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EL 1513

NYLLOW HILL

PROGRESS AND FINAL REPORTS FOR THE PERIOD 2/9/88 TO 1/9/90

Submitted by

Helix Resources NL
1990

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PRIMARY INDUSTRIES AND RESOURCES SA

ENVELOPE 8103

TENEMENT: EL 1513 - Nyllow Hill Area.

TENEMENT HOLDER: Helix Resources N.L.

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Drill Samples (Held in SADME Core Libraries).

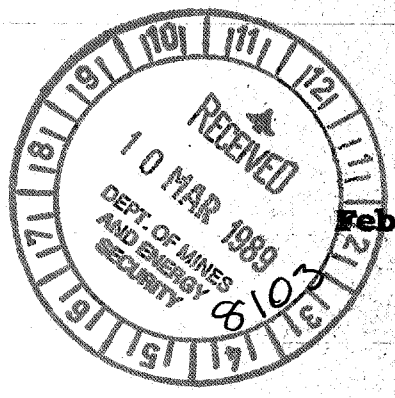
Hole No.	Sample Interval	Core Library
TRC1-8	Representative samples from most drill holes.	Glenside.

HELIX RESOURCES NL

Technical Report 2054

EL 1513, Tumby Bay, SA

Six Monthly Report for the Period
September 1988 - February 1989



A Martin
February, 1989

Distribution

SA Department Mines and Energy
S J Elliott
A R Martin
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1. INTRODUCTION

Exploration Licence 1513 is located on the east coast of Eyre Peninsula, approximately 50 km north of Port Lincoln (Fig 1).

The tenement includes the northern portion of the Lincoln Uplands which contains two circular ultramafic intrusive bodies. In the past these bodies have been investigated for Ni mineralisation (Flint, 1976) but to date no exploration for platinum group metals (PGM) mineralisation has been carried out.

This report contains a summary of the exploration activities carried out in the first six months the EL was held. No significant PGM results were obtained from the ultramafic bodies, but weakly anomalous results were gained from graphitic schists within the Hutchinson Group metasediments. Also significant Au results were obtained from some of the abandoned Cu-mines within the EL.

2. LOCATION AND ACCESS

Exploration Licence 1513 is situated in south-eastern Eyre Peninsula between the towns of Tumby Bay, in the south, and Pt Neill, in the north. The townships of Ungarra, Mt Hill, Lipson and Yallunda Flat are located within the Licence (Fig 1).

Access to the area is via the Lincoln Highway which joins Pt Augusta and Pt Lincoln and passes through the eastern portion of the EL, or via the sealed road between Tumby Bay and Cummins. Numerous unsealed roads and farm tracks allow good access within the licence.

Much of the area is open undulating country used for grazing and grain crops with native scrub confined to rocky hill tops. The Lincoln Uplands protrude into the south-western portion of the EL where the terrain consists of rolling hills with more common patches of native scrub.

3. TENURE

Exploration Licence 1513 was granted to Helix Resources NL on 2 September 1988 for a period of six months and has a total area of approximately 1215 sq kms.

Exclusion zones and prior titles within the EL are as follows:

- Res. G.G.2.9.82 a 1.8 sq km reserve over the Kapinka Falls area.
- Area 800 m inland from high water mark along coast.

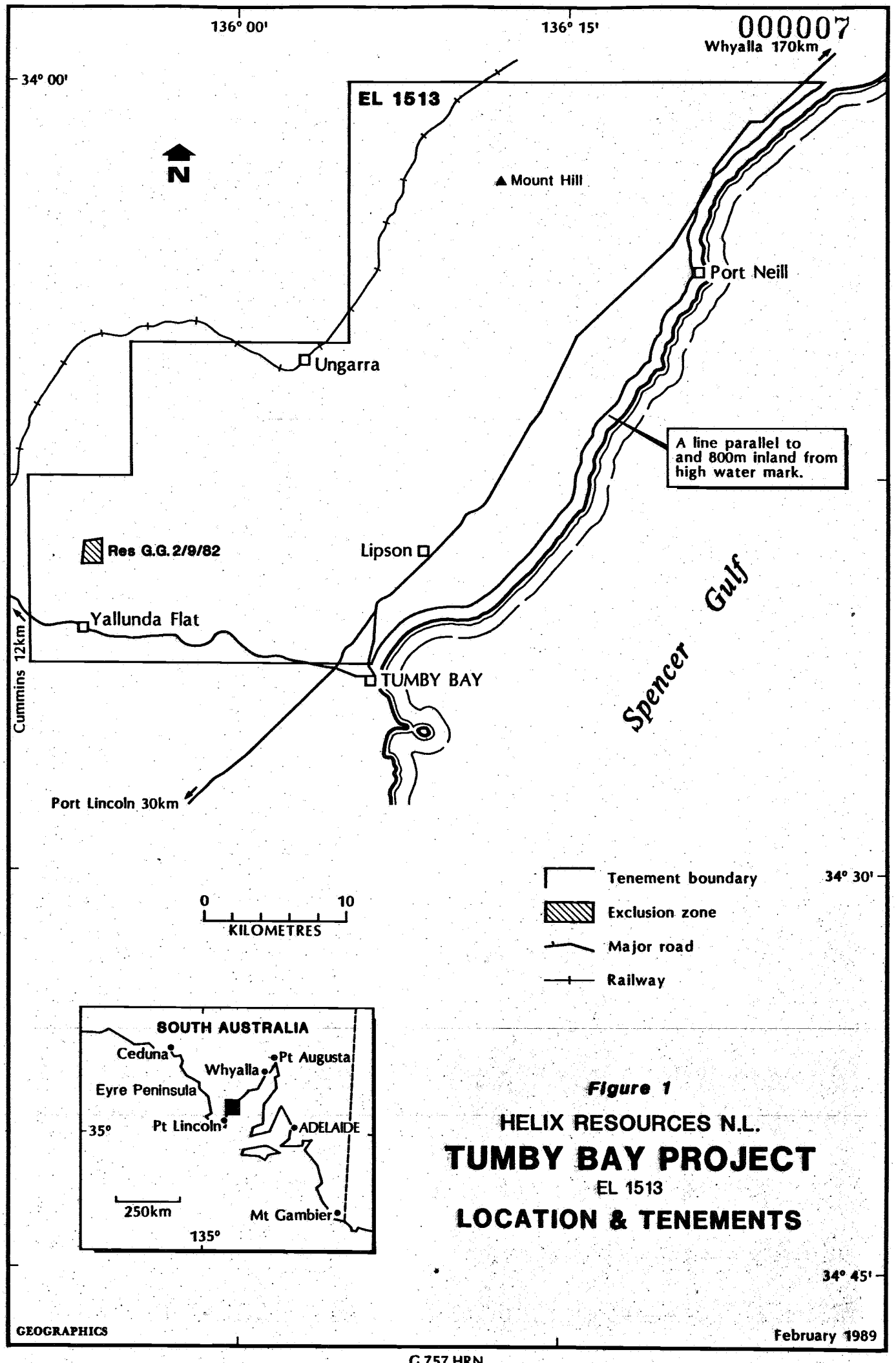


Figure 1

HELIX RESOURCES N.L.

TUMBY BAY PROJECT

EL 1513

LOCATION & TENEMENTS

GEOGRAPHICS

February 1989

G.757.HRN

4. GEOLOGY

4.1 Regional Setting

The southern Eyre Peninsula forms part of the Gawler Craton, an area consisting of a variety of Late Archaean to Middle Proterozoic basement lithologies. Southern Eyre Peninsula is comprised of three main tectonostratigraphic rock units. The oldest being a Late Archaean supracrustal sequence, the Sleaford Complex. The sequence was metamorphosed to granulite facies at about 2600 m.y. during the Sleafordian Orogeny, a deformational event which was accompanied by the intrusion of upper crustal granitoids known as the Dutton Suite.

A period of crustal extension between 2100 m.y. and 1850 m.y. resulted in the deposition of a thick sedimentary sequence known as the Hutchison Group. The group consists of, in ascending stratigraphic order, quartzite (with local calcsilicate), dolomitic marble, thin-bedded graphitic quartzite and banded iron formation, semipelitic schist, fine-grained garnetiferous gneiss, amphibolite, banded iron formation, and finally more schist (Parker and Lemon, 1982). Sedimentation ceased at about 1850 m.y. at the onset of the Kimban Orogeny.

The Kimban Orogeny is divided into three primary phases, termed D1, D2 and D3. D1 (1850 m.y.) was a phase of high grade metamorphism, upper amphibolite to granulite facies grade, which was accompanied by the intrusion of acid and basic igneous material comprising the Donnington Granitoid Suite. The second phase D2 (1780 m.y.), a period of isoclinal folding, imparted a pervasive layer parallel fabric on the rocks of the area and was also accompanied by high level acid intrusions. The final phase of deformation, D3 (1720 m.y.), produced a series of long, thin, intense north to north-easterly trending shear zones including the Kalinjala Mylonite Zone (KMZ). The D3 event was also accompanied by the intrusion of high level S-type granites, and resulted in upright open folding in the areas between the shear zones. All the intrusive rocks accompanying the Kimban Orogeny are loosely termed the Lincoln Complex, the third tectonostratigraphic rock unit seen on the southern Eyre Peninsula.

Fluviatile sands and conglomerates of the Blue Range Beds ore the only Middle Proterozoic rocks outcropping on southern Eyre Peninsular.

4.2 Prospect Geology

The distribution of basement lithologies within the Tumby Bay EL is controlled largely by Kimban Orogeny D3 structures, the most important of these being the Kalinjala Mylonite Zone. This sub-vertical zone of intense shearing is approximately 1 to 2 km wide and trends in a north-easterly direction along the eastern part of the EL broadly separating older synorogenic granitic gneisses in the east from Hutchison Group metasediments in the west. Parallel to the KMZ, to the west, are several smaller (<100 m wide) shear zones, along some of which outcrop thin thrust-slices of Lincoln Complex gneisses within the Hutchison Group.

The best exposures of Hutchison Group lithologies are seen in the Lincoln Uplands west of Tumby Bay where they abut the KMZ (Figs 2 & 3). Here the vertically dipping sequence has been sheared and is stratigraphically thinner than normal throughout the Peninsula. Because of the high degree of deformation no stratigraphic facing direction can be inferred but by analogy with other areas it is most probable that the sequence generally youngs to the west where the basal Warrow Quartzite is absent from the sequence. In addition to shearing the sequence has undergone isoclinal folding causing possible repitition of some portions and it is unlikely that a real stratigraphy is resolvable.

The Lincoln Complex gneisses to the east of the KMZ include a variety of acid granitic gneisses, the most common of these being a sheared medium-grained light pink-grey quartz feldspar biotite gneiss. Other common varieties include a grey coarsely megacrystic quartz feldspar biotite gneiss, pink-orange quartz feldspar gneiss and a grey fine-grained quartz feldspar biotite gneiss. The granitic gneisses are commonly cut by dark grey or black fine-grained dolerite dykes. These dykes show some evidence of shearing although not to the same extent as the granitic gneisses and are generally oriented sub-parallel to the dominant gneissic fabric.

On the northern boundary of the tenement, 2 kms north of Mount Hill railway siding, unmetamorphosed arenites represent the most southerly extent of outcrop of the Blue Range Beds. The sequence consists of a basal pebble bed grading up into pebbly and gritty sandstones. Also present are cross-bedded medium to very coarse grained sandstones which exhibit a pervasive mauve and white mottling with liesegang bands common. The sediments are interpreted to represent a Middle Proterozoic fluvial environment (Flint and Parker, 1981).

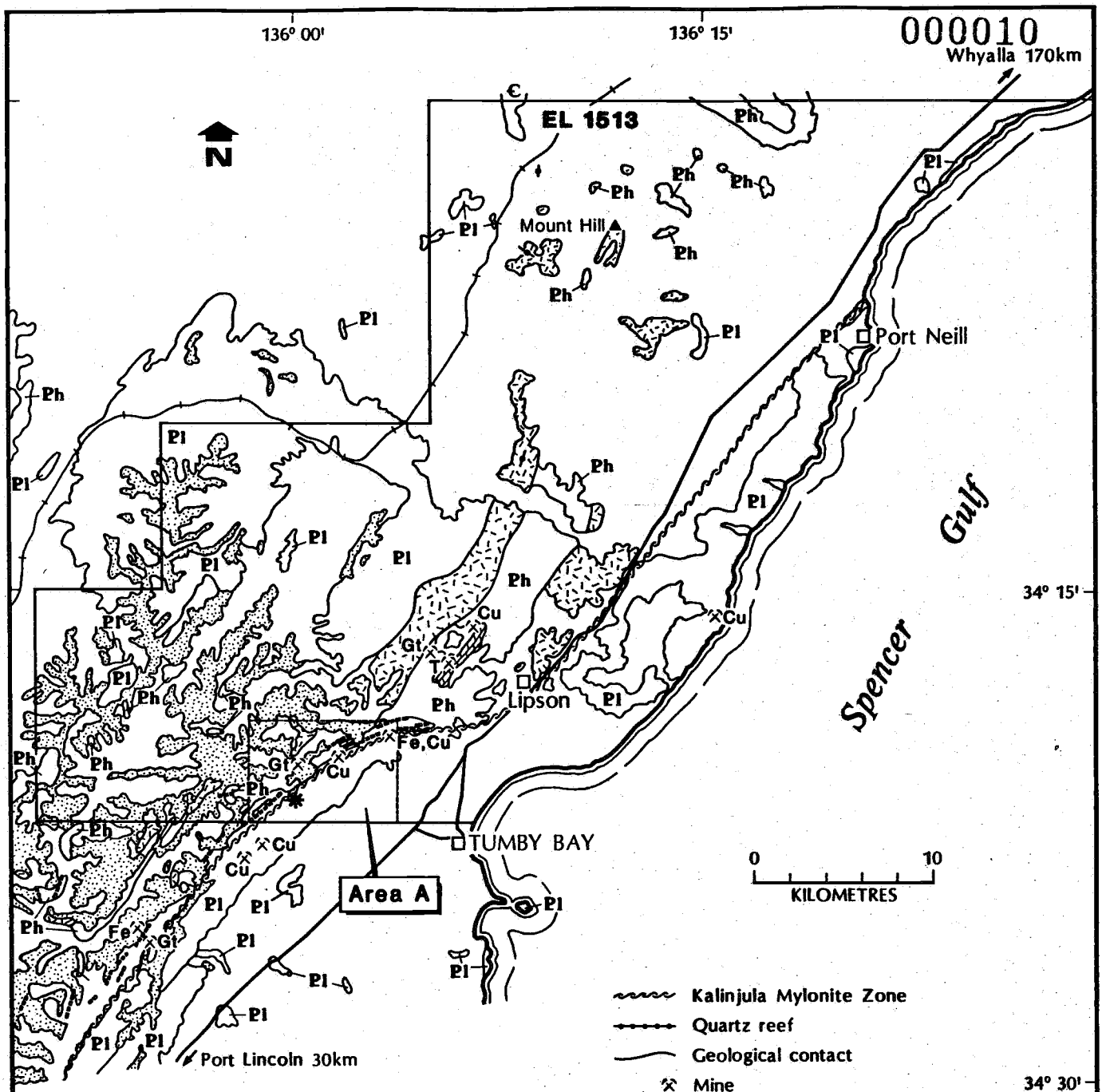


Figure 2

HELIX RESOURCES N.L.

TUMBY BAY PROJECT

EL 1513

GEOLOGY

GEOGRAPHICS

February 1989

G.758.HRN

IRON MOUNT MINE

TUMBY BAY MINES

Pt LINCOLN MINES

EL 1513

Water Tank

Waterfall Creek

Mine Creek

Coonta Creek

BRATTEN WAY

Limit of Outcrop

Tumby 4km

REFERENCE

- Ultramafic rocks.
- Pyroxenite.
- Gabbro.
- Diorite.
- Quartz vein.

Early Proterozoic

HUTCHISON GROUP

- Pl — LINCOLN COMPLEX: granitic gneisses commonly mylonitized, contains abundant amphibolite dykes.
- Phc — Cook Gap Schist: quartz feldspar biotite ±garnet gneisses.
- Phk — Katunga Dolomite: dolomitic marble, banded calc-silicate.
- Phm — Mt Shannon Iron Formation: haematitic quartzite, iron formation.
- Phg — Graphitic schist.
- Phs — Amphibolite gneiss.
- Phw — Warrow Quartzite.
- Ph — Undifferentiated, commonly deeply weathered metasediments, often with a lateritic capping.

- Structural boundary
- Fault (inferred)
- Geological contact
- Geological contact (inferred)
- Outcrop boundary
- Dip and strike of mylonitic fabric
- Mylonitic fabric and lineation
- Vertical mylonitic fabric
- Vertical spaced cleavage
- Mesoscopic fold axis with vergence
- Exploration Licence boundary
- Major road
- Minor road or track
- Drainage (intermittent)
- Open cut mine
- Abandoned mine

Cu Copper Fe Iron Gt Graphite Kn Kaolin M Marble

N

RF 1:10 000

0 200 400 600 800 1000 METRES

8103-1

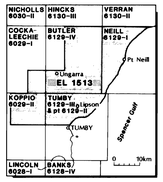
HELIX RESOURCES N.L.

TUMBY BAY PROJECT
AREA A
OUTCROP GEOLOGY

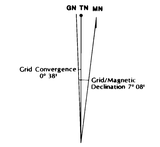
Author	T. Martin	Scale	1:10 000	Drawing No.	G.755.HRN
Drawn	GEOGRAPHICS	Report No.	2054	Plate No.	PLAN 3
Date	February 1989	Revision			

LOCATION MAP

INDEX TO 1:50 000 SHEETS



GRID VARIATIONS



The relationship between Grid North, True North and Magnetic North is shown diagrammatically for the centre of the map. Magnetic declination is correct for 1988. Annual change is 0.1° Easterly.

REFERENCE

- Built-up area
- Major road, sealed
- Major road, unsealed
- Minor road, sealed
- Minor road, unsealed
- Vehicular track
- Railway, with siding
- Landing ground
- Tenement boundary
- Exclusion zone
- Drainage, with dam or waterhole
- Lake (intermittent)
- Quarry or open-cut mine

SAMPLING

- 102 o Stream sediment sample (prefix TB)
- 142 • Rock chip sample (prefix TB)
- Ultramafic intrusion
- Gabbroic intrusion

RF 1:50 000

0 1 2 3 4 5
KILOMETRES

NOTE:
1. Watercourses show no distinction between permanent or intermittent flow.
2. Representation of roads is not evidence of the existence of right of way.
3. Minor roads and tracks have been shown selectively.

After South Australian Department of Lands

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TUMBY BAY PROJECT

South Australia
EL 1513

SAMPLE LOCATIONS

8103-2

Author	S. Elliott	Date	August 1988	Drawing No.	G759/8N	Plate No.	PLAN 4
Drawn	GEOGRAPHICS	Scale	1:50 000	Revision	February 1989		

A period of laterite development and associated deep weathering during the Tertiary caused bleaching and kaolinization of much of the outcropping Hutchison Group metasedimentary sequence. The weathered rocks still exhibit the original gneissic fabric but the original mineralogy is completely obscured. Lateritization has cause common red mottling. As a result of more recent weathering much of the Lincoln Uplands is now covered by a veneer of small ironstone concretions.

Small outliers of ferruginous flat-lying, fluviatile Tertiary sands and conglomerates up to 3 m thick are preserved throughout the tenement.

Most of the area between the basement outliers consists of a moderately thick sequence of red, green, grey and brown, gritty to gravelly clays of Pliestocene to Recent age. Commonly developed within these clays are sheet-like and nodular calcrete horizons.

4.2.1 Ultramafic Intrusives

Two intrusive bodies ranging in composition from basic to ultramafic intrude the Lincoln Complex granitoids just south of the Tumby Bay - Cummins road some 9 km west of Tumby Bay.

The more northerly of the two intrusions is a small, approximately 200 m x 200 m, circular intrusion composed entirely of ultramafic lithologies. It contains a variety of fresh rock types, the most common being feldspathic peridotite and peridotite. Other less common units include biotite bearing peridotite, biotitite, pyroxenite, hornblende biotitite, serpentinized peridotite, and hornblendite with indications of chrome staining.

The second body to the south is a much larger, approximately 1600 m x 800 m, oval shaped body oriented with its main axis parallel to the fabric in the surrounding Lincoln Complex. It is a two part intrusive with a central core (600 m x 300 m) of peridotite which is generally homogeneous in composition although some float of pyroxenite was noted. This is surrounded by a zone of medium to coarse grained gabbro and minor diorite. Several thin bands of pyroxenite appear along the boundary of intrusive in contact with the Lincoln Complex.

The intrusive bodies post date the shearing associated with the KMZ but it is likely that the shape and position of the intrusion was controlled to some degree by the presence of the shear zone. No age of intrusion can be inferred although a maximum age constraint of 1700 m.y. can be placed on the intrusion.

No other basic to ultramafic intrusives of this type have been reported from the Eyre Peninsula to date.

5. EXPLORATION SUMMARY

Prior to the commencement of field work a literature survey of all open file company and government reports held at SADME relating to the EL was completed.

Some of the earliest work in the area was carried out by the SA Geological Survey during the late 1950's. A survey of all the existing and abandoned mines at the time was reported by Johns (1961) to compliment the publication of the Lincoln 4-mile map sheet (Johns, 1958).

Much of the company activity in the area prior to 1988 was related to base metal exploration.

During the period 1970 to 1971 Pacminex and Pacminex in joint venture with Pechinex held three SML's along the east coast of Eyre Peninsula between Port Lincoln and Cowell. Detailed stream sediment sampling and soil sampling defined several geochemical targets anomalous in copper but no significant mineralisation was discovered. Copper mineralisation was believed to be associated with thin quartz veins and not of economic interest. A detailed airborne magnetometer and spectrometer survey covered much of the area now enclosed within EL 1513. Follow up ground work revealed no magnetic or radiometric features of interest. Investigations of kaolin revealed that the colour was well below the standard required for paper coating.

Australian Anglo American Limited acquired an EL in 1973 covering the area Pt Lincoln to Pt Neill to explore for stratiform sulphide mineralisation. Following an airborne EM and magnetometer survey, 75 anomalies were investigated by soil sampling, ground geophysics, geological mapping and some percussion drilling. No concentrations of sulphide mineralisation of Copperbelt or Broken Hill styles were located and the licence was relinquished after one year.

In 1976 the SA Department of Mines undertook a geological investigation of the basic to ultrabasic bodies west of Tumby Bay after a reported occurrence of nickel (Flint, 1976). The highest geochemical values reported for chromium was 2000 ppm, nickel 1500 ppm, and cobalt 150 ppm in peridotites. Values for copper, lead and zinc were generally not above background for any of the rock types. Studies of the metallic minerals revealed magnetite, pentlandite, chalcopyrite and pyrite occurred in a ratio of 6:2:2:1 and that sulphides represent less than 0.2 volume percent of the total rock. Chromite was also noted in several samples.

BHP acquired an EL along the east coast of Eyre Peninsula between Tumby Bay and Whyalla during 1976 to explore for high grade iron ore. An airborne geophysical survey delineated one linear anomaly that extends from Tumby Bay in the south to 25 km south of Cowell in the north and approximates the position of the KZM. It was felt, however, that the magnetic anomaly would probably be caused by the rock adjacent to the mylonite zone rather than the mylonite zone itself. Two holes drilled near Port Neill encountered magnetite rich gneisses, while two other holes further north encountered pyroxene granulites, magnetite rich gneisses and magnetite rich amphibolites. It was concluded that the anomaly was due to a complex of magnetite rich metamorphic rocks, and no further work was carried out.

6. EXPLORATION ACTIVITIES

Exploration Licence 1513 was acquired by Helix to investigate the potential for PGM mineralisation within ultramafic bodies first reported by Flint (1976) and to determine whether any similar intrusives occurred within this region. The area was also investigated for any regions of potential gold and/or base metal mineralisation.

Initial work on the EL involved a preliminary geological survey of the area which included reconnaissance rock chip sampling of the ultramafic bodies and abandoned Cu-mines.

A stream sediment sampling program was carried out over the entire EL. A total of 78, -3mm fraction, samples were collected in order to identify any zones of anomalous PGM's, base metal sulphides or Au and/or indicators of other mafic to ultramafic bodies within the EL.

The final phase of the program included detailed mapping at 1:10,000 scale over the area of the ultramafic bodies and the Pt Lincoln and Tumby Bay Mines (Area A - see Fig 3) and follow up detail rock chip sampling.

Rock chip and stream sediment sample locations are plotted on Figure 4.

7. RESULTS

7.1 Rockchip Sampling

A total of 89 rock chip samples were collected and assayed for Pt,Pd,Au,Cu and Ni with several samples also assayed for Pb,Zn. For complete results see Appendix 1.

Ultramafic Bodies - No significant platinum or palladium values were obtained from either ultramafic body, the highest being 31 ppb Pt and 26 ppb Pd and the majority below 5 ppb for both Pt and Pd. All Au values were low though copper had a maximum of 312 ppm and nickel 1642 ppm.

Hutchison Group - Sampling of the various Hutchison Group units revealed that the graphitic schists are slightly anomalous in palladium (up to 38 ppb) and gold (up to .324 ppm). No other significant results were obtained.

Lincoln Complex - All values for Pt,Pd,Au,Ni and Cu were low for the basic intrusives within the Lincoln Complex.

Burrawing Mine - The mine area consists of a series of small abandoned shafts and prospecting pits over a 300 m strike length within Hutchison Group quartzite and schist. Copper associated with a thin quartz vein (less than 1 m) was mined during the 1870's. Five rock chip samples from the area were assayed, four returning significant gold values between 1.9 and 4.5 ppm the fifth 0.13 ppm. The highest Cu value was 6.3% from malachite and azurite mineralised ironstone. No other significant values were obtained.

Port Lincoln Mines - The Port Lincoln Mines consist of a series of abandoned copper mines along a single 1 m wide quartz vein which can be traced for approximately 1 km. The quartz vein is oblique to the main mylonitic fabric in the area and crosses the contact between the Hutchison Group and Lincoln Complex. Cu values from the Pt Lincoln Mines and several other shafts some 200 m north were as high as 9.7%. One sample assayed 0.15 ppm Au but no other significant results were obtained.

Tumby Bay Mines - Another area of abandoned Cu-mines similar to Pt Lincoln Mines. The lode again comprises malachite (azurite) bearing quartz, with Cu values up to 10.3% and Au values up to 0.86 ppm.

7.2 Stream Sediment Sampling

The samples collected during the exploration program have be dried, screened at 2.0 mm and a heavy mineral concentrate obtained. They now await further panning, microscopic examination and geochemical analyses. For a more complete summary of the sample preparation procedure see Appendix 2.

8. CONCLUSIONS AND RECOMMENDATIONS

Rock chip sampling of the ultramafic bodies revealed low values for platinum and palladium and no significant Au,Cu or Ni values. There appears to be little potential for any mineralisation and no further work is recommended.

Although slightly anomalous palladium and gold values were obtained from the graphitic schist within the Hutchison Group there appears to be little possibility of any significant mineralisation and the thickness of the unit, generally less than 2 m, negates the possibility of larger low grade deposits. No further work is recommended.

Significant gold and copper values were obtained from four of the five rock chip samples from Burrawing Mine. The gold and copper is associated with a thin (<1 m) quartz vein within Hutchison Group schists and quartzite. Further geological reconnaissance, including detail geological mapping, rock chip sampling and soil sampling is warranted in an attempt to delineate the extent of gold mineralisation.

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10. EXPENDITURE

The following expenditure details are for the period ended 31 January 1989.

Item	$
Salary & Wages	9,990
Travel & Accommodation	9,704
Aerial Photo/Maps	777
Assay	14,255
Data Acquisition	768
Drafting	1,313
Freight	1,420
Fuel/Oil	571
Vehicle Rental	3,275
Tenement Acquisition	4
Mines Department Rents	2,795
Field Equipment	1,053
Field Expenses	129
TOTAL	$46,054

APPENDIX 1

Rock Chip Sample Analyses

Sample No	Au (ppb)	Pt (ppb)	Pd (ppb)	Ni (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
TB-1	2.23*	3	3	281	6.3%	-	130
-2	126	<1	<1	52	540	-	4
-3	4.52*	2	2	116	5500	-	78
-4	115	<1	<1	70	133	-	45
-5	11	1	2	45	137	-	73
-6	20	3	4	35	7600	-	5
-7	8	<1	<1	85	98	-	18
-8	860	2	1	77	10.3%	-	22
-9	75	<1	<1	54	8400	-	12
-10	7	3	2	68	3810	-	125
-11	<2	<1	<1	10	210	-	9
-12	7	2	7	40	5.8%	-	5
-15	<2	1	<1	38	870	-	5
-16	105	10	24	9	80	-	15
-17	7	5	1	312	384	-	245
-18	<2	7	4	35	87	-	106
-19	<2	14	6	1220	40	-	66
-20	21	31	26	196	64	-	31
-21	<2	8	8	961	77	-	21
-22	<2	6	5	1100	49	-	22
-23	3	1	11	222	26	-	59
-25	<2	1	<1	90	3200	-	66
-26	22	<1	<1	92	1.54%	-	140
-27	580	3	<1	42	11.1%	-	11
-28	32	<1	<1	98	1.03%	-	94
-29	3	<1	<1	55	450	-	54
-30	49	2	1	69	6500	-	28
-31	<2	<1	<1	33	98	-	14
-32	2	1	<1	22	460	-	3
-33	149	<1	<1	41	9.65%	-	12
-34	6	<1	<1	57	2630	-	40
-35	3	<1	<1	56	121	-	60
-37	30	<50	30	1162	57	-	-
-38	<10	<50	<10	186	125	-	-
-39	<10	<50	<10	426	89	-	-
-40	<10	<50	<10	236	45	-	-
-41	<10	<50	<10	1642	60	-	-
-42	<10	<50	<10	760	41	-	-
-44	<10	-	-	-	-	-	-
-45	<10	-	-	-	-	-	-
-47	<10	<50	<10	73	1301	-	-
-124	23	<5	<1	95	45	-	-
-125	13	<5	<1	90	125	-	-
-126	<5	<5	12	80	145	-	-
-127	<5	<5	<1	45	80	-	-
-128	<5	<5	4	1245	50	-	-
-129	10	<5	<1	30	65	-	-
-130	<5	<5	<1	35	145	-	-
-131	<5	<5	<1	50	110	-	-
-132	<5	<5	<1	45	80	-	-
-133	<5	<5	3	1530	30	-	-
-134	11	<5	4	1490	30	-	-
-135	40	<5	3	1380	35	-	-
-136	6	<5	3	1320	30	-	-
-137	21	<5	5	960	45	-	-
-138	<5	12	1	250	35	-	-

* Data in ppm

Sample No	Au (ppb)	Pt (ppb)	Pd (ppb)	Ni (ppm)	Cu (ppm)	Pb (ppm)	Zn (ppm)
-139	<5	<5	<1	110	10	-	-
-140	<5	11	7	235	35	-	-
-141	<5	<5	1	1490	50	-	-
-142	<5	<5	6	1380	45	-	-
-143	<5	7	10	1430	55	-	-
-144	<5	<5	<1	35	160	-	-
-145	38	<5	12	25	40	-	-
-147	6	<5	14	60	75	-	-
-148	20	<5	33	5	20	-	-
-149	324	<5	29	5	35	-	-
-151	8	<5	<1	280	15	-	-
-152	<5	<5	<1	85	80	-	-
-153	<5	<5	<1	5	10	<5	140
-154	<5	<5	<1	25	10	<5	110
-156	<5	<5	<1	10	7500	-	-
-157	<5	<5	<1	40	2435	-	-
-158	54	<5	3	15	2.01%	-	-
-159	<5	<5	<1	25	465	-	-
-160	<5	<5	<1	<5	25	<5	<5
-161	10	<5	15	15	200	-	-
-162	<5	<5	<1	5	35	-	-
-163	<5	<5	1	25	65	-	-
-165	1.9*	<5	4	50	1.47%	-	-
-166	3.46*	7	2	460	2.92%	-	-
-167	31	10	2	30	190	-	-
-172	24	<5	3	5	25	-	-

* Data in ppm

APPENDIX II

Treatment of Gravel Sands

AUSTRALIAN METALLURGICAL AND MINERAL TESTING CONSULTANTS PTY. LTD.

TREATMENT OF GRAVEL SANDS

FOR

HELIX RESOURCES NL

JANUARY 1989

AMMTEC JOB NO. A 2020

TABLE OF CONTENTS

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1. INTRODUCTION

Mr Steve Elliott of Helix Resources NL requested that approximately 100 gravel samples be screened and tabled to produce a concentrate for return to Helix Resources.

The flowsheet for the work is shown in Figure 1.

2. SAMPLES

In all, 73 samples were received for treatment. The details of these samples are given in Table 1.

3. SAMPLE PREPARATION

Each sample was air dried, weighed and screened at 2.0mm using a vibrating Russell screen. The +2.0mm material was discarded and the -2.0mm material, weighed and put aside for tabling. The weights of the material produced from screening are included in Table 2.

4. TABLING

4.1. Procedure

Each sample in turn was processed over a laboratory Wilfley Table, by dry addition of the gravel to a hopper, where adjustable water flow introduced the sample slurry to the table. The concentrate product was collected, filtered and dried. The middling and tailing products were discarded.

Due to the presence of fine clayey and sandy particles in the initial concentrate, a clean-up tabling was necessary to produce a concentrate having reasonable heavy mineral content.

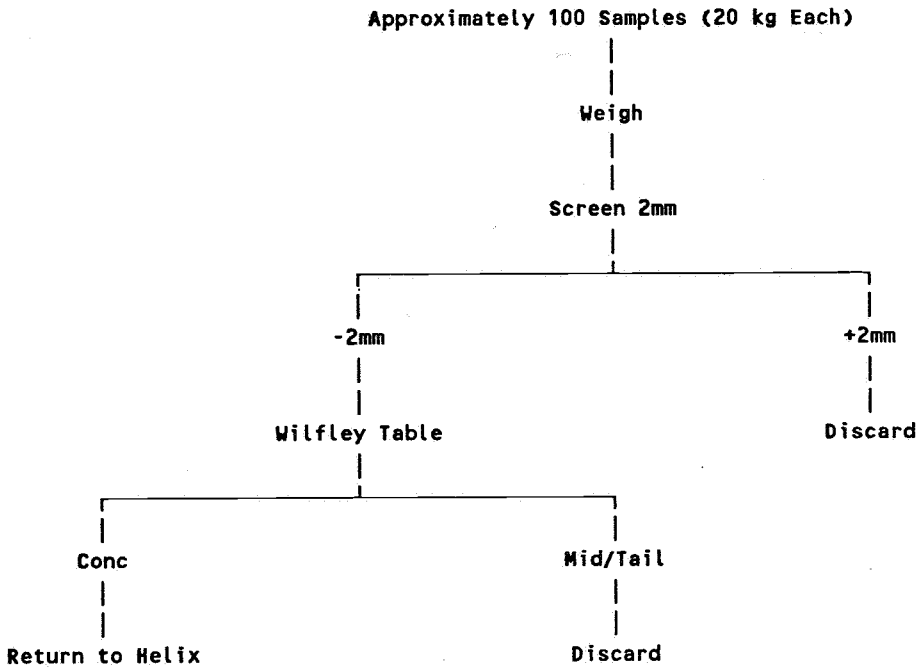
All concentrates were then dried, weighed and packaged for return to Helix Resources.

4.2. Results

The weight of the final concentrates are included in Table 2.

FIGURE

FIGURE 1
FLOWSHEET FOR TREATMENT OF GRAVEL SAMPLES



TABLES

TABLE 1
SAMPLE DATA SHEET

Sample No.	Location		Description
TB-50	NB946972	-3mm	sand silt gravel
TB-51	PC075061	-3mm	sand gravel
TB-52	PC049067	-3mm	sand silt gravel
TB-54	NB911993	-3mm	sand gravel
TB-55	NC963032	-3mm	silty sand gravel
TB-56	NC963026	-3mm	silty sand gravel
TB-57	NC984056	-3mm	silty sand boulder
TB-58	NC983057	-3mm	silty sand gravel
TB-59	NC993068	-3mm	silty sand gravel
TB-60	NC946984	-3mm	clayey sand gravel
TB-61	NB951992	-3mm	silty sand gravel
TB-62	NC982005	-3mm	sand gravel
TB-63	NC966998	-3mm	clayey gravel
TB-64	PC008009	-3mm	silty sandy gravel
TB-65	PC015018	-3mm	clayey sandy gravel
TB-66	PC018026	-3mm	silty sandy gravel
TB-67	PC020066	-3mm	clayey gravelly sand
TB-68	PC005113	-3mm	clayey sand
TB-69	NC962097	-3mm	granule sand
TB-70	NC912998	-3mm	sandy gravel
TB-71	NC904072	Unsieved	(30kg) gravelly sand
TB-72	NC926083	-3mm	sandy gravel
TB-73	NC916018	Unsieved	(30kg) gravelly sand
TB-74	NC913019	-3mm	sandy gravel
TB-75	NC908155	Unsieved	sandy gravel (40kg)
TB-76	NC912154	Unsieved	sand (30kg)
TB-77	NC868194	-3mm	gravelly sand
TB-78	PC053177	Unsieved	sand (30kg)
TB-79	PC077289	-3mm	silty sand
TB-80	PC119330	-3mm	clayey sand
TB-81	PC040159	-3mm	clayey sand
TB-82	PC126233	-3mm	sand
TB-83	PC124237	-3mm	gravelly sand
TB-84	PC181256	-3mm	sand
TB-85	PC223255	-3mm	granule sand
TB-86	PC109323	-3mm	sand
TB-87	PC205327	-3mm	sand
TB-88	PC240323	-3mm	granule sand
TB-89	PC058352	-3mm	gravel sand
TB-90	PC061336	-3mm	gravel sand
TB-91	PC039342	-3mm	clayey sand
TB-92	NC894148	-3mm	sand
TB-93	NC893152	-3mm	sand
TB-94	NC868098	-3mm	sand

TABLE 1 - Continued

Sample No.	Location	Description	
TB-95	NC767032	-3mm	granule sand
TB-96	NC764044	-3mm	gravelly sand
TB-97	NB798966	-3mm	sandy gravel
TB-98	NC831017	-3mm	gravelly sand
TB-99	NC827007	-3mm	clayey gravel
TB-100	NC753017	-3mm	sandy gravel
TB-101	NB802996	Unsieved	clayey soil
TB-102	NB813999	Unsieved	gravelly sand
TB-103	NC890033	-3mm	gravel
TB-104	NC894106	-3mm	sandy gravel
TB-105	PC057085	-3mm	silty gravel
TB-106	PC069021	-3mm	gravelly sand
TB-107	PC064023	-3mm	gravelly sand
TB-108	PC093085	-3mm	gravelly sand
TB-109	PC033132	-3mm	pebbly gravel
TB-110	PC062072	-3mm	silty gravel
TB-111	PC089132	-3mm	silty sand
TB-112	PC063115	-3mm	pebbly gravel
TB-113	PC194150	-3mm	pebbly sand
TB-114	PC205171	-3mm	silty gravel
TB-115	PC174125	-3mm	pebbly sand
TB-116	NC989142	-3mm	pebbly sand
TB-117	NC960160	-3mm	pebbly gravel
TB-118	NC988147	-3mm	pebbly gravel
TB-119	PC019054	-3mm	gravelly sand
TB-120	PC051040	-3mm	silty gravel
TB-121	NC913048	-3mm	pebbly gravel
TB-122	NB924964	-3mm	silty gravel
TB-123	NB966991	-3mm	silty gravel

TABLE 2
SCREENING AND TABLING RESULTS

Sample No.	Location		Description	Wt (kg)	-2mm Wt (Kg)	Conc Wt (g)
TB-50	NB946972	-3MM	sand silt gravel	31.7	31.6	388.8
TB-51	PC075061	-3mm	sand gravel	41.7	37.3	671.2
TB-52	PC049067	-3mm	sand silt gravel	32.5	32.0	182.4
TB-54	NB911993	-3mm	sand gravel	36.5	35.1	473.1
TB-55	NC963032	-3mm	silty sand gravel	36.5	35.5	196.8
TB-56	NC963026	-3mm	silty sand gravel	30.5	29.5	92.9
TB-57	NC984056	-3mm	silty sand boulder	32.3	30.7	157.9
TB-58	NC983057	-3mm	silty sand gravel	33.8	33.2	313.9
TB-59	NC993068	-3mm	silty sand gravel	36.8	34.5	311.1
TB-60	NC946984	-3mm	clayey sand gravel	34.5	32.7	663.2
TB-61	NB951992	-3mm	silty sand gravel	34.0	33.5	627.9
TB-62	NC982005	-3mm	sand gravel	33.8	32.4	192.3
TB-63	NC966998	-3mm	clayey gravel	30.3	28.9	392.9
TB-64	PC008009	-3mm	silty sandy gravel	37.0	36.2	128.1
TB-65	PC015018	-3mm	clayey sandy gravel	30.5	29.7	63.8
TB-66	PC018026	-3mm	silty sandy gravel	37.5	36.1	197.1
TB-67	PC020066	-3mm	clayey gravelly sand	31.5	30.5	258.5
TB-68	PC005113	-3mm	clayey sand	43.5	41.6	317.9
TB-69	NC962097	-3mm	granule sand	35.7	35.3	383.8
TB-70	NC912998	-3mm	sandy gravel	34.9	32.7	731.9
TB-71	NC904072	Unsieved	(30kg) gravelly sand	63.3	42.9	462.5
TB-72	NC926083	-3mm	sandy gravel	37.3	35.5	581.7
TB-73	NC916018	Unsieved	(30kg) gravelly sand	59.3	46.9	157.6
TB-74	NC913019	-3mm	sandy gravel	41.1	39.4	195.9
TB-75	NC908155	Unsieved	sandy gravel (40kg)	81.9	58.4	315.5
TB-76	NC912154	Unsieved	sand (30kg)	58.25	47.6	804.6
TB-77	NC868194	-3mm	gravelly sand	39.8	38.3	359.3
TB-78	PC053177	Unsieved	sand (30kg)	59.6	53.4	618.3
TB-79	PC077289	-3mm	silty sand	32.1	31.8	326.7
TB-80	PC119330	-3mm	clayey sand	42.7	41.9	794.4
TB-81	PC040159	-3mm	clayey sand	36.8	35.3	166.7
TB-82	PC126233	-3mm	sand	38.4	37.6	182.3
TB-83	PC124237	-3mm	gravelly sand	39.0	37.8	91.7
TB-84	PC181256	-3mm	sand	40.6	40.2	643.1
TB-85	PC223255	-3mm	granule sand	32.9	32.5	141.8
TB-86	PC109323	-3mm	sand	36.5	36.1	582.9
TB-87	PC205327	-3mm	sand	35.3	35.3	257.8
TB-88	PC240323	-3mm	granule sand	40.6	39.6	149.2
TB-89	PC058352	-3mm	gravel sand	36.8	36.2	149.6
TB-90	PC061336	-3mm	gravel sand	37.9	36.8	899.8
TB-91	PC039342	-3mm	clayey sand	35.4	34.8	1023.9
TB-92	NC894148	-3mm	sand	32.9	32.3	328.4
TB-93	NC893152	-3mm	sand	39.1	37.5	484.5
TB-94	NC868098	-3mm	sand	34.2	33.5	441.9

TABLE 2 - Continued

Sample No.	Location	Description		Wt	-2mm Wt	Conc Wt
TB-95	NC767032	-3mm	granule sand	38.2	36.85	282.1
TB-96	NC764044	-3mm	gravelly sand	31.3	30.1	147.3
TB-97	NB798966	-3mm	sandy gravel	36.4	34.9	659.6
TB-98	NC831017	-3mm	gravelly sand	34.8	33.8	199.7
TB-99	NC827007	-3mm	clayey gravel	38.6	36.6	552.2
TB-100	NC753017	-3mm	sandy gravel	31.4	30.6	136.6
TB-101	NB802996	Unsieved	clayey soil	48.9	41.8	173.7
TB-102	NB813999	Unsieved	gravelly sand	48.2	25.7	737.5
TB-103	NC890033	-3mm	gravel	40.0	34.4	602.9
TB-104	NC894106	-3mm	sandy gravel	35.5	34.0	953.4
TB-105	PC057085	-3mm	silty gravel	27.9	26.7	500.8
TB-106	PC069021	-3mm	gravelly sand	34.6	34.1	464.3
TB-107	PC064023	-3mm	gravelly sand	40.7	40.2	182.9
TB-108	PC093085	-3mm	gravelly sand	31.7	30.7	345.1
TB-109	PC033132	-3mm	pebbly gravel	36.5	33.7	803.1
TB-110	PC062072	-3mm	silty gravel	31.6	29.6	168.4
TB-111	PC089132	-3mm	silty sand	32.5	32.2	75.0
TB-112	PC063115	-3mm	pebbly gravel	35.1	32.6	368.9
TB-113	PC194150	-3mm	pebbly sand	38.3	37.8	170.9
TB-114	PC205171	-3mm	silty gravel	35.3	34.9	139.1
TB-115	PC174125	-3mm	pebbly sand	37.7	36.5	601.4
TB-116	NC989142	-3mm	pebbly sand	35.3	34.7	125.1
TB-117	NC960160	-3mm	pebbly gravel	36.7	32.7	958.6
TB-118	NC988147	-3mm	pebbly gravel	32.6	30.2	560.2
TB-119	PC019054	-3mm	gravelly sand	39.6	39.3	318.0
TB-120	PC051040	-3mm	silty gravel	35.2	33.7	209.6
TB-121	NC913048	-3mm	pebbly gravel	38.5	34.2	724.3
TB-122	NB924964	-3mm	silty gravel	30.3	29.6	993.4
TB-123	NB966991	-3mm	silty gravel	32.7	32.1	229.6

AUSTRALIAN METALLURGICAL AND MINERAL TESTING CONSULTANTS PTY LTD.

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J.E. ANGOVE
SENIOR METALLURGIST

.....
G.W. LLOYD
MANAGING DIRECTOR

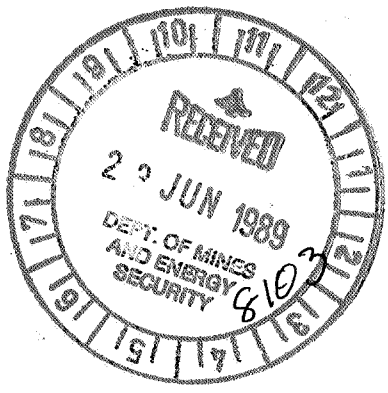
000034

HELIX RESOURCES NL

TECHNICAL REPORT 2058

EL 1513, TUMBY BAY, SA

QUARTERLY REPORT FOR THE PERIOD
March 1989 - May 1989



A R Martin

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1. INTRODUCTION

2. LOCATION AND ACCESS

3. TENURE

4. GEOLOGY

5. EXPLORATION SUMMARY

6. EXPLORATION ACTIVITIES

7. RESULTS

   7.1 Stream Sediment Sampling

8. CONCLUSIONS AND RECOMMENDATIONS

9. REFERENCES

10. EXPENDITURE

APPENDICES

1. Microscopic results from stream sediment sample concentrates.

2. Stream Sediment Sample Analysis.

FIGURES

No	Title	Scale
1	Tumby Bay, Location Map	1:500,000
2	Tumby Bay, Sample Location Map	1:50,000

1. INTRODUCTION

Exploration Licence 1513 is located on the east coast of Eyre Peninsula, approximately 50 km north of Port Lincoln (Fig 1).

The tenement includes the northern portion of the Lincoln Uplands which contains two circular ultramafic intrusive bodies. In the past these bodies have been investigated for nickel mineralisation (Flint, 1976) but no exploration for platinum group metals (PGM) mineralisation has been carried out.

Microscopic investigation and assays of heavy mineral concentrates from stream sediment samples collected during the previous quarter indicate several areas anomalous in gold, but no follow up exploration was carried out during the period of this report.

2. LOCATION AND ACCESS

Exploration Licence 1513 is situated in south-eastern Eyre Peninsula between the towns of Tumby Bay, in the south, and Pt Neill, in the north. The townships of Ungarra, Mt Hill, Lipson and Yallunda Flat are located within the licence (Fig 1).

Access to the area is via the Lincoln Highway which joins Pt Augusta and Pt Lincoln and passes through the eastern portion of the EL, or via the sealed road between Tumby Bay and Cummins. Numerous unsealed roads and farm tracks allow good access within the licence.

Much of the area is open undulating country used for grazing and grain crops with native scrub confined to rocky hill tops. The Lincoln Uplands protrude into the south-western portion of the EL where the terrain consists of rolling hills with more common patches of native scrub.

3. TENURE

Exploration Licence 1513 was initially granted for a six month period from 1 September 1988 has now been extended to a one year period due to expire on 1 September 1989. The licence has a total area of approximately 1215 sq kms.

Exclusion zones within the EL are as follows:

*Res. G.G. 2.9.82 a 1.8 sq km reserve over the Kapinka Falls area.

*Area 800 m inland from high water mark along coast.

4. GEOLOGY

A complete summary of regional geology and detailed prospect geology was reported in the previous quarterly report, Technical Report 2054 (Martin, 1989).

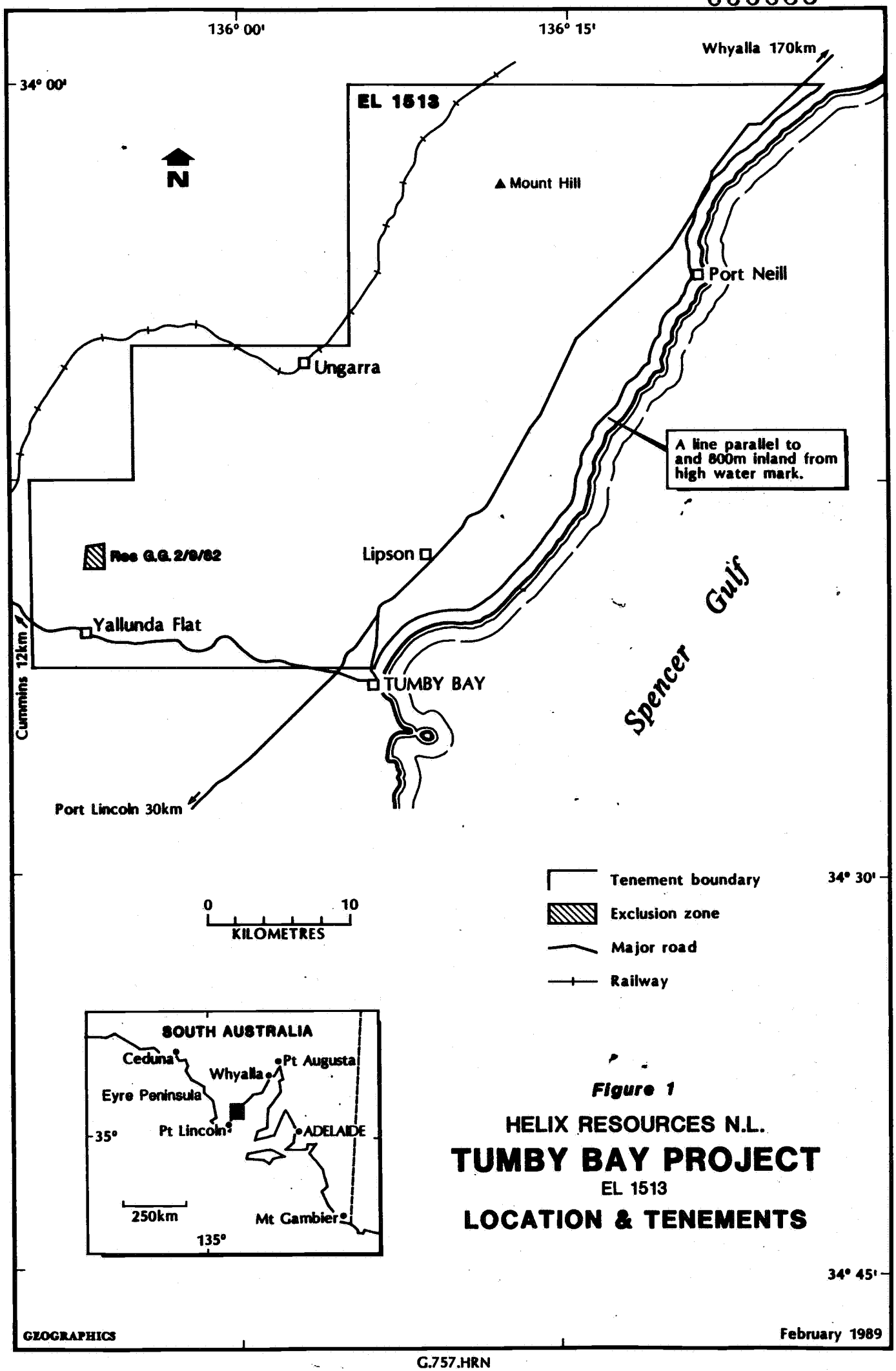


Figure 1

HELIX RESOURCES N.L.

TUMBY BAY PROJECT

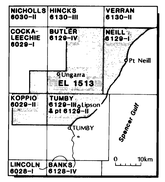
EL 1513

LOCATION & TENEMENTS

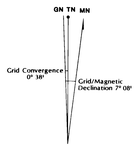
G.757.HRN

LOCATION MAP

INDEX TO 1:50 000 SHEETS



GRID VARIATIONS



The relationship between Grid North, True North and Magnetic North is shown digrammatically for the centre of the map. Magnetic declination is correct for 1988. Annual change is 0'1' Easterly.

REFERENCE

- Built-up area
- Major road, sealed
- Major road, unsealed
- Minor road, sealed
- Minor road, unsealed
- Vehicular track
- Railway, with siding
- Landing ground
- Tenement boundary
- Exclusion zone
- Drainage, with dam or waterhole
- Lake (intermittent)
- Quarry or open-cut mine

SAMPLING

- 102 ○ Stream sediment sample (prefix TB)
- 142 + Rock chip sample (prefix TB)
- Ultramafic intrusion
- Gabbroic intrusion

RF 1:50 000

0 1 2 3 4 5 KILOMETRES

NOTE:
1. Watercourses show no distinction between permanent or intermittent flow.
2. Representation of roads is not evidence of the existence of right of way.
3. Minor roads and tracks have been shown selectively.

After South Australian Department of Lands

HELIX RESOURCES N.L.							
TUMBY BAY PROJECT South Australia EL 1513							
SAMPLE LOCATIONS							
Author	S. Elliott	Date	August 1988	Drawing No.	G.759.HEN	Plate No.	PLAN 4
Drawn	GEOGRAPHICS	Scale	1:50 000	Revision	February 1989		

8103-3

5. EXPLORATION SUMMARY

A precis of literature of open file data held at SADME was reported in the previous quarterly report (Martin, 1989).

During the first six months the EL was held by Helix, rock chip sampling and geological mapping indicated that there was anomalous Au associated with several of the abandoned copper mines. The most significant of these were values up to 4.5 ppm Au at Burrawing Mine. Investigations of the ultramafic bodies failed to delineate any zones of anomalous PGM.

A programme of stream sediment sampling, consisting of a total of 78 samples, was also carried out over the entire EL. The samples were screened at -2mm and tabled, with the heavy mineral concentrates retained for microscopic investigation and assay.

6. EXPLORATION ACTIVITIES

The only work carried out by Helix during this quarter involved further panning, by hand, and microscopic investigations of 50 of the stream sediment samples.

7. RESULTS

7.1 Stream Sediment Sampling

Fifty of the concentrates received from AMMTEC were screened at 40 mesh and the -40 mesh portion was then panned to give a final sample weight of approximately 50 g. The final sample was then microscopically investigated for Au, Pt and sulphides. The weight of -40 mesh material and final weight of pan concentrate are included in Appendix 1.

During microscopic investigations Au was detected in 21 of the samples, sulphide in two of the samples but no Pt was detected. The number of grains of Au and sulphide detected are also included in Appendix 1.

In four of the samples more than 20 grains of gold were detected; TB-50, TB-63, TB-111 and TB-123 (Fig 2).

Assays of the panned concentrates from selected stream samples between TB-50 and TB-97 confirmed the presence of anomolous gold in samples TB-50 and TB-63. No anomalous Pt was detected in any of the stream samples assayed (see Appendix 2).

Anomalous gold was also detected in sample TB-67 from the Burrawing Mine area.

8. CONCLUSIONS AND RECOMMENDATIONS

During the next quarter a continued programme of steam sediment sampling and soil sampling will be carried out in an attempt to trace the source of the anomalous Au in samples TB-50, 63, 111 and 123 and to define the extent of Au mineralisation associated with the Burrawing Mine.

9. REFERENCES

Flint D.J., 1976: Geological investigations of a nickel occurrence in basic to ultrabasic rocks west of Tumby Bay. SA Department Mines and Energy. Rept Bk 76/9. Unpublished.

Martin A.R., 1989: EL 1513, Tumby Bay SA Six Monthly Report for the period September 1988 - February 1989. Unpublished report 2054 Helix Resources NL, Perth.

10. EXPENDITURE

The following expenditure details are for the three month period ended 31 May 1989.

Item	$
Salary & Wages	2,050
Travel & Accommodation	661
Aerial Photo/Maps	-
Assay	1,792
Data Acquisition	-
Drafting	1,120
Freight	-
Fuel/Oil	91
Vehicle Rental	866
Tenement Acquisition	7
Mines Department Rents	-
Field Equipment	68
Field Expenses	-
TOTAL	6,655

APPENDIX I

Microscopic results from stream sediment sample concentrates

Sample	Weight of panned conc. (g)	No. of visible grains of Au (& Sulphide)
TB-13	36	2
TB-36	67	5
TB-43/122	52	10
TB-46	53	8 Fine grains
TB-50	69	+30
TB-51	58	1
TB-52	51	-
TB-54	51	(Trace Sulphide)
TB-55	55	-
TB-57	65	1
TB-58	49	-
TB-59	56	-
TB-60	54	-
TB-61	50	2
TB-62	57	-
TB-63	46	+30
TB-64	60	-
TB-65	56	4
TB-67	55	+10
TB-70	68	3
TB-71	65	6
TB-72	52	-
TB-73	53	-
TB-74	50	-
TB-75	52	-
TB-76	54	-
TB-77	56	-
TB-79	50	5
TB-80	61	-
TB-81	64	-
TB-82	59	-
TB-83	57	-
TB-85	67	-
TB-87	60	-
TB-88	52	-
TB-89	125	-
TB-90	52	-
TB-91	65	-
TB-92	57	1
TB-94	57	-
TB-97	60	-
TB-98	52	1
TB-100	53	1
TB-103	55	-
TB-109	49	-
TB-111	65	+20
TB-114	52	2
TB-115	51	1
TB-120	55	(1 Grain Sulphide)
TB-123	68	+20

APPENDIX II

Stream Sediment Sample Analysis

Sample No.	Pt (ppm)	Au (ppm)
TB-50	<0.005	2.190
TB-51	<0.005	0.367
TB-52	<0.005	0.118
TB-54	<0.005	0.139
TB-56	<0.005	0.029
TB-57	<0.005	0.020
TB-58	<0.005	0.170
TB-59	<0.005	0.492
TB-60	<0.005	0.125
TB-61	<0.005	0.372
TB-63	<0.005	2.300
TB-64	<0.005	0.137
TB-65	<0.005	0.949
TB-70	<0.005	0.224
TB-71	<0.005	0.279
TB-72	<0.005	0.109
TB-73	<0.005	0.096
TB-75	<0.005	0.016
TB-76	<0.005	0.041
TB-79	<0.005	0.977
TB-80	<0.005	0.050
TB-81	<0.005	0.100
TB-82	<0.005	0.037
TB-85	<0.005	0.040
TB-87	<0.005	0.005
TB-88	<0.005	0.014
TB-91	<0.005	0.029
TB-92	<0.005	0.052
TB-94	<0.005	0.351
TB-97	<0.005	0.127

000047

HELIX RESOURCES NL

TECHNICAL REPORT 2062

EL 1513, TUMBY BAY, SA

Quarterly Report for the Period June - August 1989

A R MARTIN

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S A Department Mines & Energy
S J Elliott
A R Martin
File

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1. INTRODUCTION

Exploration Licence 1513 is located on the east coast of Eyre Peninsula approximately 50 km north of Port Lincoln (Fig 1).

The tenement includes the northern portion of the Lincoln Uplands which contains two circular ultramafic intrusive bodies. In the past these bodies have been investigated for nickel mineralisation (Flint, 1976) but no exploration for platinum group metals (PGM) was carried out. During the first 6 months the EL was held by Helix extensive rock chip sampling and detailed mapping of the bodies failed to delineate any PGM anomalies. During a detailed mapping programme weakly anomalous PGM results were obtained from graphitic schist within the Hutchison Group metasediments and anomalous Au values from several of the abandoned Copper mines.

A stream sediment sampling programme covering the entire EL failed to reveal any detectable PGM but four areas of anomalous Au were delineated.

Detailed summaries of the above exploration programmes by Helix can be obtained from Martin 1989a and b.

During the period covered by this report two of the anomalous Au areas were followed up, the Mitshan East Prospect and the Burrawing Prospect, but due to wet weather no work could be carried out on the other areas. The anomalous Au in the Mitshan East Prospect appears to be due to Cainozoic re-working along the eastern flank of the Lincoln Uplands while the anomalism in the Burrawing Prospect is due to primary Au mineralisation associated with Cu mineralisation along a vertical fault plane.

2. LOCATION AND ACCESS

Exploration Licence 1513 is situated in south-eastern Eyre Peninsula between the towns of Tumby Bay, in the south, and Pt Neill, in the north. The townships of Ungarra, Mt Hill, Lipson and Yallunda Flat are located within the licence (Fig 1).

Access to the area is via the Lincoln Highway which joins Pt Augusta and Pt Lincoln and passes through the eastern portion of the EL, or via the sealed road between Tumby Bay and Cummins. Numerous unsealed roads and farm tracks allow good access within the licence.

Much of the area is open undulating country used for grazing and grain crops with native scrub confined to rocky hill tops. The Lincoln Uplands protrude into the south-western portion of the EL where the terrain consists of rolling hills with more common patches of native scrub.

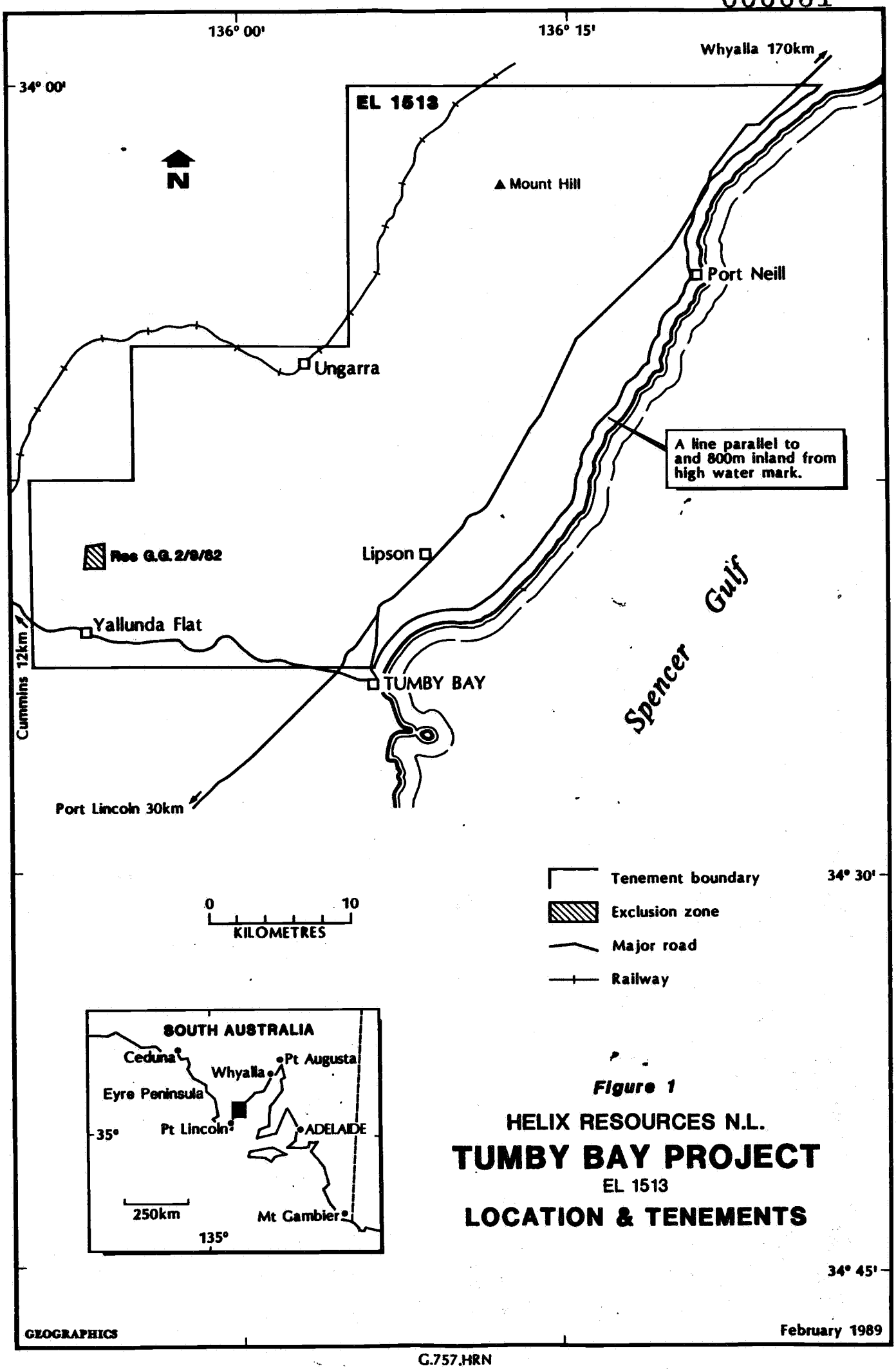


Figure 1

HELIX RESOURCES N.L.

TUMBY BAY PROJECT

EL 1513

LOCATION & TENEMENTS

G.757.HRN

3. TENURE

Exploration Licence 1513 was initially granted for a six month period from 1 September 1988 has now been extended to a one year period due to expire on 1 September 1989. The licence has a total area of approximately 1215 sq kms.

Exclusion zones within the EL are as follows:

* Res. G. G. 2.9.82 a 1.8 sq km reserve over the Kapinka Falls area.

* Area 800 m inland from high water mark along coast.

4. GEOLOGY

4.2.1 Mitshan East Prospect

The Mitshan East Prospect lies in the south portion of Area A which was mapped in detail, during the first six months the EL was held (Martin, 1989a). It occurs at the boundary between uplifted Lincoln Complex Gneisses to the west and a flat area of Tertiary to Recent sediments to the east. Uplift of the gneisses occurred along a northeast trending upright fault during the Cainozoic. The fault itself is now covered by Recent sediments but probably runs parallel to the southeastern extent of the outcrop of Lincoln Complex Gneisses (Fig 4).

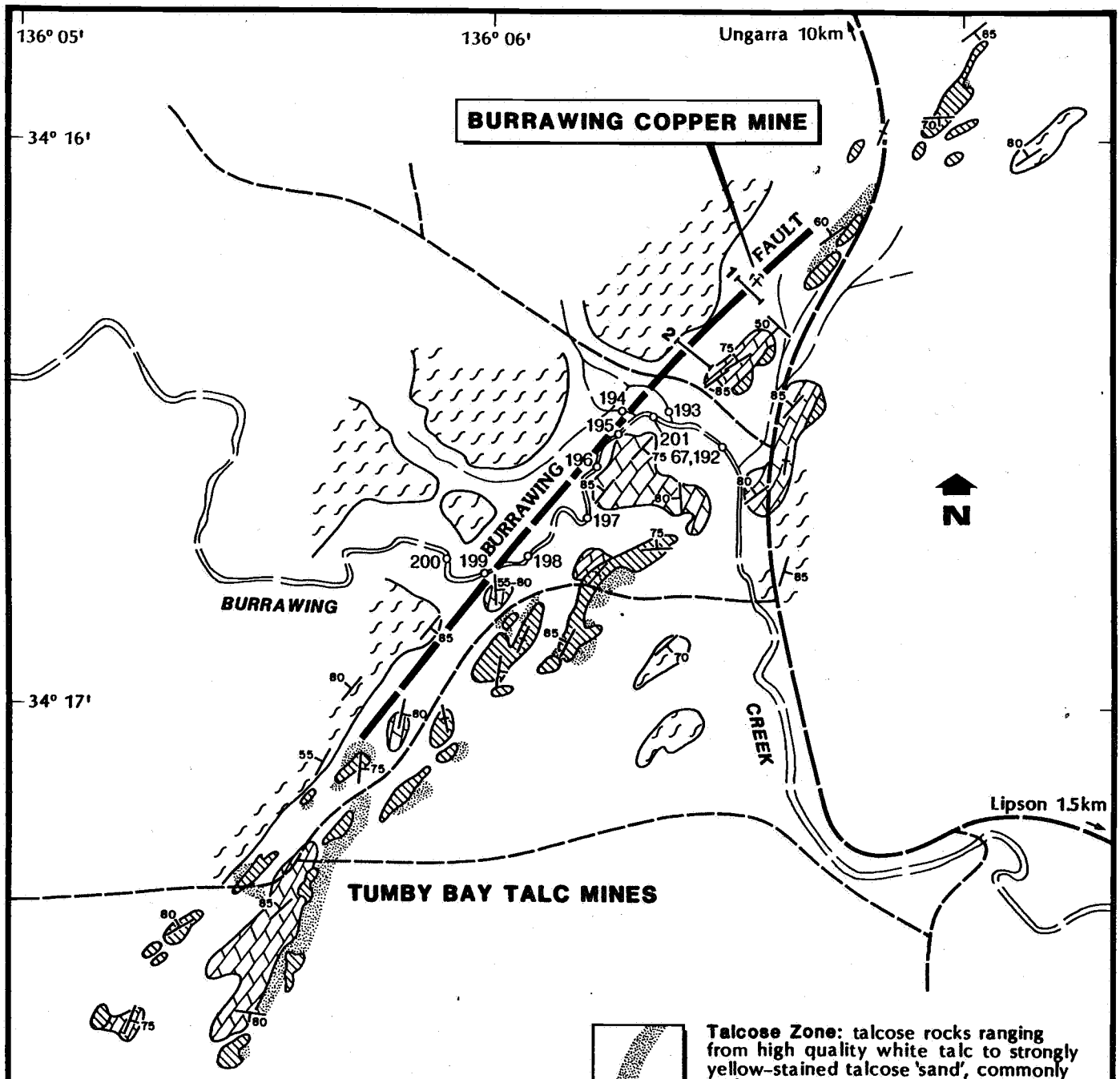
4.2.2 Burrawing Prospect

The Burrawing Prospect occurs at the faulted boundary separating Early Proterozoic pelitic schists to the north-west from a 500-700 m wide white dolomitic unit which includes zones of talc and jasper (Fig 2). All the units are steeply dipping and strike southwest-northeast. The faulted contact is assumed subparallel to the fabric of the rocks and poorly exposed, this faulted contact is termed the Burrawing Fault.

In the past Cu has been mined from the Burrawing Mine which lies on the faulted contact of the two units. Talc has also been mined from within the dolomite unit in the southwestern portion of the area.

5. EXPLORATION SUMMARY

A complete summary of all exploration activity carried out over the tenemented area is given in the two previous reports, Technical Report 2054 (Martin, 1989a) and Technical Report 2058 (Martin, 1989b).



Talcose Zone: talcose rocks ranging from high quality white talc to strongly yellow-stained talcose 'sand', commonly with grey quartz lenses and pebbles.

Jasper: red, yellow-brown, grey and white ferruginous - siliceous rock, massive and segregated occurring as discontinuous masses and lenses.

Dolomite: off-white to pale grey, mostly medium to coarse-grained, often tremolitic and granulated.

Gneiss and Schist: medium-grained quartz-feldspar-mica gneiss with thin grey-brown schist interbeds.

Strike and dip of bedding/layering:
- inclined
- vertical

Fault

Geological contact

201 Stream sediment sample site (prefix TB)

1 Soil sample traverse

Drainage (intermittent)

Major road (gravel)

Minor road or vehicular track

Figure 2

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EL1513 TUMBY BAY

BURRAWING PROSPECT
GEOLOGY & SAMPLE LOCATIONS

Modified from Johnson (1984)

GEOGRAPHICS

October 1989

G.893.HRN


LOCATION MAP
SOUTH AUSTRALIA
Ceduna
Pt Augusta
Whyalla
Eyre Peninsula
Pt Lincoln
ADELAIDE
Mt Gambier
250km
INDEX TO 1:50 000 SHEETS
NICHOLLS 6030-II
HINCKS 6130-III
VERRAN 6130-II
COCKALEECHIE 6029-I
BUTLER 6129-IV
NEILL 6129-I
KOPPIO 6029-II
LINCOLN 6028-I
BANKS 6128-IV
EL 1513
Spencer Gulf
GRID VARIATIONS
GN TN MN
Grid Convergence 0° 38'
Grid/Magnetic Declination 7° 08'
The relationship between Grid North, True North and Magnetic North is shown digrammatically for the centre of the map. Magnetic declination is correct for 1988. Annual change is 01' Easterly.
REFERENCE
Built-up area
Major road, sealed
Major road, unsealed
Minor road, sealed
Minor road, unsealed
Vehicular track
Railway, with siding
Landing ground
Tenement boundary
Exclusion zone
Drainage, with dam or waterhole
Lake (intermittent)
Quarry or open-cut mine
Homestead
SAMPLING
102 Stream sediment sample (prefix TB)
142 Rock chip sample (prefix TB)
Ultramafic intrusion
Gabbroic intrusion
RF 1:50 000
KILOMETRES
NOTE: 1. Watercourses show no distinction between permanent or intermittent flow.
2. Representation of roads is not evidence of the existence of right of way.
3. Minor roads and tracks have been shown selectively.
After South Australian Department of Lands
Mount Hill
Mt Hill
River Dutton
DUTTON BAY
Mottled Cove
Port Neill
Cape Burr
EL 1513
EYRE PENINSULA
Moody
Moreenia
Ungarra
Cockaleechie
COCKALEECHIE FLAT
Chinnininna Hill
Nyllow Hill
Cape Hardy
GULF
SPENCER
Sheep Hill
Lipson Cove
Lipson Island
BURRAWING MINE
TUMBY BAY TALC MINES
See Figure 2
Lipson
Uranno Flat
Uranno
Kapinka
AREA A
IRON MOUNT MINE
TUMBY BAY MINES
Pt LINCOLN MINES
Mitshan East
Yallunda Flat
Cummins
BRATTEN
Salt Creek Beach
TUMBY BAY
Port Lincoln 28km
INSET
EL 1513
N
8103- 4
HELIX RESOURCES N.L.
TUMBY BAY PROJECT
South Australia
EL 1513
SAMPLE LOCATIONS
Author S. Elliott
Date August 1988
Drawing No. G.759.HRN
Plate No. PLAN 3
Drawn GEOGRAPHICS
Scale 1:50 000
Revision 19/10/89

IRON MOUNT MINE

TUMBY BAY MINES

Pt LINCOLN MINES

EL 1513

Water Tank

Mitshan East HS

Tumby 4km

Limit

Outcrop

Creek

Waterfall

Mine

BRATTEN WAY

Coonts Creek

TB-24

TB-176

TB-174

TB-173

TB-171

TB-50,172

REFERENCE

- Ultramafic rocks.
- Pyroxenite.
- Gabbro.
- Diorite.
- Quartz vein.

Early Proterozoic

HUTCHISON GROUP

- Pf — LINCOLN COMPLEX: granitic gneisses commonly mylonitized, contains abundant amphibolite dykes.
- Phc — Cook Gap Schist: quartz feldspar biotite ±garnet gneisses.
- Phk — Katunga Dolomite: dolomitic marble, banded calc-silicate.
- Phm — Mt Shannon Iron Formation: haematitic quartzite, iron formation.
- Phg — Graphitic schist.
- Phs — Amphibolite gneiss.
- Phw — Warrow Quartzite.
- Ph — Undifferentiated, commonly deeply weathered metasediments, often with a lateritic capping.

- Structural boundary
- Fault (inferred)
- Geological contact
- ? Geological contact (inferred)
- Outcrop boundary
- 80 Dip and strike of mylonitic fabric
- Mylonitic fabric and lineation
- Vertical mylonitic fabric
- Vertical spaced cleavage
- Mesoscopic fold axis with vergence
- Exploration Licence boundary
- Major road
- Minor road or track
- Drainage (intermittent)
- Open cut mine
- Abandoned mine Cu Copper Fe Iron Gt Graphite Ck Kaolin M Marble
- Stream sediment sample site

8103-5

N

RF 1:10 000

0 200 400 600 800 1000 METRES

HELIX RESOURCES N.L.

TUMBY BAY PROJECT
AREA A
OUTCROP GEOLOGY

Author	T. Martin	Scale	1:10 000	Drawing No.	G.755.HRN
Drawn	GEOGRAPHICS	Report No.	2054	Plate No.	PLAN 4
Date	February 1989	Revision	19/10/89		

6. EXPLORATION ACTIVITIES

Work carried out by Helix involved more detailed stream sediment sampling, at approximately 200-300 m intervals, up stream from samples TB-50, Mishan East and TB-67 Burrawing. A total of 6 samples were collected from the Mitshan East Prospect and 11 samples from the Burrawing Prospect. In addition, a soil sampling traverse was carried out across the Burrawing Fault approximately 250 m south-west of the main Burrawing Mine, while a second trial soil sampling traverse was completed in the immediate vicinity of Burrawing Mine. Rock chip sampling from the Burrawing Mine area still continued.

7. RESULTS

7.1 Stream Sediment Sampling

Stream sediment sampling involved the collection of approximately 10 kg of -6 mm gravels. The samples were then assayed by Australian Laboratory Services for Au using Bulk Cyanide Leaching (BCL) which has a lower detection limit of 50 ppt, see Appendix 1.

Mitshan East Prospect - Because of extensive flooding in May 1989 much of the stream gravels previously deposited in the channel, and originally sampled at site TB-50, were washed away leaving only a thin 20-30 cm thick sand and gravel layer on the stream bed. A conventional 20 kg, -2 mm, sample (TB-172) of these recent gravels was taken from the same site as TB-50 this was tabled to produce a heavy concentrate. The concentrate was subsequently sieved and the -40 mesh portion panned by hand. The sample contained a total of 6 visible grains of gold compared with +30 grains obtained in TB-50. Although the total amount of gold in the two samples differed significantly the latter sample still contained anomalous Au, much higher than the background for this region.

Anomalous gold was also detected in sample TB-171 using BCL but no gold was detected in any samples further upstream. Both samples TB-171 and 172 were collected from a region where the stream is deeply incised into a thick sequence of flat lying Cainozoic alluvial gravels which form low slopes flanking the eastern edge of the Lincoln Uplands. The other samples were all from where the stream is shallowly incised into thin Quaternary alluvial cover in the base of deep valleys within the Lincoln Uplands.

It is therefore inferred that the source of the gold is most likely the alluvial gravels flanking the Lincoln Uplands. The gold was probably sourced from the Lincoln Uplands, where it is known to be anomalous within quartz veins associated with copper mineralisation. It was eroded and then concentrated within gravels proximal to the line of uplift of the Protozoic basement during the Cainozoic.

This likely scenario would also account for the anomalous Au detected in samples TB-63 and TB-123 which were also taken from the low slopes flanking the Lincoln Uplands in this area.

Burrawing Prospect - Anomalous Au up to 4.5 ppm has been detected at Burrawing Mine. Stream sediment sample TB-67 collected in Burrawing Creek approximately 500 m south of Burrawing Mine contained 20 grains of gold. A large east-west ridge separates Burrawing Mine from Burrawing Creek hence the Burrawing Mines is not the direct source of the gold in at TB-67.

Sampling at approximately 200 m intervals up from TB-67, samples TB-192 to TB-201, revealed anomalous Au in three samples TB-194, 195 & 196 (Fig 2). The source for the Au is most likely southwesterly extension of the Burrawing Fault which contained Au mineralisation at Burrawing Mine.

The Burrawing Fault crosses Burrawing Creek upstream from sample location TB-198. All samples in which gold was detected were collected from within 50 m of the Burrawing Fault as depicted by Johnson (1984).

The stream sediment sampling programme indicates that primary Au mineralisation occurs associated with Burrawing Fault of over a strike length of at least 1 km.

Sunny-Brae Prospect - A single sample was also collected from the sample locality as TB-111 and assayed by Bulk Cyanide Leaching, TB 202. The sample indicated anomalous Au in the stream but no further upstream sampling was possible because the creek still remained flooded.

7.2 Soil Geochemistry

Burrawing Prospect - Two trial soil sampling traverses were carried out across the Burrawing Fault the first Line 1 in the immediate vicinity of the Burrawing Mine the second on the southern flank of the ridge separating Burrawing Creek from the Burrawing Mine area (Fig 2).

Sampling along Line 1 was at 10 m intervals over 50 m in a northwest-southern direction all samples were split 3 times the first assayed unsieved the second -40 mesh portion assayed and the third the -80 mesh portion assayed. All were assayed for Au by conventional 50 g fire assay method with a lower detection limit of 2 ppb. Results for all samples were below .015 ppm. Although Au was detected in the -40 mesh split for 3 samples the results are too low to allow any meaningful conclusions regarding mineralisation to be drawn from this type of sampling.

Line 2 samples were collected at 12.5 m spacing along a northwest-southeast line which crossed the Burrawing Fault at between 40 SE and 80 SE. A total of 16 samples were collected along the 187.5 m line. The samples approximately 1-2 kg in weight were assayed by bulk cyanide leaching, with a lower detection limit of 50 ppt. The results indicate two distinct anomalies one between 40 and 80 SE of 3550 ppt and second between 140 and 160 SE of 9450 ppt. The first and smaller of the anomalies corresponds to the Burrawing Fault while the second corresponds to an as yet undefined zone of mineralisation.

7.3 Rock Chip Geochemistry

Burrawing Prospect - 15 further samples were collected from the immediate vicinity of the Burrawing Mine. With the exception of those which were brecciated all showed relatively low Au values.

Sample TB-178 was a channel sample across a 1 m wide vertical fault breccia outcropping at Burrawing Mine. The breccia assayed 1.83 ppm, channel samples of the footwall and hanging wall (TB-179, 180) pelitic schist assayed 0.15 ppm and 0.067 ppm indicating a significant drop in the degree of Au mineralisation out side the fault. It was also noticed that most of the visible Cu mineralisation actually occurred within both the footwall and hanging wall, and not within the fault zone.

Outcrop in the mine area is very poor and it is presumed that the outcropping 1 m wide fault breccia froms part, if not the whole, of the Burrawing Fault.

Sample TB-184 was also of highly becciated and ferruginised material, but it was not collected insitu.

8. CONCLUSIONS AND RECOMMENDATIONS

Mitshan East Prospect - Au anomalism in this area is a result of Pliestocene reworking of lower Proterozoic basement. The Au is most likely concentrated in fluviatile gravels in close proximity to the Lincoln Uplands, but it is highly unlikely to be of grade high enough to be of any economic interest. The primary source of gold in the Lincoln Uplands is vein type Cu - Au mineralisation previously mined at the Port Lincoln Mines. Earlier rock chip sampling has indicated that the mineralisation is not of economic significance. It is therefore recommended that no further work be carried out in this area.

Burrawing Prospect - Significant Au mineralisation up to 4.5 ppm is known from the Burrawing Mine, formerly mined for Cu. The mineralisation at surface is primarily contained within a 1 to 1.5 m wide beccia zone which presumably forms part of the northeasterly trending poorly outcropping Burrawing Fault. Stream Sediment sampling indicates that Au mineralisation may be significant along the fault over a strike length of up to 1000 m southwest from the main mine. No geochemical data is available along the fault northeast of the ming.

The soil geochemistry also indicates a southwestern extension of Au mineralisation associated with the Burrawing Fault. A second more significant Au anomaly of unknown extent was also defined approximately 80 m southwest of the Burrawing Fault along Line 2.

It is recommended that a detailed soil geochemistry programme be carried out over the Burrawing area to delineate the strike length of Au mineralisation along the Burrawing Fault both northeast and southwest of the Burrawing Mine and also to delineate any other anomalous zones such as that delineated along soil sampling Line 2. This should be followed by drilling of any significant targets that are delineated by the programme.

9. REFERENCES

Flint D. J., 1976: Geological investigations of a nickel occurrence in basic to ultrabasic rocks west of Tumby Bay. SA Department Mines & Energy. Rep Bk 76/9. Unpublished.

Johnson P. D., 1984: Talc deposits near Tumby Bay. Mineral Resources Review, South Australia, 154:60-68.

Martin A. R., 1989a: EL 1513, Tumby Bay SA Six Monthly Report for period September 1988 - February 1989. Unpublished report 2054 Helix Resources NL, Perth.

Martin A. R., 1989b: El 1513 Tumby Bay SA Report for period February - May 1989. Unpublished report 2058 Helix Resources NL, Perth.

10. EXPENDITURE

The following expenditure details include the three month period ended 31 August 1989 and the total for the first 12 months of the EL term.

ITEM	CURRENT PERIOD $	ANNUAL $
Salary and Wages	2,038	14,078
Travel & Accommodation	1,159	11,564
Aerial Phot/Maps	-	777
Assay	371	3,213
Metallurgy	250	13,455
Technical Services	145	145
Drafting	13	2,446
Freight	284	1,704
Fuel/Oil	-	662
Vehicle Rental	561	4,802
Tenement Acquisition	-	11
Mines Department Rents	-	2,795
Field Equipment	-	129
Field Expenses	-	662
TOTAL	4,894	57,324

APPENDIX 1

Stream Sediment Sample Analysis (BCL)

Sample No.	Weight (kg)	Au (ppt)
TB-171	9.91	150
TB-173	10.4	<50
TB-174	12.5	<50
TB-175	10.4	<50
TB-176	9.99	<50
TB-192	9.22	<50
TB-193	9.63	<50
TB-194	9.63	200
TB-195	9.59	<50
TB-196	8.90	200
TB-197	7.79	<50
TB-198	9.23	<50
TB-199	8.49	<50
TB-200	8.02	<50
TB-201	8.41	<50
TB-202	9.54	150

APPRENDIX 2

Stream Sediment Sample Metallurgy

SAMPLE TB-177

Total Dry Weight	:	51.7 kg
+2mm Weight	:	33.2 kg
-2mm Weight	:	18.5 kg
Table Concentrate Weight	:	2114 g
Panned Concentrate	:	44 g
Total No Au Grains	:	6

APPRENDIX 3

Soil Geochemistry Line 1

Sample	Location	Mesh Size	Au (ppm)
TBS-1	000 NW	unseived	<0.008
TBS-1	000 NW	-40 #	<0.008
TBS-1	000 NW	-80 #	<0.008
TBS-2	010 NW	unseived	<0.008
TBS-2	010 NW	-40 #	0.012
TBS-2	010 NW	-80 #	<0.008
TBS-3	020 NW	unseived	<0.008
TBS-3	020 NW	-40 #	<0.008
TBS-3	020 NW	-80 #	<0.008
TBS-4	030 NW	unseived	<0.008
TBS-4	030 NW	-40 #	0.011
TBS-4	030 NW	-80 #	<0.008
TBS-5	040 NW	unseived	<0.008
TBS-5	040 NW	-40 #	0.010
TBS-5	040 NW	-80 #	<0.008

APPENDIX 4

Soil Geochemistry - Line 2 (BCL)

Sample	Weight (kg)	Au(ppt)
000.0 SE	1.87	150
012.5 SE	1.40	50
025.0 SE	1.89	50
037.5 SE	2.19	300
050.0 SE	1.71	1200
062.5 SE	2.26	3550
075.0 SE	1.94	800
087.5 SE	1.85	300
100.0 SE	1.40	200
112.5 SE	1.06	450
125.0 SE	1.53	700
137.5 SE	1.93	2850
150.0 SE	1.17	9450
162.5 SE	1.92	2650

APPENDIX 5

Rock Chip Sample Analyses

Sample	Au(ppm)
TB-178	1.830
TB-179	0.150
TB-180	0.067
TB-181	<0.008
TB-182	0.011
TB-183	<0.008
TB-184	1.600
TB-185	0.036
TB-186	0.008
TB-187	0.024
TB-188	<0.008
TB-189	<0.008
TB-190	0.010
TB-191	0.014
TB-192	0.009

000070

TECHNICAL REPORT 2084

EL 1513, TUMBY BAY, SA

Quarterly Reports
September to November 1989
December 1989 to February 1990

A R MARTIN

DISTRIBUTION:

S A Department Mines & Energy
A R Martin
File

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3. EXPLORATION ACTIVITIES

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5. CONCLUSIONS AND RECOMMENDATIONS

6. EXPENDITURE

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1. INTRODUCTION

This report covers work on EL 1513 for the period December 1989 to February 1990 and includes work on the Burrawing Prospect during September to November 1989. During December 1989 much of the original EL 1513 was relinquished, the remaining portion retains only the Burrawing Prospect area as reported in previous quarterly reports.

All work carried out by Helix was in the Burrawing Prospect area and included surveying and gridding and two surface geochemical surveys.

Other work carried out on EL 1513 outside the Burrawing Prospect is reported in Martin, 1989.

2. TENURE

During the report period the EL was reduced from the original size of 1215 sq km to an area of approximately 34.2 sq km surrounding the Burrawing Prospect (Fig 1).

3. EXPLORATION ACTIVITIES

Two soil geochemistry surveys were completed over the Burrawing Mine area. Both surveys were completed using Bulk Cyanide Leach followed by AAS to determine Au with a 50 ppt detection limited. All samples were collected from the top 30 cm of soil and dry sieved, the -2mm material collected and assayed at Australian Laboratory Services.

A grid with grid north parallel to 040 MN was surveyed over the old mine site after the first of the soil geochemistry surveys.

An IP survey consisting of three 150 metre lines with a 25 m dipole spacing was also carried out. The first line was completed along 2100N centred at 1045E, the second along 1855N centred at 1070E and the third along 2400N centred at 1025. The survey was carried out by Search Exploration Services Pty Ltd (Fig 3).

3.1 Soil Geochemistry

During the first survey seven traverses were completed across the Burrawing Fault trending approximately 130° MN in addition Line 2 was extended by 60 m to the southeast. Five of the lines, 3, 4, 5, 6 and 9 were completed within the surveyed grid (Fig 3) and two lines 7 and 8 southwest of the gridded area (Fig 2). All results except lines 7 and 8 are shown on Fig 3. Results for lines 7 and 8 are included in Appendix 1. Sampling along each line was carried out at 15 m intervals.

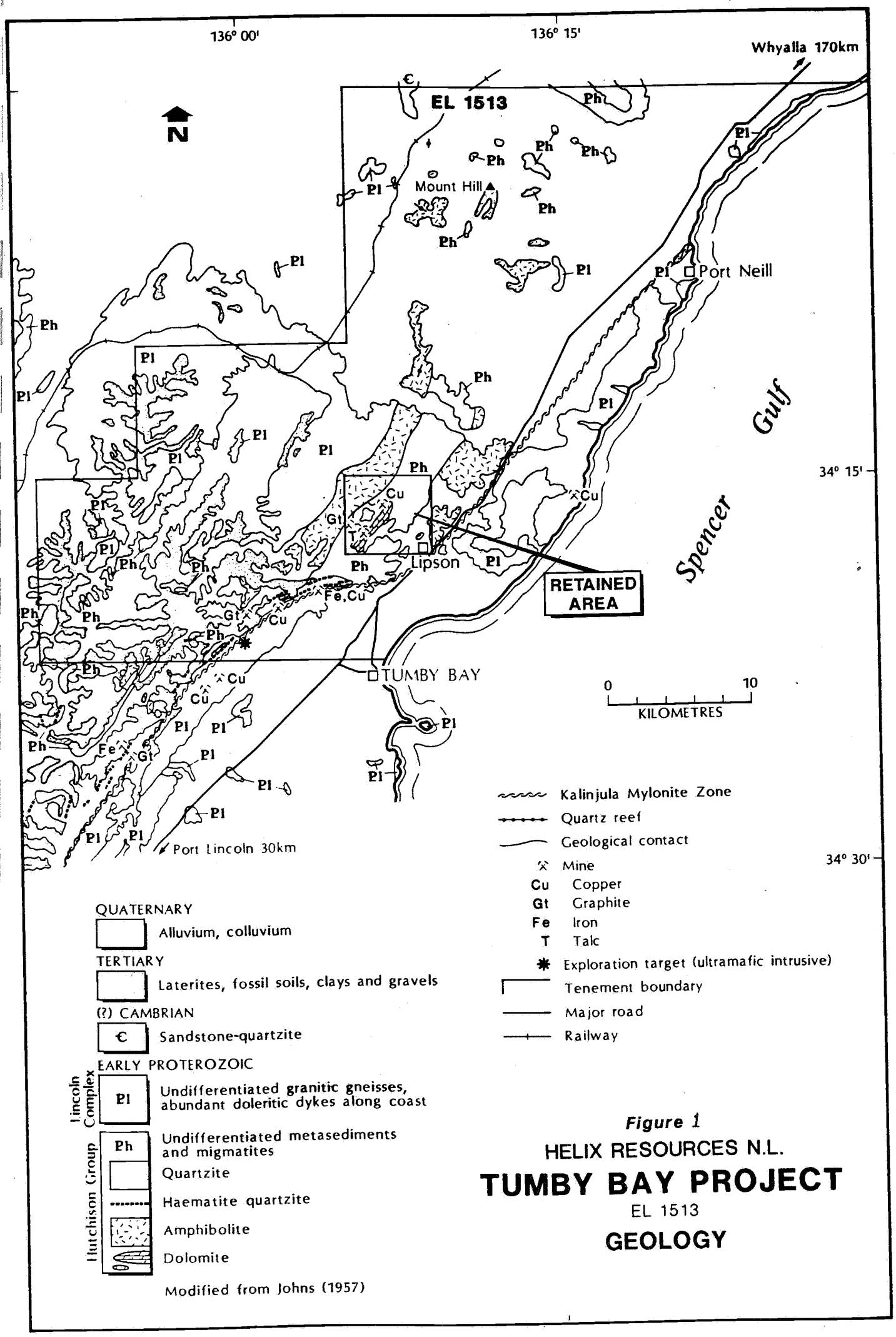


Figure 1

HELIX RESOURCES N.L.

TUMBY BAY PROJECT

EL 1513

GEOLOGY

The second survey was carried out wholly within the surveyed area. A total of seven lines were sampled, 1800N, 1900N, 2000N, 2100N, 2200N, 2300N and 2400N. Samples were again collected at 15 m intervals. All results are included on Fig 3.

4. RESULTS

4.1 Soil Geochemistry

Results of the two soil geochemistry surveys have delineated two zones of anomalous Au greater than 3 ppb (Fig 5). The first an elongate zone corresponding to the direction of strike of the Burrawing Fault lies approximately parallel to grid north. The anomaly reaches a peak of 26 ppb adjacent to the old copper workings. The second anomaly is parallel to the first and located some 70-90 m to the east. This anomaly reaches a peak of 9.5 ppb in the southwestern portion of the area.

The first anomaly is most likely associated with hydrothermal vein quartz mineralisation within pelitic schists along the subvertical breccia zone.

The second anomaly corresponds to the contact between the pelitic schists and overlying interlayered finely banded jaspilitic quartzite and dolomitic marbles and may represent skarn-type mineralisation.

No significant anomalies were encountered on Lines 7 and 8.

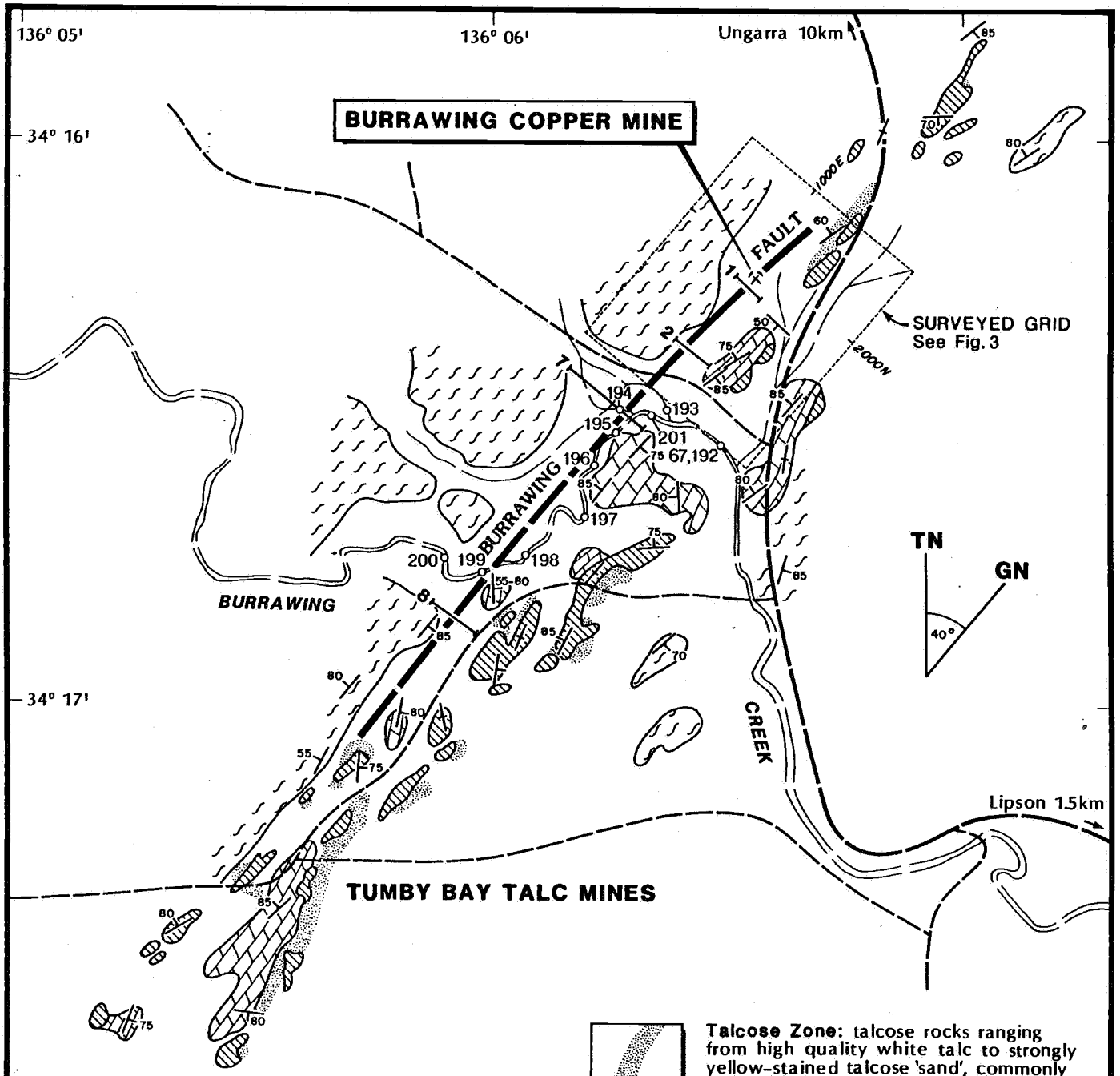
4.2 IP Survey

The IP survey delineated weak anomalies possibly indicating a low grade dissiminated sulphide zone immediately west of the Burrawing Fault Au anomaly on each of the three lines (Figs 4a,b,c).

A second larger anomaly possibly indicating a zone of more massive sulphides was delineated immediately west of the second Au anomaly at 1855N 1115E (Fig 4a).

5. CONCLUSIONS AND RECOMMENDATIONS

Soil geochemistry and the IP survey have delineated two zones of anomalous gold in the Burrawing Mine area and possible complementary zones of disseminated sulphide mineralisation at depth. It is recommended that a programme of angled percussion holes be devised to test both the Au anomalies and IP anomalies along lines 2100N and 1850N and the Au anomaly along line 1900N. It is envisaged that a programme of between 500 and 1000 m should adequately test the target to depths of 100 m.



Talcose Zone: talcose rocks ranging from high quality white talc to strongly yellow-stained talcose 'sand', commonly with grey quartz lenses and pebbles.

Jasper: red, yellow-brown, grey and white ferruginous - siliceous rock, massive and segregated occurring as discontinuous masses and lenses.

Dolomite: off-white to pale grey, mostly medium to coarse-grained, often tremolitic and granulated.

Gneiss and Schist: medium-grained quartz-feldspar-mica gneiss with thin grey-brown schist interbeds.

Strike and dip of bedding/layering:
- inclined
- vertical

Fault

Geological contact

201 o Stream sediment sample site (prefix TB)

3 Soil sample traverse

Drainage (intermittent)

Major road (gravel)

Minor road or vehicular track

Figure 2

HELIX RESOURCES N.L.

EL 1513 TUMBY BAY

BURRAWING PROSPECT
GEOLOGY & SAMPLE LOCATIONS

Modified from Johnson (1984)

GEOGRAPHICS

April 1990

G.980.HRN

900 E 1000 E 1100 E 1200 E 1300 E 1400 E

2400 N 2300 N 2200 N 2100 N 2000 N 1900 N 1800 N 1700 N 1600 N

REFERENCE

- Mine shaft
- Pit
- Mine dump
- Fenceline
- Soil sample traverse 1
- 6200 BLEG sample site with gold assay result (ppt)
- x Site not sampled
- I.P. survey line

ROAD RESERVE

RF 1:1000

0 200 400 600 800 1000 METRES

8103-6

GN MN TN 40° approx. 6.5°

HELIX RESOURCES N.L.

EL 1513 TUMBY BAY

BURRAWING PROSPECT

SOIL GEOCHEMISTRY (GOLD)

Author	A.Martin	Date	March 1990	Drawing No.	G.969.HRN	Plate No.	FIGURE 3
Drawn	GEOGRAPHICS	Scale	1:1000	Revision	9/4/90		

6. EXPENDITURE

The following are expenditure details for the periods September to November 1989, also see Martin, 1989, December to February 1989.

Item	$ Sep-Nov	$ Dec-Feb
Salaries	2,780	8,836
Travel and Accommodation	1,785	3,592
Assay	2,737	2,698
Drafting	263	494
Freight	1,455	241
Fuel/Oil	-	240
Surveying/Gridding	-	2,584
Geophysical Surveying	-	3,240
Vehicle Rental	275	1,012
Mines Dept Rent	2,923	-
Field Equipment	-	599
Sub-total	12,218	23,536
Plus 15% Administration	1,832	3,530
TOTAL	14,050	37,066

7. REFERENCES

Martin, A.R., 1989, Partial Relinquishment Report December 1989, EL 1513. Helix Resources NL Technical Report 2078. Unpub.

APPENDIX 1

Soil Geochemistry Lines 7 and 8

Line 7

Location	Au (ppt)
000E	150
015E	100
030E	100
045E	100
060E	150
075E	100
090E	200
105E	100
120E	100
135E	50
150E	150
165E	50
180E	150
195E	250
210E	200
225E	150
300E	150
315E	500
330E	200
345E	400

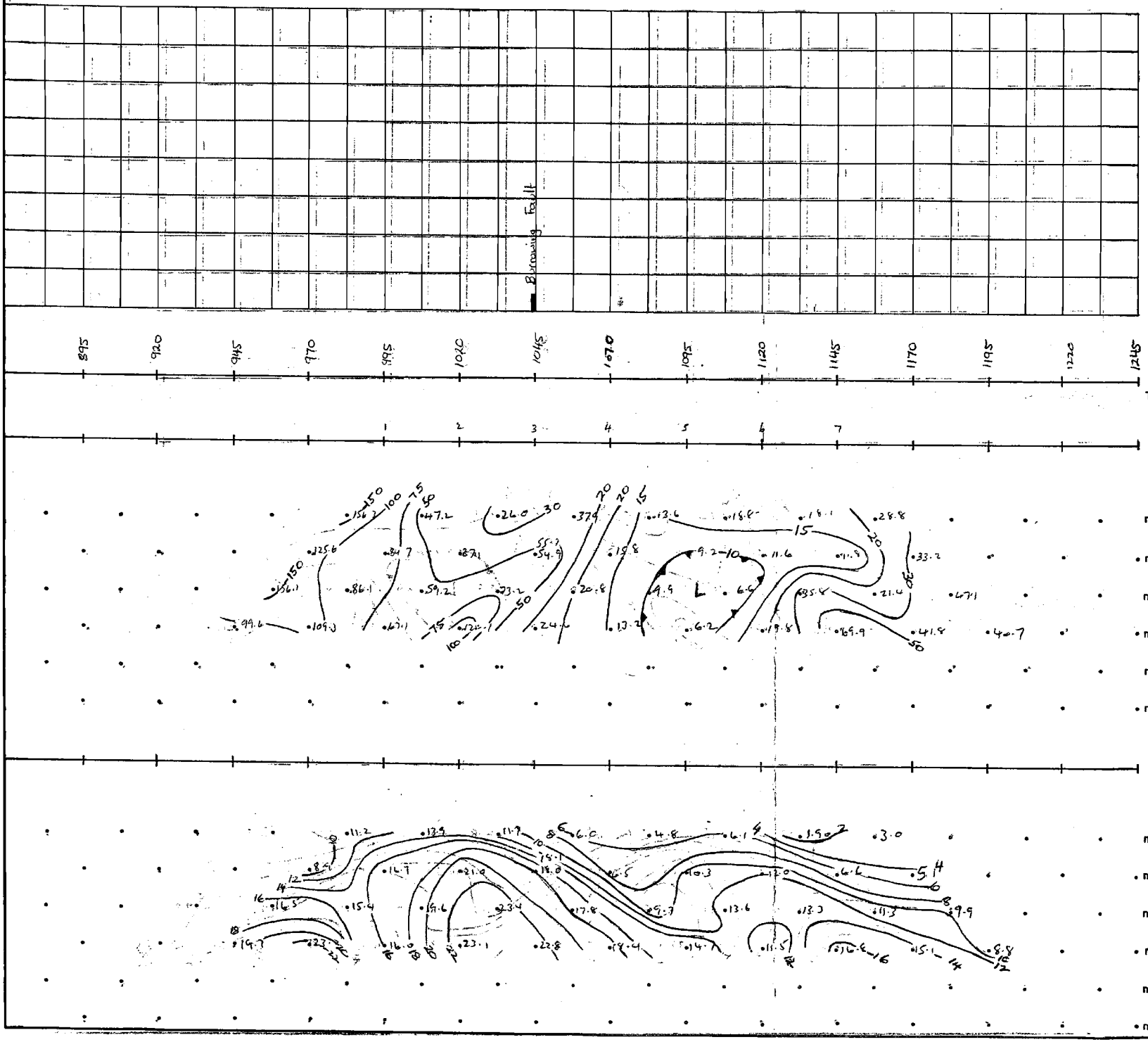
Line 8

Location	Au (ppt)
000E	100
015E	100
030E	50
045E	200
060E	100
075E	150
090E	50
105E	100
120E	<50
135E	100
150E	<50
165E	50
180E	50

SEARCH EXPLORATION SERVICES PTY. LTD.

FIGURE 4a

INDUCED POLARIZATION AND RESISTIVITY SURVEY



I.P. Unit: Tx. TERONICS IP4 Rx. HUNTEC MK IV

Freq. or Int. Period: 2 Sec

Date of Survey: 3/2/90

Field Sheet No:

Approved:

CONTOUR CHOICE

LOGARITHMIC CONTOURS
- 10 Intervals 1·0 1·3 1·6 2·0 2·5 3·2 4·0 5·0 6·3 7·9 10·0
- 8 " 1·0 1·3 1·8 2·4 3·2 4·2 5·6 7·5 10·0
- 6 " 1·0 1·5 2·0 3·0 5·0 7·5 10·0

Electrode Array: Dipole – Dipole

Anomaly Strong — Weak

Contour Interval: Logarithmic 10 8 6

Linear graph scale: 2 cm =

Dipole size: 25m

SCALE:

PROJECT (Tenement name and No.): TUMBY BAY S.A.

Prospect: BROWNING MINE

1:250 000 Sheet and No.:

CR No.:

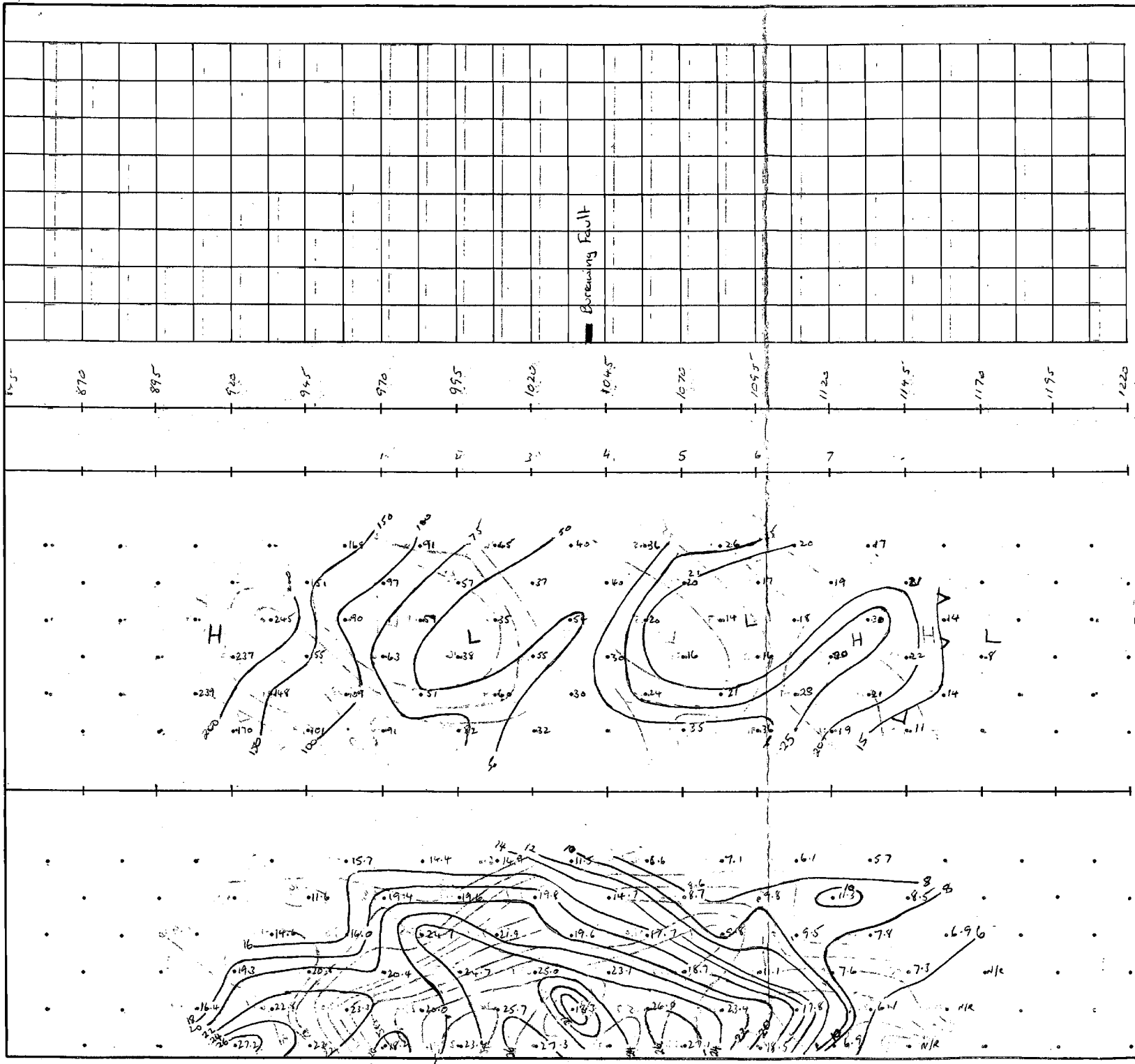
LINE: 1855 N

000081

SEARCH EXPLORATION SERVICES PTY. LTD.

FIGURE 4b

INDUCED POLARIZATION AND RESISTIVITY SURVEY



TERONICS HUNTEC

I. P. Unit: Tx. FT4 Rx. MKIV

Freq. or Int. Period: 2 Sec

Date of Survey: 3/6/90

Field Sheet No:

Approved:

CONTOUR CHOICE

LOGARITHMIC CONTOURS

10	Intervals	1·0 1·3 1·6 2·0 2·5 3·2 4·0 5·0 6·3 7·9 10·0
8	"	1·0 1·3 1·8 2·4 3·2 4·2 5·6 7·5 10·0
6	"	1·0 1·5 2·0 3·0 5·0 7·5 10·0

Electrode Array: Dipole – Dipole

Anomoly Strong — Weak

Contour Interval: Logarithmic 10 8 6

Linear graph scale: 2 cm =

Dipole size: 25m

SCALE:

PROJECT (Tenement name and No.): Tunny Bay SA.

Prospect: Burrawing Mine

1:250 000 Sheet and No.:

CR No.:

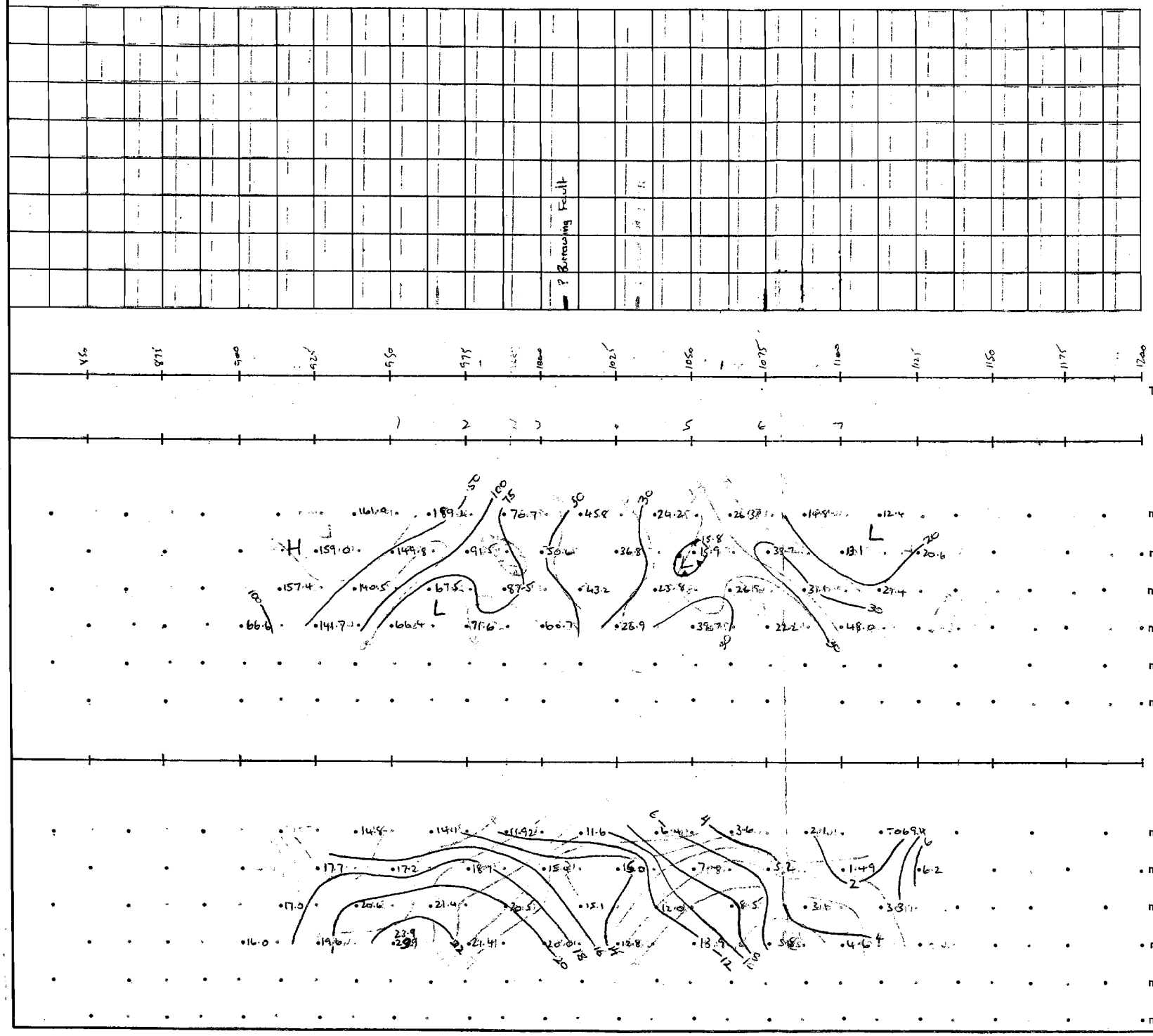
LINE: 2100 N

280082

SEARCH EXPLORATION SERVICES PTY. LTD.

FIGURE 4c

INDUCED POLARIZATION AND RESISTIVITY SURVEY



I.P. Unit: Tx. Terotics ET4 Rx. Huntec MK IV

Freq. or Int. Period: 2sec

Date of Survey: 4/2/90

Field Sheet No:

Approved:

CONTOUR CHOICE

LOGARITHMIC CONTOURS
10 Intervals 1·0 1·3 1·6 2·0 2·5 3·2 4·0 5·0 6·3 7·9 10·0
8 " 1·0 1·3 1·8 2·4 3·2 4·2 5·6 7·5 10·0
6 " 1·0 1·5 2·0 3·0 5·0 7·5 10·0

Electrode Array: Dipole – Dipole

Anomaly Strong — Weak

Contour Interval: Logarithmic 10 8 6

Linear graph scale: 2 cm =

Dipole size: 25m

SCALE:

PROJECT (Tenement name and No.): TUMBY BAY S.A.

Prospect: BURRAWING MINE

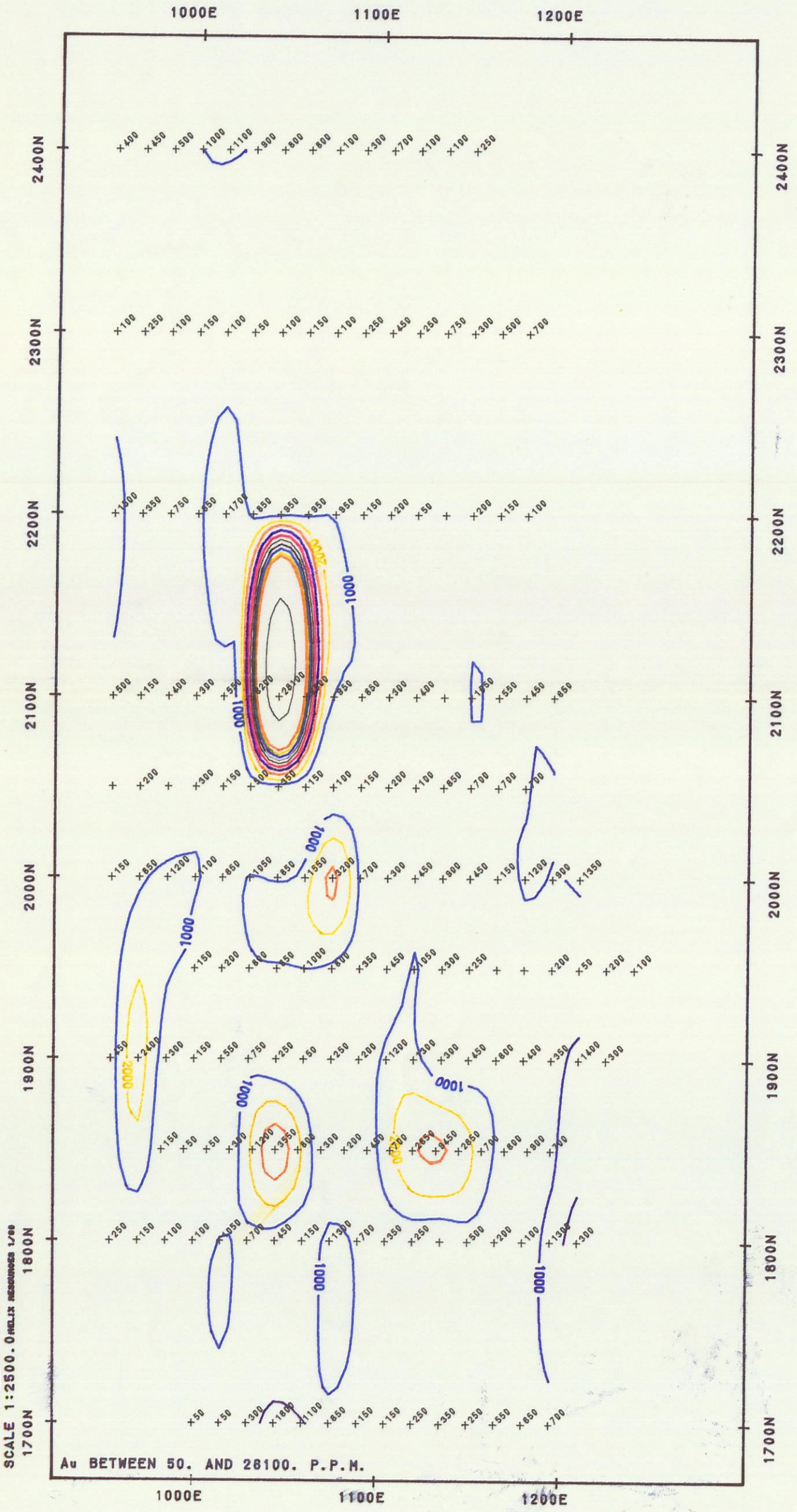
1:250 000 Sheet and No.:

CR No.:

LINE: 2400N

000083

000084



HELIX RESOURCES N.L.

TUMBY BAY PROJECT

SOIL GEOCHEM

AU CONTOURS

AU IN P.P.TRILLION

Author: A.M.	Scale 1:2500	Report:
Drawn: C.M.	Date: 6.3.90	Plan: 5

HELIX RESOURCES NL

TECHNICAL REPORT 2084

EL 1513, Tumby Bay, SA

QUARTERLY REPORT FOR THE PERIOD MARCH - MAY 1990

T Martin
30 April 1990

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S A Department of Mines
Helix Resources NL
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3. TENURE

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   4.1 Regional Setting
   4.2 Prospect Geology

      4.2.1 Burrawing Prospect
      4.2.2 Tumby Bay Talc Mines

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   6.1 Geophysics
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7. CONCLUSIONS AND RECOMMENDATIONS

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3. RC Drillhole Logs and Assay Results

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12.	Tumby Bay Project, Drillhole Geochemistry Line 2100N	1:1,000
13.	British Columbia	-

1. INTRODUCTION

A total of eight RC drillholes in the vicinity of the Burrawing Mine, an abandoned copper mine operated in the late 19th Century, have delineated low level Au + Cu ± Bi and Au mineralisation. Two types of mineralisation were intersected, the first Cu + Au ± Bi associated with mesothermal veins along with vertical brittle faults in pelitic metasediments and the second disseminated Au within finely laminated chalcedonic and jasperoidal units.

Mineralisation and alteration is most closely akin to the vein deposits in deeper parts of epithermal systems such as those in British Columbia with the jasperoidal Au mineralisation possibly representing skarn-type or Carlin -type mineralisation associated with silicification of adjacent chemically deposited sediments (dolomites and iron formation).

Best intersections of vein-type mineralisation were from holes TRC-7 (28-32m) and TRC-6 (64-66m) returning values of 4 m @ .39 g/t Au + .26% Cu and 2 m @ .18 g/t Au + 1.1% Cu respectively, while TRC-4 (8-44m) returned 36 m @ .07 g/t Au within jasperoidal units.

2. LOCATION AND ACCESS

Exploration Licence 1513 is situated in south-eastern Eyre Peninsula between the towns of Tumby Bay, in the south, and Pt Neill, in the north. The townships of Ungarra, Mt Hill, Lipson and Yallunda Flat are located with the Licence (Fig 1).

Access to the area is either via the Lincoln Highway which joins Pt Augusta and Pt Lincoln and passes through the eastern portion of the EL, or via the sealed road between Tumby Bay and Cummins. Numerous unsealed roads and farm tracks allow good access within the Licence.

Much of the area is open undulating country used for grazing and grain crops with native scrub confined to rocky hill tops. The Lincoln Uplands protrude into the south-western portion of the EL where the terrain consists of rolling hills with more common patches of native scrub.

3. TENURE

Exploration Licence 1513 was granted to Helix Resources NL on 2 September 1988 and comprised a total area of 1215 sq kms. During December 1989 much of the area was relinquished except an area of 35 sq kms in the Burrawing area (Fig 2). The Licence is current until 1 September 1990 with an annual expenditure commitment of $85,000.

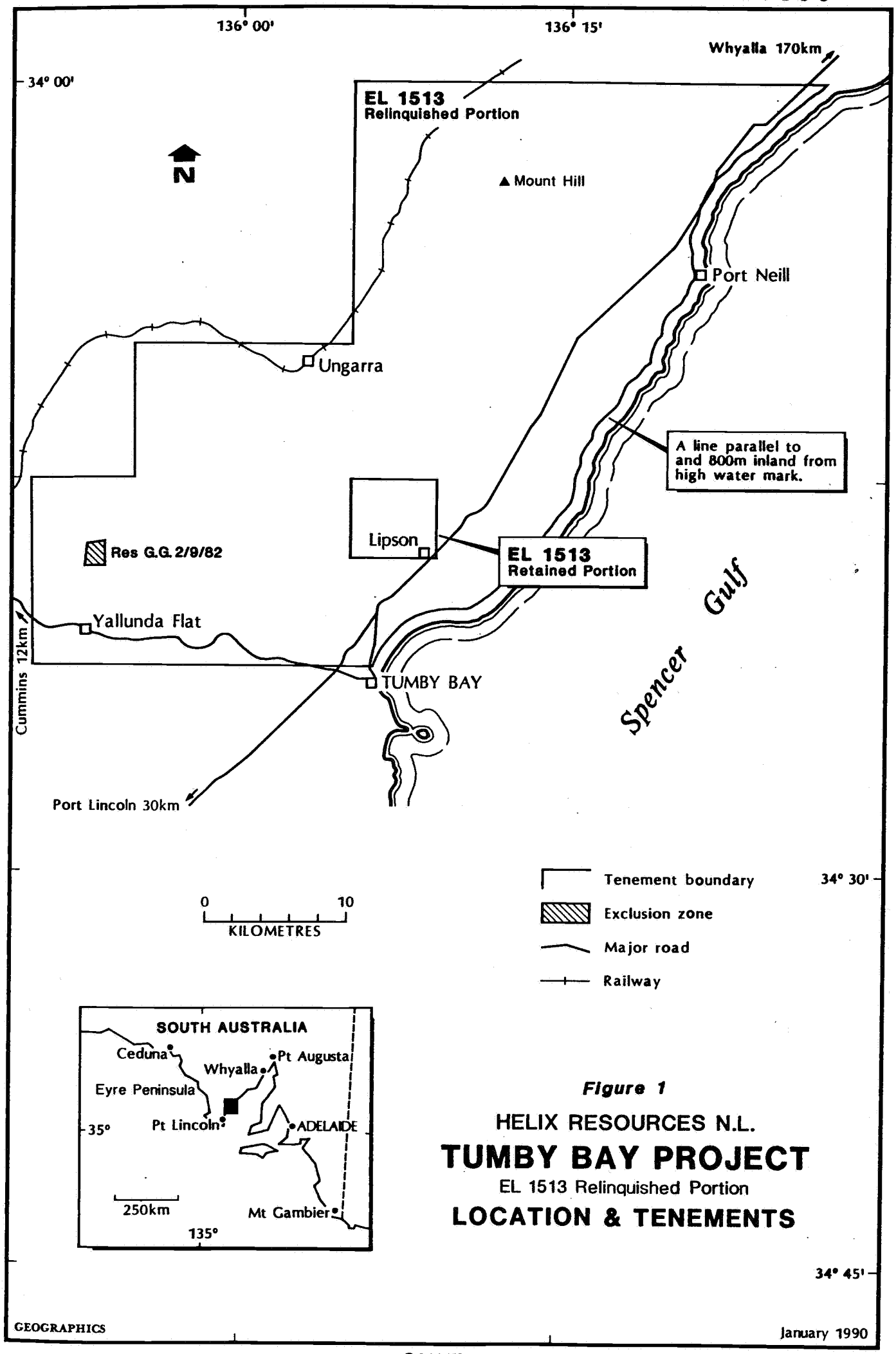


Figure 1

HELIX RESOURCES N.L.

TUMBY BAY PROJECT

EL 1513 Relinquished Portion

LOCATION & TENEMENTS

GEOGRAPHICS

January 1990

G.944.HRN

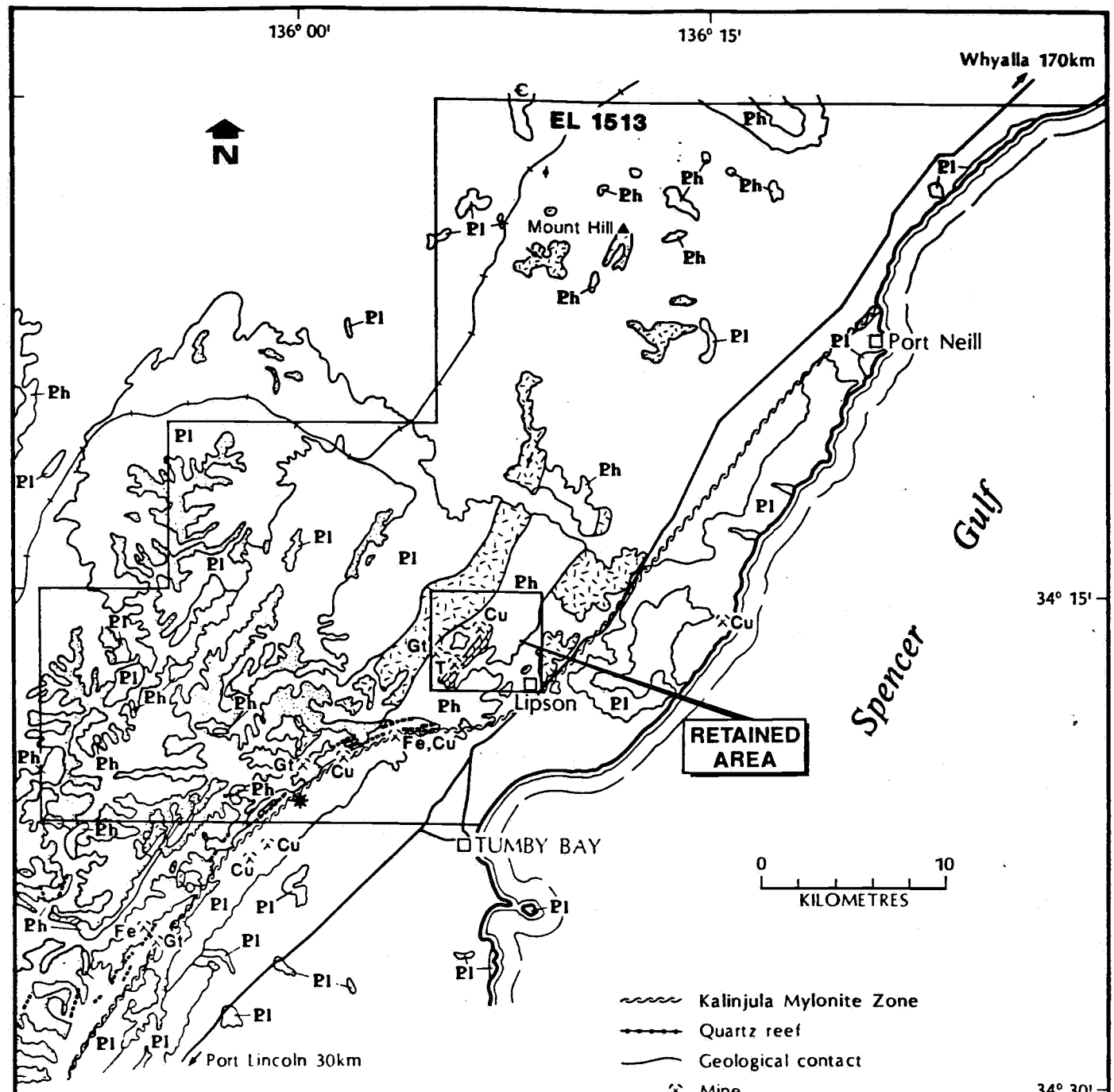
4. GEOLOGY

4.1 Regional Setting

The southern Eyre Peninsula forms part of the Gawler Craton, an area consisting of a variety of Late Archaean to Middle Proterozoic basement lithologies. Southern Eyre Peninsula is comprised of three main tectonostratigraphic rock units, the oldest being a Late Archaean supracrustal sequence, the Sleaford Complex. The sequence was metamorphosed to granulite facies at about 2600 m.y. during the Sleafordian Orogeny, a deformational event which was accompanied by the intrusion of upper crustal granitoids known as the Dutton Suite.

A period of crustal extension between 2100 m.y. and 1850 m.y. resulted in the deposition of a thick sedimentary sequence known as the Hutchison Group. The group consists of, in ascending stratigraphic order, quartzite (with local calcsilicate), dolomitic marble, thin-bedded graphitic quartzite and banded iron formation, semipelitic schist, fine-grained garnetiferous gneiss, amphibolite, banded iron formation, and finally more schist (Parker and Lemon, 1982). Sedimentation ceased at about 1850 m.y. at the onset of the Kimban Orogeny.

The Kimban Orogeny is divided into three primary phases, termed D1, D2 and D3. D1 (1850 m.y.) was a phase of high grade metamorphism, upper amphibolite to granulite facies grade, which was accompanied by the intrusion of acid and basic igneous material comprising the Donnington Granitoid Suite. The second phase D2 (1780 m.y.), a period of isoclinal folding, imparted a pervasive layer-parallel fabric on the rocks of the area and was also accompanied by high level acid intrusions. The final phase of deformation, D3 (1720 m.y.), produced a series of long, thin, intense north to north-easterly trending shear zones including the Kalinjala Mylonite Zone (KMZ). The D3 event was also accompanied by the intrusion of high level S-type granites, and resulted in upright open folding in the areas between the shear zones. All the intrusive rocks accompanying the Kimban Orogeny are loosely termed the Lincoln Complex, the third tectonostratigraphic rock unit seen on southern Eyre Peninsula.



Kalinjula Mylonite Zone
Quartz reef
Geological contact
Mine
Cu Copper
Gt Graphite
Fe Iron
T Talc
Exploration target (ultramafic intrusive)
Tenement boundary
Major road
Railway

QUATERNARY
Alluvium, colluvium

TERTIARY
Laterites, fossil soils, clays and gravels

(?) CAMBRIAN
€ Sandstone-quartzite

EARLY PROTEROZOIC

Lincoln Complex
Pl Undifferentiated granitic gneisses, abundant doleritic dykes along coast

Hutchison Group
Ph Undifferentiated metasediments and migmatites
Quartzite
Haematite quartzite
Amphibolite
Dolomite

Modified from Johns (1957)

Figure 2

HELIX RESOURCES N.L.

TUMBY BAY PROJECT

EL 1513

GEOLOGY

The distribution of basement lithologies in the Tumby Bay area is controlled largely by Kimban Orogeny D3 structures, the most important of these being the Kalinjala Mylonite Zone, This sub-vertical zone of intense shearing is approximately 1 to 2 km wide and trends in a north-easterly direction east of the EL, broadly separating early synorogenic granitic gneisses in the east from Hutchison Group metasediments in the west. Parallel to the KMZ, to the west, are several smaller (<100 m wide) shear zones, along some of which outcrop thin thrust-slices of Lincoln Complex gneisses within the Hutchison Group.

The best exposures of Hutchison Group lithologies are seen in the Lincoln Uplands west of Tumby Bay where they abut the KMZ (Fig 2). Here the vertically dipping sequence has been sheared and is stratigraphically thinner than normal throughout the Peninsula. Because of the high degree of deformation no stratigraphic facing direction can be inferred but by analogy with other areas it is most probable that the sequence generally youngs to the west where the basal Warrow Quartzite is absent from the sequence. In addition to shearing the sequence has undergone isoclinal folding causing possible repetition of some portions, and it is unlikely that a real stratigraphy is resolvable.

Lincoln Complex gneisses to the east of the KMZ include a variety of acid granitic gneisses, the most common of these being a sheared medium-grained light pink-grey quartz feldspar biotite gneiss. Other common varieties include a grey coarsely megacrystic quartz feldspar biotite gneiss, pink-orange quartz feldspar gneiss and a grey fine-grained quartz feldspar biotite gneiss.

The granitic gneisses are commonly cut by dark grey or black fine-grained dolerite dykes. These dykes show some evidence of shearing although not to the same extent as the granitic gneisses. They are generally oriented sub-parallel to the dominant gneissic fabric.

A period of laterite development and associated deep weathering during the Tertiary caused bleaching and kaolinization of much of the outcropping Hutchison Group metasedimentary sequence. The weathered rocks still exhibit the original gneissic fabric but the original mineralogy is completely obscured. Lateritization has caused common red mottling. As a result of the weathering much of the outcropping basement area is now covered by a veneer of small ironstone concretions.

Small outliers of ferruginous flat-lying, fluviatile Tertiary sands and conglomerates up to 3 m thick are preserved throughout the region.

Much of the area between the basement outliers consists of a moderately thick sequence of red, green, grey and brown, gritty to gravelly clays, the result of Pliestocene to Recent weathering. Commonly developed within these clays are sheet-like and nodular calcrete horizons.

4.2 Prospect Geology

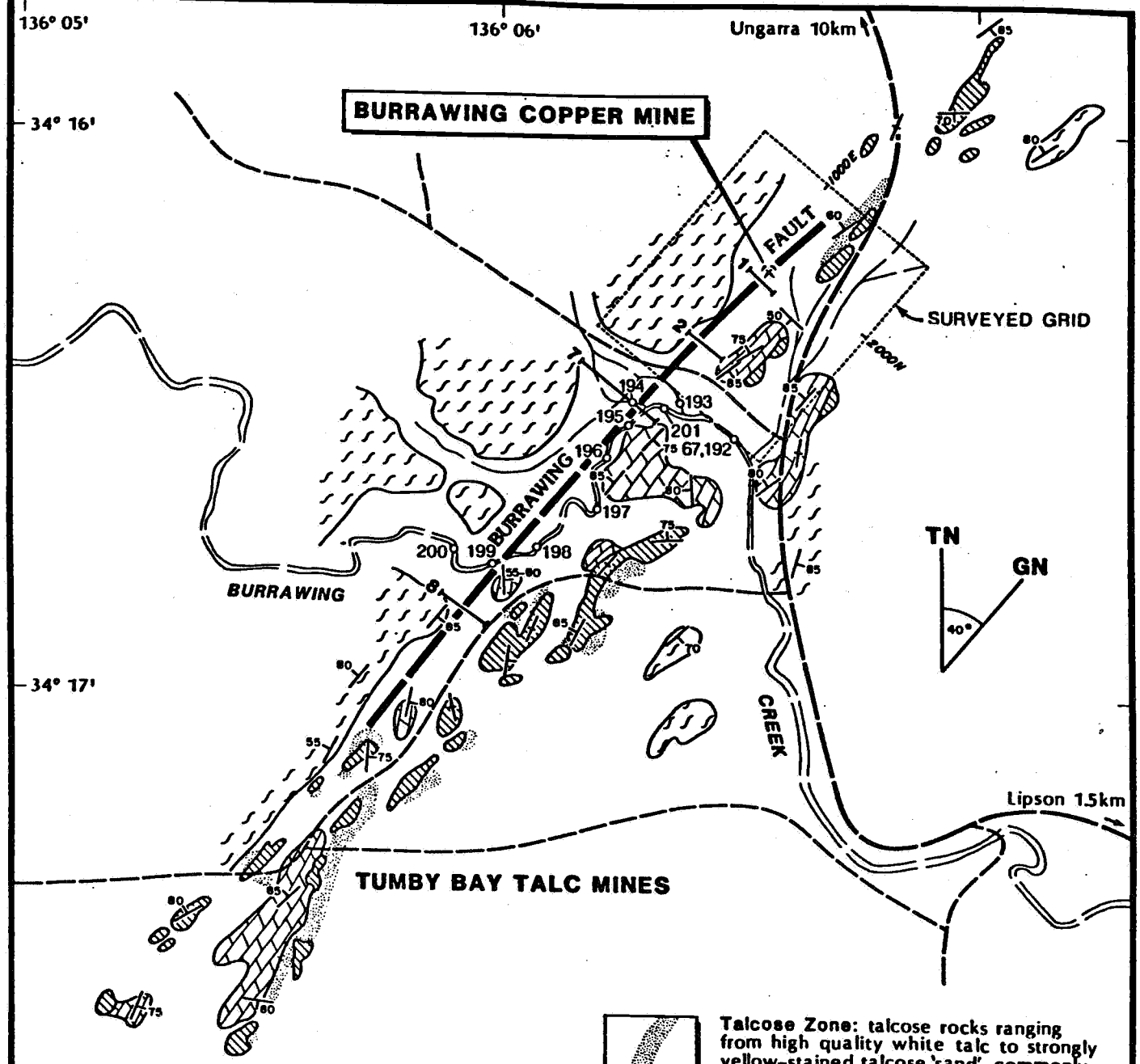
4.2.1 Burrawing Prospect

The Burrawing Prospect (Fig 3) lies in an area comprised of steeply dipping northeasterly striking Hutchison Group metasediments. From the northeast the sequence consists of a thick (>1000 m) unit of pelitic schists with minor interbanded quartzite and amphibolite units. This is overlain to the east by a 500 m thick sequence of chemically deposited units of interbanded dolomitic marble, jaspilitic quartzite and chalcedonic quartzite. All the units have a pervasive S_{0-1} foliation and have been metamorphosed to upper amphibolite facies grade.

Within the pelitic schist, subparallel to the regional S_{0-1} foliation is a post-tectonic cataclastic fault zone termed the Burrawing Fault (Johnson, 1984). Along this fault are a series of shafts and diggings of the Burrawing Mine, operated during the latter part of the 19th century. The copper-bearing lode which is 0.75 m wide at surface was worked over a length of 200m, the main shaft being 85 m deep.

4.2.2 Tumby Bay Talc Mines

The interlayered jaspilite and dolomite units south of the Burrawing Mine contain a series of concordant talc-kaolin-quartz lodes (Fig 3). These lodes occur along the contacts between dolomite and jaspilite probably as the result of siliceous alteration of a schistose unit. The lodes vary in size from 100 m x 50 m to less than 30 m x 10 m.



Talcose Zone: talcose rocks ranging from high quality white talc to strongly yellow-stained talcose 'sand', commonly with grey quartz lenses and pebbles.

Jasper: red, yellow-brown, grey and white ferruginous - siliceous rock, massive and segregated occurring as discontinuous masses and lenses.

Dolomite: off-white to pale grey, mostly medium to coarse-grained, often tremolitic and granulated.

Gneiss and Schist: medium-grained quartz-feldspar-mica gneiss with thin grey-brown schist interbeds.

Strike and dip of bedding/layering:
- inclined
- vertical

Fault

Geological contact

201o Stream sediment sample site (prefix TB)

Soil sample traverse

Drainage. (intermittent)

Major road (gravel)

Minor road or vehicular track

Figure 3

HELIX RESOURCES N.L.

EL 1513 TUMBY BAY

BURRAWING PROSPECT

GEOLOGY & SAMPLE LOCATIONS

Modified from Johnson (1984)

GEOGRAPHICS

April 1990

G.980.HRN

900 E 1000 E 1100 E 1200 E 1300 E 1400 E

2400 N 2300 N 2200 N 2100 N 2000 N 1900 N 1800 N 1700 N 1600 N

REFERENCE

- Mine shaft
- Pit
- Mine dump
- Fenceline
- Soil sample traverse
- 6200 BLEG sample site with gold assay result (ppt)
- x Site not sampled
- A — I.P. survey line with anomaly location

GEOLOGY

- Qp — Pleistocene to Recent alluvium.
- Phk — Dolomite with interbanded jaspilitic iron formation and cherty quartzite.
- Phm — Jaspilitic quartzite, finely laminated with interbanded dolomite.
- Phq — Chalcedonic quartzite, finely laminated.
- Phc — Pelitic schist with minor quartzite and amphibolite.
- Fault breccia
- Geological contact
- Contact inferred from float
- Burrawing Fault (position approx.)
- Lineament
- • TB180 Rock chip sample from outcrop
- × TB183 Rock chip sample from float

E F C D B A

Phc Phm Phk Phq Qp

TB1-3,165,166 TB179 TB180 TB178 TB181 TB185 TB182 TB186 TB184 TB183 TB191 TB192 TB187,188 TB189,190

ROAD RESERVE

RF 1:1000

0 200 400 600 800 1000 METRES

8103-7

GN MN TN 40° approx. 6.5°

HELIX RESOURCES N.L.

EL1513 TUMBY BAY
BURRAWING PROSPECT
Soil Geochemistry (Gold)
INTERPRETED GEOLOGY

Author	A.Martin	Date	June 1990	Drawing No.	G.989.HRN
Drawn	GEOGRAPHICS	Scale	1:1000	Revision	

Plate No. **FIGURE 4**

Alteration that resulted in the talc formation post-dated the main structural and metamorphic events in the area. Evidence for this is seen in the form of pseudomorphs after metamorphic minerals within the talc. Other associated alteration features include chloritic alteration of schists along the northwestern boundary of the chemical sediments. It is also possible that finely laminated chalcedonic quartzite and chert units just south of Burrawing Mine are the result of the same alteration phase and represent silicified carbonates, although it should be noted that some of these siliceous units are more likely to represent 'silicate facies' iron formations.

The degree of alteration resulting in the development of talc in this area is unusual for the Eyre Peninsula. By comparison, talc development within iron formations further north is relatively minor. This would indicate that a unique hydrothermal system was active either late syntectonically or more likely some time after the Kimban Orogeny ceased.

5. PREVIOUS EXPLORATION

Previous precious and base metals exploration in the tenemented area has been restricted to regional surveys including stream geochemistry and airborne geophysics. Prior to Helix's involvement in the area no detailed exploration of the Burrawing Mine area had been undertaken. No records of production from the mine are obtainable but it is known that the mine operated from 1869 to 1874, yielding ore to the value of £6,300 with copper assays up to 37% copper and about 1½% bismuth (Johns, 1951).

Exploration of the Tumby Bay Talc Mines area was carried out by the SA Department of Mines and Energy during the period 1979-1980 (Johnson, 1982). Work included geological mapping, petrographic investigation, drilling and bulk sampling. The results indicated that the main lode contained a yield of 2-3000 tonnes of talc per vertical metre but that further work would need to be carried out on the separation of grey quartz contaminant before bulk mining could proceed economically. Johnson also concluded that the smaller lode could supply small amounts of high quality talc.

Three holes TRC 5, 6 & 7 were drilled along 2100N in the immediate vicinity of the old workings and IP anomaly 'C' drilling indicated two thin (1-5 m) steep westerly dipping zones of low grade mineralisation up to 1.1% Cu and 0.4 ppm Au (Fig 12). The mineralisation is closely associated with zones of thin (<.5 m wide) quartz veins controlled by normal brittle faulting. Alteration around the mineralisation is characterised by pervasive silicification and minor retrograde mineral (epidote and ?chlorite) development. The veins appear to vary from massive to vuggy with saw tooth textures. Finely disseminated sulphide,dominantly pyrite, is found throughout the alteration zone with patchy massive development within the vein systems. The disseminated pyrite within the alteration zone west of the mineralised fault is probably responsible for IP anomaly 'C'. This would imply that there is little or no disseminated pyrite within the alteration halo east of the mineralised zone or the pyrite is not responsible for the observed anomaly.

The holes drilled on line 1855N, TRC 1, 2, 3, and 8 failed to intersect any zones of Au or Cu mineralisation (Fig 10). Minor Cu anomalism up to 1890 ppm was intersected in TRC-1 between 58 and 61 m. Anomalous Au (0.03 ppm) was also intersected in the vicinity of the Burrawing Fault. No anomalous Au zones were intersected in subsurface below the soil anomaly at 1120-1135 E.

A single hole on line 1900 N to test a soil geochem anomaly at 1150E intersected anomalous gold within chalcedonic quartzite (jaspilitic in part), and minor interlayered dolomite (Fig 11). Au values between 0.06 and 0.09 ppm were detected from throughout most of the length of the hole (8-48.5 m). No Cu anomalism was associated with the Au anomaly.

Lead and Zinc are generally low throughout the area but there appears to be some enrichment within the oxidized zone; this is probably enrichment as a result of lateritic weathering processes.

Silver values are very low in all the drill holes while Bi is anomalous only within the higher grade Cu $\pm$ Au mineralised zones directly associated with vein quartz.

7. CONCLUSIONS AND RECOMMENDATIONS

Characteristics of the Burrawing Mine mineralisation viz :-

1. Two types of mineralisation - a) Thin vein type Cu + Au and b) Disseminated Au within jasperoidal lithologies.

2. Pervasive SiO_2 alteration and minor epidote $\pm$ chlorite $\pm$ sericite alteration.

3. Disseminated very fine pyrite throughout the alteration zone.

4. Low temperature of formation, ie precipitation of Cu and Au- bearing SiO_2 along a brittle fault indicates temperatures below those at the brittle-ductile transition.

5. Association with normal faulting.

are most similar to deeper epithermal to mesothermal deposits such as those found in British Columbia. Deposits of this type eg. Rossland area and Scottie deposits, are described by Panteleyer (1986) as representing deposits of intermediate depth between the more common high level epithermal deposits of British Columbia and deeper Cu-Mo porphyry systems (see Fig 13). The disseminated Au within the jasperoidal units has characteristics similar to Carlin-type deposits ie. epithermal to mesothermal deposits in silicified carbonate and dolomite horizons in Nevada USA.

The heat source for this type of system may have been provided by the intrusion of the Yunta Well Leucogranite, a large batholith composed essentially of adamellite which intruded along a major antiformal axis some 7-10 km wide. The outcrop of the leucogranite can be found some 2 km north- west of the Burrawing Mine.

Anomalous results obtained during the first drilling programme indicate the area warrants further exploration to fully evaluate the potential for economic mineralisation. Exploration should be directed towards three types of primary mineralisation. The first, Carlin-style mineralisation, would include more detailed work in the interlayered siliceous and dolomitic units in particular to gain a better understanding of the anomalism in TRC-4 and to find the Au source which was not intersected during drilling. The second would be evaluation of the area for deeper porphry-type deposits as predicted by the British Columbia epithermal model. The final type would be skarn-type base metal mineralisation within the dolomitic sequence associated with a porphyry body or some other igneous intrusion.

All anomalous Au results from rock chip sampling were obtained from samples which originated above the base of oxidation, inferred from drilling to be between 30 and 35 m. None of the mineralisation intersected during the drilling programme was from the oxidized zone. This implies there remains an untested source of secondary mineralisation associated with veining along the Burrawing Fault zone of depth less than 35 metres.

It is recommended that the following work be carried out:

1. Petrological investigation to more fully understand the alteration features associated with mineralisation, it is important that these are distinguishable from a syntectonic alteration that has taken place previously.

2. Expansion of the surface geochemistry, in particular Au soil geochemistry within the dolomites and layered chalcedonic and jaspilitic quartzites.

3. Continued drilling in the region of TRC-4 to define the source and any higher grade zones of Au mineralisation.

4. Deep drilling to define the source of hydrothermal fluids and investigate potential for porphyry-style mineralisation and possible related skarn mineralisation.

5. Test the potential for high grade secondary mineralisation associated with the Burrawang Fault by shallow drilling. Prior to this being carried out more information about the old underground workings would need to be obtained.

8. REFERENCES

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9. EXPENDITURE

The following are expenditure details for the period March-May 1990.

Item	Cost ($)
Salaries and Wages	5,636
Consultants	900
Travel and Accommodation	1,979
Assay Other Geochemical	4,752
Drafting	330
Survey and Gridding	2,584
Freight and Cartage	24
Motor Vehicles Expenses	397
Compensation Agreement Costs	400
Reverse Circulation Drilling	16,362
Field Equipment	671
	34,035
Administration 15%	5,105
TOTAL	$39,140

APPENDIX 1

Interpretation of IP and Magnetic Survey

NB: Line 2 = 1855N
Line 1 = 2100N
Line 3 = 2400N

000104

SEARCH EXPLORATION SERVICES PTY. LTD.

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Mr. Tony Martin,
Helix Resources N.L..
P.O. Box 825,
West Perth, W.A.. 6005

9th February, 1990.

Dear Tony, Re: Interpretation IP Survey, Tumby Bay.

There are a couple of anomalies of note on each line. The western most anomaly appears to be mainly due to a source within the schists. Probably pyrite as the magnetics is not enhanced tending to rule out magnetite or pyrrhotite. There may be some contribution from sulphides in the breccia zone for lines 1 and3 but not 2. This may be a positive indication because of the workings near line 1.

The anomaly in the east appears to be related to the BIF. Its source is also conductive and may represent base metal sulphide mineralisation. The base metals on the Eyre Peninsula have associated low tenor gold as do some of the BIF's.

I have classified the anomalies from A-F although these are two basic features which can be traced from line to line.

Line 2: A: This is the most promising anomaly. It has a coincident low resistivity and moderate chargeability centred on about 1095E. It most likely represents the downdip extension of the BIF, supported by the magnetics. A massive sulphide source(Pb-Zn bearing?) is a strong possibility in this setting.

B: A stronger chargeability anomaly than A but probably represents a pyritic schist unit, and possibly the downdip extension of the breccia zone if it is west dipping ?

Line 1: C: Similar to B on line 2 but more complicated. It probably represents the combined response of sulphides in the breccia zone a possibly a pyritic source in the schists.

D: This is similar in character to anomaly A on line 2 but is not as well defined. It may also represent massive sulphides associated with the BIF. It appears tob be more to the base of the BIF than A.

Line 3: E: Similar to anomaly C on line 1 and probably due to multiple sources. The weaker of which is probably the breccia zone.

F: Anomaly similar to A on line2 but much weaker.

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I hope this has been of some assistance to you Tony. If wish to have a properly drafted report and diagrams please get back to me.

Cheers,

Peter Elliott
Manager- geophysicist.

APPENDIX 2

Rock Chip Sample Analysis

Sample	Au (ppm)	Cu (ppm)	Pt (ppm)	Pd (ppm)	Ni (ppm)	Zn (ppm)
TB-1	2.23	6.3%	3	3	281	130
TB-2	0.13	450	<1	<1	52	4
TB-3	4.52	5500	2	2	116	78
TB-165	1.9	1.5%	<5	4	50	-
TB-166	3.46	2.9%	7	2	460	-
TB-178	1.83					
TB-179	0.15					
TB-180	0.067					
TB-181	<0.008					
TB-182	0.011					
TB-183	<0.008					
TB-184	1.60					
TB-185	0.036					
TB-186	0.008					
TB-187	0.024					
TB-188	<0.008					
TB-189	<0.008					
TB-190	0.010					
TB-191	0.014					
TB-192	0.009					

APPENDIX 3

RC Drillhole Logs and Assay Results

HELIX RESOURCES N.L.

DRILL LOG

HOLE NO: TRC-1

PROJECT/AREA: Tumby Bay EL 1513 PROSPECT: Burrowing CO-ORDINATES: 1855 N 1000 E COLLAR R.L.:

BEARING: 130 (090 GN) ~~M/T/G~~ INCLINATION: -60° TOTAL DEPTH: 103m COMMENCED: 20-3-90 COMPLETED: 21-3-90

RAB: HAMMER: R.C. 0->103 ANALYSED BY: Analabs LOGGED BY: ARM

FROM (m)	TO (m)	LEN-GTH (m)	DESCRIPTION	SAMPLE NO.	ANALYSES Au	Pb	Zn	Bi Ag	Cu
0	1		Weathered white micaceous quartzite + dk brown claystone	TB-350	<.02	20	45	10 1.5	25
1	2		weathered white micaceous quartzofeldspathic gneiss						
2	3		weathered clayey lt yellow micaceous gneiss	351	<.02	15	75	20 1.5	25
3	4		lt yellow brown micaceous clay						
4	5		lt yellow brown micaceous clay	352	<.02	<5	90	<10 1.0	20
5	6		as above						
6	7		as above	353	<.02	15	70	<10 1.0	15
7	8		as above						
8	9		as above	354	<.02	10	100	10 1.0	25
9	10		as above						
10	11		95% lt yellow brown clay, 5% weathered qtz+feld+biot gneiss	355	<.02	5	80	10 1.0	40
11	12								
12	13		as above	356	<.02	5	90	20 10	20
13	14								
14	15		as above	357	<.02	5	95	10 1.5	20

000109

HELIX RESOURCES N.L.
DRILL LOG

HOLE NO: TRC-1

FROM (m)	TO (m)	LEN-GTH (m)	DESCRIPTION	SAMPLE NO.	ANALYSES Au	Pb	Zn	Ag	Cu
15	16								
16	17		weathered clayey lt yellow brown qtz+feld+biot gneiss	TB-358	<.02	<5	100	10 .5	25
17	18		90% clay 10% gneiss (7-8% qtz_3, 2% biot, 1% feld)						
18	19		as above	359	<.02	35	185	<10 1.0	35
19	20		as above						
20	21		fine grained qtz+feld+biot gneiss (Q_{50} Fe_{30} Bi_{20})	360	<.02	25	160	10 .5	65
21	22		with feldspar grains commonly weathered to red oxidized clay						
22	23		gneiss as above	361	<.02	10	110	<10 1.0	120
23	24								
24	25		fine grained grey orange qtz+feld+mica gneiss	362	<.02	15	100	<10 1.0	65
25	26		mica composed 50% silver mica 50% black biotite						
26	27		as above	363	<.02	5	90	10 .5	65
27	28								
28	29		as above	364	<.02	<5	100	<10 .5	30
29	30								
30	31		fine grained grey orange qtz+feld+mica gneiss as above	365	<.02	<5	180	10 .5	50
31	32								
32	33		fine grained grey Q_{40} F_{30} Bi_{30} schist & minor oxide	366	<.02	10	100	10 .5	60
33	34		staining						

000110

HELIX RESOURCES N.L.
DRILL LOG

HOLE NO: TRC-1

FROM (m)	TO (m)	LEN-GTH (m)	DESCRIPTION	SAMPLE NO.	ANALYSES Au	Pb	Zn	Bi Ag	Cu
34	35		fine to med grained grey Q40 F30 Bi 20 schist	TB-367	<.02	5 40	140	10 1.0	55
35	36								
36	37		as above ≤ minor dk grey veinlets of chalcedonic quartz	368	<.02	<5	100	<10 .5	60
37	38								
38	39		fine to medium grained grey quartzo feldspathic gneiss ≤ <5% mica	369	<.02	<5	70	<10 .5	60
39	40		≤ common quartz veinlets // to foliation						
40	41		grey fine grained quartzite	370	<.02	5	125	<10 .5	65
41	42								
42	43		grey Q70 F20 Bi 10 gneiss	371	<.02	<5	115	<10 .5	60
43	44								
44	45		as above with 10-20% vein quartz.	372	<.02	<5	205	<10 <.5	70
45	46								
46	47		as above	373	<.02	<5	65	<10 .5	50
47	48								
48	49		dk grey Q70 F20 Bi 10 gneiss vein quartz still common	374	<.02	<5	70	<10 1.0	65
49	50								
50	51		as above	375	<.02	<5	45	<10 <.5	75
51	52								
52	53			376	<.02	<5	65	<10 <.5	60

0001111

HELIX RESOURCES N.L.
DRILL LOG

HOLE NO: TRC-1

FROM (m)	TO (m)	LEN-GTH (m)	DESCRIPTION	SAMPLE NO.	ANALYSES Au	Pb	Zn	Bi Ag	Cu
53	54		Coarse grained pegmatite ≤ 1-2% tourmaline						
54	55			TB-377	<.02	5	80	<10 <.5	30
55	56		lt grey micaceous gneiss						
56	57			378	<.02	5	105	10 <.5	60
57	58		as above						
58	59			379	<.02	<5	40	10 <.5	910
59	60		as above						
60	61		White med-coarse pegmatite	380	<.02	5	40	<10 <.5	1890
61	62		silver-grey micaceous schist	381	<.02	<5	55	10 <.5	130
62	63		as above with trace sulphide (pyrite)	382	<.02	<5	60	<10 .5	150
63	64		as above	383	<.02	<5	55	<10 <.5	70
64	65		schist as above no sulphide	384	<.02	<5	50	10 <.5	70
65	66		as above ≤ trace v.f. grained Arsenopy sulphide	385	<.02	<5	60	10 <.5	105
66	67		as above	386	<.02	5	65	20 .5	60
67	68		amphibole bearing schist no visible sulphide	387	<.02	<5	55	10 <.5	50
68	69		30% schist 40% tourmaline bearing pegmatite 30% vein qtz trace	388	<.02	<5	85	10 <.5	65
69	70		sulphide (pyrite)	389	<.02	<5	70	<10 <.5	60
70	71		quartz bearing schist	390	<.02	<5	60	10 <.5	50
71	72		med to dk grey amphibole bearing schist trace sulphide 20% vein qtz	391	<.02	5	85	10 <.5	40

GR0011.2

HELIX RESOURCES N.L.
DRILL LOG

HOLE NO: TRC-1

FROM (m)	TO (m)	LENGTH (m)	DESCRIPTION	SAMPLE NO.	ANALYSES Au	Pb	Zn	Bi Ag	Cu
72	73		as above	TB-392	<.02	5	70	20 <.5	75
73	74		as above	393	<.02	<5	50	10 .5	60
74	75		60% pegmatite 40% silver grey schist trace pycite	394	<.02	<5	50	<10 .5	55
75	76		50% silver grey schist 50% milky qtz minor epidote alteration.	395	<.02	10	60	<10 <.5	50
76	77		as above ≤ minor sulphide	396	.03	5	65	10 <.5	55
77	78		as above	397	<.02	5	45	<10 <.5	55
78	79		No Sample						
79	80		90% Tourmaline bearing pegmatite 10% silver grey schist	399	<.02	5	30	<10 .5	35
80	81		as above ≤ mind epidote alteration	400	<.02	5	30	<10 .5	30
81	82		80% pegmatite + vein quartz 20% silver grey Q+F+B gneiss	401	<.02	<5	30	10 .5	35
82	83		90% vein quartz 10% gneiss	402	<.02	<5	40	<10 .5	45
83	84		70% gneiss, with minor epidote alteration + 20% vein quartz	403	<.02	<5	70	10 .5	60
84	85		as above	404	<.02	5	95	<10 <.5	60
85	86		gneiss ≤ 20% vein quartz trace sulphide	405	.03	<5	75	20 .5	365
86	87		gneiss ≤ 30% vein quartz trace sulphide	406	.03	<5	40	<10 <.5	90
87	88		as above	407	<.02	<5	50	<10 .5	100
88	89		gneiss ≤ 40% vein quartz	408	<.02	<5	65	10 .5	80
89	90		as above trace flakey sulphide	409	<.02	<5	65	<10 <.5	100
90	91		grey gneiss ≤ 10% milky qtz trace finely disseminated sulphide	410	<.02	<5	50	<10 <.5	55

0001113

HELIX RESOURCES N.L.
DRILL LOG

HOLE NO: TRC-1

FROM (m)	TO (m)	LENGTH (m)	DESCRIPTION	SAMPLE NO.	ANALYSES Au	Pb	Zn	Bi Ag	Cu
91	92		greiss & minor epidote alteration & 30% milky vein quartz	TB-411	.03	<5	50	10 <.5	60
92	93		as above & 10% vein quartz	-412	.03	<5	40	10 <.5	65
93	94		silver grey QFB schist + 10% vein quartz	413	<.02	<5	65	<10 <.5	85
94	95		as above	414	<.02	<5	85	<10 <.5	60
95	96		grey fine grained schist & 10% vein quartz	415	<.02	<5	110	<10 .5	45
96	97		as above	416	<.02	5	70	<10 <.5	50
97	98		70% silver grey schist 30% vein quartz	417	<.02	5	70	10 <.5	65
98	99		as above	418	<.02	5	100	10 .5	55
99	100		as above & trace disseminated sulphide	419	<.02	<5	60	<10 .5	55
100	101		dk grey fine grained qtz+feld+biot gneiss minor dissem sulphide	420	<.02	5	100	10 <.5	35
101	102		qtz vein 101.0 - 101.5	421	<.02	5	80	10 <.5	60
102	103		grey-green fine grained schist	422	<.02	10	95	20 .5	55

000114

HELIX RESOURCES N.L.

DRILL LOG

HOLE NO: TRC-2

PROJECT/AREA: Tumby Bay EL 193 PROSPECT: Borrowing CO-ORDINATES: 1855 N 1070 E COLLAR R.L.:

BEARING: 090 ~~M/F~~/G INCLINATION: -60 TOTAL DEPTH: 70 COMMENCED: 21-3-90 COMPLETED: 21-3-90

RAB: HAMMER: R.C. 0-70 ANALYSED BY: Analabs LOGGED BY: ARM

FROM (m)	TO (m)	LEN-GTH (m)	DESCRIPTION	SAMPLE NO.	ANALYSES				
					Au	Pb	Zn	Bi Ag	Cu
0	1		highly weathered brown schist	TB-423	<.02	10	155	<10 <.5	55
1	2		as above	424	<.02	10	185	10 .5	25
2	3								
3	4		orange brown weathered qtz+feld+mica schist	425	<.02	15	100	<10 <.5	25
4	5								
5	6		as above	426	<.02	5	85	<10 <.5	40
6	7								
7	8		as above	427	<.02	<5	75	10 <.5	35
8	9								
9	10		orange brown oxidized schist	428	<.02	5	90	<10 .5	45
10	11								
11	12		as above	429	<.02	5	65	10 .5	45
12	13								
13	14		as above	430	<.02	5	60	10 <.5	60
14	15								

0001115

HELIX RESOURCES N.L.
DRILL LOG

HOLE NO: TRC-2

FROM (m)	TO (m)	LENGTH (m)	DESCRIPTION	SAMPLE NO.	ANALYSES Au	Pb	Zn	Bi Ag	Cu
15	16		orange brown oxized weathered schist	TB-431	<.02	25	80	20 <.5	50
16	17								
17	18		as above	432	<.02	25	80	20 <.5	50
18	19								
19	20		as above	433	<.02	10	100	10 <.5	45
20	21								
21	22		weathered oxidized schist as above	434	<.02	25	115	<10 .5	55
22	23								
23	24		as above	435	<.02	10	115	10 <.5	65
24	25								
25	26		as above	436	<.02	50	70	<10 <.5	45
26	27								
27	28		as above	437	<.02	5	50	<10 <.5	25
28	29								
29	30			438	<.02	5	85	10 <.5	35
30	31		brown orange oxidized Qtz+feld+biot schist fine grained						
31	32			439	<.02	10	100	10 <.5	55
32	33		schist becomes more qtz rich						
33	34		70% dk grey siliceous iron formation 30% schist as above	440	<.02	10	135	10 <.5	35

0001116

HELIX RESOURCES N.L.
DRILL LOG

HOLE NO: TRC-2

FROM (m)	TO (m)	LENGTH (m)	DESCRIPTION	SAMPLE NO.	ANALYSES Au	Pb	Zn	Bi Ag	Cu
34	35		highly weathered and oxidized schist						
35	36		partly oxidized grey fine grained micaceous feldspathic quartzite	TB 441	<.02	10	75	10 <.5	55
36	37		grey fine grained laminated quartzite						
37	38		partly oxidized mica+feld quartzite	442	<.02	5	45	<10 <.5	55
38	39		blue-grey fine grained micaceous quartzite						
39	40		V. fine grained black finely laminated chert	443	<.02	5	60	<10 <.5	25
40	41		as above						
41	42			444	<.02	5	30	<10 <.5	20
42	43		as above V. poor recovery						
43	44		"	445	<.02	<5	5	<10 <.5	15
44	45		blue-grey fine grained quartzite "						
45	46		"	446	<.02	<5	5	<10 <.5	20
46	47		grey fine grained quartzite finely laminated						
47	48		as above	447	<.02	5	30	<10 <.5	25
48	49		dk grey fine grained qtz+fld+biot gneiss (silicified)						
49	50		grey fine grained qtzite + minor flaky sulphide	448	<.02	<5	<5	<10 <.5	25
50	51		as above						
51	52		as above	449	<.02	<5	<5	<10 <.5	50
52	53		as above						

0001117

HELIX RESOURCES N.L.
DRILL LOG

HOLE NO: TRC-2

FROM (m)	TO (m)	LEN-GTH (m)	DESCRIPTION	SAMPLE NO.	ANALYSES Au	Pb	Zn	Bi Ag	Cu
53	54		green grey finely laminated highly silicified rock may represent	TB-450	<.02	<5	15	<10 <.5	40
54	55		a silicified carbonate minor sulphide						
55	56			451	<.02	<5	5	<10 <.5	45
56	57		as above ≤ sulphide (pyrite) to 2mm						
57	58			452	<.02	<5	25	<10 <.5	20
58	59		as above + minor dolomite ± trace sulphide						
59	60		as above no dolomite minor sulphide	453	<.02	<5	<5	<10 .5	40
60	61		80% green grey siliceous rock + 20% dolomite minor sulphide						
61	62		green grey siliceous rock no visible sulphide	454	<.02	<5	<5	<10 <.5	15
62	63		as above						
63	64		as above	455	<.02	5	30	<10 <.5	20
64	65		50% siliceous rock as above + 50% amphibolite 1-2% sulphide						
65	66		green grey siliceous rock minor disseminated sulphide	456	<.02	<5	40	<10 .5	5
66	67		50% green grey siliceous rock + 40% dolomite + 5-10% pyrite						
67	68		as above <5% sulphide	457	<.02	5	10	<10 <.5	10
68	69		90% dolomite + 10% siliceous rock minor sulphide						
69	70		as above	458	<.02	<5	<5	<10 <.5	5

0001118

HELIX RESOURCES N.L.

DRILL LOG

HOLE NO: TRC-3

PROJECT/AREA: Tumby Bay EL 1573 **PROSPECT:** Burrowing **CO-ORDINATES:** 1855 N 1100 E **COLLAR R.L.:**

BEARING: 090 ~~M/T~~/G **INCLINATION:** -60° **TOTAL DEPTH:** 71m **COMMENCED:** 22-3-90 **COMPLETED:** 22-3-90

RAB: **HAMMER:** **R.C.** 0-71 **ANALYSED BY:** Analabs **LOGGED BY:** ARM

FROM (m)	TO (m)	LEN-GTH (m)	DESCRIPTION	SAMPLE NO.	ANALYSES				
					Au	Pb	Zn	Bi / Ag	Cu
0	1		light grey highly weathered finely laminated chalcedonic quartzite partly	TB 459	<.02	10	30	<10 / <.5	35
1	2		oxidized with coating of Fe oxide along fractures						
2	3		as above	460	<.02	10	15	<10 / .5	35
3	4								
4	5		90% grey clay + 10% quartzite as above	461	<.02	10	70	10 / <.5	50
5	6		partly oxidized weathered micaceous qtz+feld gneiss mostly clay						
6	7		as above	462	<.02	10	70	10 / <.5	40
7	8								
8	9		as above	463	<.02	10	90	<10 / .5	40
9	10								
10	11		as above	464	<.02	10	55	<10 / .5	35
11	12								
12	13			465	<.02	<5	45	<10 / <.5	25
13	14		weathered finely laminated blue grey qtz ± thin bands of Fe oxide						
14	15		as above	466	<.02	5	85	<10 / <.5	55

000119

HELIX RESOURCES N.L.
DRILL LOG

HOLE NO: TRC-3

FROM (m)	TO (m)	LEN-GTH (m)	DESCRIPTION	SAMPLE NO.	ANALYSES Au	Pb	Zn	Bf Ag	Cu
15	16								
16	17		yellow brown clay & fragments of lt grey fine grained quartzite	TB-467	<.02	5	85	<10 <.5	55
17	18		with thin <½ mm bands of orange Fe-oxide						
18	19		probably a jaspilitic quartzite	468	<.02	40	345	10 <.5	50
19	20		as above						
20	21		lt grey finely banded jaspilitic quartzite	469	<.02	55	120	10 <.5	20
21	22		as above						
22	23		as above	470	<.02	5	215	<10 .5	30
23	24		as above						
24	25		jaspilitic quartzite increase in Fe oxide to 10%	471	<.02	<5	45	<10 .5	10
25	26		as above						
26	27		as above	472	<.02	<5	5	<10 <.5	15
27	28		dark grey plastic clay ≤ minor Fe oxide particles						
28	29		grey clay ≤ minor frags of limestone + mine jaspilitic qtzite	473	<.02	<5	20	<10 <.5	20
29	30		as above						
30	31		khaki grey clay ≤ frags of white carbonate	474	<.02	<5	65	<10 .5	15
31	32		as above						
32	33		as above	475	<.02	<5	70	<10 .5	15
33	34		dk khaki grey clay ≤ frags of white ± orange carbonate						

0001120

HELIX RESOURCES N.L.
DRILL LOG

HOLE NO: TRC-3

FROM (m)	TO (m)	LENGTH (m)	DESCRIPTION	SAMPLE NO.	ANALYSES Au	Pb	Zn	Bi Ag	Cu
.34	35		grey green clay & frags of fine laminated qtzite	TB-476	<.02	<5	20	<10 .5	15
.35	36								
.36	37		as above & minor frags of dolomite	477	<.02	<5	40	<10 <.5	10
.37	38		green grey clay & frags of weakly jaspilitic quartzite						
.38	39		as above	478	<.02	<5	150	<10 .5	15
.39	40		dark grey clay with frags of dk grey siliceous rock (? silici-						
.40	41		fied calcsilicate)	479	<.02	<5	150	<10 .5	20
.41	42		as above						
.42	43		as above + minor to 3% sulphide	480	<.02	<5	155	<10 <.5	25
.43	44		as above, no visible sulphide						
.44	45		as above, minor disseminated sulphide	481	<.02	<5	80	<10 <.5	20
.45	46		as above						
.46	47		as above	482	<.02	5	10	<10 <.5	15
.47	48		as above						
.48	49		as above	483	<.02	<5	20	<10 <.5	15
.49	50		as above						
.50	51		as above	484	<.02	<5	10	<10 <.5	55
.51	52		as above higher sulphide content say 5-10% ~~=3%~~						
52	53		as above trace sulphide	485	<.02	<5	25	<10 <.5	20

T21000

HELIX RESOURCES N.L.
DRILL LOG

HOLE NO: TRC-3

FROM (m)	TO (m)	LENGTH (m)	DESCRIPTION	SAMPLE NO.	ANALYSES Au	Pb	Zn	Bi Ag	Cu
53	54								
54	55		No Sample	—					
55	56		green grey highly siliceous rock with finely disseminated	TB 486	<.02	<5	15	<10 <.5	5
56	57		sulphide (? ex calcsilicate)	487	<.02	<5	5	<10 <.5	5
57	58		as above						
58	59		as above	488	<.02	<5	<5	<10 <.5	5
59	60		as above ≤ 5% sulphide						
60	61		as above ≤ 1% sulphide	489	<.02	<5	<5	<10 <.5	5
61	62		as above						
62	63		as above	490	<.02	5	<5	10 <.5	5
63	64		as above						
64	65		50% grey green siliceous rock 50% brown dolomite	491	<.02	5	<5	<10 <.5	10
65	66		as above minor sulphide						
66	67		50% f.g grey jaspilitic quartzite 50% brown dolomite	492	<.02	<5	5	<10 <.5	15
67	68		as above						
68	69		as above	493	<.02	<5	5	<10 .5	<5
69	70		70% brown dolomite 30% jaspilitic quartzite						
70	71		as above	494	<.02	<5	5	<10 <.5	<5

0001122

HELIX RESOURCES N.L.

DRILL LOG

HOLE NO: TRC-4

PROJECT/AREA: Tunky Bay EL 1513 PROSPECT: Burrawing CO-ORDINATES: 1900 N 1135 E COLLAR R.L.:

BEARING: 090 ~~M/T~~/G INCLINATION: -60° TOTAL DEPTH: 48.5 COMMENCED: 23-3-90 COMPLETED: 23-3-90

RAB: HAMMER: R.C. 0-48.5 ANALYSED BY: Analabs LOGGED BY: ARM

FROM (m)	TO (m)	LEN-GTH (m)	DESCRIPTION	SAMPLE NO.	ANALYSES Au	Pb	Zn	Bi Ag	Cu
0	1		brown clayey soil	TB- 495	<.02	<5	<5	<10 <.5	30
1	2								
2	3		white talc rich clay	496	<.02	5	<5	10 <.5	15
3	4								
4	5		as above	497	<.02	<5	<5	<10 <.5	5
5	6		lt yellow brown clay ≤ 5% frags of dk grey fine grained qtzite						
6	7		qtzite is finely laminated with minor Fe oxide bands	498	<.02	<5	<5	<10 <.5	5
7	8		as above						
8	9		as above	499	.09	5	<5	<10 <.5	<5
9	10		as above ≤ minor frags of oxidized orange metasediments						
10	11		as above	500	.06	<5	<5	<10 <.5	<5
11	12		jaspilite ≤ approx 10% Fe oxide						
12	13		lt grey clay + frags of dark grey chalcedonic quartzite	501	.06	<5	<5	<10 <.5	<5
13	14		orange brown oxidized metasediment probably a weathered						
14	15		jaspilite	502	.06	<5	<5	<10 <.5	<5

0001123

HELIX RESOURCES N.L.
DRILL LOG

HOLE NO: TRC-4

FROM (m)	TO (m)	LEN-GTH (m)	DESCRIPTION	SAMPLE NO.	ANALYSES Au	Pb	Zn	Bi Ag	Cu
15	16								
16	17		50% dk grey chalcedonic quartzite 50% partly Fe oxidized carbonate	TB-503	.03	<5	<5	<10 <.5	<5
17	18		Carbonate with orange Fe-oxide staining						
18	19		as above	504	.06	<5	<5	10 <.5	<5
19	20		as above						
20	21		carbonate as above & minor black chalcedonic quartz	505	.09	<5	<5	<10 <.5	<5
21	22								
22	23		lt grey quartzite + minor black chalcedonic quartz	506	.09	5	<5	<10 <.5	<5
23	24								
24	25		lt grey finely laminated quartzite & fine Fe oxide bands	507	.09	5	<5	<10 <.5	<5
25	26								
26	27		as above	508	.06	5	<5	<10 <.5	<5
27	28								
28	29		lt and dk grey quartzite & 2-3% fine Fe oxide laminations	509	.09	<5	<5	<10 <.5	<5
29	30								
30	31		as above	510	.09	<5	<5	<10 <.5	20
31	32								
32	33		lt grey fine grained dolomite	511	.06	5	<5	<10 <.5	<5
33	34								

0001124

HELIX RESOURCES N.L.
DRILL LOG

HOLE NO: TRC-4

FROM (m)	TO (m)	LENGTH (m)	DESCRIPTION	SAMPLE NO.	ANALYSES Au	Pb	Zn	Bi Ag	Cu
34	35		lt grey fine grained dolomite	TB-512	.09	<5	<5	<10 <.5	<5
35	36								
36	37		dolomite + dark grey fine grained siliceous calcsilicate	513	.06	<5	<5	<10 <.5	<5
37	38		grey fine grained siliceous calcsilicate						
38	39			514	.06	<5	<5	<10 <.5	<5
39	40		as above						
40	41			515	.06	5	<5	<10 <.5	<5
41	42		as above						
42	43		dk grey laminated chalcedonic quartzite with minor Fe oxide bands	516	.06	<5	<5	<10 <.5	<5
43	44		as above						
44	45			517	<.02	<5	<5	10 <.5	<5
45	46		as above & Fe oxide content upto 5% in jaspilite quartzite						
46	47		as above	518	<.02	<5	<5	<10 <.5	<5
47	48		as above						
48	48.5		as above	519	.06	5	<5	<10 <.5	<5

0001125

HELIX RESOURCES N.L. Page. 1. of...

DRILL LOG HOLE NO: TRC-5

PROJECT/AREA: Tomby Bay EL 1513 PROSPECT: Burrowing CO-ORDINATES: 2100 N 970 E COLLAR R.L.:

BEARING: 090 ~~M/T~~/G INCLINATION: -60° TOTAL DEPTH: 50 m COMMENCED: 23-3-90 COMPLETED: 23-3-90

RAB: HAMMER: R.C. 0-50 ANALYSED BY: Analabs LOGGED BY: ARM

FROM (m)	TO (m)	LEN-GTH (m)	DESCRIPTION	SAMPLE NO.	ANALYSES Au	Pb	Zn	Bi Ag	Cu
0	1		weathered clayey schist	TB-520	.03	<5	15	10 <.5	20
1	2								
2	3		khaki-grey micaceous clay + weathered schist	521	<.02	<5	45	<10 <.5	15
3	4								
4	5		as above	522	<.02	<5	45	<10 .5	35
5	6								
6	7		as above	523	<.02	10	60	<10 .5	20
7	8								
8	9		weathered grey qtz+feld+biot schist ≤ thin band ~ 1mm	524	<.02	5	65	<10 .5	10
9	10		of milky qtz parallel to foliation						
10	11		schist with small patches of oxide staining may represent	525	<.02	5	70	<10 <.5	15
11	12		weathered garnet						
12	13		patchy grey and maroon fine grained schist ≤ thin	526	<.02	<5	40	40 <.5	15
13	14		qtz stringer parallel to foliation						
14	15		as above	527	<.02	<5	55	10 <.5	20

000126

HELIX RESOURCES N.L.
DRILL LOG

HOLE NO: TRC-5

FROM (m)	TO (m)	LENGTH (m)	DESCRIPTION	SAMPLE NO.	ANALYSES Au	Pb	Zn	Bi	Ag	Cu
15	16		as above							
16	17		as above	TB-528	<.02	5	135	<10	<.5	15
17	18									
18	19		as above	529	<.02	<5	60	<10	<.5	40
19	20									
20	21		as above	530	<.02	5	65	10	<.5	35
21	22									
22	23		weathered grey schist only minor oxide staining	531	<.02	<5	65	<10	<.5	15
23	24									
24	25		as above	532	<.02	5	25	10	<.5	10
25	26									
26	27		as above	533	<.02	5	20	<10	.5	5
27	28									
28	29		50% partly oxidized schist 50% white milky quartz	534	<.02	5	<5	<10	<.5	5
29	30									
30	31		schist becomes more silicified & corresponding	535	<.02	5	<5	<10	<.5	5
31	32		color change to green-grey Fe oxide							
32	33		staining still evident	536	<.02	5	20	<10	<.5	25
33	34									

0001121

HELIX RESOURCES N.L.
DRILL LOG

HOLE NO: TRC-5

FROM (m)	TO (m)	LENGTH (m)	DESCRIPTION	SAMPLE NO.	ANALYSES Au	Pb	Zn	Bi Ag	Cu
34	35		as above	TB-537	<.02	5	<5	<10 <.5	<5
35	36								
36	37		silicified schist as above + common coarse quartz frags.	538	<.02	<5	25	<10 <.5	20
37	38		minor Fe oxide still evident						
38	39		as above	539	<.02	<5	5	<10 <.5	15
39	40								
40	41		as above	540	<.02	5	20	<10 <.5	5
41	42								
42	43		as above	541	<.02	5	20	<10 .5	15
43	44								
44	45		as above	542	<.02	5	45	<10 <.5	15
45	46								
46	47		as above	543	<.02	5	55	<10 <.5	15
47	48								
48	49		as above	544	<.02	5	60	<10 <.5	30
49	50								

000128

HELIX RESOURCES N.L.

DRILL LOG

HOLE NO: TBC-6

PROJECT/AREA: Tumby Bay EL 1513 PROSPECT: Borrawing CO-ORDINATES: 2100 N 995 E COLLAR R.L.: ____

BEARING: 090 ~~M/T~~/G INCLINATION: -60 TOTAL DEPTH: 109m COMMENCED: 24-3-90 COMPLETED: 25-3-90

RAB: ____ HAMMER: ____ R.C. 0-109 ANALYSED BY: Anabbs LOGGED BY: ARM

FROM (m)	TO (m)	LEN-GTH (m)	DESCRIPTION	SAMPLE NO.	ANALYSES Au	Pb	Zn	Bi Ag	Cu
0	1		weathered grey schist	TB-545	<.02	45	210	10 <.5	50
1	2			546	<.02	15	125	<10 <.5	45
2	3		as above						
3	4			547	.03	25	55	10 <.5	35
4	5		fine to med grained qtz+feld+biot schist & minor thin						
5	6		qtz stringers parallel to foliation	548	<.02	20	55	10 <.5	75
6	7		Tourmaline bearing pegmatite						
7	8		weathered partly oxidized grey schist	549	<.02	20	10	<10 <.5	35
8	9		80% vein quartz 20% weathered schist						
9	10		40% vein quartz 60% weathered grey schist	550	<.02	35	100	10 <.5	75
10	11		90% weathered partly oxidized grey schist 10% vein quartz						
11	12		as above	551	<.02	40	40	20 <.5	35
12	13		60% tourmaline bearing pegmatite 30% vein quartz						
13	14		10% weathered partly oxidized schist	552	<.02	25	140	<10 .5	45
14	15								

000129

HELIX RESOURCES N.L.
DRILL LOG

HOLE NO: IRC-6

FROM (m)	TO (m)	LEN-GTH (m)	DESCRIPTION	SAMPLE NO.	ANALYSES Au	Pb	Zn	Bi Ag	Cu
15	16		70% grey schist 30% vein quartz						
16	17			TB-553	<.02	10	100	<10 .5	50
17	18		grey partly oxidized schist						
18	19			554	<.02	5	105	<10 <.5	55
19	20		85% grey schist 15% vein quartz						
20	21			555	<.02	10	130	<10 .5	55
21	22		grey partly oxidized schist = <10% f.g. milky qtz						
22	23			556	<.02	5	125	10 <.5	55
23	24		as above						
24	25			557	<.02	5	145	10 <.5	55
25	26		as above						
26	27			558	<.02	10	135	<10 <.5	55
27	28		as above						
28	29			559	<.02	5	115	<10 <.5	55
29	30		as above						
30	31			560	<.02	10	120	10 <.5	55
31	32		as above						
32	33			561	<.02	5	125	<10 <.5	75
33	34		as above						

0001130

HELIX RESOURCES N.L.
DRILL LOG

HOLE NO: TRC-6

FROM (m)	TO (m)	LENGTH (m)	DESCRIPTION	SAMPLE NO.	ANALYSES Au	Pb	Zn	Bi	Ag	Cu
34	35		dk grey fine grained qtz feld biot gneiss	TB-562	<.02	5	75	<10	<.5	35
35	36									
36	37		as above	563	<.02	5	125	10	<.5	65
37	38									
38	39		dk grey gneiss more schistose than previous 4m	564	<.02	10	75	<10	<.5	40
39	40									
40	41		grey to dark grey qtz feld biot gneiss	565	<.02	10	90	<10	<.5	45
41	42									
42	43		50% grey gneiss + 50% fine grained quartzite	566	<.02	5	105	<10	<.5	65
43	44									
44	45		dark grey fine grained quartzite with minor sulphide	567	<.02	5	45	<10	.5	75
45	46		quartzite may represent a silicified gneiss as above							
46	47		dark green grey siliceous gneiss	568	<.02	5	120	10	.5	55
47	48									
48	49		siliceous gneiss & ~~v minor~~ trace sulphide mineralization along	569	<.02	10	105	<10	<.5	45
49	50		foliation planes							
50	51		as above with minor sulphide mineralization	570	<.02	5	125	<10	<.5	65
51	52		as above + 20% tourmaline bearing pegmatite							
52	53		partly micaceous tourmaline bearing pegmatite	571	<.02	10	<5	10	<.5	135

00001131

HELIX RESOURCES N.L.
DRILL LOG

HOLE NO: TRC-6

FROM (m)	TO (m)	LEN-GTH (m)	DESCRIPTION	SAMPLE NO.	ANALYSES Au	Pb	Zn	Bi Ag	Cu
53	54		tourmaline bearing pegmatite						
54	55		dk green grey fine grained silicified qtz+felt+biot gneiss ≤ trace sulph	TB-572	<.02	5	25	<10 <.5	25
55	56								
56	57		as above	573	<.02	15	130	<10 <.5	50
57	58								
58	59		dk green grey highly silicified gneiss ≤ minor sulphide	574	<.02	10	130	<10 <.5	55
59	60								
60	61		as above	575	<.02	10	100	10 <.5	75
61	62								
62	63		as above	576	<.02	5	75	<10 <.5	80
63	64								
64	65		as above ≤ ~10% vein quartz	577	.18	15	5	100 .5	1.1%
65	66		Poor recovery						
66	67		60% siliceous gneiss 40% vein quartz ≤ dogtooth texture	578	.09	5	10	20 .5	5100
67	68		≤ high sulphide content 10%-15% mostly pyrite + minor chalco						
68	69		siliceous gneiss ≤ 1-2% sulphide	579	.04	5	25	20 .5	1940
69	70								
70	71		as above	580	.03	<5	25	10 <.5	875
71	72		large sulphide grains (pyrite) assoc with vein quartz			"	"		

000132

HELIX RESOURCES N.L.
DRILL LOG

HOLE NO: TRC-6

FROM (m)	TO (m)	LENGTH (m)	DESCRIPTION	SAMPLE NO.	ANALYSES Au	Pb	Zn	Bi	Ag	Cu
72	73		80% grey grey siliceous gneiss 20% vein quartz <1% sulphide	581	<.02	<5	30	<10	<.5	55
73	74									
74	75		95% siliceous gneiss 5% vein quartz ± trace sulphide	582	<.02	<5	35	20	<.5	135
75	76		80% siliceous gneiss 20% vein qtz + ~1% sulphide							
76	77			583	<.02	<5	25	20	<.5	25
77	78		90% siliceous gneiss 10% vein qtz trace sulphide							
78	79		95% " " 5% " " " "	584	<.02	5	90	10	<.5	170
79	80		as above							
80	81		lt grey silicified gneiss ± 2-3% sulphide (chalco + pyrite)	585	.14	5	100	20	<.5	9790
81	82		70% lt grey silicified gneiss + 30% vein qtz + sulphide (20%, 10%)							
82	83		95% grey grey siliceous gneiss + 3% vein qtz + 2% sulphide (chalco + py)	586	.03	<5	40	10	<.5	2910
83	84		90% grey grey siliceous gneiss +10% vein qtz ± disseminated sulphide							
84	85		grey green siliceous gneiss ± minor disseminated sulphide	587	<.02	<5	25	<10	<.5	880
85	86							<1		
86	87		as above	588	<.02	<5	25	<10	.5	140
87	88									
88	89		as above	589	<.02	5	50	10	.5	1300
89	90		5% vein quartz ± minor to 1% sulphide (chalco + pyrite)							
90	91		as above	590	<.02	5	30	10	.5	480

0001133

HELIX RESOURCES N.L.
DRILL LOG

HOLE NO: TRC-6

FROM (m)	TO (m)	LEN-GTH (m)	DESCRIPTION	SAMPLE NO.	ANALYSES Au	Pb	Zn	Bi Ag	Cu
91	92		green grey siliceous gneiss ± trace sulphide						
92	93		as above	TB 591	<.02	<5	25	<10 <.5	220
93	94		as above						
94	95		as above	592	<.02	5	20	<10 <.5	495
95	96		95% siliceous gneiss 5% vein quartz trace sulphide						
96	97		as above	593	<.02	5	15	20 .5	980
97	98		green grey gneiss no visible vein quartz or sulphide						
98	99		95% siliceous gneiss 5% vein quartz, trace sulphide	594	<.02	10	85	10 <.5	355
99	100		as above						
100	101		as above	595	<.02	5	70	10 <.5	960
101	102		gneiss more highly altered to lt grey siliceous rock						
102	103		as above	596	.03	5	25	20 .5	1610
103	104		dk green grey siliceous gneiss ±10% vein qtz + minor cpy						
104	105		very hard green grey siliceous gneiss trace sulphide	597	<.02	5	70	<10 .5	280
105	106		as above						
106	107		as above	598	<.02	<5	45	<10 .5	325
107	108		as above gneiss very hard drilling rate						
108	109		as above 2-3 m per hour.	599	<.02	5	70	<10 <.5	205

00013434

HELIX RESOURCES N.L.

DRILL LOG

HOLE NO: TRC-7

PROJECT/AREA: Tumby Bay EL1513 **PROSPECT:** Burrowing **CO-ORDINATES:** 2100 N 1020 E **COLLAR R.L.:** .

BEARING: 090 ~~M/T~~/G **INCLINATION:** -60° **TOTAL DEPTH:** 71m **COMMENCED:** 25-3-90 **COMPLETED:** 25-3-90

RAB: _____ **HAMMER:** _____ **R.C.** 0-71 **ANALYSED BY:** Arabbs **LOGGED BY:** ARM

FROM (m)	TO (m)	LEN-GTH (m)	DESCRIPTION	SAMPLE NO.	ANALYSES				
					Au	Pb	Zn	Bi Ag	Cu
0	1		weathered clayey micaceous schist	TB-600	<.02	15	70	<10 .5	75
1	2								
2	3		weathered grey brown fine grained schist (qtz+feld+biot)	601	<.02	10	90	<10 .5	65
3	4								
4	5		partly weathered grey schist + common orange brown oxide staining	602	<.02	10	90	<10 <.5	75
5	6								
6	7		as above	603	<.02	15	70	<10 <.5	75
7	8								
8	9		80% weathered schist + 20% vein quartz	604	<.02	20	70	<10 <.5	65
9	10								
10	11		milky white vein quartz	605	<.02	10	75	<10 <.5	30
11	12		partly weathered fine grained schist						
12	13		as above	606	<.02	15	135	<10 <.5	55
13	14								
14	15		as above + 5% vein quartz	607	<.02	15	145	<10 <.5	60

0001135

HELIX RESOURCES N.L.
DRILL LOG

HOLE NO: TRC-7

FROM (m)	TO (m)	LEN-GTH (m)	DESCRIPTION	SAMPLE NO.	ANALYSES Au	Pb	Zn	Bi Ag	Cu
15	16								
16	17		partly oxidized weathered fine to medium grained schist	TB-608	<.02	10	185	<10 <.5	55
17	18								
18	19		as above	609	<.02	10	150	<10 <.5	75
19	20								
20	21		as above ≤ 5% vein quartz	610	<.02	25	185	<10 <.5	145
21	22								
22	23		as above ≤ 5% vein quartz	611	<.02	5	105	<10 <.5	155
23	24								
24	25		as above ≤ <1% vein quartz	612	<.02	5	65	<10 <.5	410
25	26								
26	27		dark grey fine grained qtz feld biot gneiss some	613	<.02	<5	50	<10 <.5	465
27	28		minor oxidation						
28	29		partly oxidized and weathered grey schist	614	.43	10	55	260 <.5	3140
29	30		~~orange oxidized iron bearing quartzite~~						
30	31		orange oxidized iron bearing quartzite	615	.34	5	<5	310 .5	2000
31	32		grey schist ≤ minor quartzite						
32	33		grey brown weathered schist +10% grey v.fine grained	616	.10	10	10	40 <.5	3080
33	34		quartzite						

0001136

HELIX RESOURCES N.L.
DRILL LOG

HOLE NO: TRC-7

FROM (m)	TO (m)	LEN-GTH (m)	DESCRIPTION	SAMPLE NO.	ANALYSES Au	Pb	Zn	Bi Ag	Cu
34	35		more siliceous grey qtz+feld+biot gneiss	TB-617	<.10	10	5	320 <.5	1550
35	36								
36	37		grey qtz+f+biot schist ≤ thin quartz stringers parallel	618	<.02	<5	15	<10 <.5	960
37	38		to schistosity						
38	39		grey schist as above ≤ minor vein quartz	619	<.02	<5	40	40 <.5	360
39	40								
40	41		siliceous green grey gneiss ≤ trace v fine grained	620	<.02	<5	50	<10 <.5	270
41	42		sulphide						
42	43		green grey siliceous gneiss + 5% vein quartz no visible sulphide	621	<.02	<5	55	<10 <.5	165
43	44								
44	45		as above	622	<.02	5	75	<10 <.5	230
45	46								
46	47		siliceous gneiss as above with minor flakey sulphide	623	<.02	10	80	<10 <.5	405
47	48								
48	49		as above no visible sulphide	624	<.02	10	115	<10 <.5	175
49	50								
50	51		lt grey green schist ≤ sulphide visible in vein quartz	625	.05	5	120	<10 .5	7520
51	52								
52	53		green grey siliceous gneiss ≤ trace sulphide	626	<.02	5	65	<10 <.5	390

0001137

HELIX RESOURCES N.L.
DRILL LOG

HOLE NO: TRC-7

FROM (m)	TO (m)	LEN-GTH (m)	DESCRIPTION	SAMPLE NO.	ANALYSES Au	Pb	Zn	Bi Ag	Cu
53	54								
54	55		as above	JB-627	<.02	10	105	<10 <0.5	105
55	56								
56	57		as above trace sulphide along foliation planes	628	<.02	10	125	20 <0.5	310
57	58								
58	59		50% green grey siliceous gneiss 50% vein quartz with dog tooth	629	<.02	15	135	10 <0.5	290
59	60		texture, massive pyrite assoc with vein quartz						
60	61		siliceous gneiss with very fine grained disseminated sulphide	630	<.02	5	55	10 <0.5	40
61	62								
62	63		siliceous gneiss no visible sulphide	631	<.02	25	105	10 <0.5	55
63	64								
64	65		lt grey green siliceous gneiss or quartzite	632	<.02	10	70	20 <0.5	90
65	66								
66	67		dk green grey highly siliceous gneiss minor dissem sulphide	633	<.02	5	110	10 <0.5	175
67	68								
68	69		as above	634	<.02	5	55	<10 <0.5	90
69	70								
70	71		fine grained qtz+fld+biot schist	635	<.02	5	45	10 0.5	235

000138

HELIX RESOURCES N.L. Page 1 of ...

DRILL LOG HOLE NO: TRC-8

PROJECT/AREA: Tumby Bay EL 1513 PROSPECT: Burrowing CO-ORDINATES: 1855 N 1135 E COLLAR R.L.:

BEARING: 090 ~~M/A~~/G INCLINATION: -60 TOTAL DEPTH: 30m COMMENCED: 26-3-90 COMPLETED: 26-3-90

RAB: HAMMER: R.C. 0-30 ANALYSED BY: Analabs LOGGED BY: ARM

FROM (m)	TO (m)	LEN-GTH (m)	DESCRIPTION	SAMPLE NO.	ANALYSES Au	Pb	Zn	Bi Ag	Cu
0	1		clayey rubbley soil	TB-636	<.02	5	15	<10 <.5	45
1	2		highly weathered silicified calcsilicate + dolomite						
2	3		weathered blue grey silicified calcsilicate + dolomite	637	<.02	<5	5	<10 <.5	30
3	4		weathered grey clayey dolomite + minor silicified calcsilicate						
4	5		blue grey silicified cals-silicate + minor jaspilitic quartzite	638	<.02	<5	10	<10 <.5	30
5	6		banded blue grey jaspilite ~~quartzite~~						
6	7		highly weathered dolomite + calcsilicate	639	<.02	<5	<5	<10 <.5	20
7	8		weathered + oxidized jaspilite (70% chert 30% Fe oxide)						
8	9		as above	640	<.02	<5	<5	<10 .5	15
9	10		grey jaspilitic quartzite (<10% Fe oxide) v. fine grained and laminated						
10	11		as above	641	<.02	5	<5	<10 <.5	5
11	12		very fine grained jaspilite						
12	13		dark grey laminated jaspilitic quartzite + fractures	642	<.02	<5	15	<10 <.5	15
13	14		commonly infilled with carbonate.						
14	15		as above	643	<.02	<5	10	10 <.5	10

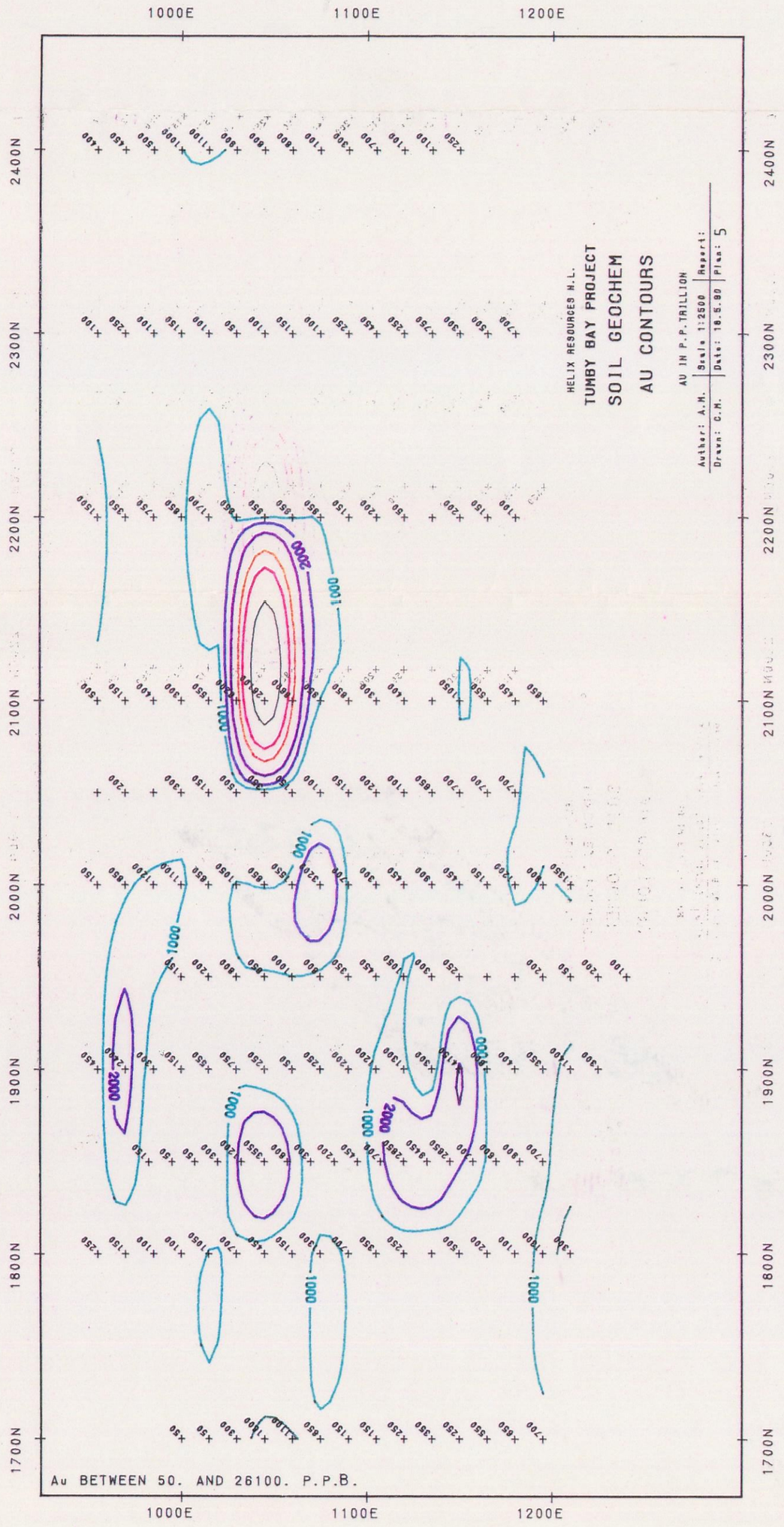
0001139

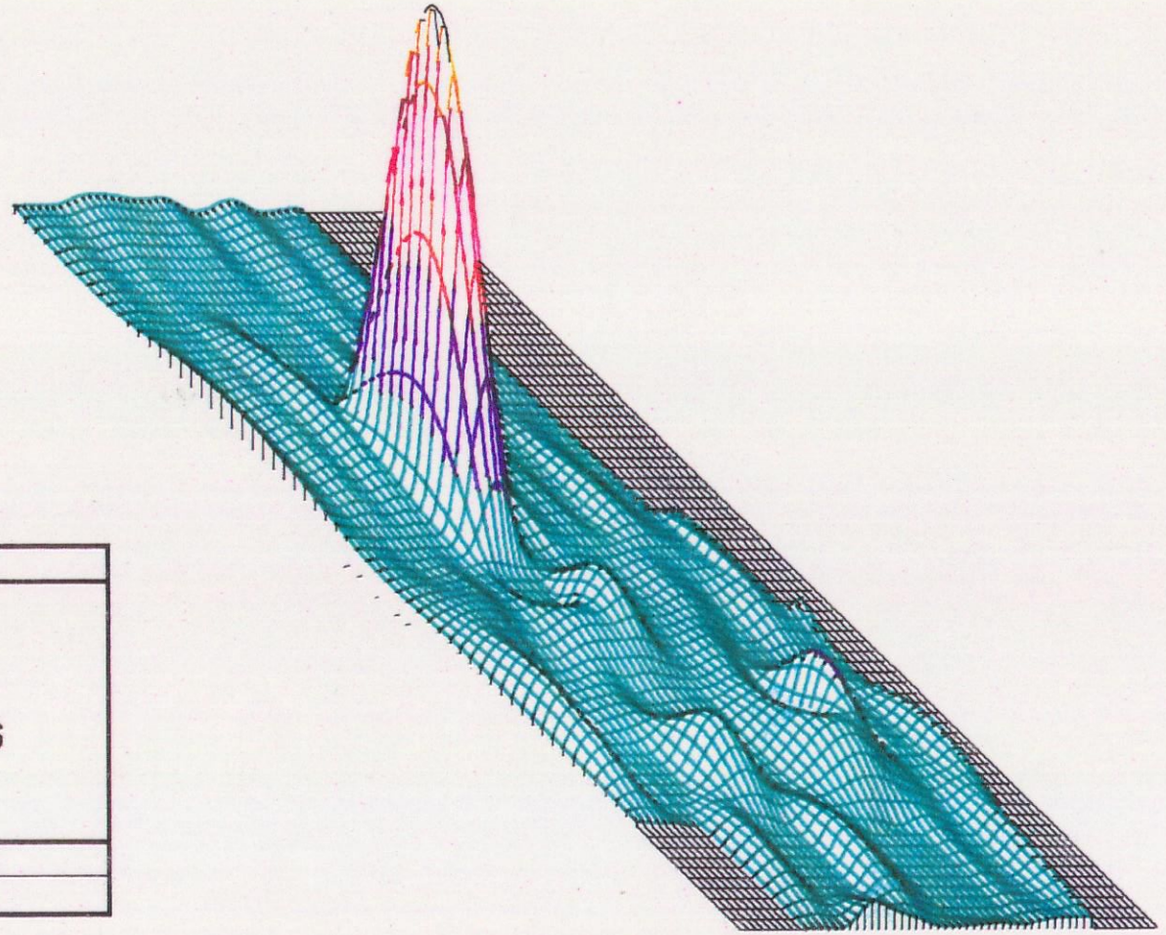
HELIX RESOURCES N.L.
DRILL LOG

HOLE NO: TRC-8

FROM (m)	TO (m)	LEN-GTH (m)	DESCRIPTION	SAMPLE NO.	ANALYSES Au	Pb	Zn	Bi Ag	Cu
15	16		as above						
16	17		increase Fe content to 10% ∴ Jaspilite	TB-644	<.02	5	10	<10 <.5	15
17	18		V. fine grained dk grey laminated qtzite no Fe oxide carbonate						
18	19		filled fractures common	645	<.02	<5	30	<10 <.5	20
19	20		laminated - jaspilite quartzite						
20	21		finely laminated grey quartzite	646	<.02	25	90	<10 <.5	85
21	22		grey jaspilitic quartzite						
22	23		green grey clay + 50% jaspilitic quartzite	647	<.02	15	315	<10 <.5	20
23	24		clayey carbonate + jaspilitic quartzite						
24	25		khaki yellow clay ± frags 60% quartzite 40% carbonate	648	<.02	5	115	<10 .5	<5
25	26		as above						
26	27		white carbonate	649	<.02	25	20	<10 <.5	<5
27	28		siliceous rock - grey quartzite + brown chalcedonic rock						
28	29		white carbonate	650	<.02	5	<5	<10 <.5	<5
29	30		white carbonate						

UUU140


1000E
1100E
1200E
2400N
2300N
2200N
2100N
2000N
1900N
1800N
1700N
HELIX RESOURCES N.L.
TUMBY BAY PROJECT
SOIL GEOCHEM
AU CONTOURS
AU IN P.P.TRILLION
Author: A.M.
Drawn: C.M.
Scale 1:2500
Date: 18.5.90
Report:
Plan: 5
2000
1000
Au BETWEEN 50. AND 26100. P.P.B.



HELIX RESOURCES N.L.

TUMBY BAY PROJECT

SOIL GEOCHEM

3-D AU CONTOURS

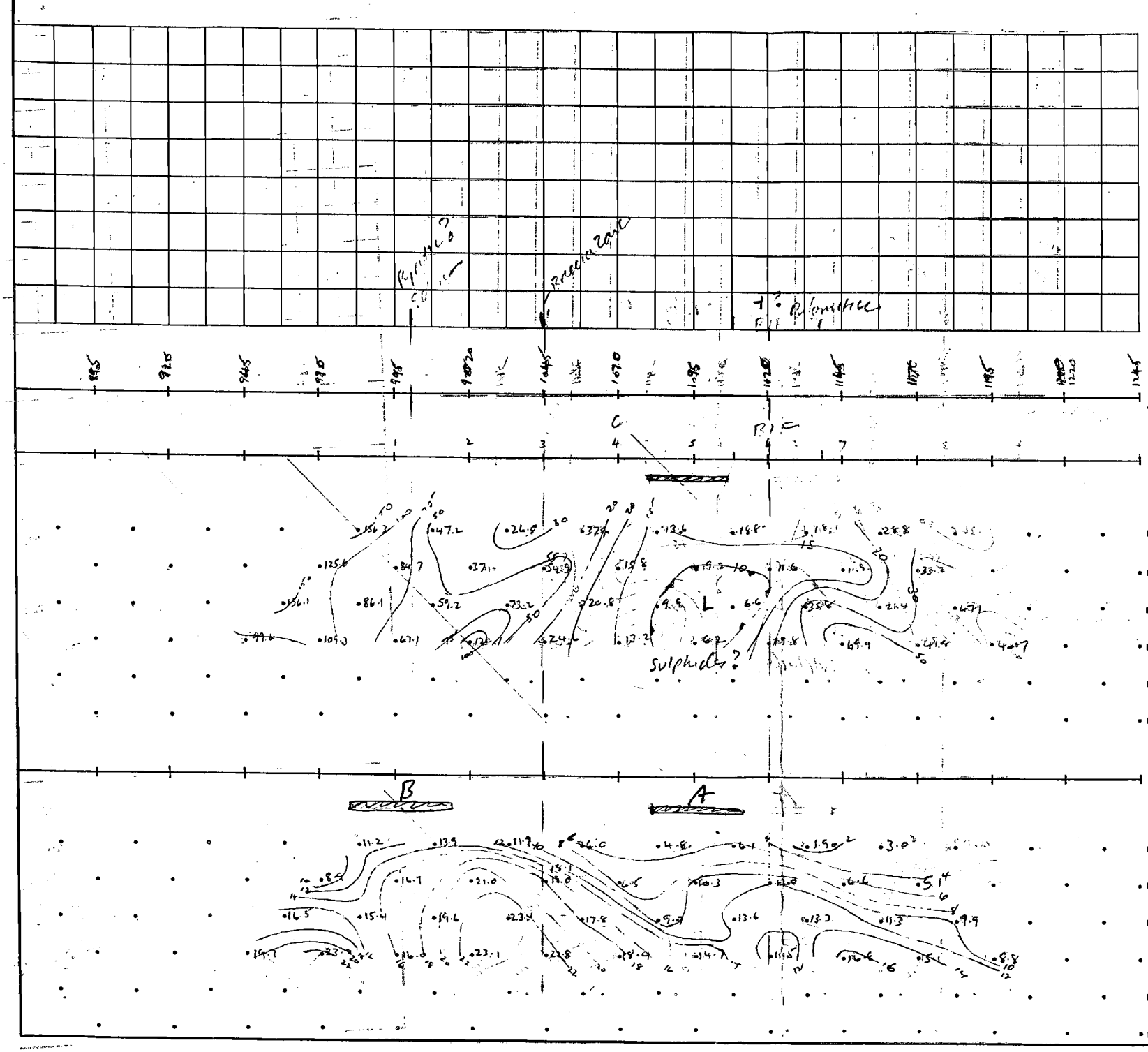
(ARBRITRARY SCALE)

Author: A.M.	Scale 1:	Report:
Drawn: C.M.	Date: 18.5.90	Plan: 6

0001142

SEARCH EXPLORATION SERVICES PTY. LTD.

INDUCED POLARIZATION AND RESISTIVITY SURVEY



I.P. Unit: Tx. TERONICS FIT Rx. HUNTEC MK IV

Freq. or Int. Period: 2 Sec

Date of Survey: 3/2/80

Field Sheet No:

Approved:

CONTOUR CHOICE

LOGARITHMIC CONTOURS
10 Intervals 1·0 1·3 1·6 2·0 2·5 3·2 4·0 5·0 6·3 7·9 10·0
8 " 1·0 1·3 1·8 2·4 3·2 4·2 5·6 7·5 10·0
6 " 1·0 1·5 2·0 3·0 5·0 7·5 10·0

Electrode Array: Dipole – Dipole

Anomaly Strong — Weak

Contour Interval: Logarithmic 10 8 6

Linear graph scale: 2 cm =

Dipole size: 25m

SCALE:

PROJECT (Tenement name and No.): TUMBY BAY S.A.

Prospect: BUREAU INE MINE

1:250 000 Sheet and No.:

CR No.:

LINE: 1855 N

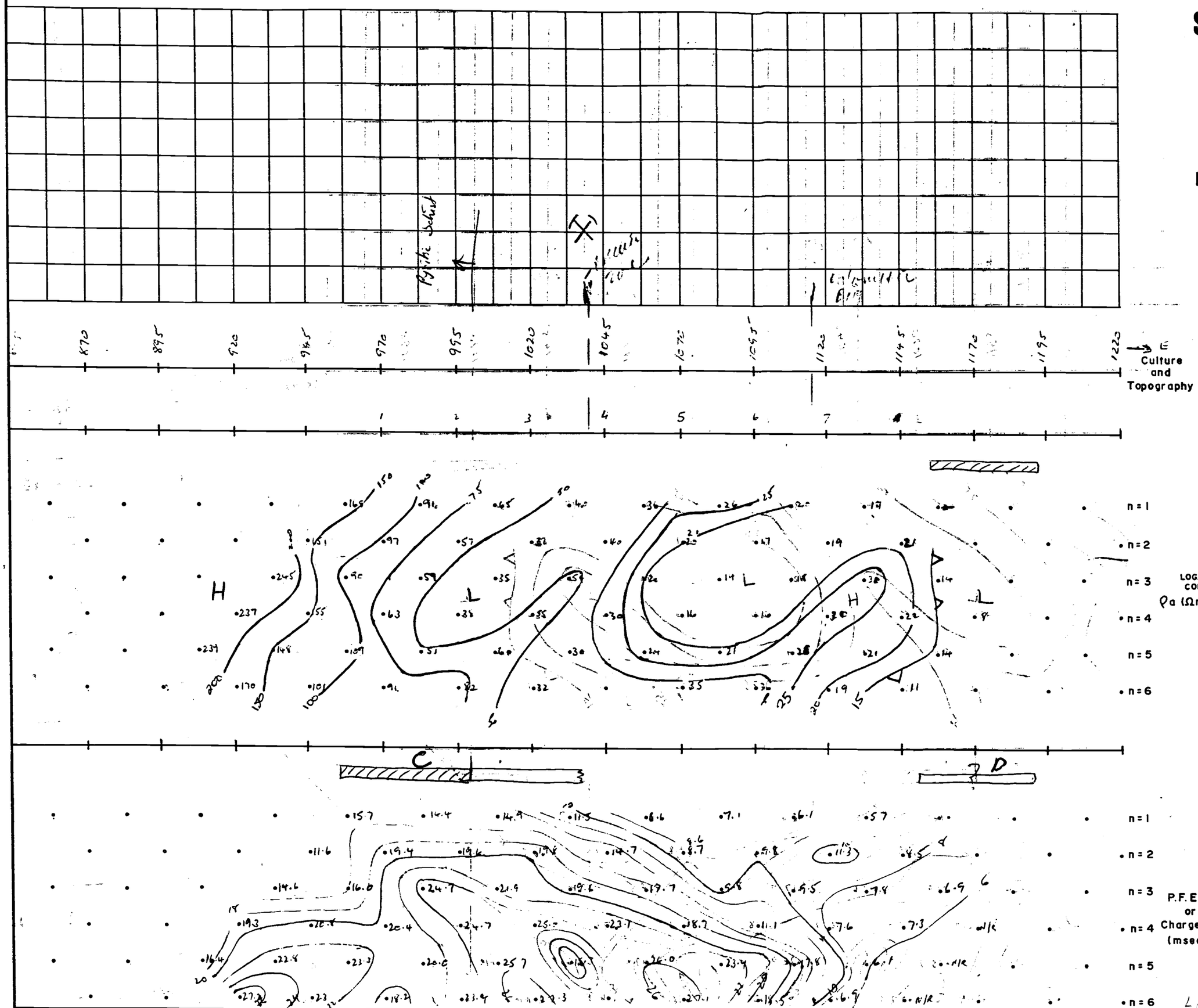
Line 2

Fig. 7

000143

SEARCH EXPLORATION SERVICES PTY. LTD.

INDUCED POLARIZATION AND RESISTIVITY SURVEY



I. P. Unit: Tx. Phoenix FT4 Rx. Hunter MKIV

Freq. or Int. Period: 2 Sec

Date of Survey: 3/2/90

Field Sheet No:

Approved:

CONTOUR CHOICE

LOGARITHMIC CONTOURS

10	Intervals	1·0 1·3 1·6 2·0 2·5 3·2 4·0 5·0 6·3 7·9 10·0
8	"	1·0 1·3 1·8 2·4 3·2 4·2 5·6 7·5 10·0
6	"	1·0 1·5 2·0 3·0 5·0 7·5 10·0

Electrode Array: Dipole – Dipole

Anomaly Strong — Weak

Contour Interval: Logarithmic 10 8 6

Linear graph scale: 2 cm =

Dipole size: 25m

SCALE:

PROJECT (Tenement name and No.): Tunay Bay S.A.

Prospect: Burrawing Mine

1:250 000 Sheet and No.:

CR No.:

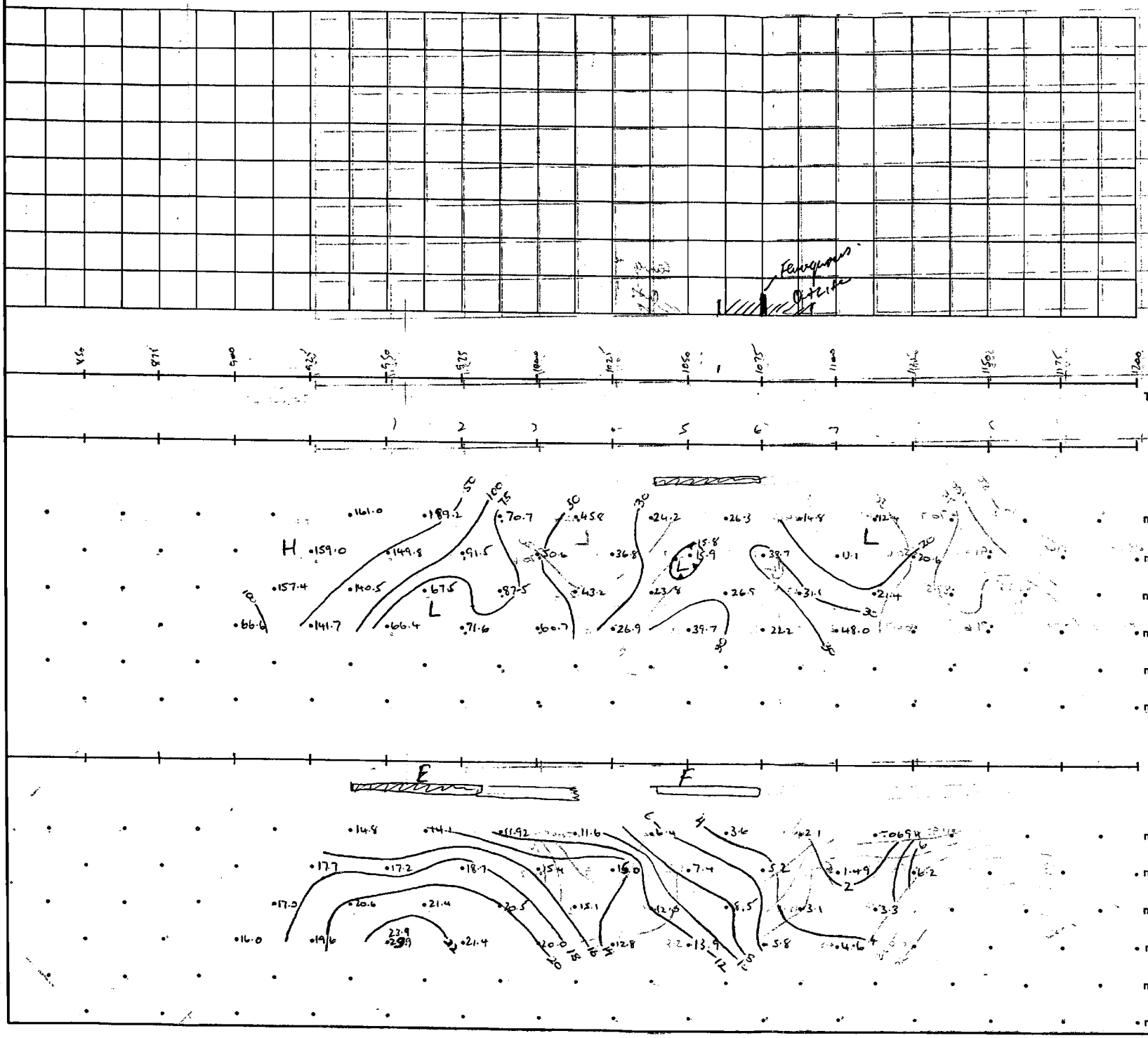
LINE: 2100N

00011441

Fig. 7

SEARCH EXPLORATION SERVICES PTY. LTD.

INDUCED POLARIZATION AND RESISTIVITY SURVEY



I.P. Unit: Tx. TEROCK Rx. HUNTEC MK IV

Freq. or Int. Period: 2sec

Date of Survey: 4/2/90

Field Sheet No:

Approved:

CONTOUR CHOICE

LOGARITHMIC CONTOURS
10 Intervals 1·0 1·3 1·6 2·0 2·5 3·2 4·0 5·0 6·3 7·9 10·0
8 " 1·0 1·3 1·8 2·4 3·2 4·2 5·6 7·5 10·0
6 " 1·0 1·5 2·0 3·0 5·0 7·5 10·0

Electrode Array: Dipole – Dipole

Anomaly Strong — Weak

Contour Interval: Logarithmic 10 8 6

Linear graph scale: 2 cm =

Dipole size: 25m

SCALE:

PROJECT (Tenement name and No.): TUMBY BAY S.A.

Prospect: BURRAWING MINE

I: 250 000 Sheet and No.:

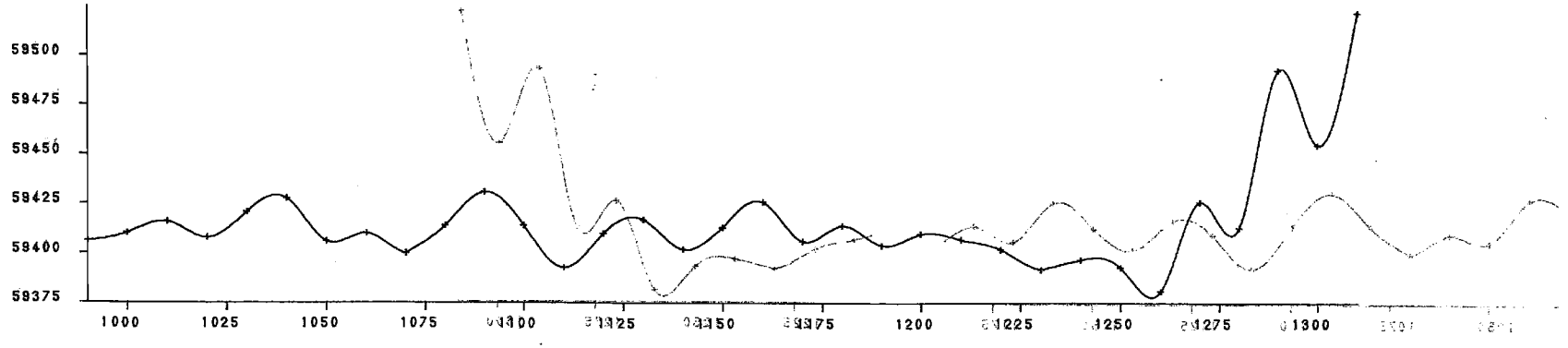
CR No.:

LINE: 2400N

LINE 3

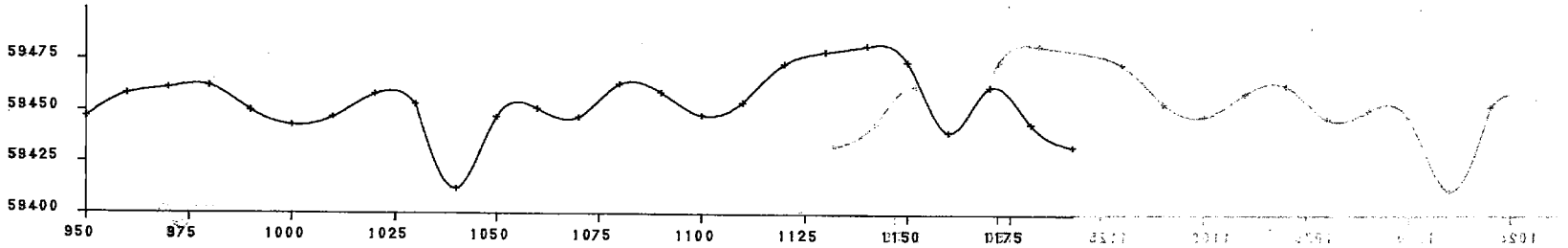
Fig. 7

000145



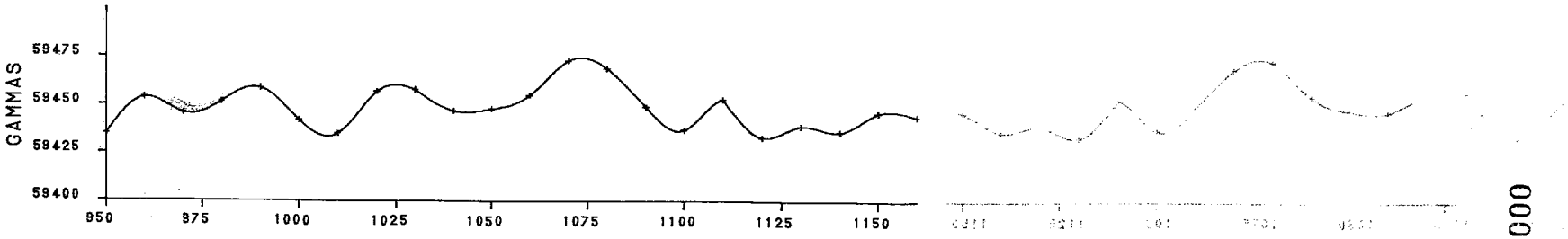
LINE 1855N

LINE 1855.0N SCALE 1:1250.0 HELEX RESOURCES 587



LINE 2100N

LINE 2100.0N SCALE 1:1250.0 HELEX RESOURCES 587



LINE 2400 N

LINE 2400.0N SCALE 1:1250.0 HELEX RESOURCES 587

FIGURE 8 GROUND MAGNETIC PROFILES

000146

900 E
1000 E
1100 E
1200 E
1300 E
1400 E

2400 N
2300 N
2200 N
2100 N
2000 N
1900 N
1800 N
1700 N
1600 N

REFERENCE

- Mine shaft
- Pit
- Mine dump
- Fenceline
- TRC09 — Reverse Circulation drillhole

TRC05
TRC06
TRC07
TRC04
TRC01
TRC02
TRC03
TRC08

ROAD RESERVE

RF 1:1000

0 200 400 600 800 1000
METRES

8103-8

GN
MN
TN
40°
approx. 6.5°

HELIX RESOURCES N.L.

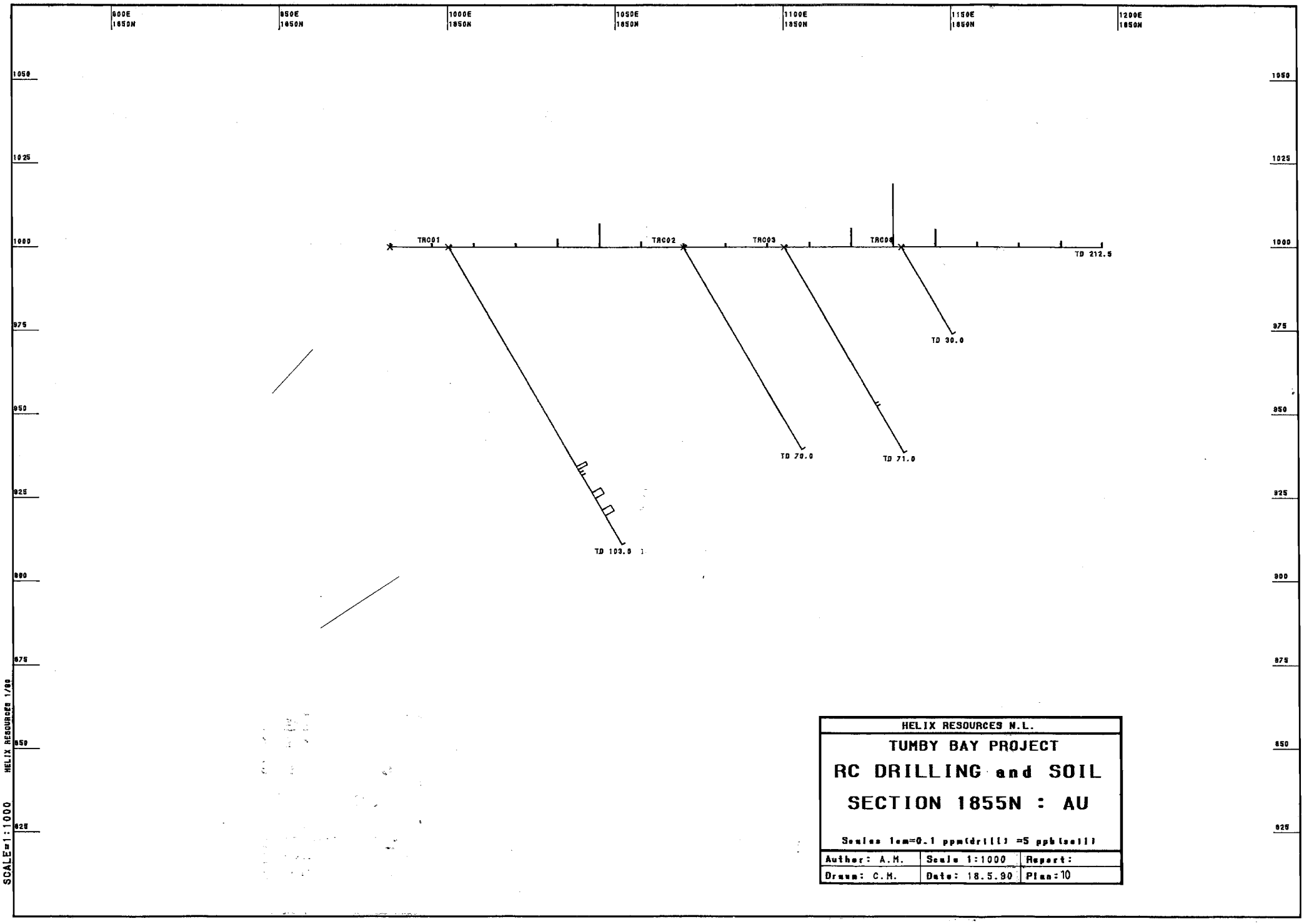
EL 1513 TUMBY BAY

BURRAWING PROSPECT

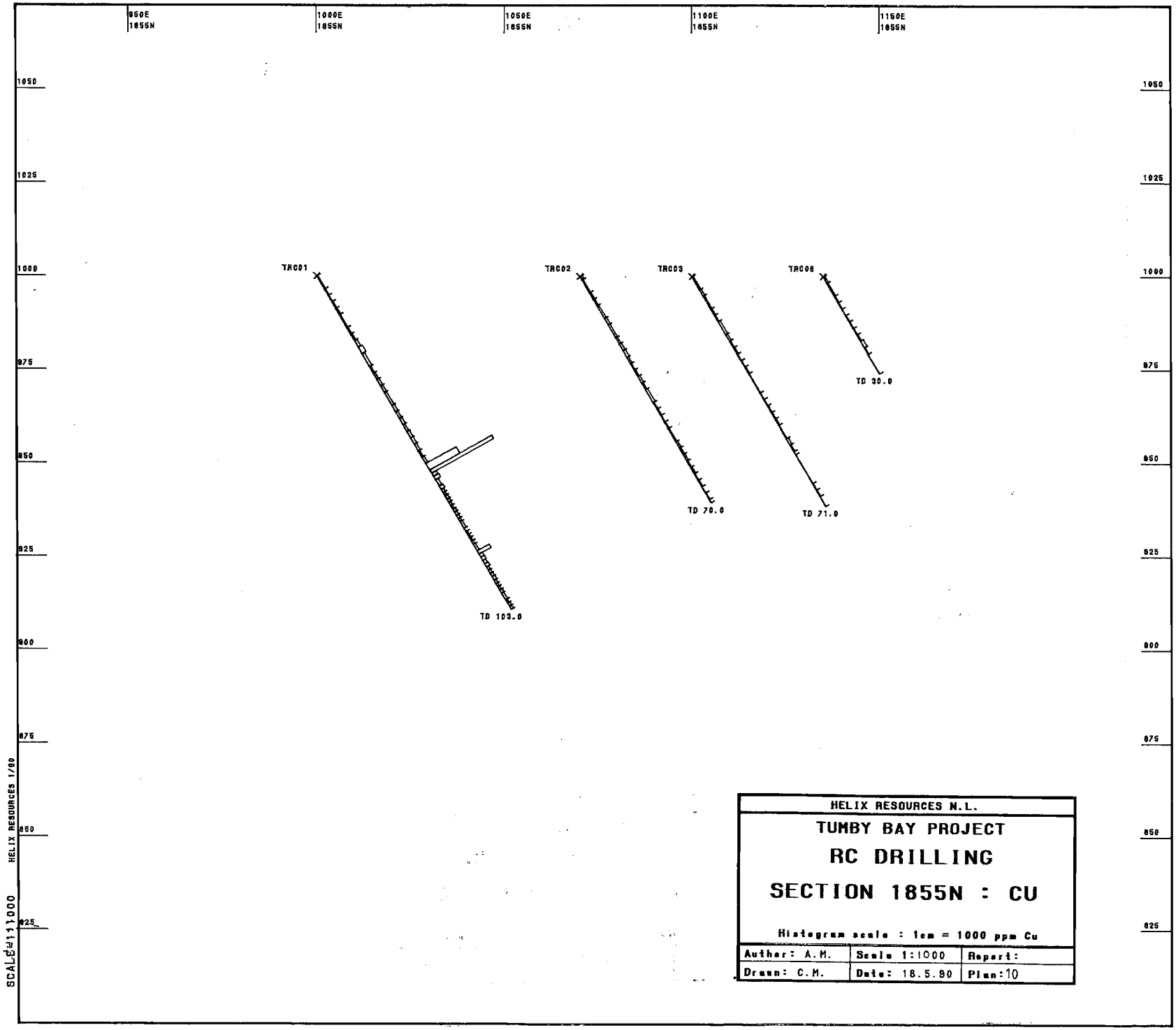
DRILLING PLAN

Author	A.Martin	Date	June 1990	Drawing No.	G.990.HRN
Drawn	GEOGRAPHICS	Scale	1:1000	Revision	

Plate No. FIGUR


800E
1850N
850E
1850N
900E
1850N
950E
1850N
1000E
1850N
1050E
1850N
1100E
1850N
1150E
1850N
1200E
1850N
1050
1025
1000
975
950
925
900
875
850
825
TRC01
TRC02
TRC03
TRC04
TD 212.5
TD 30.0
TD 70.0
TD 71.0
TD 103.0
HELIX RESOURCES N.L.
TUMBY BAY PROJECT
RC DRILLING and SOIL
SECTION 1855N : AU
Scales 1cm=0.1 ppm(drill) =5 ppb(soil)
Author: A.M.
Scale 1:1000
Report:
Drawn: C.M.
Date: 18.5.90
Plan:10
SCALE=1:1000
HELIX RESOURCES 1/90

000147



HELIX RESOURCES N.L.

TUMBY BAY PROJECT

RC DRILLING

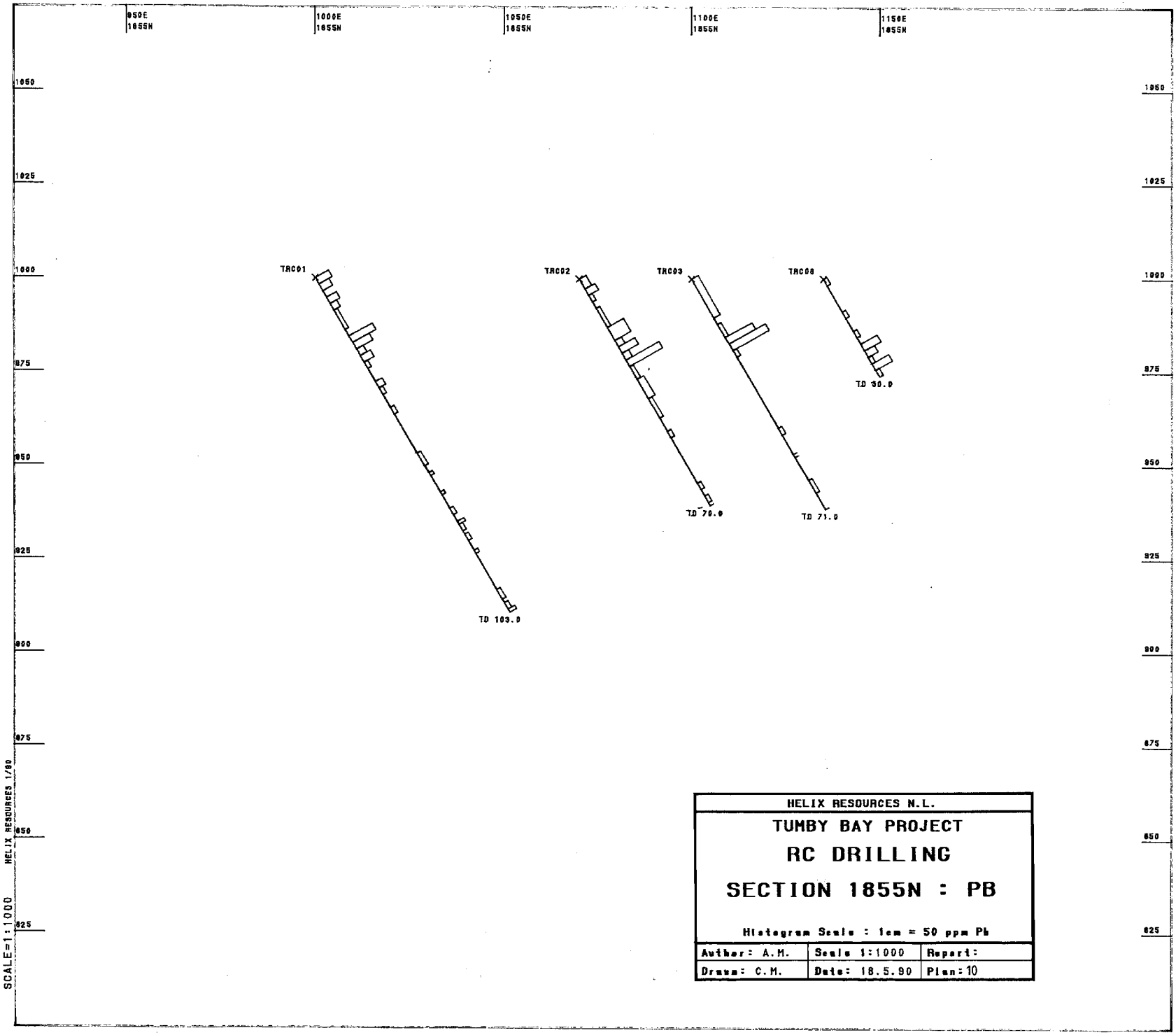
SECTION 1855N : CU

Histogram scale : 1cm = 1000 ppm Cu

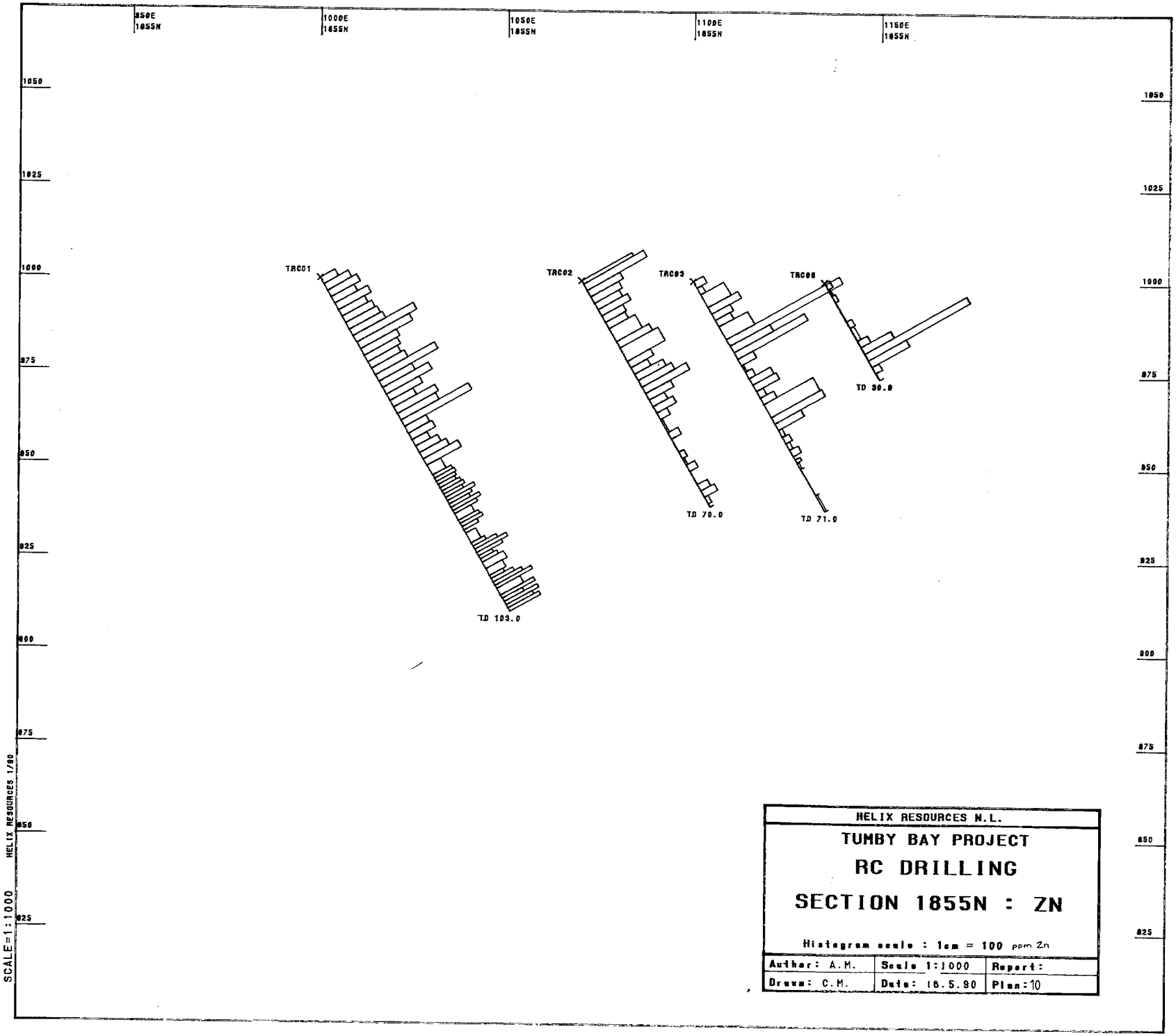
Auther: A.M.	Scale 1:1000	Report:
Drawn: C.M.	Date: 18.5.90	Plan:10

SCALE 1:1000 HELIX RESOURCES 1/90

000148


950E
1855N
1000E
1855N
1050E
1855N
1100E
1855N
1150E
1855N
1050
1025
1000
975
950
925
900
875
850
825
TRC01
TD 103.0
TRC02
TD 70.0
TRC03
TD 71.0
TRC08
TD 30.0
HELIX RESOURCES N.L.
TUMBY BAY PROJECT
RC DRILLING
SECTION 1855N : PB
Histogram Scale : 1cm = 50 ppm Pb
Author: A.M.
Scale 1:1000
Report:
Drawn: C.M.
Date: 18.5.90
Plan:10
HD
SCALE=1:1000 HELIX RESOURCES 1/90

000149



HELIX RESOURCES N.L.

TUMBY BAY PROJECT

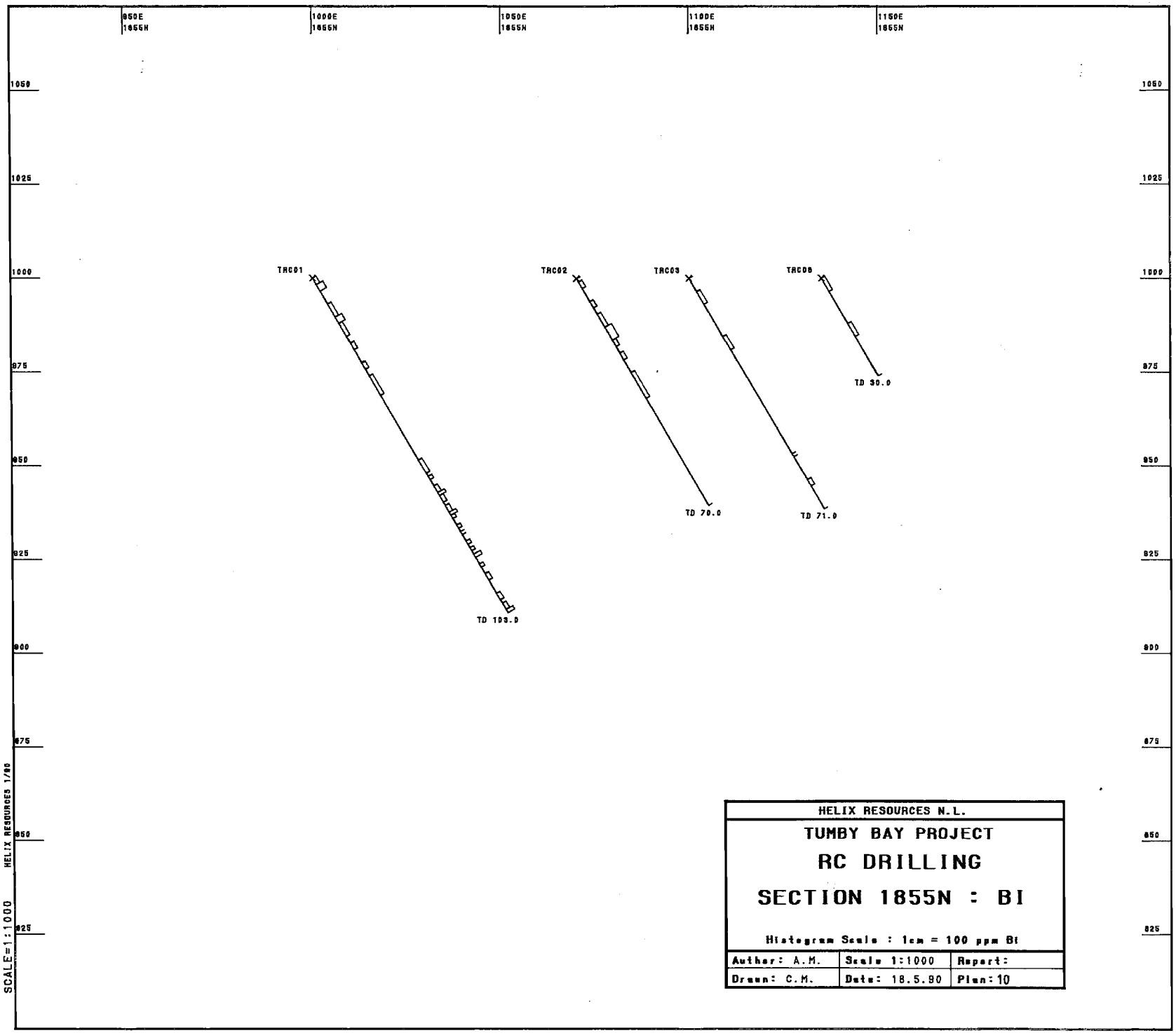
RC DRILLING

SECTION 1855N : ZN

Histogram scale : 1cm = 100 ppm Zn

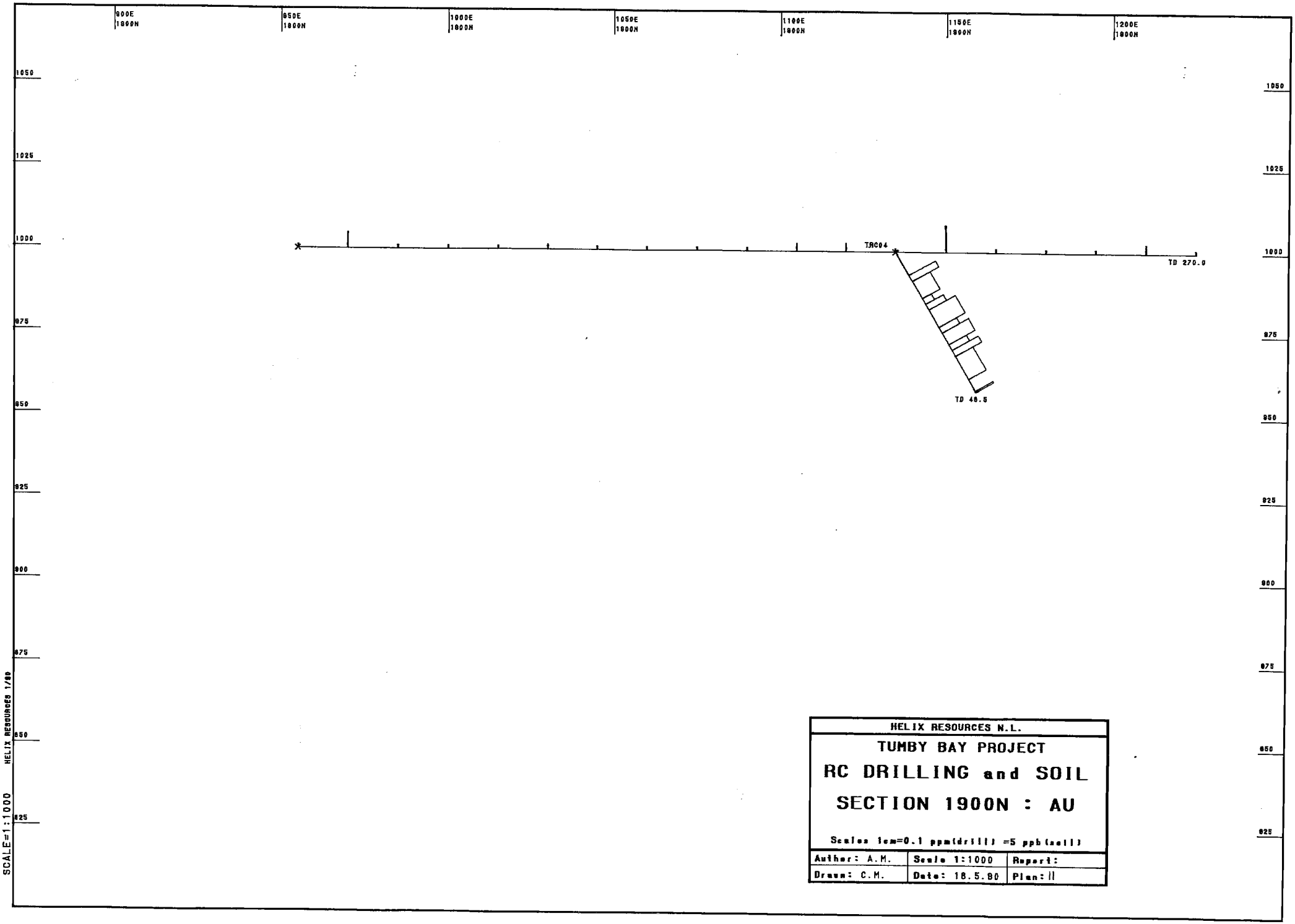
Author: A.M.	Scale 1:1000	Report:
Drawn: C.M.	Date: 16.5.90	Plan: 10

000150



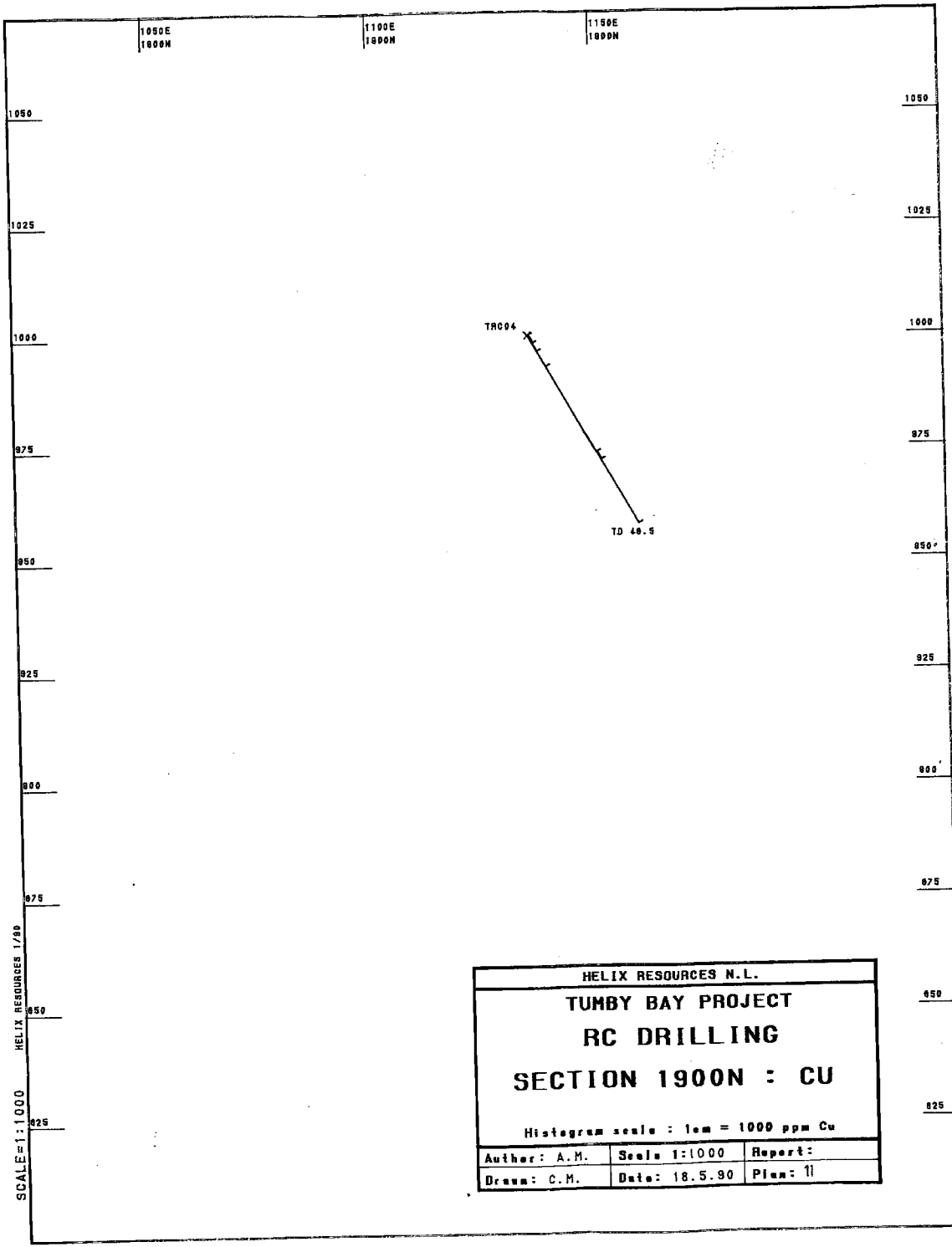
HELIX RESOURCES N.L.		
TUMBY BAY PROJECT		
RC DRILLING		
SECTION 1855N : BI		
Histogram Scale : 1cm = 100 ppm Bi		
Author: A.M.	Scale 1:1000	Report:
Drawn: C.M.	Date: 18.5.90	Plan: 10

000151



HELIX RESOURCES N.L.		
TUMBY BAY PROJECT		
RC DRILLING and SOIL		
SECTION 1900N : AU		
Scales 1cm=0.1 ppm(drill) =5 ppb(soil)		
Author: A.M.	Scale 1:1000	Report:
Drawn: C.M.	Date: 18.5.90	Plan: II

000152



HELIX RESOURCES N.L.

TUMBY BAY PROJECT

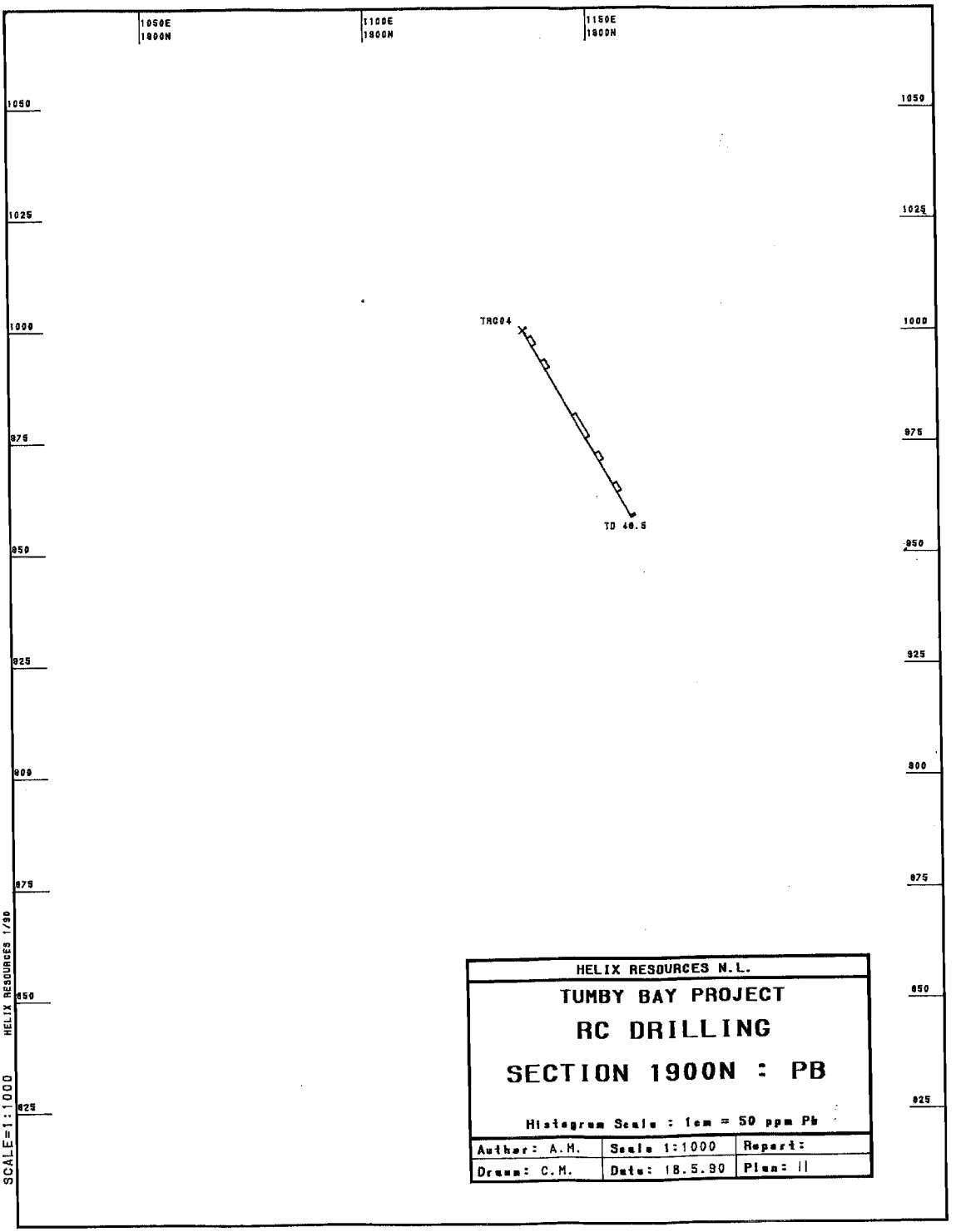
RC DRILLING

SECTION 1900N : CU

Histogram scale : 1cm = 1000 ppm Cu

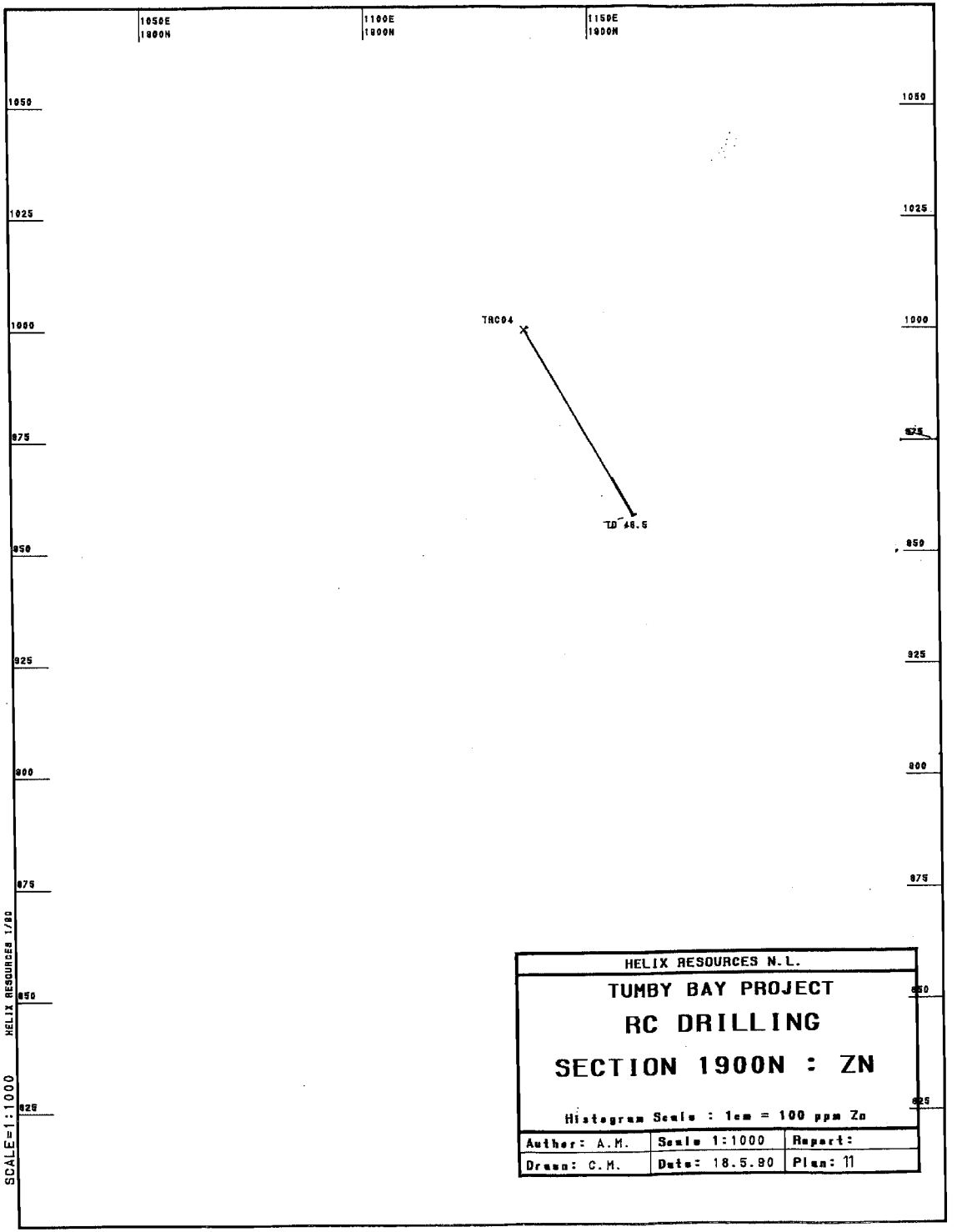
Author: A.M.	Scale 1:1000	Report:
Drawn: C.M.	Date: 18.5.90	Plan: 11

SECTION



SCALE=1:1000 HELIX RESOURCES 1/90

HELIX RESOURCES N.L.		
TUMBY BAY PROJECT		
RC DRILLING		
SECTION 1900N : PB		
Histogram Scale : 1cm = 50 ppm Pb		
Author: A.M.	Scale 1:1000	Report:
Drawn: C.M.	Date: 18.5.90	Plan: II



HELIX RESOURCES N.L.

TUMBY BAY PROJECT

RC DRILLING

SECTION 1900N : ZN

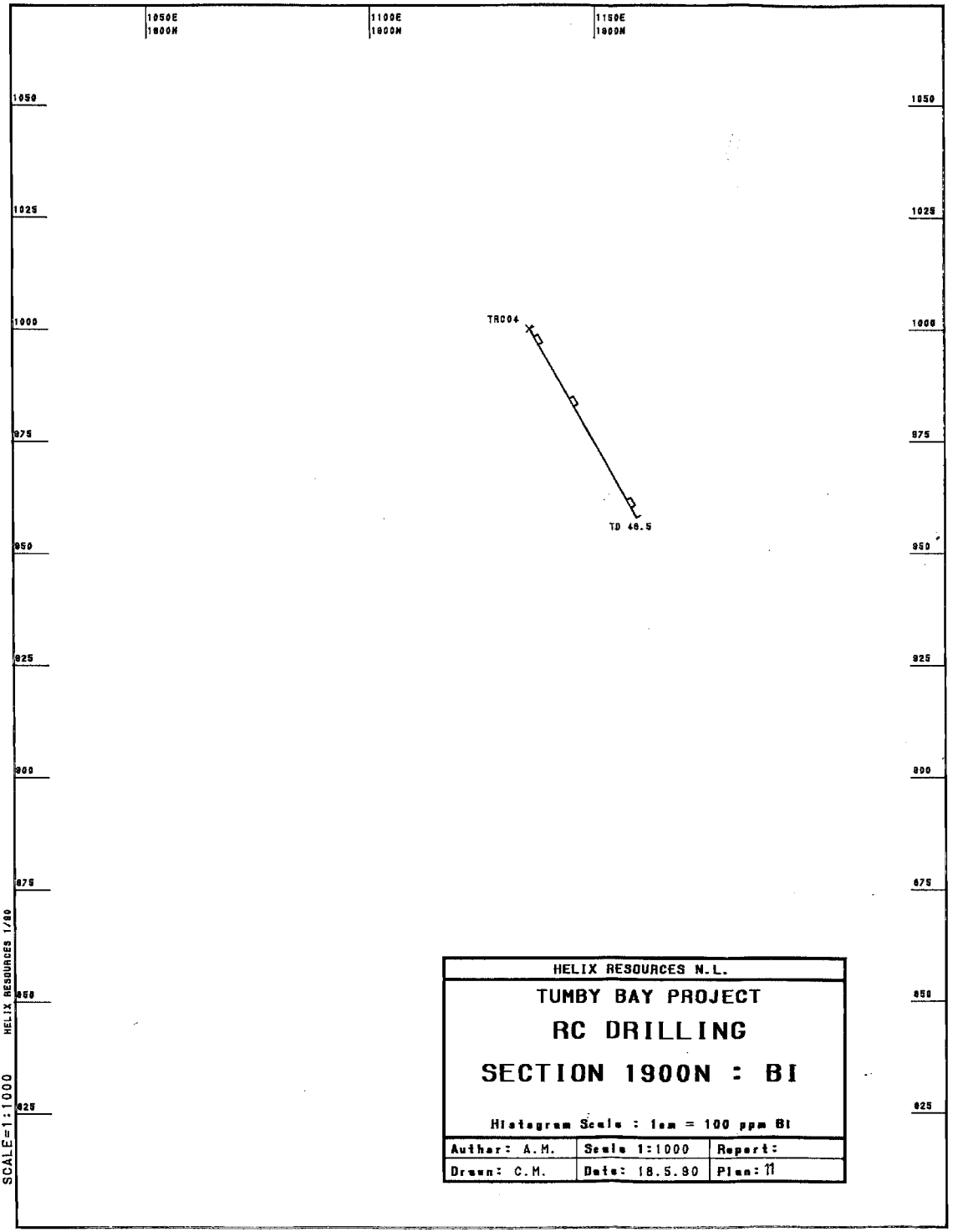
Histogram Scale : 1cm = 100 ppm Zn

Auther: A.M.	Scale 1:1000	Report:
Drawn: C.M.	Date: 18.5.90	Plan: 11

HELIX RESOURCES 1/90

SCALE=1:1000

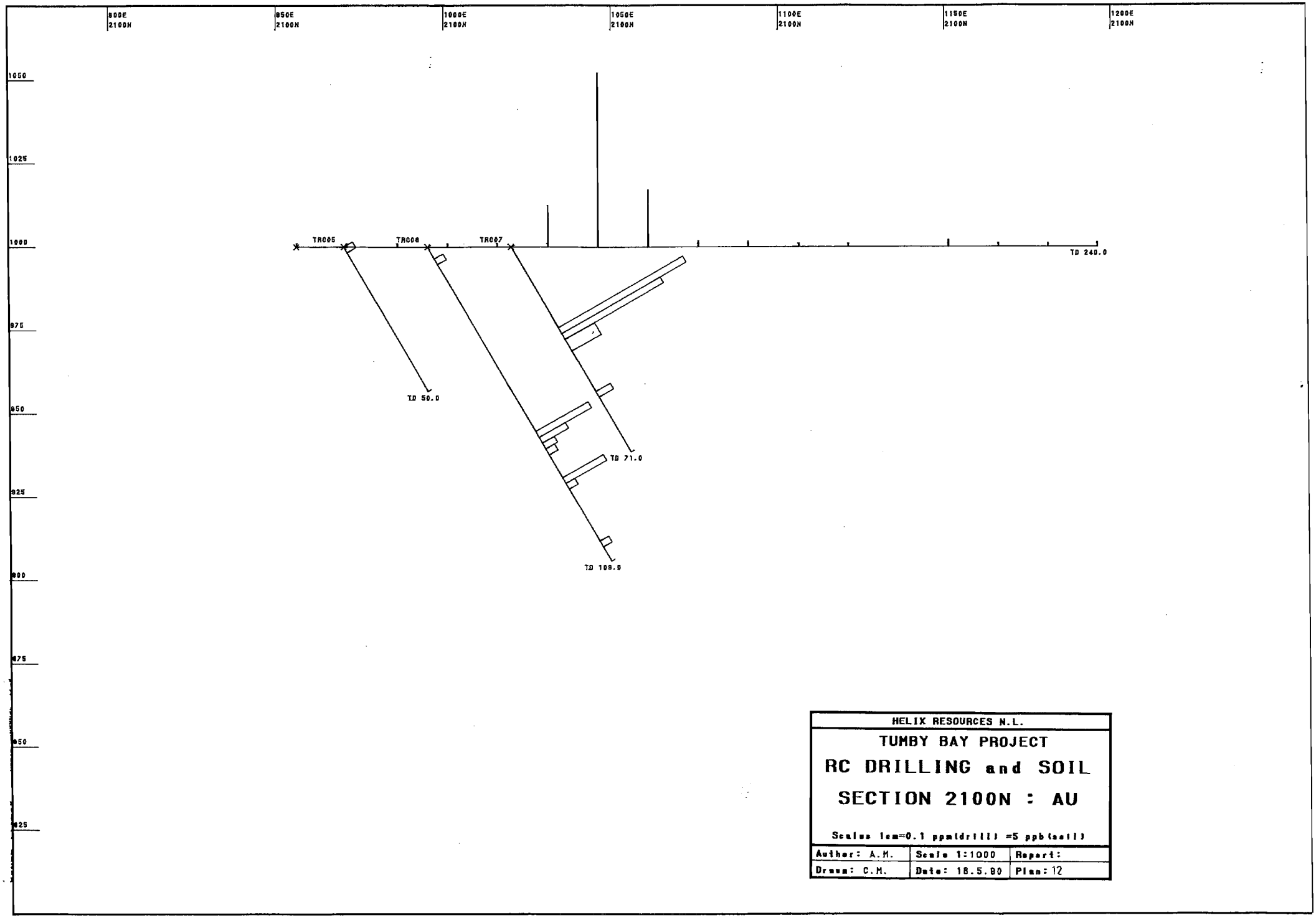
HD



SCALE=1:1000 HELIX RESOURCES 1/80

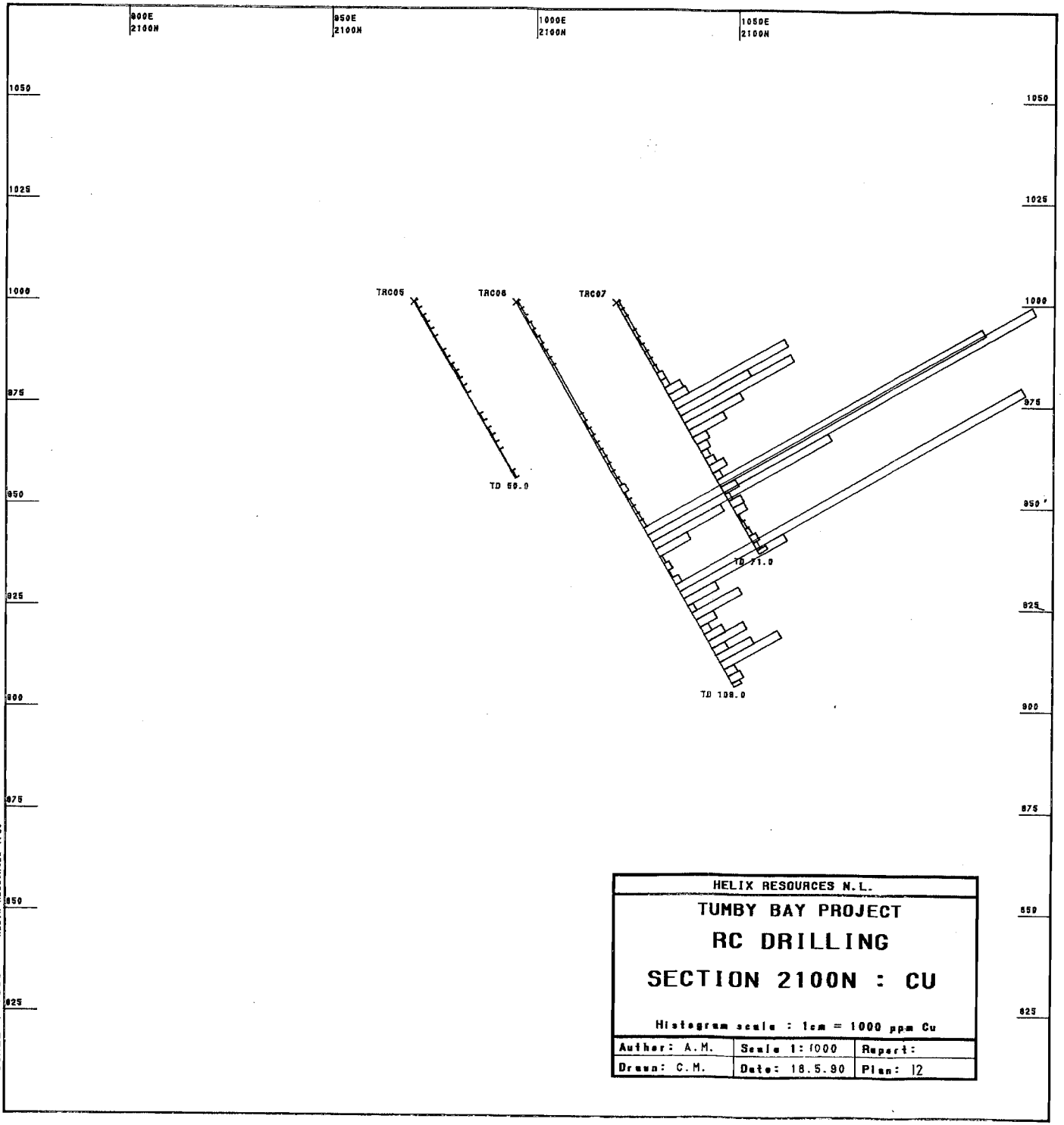
HELIX RESOURCES N.L.		
TUMBY BAY PROJECT		
RC DRILLING		
SECTION 1900N : BI		
Histogram Scale : 1cm = 100 ppm Bi		
Author: A.M.	Scale 1:1000	Report:
Drawn: C.M.	Date: 18.5.90	Plan: 11

000156



HELIX RESOURCES N.L.		
TUMBY BAY PROJECT		
RC DRILLING and SOIL		
SECTION 2100N : AU		
Scales 1cm=0.1 ppm(drill) =5 ppb(soil)		
Author: A.M.	Scale 1:1000	Report:
Drawn: C.M.	Date: 18.5.90	Plan: 12

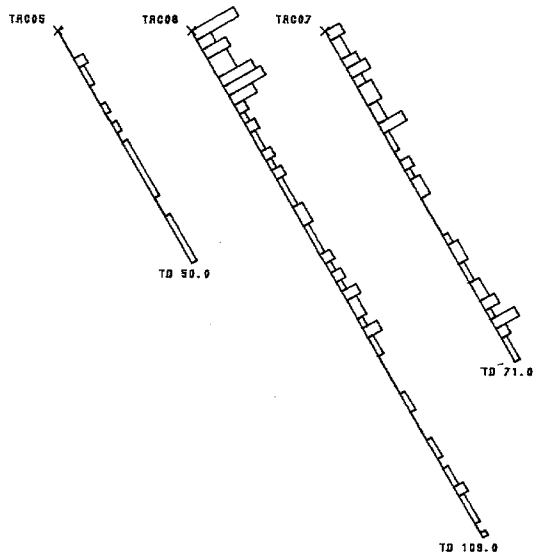
000157



SCALE=1:1000 HELIX RESOURCES 1/90

HELIX RESOURCES N.L.		
TUMBY BAY PROJECT		
RC DRILLING		
SECTION 2100N : CU		
Histogram scale : 1cm = 1000 ppm Cu		
Author: A.M.	Scale 1:1000	Report:
Drawn: C.M.	Date: 18.5.90	Plan: 12

000158



HELIX RESOURCES N.L.		
TUMBY BAY PROJECT		
RC DRILLING		
SECTION 2100N : PB		
Histogram Scale : 1cm = 50 ppm Pb		
Author: A.M.	Scale 1:1000	Report:
Drawn: C.M.	Date: 18.5.90	Plan: 12

SCALE=1:1000 HELIX RESOURCES 1/90

900E
2100N

950E
2100N

1000E
2100N

1050E
2100N

1050

1025

1000

975

950

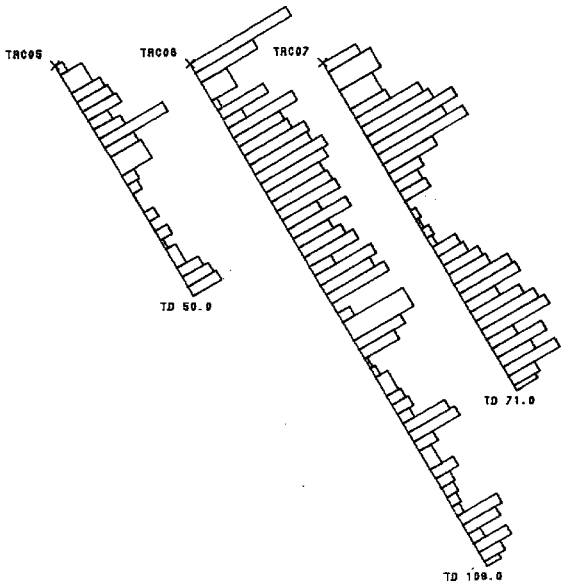
925

900

875

850

825



SCALE=1:1000 HELIX RESOURCES 1/80

HELIX RESOURCES N.L.		
TUMBY BAY PROJECT		
RC DRILLING		
SECTION 2100N : ZN		
Histogram Scale : 1cm = 100 ppm Zn		
Author: A.M.	Scale 1:1000	Report:
Drawn: C.M.	Date: 18.5.90	Plan: 12

900E
2100N

950E
2100N

1000E
2100N

1050E
2100N

1050

1025

1000

975

950

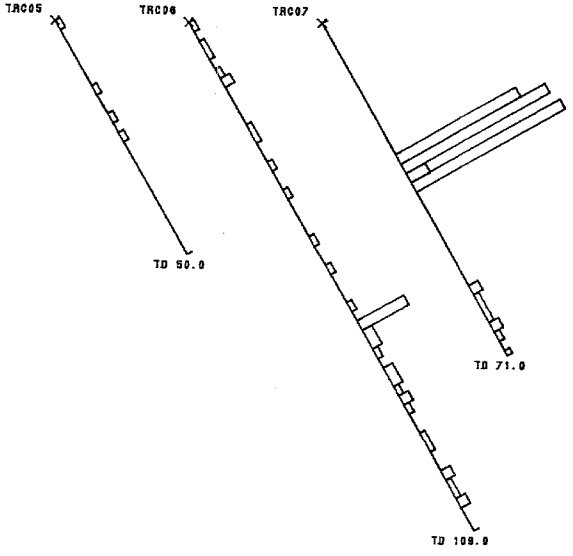
925

900

875

850

825



SCALE=1:1000 HELIX RESOURCES 1/90

HELIX RESOURCES N.L.		
TUMBY BAY PROJECT		
RC DRILLING		
SECTION 2100N : BI		
Histogram Scale : 1cm = 100 ppm BI		
Author: A.M.	Scale 1:1000	Report:
Drawn: C.M.	Date: 18.5.90	Plan: 12

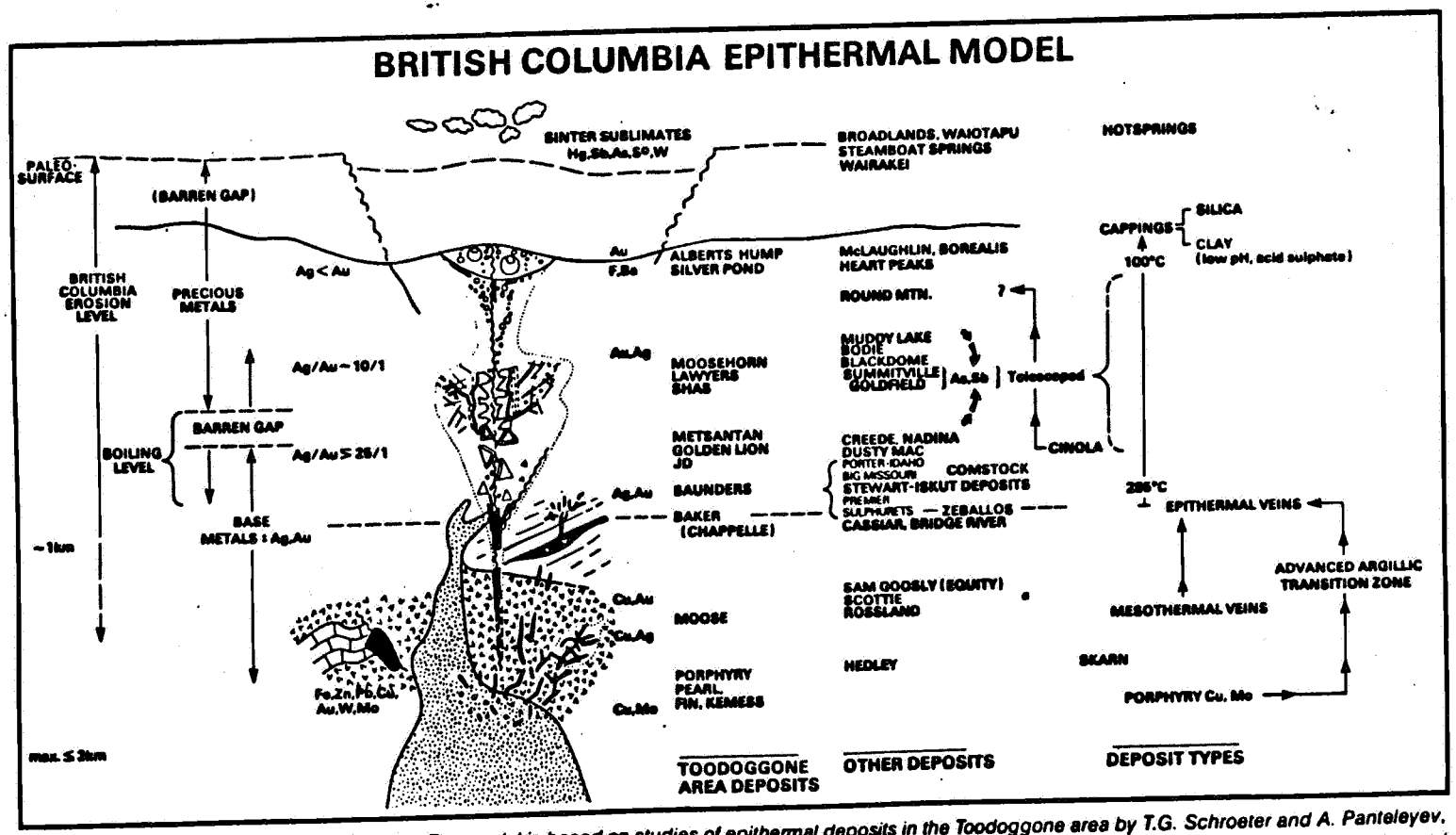


Figure 5 *British Columbia epithermal model. The model is based on studies of epithermal deposits in the Toodoggone area by T.G. Schroeter and A. Panteleyev, and comparisons with deposits elsewhere. The model infers a continuum exists from porphyry copper and skarn through transitional deposits, to epithermal veins, and hot spring discharge deposits.*

(From Panteleyev, 1986)

Fig. 13

0001162

TECHNICAL REPORT 2088

EL 1513, TUMBY BAY, SA

Final Report
September, 1990

TONY MARTIN
18 SEPTEMBER 1990

CONTENTS

1. INTRODUCTION

2. LOCATION AND ACCESS

3. TENURE

4. PREVIOUS EXPLORATION

5. CONCLUSIONS

6. REFERENCES

7. EXPENDITURE

FIGURES

No.	Title	Scale
1.	Tumby Bay Project, Location Map and Tenements.	1:500,000

1. INTRODUCTION:

During the period of this report no field work was carried out on EL 1513. With continued assessment of work carried out previously (Martin 1990) it has been concluded that any mineralisation outside that already defined would be of a grade too low to be economic and thus, the licence was relinquished on 7 August, 1990. All technical data relevant to the work carried out by Helix is contained in reports Martin 1989 a,b,c and 1990 a,b.

2. LOCATION AND ACCESS:

Exploration Licence 1513 is situated in south-eastern Eyre Peninsula between the towns of Tumby Bay, in the south, and Pt Neill, in the north. The townships of Ungarra, Mt Hill, Lipson and Yallunda Flat are located with the Licence (Fig 1).

Access to the area is either via the Lincoln Highway which joins Pt Augusta and Pt Lincoln and passes through the eastern portion of the EL, or via the sealed road between Tumby Bay and Cummins. Numerous unsealed roads and farm tracks allow good access within the Licence.

Much of the area is open undulating country used for grazing and grain crops with native scrub confined to rocky hill tops. The Lincoln Uplands protrude into the south-western portion of the EL where the terrain consists of rolling hills with more common patches of native scrub.

3. TENURE:

Exploration Licence 1513 was granted to Helix Resources NL on 2 September 1988 and comprised a total area of 1215 sq kms. During December 1989 much of the area was relinquished except an area of 35 sq kms in the Burrawing area (Fig 1).

4. PREVIOUS EXPLORATION:

A complete summary of work carried over the entire Exploration Licence excluding the Burrawing Prospect is contained in report, Martin 1989d.

Martin 1990b, contained a complete summary of all work carried out on the Burrawing Prospect.

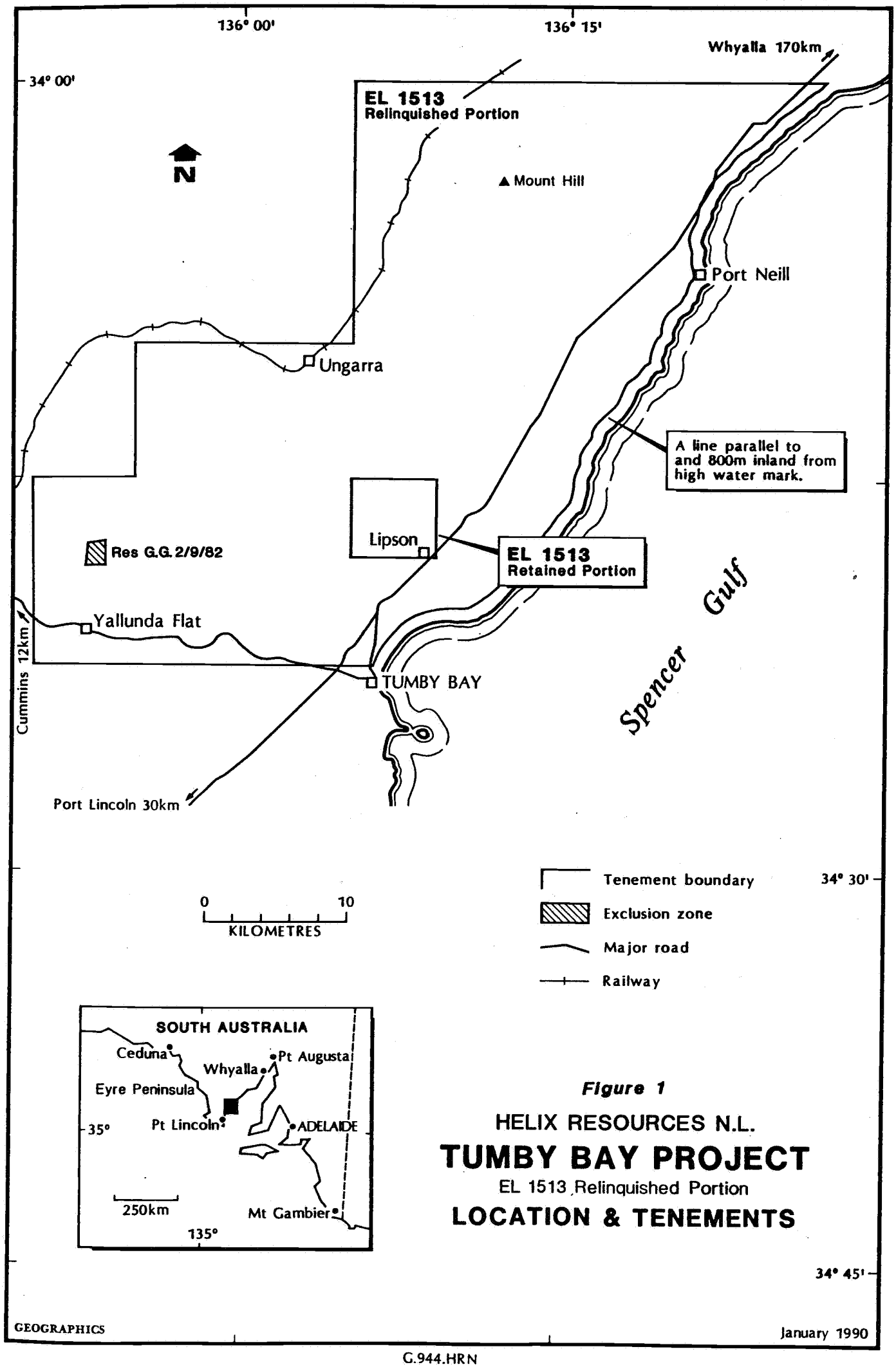


Figure 1

HELIX RESOURCES N.L.

TUMBY BAY PROJECT

EL 1513 Relinquished Portion

LOCATION & TENEMENTS

G.944.HRN

5. CONCLUSIONS:

As indicated in previous reports there exists potential for further Au ± Cu mineralisation in the Burrawing area associated with hydrothermal activity. It is most likely that any near surface mineralisation ie. lateritic or skarn type would be of a grade too low and size too small to be a potential target of economic significance. It is also likely that deeper drilling to investigate the source of the mineralising fluids would be extremely expensive and there would be little chance of intersecting economic mineralisation. It is therefore concluded that EL 1513 be relinquished.

6. REFERENCES:

Martin A. R., 1989a: EL 1513, Tumby Bay SA Six Monthly Report for Period September 1988 - February 1989. Unpublished report 2054 Helix Resources NL, Perth.

Martin A. R., 1989b: EL 1513 Tumby Bay SA Report for Period February - May 1989. Unpublished report 2058 Helix Resources NL, Perth.

Martin A. R., 1989c: EL 1513 Tumby Bay SA Report for Period June - August 1989. Unpublished report 2062 Helix Resources NL, Perth.

Martin A. R., 1989d: Partial Relinquishment Report December 1989, EL 1513. Unpublished report 2078 Helix Resources NL, Perth.

Martin A. R., 1990a: EL 1513 Tumby Bay SA Report for Period September 1989 - February 1990. Unpublished report 2084 Helix Resources NL, Perth.

Martin A. R., 1990b: El 1513 Tumby Bay SA Report for Period March - May 1990. Unpublished report 2084 Helix Resources NL, Perth.

7. EXPENDITURE:

The following are expenditure details for the period June - August 1990 and total for the period September 1988 - August 1990.

	JUNE TO AUGUST	PROJECT TO DATE
Salaries and Wages	-	17,294
Salary Allocation	600	6,475
Consultants	-	900
Travel and Accommodation	-	15,564
Helix Salary Allocation	-	6,800
Aerial Photo/Mapping	-	777
Assay Other Geochemical	-	14,360
Data Acquisition	-	768
Geophysical	-	3,240
Metallurgical	-	13,455
Technical Services - Other	-	145
Drafting	345	3,680
Survey and Gridding	-	2,584
Freight and Cartage	-	2,949
Fuel Oil Service Tyres	-	902
Vehicle Rental	959	7,048
Tenement Acquisition Costs	-	11
Mines Department Rents	-	5,718
Compensation Agreement Costs	-	400
Reverse Circulation Drilling	-	16,362
Field Equipment	-	1,248
Field Expenses	-	129
	1,094	120,809
Administration 15 %	164	18,121
TOTAL	$1,258	$138,930