

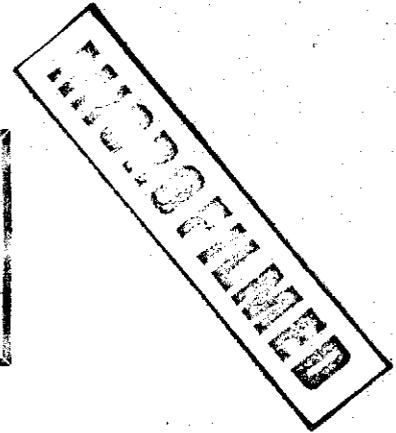
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Cyprus Minerals Australia Company

PART PROJECT A-84-111

D. of M.	A.O.	C.G.	E.O.	D.S. & E.
				Registrar
D. DIR.	30 OCT 1986			E & IL
DEPT. OF MINES				
REF. No.	10,952/86			



PROGRESS REPORT

12 MONTHS TO SEPTEMBER 1986

SORELL PENINSULA

EXPLORATION LICENCES 35/83, 36/83, 37/83

TASMANIA

P JONES of
Phil Jones & Associates

SEPTEMBER 1986

REPORT 500

AMG REFERENCE POINTS ADDED

CYPRUS

DISTRIBUTION

- o Denver
- Mines Department
- o Sydney
- o Field
- o Spare
- o Poseidon
- o Placer
- o Arinco

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FIGURE

1 **LOCATION**

After Page

5

APPENDICES

1 **MEMORANDUM: ELLIOTT BAY AND MUDDY COVE DIGHEM SURVEYS**
 by Mitre Geophysics

2 **PRELIMINARY INTERPRETATION OF THE ELLIOTT BAY AND MUDDY COVE**
 DIGHEM SURVEYS
 by Mitre Geophysics

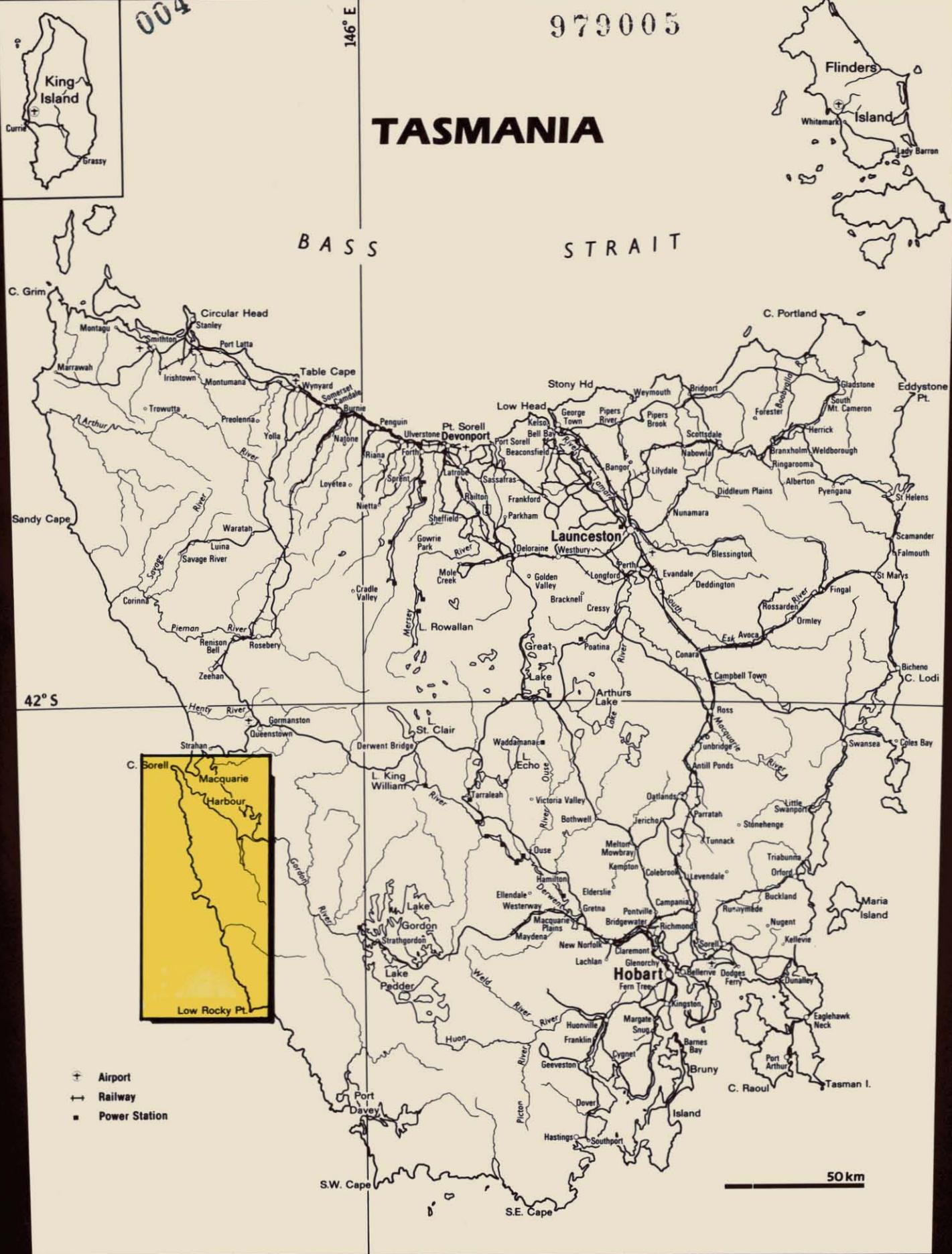
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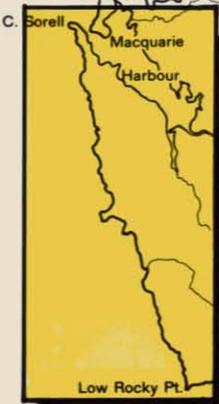
146° E

TASMANIA

BASS STRAIT

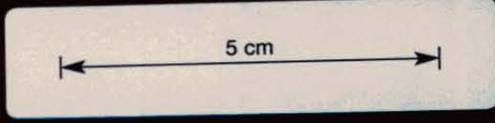


42° S



- ✈ Airport
- 🚊 Railway
- ⬛ Power Station

50 km



Project Location

EXPLORATION TARGETS

Three exploration licences protect a prospective section of Cambrian volcanics and volcano sedimentary units and carbonates equivalent to the Dundas Group.

The main target for exploration is a polymetallic volcanogenic massive sulfide orebody with minimum reserves of 15 million tonnes of 20% lead-zinc with gold plus silver credits similar to the Rosebery and Que River/Hellyer deposits 70 kilometers to the north.

An important secondary target is a volcanic gold deposit with minimum contained reserves of 30 million grams gold. No significant deposits of this type have yet been outlined on the west coast however gold is recorded in association with mineralization and alteration in the area.

The Platinum group metals (PGMs) also rank as an important target within the Asbestos Point to Hibbs Lagoon thrust zone as well as in the large ultramafic intrusive complex on the Spero River. PGMs may also occur within the mafic dominant volcanic belt at Cypress Creek.

The carbonate rich formations of the Cambrian Dundas Group are prospective for replacement type tin deposits similar to Renison (24 million tonnes of 1.1% tin). While this type of deposit is not a high priority target for the current exploration program there are several localities within the tenements which could host such a deposit.

DESCRIPTION OF THE PROPERTY AND OWNERSHIP

The tenements comprise three exploration licences held by Placer Development Ltd:

EL35/83 - 240 square kilometers

EL36/83 - 240 square kilometers

EL37/83 - 230 square kilometers

All three tenements were granted on September 20, 1983 and are renewed on an annual basis.

Cyprus Minerals (previously Amoco Minerals) has negotiated agreements with Placer Development and Poseidon Ltd whereby Cyprus will operate exploration within the tenements and the equity structure will be:

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- 979009

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Cyprus Minerals	50%
Poseidon Ltd	50%
Placer Development	5% net profit

LOCATION AND ACCESS

The tenements are located over the Sorell Peninsula on the southwest coast of Tasmania and south of Macquarie Harbor (Figure 1). The area has a high annual rainfall (approximately 1750 millimeters) and the geologically prospective units are covered by dense myrtle rainforest and swampy bauera scrubland. Exploration is generally confined to the summer season from December to April.

Access is by helicopter from Queenstown with boat and barge support from Strahan. A limited network of tracks from previous exploration exist but are substantially overgrown. Extreme difficulty of access is experienced by ground crews particularly in bauera and ti-tree scrubland. Ground movement beneath the tall myrtle canopy is easier. Movement of ground crews is improved dramatically by the cutting of rough foot tracks, helipads and opening out of the smaller streams and gullies filled with



010

AMG 34807CE
532603CN

EL 35/83

EL 36/83

EL 37/83

HIGH ROCKY POINT
Montgomery Rks
AMG 367090F
506204CN

Figure 1
Location
10 km

5 cm

AMG REFERENCE POINTS ADDED

SOUTHERN

OCEAN

145° 30' E

42° 30' S

12

011

horizontal scrub. Most areas are only accessible by foot from short term camps or from a main camp, helicopter supported.

The tenements are located within the Southwest Conservation Area and all mineral exploration and associated activity is regulated and monitored by a working committee chaired by the Department of Mines with representation from the Forestry Commission, Department of Environment and National Parks and Wildlife Service. Exploration programs and alterations must be approved by the committee prior to the granting or renewal of licences.

NOTE

Sections on history and previous exploration, regional geology and mineralization, geology and mineralization of the property (normally included in Cyprus reports) have been adequately discussed in previous Cyprus (Amoco) reports 401 and 454.

013

WORK CONDUCTED BY CYPRUS

Work during the 1986 summer field season was constrained to the completion of detailed helicopter borne Dighem EM surveys over both the Muddy Cove and Wanderer North volcanic sequences.

Mitre Geophysics recommended both the Muddy Cove and Hibbs River volcanic belts be covered by Dighem (Appendix 1) with a total of 369 line kilometers being flown. This was amended at a later date with the inclusion of 84 line kilometers over the Wanderer North area and the deletion of the Hibbs River coverage. The Hibbs River belt was dropped due to the scarcity of volcanics observed during field operations in the 1983-84 summer season.

Dighem Limited was contracted in early January to fly 267 line kilometers of EM with a minimum line length specification of three kilometers, 150 meter spacings between lines (Appendix 1, Figures 1 and 2) and a maximum flight height of 50 meters.

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The Muddy Cove and Wanderer North volcanic belts were covered during the survey. The Muddy Cove belt had previously been explored by Amoco over one kilometer spaced east-west traverses which delineated prospective acid volcanics within an otherwise predominantly andesitic suite. The Wanderer North sequence had received little work by preceding explorers and Dighem was chosen as a cost effective method of screening the prospective sequences to an approximate depth of 50 meters.

Mitre Geophysics conducted a preliminary evaluation of the analog data during February in order to identify targets worthy of ground follow-up prior to the cessation of the summer field season (Appendix 2). Seven anomalous areas were targeted for ground evaluation using Bishop's recommended Max-Min EM system. However as the Sorell program was integrated with that at Elliott Bay, the rating of the Sorell anomalies were downgraded in respect to those delineated over the Lewis Creek Volcanics at Elliott Bay. Thus no follow-up was implemented during the 1985-86 summer season.

The detailed Dighem Report was not received until late July and Mitre Geophysics is currently re-evaluating the data in order to recommend changes to the proposed ground follow-up program. This report as well as the Dighem Report will be appended in the next six monthly report to the Tasmanian Mines Department.

A detailed program for exploration to be conducted during the 1986-87 summer season was submitted to the management committee overseeing exploration within the Southwest Conservation Area. The proposed program is based on Mitre's preliminary interpretation of the analog data.

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EXPLORATION POTENTIAL

The tenement has excellent potential for hosting an exhalitive volcanogenic massive copper, lead, zinc, silver, gold deposit (VMS) with reserves of from 10 to 20 million tonnes grading +20% combined base metals. There is also good potential for both volcanic hosted gold and ultramafic hosted platinoid deposits. There is subordinate potential for Renison style, carbonate hosted tin deposits.

PROPOSED PROGRAM

Dighem responses outlined at Muddy Cove and at Wanderer North will be assessed during ground follow-up operation in 1986-87. Follow-up surveys will include gridding, geological mapping, geochemical surveys and Max-Min EM surveys.

Ground surveys will also include detailed stream and panned sediment surveys over areas draining the ultramafic sequence extending from Asbestos Point to Hibbs Lagoon and at Lowren Hill - near the Spero River. These surveys are designed to look for the PG metals. Platinoid metals may also be found by sediment surveys over the mafic volcanic sequence at Cypress Creek.

Gold values obtained at Lucas Creek and at Cypress Creek will also be re-evaluated. The possibility of gold being found near Karnebunyer Creek within mafic volcanics will also be investigated (possible BHP fossicking area).

017

The 1986-87 survey will be helicopter supported with the program being integrated with that at Elliott Bay. At this stage it is envisaged the program will utilize a small Bell 47 helicopter based at Wart Hill Camp - Elliott Bay and ferry men and equipment to the work place or to fly camps situated near the prospective areas.

Signed P A Jones

PHIL JONES AND ASSOCIATES FOR CYPRUS MINERALS

A handwritten signature in cursive script, appearing to read 'P A Jones', written in black ink.

CYPRUS MINERALS AUSTRALIA COMPANY

EXPENDITURE FOR THE 12 MONTHS ENDED 30 SEPTEMBER 1986

SORELL PENINSULAR ELs 35/83, 36/83, 37/83

	\$
Salaries and Wages	1,358.24
Benefits	79.19
Drafting	356.25
Cookery	-
Field Office Rent	-
Field Supplies - General	-
Freight	-
Communications	3,566.60
Consultants	-
Assays	803.00
Equipment Rental	1,080.00
Geophysics	57,000.00
Equipment Operation and Maintenance	-
Property Payments	-

	64,243.28
Overhead 10%	6,424.33

	70,667.61
	=====

TREVOR CONQUEST
ACCOUNTANT

HP:AMR

019

979020

APPENDICES

APPENDIX 1

MEMORANDUM: ELLIOTT BAY AND MUDDY COVE DIGHEM SURVEYS
by Mitre Geophysics



Memorandum to: P. Jones, Cyprus Minerals.
 from: J. Bishop, Mitre Geophysics.
 Subject: ELLIOTT BAY DIGHEM SURVEY.

Attached is a revised diagram of the proposed flight paths for the Elliott Bay Dighem survey plus diagrams for the Muddy Cove and Hibbs River areas which may also be flown.

The Elliott Bay plan covers all of the (poorly mapped) acid volcanics on the western side of the Osmund syncline and all of the Hart Hill and Hudson River Pyroclastics north of 5,248,350mN on the eastern side. (These boundaries were taken from the 1:42,000 geological map in Herrmann, 1983. They are not exactly as shown on the 1:100,000 map accompanying this memorandum.)

The proposed survey covers all of the prospective rocks in the northern part of the E.L. which were not covered by Geopeko's IP survey. At a 150m line spacing and with a minimum line length of 3km, the survey totals about 630 line-km (plus ~56 line-km of tie lines for the magnetics). This total includes 81 line-km over E.L. 37/83 (Spero River), the data from which should be produced as a separate set of maps. The prospective areas not covered by the survey (or by the IP) total about 45 sq kms (ie, about 300 line-kms), however these have probably been adequately explored by Geopeko (Bishop, 1984).

Dighem expect to start the job near the beginning of January, with preliminary maps ready sometime in March. A cost of \$120 per line-km including helicopter costs plus a mobilisation charge of \$10,000 has been quoted.

The survey on the western side of the Osmund syncline overlaps the 1984 Sorell survey and it is recommended that at least the magnetics from that survey be merged with the Elliott Bay data to provide a better regional view of the area. Further, since it is likely that the two halves of the survey will be done together (ie by flying across the syncline), it may be worth paying for a complete magnetic coverage of the area. This should assist in mapping the geological boundaries, including the sub-surface

x It is anticipated that Dighem will produce much more accurate magnetic maps than they have in the past.

Costs for merging of two surveys are approximately \$10 per line km for the two EM and magnetic sheets plus \$5 for resistivity and \$2 for enhanced magnetics. The part of the Sorell survey west of Elliott Bay totals approximately 350 line-kms (ie, all up cost for merging all four sets of data would be less than \$6000 or less than \$2000 for magnetics alone).

2022

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979023



Cambrian/Ordovician contact and the sediments within the syncline may be prospective for gold.

The system will be coming with a VLF receiver: hopefully two channels, but possibly one. The data will be processed and the maps can then be examined and purchased if desired. I understand the cost will be \$3 per line-km for the first channel (probably NWC) and \$2 for the second (Japan or Hawaii).

All maps can be provided in colour (recommended for the magnetics). Cost is about \$300 per first map sheet for each data set and about \$50 for each subsequent sheet.

The Muddy Cove Volcanics and part of the Hibbs River Volcanics on the Sorell Peninsula may also be covered by Dighem surveys. Flight path diagrams for these areas, totalling ~183 and ~186 line-kms respectively, are attached.

J.R. Bishop
18th Dec., 1985.

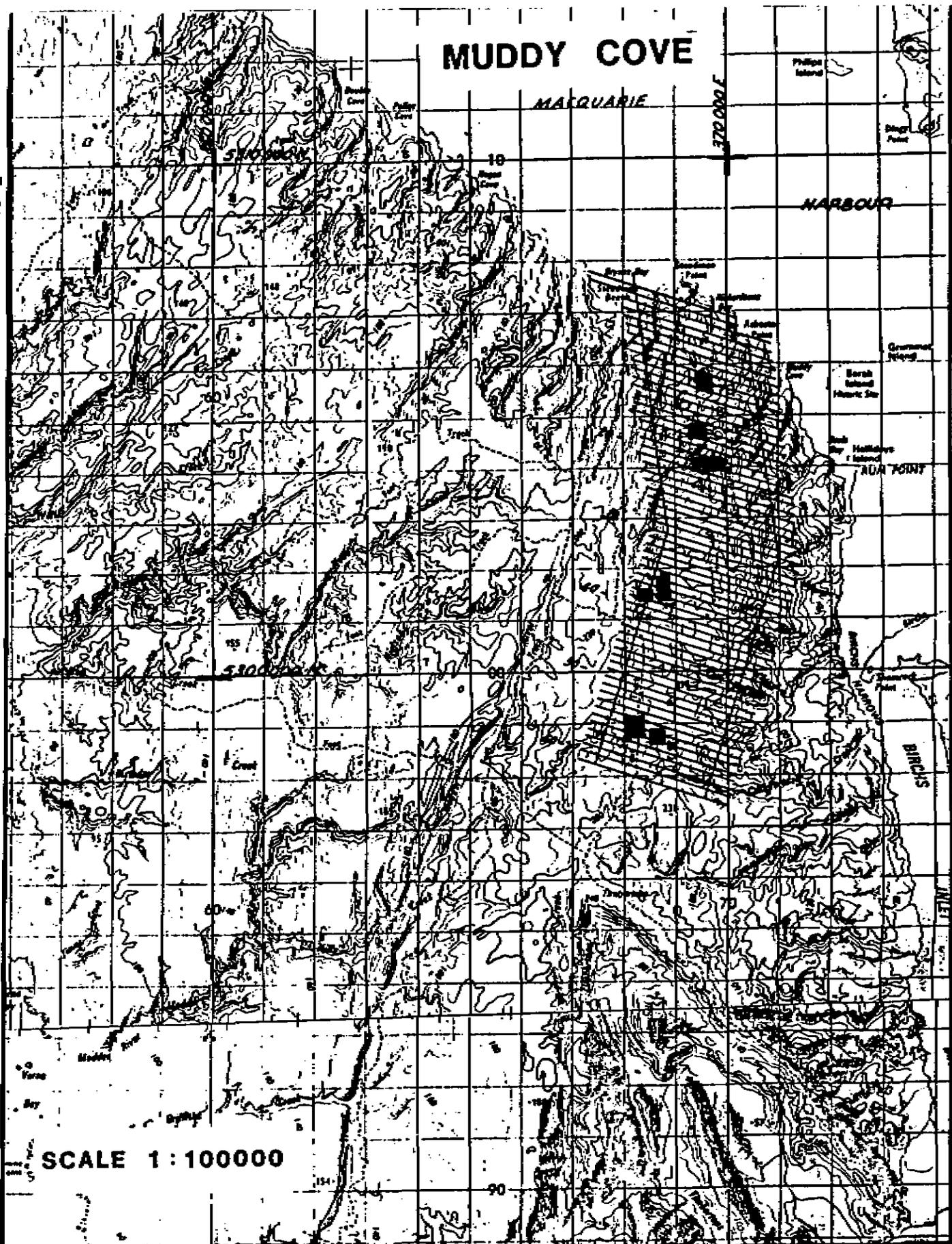
Reference

Bishop, J.R., 1984. An Evaluation of the geophysical surveys over E.L. 27/76, Elliott Bay. Mitre Geophysics report 84/06 for Amoco Minerals.

023

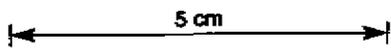
979024

MUDDY COVE



SCALE 1:100000

103 line-km
 + ~ 20 line-km magnetics tie-lines



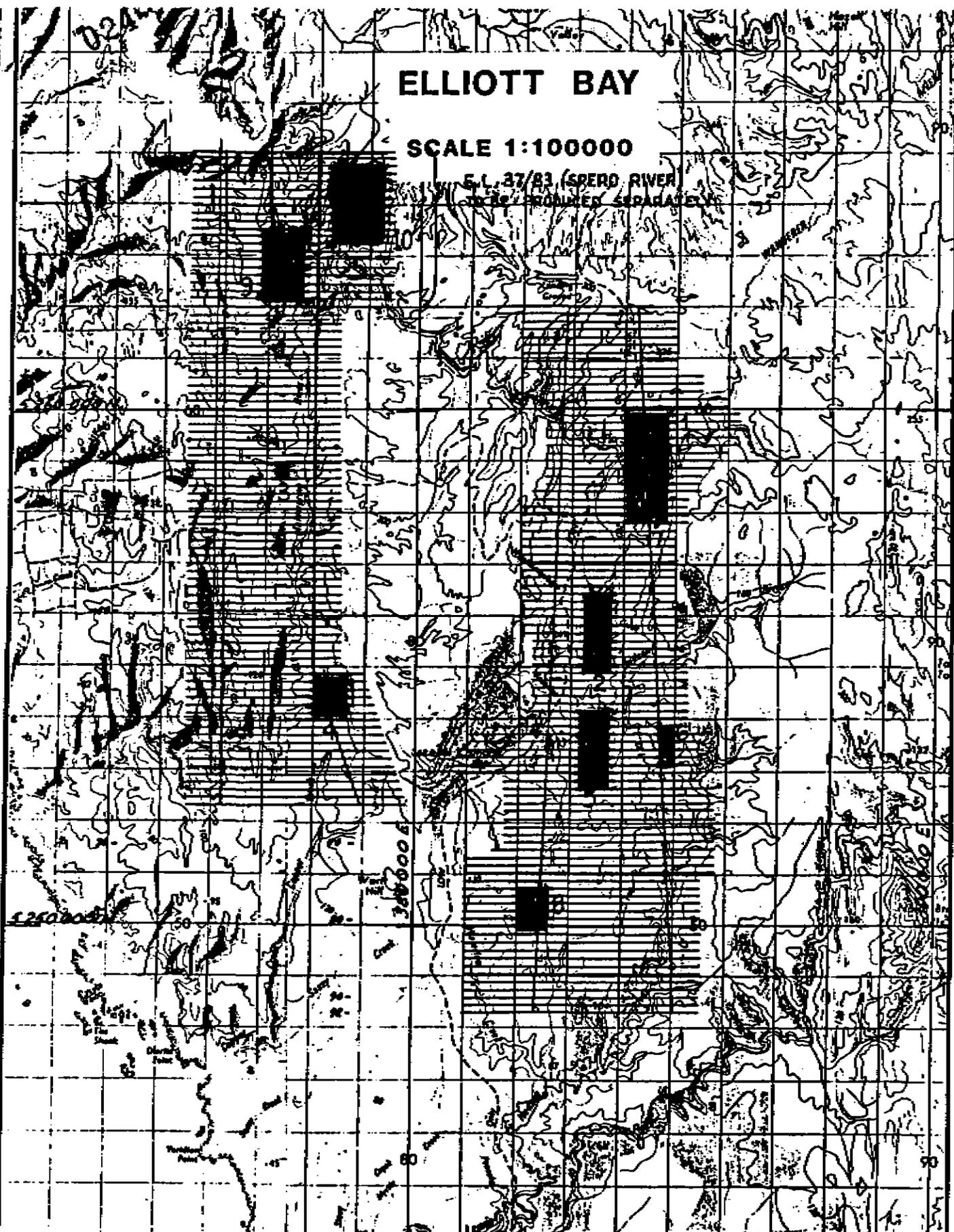
MITRE GEOPHYSICS PTY. LTD.	
SORELL PENINSULA, TAS.	
MUDDY COVE VOLCANICS	
PROPOSED FLIGHT LINES	
DIGHEM SURVEY	
SCALE 1:100000	1000 0 2000 Metres
DRAWN BY: J.R.B.	FILE NO.
DRAFTSMAN:	FIG. 1
DATE:	
REVISIONS:	

ELLIOTT BAY

SCALE 1:100000

S.L. 37/83 (SPERO RIVER)

TO BE PROMINENT SEPARATELY

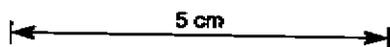


979025

630 line-km

+ ~56 line km magnetics tie-lines

84 line - km SORRELL LICENCE 37/83



MITRE GEOPHYSICS PTY. LTD.

ELLIOTT BAY, TAS.
PROPOSED FLIGHT LINES
DIGHEM SURVEY

DRAWN BY : J.R.B.

DRAFTSMAN:

DATE : Nov '85

REVISIONS :

FILE NO.

SCALE 1:100000



FIG. 2

APPENDIX 2

**PRELIMINARY INTERPRETATION OF THE ELLIOTT BAY AND MUDDY COVE DIGHEM
SURVEYS**

by Mitre Geophysics



PRELIMINARY INTERPRETATION

OF THE ELLIOTT BAY AND MUDDY COVE DIGHEM SURVEYS.

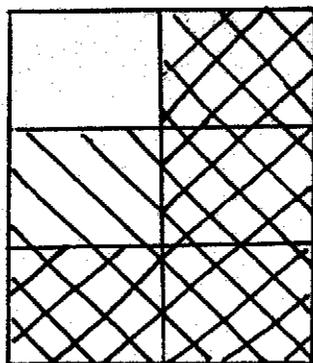
The Dighem surveys of Elliott Bay and Muddy Cove were completed on the 19th January, 1986. Processing of the data is expected to take about two months. Since some follow up is desired this field season, a preliminary interpretation has been made of both areas.

The preliminary interpretation was carried out by picking responses from the analog records and positioning these on to the aerial photographs (enlarged to approximately 1:10,000 scale). (The locations were mostly made using the navigator's in-flight positioning: some of these will be in error, particularly on the western side of the Elliott Bay survey where there are few landmarks.)

The responses were graded into three categories according to their conductances. On the photographs, the most conductive are coloured blue, then green and the least conductive, red. On the maps, three different symbols have been used (see legends).

ELLIOTT BAY

A base map for Elliott Bay was prepared by tracing from Geopako's 1:10,000 scale maps (no map for the north-west corner). The geology was traced from four 1:10,000 scale maps with the missing segments (see diagram below) filled in using a 1:42,000 scale map. (The 1:42,000 scale map is more recent than the 1:10,000 scale maps and is different in some details, however these are not shown on this plan).



1:10,000
base maps.



1:10,000
geology maps.

The Dighem responses were placed on the base map by matching rivers and tracks. Agreement between the photographs and the base map was generally good (ie, the photographs are close to scale).

The long zones of responses on either side of the Osmund syncline are most likely due to Tyndall shales, thus the geology appears



to be incorrectly located on the Geopeko base maps. (Note also the discrepancy between the V28 position marked on the geology sheet and as seen on the air-photograph.) The final plans from Dighem Ltd will undoubtedly have responses in slightly different positions to those shown here, particularly in the north-western quarter where there are few features to assist recovery. Accurate plotting of the geology on to these plans is recommended.

MUDDY COVE

The map for this area was traced directly from the photographs. The AMG lines were drawn in by best fitting a number of landmarks positioned from the 1:20,000 topography map (again the fits were reasonably good). The geology has been sketched in from a 1:20,000 scale map (which in turn is an enlargement of a 1:50,000 scale map).

RECOMMENDATIONS AND CONCLUSIONS

No first-class anomalies have been interpreted (ie, no responses indicating good conductors recorded over a short strike length in an area of prospective geology). However a large number of responses have outlined weak to moderate conductors, several in areas of favourable geology. Since a massive sulphide deposit in these areas is likely to be only a moderate conductor, all of these responses are valid targets for follow up. The most promising have been outlined on the plans and numbered in order of priority and listed in the accompanying table. There are several other likely targets, but investigation of these can await the final interpretation. Any ground investigations should be planned directly from the aerial photographs.

A Maxmin EM system with highest frequency of 3555hz* is recommended for ground follow up. Extra care and certain procedures have to be taken in areas of steep topography†, but it has been my experience that the system is more sensitive than 'Genie' which was not particularly successful at Sorell. Magnetics should also be read to help the location (using the final Dighem plans). One or two lines should be surveyed in for each anomaly or anomalous zone, as was done at Sorell.

For the western side of Elliott Bay and the Muddy Cove area, the possibility of hiring a satellite navigation system could be investigated. This would both assist location of the anomalies and permit a more accurate (and confident) plotting of the ground data.

JRB
J.R. Bishop
Jan., 1986.

* Some Maxmin systems read only to 1777hz.

† Most of the Elliott Bay areas should be relatively flat.



List of prospects arising from the preliminary interpretation
of the Dighem surveys over Elliott Bay & Muddy Cove.
(in order of priority)

ELLIOTT BAY

1. Numerous short zones (2 or 3 responses) of intermediate conductors within HRP and WRP*. Close to V28 which had very good base metal geochem and no further work (by Geopeko). Access is very good.
2. A single intermediate to good conductor in WHP with good access. Also a short zone of intermediate responses in WRT with good access.
3. A single intermediate response on the western side of the licence; probably in acid volcanics. Difficult access and navigation.
4. A single intermediate response within acid volcanics on the western side of the licence. Access is not good, but it may be within the recently burnt area. Also a zone of intermediate responses apparently within the Tyndall tuffs & agglomerates. The southern end is in open country and should be easily located. A useful check on the western geology.
5. A single zone of weak and intermediate responses in WHP; near and sub-parallel to a fault or contact. Access is good.
6. A single zone of weak responses with one intermediate response near the (eastern) contact of the HRP and Porphyry. In open country.
7. Three or four zones of intermediate responses within HRP. It lies immediately to the south of prospect no. 1 with good access.
8. Two zones of weak and intermediate responses within a broad area of WHP. Good access.
9. Three short zones of weak and intermediate responses; mapped as Mainwaring and Western Sequence, in the north-western section of the survey.
10. Two long zones including one 'good' response; mapped as Ordovician sediments, but may be Tyndall shales. In the north-western section of the survey.

* WHP: Wart Hill Pyroclastics
HRP: Hudson River Pyroclastics
WRT: Wanderer River Tuffs.



MUDDY COVE

1. Two good responses, across strike. To the east of the 'main zone' and apparently within the Muddy Cove Volcanics (also called the Noddy Creek Volcanics).
2. Two intermediate responses, across strike in the centre of the volcanics.
3. Two intermediate responses, across strike on the western edge of the volcanics.
4. Two widely spaced intermediate responses, across strike within the volcanics.
5. A single intermediate response in the south-eastern corner of the volcanics.
6. A single good response to the east of the 'main zone' and located on the Cambrian sediments/volcanics contact.
7. A zone of three weak responses within the volcanics.

* The so-called 'main zone' is the long line of good responses in the north western quadrant, immediately to the west of the volcanics. The zone runs out to near Asbestos Point (about 100m to the west) and is probably due to serpentinite (although there is none mapped at, or south of, Asbestos Point). The discrepancy of ~100m suggests that there may be some (expected) positioning errors.