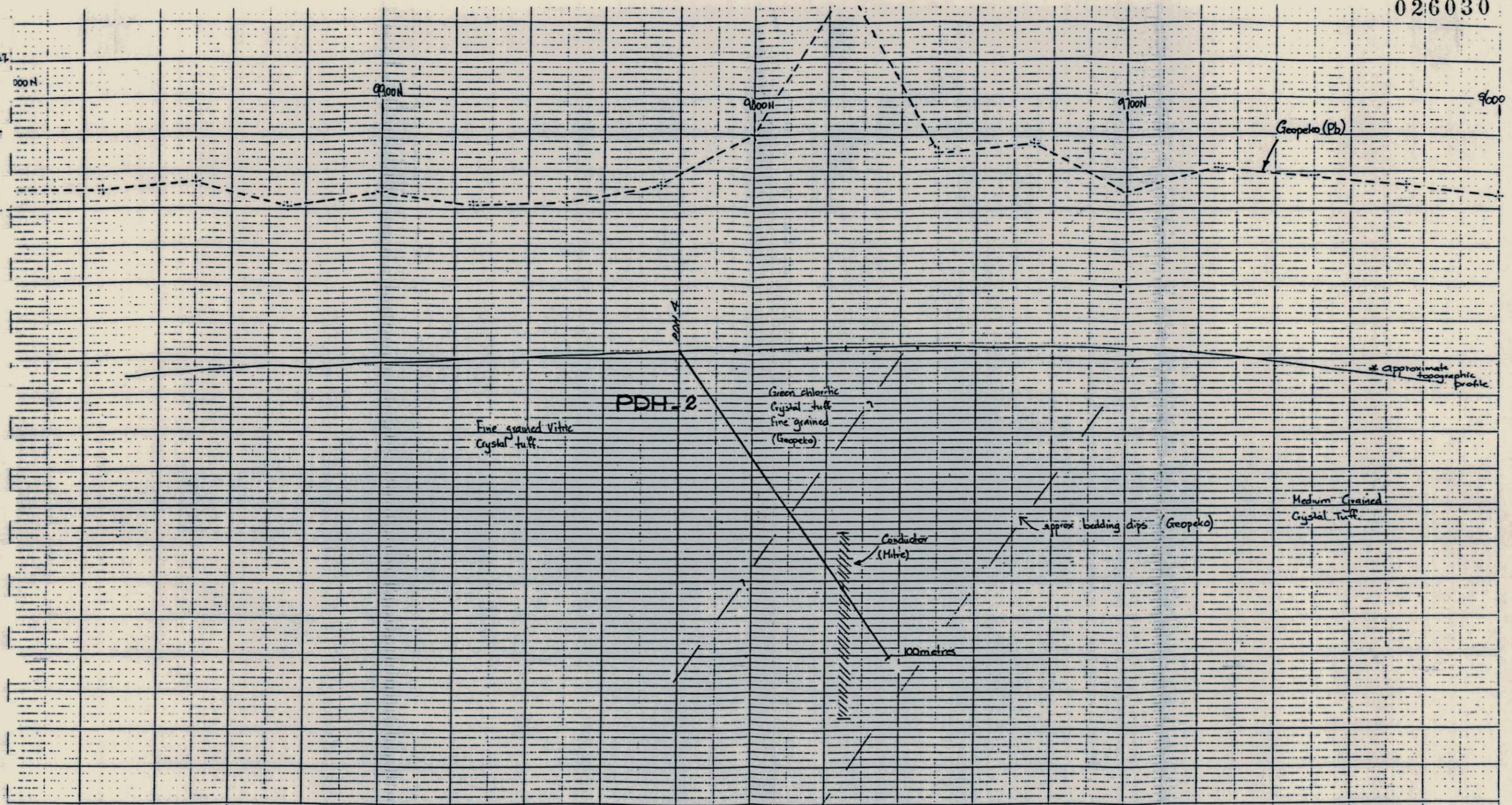
Depth Extent: ??

Geochemistry: Good geochemistry over 200 x 100m assaying >500ppm lead (up to 0.3% lead) and 50m assaying from 0.25 to 0.35g/t Au

Geology: Green, fine grained chloritic sausseritized tuffs (dacites/rhyolites)

Access: Not good, approx 1.5 kilometers from track into Carters Prospect but traverses mainly button grass and light scrub.

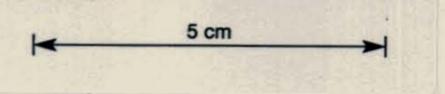
Length of Hole 100 meters



Collar coordinates: 10800E - 9820N
 azimuth 132.5°
 declination -55°

FIGURE 5

SPEELER CREEK
 PDH-2 X-SECTION 10800E
 1:1000 SCALE



620

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These two lines also returned low gold values as well as weak base metal values (0.1% lead, 0.06% zinc).

Geology: Poor outcrop again hindered the geological understanding however the bulk of the sequence consisted of massive crystal tuffs which contained a thin unit of pyritic siliceous fine tuff (Figure 2). The alteration is very weak (chloritic) and the rocks are quite strongly jointed. No bedding attitudes were observed.

Recommendations: Poor geochemistry and uninteresting geology led to the abandonment of PDH-2 and any further gold follow up.

Speeler Creek

Purpose: To conduct detailed bedrock soil and rock chip sampling surveys over a previously defined EM-37 response with coincident Peko geochemical zone to more accurately position a drillhole collar. Anomalous values returned from this initial survey led to further surveys being implemented to assess geochemical zones defined previously by Geopeko.

Geochemistry: Proposed drillhole PDH-4 (Report 449) was sited to intersect coincident lead-zinc geochemistry delineated by Geopeko and a minor EM-37 response. Cyprus resampled the drillhole section at ten meter intervals to help site the proposed hole more accurately (Appendices 7, 8 and 9). The results from this survey proved highly encouraging with a zone 50 meters wide assaying from 0.25 g/t gold to 0.35 g/t gold with associated high lead (0.22%) and zinc (0.08%) values. On the strength of these results, additional soil and rockchip sampling surveys were undertaken on lines 50 meters and 100 meters east and west of the original section. The anomalous zone was immediately closed off to the west and east.

Further Geopeko base metal zones throughout the grid were resampled at 20 to 25 meter spacings (Lines 10700E, 10900E,

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11000E and 11200E) with no anomalous gold values being returned.

Check assays of the initial values are currently in progress, however infill sampling and sampling of delineated base metal zones were completed on the strength of the original results.

No geochemical work was undertaken at PDH-3 (Report 449) due to the blanketing basalt cover.

Geology: The sequence at PDH-4 (Figure 3) is characterized by moderately sausseritized, chloritic and pyritic (minor galena/sphalerite) fine grained crystal tuffs overlain by brittle fractured massive porphyritic rhyolites and underlain by coarse grained quartz crystal tuffs. Bedding attitudes average around 55° to the north. It should be noted outcrop was scarce in the immediate area of the proposed hole, however float where possible was used to fill in some of the geological gaps.

As stated previously the geology at PDH-3 is covered by basalt and has precluded geochemical evaluation of the target zone. Mapping along strike to the east however has outlined a sequence of bedded fine tuffs and altered pyritic pyroclastics and tuffs (DMR quarry approximately 300 meters to northeast).

Recommendations: A 100 meter drillhole PDH-2 is planned to test the coincident base metal and geophysical (EM-37) response on Line 10800E (Enclosure 1) should the check assays confirm the original results.

A second hole of 150 meters (PDH-1) on Line 11700E will test the highly anomalous conductor delineated from the previous EM-37 survey. Should this hole prove encouraging a 250 meter diamond hole down plunge will also be drilled.

Regional Work

Four further traverses (A, B, C and D - Appendices 10, 11 and 12)

totalling 500 meters were surveyed over base metal anomalies previously delineated by Paringa (Enclosure 1). The zones were sampled to check for possible gold mineralization associated with the lead and zinc as discovered at Speeler and Heap of Rocks.

Traverses A and B are located to the northeast of Carters grid and returned background gold values only. Traverse C is found just off the western position of the Speeler Creek grid with traverse D located to the southeast of the grid near the head waters of the Iris River. Both traverses C and D proved to have background gold values only. Base metal values were also weak to moderate in tenor.

Recommendations: No further follow-up surveys to be undertaken in the vicinity of traverses A to D.

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EXPLORATION POTENTIAL

Surveys to date have confirmed the highly geochemically anomalous volcanic and epiclastic sequences which outcrop poorly throughout the licence. The sequence is considered to have excellent potential for hosting a volcanogenic exhalative base metal deposit with reserves of 20 million tonnes grading +20% combined lead and zinc with significant gold and silver credits.

There is subordinate potential for volcanic hosted gold deposits as the sampling to date has defined zones of elevated geochemistry to 0.4 g/t gold. It should be also noted gold results were obtained from only one in every four samples from Geopeko's stream sediment sampling program.

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PROPOSED PROGRAM AND BUDGET

Stage 1

Five hundred meters of diamond drilling is required to evaluate the two anomalous zones delineated by the EM-37 and close spaced soil and rockchip geochemical surveys. Initially two holes are planned

PDH-1	9940N:11700E	-45°	150 meters
PDH-2	9820N:10800E	-55°	100 meters

A further 250 meter hole is planned should encouragement be forthcoming from PDH-1 (down plunge). Downhole geophysics will be run to test for possible off-hole conductors.

Minor bulldozing will be necessary to gain access to both drill pads, however it is understood that in compliance with Mines

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Department regulations, all such excavations shall be returned where possible to a condition capable of regeneration. Such excavations would need Mines Department approval and where possible, Mines Department personnel should inspect the areas prior to the program's completion.

The proposed Stage 1 program has a budget of \$100,000.

Stage 2

Should encouragement be forthcoming from the initial program a second budget of \$100,000 will be submitted to conduct further drilling surveys.

PROPOSED BUDGET

PART EL 2/70 - MACKINTOSH EAST

Salaries, Wages, Benefits	10,000
Drafting	4,500
Travel	1,500
Fuel	1,000
Communications	500
Cookery and Lodgings	7,500
Equipment Rental	1,000
Drilling (500 meters at \$80)	40,000
Contractors (Dozing)	5,000
Assays	5,000
Consultants	5,000
Field Supplies	1,500
Freight	1,000
Geophysics (downhole EM)	7,000
Miscellaneous	500

	91,000
Overhead	9,000

	\$100,000
	=====

Signed P A Jones

for Phil Jones and Associates

CYPRUS MINERALS AUSTRALIA COMPANY

EXPENDITURE FOR 6 MONTHS DECEMBER 1, 1985 TO MAY 31, 1986

EXPLORATION ON MACKINTOSH EAST EL 2/70

Salaries and Wages	3,876.08
Drafting	4,546.19
Cookery	819.66
Field Supplies	207.99
Freight	443.30
Travel	663.97
Communications	352.61
Geophysics	250.00
Consultants/Contractors	4,991.22
Assays	3,027.70
Equipment Operation & Maintenance	1,605.48
Property Payments	<u>775.00</u>
	21,559.20
Overhead	<u>2,155.92</u>
	<u>23,715.12</u>



T.J. CONQUEST

ACCOUNTANT

TJC.DA

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APPENDICES

AU

HEAP OF ROCKS.
1:2,500
Scale.

5 cm

9500E
9600E
9700E
9800E
9900E
10000E
10100E

10400 N

10300 N

10200 N

10100 N

10000 N

161560	<0.005	161551	0.005	161508	-
161561	<0.005	161552	0.005	161507	-
161562	<0.005	161553	0.020	161506	-
161563	<0.005	161554	0.020	161505	-
161564	<0.005	161555	0.015	161504	0.005
161565	<0.005	161556	0.005	161503	0.005
161566	<0.005	161557	0.005	161502	0.005
161567	<0.005	161558	0.040	161501	0.005
161568	0.010	161559	0.010	161500	0.005
161031	0.015	161046	0.005	161499	0.005
161031	0.4	161045	0.05	161498	0.005
161030	0.005	161044	0.01	161497	0.005
161029	0.005	161043	0.025	161496	-
161028	0.005	161042	-	161495	-
161027	-	161041	-	161494	-
161026	<0.005	161040	0.025	161493	-
				161492	-
				161491	-
				161490	-
				161489	-
				161488	-
				161487	-
				161486	-
				161485	-
				161484	-
				161483	-
				161482	-
				161481	-
				161480	-
				161479	-
				161478	-
				161477	-
				161476	-
				161475	-
				161474	-
				161473	-
				161472	-
				161471	-
				161470	-
				161469	-
				161468	-
				161467	-
				161466	-
				161465	-
				161464	-
				161463	-
				161462	-
				161461	-
				161460	-
				161459	-
				161458	-
				161457	-
				161456	-
				161455	-
				161454	-
				161453	-
				161452	-
				161451	-
				161450	-
				161449	-
				161448	-
				161447	-
				161446	-
				161445	-
				161444	-
				161443	-
				161442	-
				161441	-
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				161434	-
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				161432	-
				161431	-
				161430	-
				161429	-
				161428	-
				161427	-
				161426	-
				161425	-
				161424	-
				161423	-
				161422	-
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				161419	-
				161418	-
				161417	-
				161416	-
				161415	-
				161414	-
				161413	-
				161412	-
				161411	-
				161410	-
				161409	-
				161408	-
				161407	-
				161406	-
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				161404	-
				161403	-
				161402	-
				161401	-
				161400	-

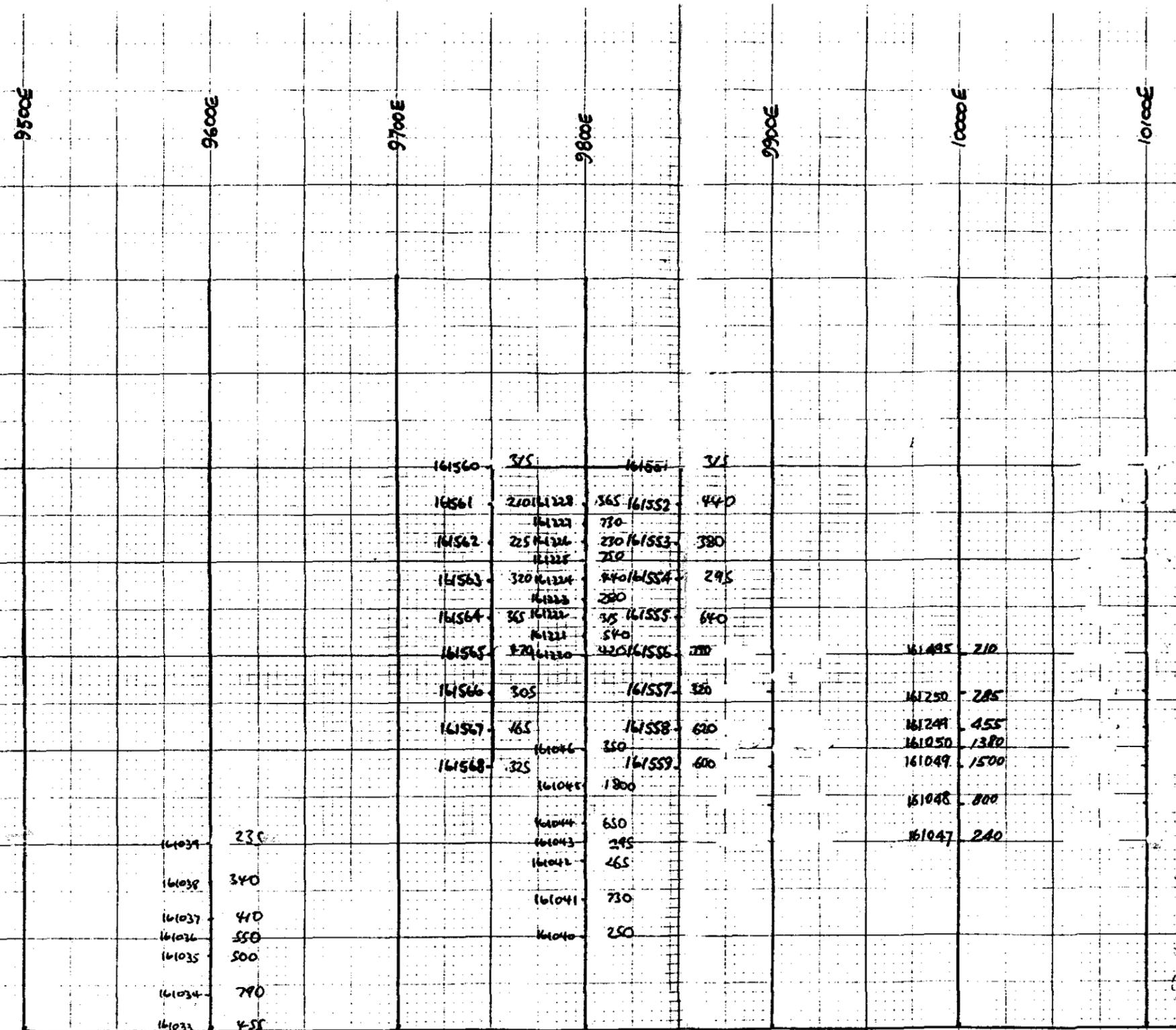
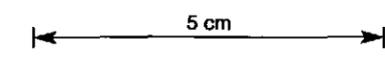
NOTE: - denotes <0.005

APPENDIX I

GOLD
SAMPLE NUMBER
LOCATIONS

680

HEAP OF ROCKS.
1:2,500
Scale.



161508	335	10800N
161507	530	
161506	200	
161505	140	
161504	350	
161503	475	
161502	700	10200N
161501	360	
161500	1800	
161499	3700	
161498	445	
161497	125	
161496	68	10100N

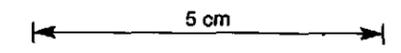
161039	190
161038	260
161037	415
161036	445
161035	360
161034	375
161033	105

APPENDIX 2

LEAD
SAMPLE NUMBER
LOCATIONS

030

HEAP OF ROCKS.
1:2,500
Scale.



9500E 9600E 9700E 9800E 9900E 10000E 10100E

10400 N

10300 N

10200 N

10100 N

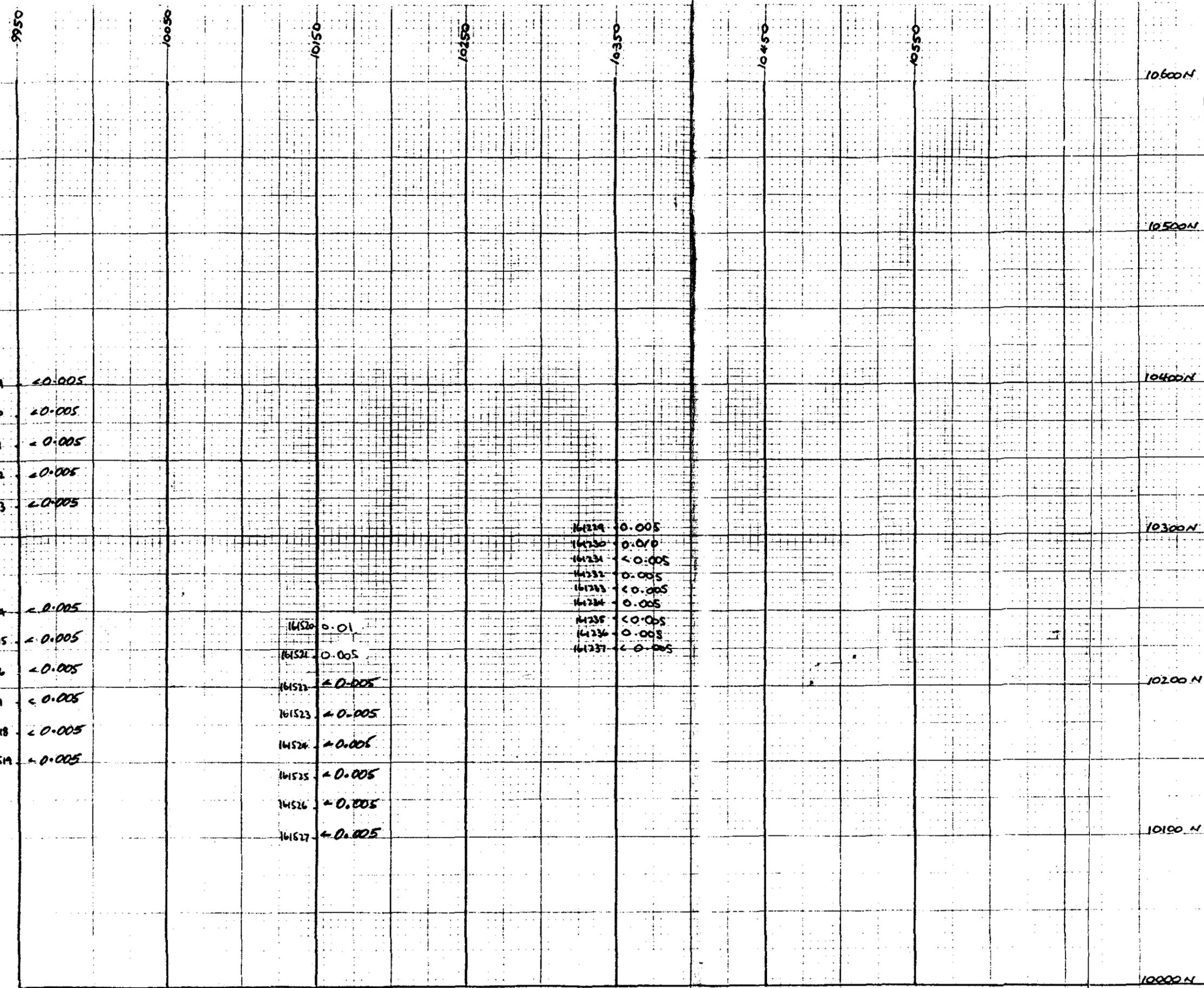
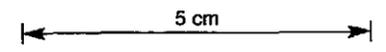
10000 N

161036	860	161035	940	161046	610	16129	610	16188	120	10300 N
161031	810	161038	950	161043	160	16129	185	161507	170	
161030	155	161037	830	161045	195	16129	610	161506	54	
161029	600	161036	650	161044	40	16129	495	161505	68	
161028	395	161035	215	161043	64	16129	465	161504	78	
161027	390	161034	435	161042	550	16129	710	161503	66	
161026	220	161033	395	161041	27	16129	94	161502	190	10200 N
				161040	27	16129		161501	52	
						16129		161500	395	
						16129		161499	195	
						16129		161498	285	
						16129		161497	66	
						16129		161496	13	10100 N

0470

APPENDIX 3

ZINC
SAMPLE NUMBER
LOCATIONS



APPENDIX 4

SAMPLE NUMBER
 LOCATIONS

GOLD

04270

CARTERS GRID
1:2,500
SCALE

5 cm

9950

10000

10150

10200

10350

10400

10550

10600N

10500N

10400N

10300N

10200N

10100N

10000N

161509	120
161510	125
161511	84
161512	98
161513	185

161514	375
161515	195
161516	115
161517	110
161518	390
161519	390

161520	910
161521	400
161522	200
161523	485
161524	990
161525	155
161526	170
161527	135

161229	410
161230	320
161231	470
161232	405
161233	395
161234	430
161235	180
161236	255
161237	92

APPENDIX 5

SAMPLE NUMBER
LOCATIONS

LEAD

340

Zn
CARTERS GRID
1:2,500
Scale.

5 cm

0566

10050

10150

10250

10350

10450

10550

10600N

10500N

10400N

10300N

10200N

10100N

10000N

161509 52
161510 43
161511 56
161512 27
161513 42

161514 110
161515 71
161516 195
161517 84
161518 240
161519 425

161520 415
161521 630
161522 330
161523 160
161524 52
161525 38
161526 42
161527 49

161229 64
161230 205
161231 305
161232 280
161233 210
161234 105
161235 220
161236 110
161237 115

APPENDIX G

SAMPLE NUMBER
LOCATIONS

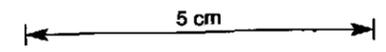
ZINC

04A

7M
SPEELER CREEK
1:2,500
Scale.

026046

10100N



Base
Line.

10000N

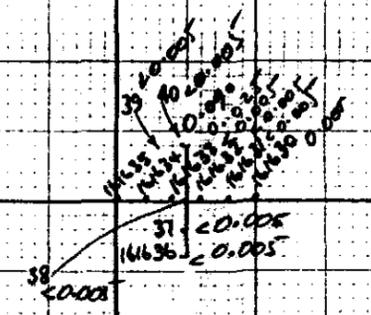
9900N

9800N

9700N

9600N

9500N



161577 < 0.005	161578 = 0.005	161587 < 0.005	161604 < 0.005
161576 < 0.005	161579 < 0.005	161588 < 0.005	161603 < 0.005
161575 < 0.005	161580 < 0.005	161589 < 0.005	161602 < 0.005
161574 < 0.005	161581 < 0.005	161590 < 0.005	161601 < 0.005
161573 < 0.005	161582 < 0.005	161591 < 0.005	161600 < 0.005
161572 < 0.005	161583 < 0.005	161592 < 0.005	161599 < 0.005
161571 < 0.005	161584 < 0.005	161593 < 0.005	161598 < 0.005
161570 < 0.005	161585 < 0.005	161594 < 0.005	161597 < 0.005
161569 < 0.005	161586 < 0.005	161595 < 0.005	161596 < 0.005
161611 < 0.005			
161612 < 0.005			
		161610 < 0.005	
		161609 < 0.005	
		161608 < 0.005	
		161607 < 0.005	
		161606 < 0.005	
		161605 < 0.005	
		161619 < 0.005	
		161617 < 0.005	
		161616 < 0.005	
		161615 < 0.005	
		161614 < 0.005	
		161613 < 0.005	
			161624 < 0.005
			161623 < 0.005
			161622 < 0.005
			161621 < 0.005
			161620 < 0.005
			161619 < 0.005
			161617 < 0.005
			161616 < 0.005
			161615 < 0.005
			161614 < 0.005
			161613 < 0.005
			161627 < 0.005
			161629 < 0.005
			161628 < 0.005
			161626 < 0.005
			161625 < 0.005

APPENDIX 7

SAMPLE NUMBER
LOCATIONS

GOLD

045

10600E

10700E

10750E

10800E

10850E

10900E

11000E

11100E

11200E

SPEELER CREEK

1:2,500 Scale.

10100N

5 cm

Base Line.

10000N

9900N

9800N

9700N

9600N

9500N

10600E

10700E

10750E

10800E

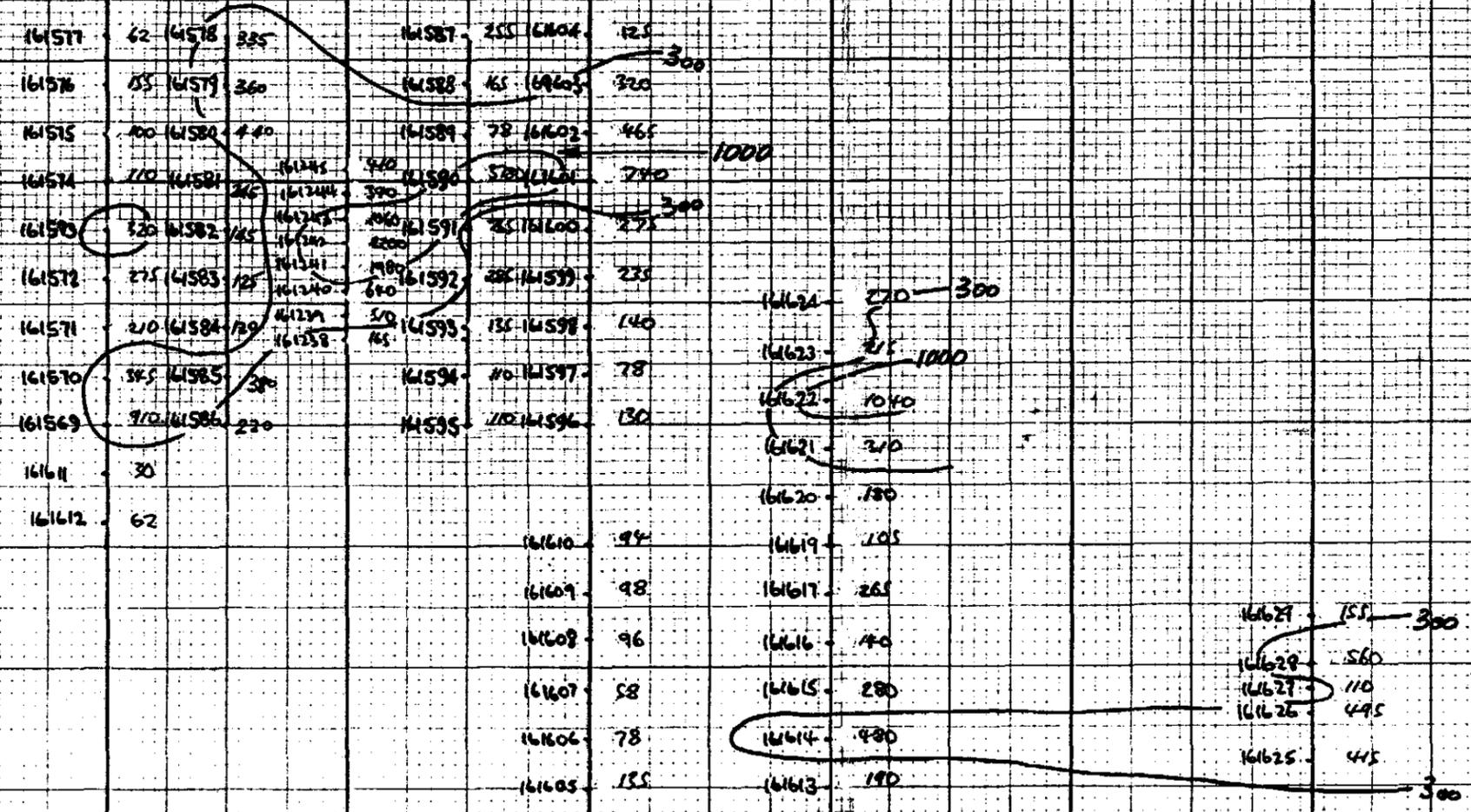
10850E

10900E

11000E

11050E

11200E



APPENDIX B

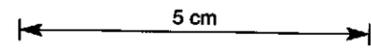
SAMPLE NUMBER LOCATIONS

LEAD

WHEELER CREEK

1:2,500 Scale.

10100N.



Base Line.

10000N

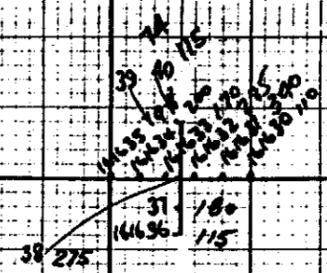
9900N

9800N

9700N

9600N

9500N



16157	10	16158	62	16157	29	16160	570
16156	110	16157	160	16158	29	16160	190
16155	45	16158	230	16159	45	16160	120
16154	66	16158	220	16159	110	16160	500-900
16153	35	16158	120	16159	110	16160	500-900
16152	92	16158	64	16159	84	16160	175
16151	66	16158	62	16159	60	16160	143-100
16150	25	16158	82	16159	74	16160	34
16149	290	16158	175	16159	205	16160	80
16148	20		100				100
16142	52						

16161	104
16163	185
16162	115
16161	125
16160	48
16161	115
16161	28
16161	140
16165	58
16164	120
16163	96

16161	135
16162	98
16162	58
16162	115
16162	335

APPENDIX 9

SAMPLE NUMBER LOCATIONS

ZINC

1047

10600E

10700E

10750E

10800E

10850E

10900E

11000E

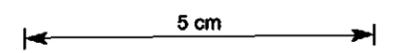
11050E

11200E

Au

RECONNAISSANCE TRAVERSES
A, B, C, AND D.

1:2500
Scale



161528 - 000N
 161529 -
 161530 0.005
 161531 -
 161532 - 100N
 161533 -
 161534 -
 161535 0.01
 161536 0.005 200N

161537 - 000N
 161538 -
 161539 -
 161540 -
 161541 - 100N

161542 - 000N
 161543 -
 161544 -
 161545 -
 161546 0.005
 161547 - 100N

161548 - 000N
 161549 -
 161550 -
 161551 -
 161552 100AS

TRAV A.
CARTERS AREA

TRAV B.
CARTERS AREA

TRAV C
SPEELER AREA

TRAV D
IRIS RIVER AREA

NOTE: - denotes <0.005

APPENDIX 10

SAMPLE LOCATIONS.

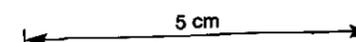
GOLD

870

P_b

RECONNAISSANCE TRAVERSES
A, B, C, AND D.

1:2500
Scale



161528 36 000M
161529 58
161530 52
161531 260
161532 250 100M
161533 285
161534 295
161535 185
161536 98 200M

161537 120 000M
161538 105
161539 30
161540 48
161541 225 100M

161542 72 000M
161543 96
161544 140
161545 165
161546 40
161547 180 100M

161548 200 000M
161549 130
161550 90
161541 200
100MS

TRAV A.
CARTERS AREA

TRAV B.
CARTERS AREA

TRAV C
SPEELER AREA

TRAV D
IRIS RIVER AREA

APPENDIX 11

SAMPLE LOCATIONS.

LEAD

30

051



The Australian
Mineral Development
Laboratories

amdel

3/786/0 - AC 3764/86
SPT 102/86

19 March 1986

NATA CERTIFICATE

Flemington Street, Frewville,
South Australia 5063
Phone Adelaide (08) 79 1662
Telex AAB2520

Please address all
correspondence to
P.O. Box 114 Eastwood
SA 5063
In reply quote:

Mr. P. Jones,
Cyprus Minerals Australia Company,
Saddle Road,
KETTERING TASMANIA 7155

APPENDIX 13

REPORT AC 3764/86

YOUR REFERENCE:

Order Number E16964, Despatch 2331

REPORT COMPRISING:

Cover Sheet
Page 1
Pages X1 - X3
Pages G1 - G3

DATE RECEIVED:

10 March 1986

NOTE:

Sample 152800 was received but not listed.

Head Office:
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Telex: Amdel AAB2520
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Thebarton, S.A.
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Melbourne, Vic.
Telephone (03) 645 3093
Perth, W.A.
Telephone (09) 325 7311
Telex: Amdel AA94893
Sydney, N.S.W.
Telephone (02) 439 7735
Telex: Amdel AA20053
Townsville
Queensland 4814
Telephone (077) 75 1377

D. Patterson
Manager, Quality Control
& Methods Development
Applied Sciences Group

cc Cyprus Minerals Australia Company,
P.O. Box 493,
NORTH SYDNEY N.S.W. 2060

ij



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X

052

026053

Report AC 3764/86
Page 1ANALYSIS
g/tonne

SAMPLE MARK	GOLD Au						
161551	0.005	161574	0.010	161597	<0.005	161620	<0.005
552	0.005	575	<0.005	598	<0.005	621	<0.005
553	0.020	576	<0.005	599	<0.005	622	<0.005
554	0.020	577	<0.005	600	0.010	623	0.005
555	0.015	578	<0.005	601	<0.005	624	0.005
556	0.005	579	<0.005	602	<0.005	625	<0.005
557	0.005	580	<0.005	603	<0.005	626	<0.005
558	0.040	581	<0.005	604	<0.005	627	<0.005
559	0.010	582	<0.005	605	<0.005	628	0.010
560	<0.005	583	<0.005	606	<0.005	629	<0.005
561	<0.005	584	<0.005	607	<0.005	630	0.005
562	<0.005	585	<0.005	608	<0.005	631	<0.005
563	<0.005	586	<0.005	609	<0.005	632	<0.005
564	<0.005	587	<0.005	610	<0.005	633	<0.005
565	<0.005	588	<0.005	611	<0.005	634	0.025
566	<0.005	589	<0.005	612	<0.005	635	0.090
567	<0.005	590	<0.005	613	0.010	636	<0.005
568	0.010	591	<0.005	614	<0.005	637	<0.005
569	<0.005	592	<0.005	615	<0.005	638	<0.005
570	<0.005	593	<0.005	616	<0.005	639	<0.005
571	<0.005	594	<0.005	617	<0.005	640	<0.005
572	<0.005	595	<0.005	618	<0.005	152800	2.8
573	<0.005	596	<0.005	619	<0.005		

Method: A7/2

D

053

026054



corn medical

Analysis code X3

Report AC 3764/86

Page X1

NATA Certificate

Results in ppm

Sample	As	Pb
161551	25	315
161552	37	440
161553	22	380
161554	11	295
161555	16	640
161556	32	790
161557	28	320
161558	9	620
161559	16	600
161560	56	315
161561	14	210
161562	41	225
161563	29	320
161564	25	365
161565	36	470
161566	12	305
161567	19	165
161568	20	325
161569	45	910
161570	15	345
161571	25	210
161572	25	275
161573	29	320
161574	12	110
161575	25	100
161576	11	155
161577	7	62
161578	4	335
161579	9	360
161580	12	440
161581	70	245
161582	41	145
161583	10	125
161584	6	120
161585	12	380
161586	20	220
161587	18	255
161588	10	165
161589	4	78
161590	<2	3780

Detn limit	(2)	(4)
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054
annndicell

Analysis code X3

Report AC 3764/86

Page X2

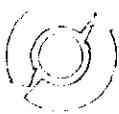
NATA Certificate

Results in ppm

Sample	As	Pb
161591	23	265
161592	5	285
161593	6	135
161594	6	110
161595	17	110
161596	8	130
161597	9	78
161598	7	140
161599	13	235
161600	8	275
161601	11	740
161602	24	465
161603	5	320
161604	37	125
161605	8	135
161606	3	78
161607	9	58
161608	7	96
161609	9	98
161610	9	94
161611	<2	30
161612	3	62
161613	3	190
161614	47	480
161615	3	280
161616	6	140
161617	<2	265
161619	5	105
161620	30	180
161621	21	310
161622	42	1040
161623	10	215
161624	20	270
161625	62	415
161626	4	495
161627	17	110
161628	42	560
161629	17	155
161630	5	94
161631	23	475
Detn limit	(2)	(4)

⊕

055



environmental

026056

Analysis code X3

Report AC 3764/86

Page X3

NATA Certificate

Results in ppm

Sample	As	Pb
161632	7	84
161633	<2	78
161634	3	115
161635	<2	86
161636	15	225
161637	5	175
161638	9	135
161639	11	100
161640	8	125
161618	10	110
152800	670	5450
Detn limit	(2)	(4)

ⓧ

056



can.med.lab

026057

Analysis code A1/1.2

Report AC 3764/86

Page G1

NATA Certificate

Order No. E 16964

Results in ppm

Sample	Cu	Zn	Ag
161551	7	470	<1
161552	7	460	<1
161553	8	480	<1
161554	5	415	<1
161555	12	540	<1
161556	10	445	<1
161557	3	165	<1
161558	10	250	<1
161559	12	425	<1
161560	6	115	<1
161561	3	26	<1
161562	3	31	<1
161563	3	22	<1
161564	3	72	<1
161565	5	295	<1
161566	3	130	<1
161567	3	92	<1
161568	3	140	<1
161569	16	2900	<1
161570	7	125	<1
161571	10	66	<1
161572	13	82	<1
161573	9	135	<1
161574	9	66	<1
161575	11	45	<1
161576	8	110	<1
161577	2	10	<1
161578	5	62	<1
161579	10	160	<1
161580	13	230	<1
161581	21	220	<1
161582	19	120	<1
161583	10	64	<1
161584	7	62	<1
161585	5	82	<1
161586	11	175	<1
161587	7	29	<1
161588	9	210	2
161589	4	195	<1
161590	17	1040	1
Detn limit	(2)	(2)	(1)

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analytical

026058

Analysis code A1/1.2

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NATA Certificate

Order No. E 16964

Results in ppm

Sample	Cu	Zn	Ag
161591	20	110	<1
161592	17	84	<1
161593	6	60	<1
161594	9	74	<1
161595	11	105	<1
161596	8	80	<1
161597	10	34	<1
161598	7	43	<1
161599	21	175	<1
161600	6	98	<1
161601	11	350	<1
161602	7	130	<1
161603	34	190	<1
161604	88	310	<1
161605	2	47	<1
161606	<2	20	<1
161607	<2	47	<1
161608	<2	48	<1
161609	7	105	<1
161610	6	60	<1
161611	<2	20	<1
161612	2	52	<1
161613	8	96	<1
161614	7	120	<1
161615	<2	58	<1
161616	<2	140	<1
161617	<2	28	<1
161619	14	115	<1
161620	3	48	<1
161621	8	125	<1
161622	9	115	<1
161623	5	135	<1
161624	9	145	<1
161625	39	335	<1
161626	11	115	<1
161627	12	58	<1
161628	10	98	<1
161629	6	135	<1
161630	50	110	<1
161631	66	340	<1
Detn limit	(2)	(2)	(1)

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058



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Analysis code A1/1.2

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NATA Certificate

Order No. E 16964

Results in ppm

Sample	Cu	Zn	Ag
161632	15	285	<1
161633	16	170	<1
161634	6	200	<1
161635	8	98	<1
161636	19	115	<1
161637	86	180	<1
161638	21	275	<1
161639	14	74	<1
161640	39	115	<1
161618	16	230	<1
152800	485	4440	4
Detn limit	(2)	(2)	(1)

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In reply quote:

026060

amdel

3/397/0 - AC 4072/86
SPT 115/86

9 April 1986

NATA CERTIFICATE

Mr. P. Jones,
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"Ocean View",
Saddle Road,
KETTERING TASMANIA 7155

REPORT AC 4072/86

YOUR REFERENCE:

Despatch 2333
Order 16978

REPORT COMPRISING:

Cover Sheet
Pages G1 - G3

DATE RECEIVED:

2 April 1986

Approved Signatory
Manager, Chemistry Services:

Martin R. Hanckel

for Dr. William G. Spencer
General Manager
Applied Sciences Group

cc Mr. B. Roxburgh,
Cyprus Minerals Australia Company,
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ij

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060



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Analysis code A1/1,2
X3 A7/2

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NATA Certificate

Order No. 2333

Results in ppm

Sample	Cu	Zn	Ag	As	Pb	Au
161026	8	220	<1	9	105	<0.005
161027	13	390	<1	68	375	<0.005
161028	32	395	<1	200	360	0.005
161029	34	600	<1	38	445	<0.005
161030	6	155	<1	34	415	0.005
161031	8	810	<1	33	260	0.40
161032	5	860	<1	31	190	0.015
161033	25	395	<1	50	455	0.050
161034	16	435	<1	40	790	0.14
161035	8	215	<1	37	500	0.005
161036	13	650	<1	21	550	0.045
161037	11	830	<1	15	410	0.010
161038	9	950	<1	19	340	0.020
161039	9	940	<1	13	235	0.055
161040	3	27	<1	3	250	0.025
161041	20	550	<1	7	730	<0.005
161042	13	64	<1	19	265	<0.005
161043	11	160	<1	<2	295	0.025
161044	18	690	<1	17	650	0.010
161045	23	195	<1	18	1800	0.050
161046	5	90	<1	4	350	0.005
161047	7	94	<1	25	240	<0.005
161048	15	110	<1	66	800	<0.005
161049	41	465	<1	27	1500	<0.005
161050	36	495	<1	30	1380	<0.005
161249	27	610	<1	12	455	0.005
161250	10	185	<1	12	285	<0.005
161495	15	520	<1	7	210	<0.005
161496	14	13	<1	9	68	<0.005
161497	72	66	<1	230	125	0.005
161498	30	285	<1	5	445	0.005
161499	17	195	<1	<2	3700	0.005
161500	68	395	<1	46	1800	0.005
161501	5	52	<1	7	360	0.005
161502	15	190	<1	37	700	0.005
161503	10	66	<1	24	495	0.005
161504	54	78	<1	27	350	0.005
161505	84	68	<1	8	140	<0.005
161506	42	54	<1	10	200	<0.005
161507	20	170	<1	38	530	<0.005

Detn limit (2) (2) (1) (2) (4) (0.005)

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026062

 Analysis code A1/1,2
 X3 A7/2

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NATA Certificate

Order No. 2333

Results in ppm

Sample	Cu	Zn	Ag	As	Pb	Au
161508	11	120	<1	15	335	<0.005
161509	7	52	<1	10	120	<0.005
161510	8	43	<1	13	125	<0.005
161511	7	56	<1	15	84	<0.005
161512	7	27	<1	10	98	<0.005
161513	6	42	<1	13	185	<0.005
161514	8	110	<1	19	375	<0.005
161515	3	7	<1	19	195	<0.005
161516	21	195	<1	23	115	<0.005
161517	6	84	<1	23	110	<0.005
161518	14	240	<1	18	390	<0.005
161519	15	425	<1	17	390	<0.005
161520	18	415	<1	21	910	0.010
161521	24	630	<1	18	400	0.005
161522	21	330	<1	32	200	<0.005
161523	11	160	<1	14	485	<0.005
161524	28	58	<1	990	260	<0.005
161525	21	38	<1	46	155	<0.005
161526	34	42	<1	48	170	<0.005
161527	13	49	<1	46	135	<0.005
161528	17	28	<1	27	36	<0.005
161529	37	47	<1	36	58	<0.005
161530	31	35	<1	41	52	0.005
161531	18	50	<1	27	260	<0.005
161532	11	94	<1	22	250	<0.005
161533	22	100	<1	8	285	<0.005
161534	17	145	<1	62	295	<0.005
161535	35	62	<1	47	185	0.010
161536	38	78	<1	33	98	0.005
161537	3	64	<1	23	120	<0.005
161538	5	60	<1	19	105	<0.005
161539	8	26	<1	11	30	<0.005
161540	19	92	<1	14	48	<0.005
161541	17	335	<1	22	225	<0.005
161542	4	110	<1	14	72	<0.005
161543	16	74	<1	35	96	<0.005
161544	30	110	<1	135	140	<0.005
161545	42	115	<1	39	165	<0.005
161546	50	42	<1	110	40	0.005
161547	10	70	<1	15	180	<0.005

Detn limit (2) (2) (1) (2) (4) (0.005)

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Analysis code A1/1,2

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NATA Certificate

Order No. 2333

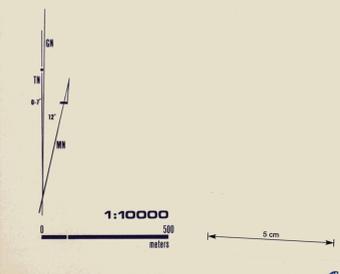
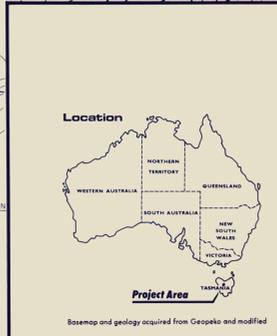
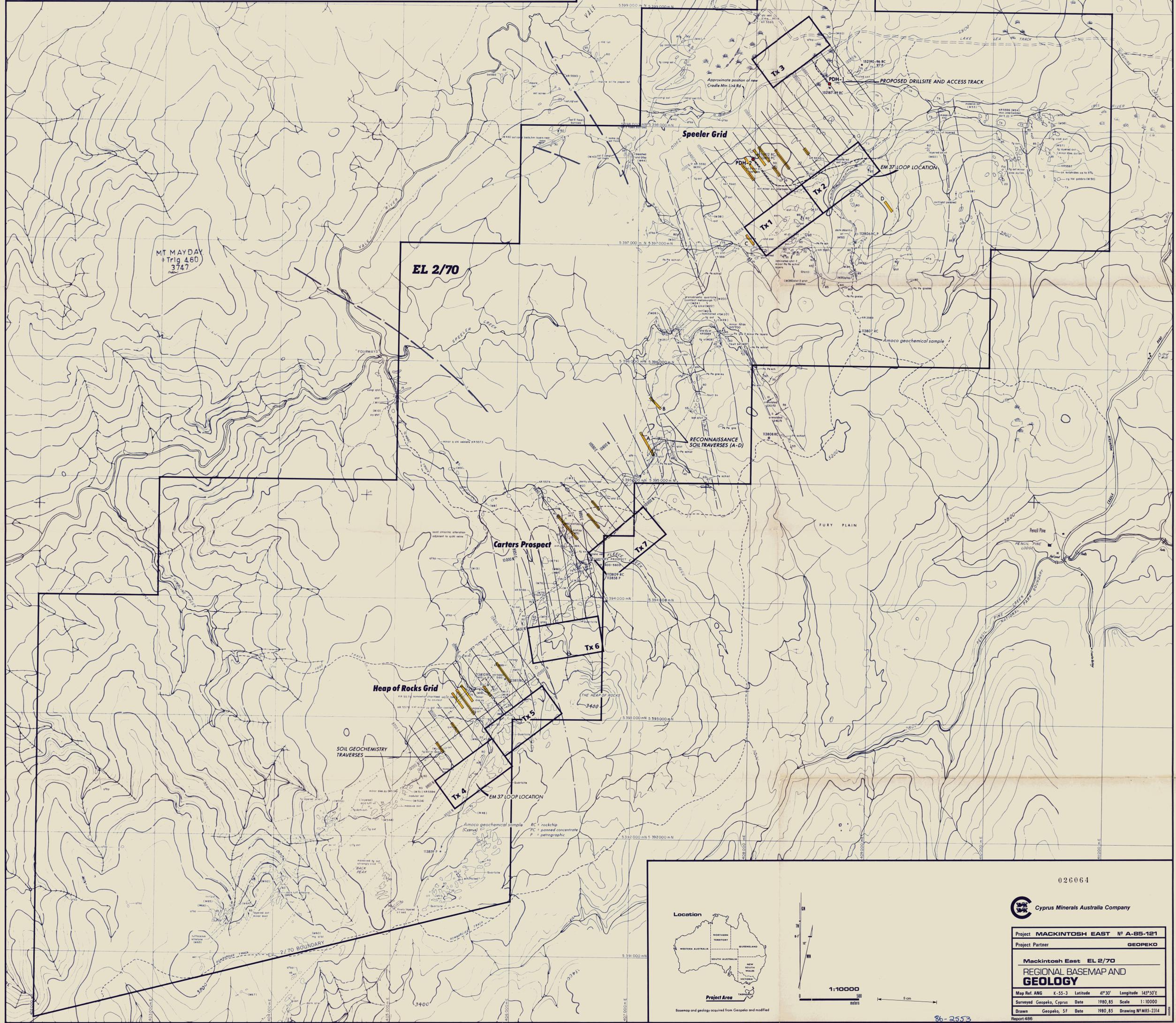
Results in ppm

Sample	Cu	Zn	Ag	As	Pb	Au
161548	34	56	<1	56	100	<0.005
161549	16	120	<1	27	130	<0.005
161550	18	195	<1	60	90	<0.005
161641	21	105	<1	26	200	<0.005
Detn limit	(2)	(2)	(1)	(2)	(4)	(0.005)

6902

- LEGEND**
- Geological Boundary**
- mapped
 - inferred
 - unconformity
 - inferred
 - boundary tertiary
 - outcrop boundary
 - float boundary
- Faults**
- mapped
 - inferred
 - strike-slip
 - strike/dip of lithological layering/foliation
 - strike/dip of flow layering in volcanic rock
 - strike/dip of schistosity (metamorphic foliation)
 - strike/dip of schistosity parallel to bedding/lithological layering
 - strike/dip of cleavage
 - cleavage vertical
- Miscellaneous**
- KR 5600 Rock sample location and number for geochemical analysis
 - (M66) Rock specimen location and number
 - Foot track and bombardier track
- strike/dip of prominent joints**
- strike/dip of vertical joints**
- minor fold axes (in folded foliation) with plunge**
- lineation (crenulation of metamorphic foliation)**

- GEOLOGICAL INTERPRETATION**
- Unit**
- 19-36 TERT. Basalt
 - 19-5 ORDO. Limestone, impure limy siltstone
 - 19-7 ORDO. Sandstone, conglomeratic sandstone
 - 19-21 C Quartz-feldspar-biotite porphyry - intrusive
 - 19-19 C Rhyolitic quartz-feldspar-biotite porphyry-extrusives
 - 19-28 C Rhyolitic quartz crystal tuff, minor crystal lithic tuff
 - 19-24 C Rhyolitic fine grained massive or laminated vitric tuffs
 - 19-17 C Fine grained volcanoclastic sediments
 - 19-70 PRE C Psammo-pelitic schist and quartzite



026064

Cyprus Minerals Australia Company

Project **MACKINTOSH EAST** No A-85-121

Project Partner **GEOPEKO**

Mackintosh East EL 2/70

REGIONAL BASEMAP AND GEOLOGY

Map Ref ANG E-55-3 Latitude 41°30' Longitude 145°50'E

Surveyed Geopko, Cyprus Date 1980,85 Scale 1:10000

Drawn Geopko, SF Date 1980,85 Drawing N°M85-2314

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