golden apple mining syndicate

FINAL REPORT E.L. 8/80

Geological Summary for Director of Mines

J.R. Wall / CYGNET

1.7.80 - 1.7.81

AMG REFERENCE POINTS ADDED

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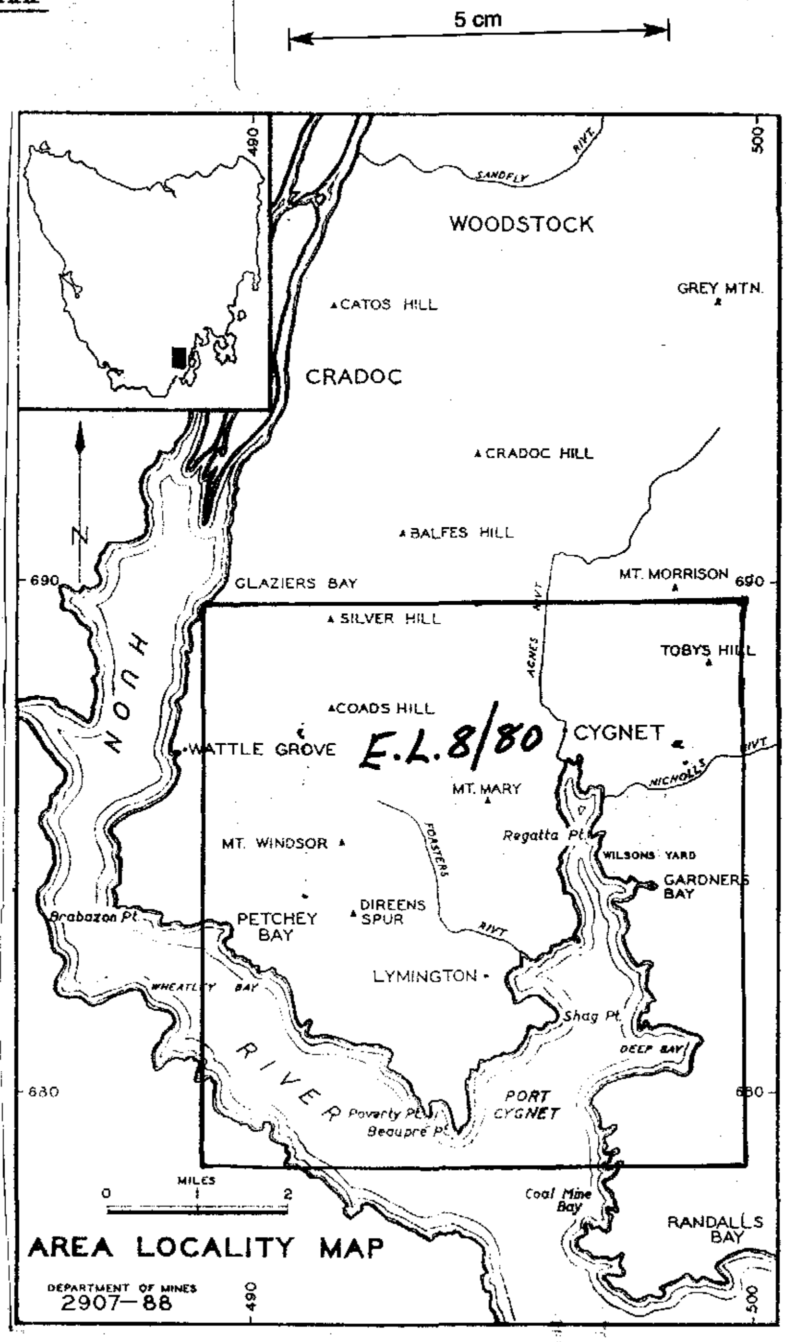
CONTENTS

1. ABSTRACT

The Mt Mary mine has become a focus for exploration development and is now held under Mining Lease. However, the Toby's Hill workings, in spite of their interesting base mineralogy, have been found lacking in any direct economically significant results. The Port Cygnet West and Lymington West areas show encouragement for future work. Finally, strong comparisons with carbonatites cannot be ignored at this stage for the Cygnet tectonic, chemical, petrological and economic environmental comparisons. Maps of regional interest and introduction are to be found in our six monthly report for 1980.

2. AREA LOCALITY MAP



3. LIST OF TRANSPARENCY PLANS

Plan Number		1980	1981
GAMS 1	Toby's Hill Magnetics	X	
GAMS 2	Toby's Hill S.P.	X	
GAMS 3	Mt Mary Magnetics		X
GAMS 4	Mt Mary S.P.		X
GAMS 5	Lymington S.P.		X
GAMS 6	Mt Mary Regional Magnetic Profiles	X	

4. DISCUSSION ON RESULTS AND SURVEYS

A. Mt Mary - Introduction

The map featured in Appendix 2 shows the location of the Mt Mary exploration survey grid which was centred over the distribution of old workings.

The Mt Mary mine consists of a main 3-compartment shaft sunk to a depth of 64 metres. There are about a dozen smaller shafts in the area which are now inaccessible having either caved-in at the surface or been filled in with domestic rubbish.

The country rock is Permian mudstone showing an interesting contact metamorphic spotted mineralization; being pyrite often associated with blebs of secondary minerals, especially chlorite. These mudstones are intersected by numerous porphyry dykes, notable ones being tinguaite and epidote-sanidine porphyry. Fine disseminated pyrite can occur in the dykes but is not proven to be auriferous.

In the past, (Scott, 1927), ferruginous quartz veins up to several feet thick have been shown to be erratically gold bearing. Assays of up to 5 oz. gold per ton have been reported.

Twelvetrees (1907) mentions a reddish contact rock bearing visible gold. It seems likely that such free gold, which is also known to have been crushed by hand prior to 1927, occurs only in the oxidized or weathered zone which would not extend below the known water table level of 60 metres. Below this level the ore-rock is probably in the form of heavy sulphides with the gold in chemical combination.

Our surveys support Scott's report showing that the miners should not have driven out East, but more to the North-West (not to be confused with Exploration Grid North). These surveys here give the first clues known today about the structural controls of gold emplacement.

Although the magnetic traverse profiling method has been established as an effective exploration tool, it has not yet been used extensively since enough interest so far has been consumed in locating and examining areas of old mine workings.

B. Magnetics and Self Potential

Plan No. GAMS 6 (see Appendix 5 for Location Map) shows a regional magnetic traverse profile which runs for approximately one kilometer to the S.S.W. along the ridgetop extending away from the Mt Mary mine road. This profile work is an example of how such traverses are able to detail very local magnetic highs which in this area are most likely to be magnetite-rich porphyry dykes; even amid an area of high regional background. The effectiveness of the method is illustrated by the shape distribution of the anomalies on the profile. Regional magnetics with several published maps were discussed in our 6-monthly report of 1980.

Plan 3 shows the magnetic contours in detail of the Mt Mary exploration grid. The values range from 62,900 to 64,600 gammas using a Geometrics G816 proton magnetometer.

There are two prominent trends obvious from these results which are also well complimented by the trend directions of the S.P. survey. There is a trough-like zone of low magnetic anomalies between Lines 300N and 400N, and particulary to the North of 100W, encompassing the zone of old workings. The gaps between these localised low spots in the zone, which show higher magnetic intensity, are likely to be due to (Grid) North-trending, narrow cross-cutting dykes.

Now, this general low-zone just described is presently considered to be a major graben-fault system which cut across the elongation of the ridge and runs into the valley occurring on the Western side above Kings Hill Road. A piece of obviously well-sheared rock float was observed on the surface at 300N-300W; down in the valley. Also, Twelvetrees has referred to "brecciated contacts" in the old shaft workings.

Self-Potential

The long-wire method was applied with the intrument fixed on the baseline with a pot and the other pot moving along the line. The pot variations were checked against each other at the start of each line.

The ground in the valley on the Western side of the grid was slightly damp but generally the ground conditions or topographical effects are not thought to have a significant influence of the trends of the results.

The negative S.P. results range from 0 to -35 millivolts and a Beckman 310 digital readout multimeter was used. The significant graben trend lines mentioned above are plotted on the S.P. contour map. (Plan No. GAMS 4). The distribution and shape of the S.P. anomalies shows that the major trend is along Line 300N.

The secondary trend is illustrated by the elongation of S.P. results between 00 and 100W and by the direction of the small slender magnetically high trend at 500N-50W; which is interpreted to be a dyke of strike length 250m.

This trend is known to complement the known strike of the gossanous lode mineralization outcropping in the Main or "No. 1" (Scott, 1927) Prospecting Shaft. It also complements the line which links the main shaft workings with the Easterly extent of shaft workings, being "Breretons".

It is interesting to note that both the primary "graben" trend and the secondary trend can be compared on a regional scale. The first respective one being the fault line trending from Cradoc Hill, through Cygnet town and Port Cygnet, and on to Deep Bay and then cut off by the dolerite south of Merchants Hill. The second being the Wheatleys Bay fault running North-Easterly through to Robley's Point below Cygnet (see Kingsborough Geology Sheet).

Indeed these can be considered to be the two most important and complementary shear directions for the whole of the Cygnet region; especially with four major parallel trends occurring in the Cradoc area. Incidentally, the Dillons Hill Fault (starting at the Huon River) is on line with the graben zone inferred through the Mt Mary Mine workings.

Because of the parallel repetition of the secondary trends of elongated S.P. negative results which occur laterally along each side of the dyke interpreted from the magnetic results at 500N-50W; then there may be small pyritised surface lodes repeated along these zones and probably coinciding with the contacts of the dyke.

C. Laboratory Results on Gassanous Rocks (See Appendix 1)

Gossanous samples from Mt Mary have been studied from two separate sampling points and the Registered Numbers quoted are from the Mines Department Laboratory.

Sample registered No. No. 1 Prospecting Shaft:	Au g/t	Ag g/t	Cu %
A. 802854	25		
B. 813083	< 0.3	53	0.11
C. 811624	8.7	31	
Breretons Open Shaft:			
D. 813084	10	29	0.17

Sample B contained a slight trace of arsenic and sample D had a larger trace and neither contained antinomy. Covellite was observed in sample C and it is likely all samples contain copper. Gold and silver occurs in significantly interesting amounts generally in all gossanous samples examined.

Sample B shows an unusually high silver value of 53 g/t with a negligible, uncomplementary gold value. This can be explained by the nature of the sample taken off the western end of the dump. The free gold would have washed away on the dump surface and the silver is still contained in the gossanous boxwork material of the solid rock chips of the sample.

D. Laboratory Result from Hybrid Rock

In June 1981, a Mr Smith from Lymington Road, Port Cygnet West brought a well mineralized sample of hybrid rock into our office. This was analysed to contain 9.1 g/t of gold with traces of Zinc, Copper and Lead. (Reg. Number 813082). On checking this result, with the same material, it was found not to contain gold. (Reg. Nos. 814105 and 814106). The rock appears to be a hybridized dolerite containing obvious chalcopyrite and fine-grained galena. Further research indicated that an earlier analysis (Reg. No. 802855) likely to be of the same material contained 0.4 g/t of gold.

Local property-owner reactions to the possibility of my inspecting the exact location of this rock-type were prohibitive, although friendly. Anyway, I was no longer qualified to do so.

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I understand that the location of the rock may be from a damsite in the vicinity of Langdons Hill. I inspected more samples of the rock stored at a farmer's house near here.

I am still mildly intrigued by the high gold result and can think of only two explanations at this stage:

1) that there is good gold spasmodically distributed throughout this disseminately pyritized rock-type. Edwards (1947) first described the Hydrid Rocks of Regatta Point. He does state that "the various types of hybrid rock show no regular distribution but occur in irregular patches, and schlieren, and show rapid transition from one to another". I would suspect that the rock analyses above are from the "Transition Zone" described by Edwards;

2) that the sample (813082) was salted between the time it was excavated and the time it was received by the laboratory. I do recall being surprised that the sample was delayed on delivery.

Anyway, with very careful approaches to the property owners concerned, some work should be done in this area.

E. Lymington Geophysics

An orientation S.P. survey was conducted on the Black Jack Spur Arid (Location, see Append. 6) to test the response of this method in a scree-covered contact zone there. Results varied from -9 to +18 mv but there was a predictable negative change in values going westwards on all lines. This significant trend is shown on the profiles plotted on transparency PLAN No. 5.

There are three areas of old mine prospecting work shown on this grid, each one being of a different nature:

1) Limonite Trench at 250N.50W. This shows an interesting opalised limonite or brown chalcedony which can contain large crystals of epidote and sometimes boxwork texture in gossanous cavities. This may be the location described by Twelvetrees (1907, p.6): "an excavation has been made in mudstone with a seam of limonite. The gossanous capping is rather inviting in appearance, but degenerates into a seam of limonite, which has the disadvantage of carrying no associated quartz or pyrites."

Further evaluation work is planned for this occurrence. The S.P. results from line 250N indicate that the ground to the East of the trench could be mineralized.

2) The Shaft at 165W-70W. This contains the "red-rock" described by Twelvetrees and a random sample of solid rock from the shaft

dump contained 2.2 g/t of gold. (Reg. No. 802463). The shaft is collapsed and was probably no more than 25 metres deep. More studies need to be done on the origin of this "red-rock".

3) The "skarn-like" pyritized contact rocks in the prospect pits above Line 75N. A hard rock sample (No. 802462) was analysed to contain 0.02% copper, without any gold. A light-coloured porphyry dyke can be seen outcropping adjacent to these pits. Magnetometer trials below here, on the western side, indicated very sudden variations in local magnetic intensity.

This locality on the Black Jack Spur has the advantage of having many of the variety of interesting rock-types from the Cygnet district available for surface inspection and therefore should contribute to future studies on the origin of these rocks and mineralisation.

5. ORIGIN OF THE CYGNET ALKALINE ROCKS

Considerations of the origin of the great variety of igneous rocks found in the Cygnet area are pertinent to the ore genesis considerations, the nature and distribution of mineralisation and the exploration philosophy. Is it possible that one day drilling may turn up a carbonatite?

The known surface dyke rocks have been well studied by Edwards (1947). These are:

- syenite - porphyry
- hauyne - sanidine - garnet - porphyry
- sanidine - garnet - porphyry
- sanidine - biotite - porphyry
- sanidine - porphyry
- sanidine - tinguaite
- syenite - aplite, syenite - pegmatite
- garnet - orthoclasite

Edwards (p. 107) considered that the Cygnet intrusion is a differentiated syenitic stock of which the uppermost zone is presumably, from its texture, a chilled margin. He also states that the marginal zone of syenite porphyry closely resembles in chemical composition the banatite that forms the upper part of the Mt Dromedary ("Mt D.") laccolith in N.S.W. He said the Mt Dromedary laccolith appears to have developed through differentiation in situ of a monzonitic magma, giving rise to an uppermost zone of banatite, and lower zones of shonkinite and pyroxenite.

Edwards went on to consider similar processes of formation for both areas.

There are monzonitic, nepheline bearing, latitic and melanite bearing rocks in the Mt D. area. Further, the distribution of these rocks is not so localised since they are found 20 km from Mt. D. out on Montagüe Island.

Now, Boersen (1964) concludes Mt D. to be a stock rather than the earlier laccolithic considerations. Similarly, I would agree with Edwards "stock-like" account of Cygnet rather than the laccolith described by Leahman & Nagvi (1966); particularly in the light of the most recent detailed regional mapping of Dr.N. Farmer.

The igneous rocks of the Mt. D. complex show clear evidence of forceful intrusion into the surrounding Ordovician sediments.

Boesen (1964) described the jointing in the banatite (same as Cygnet syenite porphyry) and monzonite at Mt D. as radial and tangential (with vertical dip) to the outline of the intrusions. This feature, together with the distribution of the banatite and monzonite, their relationship to the form-lines of the mountain, and steepness of the sharp contacts, led studies to conclude that the intrusions are stock-like in character.

Brown (1930) considered, on the evidence then available, that the complex was a laccolith in which gravity differentiation had taken place in situ. She suggested that the complex could have been emplaced along an unconformity between folded basement and overlying Late Devonian rocks now completely eroded away. However, as Boesen pointed out, this explanation fails to account for the following features:

1. The porphyritic banatite/monzonite contact and the monzonite/country rock contact are knife sharp and steeply dipping. Such is the nature of many of the contacts of the Cygnet (although numerous and separate) porphyry bodies.

2. Dyke of porphyritic banatite intrude the monzonite. The sanidine porphyry is known to be younger, in this respect, than the syenite porphyry at Cygnet.

3. The pyroxenite does not show structures consonant with its formation by gravitational accumulation in situ, and appears to be very thick. A vertical diamond drill hole showed no appreciable change in composition or structure of the pyroxenite over a depth of 180 m. Comparable

differentiated rocks, such as these N.S.W, pyroxenites, which could be of a lower laccothic differentiated phase, are not to be found at Cygnet.

4. Similarly, no variation was noted in the 120 m of core from a vertical drill hole in the Tilba Tilba monzonite. No such variation is known from the Cygnet alkaline rocks.

5. Unless the floor of the proposed laccolith were extremely irregular, the geometry of the body could ensure a much greater exposure of pynexenite and monzonite than exists at this time. (Not relevant to Cygnet).

6. There is strong evidence that the banatite and monzonite were emplaced by vertical movement of magma.

Boersen says there are strong indications that the intrusions were injected to a very high crustal level (older volcanic rocks are known in this area). This could be the case for Cygnet also, with some of the separate, comparatively smaller, stocks being feeders. Once volcanic rocks now removed by post-Cretaceous erosion.

As with Cygnet, the Mt Dromedary area has numerous dykes: Boesen states, "several hundred dykes intrude the country rock surrounding the monzonitic complex, although only a few have been observed intruded into the other igneous bodies. The average width of the dykes is 1 m and a few reach 15 m." For both locations, the dykes may be the result of tension stress related to a major phase of igneous emplacement. Also, regional doming of the country rocks, causing the intrusive stage, occurs in both areas.

Ramsay Ford (pers. comm. 1981) considers there were two separate magmas to produce both the syenite and sanidine porphyry rock types. He says the sanidine porphyry is the result of the partial melt of amphibolite which has been mixed with a potassium rich magma. Also if a residual came from the syenite porphyry magma, then it would produce the hornblende rock-types. If a magnesium-iron rich basic intrusion was postulated deep down, then it relates to an account of the strength of intensity for the large Port Cygnet magnetic anomaly.

Because of its relevance to the origin of the Cygnet igneous rocks, I will now go on to elaborate on the geology of the Mt Dromedary area. It will be interesting to compare the expectant thesis of Mr Ramsay Ford from Univ. of Tas. with these other thorough petrological studies available from N.S.W. Mr Ford has undertaken isotopic work on the Cygnet rocks. He does not think that the Cygnet rocks are a carbonatite derivate.

Melanites

Now, like Edwards for Cygnet, Brown (1930) considered the origin of the melanite garnet from Mt D. The melanite is a lime-bearing garnet found in association with monzonitic or alkaline rocks. So the big question is, where does the lime come from?

Brown considered three possibilities:

(i) pure magmatic differentiation;

(ii) assimilation of limestone by the magma;

(iii) contact metamorphism of limestone beds, with the introduction of silica, iron, magnesia and alumina from the magma.

Brown thought that the origin of the garnet-bearing pyroxenites was possibly related to limestone syntexsis.

But no calcareous rocks are known to outcrop within 50 miles of the Mt D. igneous complex and there seems little evidence for supposing that any exist beneath the older Palaeozoic metamorphic country rocks of the region; certainly none occurs close to the intrusion and the positions of the outcrops of the garnet-bearing rocks show that they are not due to simple contact metamorphism.

Similar conditions evidently prevail in the Fen District, Norway, where the nearest limestone outcrop is 40 to 60 km distant from the (Melteig) alkaline series.

Throughout Cygnet, there is only the one very small (Permian) limestone body near Dillons Hill, towards Cradoc. (This area has been inspected for possible contact metamorphism with a nearby dyke, but nothing found).

Also, brachiopod fossil remnants have been collected by us from a sanidine-porphyry dyke or sill to the North-East of Livingston Spur (Toby's Hill locality) but these are attributed to a xenolithic effect on the Bundella Permian Mudstone. Rafted blocks of such xenolithic material are also found.

6. "CARBONATITES" AND BASEMENT ROCKS

In many parts of the world limestones originally believed to be of sedimentary origin are closely associated with alkaline rocks, and such occurrences have suggested that alkaline magmas owe their origin to a desilication process brought about by the assimilation of limestone by a magma. It is today recognized that some of the carbonate rocks associated with alkaline complexes are probably of magmatic origin and they may be distinguished from sedimentary carbonates by their unusually high content of such elements as phosphorous, barium, titanium, flourine, niobium, lanthinum and yttrium. NB. In some places the content of one or other of these elements is so high that the carbonatite occurrence is of great economic importance.

The carbonates of these rocks may be calcite, dolomite, ankerite, or manganese bearing varieties and minerals containing the rarer elements are commonly apatite, rutile, brookite, perovskite and pyrochlore. (Joplin, 1972)

Carbonatite complexes are known in Sweden, Norway, Russia, California, Colorado, Arkansas, Canada, India and many localities in the Great Rift Valley of East Africa. They occur as plugs, stocks, ring-dykes, cone sheets, large single dykes and as dyke swarms... In some places carbonatite and shoskonite complexes occur fairly close together in the field.

Edwards stated that if the resemblance to the Mt D. rock is more than superficial, then it is possible that the deeper-lying rocks in the Cygnet stock may be of monzonitic or even shonkinitic character.

Carbonatite complexes are commonly zoned and can have an inner core of carbonate rocks passing out to leucocratic alkaline rocks and still further outwards and at a deeper level into a zone of melanocratic alkaline rocks; these are followed by a zone of nepheline syenites (previously described from the Cygnet Suite) and finally by syenites (Cygnet) or fenitized granites.

Dykes are very abundant in carbonatite complexes and all the rocks found in the larger bodies may also occur as dykes. Olivine-bearing lamprophyres, kimberlites and tinguaites (peculiar to Cygnet) are also recorded as dykes from a number of carbonatite areas.

Joplin states that although there is absolutely no evidence that either of the intrusions at Mount Dromedary or Cygnet are carbonatites many rock-types found within them bear strong resemblances to rocks associated with carbonatites elsewhere.

When these rocks were originally described the authors (Brown & Edwards) likened certain types to rocks occurring in the Fen District of Norway, in the Bearbau Mountains, in the Little Belt Mounts and in other places in the U.S.A. and San Paulo, Brazil. NB. Joplin states that all of these extra-Australian occurrences have since proved to be carbonatites.

A "jacupirangite" was described by Twelvetrees from Port Cygnet and this rock is also reported to have contained garnet and nepheline. Edwards, 1947, has since shown that this rock occurs only in segregations and is, in fact, a hybrid formed by reaction between highly alkaline fluids associated with the syenite porphyry (banatite) and country rock which is a quartz dolerite. Boesen suggests that the so-called jacupirangite at Mt D. may also be a hybrid formed by interaction between alkaline fluids associated with the porphyritic banatite of an earlier intrusion of pyroxenite. NB. Alkalization could, in fact be brought about by carbonatite fluids.

Other undersaturated rocks at Port Cygnet are described by Edwards as sanidine tinguaites and hauyne-sanidine-garnet porphyries. These rocks occur as dykes associated with the main mass of syenite porphyry (banatite).

The sanidine tinguaites contain phenocrysts of potash feldspar that are aligned parallel to the length of the dyke and measure 20 x 10 x 1 mm. Apatite and sphere occur and Edwards has recognized pink pleochroic andalusite in some specimens. Edwards has pointed out that the analysis of this rock reveals exceptionally high potash for a tinguaite and Joplin believes that this is the distinguishing feature, apart from field association, which separates the tinguaites associated with the shoshonites and carbonatites from those derived from the alkali basalt magma.

Basement Rocks

Cambrian volcanic basement rocks have been proven beneath the Permian at Glenorchy (near Hobart), by a deep borehole in recent years. The nature of the basement contact is likely to be erratically irregular of a well developed "Fiord-like" glaciated erosional nature.

Future detailed geophysical work, perhaps electrical resistivity, may provide inferences as to where the basement rocks can be drilled closer to the surface. The report of Leaman and Nagvi (1966) still contains valuable geophysical information, however its geological map and conclusions are now considered by me to be redundant.

An M.Sc. thesis is soon to become available on the origin and micro-chemistry of the Port Cygnet alkaline rocks. Such work may well provide important keys in comparing surface exploration geochemical results with Cambrian (?) basement rock relationships. The area has not yet been well studied from a modern economic geological viewpoint.

7. AURIFEROUS LODES AT MT DROMEDARY, N.S.W.

These notes on the Mt D. mineralization sound similar to the "secondary trend of lode mineralization" now recognized for the Mt Mary system.

Near the top of Mt D., narrow auriferous veins of pyrites occasionally occur through the banatite, these being probably of late stage magmatic origin; while the effects of deuteric processes (c.f. epidote, Mt Mary) are evident throughout the finely-grained phases of the banatite. The veins are associated with andesitic dykes and they are parallel lodes ranging up to 18 inches thick, but are less than 6 inches on average. (Hall, 1958).

A recorded 10,770 oz (335 kg) of gold was won from these reefs mainly between the years 1877 to 1910. The actual production was probably a lot higher, particularly as very little of the alluvial gold was recorded. (Information supplied by records of N.S.W. Department of Mines).

The main Mt D. line of lode was a pyrite vein, a few inches wide and carrying good gold, striking 270 degrees and dipping almost vertically. It was completely oxidized in the upper levels, but at depth became heavily mineralized with pyrite. It was worked by several tunnels into the mountain side and was stopped vertically about 750 feet.

Gold values on past operations for the Mt D. region average in excess of 1 oz per ton.

8. CONCLUSIONS:

The types of deposits to consider are:

(a) contact metamorphic-lode and "red rock";

(b) porphyry copper - regional approach;

(c) low-grade gold;

(d) cambrian basement ore halo;

(e) carbonatite.

Here are ten general reflections in summary:

1. Most of the interesting mineralized country known occurs between the highland country which runs from the Black Jack to Mt Mary and across to Port Cygnet.

2. The important metals are gold, copper and silver.

3. Both ground magnetics and trace-element geochemical research are recommended as important exploration approaches.

4. Geophysical surveys infer that structural controls for ore emplacement occur at Mt Mary and the Black Jack Spur but not on the pear-shaped intrusive porphyry stock of Livingston Spur (Toby's Hill).

5. A carbonatite association of the igneous rocks has been considered. This may be disproven by current local academic trace-chemical studies being done. Cygnet is very similar to Mt Dromedary in N.S.W.

6. Barium and Titanium occur in the contact rocks and can be used as geochemical pathfinders as well as to reflect on the origin of the rocks.
7. The local magnetic anomaly at Crooked Tree Point, in the Port, is interesting and should be explained. I think it is too strong and localised to be attributed to pyrhottite nodules of the Wilsons Shipyard type but it may indicate a new rocktype.
8. Some of the hybridized rocks of Port Cygnet West are well mineralized and need soil sampling grids but private property interests may be a deterrent.
9. Geological investigations have not disturbed any local environment on E.L. 8/80.
10. The possible occurrence of Cambrian volcanic basement rocks must be considered.

9. BIBLIOGRAPHY

References quoted in this report;

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Brown, Ida A., 1930 - The Geology of the South Coast of N.S.W., Part 3: The Monzonitic Complex of the Dromedary District. Proc.Linn.Soc.N.S.W., Vol. 55).

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Farmer, N., 1978 - Geological Map. Tas.Mines Dept., unpublished report.

Hall, L.R., 1958 - Auriferous Lodes on Mt Dromedary Tech.Rep.Dept. Mines No. 6 1958.

Leaman, D.E. and Nagvi, I.H., 1967 - Geology and Geophysics of the Cygnet District. Geol.Surv.Bull. No. 49.

Scott, J.B., 1927 - Cygnet Gold Mine. Unpub. Report. Tas. Mines Dept.

Twelvetrees - see Literature Research List attached.

10. APPENDIX: (Seven Sections Attached)

017

DEPARTMENT OF MINES TASMANIA

Laboratory, 287 Wellington Street
Launceston, Tas. 7250

CERTIFICATE OF ANALYSIS

To Mr. John Wall
P.O. Box 178 Savage River 7321

The sample of Specimens received from you on the 27th Mar'81 and stated to be from Cygnet ~~has~~ have been examined, with the following results:—

	Registered Number	Description	Au g/t	Ag g/t
6.4.81	811624	1. Mt. Mary Prospecting Shaft	8.7	31
	811625	2. Livingstone Reef	<0.3	

Analyses by: J. R. [signature]

Fee Paid.

21392

[signature]
Chief Chemist and Metallurgist

APPENDIX 1.
FILE OF LABORATORY CERTIFICATES.

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DEPARTMENT OF MINES—TASMANIA

741019

TELEPHONES:
Metallurgical Research
Laboratory
Mines Inspection
Explosives & Inflammable Liquids
44 2431-2 (2 lines)

LAUNCESTON OFFICES
287 WELLINGTON STREET
SOUTH LAUNCESTON 7250

27th July 1981

Mr. J. R. Wall,
C/- "Golden Apple Mining Syn,"
Mary Street,
Cygnet 7112.
TASMANIA

Reg. Nos 813083-85

Dear Sir,

Please find below results of samples submitted to this laboratory on the 19th Jun'81 and stated to be from Mt. Mary E.L. 8/80.

Reg. Nos	Description	Au g/t	Ag g/t	%Sb	%As	%Cu	%Mn
813083	1. Gossanous	<0.3	53	<0.01	0.06	0.11	0.03
084	2. "	10	29	<0.01	0.23	0.17	0.03
085	3. Manganese Quartz Rock	<0.3					

Yours faithfully,

(H. K. Wellington)
Chief Chemist & Metallurgist.

Analyses by........ J. R. Letthory

Fee Paid

019

741020

DEPARTMENT OF MINES, TASMANIA

Laboratory, 287 Wellington Street
Launceston, Tas. 7250

10th November 1980

CERTIFICATE OF ANALYSIS

To Mr. J. R. Wall, Golden Apple Mining Syd.
P.O. Box 157, Glenorchy Tas 7010

The sample of Specimens received from you on the 23rd Oct'80 and stated to be from Lymington West & Toby's Hill E.L. 8/80 ~~has~~ have been examined, with the following results:—

	Registered Number	Description	Au g/tonne	Cu %
23/11/80	802462	Lymington West No 1 "Skarn"	<0.3	0.02
	802463	" " No. 2 Red. Limonite	2.2	
	802464	Toby's Hill South Adit Mudstone Qualitative examination shows the presence of some Titanium & Barium	<0.3	

Analyses by..[signature] M. D. [signature]

Fee Paid

[signature]
Chief Chemist and Metallurgist
Mr. Wellington

21392

020

741021

DEPARTMENT OF MINES, TASMANIA

Laboratory, 287 Wellington Street
Launceston, Tas. 7250

CERTIFICATE OF ANALYSIS

To Golden Apple Mining Syn,
P.O. Box 157, Glenorchy

The sample of Chip *received from* you *on the* 1st Dec'80 *and stated to be from* Toby's Hill, Cygnet. ~~*has*~~ *have been examined, with the following results:—*

	Registered Number	Description	Au g/tonne
10.12.80	802871	Toby's Hill C 1 E	0.4
	802872	" " C 1 W	0.2

Analyses by J. R. Pettbory

Fee Paid

Other assay results will follow

Chief Chemist and Metallurgist

21392

1.

021

741022

DEPARTMENT OF MINES, TASMANIA

Laboratory, 287 Wellington Street
Launceston, Tas. 7250

CERTIFICATE OF ANALYSIS

12th January 1981

To Golden Apple Mining Syn,
P.O. Box 157 Glenorchy

The sample of Chip received from you on the 1st Dec'80 and stated to be from Toby's Hill Cygnet ~~has~~ have been examined, with the following results:—

	Registered Number	Description	Ti%	Ba%	
12.1.81	802873	A5	0.63	0.08	
	802874	A10	0.63	0.13	

Analyses by

Fee Paid.

21392

Chief Chemist and Metallurgist

022

741023

DEPARTMENT OF MINES—TASMANIA

TELEPHONES:
Metallurgical Research .. .. } 44 2431-2
Laboratory .. .. .. } (2 lines)
Mines Inspection .. .. ..
Explosives & Inflammable Liquids

LAUNCESTON OFFICES
287 WELLINGTON STREET
SOUTH LAUNCESTON 7250

1st December 1980

Messrs R.W.T. Young & C. Smith,
Lymington Road,
Cygnet 7112.

Reg. Nos 802854-5

Dear Sirs,

The following two samples were received from you on 21st Nov'80 and stated to from the locations given namely,

802854 consisted of a single piece of rock marked with a 'V' and stated to be from the Mt. Mary Mine, Golden Valley Rd, Cygnet. It assayed 25 g/t of gold (grams/tonne = g/t) and contains pyrite.

802855 consisted of three pieces of stone taken from hills in Lymington about 2 miles from where 802854 was taken. This sample also contained pyrite and assayed 0.4 g/t of gold.

Your receipt 2911 is attached.

Yours faithfully,

(H. K. Wellington)
Chief Chemist & Metallurgist.

Analyses by.........

Fee Paid.

023

DEPARTMENT OF MINES—TASMANIA

741024

TELEPHONES:
Metallurgical Research Laboratory ... 44 2431-2 (2 lines)
Mines Inspection
Explosives & Inflammable Liquids

LAUNCESTON OFFICES
287 WELLINGTON STREET
SOUTH LAUNCESTON 7250

27th July 1981

Mr. J. R. Wall,
C/- "Golden Apple Mining Syn,
Mary Street,
Cygnet 7112.
TASMANIA

Reg. No 813082

Dear Sir,

Please find below results of sample submitted to this laboratory on the 19th Jun'81 and stated to be from Lymington, Port Cygnet. E.L. 8/80.

Reg. No.	Description	Aug/t	Agg/t	%Zn	%Cu	%Pb
813082	Mr. Smith's Grey Rock Sample	9.1	<10	0.03	0.02	0.10

Yours faithfully,

(H. K. Wellington)
Chief Chemist & Metallurgist.

Analyses by

Fee Paid

024

741025

DEPARTMENT OF MINES, TASMANIA

Laboratory, 287 Wellington Street
Launceston, Tas. 7250

CERTIFICATE OF ANALYSIS

8th August 1980

To Mr. J. Wall
P.O. Box 157 Glenorchy 7010

The sample of Specimens received from you on the 21st July 1980 and stated to be from N.W. Cygnet & S.W. Cygnet has/have been examined, with the following results:—

	Registered Number	Description	Au g/t	Ag g/t
8.8.80	801734	Hard F.G. Dyke Rock No. 1 N.W. Cygnet	<0.3	<2
	801735	Some Clay with quartz from fault zone No 2. S.W. Cygnet	<0.3	
	801736	Hard F.G. Dyke Rock No. 3 S.W. Cygnet	<0.3	

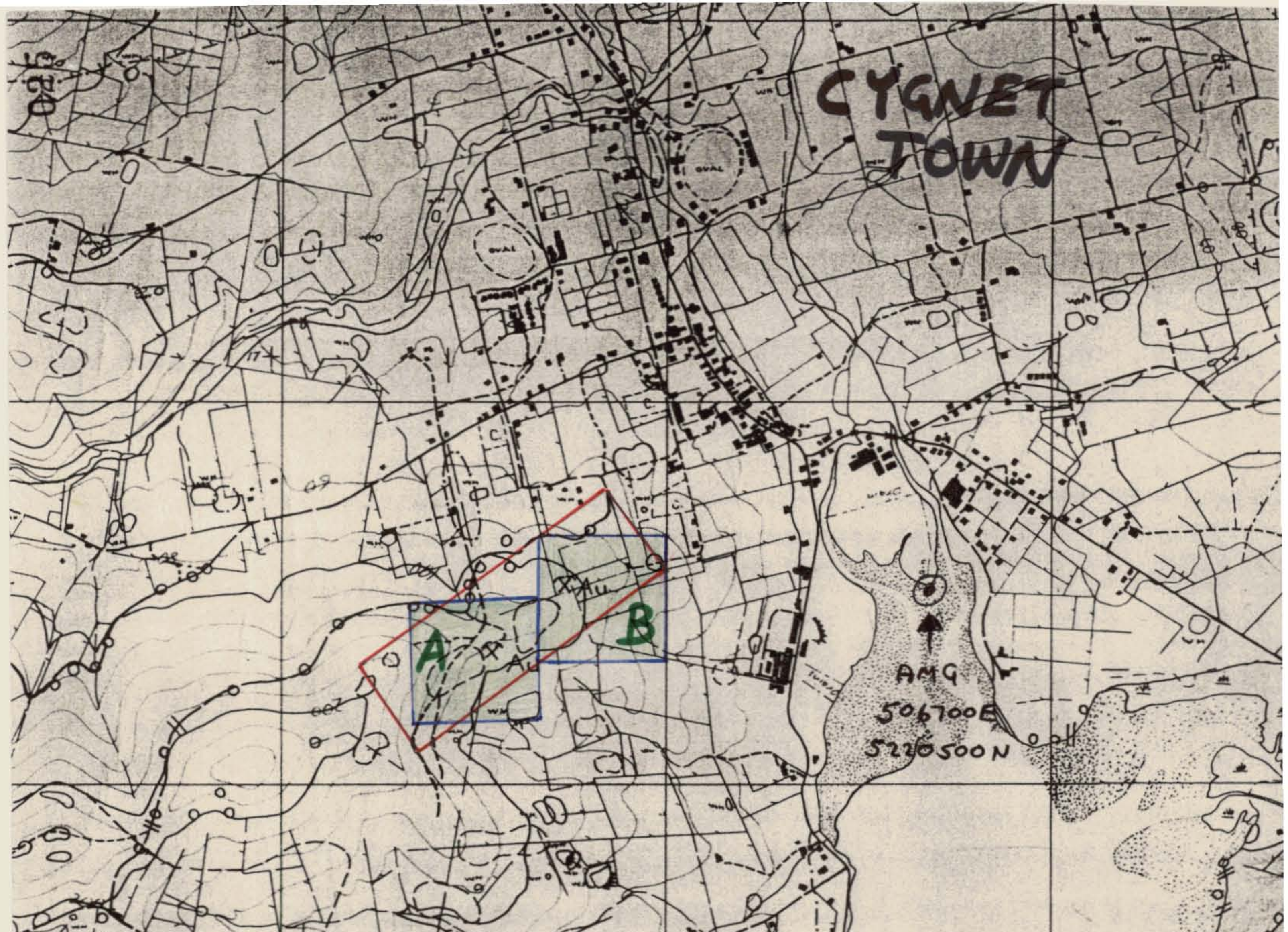
Analyses by J. R. [signature]

Fee Paid.

[signature]

Chief Chemist and Metallurgist

21392



SCALE: ONE QUADRANT TO ONE KM.

APPENDIX 3

DATA for MT. MARY. S.P. GRID SURVEY (G.A.M.S. PLAN 4)

LINE \ STATION	00	25W	50W	75W	100W	125W	150W	175W	200W	225W	250W	275W	300W
150S		006-	010+	00	006+	005+	010+	012+	006+	007+	001+	007+	006-
200N	020+	000(+)	004-	009+	017+	016+	008+	017+	000(+)	006+	000(-)	001+	004-
250N (008+)	012+	024+	012+	009+	012+	028+	021+	020+	015+	015+	026+	034+	001+
300N (002+)	000(+)	009+	003+	002+	001-	005-	013-	011-	019-	009+	017-	026-	031-
DETAIL 325N (005+)	004+	000(+)	002-	003-	005+	010+	005-	002+	013+	006-	002-	014-	024+-
350N (004+)	005-	004-	008-	006-	006-	010+	006-	016-	004+	015-		011-	
400N (002+)	022+	014+	020+	019+	023+	010+	009+	001+	013+	019+	015+	011+	018-
450N (005-)	006-	007-	030+	016-	008-	015-	031-	036-	028-	035-	039-	025	KINGSHILL RD.
500N (005-)	001(-)	002-	004+	002+	001-	008-	021-	021-	020-	021- DAM	025-	KINGSHILL RD.	
550N	N.BS	001-	003-	002+	014-	009-	011-	006-	009-	015-	011-	031-	TOM 011+
600N (003+)	N.BS	007-	000(-)	000(-)	014+	020+	036+	027+	032+	033+	022+		
650N (002+)	010-	003-	001-	007-	009-	004+	003+	005-	014+	005+			
700N (002-)	003+	005-	000(+)	001-	000(-)	003-	010+	008+	020+				
750N (002-)	001+	010+	007+	017+	016+	011+	019+	012+	026+				
800N (000+)	013+	002-	001+	003+	005+	003+	008-	005-	008+				

(B/L CALIBRATION)

Data in Millivolts.

741027

026

027

741028

APPENDEX 4

DATA FOR MT. MARY MAG. GRID SURVEY (GAMS PLAN 3)

Station	Gammas	Station	Gammas	Station	Gammas	Station	Gammas
200N 10E	940			250N 00.	63740	250N 312W	63648
25E	63847			12E	..741	325W	589
00	"920			25E	..764	337W	616
12W	"064			12W	..745	350W	551
25W	"925	25E	63.860	25W	..707		
37W	"890	37E	" 966	37W	..728		
50W	"842	50E	64000	50W	..698		
62W	"854	62E	64011	62W	..696		
75W	"824	75E	"" 049	75W	..676		
87W	"788	87E	" 085	87W	..683		
100W	"781	100E	..118	100W	..675		
112W	"792	112E	..150	112W	..662		
125W	"777	125E	..180	125W	..686		
137W	"775	137E	..217	137W	..521		
150W	"757	150E	..268	150W	..669		
167W	"793			167W	..648		
175W	"782			175W	..678		
187W	"818			187W	..701		
200W	"812			200W	..717		
212W	"818			212W	..743		
225W	"792			225W	..710		
237W	"770			237W	..714		
250W	"778			250W	..715		
262W	"761			262W	..614		
275W	"771			275W	..578		
282W	"776			282W	..650		
300W	"814			300W	..701		

028

MAG. DATA (GAMS PLAN 3)

300N-00 63644	300N 212W 63542	325N 00 63592	350N 87W 63526
12W ·· 643	220W ·· 478	12W ·· 580	100W ·· 545
25W ·· 637	227W ·· 390	25W ·· 577	112W · 235
37W ·· 638	230W ·· 493	37W ·· 556	125W ·· 408
50W ·· 634		50W ·· 566	137W ·· 514
55W ·· 630		60W ·· 578	150W ·· 532
62W ·· 609		65W ·· 537	162W ·· 487
65W ·· 626	287W 63559	75W ·· 563	175W ·· 524
70W ·· 628	300W ·· 545	87W ·· 596	187W ·· 432
75W ·· 548	312W ·· 535	100W ·· 594	200W ·· 515
80W ·· 650	325W ·· 529	112W ·· 542	212W ·· 497
85W ·· 450	337W ·· 572	125W ·· 335	225W ·· 480
90W ·· 588	350W ·· 527	137W ·· 513	237W ·· 555
95W ·· 600		150W ·· 384	250W ·· 975
100W ·· 574		162W · 482	267W ·· 476
115W 62892 125W 4459		175W ·· 570	275W ·· 551
130W 3644		187W ·· 565	300W 63565
137W ·· 568		200W ·· 586	
140W ·· 549		212W ·· 404	
145W ·· 427		225W ·· 497	
150W ·· 279		350N 00 63547	
155W ·· 307		12W ·· 552	
167W ·· 437		25W ·· 564	
175W ·· 501		37W ·· 551	
187W ·· 584		50W ·· 544	
198W ·· 530		62W ·· 534	
200W ·· 458		75W 547	

029

741030

3.

MAG. DATA GAMS #3

400N	25W	63506	450N	00	63516	500N	00	63430
	37W	488		12W	446		12W	492
	50W	496		25W	500		25W	445
	62W	513		37W	327		37W	432
	75W	524		50W	455		50W	568
	87W	538		62W	461		55W	379
	100W	530		75W	489		60W	354
	112W	527		87W	467		65W	380
	125W	486		100W	457		75W	404
	137W	475		112W	450		80W	434
	150W	458		125W	442		87W	447
	162W	502		137W	424		100W	436
	175W	451		150W	398		112W	430
	187W	454		167W	385		125W	418
	200W	487		175W	391		137W	390
	212W	482		187W	371		150W	398
	225W	463		200W	343		162W	378
	237W	468		212W	362		175W	377
	250W	429		225W	324		187W	330
	262W	451		237W	306		200W	330
	275W	445		250W	188		225W	247
	287W	420					250W	064
	300W	410						

030

741031

4.

MAG. DATA GAMS #3

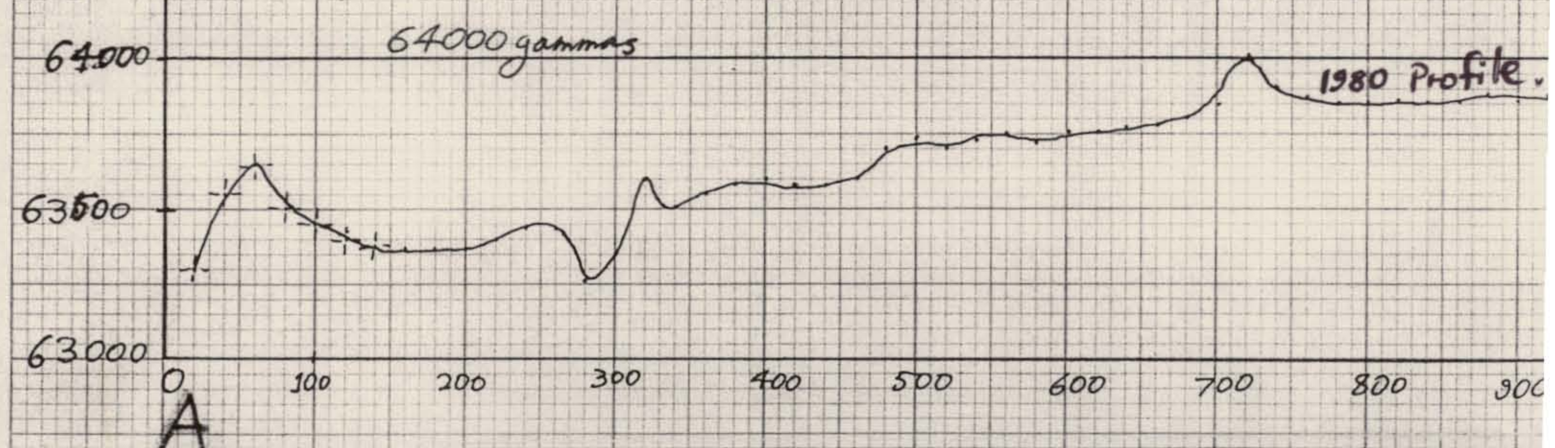
600N	00	63395	650N	00	63396
	12W	411		12W	377
	25W	390		25W	392
	37W	397		37W	390
	50W	381		50W	373
	62W	371		62W	364
	75W	381		75W	361
	87W	373		87W	344
	100W	370		100W	339
	112W	340		112W	321
	125W	370		125W	305
	137W	332		137W	308
	150W	305		150W	297
	168W	304		162W	300
	175W	305		175W	272
	187W	296		187W	206
	200W	325		200W	230
	212W	288			
	225W	268			

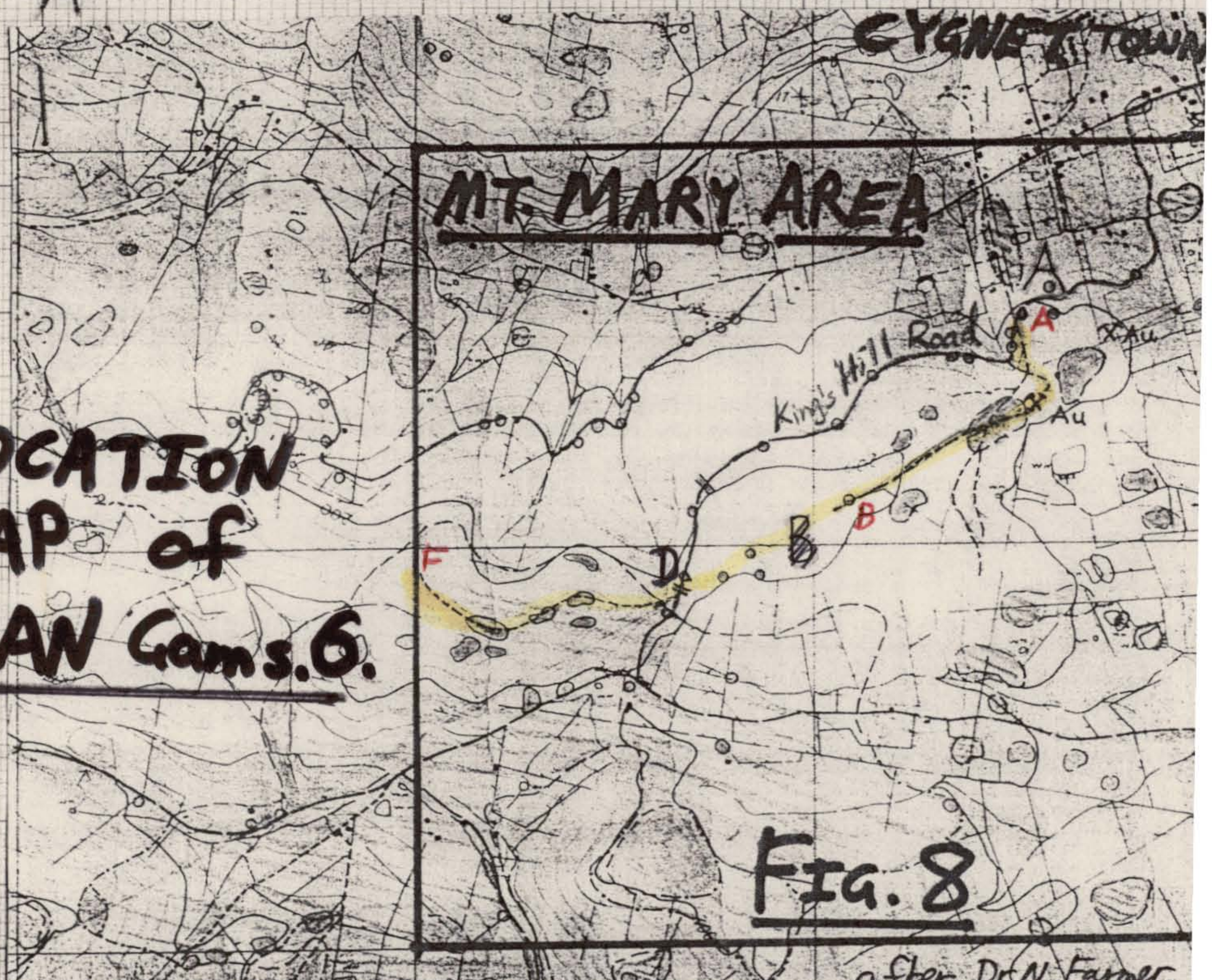
Appendix 5

MT. MARY — trial magnetics

1980

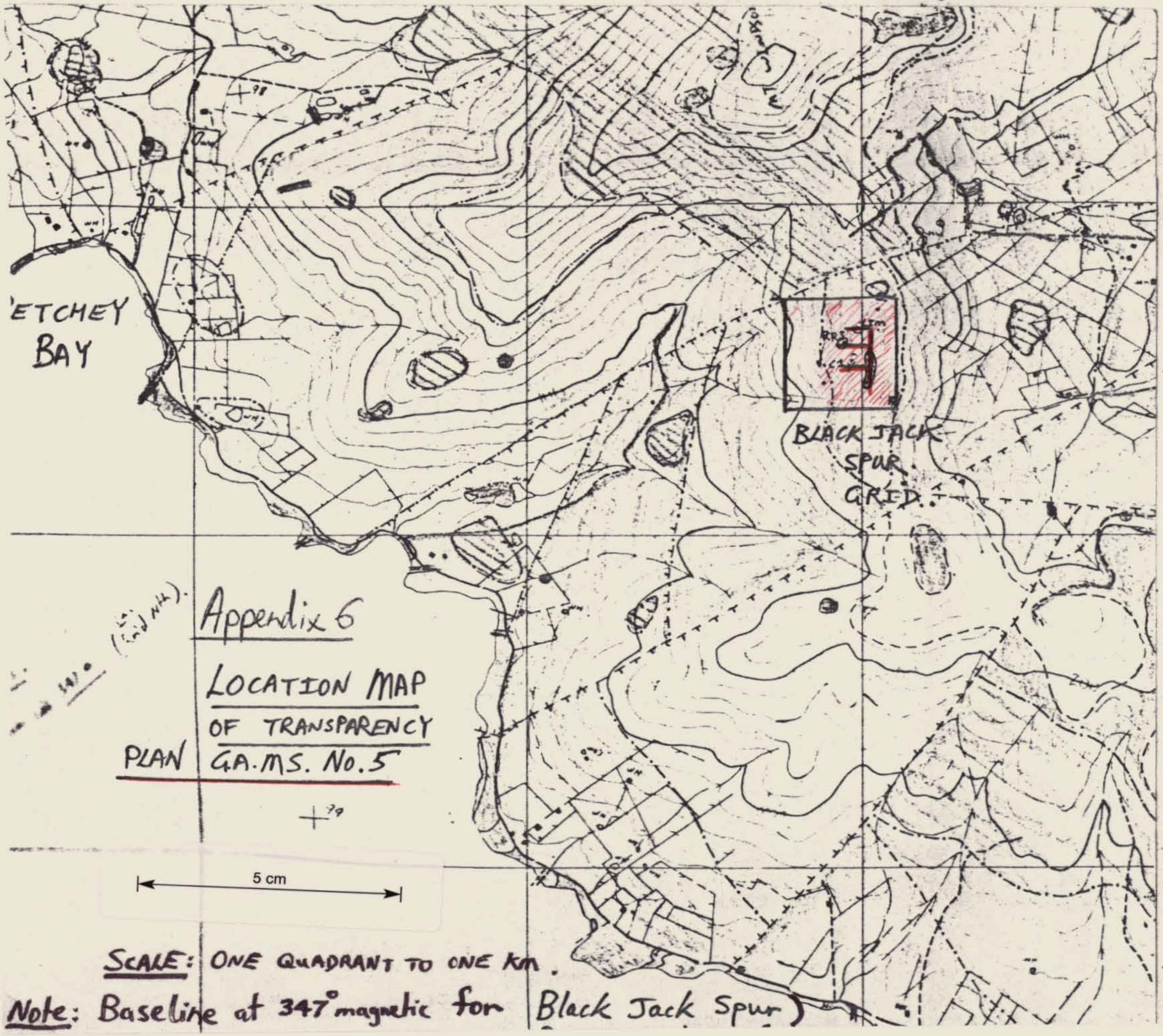
NB. For plot of full Profile, see Transparency Plan No. 6.





SCALE: ONE QUADRANT TO ONE KM:

032


ETCHEY
BAY
BLACK JACK
SPUR
GRID
Appendix 6
LOCATION MAP
OF TRANSPARENCY
PLAN
GA.MS. No.5
5 cm
SCALE: ONE QUADRANT TO ONE Km.
Note: Baseline at 347° magnetic for (Black Jack Spur)

741033

033

APPENDIX 7.

741034

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APPENDIX 7.

034

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16. SKEATS, E.W., 1917 - On the age of the alkali rocks of Port Cygnet and the D'Entrecasteaux Channel in the South Eastern Tasmania. Proc. Roy. Soc. Vic., 29(2), 154-164.

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APPENDIX B

- COLLECTION OF LABORATORY RESULTS:

741035

82-1799
741036

82-1799

741037

3.

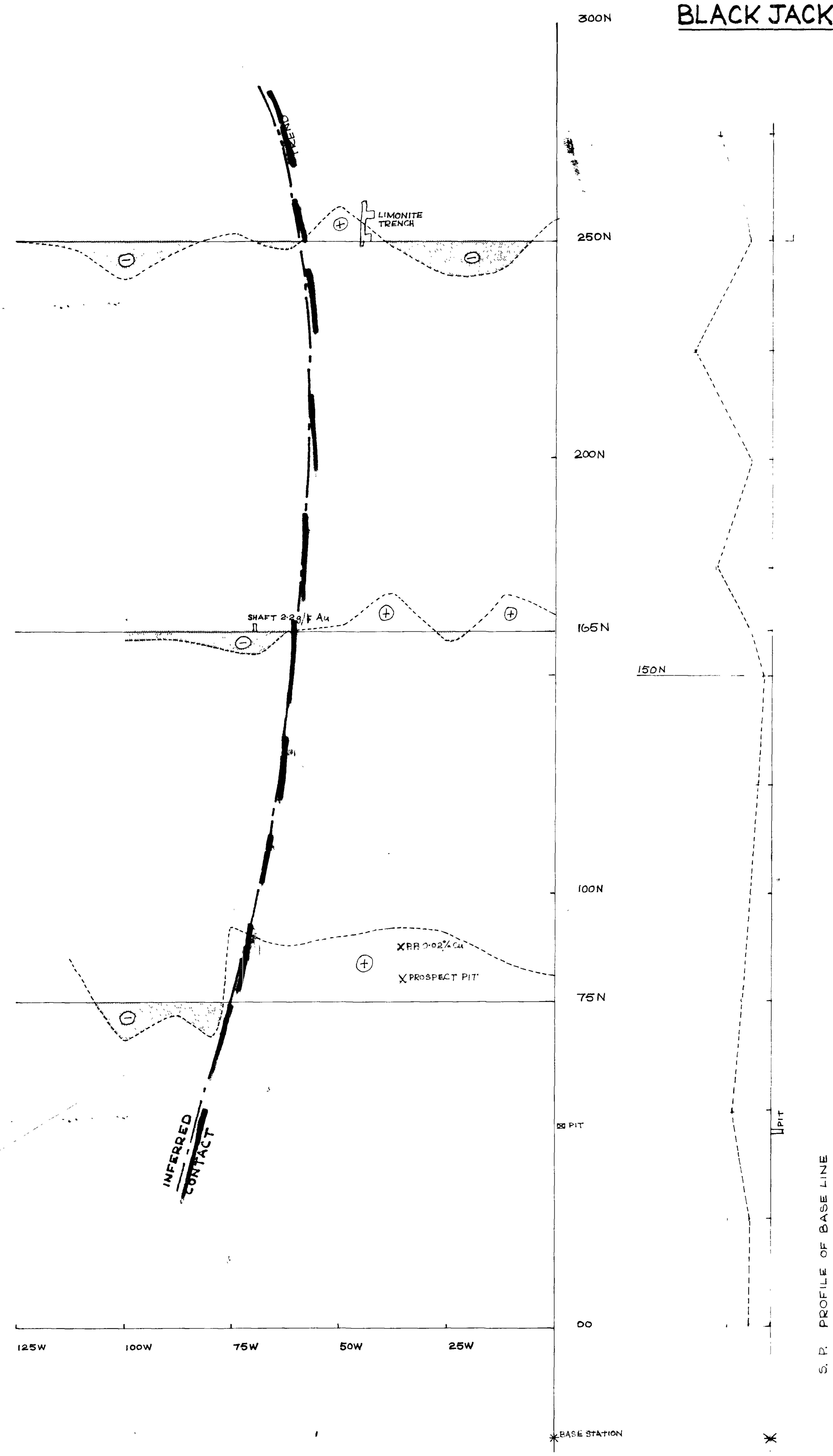

MT. MARY
CYGNET MAGNETICS
TO WATTLE GROVE
TO CYGNET
KINGS HILL ROAD
QUARRY
4-WHEEL DRIVE
PROSPECT TRENCH
DAM
OPEN PADDOCK
BUSH
BUSH
M.L. PEG.
"BRERETONS" SHAFTS
THORPES
PROSPECT SHAFTS
WILLIAMS 32M.
MAIN PROSPECTING SHAFT 30M.
MAIN SHAFT 64M. Deep
MAIN DRIVE
UNDERLAY SHAFT
PRIVATE LAND TRACK
SHAFT
TRACK
SMALL PROSPECT
COLLAPSED TUNNEL
M.L. 1059 P/M
BASELINE
NORTH
MAGNETIC
TRUE
SURVEY GRID WEST
GRID NORTH
11°
41°
350W
300W
250W
200W
150W
100W
50W
00
50E
100E
150E
50N
100N
150N
200N
250N
300N
325N
350N
400N
450N
500N
550N
600N
650N
700N
750N
800N
GOLDEN APPLE MINING SYND.
E.L. 8/80
MAGNETOMETER — G 816
SCALE: 1CM = 10M.
RANGE: 62900 → 64600 GAMMAS
OPERATOR R. SHIELDS
GEOLOGIST J.R. WALL
PLAN No GAMS 3
AUGUST 1981

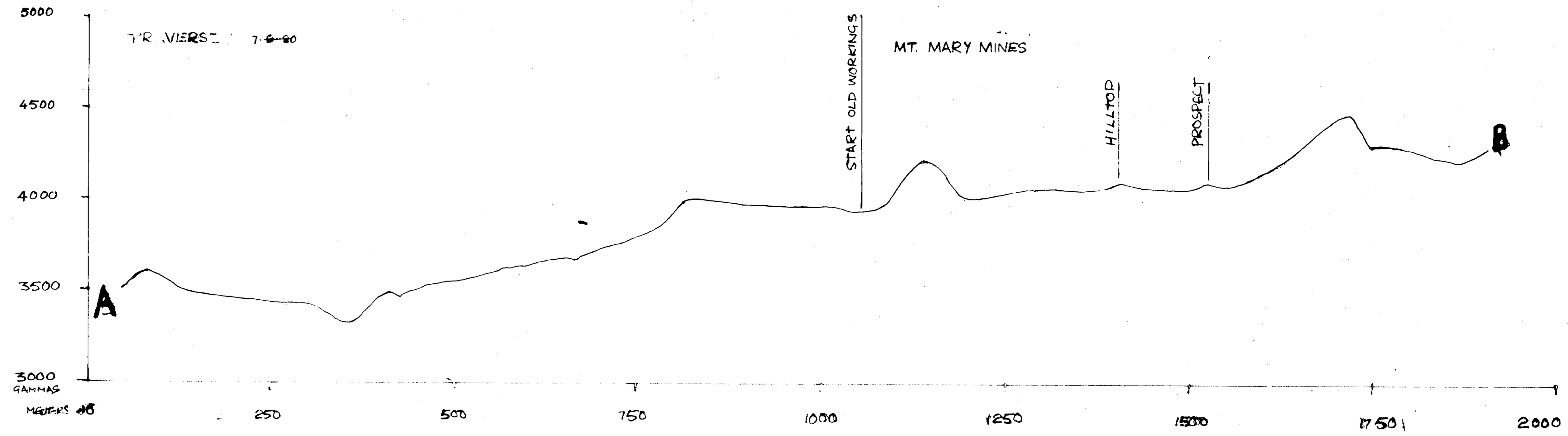

MT. MARY
CYGNET SELF POTENTIAL
GEOPHYSICS
TO CYGNET
TO WATTLE GROVE
KINGS HILL ROAD
4-WHEEL DRIVE
QUARRY
MAJOR
MINOR
DAM
BUSH
OPEN PADDOCK
PROSPECT TRENCH
PROSPECT SHAFTS
WILLIAMS 32M.
MAIN SHAFT 64M. Deep
MAIN PROSPECTING SHAFT 30M.
MAIN DRIVE
UNDERLAY SHAFT
SHAFT
TRACK
PRIVATE LAND TRACK
SMALL PROSPECT
"BRERETONS" Open
M.L. PEG.
SECONDARY TREND
MINERALIZED LODE DIRECTION
COLLAPSED TUNNEL
ML 1059 P/M
MAJOR TREND
MINOR TREND
Survey GRID WEST
NORTH
MAGNETIC
TRUE
11°
41°
GRID NORTH
BASELINE
350W
300W
250W
200W
150W
100W
50W
00
50E
100E
150E
50N
100N
150N
200N
250N
300N
325N
350N
400N
450N
500N
550N
600N
650N
700N
750N
800N
KEY
INSTRUMENT: BECKMAN 310
NEGATIVE VALUES ONLY SHOWN
RANGE 0 → MINUS 35 M/VOLTS
CONTOUR INTERVAL 5 UNITS
GOLDEN APPLE MINING SYND.
E.L. 8/80
SCALE: 1cm=10m.
OPERATOR R. SHIELDS
GEOLOGIST J.R. WALL
PLAN No GAMS 4
AUGUST 1981
5 cm

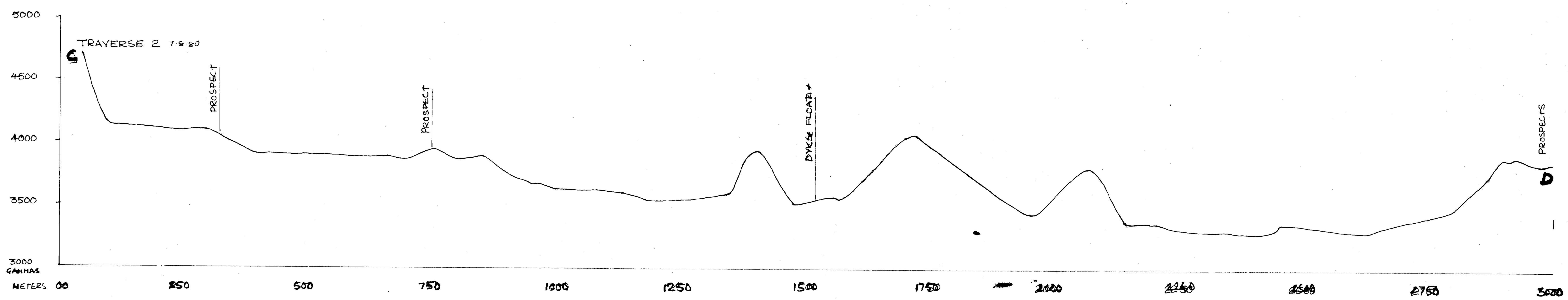
82-1799
741040

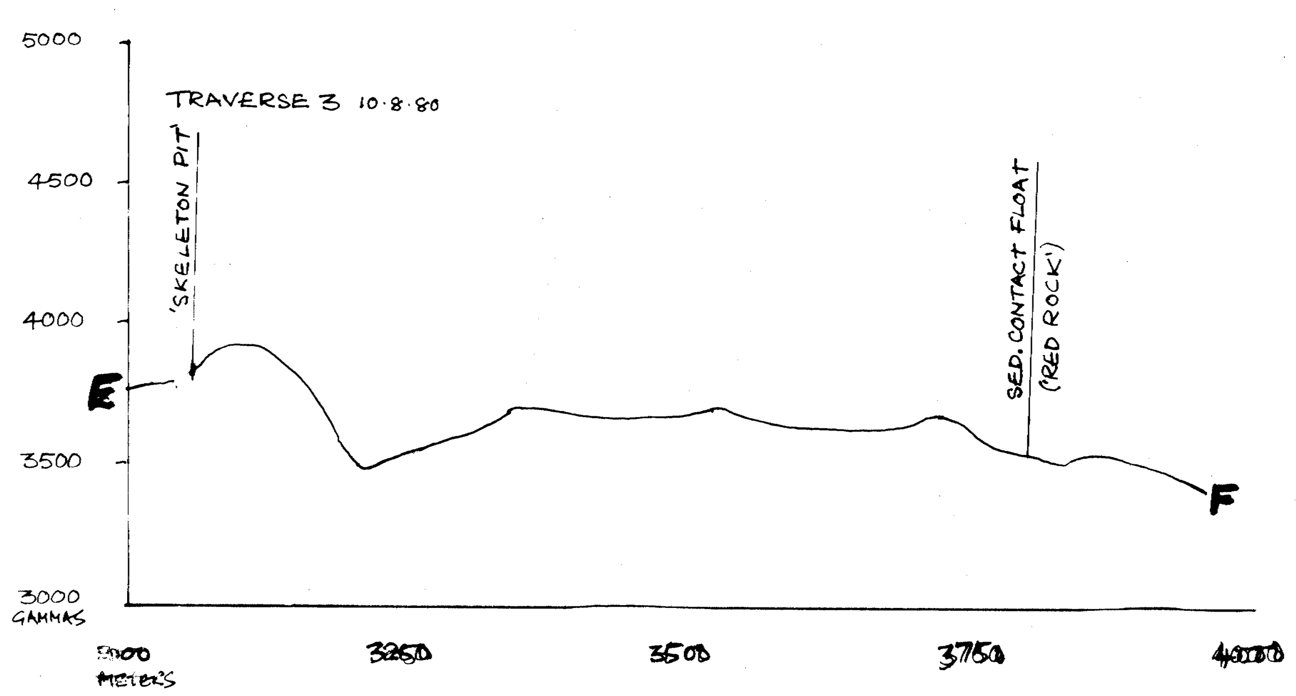
LYMINGTON

BLACK JACK SPUR S/POTENTIAL









GOLDEN APPLE MINING SYND.

E.L. 8/80

Regional Magnetics

SCALE 1 cm = 50m
1 cm = 200 GAMMAS

Mt. Mary Traverse Example

GEOLOGIST	PLAN NO. GAMS 6
	AUGUST 1981
J.R. WALL	MAGNETOMETER Geometrics G80

5 cm