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GOLD FIELDS EXPLORATION PTY. LIMITED

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E.L. 11/76 FEDERATION AREA

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ANNUAL REPORT, JUNE 1983

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June, 1983

SUMMARY

The 1982/83 exploration programme on E.L. 11/76 was largely carried out in January-March 1983. Bedrock sampling programmes over Anomalies 1 and 4 were successful in delineating surface mineralisation and alteration. Three diamond drill holes were completed following an evaluation of the results of the bedrock sampling and an earlier geophysical survey. Two of these holes (Fed. 24 and Fed. 26), encountered significant stanniferous mineralisation, one (Fed. 26) with high silver and base metal values also. Ground and down-hole geophysical surveys executed after the drilling programme, produced mixed results.

A three-dimensional picture of the mineralised body at Anomaly 1 has been obtained using horizontal sections. It appears to take the shape of a "carrot" with the thin tapered end plunging steeply in an as yet unknown direction. The outer limits of the upper part of the mineralised body of Anomaly 1 (and Sweeneys) are undefined at present, making potential tonnage estimates difficult.

A model for the occurrence of mineralisation at Anomaly 4 has been proposed. Features of this model have general applications elsewhere on the licence area and will be used to aid the search for "blind" Sweeneys-type mineralised bodies. Overall, the emphasis in future exploration will be towards discovering more of these bodies.

Work proposed for 1983/84 includes a diamond drill hole on Anomaly 3, small-hole drilling on both Sweeneys and Anomaly 1 and gridding over the southwestern and eastern portions of the granite. The drilling at Sweeneys and Anomaly 1 is designed to determine the tonnage and grade of the more tabular, upper parts of the mineralised bodies. At Anomaly 3, a drill hole will test the possibility of a further mineralised zone occurring within the licence area and the grid is proposed to explore geologically favourable ground for sub-outcropping and unexposed stanniferous-polymetallic sulphide bearing bodies. This programme should be partially helicopter-supported and is estimated to cost \$141,200.

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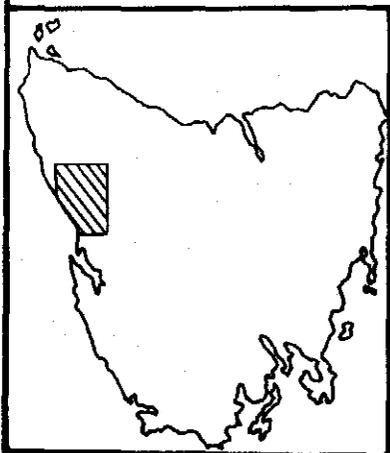
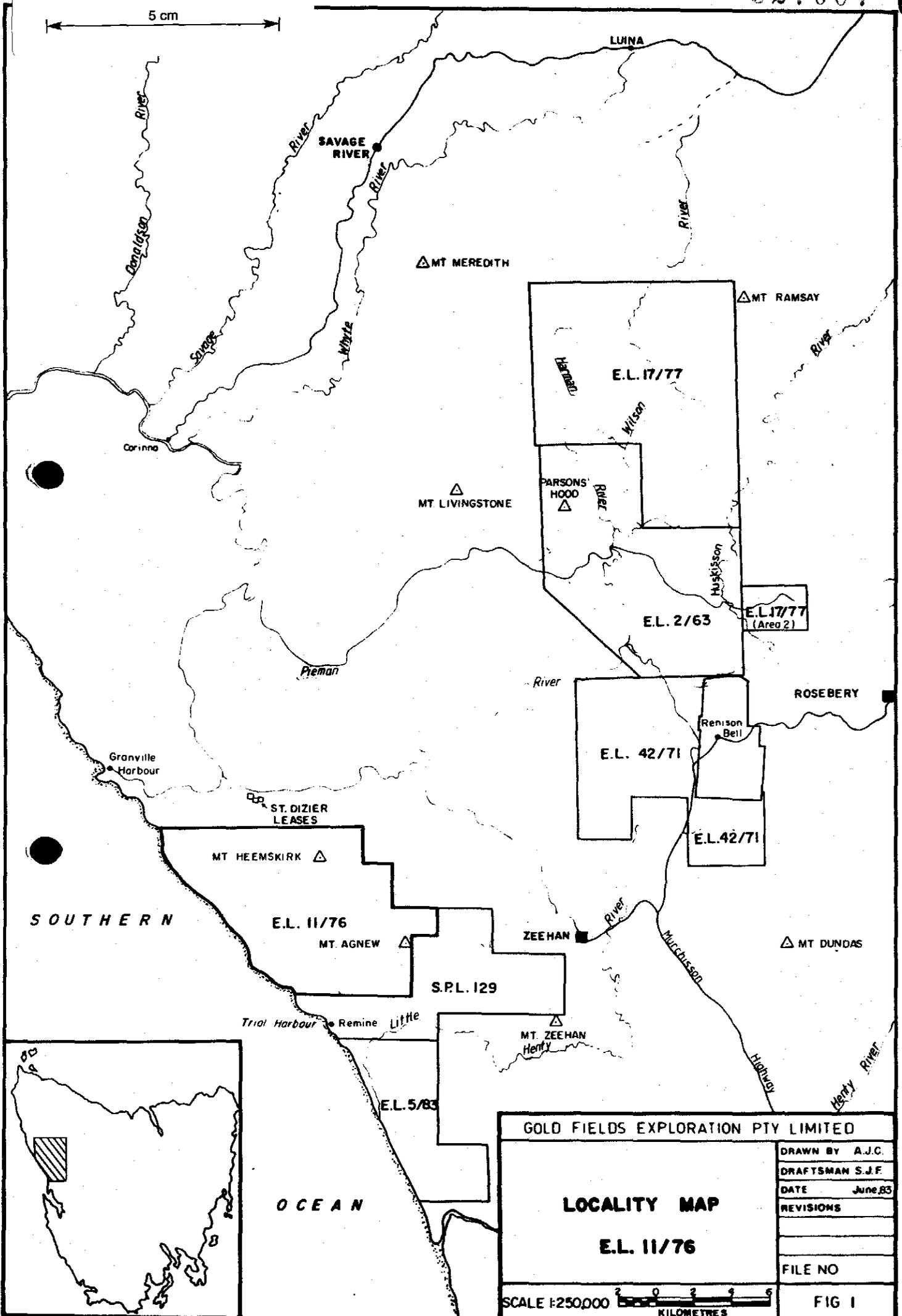
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1. INTRODUCTION

E.L. 11/76 is situated on the Western Tasmanian coast, approximately 6.5km west of Zeehan (Fig. 1). The licence area is completely underlain by the Devonian Heemskirk Granite. The physiography of the area is dominated by the deeply dissected ranges and valleys of the Mt. Heemskirk - Mt. Agnew massif which is surrounded to the west and south by button grass plains. Abundant rainforest and regrowth vegetation occupies the steeper flanks of high ranges.

Mineralisation within the granite consists of stanniferous polymetallic sulphide bodies, vein systems and greisens. Since the licence was granted in 1976, systematic exploration for tin, base metals and silver has been carried out. Early work identified a stanniferous polymetallic sulphide body at Sweeneys Mine, and as such deposits appear larger, more attractive targets than either vein or greisen systems, further work was aimed at discovering similar zones of mineralisation. Exploration undertaken in 1980-82 revealed a number of geophysical and geochemical anomalies, one of which was drilled. Exploratory work this field season consisted of drilling several of these anomalies, together with power auger sampling (bedrock sampling) and geophysics. The results of this work are detailed and discussed in this report, and recommendations for future exploration programmes are given.

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LOCALITY MAP	
E.L. 11/76	
SCALE 1:250,000	
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FIG 1	

2. LAND TENURE

E.L. 11/76 covering a total of 88 km², is held by Renison Ltd. Since mid-1982, the operator of the licence has been Gold Fields Exploration Pty. Limited. Included within the licence are five small mineral leases covering a total 76.3 h.a. The status of each of these are as follows:

- (i) M.L. 90M/47 of 2 ha. at West Federation is held by Renison Ltd.
- (ii) M.L. 103M/71, covering 8.1 ha., formerly held by K.P. Cornish is at present under application by Renison Ltd. to be incorporated into E.L.11/76.
- (iii) M.L. 20M/41 is held by E.W. Coleman. This lease covers 16.2 ha.
- (iv) M.L.'s 32M/78 and 33M/78 are held by M.J. and L. Bennett respectively. Each of these covers 25 ha., over the Peripatetic Mine.

3. EXPENDITURE

A total of \$72,119 has been spent during the current financial year, up until the end of April. The total expenditure to date on E.L. 11/76 is \$808,440.

4. PREVIOUS WORK

- (i) 1976: E.L. 11/76 was first granted to Renison Ltd. in 1976. It was originally thought (Wells, 1976) that the area held a potential for the development of a large tonnage, low grade tin deposit (40 million tonnes, 0.2% Sn), particularly in the Federation Mines and Sweeneys Mine areas.
- (ii) 1977: The Federation plateau was geologically mapped and sampled. At Sweeneys, following encouraging geochemical assay results from adit sampling, a diamond drilling programme was completed. Seventeen holes totalling 2,582m were drilled and six of these encountered significant tin-silver-zinc mineralisation. Numerous geophysical surveys were also carried out over the Sweeney mineralised body, (Wells, 1977).
- (iii) 1978: A photogeological interpretation of the Heemskirk Granite was made and further geophysical test work was performed at Sweeneys. A 30 line km grid was cut over the Federation plateau and geochemically, geophysically and geologically examined. (Wells, 1978).
- (iv) 1978-79: A total of seven holes were drilled, six on the Federation plateau, which achieved mixed results and one further unsuccessful hole at Sweeneys. It was decided at this stage (Wells, 1979), to cease drilling at Sweeneys and concentrate elsewhere on the licence.
- (v) 1979-80: On the Federation plateau, seven holes were completed, with limited success, and the Federation Grid was extended south and west. The results of the geophysical surveys over this grid extension were generally disappointing (Roberts, 1980).

- (vi) 1980-81: The Agnew Grid was established over the southeastern portion of the granite, between the Globe Mine and Sweeneys. A number of anomalies were discovered by geochemical/geophysical surveys on the grid. Five holes with discouraging results were drilled on the Federation plateau (Roberts, 1981). A reconnaissance mapping project over the granite was undertaken by contractor, R. Poltock.
- (vii) 1981-82: Four drill holes were completed on the Agnew Grid (Anomaly 1), with two of the holes encountering significant stanniferous - sulphide mineralisation. Detailed geophysics was performed over the more promising anomalies on the Agnew Grid. On the Federation plateau, another hole was drilled and the results of this and further geochemical/geophysical surveys on the Federation Grid, were disappointing (Kilpatrick, 1982). The contract mapping of the granite by R. Poltock was completed.

A number of university studies have been carried out on the Heemskirk Granite and references to these are included in the bibliography.

5. WORK COMPLETED 1982-83

The recommendations of Kilpatrick(1982) formed the basis for all of the work on E.L. 11/76 this season and, as a result, the only areas worked on were Anomaly 1 and Anomaly 4 (Fig.2) completed in a 4-5 week period during January-March 1983. The diamond drilling and some of the geophysical surveys were helicopter supported as in previous seasons, to ensure maximum efficiency and minimal environmental disturbance. The use of helicopters necessitated the construction of drill and access landing pads in December 1982.

Also some ground-supported geochemical and geophysical surveys were undertaken in December-January.

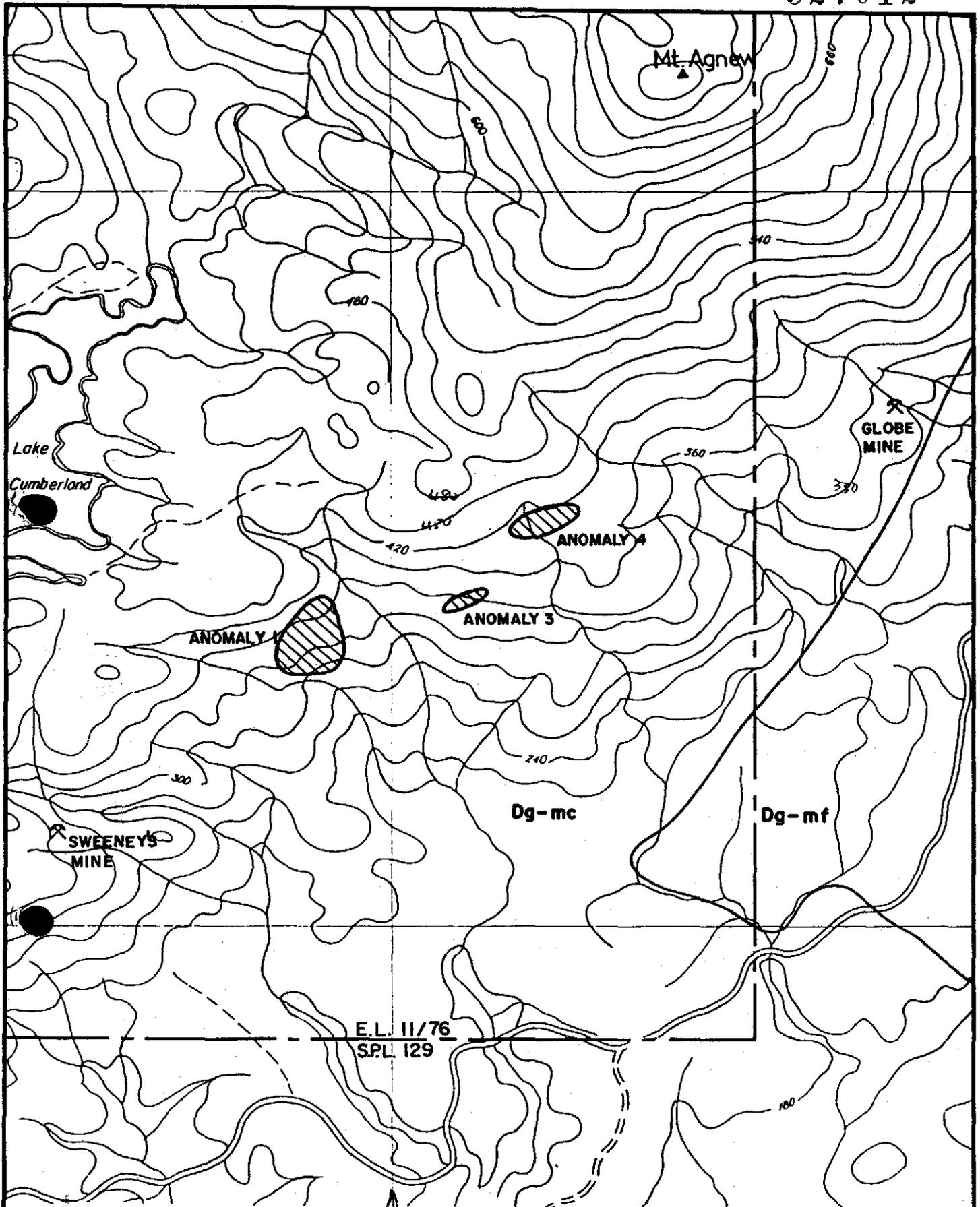
5.1 Geology and geochemistry

A power auger sampling programme, to test bedrock geology and geochemistry, was performed by contractor N. Poltock and one assistant over both Anomalies 1 and 4. This was carried out prior to diamond drilling in order to define the shape of the outcropping mineralised bodies, thereby assisting planning of the subsequent drillholes. A close spaced (15m) square grid was cut by contractor N. Poltock over Anomaly 4, for sample location. Over Anomaly 1, the existing grid was used. Both grids were later tape and compass surveyed off existing Renison survey points. All the samples obtained by the power auger, were examined geologically before being assayed for Sn, As, Ag, Cu, Pb and Zn.

5.2 Drilling

Three diamond drill holes, totalling 507.0m were completed in 1982-83. Of these, two holes were on Anomaly 1 (Fed. 24 and Fed. 25), making a total

U1



Dg-mf MEDIUM-FINE GRAINED NON-PORPHYRITIC GRANITE

Dg-mc COARSE-MEDIUM GRAINED GRAVEL PORPHYRITIC GRANITE

5 cm

GOLD FIELDS EXPLORATION PTY LIMITED	
SOUTHERN END, HEEMSKIRK GRANITE	
INTERPRETATIVE GEOLOGY & ANOMALY LOCATIONS	
DRAWN BY A.J.C.	DRAFTSMAN S.J.F.
DATE June, 63	REVISIONS
FILE NO	FIG 2
SCALE 1:7000	0 200 400 METRES

of six holes now in this area, and the third hole was drilled beneath Anomaly 4, the first hole into this prospect.

The drill holes were planned using the bedrock geochemistry results, and in the cases of Fed. 24 and Fed. 25, the Anomaly 1 geophysical surveys of 1981-82 and January 1983. The positions of the drill hole collars, however, had to be determined earlier to allow sufficient time for drill pads and helipads to be cut.

The water supply for the two Anomaly 1 holes was Lake Cumberland on the Federation plateau (Fig.2), while the Anomaly 4 hole (Fed. 26) used a creek in the vicinity of the Globe Mine. This meant that a long water supply hose was needed for Fed. 26, and some difficulties were encountered in keeping it intact.

5.3 Geophysics

Several geophysical surveys were undertaken on Anomaly 1 by Dr. J. Bishop, consultant geophysicist, assisted by G.F.E.L. field personnel. These surveys included an applied potential survey on the surface and down some drill holes energising the mineralised intersection in Fed. 21 (Fed. 20 was used in a similar survey by Scintrex in 1981-82), prior to the drilling of Fed. 24 and Fed. 25. After these holes were finished, a down-hole applied potential survey was executed, again energising Fed. 21. Also 3-array logs of both Fed. 24 and Fed. 25 were produced. All the equipment used was hired from Scintrex and ferried to Anomaly 1 by helicopter. The crews using the equipment usually travelled to the site on foot.

6. RESULTS6.1 Anomaly 1

Most of the field work during the 1982-83 field season concentrated on Anomaly 1 where a more detailed evaluation of the size and shape of the mineralised body was attempted.

6.1.1 Geology and geochemistry

The bedrock sampling programme proved to be very useful over Anomaly 1, allowing a detailed look at the surface geology. This was necessary as mineralised granite outcrops beneath the soil and slope debris covering Anomaly 1. Obviously the shape of this mineralised sub-outcrop partly dictates the shape of the body below.

Highly encouraging assay results were obtained and these are displayed in Appendix 2. Bedrock geochemical plans for Anomaly 1 are attached (Figs. 3-7). These show three distinct areas anomalous in tin, silver and to a lesser extent, base metals. They are thought to represent polymetallic mineralisation similar to that obtained in Fed. 20. The silver and base metal values are lower than those obtained in Fed. 20, but this probably reflects some shallow oxidation of the sulphides.

An interpretative geological map of Anomaly 1 (Fig. 8) was prepared using the bedrock geochemical results, geological descriptions of the bedrock samples and geological mapping. All of the geochemical plans and the geological map are based on the re-surveyed portion of the Agnew Grid directly over Anomaly 1.

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6.1.2 Drilling

Two drill holes were designed to intersect mineralisation at depth beneath Anomaly 1. The general 'target area' was known prior to this season's field work, thus allowing drill pads to be constructed in advance.

The first of the two holes drilled was designed to see if the previously discovered mineralisation (Fed. 20 and 21), extended to the west at depth. A summarised log is given below:

FED. 24

0.0 - 20.5	Strongly argillised and weakly mineralised (base metal), medium grained granite.
20.5 - 74.5	Moderately argillised, medium-coarse grained. Weakly porphyritic granite.
74.7 - 118.4	Strongly argillised, mineralised (stanniferous, sulphide-poor) medium grained granite with several, narrow, fine grained aplitic granites.
118.4 - 137.7	Moderately altered, medium-coarse grained, porphyritic granite.
137.7 - 186.0	Weakly altered medium-coarse grained granite with hematitic inclusions in feldspar phenocrysts.

Unexpectedly encouraging results were found to occur in the following intersection:

FED. 24 ASSAY DATA SUMMARY

FROM	TO	LENGTH (m)	Sn	Sol.Sn wt%	S	Zn	Ag g/t
79.0	102.0	23.0	0.55	<0.01	0.4	0.18	1

The second hole, Fed. 25, was drilled to see if the Anomaly 1 mineralisation extended to the east at depth. A summarised log is given below:

FED. 25

0.0 - 33.1 Weathered coarse-medium grained granite and colluvium.

33.1 - 196.2 Fresh to weakly altered, coarse-medium grained, porphyritic granite with numerous, thin aplites.

It seems certain that this hole failed to intersect the Anomaly 1 mineralisation. No core from Fed. 25 was assayed.

Detailed drill logs for Fed. 24 and Fed. 25 are given in Appendix 4 and drill hole plan views are illustrated on Figs. 8 and 12. At the time of writing this report, a petrographic examination of the mineralised intersection in Fed. 24, was being carried out by C.M.S. in Adelaide.

6.1.3 Geophysics

A complete report on both the re-evaluated 1981-82 surveys and the 1982-83 surveys by Dr. J. Bishop, consultant geophysicist is being produced separately. Detailed results will be included in that report, making it unnecessary to repeat them here. However, several significant matters have arisen from this work:

- (i) Accurate positioning of the grid has shown itself to be most important in detailed I.P. surveys. The changes in the plotted location of grid lines over Anomaly 1 (resulting from tape and compass surveying the lines) resulted in significant changes to the geophysical contour plans prepared previously.
- (ii) The applied potential method was used at Anomaly 1 primarily because of its successful application at Sweeneys where it was effective in indicating the plunge of the pipe-shaped body. Unfortunately, it did not prove to be as useful at Anomaly 1 probably because the lower base metal (and total) sulphide content of the mineralisation there (compared with Sweeneys) gives it a higher resistivity.
- (iii) The three-array downhole I.P. log indicated that Fed. 24 came within 20m of a chargeable body at 85m (approximately) down hole. This is probably an extension of the base metal-rich Fed. 20 intersection.

6.2 Anomaly 4

Anomaly 4 was the only other area apart from Anomaly 1 to be explored this season. The aim of the work at this prospect was to test the altered granite both at the surface and at depth, to see if, or to what extent, it was mineralised. The results obtained were generally encouraging.

6.2.1 Geology and geochemistry

As with Anomaly 1, bedrock exposure at Anomaly 4 is almost non-existent, the topography there being flat and swampy. Therefore, in January 1983, a bedrock sampling programme was completed over the prospect. A list of the samples, their descriptions, assay results and grid positions is given in Appendix 2. Bedrock geochemical plans are shown on Fig. 9 and the interpretative geology over Anomaly 4 is displayed on Fig. 10.

It would appear from these plans that the mineralisation is confined to a linear belt, 30m thick, striking across the grid at approximately 040°. High values for all the elements analysed were recorded, which indicates that the mineralisation is the same style as that occurring at Sweeneys and Anomaly 1. It must be noted that this mineralised system is as yet not closed off in any direction and may well extend, particularly to the northeast and southwest. Fed. 26 was oriented at right angles to the roughly linear outline of the mineralisation at the surface.

6.2.2 Drilling

One diamond drill hole, Fed. 26, 122.8m long,

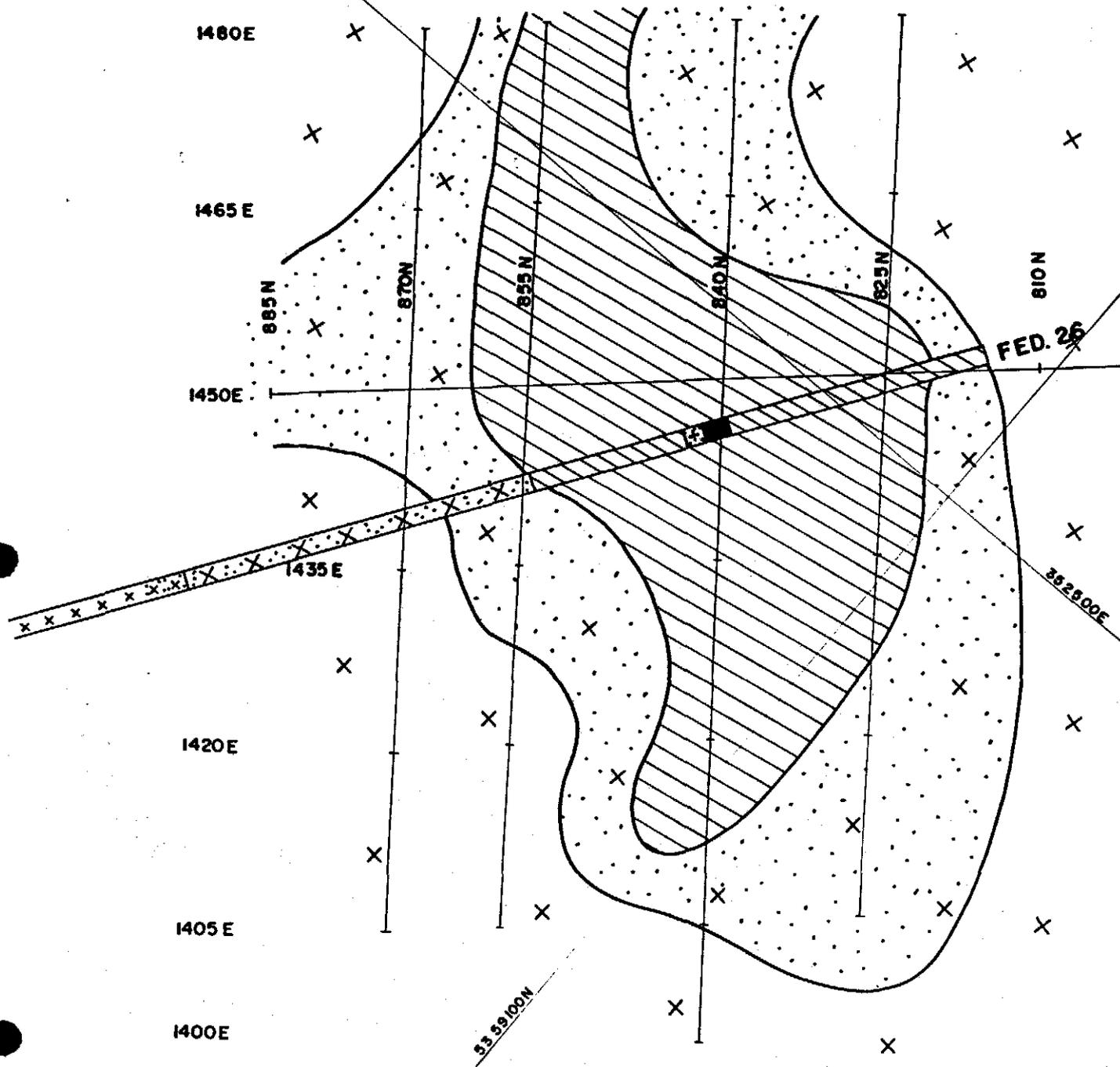
was drilled on Anomaly 4 in February 1983. The collar position, dip and azimuth of the hole were determined using the results obtained from the survey described in the previous section. A plan view of Fed. 26 can be seen on Fig. 10, and a full detailed drill log is given in Appendix 4. A summarised log is given below:

FED. 26

0.0 - 32.8	Strongly altered, argillised granite with numerous polymetallic sulphide veins. Medium grained and slightly porphyritic.
32.8 - 35.7	Intensely altered and mineralised granite with massive and semi-massive sulphides.
35.7 - 37.6	Moderately altered and silicified, fine grained, equigranular aplitic granite.
37.6 - 57.7	Variably altered and mineralised, medium grained granite, with several fracture zones.
57.7 - 97.8	Moderately altered, medium grained, weakly porphyritic granite.
97.8 - 122.8	Weakly altered, fine grained granite with abundant quartz-tourmaline intergrowths.

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KEY

-  Sulphide Bearing Argillised Granite
 -  Massive & Semi-Massive Sulphides
 -  Medium-Coarse Grained Granite
 -  Fine Grained Tourmalinised Granite
 -  Fine Grained Aplitic Granite
-  *Altered (Sericitised)*

5 cm

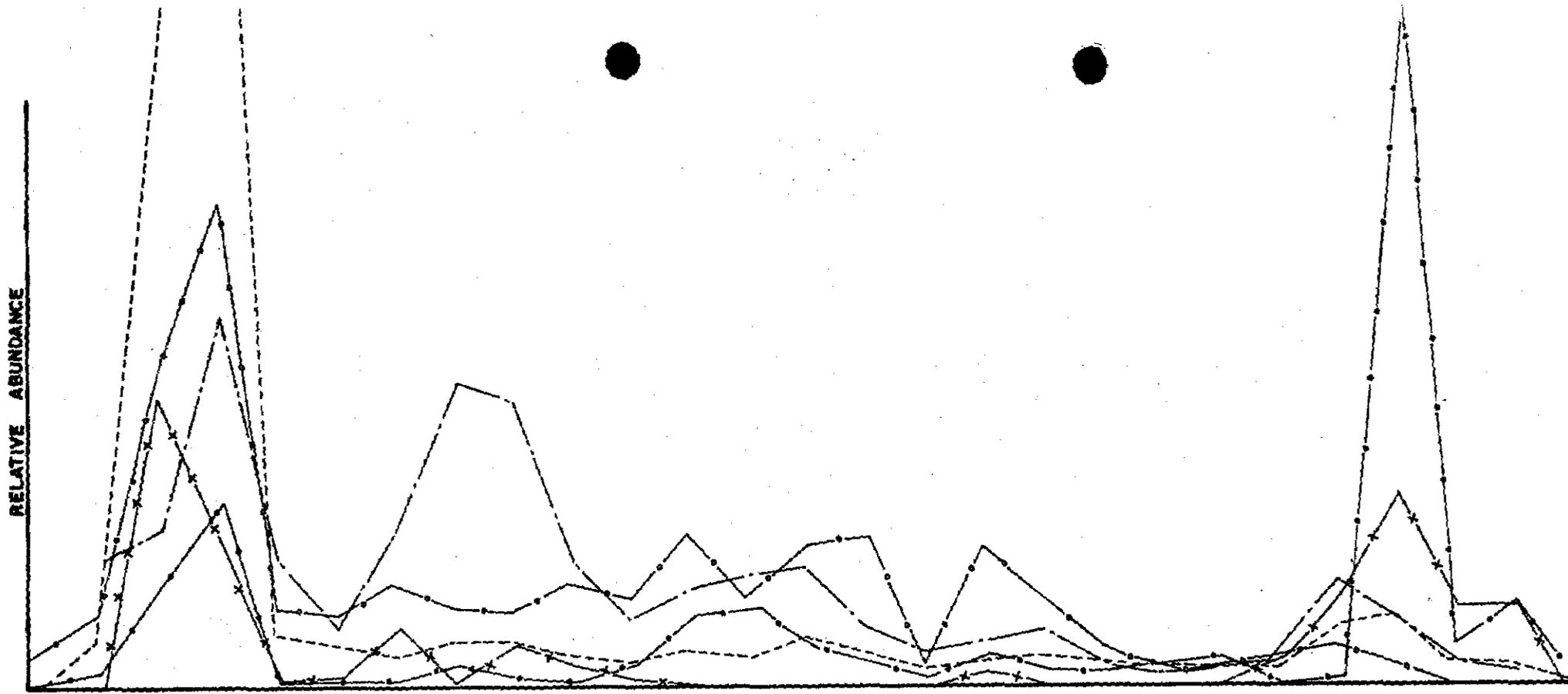
GOLD FIELDS EXPLORATION PTY. LIMITED	
ANOMALY 4	
INTERPRETATIVE GEOLOGY	
&	
DRILL HOLE LOCATION	
SCALE 1:500	
	DRAWN BY : A.J.C. DRAFTSMAN: S.J.F. DATE : July, 85 REVISIONS : FILE NO. FIG 10

Significant intersections are tabulated below:

FED. 26 ASSAY DATA SUMMARY										
	FROM	TO	LENGTH (m)	Sn.	Sol. Sn. wt%	S.	Cu.	Pb.	Zn.	Ag g/t
	33.7	57.7	24.0	0.22	0.22	2.82	0.07	0.35	1.75	33
including	33.7	35.7	2.0	0.49	0.14	7.10	0.78	1.38	4.58	334
including	42.7	45.7	3.0	0.22	0.01	1.70	0.01	0.45	1.86	6
including	54.7	57.7	3.0	0.92	0.01	4.50	0.01	0.09	0.46	6

The style of mineralisation in Fed. 26 is similar to that at both Sweeneys and Anomaly 1. A petrographic study of drill core from Fed. 26 by C.M.S. (Appendix 3) has shown the ore mineralogy to be complex, as it is at the two previously discovered deposits. Minerals recognised include: cassiterite, stannite, tetrahedrite, boulangerite (geocronite), chalcopryrite, galena, cubanite, sphalerite, arsenopyrite, pyrrhotite and pyrite. The cassiterite is very fine grained and ill-defined, features of the cassiterite found at Sweeneys and Anomaly 1. The tetrahedrite is argentiferous and occurs with stannite, rare chalcopryrite and galena, boulangerite, cassiterite and pale (iron-poor) sphalerite. A higher temperature assemblage of pyrite, boulangerite, arsenopyrite, cassiterite and dark (iron-rich) sphalerite also occurs. Detailed geochemistry over the 33.7 - 57.7m intersection of Fed. 26 is shown in Fig. 11. Certain elements appear to have affinities with one another and these coincide with the mineral assemblages observed. Antimony, silver, lead, copper, zinc, bismuth, arsenic, iron and tin occur together in the massive and semi-massive sulphide zones and veins, while iron, tin, arsenic, antimony and zinc are found enriched in the deeper fracture system.

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N.B.: THIS LOG IS BASED ON THE DETAILED LOG OF FED 26 IN APPENDIX 4



Argillised Coarse Granite	Semi-Massive & Massive Sulphides	Fine Grained Sericitised Aplitic Granite	Sulphide Bearing Argillised Coarse Granite. Zones of Semi-Massive Sulphides developed	Highly Fractured Argillised Coarse Granite. Crush zone	Argillised Coarse Granite	Highly Fractured Argillised Coarse Granite with Clay zone indicated	CORE LOG
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3349
3348
3347
3347

3346
3343
3345

3342
3341
3339

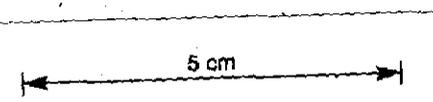
PETROLOGICAL SAMPLES
TAKEN (APPENDIX 3)

9E8B
9E8B
9E8B

Z2702Z

KEY

-----x-----	Pb	-----o-----	Sn
-----	Zn	-----	Ag
-----	As		



GOLD FIELDS EXPLORATION PTY. LIMITED	
SELECTED ELEMENT GEOCHEMISTRY OF FED. 26 DRILL CORE	
DRAWN BY	A.J.C.
DRAFTSMAN	S.J.F.
DATE	July 8
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FIG. 11	

7. DISCUSSION7.1 Anomaly 1

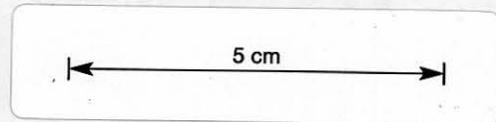
A total of six holes have been drilled to intersect the mineralised body at Anomaly 1. Of these, three have been successful. The variety of drill hole orientations and the likely irregular shape of the body itself has meant that a representation of all this information has been difficult to construct. However with the data now available, cross-sections along planes through five of the drill holes have been made (Fig. 12).

The interpretation was arrived at using both surface geology and the drill hole data. This means that all the cross-sections shown on Fig. 12 are dependent on the surface geology which may well be altered with a more detailed appraisal. The actual shape of the body from these sections, resembles a "carrot" whose tail plunges steeply to the southeast. Again, the interpretation of the deeper portions of the sections is open to conjecture as the majority of the holes intersected unmineralised granite at depth. The "carrot" shape is quite different from the shape proposed in the 1981-82 Report (Kilpatrick, 1982), which is a feeder pipe to a bulbous upper body, the "inverted gumboot" model. However, the possibility that a major part of the upper "foot" part of the "gumboot" has not been eroded leaving the "heel and leg", does exist. The northern extension of the body has been shown as a thin surface veneer (e.g. section E-E'. Fig. 12) mainly because of a lack of geophysical evidence (Bishop, 1983) for any depth extensions.

All five drill holes displayed in the sections (Fig. 12) intersected thin (1-5m) fine grained

**ANOMALY 1.
HORIZONTAL SECTIONS AND
POSSIBLE FEEDER PIPE LOCATIONS.**

Scale 1:1000



Legend



Possible Feeder Pipe Locations



**Sulphide Bearing Argillised
Granite**



**Medium-Coarse Grained Granite
(Altered/Sericitised)**



Drill Hole Intersections

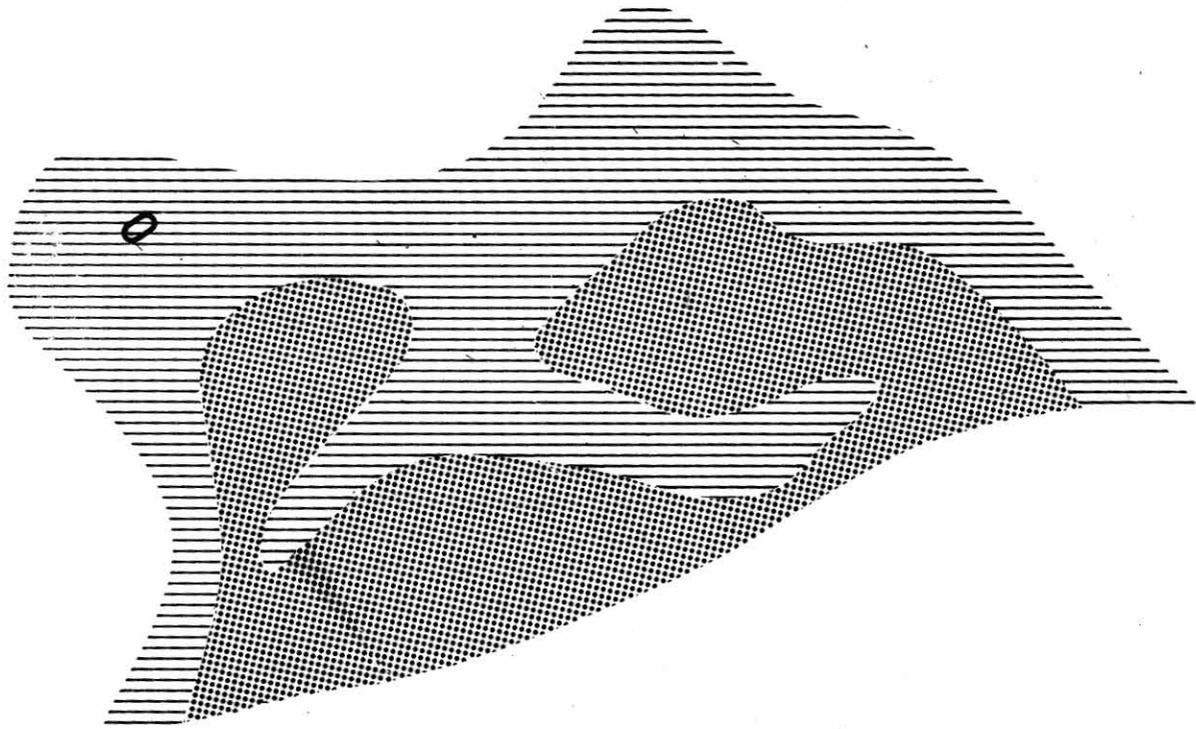
FIG. 13



350R.L.

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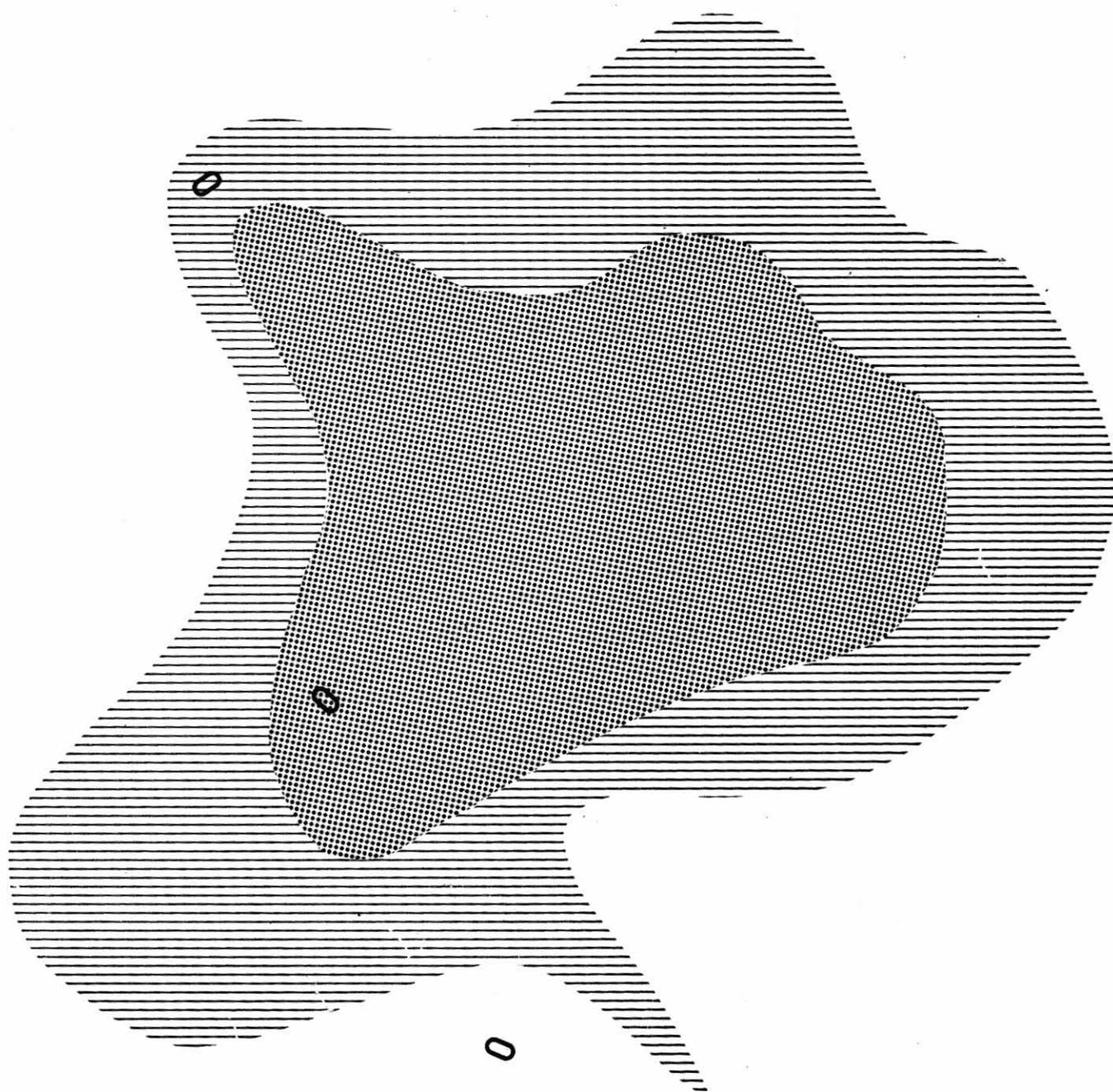
325R.L.



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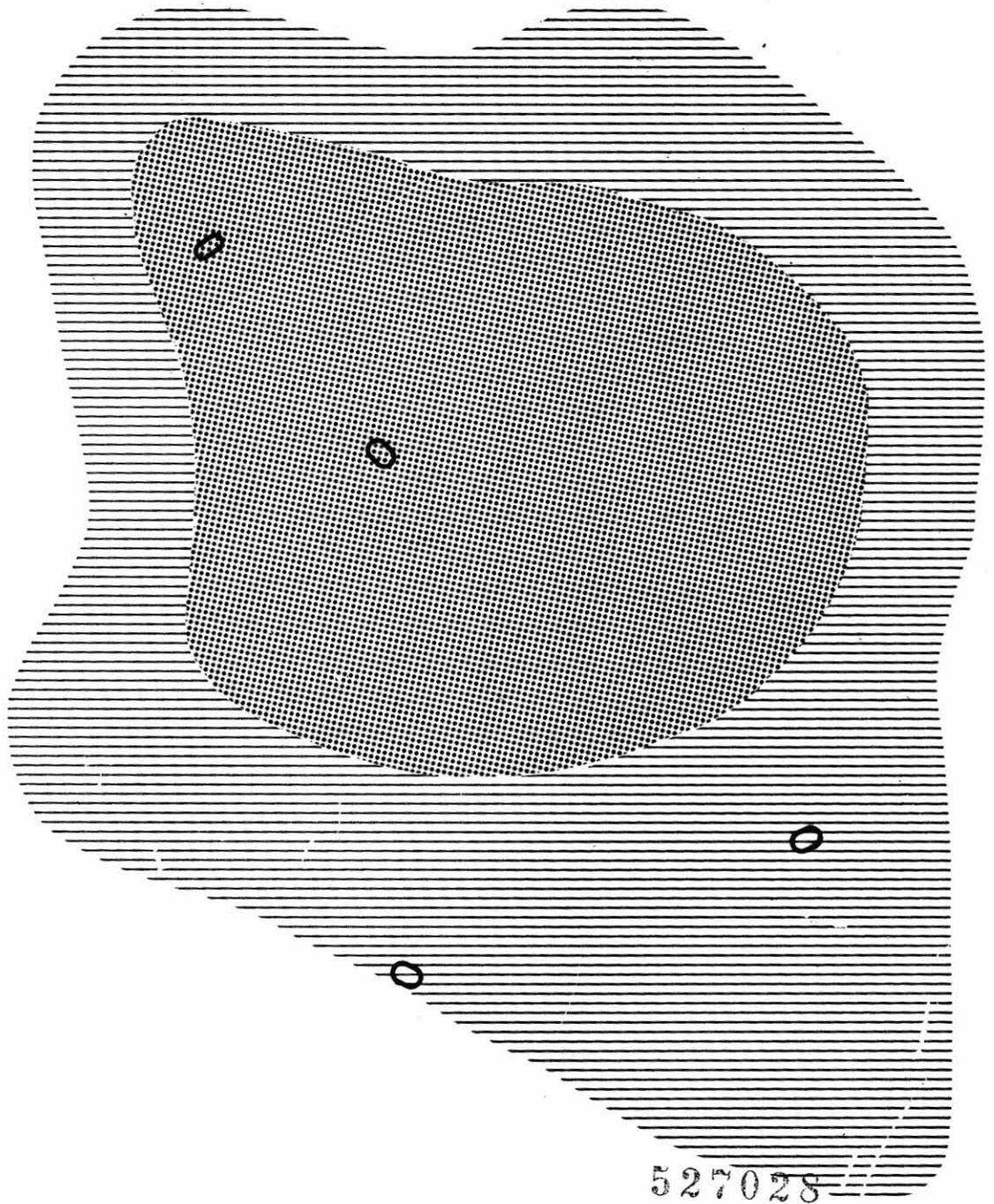
300R.L.



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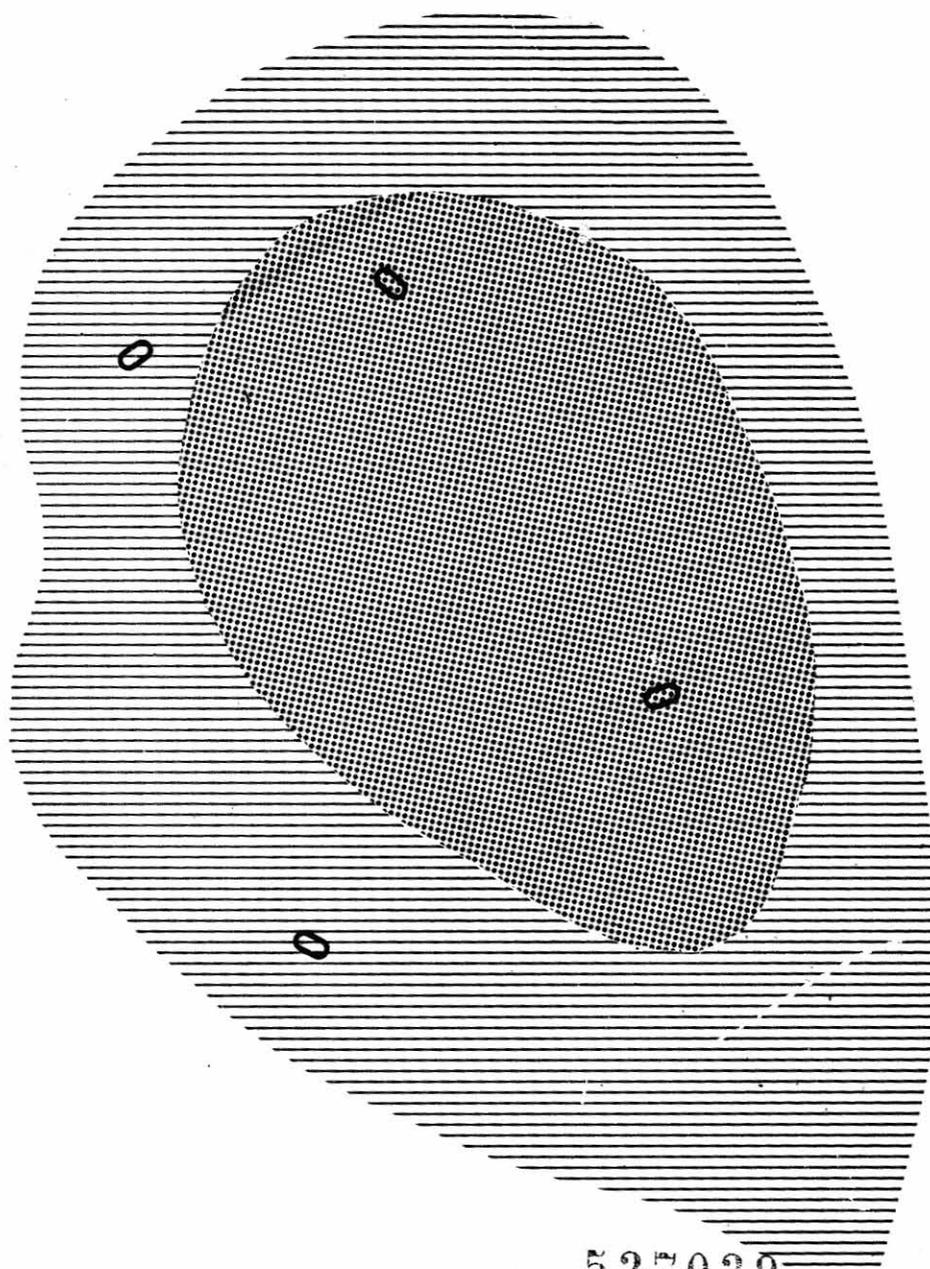
027

275R.L.



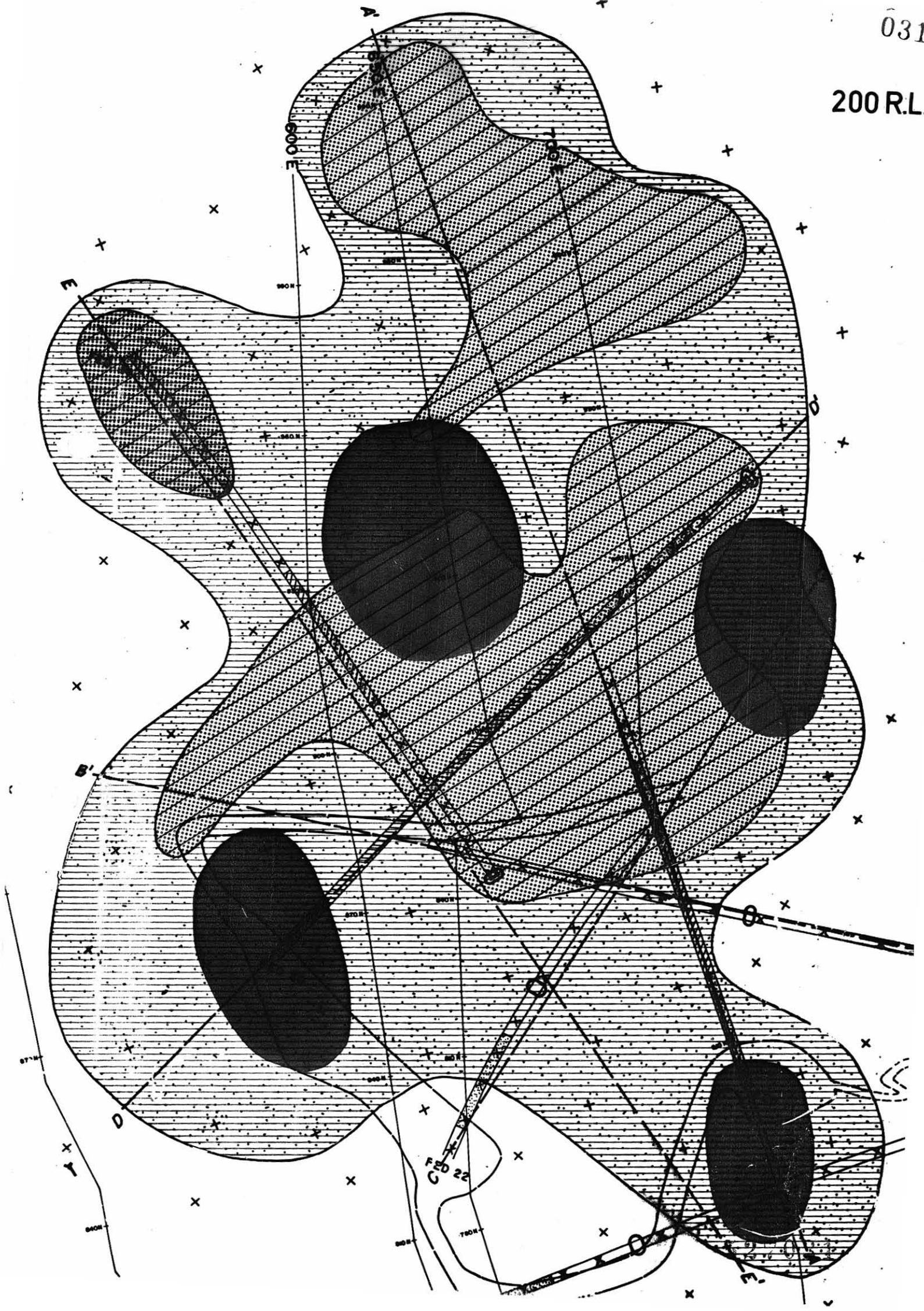
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250 R.L.



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granite-aplitic phases within the mineralised/altered medium-coarse grained porphyritic granites (a feature also observed at Sweeneys). These aplites are characterised by being moderately altered and possibly very weakly base metal bearing, but never stanniferous, even when they occur within stanniferous coarser grained granite. The aplites have been correlated on the sections (Fig. 12) and while the two deeper aplites may really be several distinct phases at differing levels, the uppermost aplite is quite continuous and horizontal. Also, two other features apparent from these sections are that the mineralisation is at its widest around the upper aplite and the lower most aplite seems to control the lower most extensions of mineralisation. It appears almost certain that these aplites are intimately connected with the mineralisation found in these polymetallic sulphide stanniferous bodies, probably as horizontal channelways and accesses - planes of weakness along which mineralising fluids have travelled and "soaked out" from.

The morphology of the mineralised body at Anomaly 1 is better illustrated by the horizontal sections in Fig. 13. These have been drawn based entirely on the cross-sectional views shown on Fig. 12 and also indicate a depth extension towards the southeast at a high angle. However, alternatives to this interpretation are possible and these are also depicted on Fig. 13 (at the 200m R.L.). The horizontal sections can also be used to obtain an approximate guide to the potential tonnage of mineralised granite contained in the upper part of the body. Using the sectional method of King et. al. (1982) and an S.G. of 2.90, a rough estimate of around 500,000 tonnes above the 225m R.L. can be made. It must be noted that this is not any kind of ore reserve figure, particularly as the

mineralised granite shown on both the horizontal and vertical sections is only partly stanniferous. Nevertheless, the prospect is thought to have potential for an irregular but continuous stanniferous zone within the mineralised granite with an overall tonnage potential (to depth) of about 400,000 tonnes.

The mineralisation at Anomaly 1 that is ore grade, occurs in two separate 'styles'. One is tin, silver base metal and sulphide rich (the upper part of Fed. 20) and the other is tin-bearing but sulphide poor (Fed. 21, Fed. 24 and the lower part of Fed. 20). According to conventional genetic theory (e.g. Lindgren, 1937), the latter style represents the higher temperature, deeper, inner zone, while, the former is the lower temperature, outer zone. The evidence from Anomaly 1 seems to comply with this theory although the outer zone appears to be poorly developed here, being restricted to the southwest corner of the body. This has implications for exploration in that electrical geophysical methods will have great difficulty locating the sulphide poor inner tin zones.

The geophysical report on Anomaly 1 (Bishop, 1983), confirms that Fed. 21 type mineralisation (sulphide poor tin zone) is not picked up by the applied potential surveys as it is too resistive. Also the other 'style' of mineralisation found in Fed 20 probably only occurs to a limited extent (Bishop, 1983). As the deep feeder level of the mineralised body is likely to be narrow and consist predominantly of tin bearing-sulphide-poor 'style' of mineralisation, geophysical methods have not and quite probably will not locate its position.

7.2 Anomaly 4

The mineralogy, geochemistry and geology of Fed. 26 and the overlying rocks at Anomaly 4, together can be used to build a possible model for mineralisation. A schematic section through Anomaly 4 is shown on Fig. 14. As with both Anomaly 1 and Sweeneys, a fine grained granite-aplitic phase is found intimately associated with the mineralisation, probably acting as a fluid channelway and localising structure. The aplite is thought to be a late phase magmatic product and this is strengthened by the fact that fluorine is enriched in the aplite and the granite beneath. The very fine grained nature of this rock unit suggests rapid emplacement and it seems likely that it was accompanied by a strong fracture system developed in the surrounding country rock. A hydro-thermal system later initiated, and produced the alteration effects observed at Anomaly 4, and through a variety of mechanisms, formed the mineralised zones encountered in Fed. 26.

At this stage, it would appear that the mineralising events occurred in two phases. The earlier, higher temperature one was accessed through some kind of feeder system (veins, breccias etc. Fig. 14) and consisted of tin and iron with minor arsenic, zinc, lead and antimony mineralisation as cassiterite, pyrite, arsenopyrite, boulangerite and iron-rich sphalerite. This mineralisation is found remaining in the feeder channel and beneath the aplite (Fig. 14). The second mineralising event was a later, lower temperature one, from a brine rich in all the earlier metals as well as copper, silver and bismuth. These metals occur in the minerals tetrahedrite, stannite, galena and chalcopyrite occurring with and overprinting the earlier formed minerals. This lower temperature mineralisation appears to be confined to the thinner zone immediately above the aplite (Fig. 14). A halo of argillised granite

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with numerous mineralised veins surrounds this system, extending to the surface.

Several features can be discerned from Fig. 14 if such a model represents the mineralised body beneath Anomaly 4. The lower temperature, above aplite, tin-silver-base metal mineralisation will probably be best developed in the vicinity of the feeder - aplite contact.

Also, the possibility for quite large extensions along strike of both the mineralised feeder and the flat lying aplite, are good.

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S.E.

N.W.

FED 26

NUMEROUS POLYMETALLIC
SULPHIDE VEINS IN THIS
AREA

FEEDER
SYSTEM

LIMIT OF ARGILLIC
ALTERATION

NOT TO SCALE

LEGEND



SULPHIDE BEARING ARGILLISED
MEDIUM-COARSE GRAINED GRANITE



MEDIUM-COARSE GRAINED GRANITE
ARGILLISED

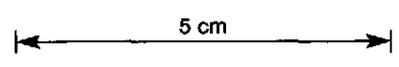


MASSIVE + SEMI-MASSIVE SULPHIDES



FINE GRAINED APLITIC GRANITE

ARGILLISED



GOLD FIELDS EXPLORATION PTY. LIMITED	
SCHEMATIC SECTION THROUGH ANOMALY 4	DRAWN BY : A.J.C.
	DRAFTSMAN: S.J.F.
SCALE 1:  Metres	DATE : July 83
	REVISIONS :
	FILE NO.
	FIG. 14

8. CONCLUSIONS AND RECOMMENDATIONS

At the present stage of exploration, three similarly mineralised bodies have been found. They are Sweeneys, Anomaly 1 and Anomaly 4. All three have certain features in common and these are listed below:

- (i) They are irregularly shaped pipe-like bodies of stanniferous/silver - base metal sulphide mineralisation.
- (ii) They are all outcropping or sub-outcropping (the upper, more flat-lying, tabular parts) with narrow, steeply dipping feeders extending below.
- (iii) All three bodies lie in a linear belt, striking approximately 060° . The Globe Mine and Anomaly 3 also lie on this belt (Fig. 2). It seems highly probable that some form of structural control has been exerted on the formation of these deposits.
- (iv) The three prospects all occur within coarse-medium grained, partly porphyritic ("red") granite which is underlain at varying depths by a later phase medium-fine grained, non-porphyritic tourmalinised ("white") granite relatively close to the southern granite margin. The Globe Mine is situated within the "red" granite very near a major exposure of the "white" granite and its mineralisation is distinct from the other three, being tourmaline rich.
- (v) Sub-horizontal, narrow aplitic sills are ubiquitous within the three deposits. These appear to act as localising structures for the mineralisation particularly the upper, tabular bodies. This suggests that such mineralisation can occur as "blind" bodies within the granite.

Drilling at the three prospects to date, has reached a different stage for each. The most advanced is Sweeneys, where eighteen holes have been drilled into a shallow tabular body and a pipe-feeder at depth. However, as most of the holes were designed to intersect the pipe, little is known about the shape of the upper part of the body. The tonnage potential at Sweeneys has been roughly estimated at 0.5 million tonnes (L.A. Newnham pers. comm.). More detailed information about the grade, size and shape of the tabular body is required for a better tonnage estimate.

At Anomaly 1, where six holes have been completed, an estimated 0.4 million tonnes potentially occurs, however this body is not as yet completely closed off horizontally or vertically. A knowledge of the grade and limits of the upper mineralised portion at Anomaly 1, would enable a far more accurate estimate of the tonnage potential at this prospect.

One diamond drill hole has been completed at Anomaly 4 and no real indication of the size of the mineralised body can be obtained. Several further holes would have to be drilled in order to gain an idea of the tonnage potential there.

The current exploration objective on this area is to define a series of Sweeney-style deposits which may collectively support an economic mining operation. Given the typical grades of this mineralisation (0.5 - 0.6% Sn with appreciable silver and zinc credits), a resource in excess of three million tonnes is probably an appropriate economic target. Both Anomaly 1 and Sweeneys appear to be of the order of 0.5 million tonnes and Anomaly 4 seems unlikely to be any larger. Clearly to obtain the suggested target, these bodies must be shown to be substantially larger and/or more deposits must be found. Given that undiscovered, blind deposits may well

E.L. 47/71

E.L. 11/76

AREA OF PROPOSED GRID

Lake Cumberland

MT. AGNEW 

SWEENEY'S & ANOMALY 1
WINKIE DRILLING

ANOMALY 3 DIAMOND
DRILLING & BEDROCK
SAMPLING

S.P.L. 129

AREA OF PROPOSED GRID

Trail Harbour

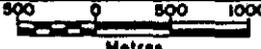
Remine 

Little Henty River

SOUTHERN

OCEAN

-  GRANITE CONTACT
-  EXISTING GRIDS
-  PROPOSED GRID AREA

GOLD FIELDS EXPLORATION PTY. LIMITED	
SOUTHERN END, HEEMSKIRK GRANITE	
PROPOSED WORK, 1983-84	
DRAWN BY : A.J.C.	DATE July 83
DRAFTSMAN: S.J.F.	REVISIONS :
FILE NO.	FIG. 15
SCALE 1:50 000	 Metres

5 cm

039
GOLD FIELDS EXPLORATION PTY. LIMITED

occur in this geological environment, there must be a good chance of discovering more Sweeney-style bodies.

The work proposals for 1983/84 are designed to establish whether the southern portion of the Heemskirk Granite has potential for the target resource in three ways (Fig. 15):

- (1) By extending grid coverage near the granite margin over geologically favourable ground (the coarser grained "older" granite) both to the south-west and north-east of the existing grids. The grid lines, which should be spaced 100m apart, should be covered by gradient array I.P. and soil and/or bedrock geochemical surveys.
- (2) By testing a second anomaly on the Agnew Grid, Anomaly 3, with one diamond drill hole, approximately 150m long. A small, detailed bedrock sampling program should be carried out on this prospect to allow optimum positioning of the hole.
- (3) By carrying out approximately 500m of shallow, small-hole drilling using a "Winkie" - type drill rig on both Sweeneys and Anomaly 1 to determine the tonnage and grade of the more tabular parts of the mineralisation. From a mining point of view, these are clearly the most attractive portions of the mineralisation. In addition if the tabular zones are thick, the tonnage potential of both deposits could be substantially larger than the current estimates. Detailed drilling proposals are illustrated on Figures 16 and 17.

The programmes proposed above should be carried out during the summer field season with the diamond drilling being completely and the Winkie drilling partially helicopter supported. The total cost of these recommendations is estimated to be \$141,200 (Appendix 1).

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APPENDIX 1.

Expenditure (1982-83) and proposed budget 1983-84.

042

GOLD FIELDS EXPLORATION PTY. LIMITED

527043

EXPENDITURE

(1982/83 to April 1983)

	<u>\$</u>
<u>GEOLOGY</u>	
- Salaries	10,869
Salary on-costs	710
Transport	13,736
Miscellaneous	1,576
Outside Contractors	3,779
Travel	1,226
Stores	734
	<u>32,630</u>
<u>GEOPHYSICS</u>	
- Miscellaneous	720
Outside Contractors	2,200
Stores	351
	<u>3,271</u>
<u>GEOCHEMISTRY</u>	
- Assays	604
Outside Contractors	420
	<u>1,024</u>
<u>DRILLING</u>	
- Transport	260
Outside Contractors	27,047
Stores	1,886
	<u>29,193</u>
<u>LAND ACQUISITION</u>	
- Miscellaneous	1,005
	<u>1,005</u>
<u>SITE PREPARATION</u>	
- Outside Contractors	3,683
	<u>3,683</u>
<u>SURVEYING</u>	
- Outside Contractors	278
	<u>278</u>
<u>INDIRECT MOTOR VEHICLE EXPENSES</u>	
	1,035
	<u>1,035</u>
	<u>72,119</u>

043

GOLD FIELDS EXPLORATION PTY. LIMITED

PROPOSED BUDGET 1983-84

	<u>\$</u>
<u>GEOLOGY</u>	
- Salaries	17,000
Salary on-costs	4,300
Outside Contractors	2,000
Travel and Accomodation	1,400
Stores	1,400
	<u>26,100</u>
<u>GEOPHYSICS</u>	
- Outside Contractors	24,400
Stores	400
	<u>24,800</u>
<u>GEOCHEMISTRY</u>	
- Outside Contractors	17,800
Stores	300
	<u>18,100</u>
<u>DRILLING</u>	
- Transport	13,800
Outside Contractors	29,800
Stores	2,500
	<u>46,100</u>
<u>LAND ACQUISITION</u>	
- Miscellaneous	2,000
	<u>2,000</u>
<u>SITE PREPARATION</u>	
- Outside Contractors	19,500
Stores	300
	<u>19,800</u>
<u>SURVEYING</u>	
- Outside Contractors	2,400
	<u>2,400</u>
<u>INDIRECT MOTOR VEHICLE EXPENSES</u>	
	1,900
	<u>1,900</u>
	<u>141,200</u>

APPENDIX 2.

Power auger sample locations, descriptions and assays.

045

AGNEW ANOMALY 1

POWER AUGER SAMPLE RECORD AND ANALYTICAL DATA SHEET

527046

SAMPLE NUMBER	GRID LOCATION		DEPTH (metres)	DESCRIPTION	ANALYSES					
					Sn	As	Cu	Pb	Zn	Ag
2183	715E	960N	0.1	Mineralized, altered granite with minor dissem. pyrite and fine grained disseminated black mineral. Small hand-dug pit to bedrock (or boulder?).	0.12%	0.12%	65	260	0.96%	3.0
2184	735E	960N	Rock Chip	Fresh/weathered medium to coarse grained 'red' granite and microgranite. Outcrop sampled in creek.	8	<100	10	15	285	0.5
2185	650E	990N	Rock Chip	Dark grey-green altered medium grained granite with disseminated sphalerite. Sample taken from existing trench-walls and spoil heap - at 647E/993N	550	<100	95	155	1.08%	2.5
2276	700E	930N	1.4	Orange-brown clayey soil/argillized granite, rare small dark grey fragments - possible mineralization	170	30	50	60	1350	1
2277	700E	915N	1.0?	Mottled brown, pale grey and white clayey sample-argillized granite? Minor? altered granite fragments. No visible sulfides.	11370	4730	230	590	11500	6
2279	900N	685E	2.0	Grey-brown clayey soil?. argillized granite. Minor altered fragments. Rare fine pyrite crystals	470	140	60	140	190	2
2280	895N	715E	1.6	Pale grey-brown, argillized granite. Minor pink feldspar grains.	300	10	10	30	130	1
2281	895N	730E	1.8	Orange weathered/argillized medium grained granite. Minor pink feldspars.	20	10	<10	20	50	<1
2282	700E	885N	2.2	Orange-brown, glutinous clay. Fine rock fragments.	890	290	90	120	420	1
2283	650E	825N	1.6	Pale bluish grey clay. Abundant fine fragments. No sulfide seen, however possibly in mineralized/ altered granite?	420	100	240	170	1000	2
2260	922N	585E	1.4	Pale grey brown soil/weathered - argillized medium grained granite.	100	<10	<10	20	90	1
2261	922N	570E	1.3	Olive green/khaki fine grained sample. Weathered/ argillized fine grained granite? No visible sulfides.	30	<10	10	30	110	1
2262	922N	555E	1.8	Olive green/khaki, fine grained sample. Weathered/ argillized fine grained granite? Minor feldspars, no visible sulfides.	30	<10	40	50	110	1
2263	900N	555E	1.8	Olive green/khaki fine grained sample. Weathered/ argillized fine grained granite? Minor feldspars, no visible sulfides.	130	30	100	20	160	1
2264	900N	570E	1.9	Yellow-brown, clayey soil/argillized medium grained granite. Orange-brown clayey patches. No visible sulphides.	80	20	10	40	100	1
2265	900N	585E	1.4	Orange-brown, clayey granitic soil. Minor dark coloured fragments carrying fine grained pyrite.	1400	320	70	90	790	2
2266	650E	870N	1.0	Brown-grey clay, fine fragments of blue-grey, hard ?mineralized/ altered granite.	970	110	80	50	130	2
2267	650E	885N	Rock Chip	Green-blue-grey, altered/mineralized medium grained granite.	4710	390	80	80	390	2
2278	700E	900N	1.0	Orangey-brown clay. Blue-grey clay, derived from ?mineralization.	1990	860	200	640	1300	10

SAMPLE NUMBER	GRID LOCATION		DEPTH (metres)	DESCRIPTION	ANALYSES					
					Sn	As	Cu	Pb	Zn	Ag
2251	600E	885N	1.2	Yellow-brown intensely argillized granite/clayey soil, rare dark green altered/mineralized? fragments.	200	50	30	40	100	1
2252	600E	900N	1.6	Grey-brown clayey soil and abundant fragments of finely pyritic, blue grey mineralization.	430	310	350	290	260	4
2253	600E	915N	0.9	Intensely argillized granite/clayey rich soil, minor fragments of dark green mineralized?/altered granite.	1000	330	100	70	9500	3
2254	600E	930N	Rock Chip	Outcrop or boulder of fresh, green sericitized medium grained granite. Minor disseminated pyrite.	340	10	6500	440	1280	2
2255	600E	945N	0.6	Brown, argillized medium grained granite. Some reddish brown fragments, fine grained feldspars No visible sulfides.	310	30	<10	20	210	1
2256	600E	960N	0.3	Pale grey-brown clayey soil/argillized medium grained granite. No visible sulfides.	250	<10	10	10	20	1
2257	600E	975N	0.8	Pale grey-brown argillized medium grained granite, clay. Very fine specks of pyrite.	390	70	<10	20	20	1
2258	600E	990N	1.5	Buff to pale grey, extremely argillized medium grained granite.	70	<10	60	20	20	2
2259	600E	1005N	1.8	Buff to pale grey, extremely argillized medium grained granite. Minor pyrite.	50	<10	<10	20	50	1
2268	650E	900N	1.4	Very pale grey clay. Few dark coloured, small fragments - mineralized/altered granite?	5530	110	180	610	370	3
2269	650E	915N	1.2	Buff clayey sample. Extremely argillized fine-medium grained granite? No visible sulfide.	350	60	70	30	130	1
2270	650E	930N	1.4	Dark grey-brown? soil? derived from argillized medium grained granite. No visible sulfides.	910	<10	<10	30	40	1
2271	650E	945N	1.0	Dark grey-brown? soil? derived from argillized medium grained granite. No visible sulfides	120	<10	<10	20	120	<1
2272	650E	960N	0.7	Mixture of dark grey-brown sample as above, pale green-grey clay, sericitized/altered granite fragments - possibly mineralized.	180	10	50	20	1140	1
2273	650E	975N	Rock Chip	Altered, mineralized, medium grained granite. Green coloured. Disseminated pyrite.	1740	80	110	20	130	16
2274	700E	960N	1.6	Orange-brown clay and small sericitized? granite fragments - possibly mineralized.	900	30	70	70	1310	4
2275	700E	945N			870	400	200	185	3200	3.5
2186	650E	1005N	30-40cm	Very weathered medium grained granite. Not yellow and argillized, however. From small hand-dug pit. Outcrop of fresh "red" granite nearby, up-slope.	45	100	10	10	115	1.0
2187	700E	870N	3.0	Very deep clayey soil. Sample largely of yellow-brown clay with minor dry fine grained material from hole bottom (rest irrecoverable) - possibly argillized f.g.-granite.	0.34%	100	120	90	410	1.0
2188	700E	855N	2.9	Very deep clayey soil. Sample of dry f.g. clayey material (argillized f.g. granite?) plus clay.	0.16%	100	85	60	370	3.0
2189	700E	840N	3.1	Very deep clayey soil. Sample of weathered/argillized(?) medium grained granite and clay.	220	100	55	75	250	1.5
2190	650E	840N	0.3	Medium grained, argillized and altered granite-bedrock(?). From small hand-dug pit. Mineralized cobbles in soil overlying the ? b/r.	500	100	120	5	770	14.5
2180	700E	975N	0.3-0.4	Dark green altered granite with disseminate sphalerite and lesser pyrite. Small, hand-dug trench to bedrock (?)	740	100	175	70	1.67%	2.5
2181	700E	990N	2.1	Argillized medium grained granite and soil/clay. Near outcrop or boulder of medium grained granite.	100	200	40	55	0.15%	3.5
2182	715E	975N	0.3	Weakly altered/sericitized medium grained granite. Small hand-dug trench to bedrock. No visible sulphides.	20	200	10	15	55	0.5

SAMPLE NUMBER	GRID LOCATION		DEPTH (metres)	DESCRIPTION	ANALYSES					
					Sn	As	Cu	Pb	Zn	Ag
1042	870N	1465E	1.6	Pale brown sand - possibly argillised granite.	160		60	100	150	1
1043	870N	1480E	1.3	Light orange-brown gritty clay - weathered granite	40		10	30	80	1
1044	870N	1435E	1.3	Light-medium brown clay-weathered granite.	40		10	150	220	2
1045	870N	1420E	1.1	Light brown soil - argillised granite.	50		10	40	50	2
1046	870N	1405E	1.0	Light brown gritty soil - argillised granite.	190		10	40	30	2
1047	855N	1405E	1.0	Very pale brown gritty (qtz) soil-weathered granite	100		10	50	50	2
1048	855N	1420E	0.8	Dark brown soil-weathered granite	60		<10	20	20	1
1049	855N	1435E	0.4	Pale white, stained rock - altered granite.	230		90	370	150	1
1050	855N	1465E	0.8	Very pale grey brown clay - argillised granite.	610		10	90	10	2
1051	855N	1480E	1.6	Pale brown clayey grit - argillised/weathered? granite.	480		80	1650	70	1
1052	825N	1465E	1.5	Pale brown clay - weathered granite	30		40	110	90	2
1053	825N	1480E	1.5	Pale brown clay - weathered granite.	20		50	60	70	3
1054	825N	1420E	0.5	Float-qtz vein and altered granite.	350		40	110	30	4
1055	825N	1405E	1.6	Blue clay - argillised? granite.	180		50	740	730	3
1056	840N	1400E	0.5	Pale brown grey soil - weathered? granite.	80		10	60	60	1
2191	1450E	840N	1.0	Grey clayey sample quite unlike overlying soil Minor pyrite, ?sphalerite, ?tourmaline.	800	0.11%	1.00%	330	2.47%	50
2192	1450E	825N	0.3	Altered, mineralized granite. Buff and dark green with abundant coarse grained (1-3mm) pyrite euhedra. Small, hand-dug pit, approx. 3 cm deep.	200	0.26%	315	130	115	5
2193	1450E	810N	0.4	Relatively fresh pink, medium grained granite. Bedrock (?) or boulder. Small hand-dug pit, approx. 40cm deep.	15	<100	30	80	135	0.5
2194	1450E	855N	1.6	Talcose, pale brown and white clay with very small rock fragments.	390	0.44%	615	0.49%	90	57
2195	1450E	870N	1.3	Weathered/argillized granite, yellow-brown-grey brown. Rare feldspar fragments.	25	<100	25	110	220	0.5
2196	1450E	885N	1.2	Yellow-brown, weathered/argillized granite. Some feldspars visible.	25	<100	25	55	140	0.5
2197	1435E	825N	0.4	Weathered (not argillized) medium to coarse grained granite. Bedrock or boulder? Small hand- dug pit. 40cm deep.	25	<100	55	240	65	3.0
2198	1435E	840N	1.5	Pale grey-brown and yellow-brown clay, some very argillized granite. Bedrock (?).	360	200	115	875	55	0.5
2199	1420E	840N	1.5	Very pale blue-grey clay, talcose with abundant disseminated fine pyrite euhedra.	110	1.75%	750	0.34%	75	47
2200	1465E	840N	1.1	Very pale yellow-brown fine grained sample. Argillized fine grained granite(?). No visible sulfides.	420	200	65	80	95	2.5
2043	1480E	840N	1.2	Pale yellow-brown fine grained sample. Argillized/ weathered fine grained granite(?).	70	100	35	280	110	1.5
1041	1430E	830N	Rock Chip	Rock chips taken from boulders of float-silicified, gossanous ?altered granite, rare pyrite.	0.12%	100	40	265	25	5.5

048

GOLD FIELDS EXPLORATION PTY. LIMITED

527049

APPENDIX 3.

C.M.S. mineralogical descriptions of selected drill core from Fed. 26.

049

REPORT CHS 83/5/1

Heemskirk Granite Drill Core Samples

Fourteen drill core samples were received for petrological and mineralogical examination, and for comparison with Sweeney's and Federation material. Thin-sections were prepared of all samples, and nine polished sections were also prepared and examined. Because of the similarity of the clay mineral species (as indicated by optical properties), only three X-ray determinations were made to avoid needless repetition.

The samples are described in the accompanying table, in terms of their mineralogy rather than petrology, since origin rock features have virtually disappeared because of the intensity of the alteration.

Comments

The only primary mineral to have survived alteration is accessory zircon; the former presence of generally coarsely crystalline feldspars is fairly clearly indicated in some samples, but is mostly inferred. In fact, granitic features and minerals are unusually poorly preserved; even the (presumed) primary quartz has disappeared or been redistributed. Certainly, there is no surviving evidence of textural or compositional variations. The present silicates are fine-grained; siderite and sulphides range from fine- to coarse-grained.

Cassiterite shows the same ill-defined characteristics as in Federation and Sweeney's samples, and some is indistinguishable from leucoxene (released from, say, biotite), which is almost certainly present also. Its mode of occurrence suggests a low temperature of formation, possibly via hydrocassiterite. Metallurgically, the mineral is very problematical.

Sulphides seem to occur in two generations, comprising an earlier, higher-temperature assemblage of pyrite, arsenopyrite and dark (Fe-rich) sphalerite, with a later group comprising pale sphalerite (often as overgrowths on earlier sphalerite), "boulangerite" and galena. The "boulangerite" is a problematical mineral because it is generally too fine-grained for accurate optical identification; in 3347 it is much coarser and is more like geocronite. Essentially, the mineral is a Pb-Sb sulphide, of which there are several with very similar properties; it may well be that two or more of these compounds are present, but the matter is perhaps of academic rather than practical interest.

The one sample with a high Ag assay also carries tetrahedrite, which is logically the source of the Ag.

Pneumatolytic minerals such as tourmaline and topaz are absent, and it seems that hydrothermal alteration was of a lower grade than in the other two localities, though perhaps more intense and pervasive. Clearly, there are general similarities between all three occurrences, indicating widespread mineralising activity, much of which is probably difficult to detect.

X-ray powder diffraction was carried out on the (hand-picked) clay minerals of samples 3337, 3340 and 3348; all three consisted of the same species, identified as illite-hydromuscovite ("sericite"); their optical properties are the same as those of the clays in all the other samples and, though such properties are not very specific, there is no reason to suppose that the clays in other samples are any different from those checked by XRD.

H.W. Fander, M. Sc.

Sample no.	Sulphides	Cassiterite	Gangue Minerals	Comments
3336	Mainly coarse pyrite crystals; scattered dark sphalerite crystals with pale rims (younger); fine arsenopyrite.	Patches of crypto-crystalline white leucoxene-like material. Rare grains up to 50 μ .	Dominant, coarse siderite; minor sericite aggregates; small quartz crystals.	Original rock completely replaced, no relict features. ?Cassiterite far less than assay.
3337	Abundant coarse euhedral pyrite, small arsenopyrite crystals; dark sphalerite with pale overgrowths. Swarms of minute ?boulangerite needles.	None detected.	Patches of ultrafine illite-sericite; siderite masses with sulphide inclusions.	General disposition of minerals suggests original rock was coarse, but no relict features. ?Boulangerite - see text.
3338	Euhedral pyrite and arsenopyrite crystals throughout. A few dark and light sphalerite crystals - two generations.	Clusters of < 10 μ grains, patches of ultrafine white material (?hydro-cassiterite).	Dominant matted sericite flakes with minor siderite patches.	Vague relict features suggest that original rock may have been medium-grained.
3339	Very minor scattered pyrite, sphalerite. Thin films, rims of ?boulangerite, often rimming siderite.	Clusters of < 5 μ whitish grains (?hydrocassiterite).	Large patches of coarse siderite; many small quartz crystals; chalcedony.	Textures, structures indicate that this is vein material rather than replaced rock.
3340	A few galena patches up to 2-3 mm in veins. Scattered sphalerite, isolated pyrite crystals.	Loose clusters of 1-25 μ grains in sericite, mostly < 10 μ .	Large sericite masses; irregular siderite patches. Isolated quartz, purple fluorite.	Large sericite patches have relict feldspar textures, i.e. representing coarsely-crystalline feldspar.
3341	Scattered pyrite, dark and light sphalerite. Ultrafine ?boulangerite.	Whitish, semi-opaque, ultrafine ?hydro-cassiterite.	Fine quartz-sericite, pseudomorphous after coarse feldspar; minor siderite.	Originally coarsely-crystalline; very thoroughly argillised.
3342	Sporadic small grains of pyrite and sphalerite, a few loose clusters of fine ?boulangerite needles.	As above; as small irregular patches and films.	Dominant illite-sericite masses, minor interstitial quartz; siderite patches.	Poor relict features indicate coarse crystallinity, similar to 3341.
3343	Intergranular films of ultrafine ?boulangerite; small sphalerite patches. Scattered arsenopyrite.	Small clusters of < 10 μ grains, preferentially in fluorite.	Porphyroblastic siderite with small quartz crystals. Sericite aggregates. Trace fluorite.	Little, if any of original rock recognisable.

Sample No.	Sulphides	Cassiterite	Gangue Minerals	Comments
344	Conspicuous large single crystals of dark sphalerite with pale overgrowths. Very minor pyrite, ultrafine ?boulangerite.	Whitish, semi-opaque patches of ?hydrocassiterite.	Fine quartz-sericite intergrowths, pseudomorphous after coarse feldspar.	Coarse granitoid fabric recognisable.
345	Scattered irregular sphalerite grains. Ultrafine ?boulangerite, with small galena grains.	< 10 μ grains in small clusters, whitish, semi-opaque.	Finely intergrown quartz-illite/sericite masses; scattered siderite.	Relict textures indicate a coarsely-crystalline rock.
346	Large sphalerite masses, with minute inclusions of pyrrhotite, chalcopyrite, ?stannite. Small arsenopyrite crystals.	Clusters of < 10 μ grains and a few well-formed crystals up to 50 μ .	Fine quartz, pseudomorphous after coarse feldspar; sericite aggregates.	In contrast to the others, this rock is mainly silicified rather than argillised.
347	Euhedral arsenopyrite, pyrite crystals. Irregular sphalerite. Patches of coarse ?geocronite ("?boulangerite"); rare chalcopyrite, cubanite. Tetrahedrite intergrown with geocronite.	Compact clusters up to 350 μ across, of small cloudy crystals (up to 50 μ in size).	Mainly sericite masses; quartz crystals, and pseudomorphous after feldspar.	Cassiterite relatively conspicuous and coarser than elsewhere. Tetrahedrite no doubt source of Ag.
348	Euhedral pyrite and arsenopyrite crystals. Irregular sphalerite patches with small stannite, chalcopyrite inclusions. ?Geocronite patches with galena inclusions.	Cloudy, zoned, poorly defined crystals up to 120 μ , but mostly < 10 μ , singly and in clusters.	Dominantly masses of fine sericite with interspersed fine quartz.	Vague relict textures indicate coarse feldspars. Cassiterite more abundant than assay.
349	Massive coarse sphalerite with small galena inclusions and fine pyrrhotite.	None detected.	Quartz patches, veinlets. Quartz/sericite pseudomorphs after feldspar.	Dominant sphalerite in this very small specimen.
	T.S. 45819 - 45832			

APPENDIX 4.

Diamond drill hole logs and profiles.
Fed. 24 and Fed. 25 (Anomaly 1), Fed. 26 (Anomaly 4).

053

GOLD FIELDS EXPLORATION PTY. LIMITED
 DRILL CORE RECORD

HOLE NO.: FED 24
 STATE : TASMANIA

ULV. PRESS

PROJECT	FEDERATION	PURPOSE To test for an extension at depth of the mineralisation at Anomaly 1.
DESIGNED BY	P.A.R. / A.J.C.	
LOGGED BY	A.J. CARTWRIGHT	
COMMENCED	4-2-83	
COMPLETED	11-2-83	

LOG SUMMARY	Strong, argillic altered granite was encountered throughout the hole. The granite is medium-coarse grained and porphyritic with minor aplites and fracture zones. Minor base metal-tin mineralisation occurs at the top of the hole and a major tin mineralised zone occurs between 79.0 and 102.0. The significant assays are given below.
GENERAL COMMENTS	

ASSAY SUMMARY (all wt% except Ag which is in ppm)

INTERVAL		LENGTH	Sn	S	Zn	As	So1 Sn								COMMENTS
From	To														
79.0	102.0	23m	0.55	0.4	0.18	<0.1	<0.1								

LOCATION

NORTHING	5358782
EASTING	351667
R.L.	348.1
GRID	A.M.G.
LENGTH	186.0

HOLE CONDITION

SIZE	
Hole Size	Depth
HQ	0.0-4.0
NQ	4.0-12.0
BQ	12.0-186

SIGNIFICANT CORE LOSS INTERVALS

From	To	% Lost
0.0	6.0	55

POOR GROUND CONDITION ZONES

From	To	Condition

HOLE CONDITIONS AFTER COMPLETION

Approximately 12m of black polythene left in top of hole.

SURVEY DATA (Note Bearing type must be same as Project Grid Type)

SURVEY			INTERVAL			VERTICAL		HORIZONTAL		SURVEY			INTERVAL			VERTICAL		HORIZONTAL		
Depth	Bearing	Dip	From	To	Distance	D.Sin Dip	R.L.	D.Cos Dip	Prog.Total	Depth	Bearing	Dip	From	To	Distance	D.Sin Dip	R.L.	D.Cos Dip	Prog.Total	
0.0	119	53.0	0.0	15.5	15.5	12.2	335.9	9.5	9.5											
31.0	121	52.5	15.5	46.0	30.5	24.2	311.7	18.6	28.1											
61.0	121	53.5	46.0	77.5	31.5	25.3	286.4	15.1	43.2											
94.0	121	54.0	77.5	109.0	31.5	25.5	260.9	15.0	58.2											
124.0	123	55.0	109.0	139.0	30.0	24.6	236.3	17.2	75.4											
154.0	122	55.0	139.0	169.0	30.0	24.6	211.7	17.2	92.6											
184.0	123	55.0	169.0	186.0	17.0	13.9	197.8	9.8	102.4											

527054

GOLD FIELDS EXPLORATION PTY. LIMITED
 DRILL CORE LOG AND ASSAY DATA

PROJECT: Federation

HOLE NUMBER: FED 24

Page: 3.

ULV. PRESS

INTERVAL		RECOVERY		DESCRIPTION	(all wt% except Ag which is ppm)				ASSAY DATA									
From	To	m	%		Sample No	From	To	Rec. %	Sn	S Sn	As	Cu	Pb	Zn	WO ₃	Fe	S	Ag
					At 41.8, a 10cm thick intergrowth of quartz-tourmaline underlain by 2mm thick quartz-tourmaline veinlet at 30° CA.	4004	38.0	39.0	100	.02	<0.01	<.1	<.01	.01	.03	<.01	12.3	.1
					4005	39.0	40.0	100	.04	0.01	<.1	<.01	<.01	.03	<.01	9.7	<.1	1
				At 43.5, a 10cm zone of a clay rich rock, crumbly and highly fractured.	4006	40.0	41.0	100	.01	<0.01	<.1	<.01	<.01	.03	<.01	18.9	.2	1
					4007	41.0	42.0	100	.01	0.01	<.1	<.01	<.01	.03	<.01	12.0	<.1	1
					4008	42.0	43.0	100	<.01	<0.01	<.1	<.01	.01	.06	<.01	4.5	<.1	<.1
43.7	53.0	9.3	100	Dark brown-grey granite. Medium-coarse grained, porphyritic with sericitised feldspar phenocrysts. Rarerly fractured and bleached between 45.0 and 46.3. Also darker green sericitic patches are developed. The large feldspars are rimmed, dark and light browns. Numerous quartz-tourmaline intergrowths occur. Overall, argillically altered with the last 1.0m greener and bleached.	4009	43.0	44.0	100	.01	<0.01	<.1	<.01	.01	.05	<.01	3.8	<.1	<.1
					4010	44.0	45.0	100	<.01	<0.01	<.1	<.01	.01	.03	<.01	2.9	<.1	<.1
					4011	45.0	46.0	100	<.01	<0.01	<.1	<.01	.01	.01	<.01	1.5	<.1	<.1
					4012	46.0	47.0	100	.01	<0.01	<.1	<.01	.01	.04	<.01	3.7	<.1	<.1
					4013	47.0	48.0	100	.08	<0.01	<.1	<.01	.01	.02	<.01	3.3	.2	<.1
					4014	48.0	49.0	100	<.01	<0.01	<.1	<.01	.01	.05	<.01	3.2	<.1	<.1
53.0	53.9	0.9	100	Bleached, argillised, hematitic feldspar granite. Pale red-brown (altered) feldspars. Quartz also forms phenocrysts.	4059	50.0	51.0	100	.01					.05	<.01	5.5	<.1	1
					4060	51.0	52.0	100	<.01					.02	<.01	3.3	<.1	<.1
					4061	52.0	53.0	100	<.01					.02	<.01	2.0	<.1	1
53.9	60.0	6.1	100	Dark yellow-brown, medium-coarse grained, porphyritic granite. Unfractured.	4062	53.0	54.0	100	<.01					.03	<.01	3.5	<.1	<.1
					4063	54.0	55.0	100	<.01					.01	<.01	2.7	<.1	<.1
				At 55.4, a 10cm wide vuggy, dog-tooth quartz-fluorite vein at 70° CA.	4064	55.0	56.0	100	.16					.04	<.01	4.4	<.1	<.1
					4065	56.0	57.0	100	.52					.03	.01	4.7	<.1	<.1
				At 55.9, a 2cm coarse grained quartz-feldspar vein at 45°CA.	4066	57.0	58.0	100	<.01					.02	<.01	3.6	<.1	<.1
				Becomes bleached and sericitic after 57.0, for 1.1m. Then dark yellow-brown as before.	4067	58.0	59.0	100	.07					.04	.01	3.7	<.1	<.1
					4068	59.0	60.0	100	.03					.04	<.01	3.8	<.1	<.1
					4069	60.0	61.0	100	.01					.03	<.01	3.7	<.1	<.1
60.0	62.9	2.9	100	10cm of white argillised granite, consisting of quartz and white clays with a few feldspar-phenocrysts pseudomorphed by clay.	4070	61.0	62.0	100	<.01					.02	<.01	2.4	<.1	<.1
					4071	62.0	63.0	100	<.01					.03	<.01	2.4	<.1	<.1
				Then bleached pale brown sericitic feldspar and quartz with accessory tourmaline. Weakly fractured.	4072	63.0	64.0	100	.01					.03	<.01	5.0	<.1	<.1
					4073	64.0	65.0	100	.01					.03	.01	5.7	<.1	1
					4074	65.0	66.0	100	<.01					.04	<.01	4.9	<.1	1
62.9	68.9	6.0	100	Dark green brown granite. Porphyritic with phenocrysts up to 2cm across - either orangey-brown or dark green. Also green sericite-quartz intergrowth occur, destroying the original granitic texture. Rare fractures are filled with quartz.	4075	66.0	67.0	100	.01					.12	<.01	4.0	<.1	<.1
					4076	67.0	68.0	100	.02					.09	<.01	6.7	.1	1
					4077	68.0	69.0	100	<.01					.02	<.01	4.8	<.1	1
					4078	69.0	70.0	100	<.01					.01	.01	2.0	<.1	<.1
					4079	70.0	71.0	100	<.01					.03	.01	2.6	<.1	<.1
68.9	74.7	5.8	100	Yellow-red granite, coarse-medium grained and porphyritic. Relatively fresh with hematitic feldspar phenocrysts.	4080	71.0	72.0	100	<.01					.02	.01	1.5	<.1	<.1

057

527058

GOLD FIELDS EXPLORATION PTY. LIMITED
DRILL CORE LOG AND ASSAY DATA

PROJECT: Federation

HOLE NUMBER: FED 24

Page: 4.

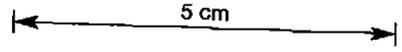
ULV. PRESS

INTERVAL		RECOVERY		DESCRIPTION	ASSAY DATA													
From	To	m	%		Sample No	From	To	Rec. %	Sn	S Sn	As	Cu	Pb	Zn	WO ₃	Fe	S	Ag
				smaller quartz phenocrysts and smaller sericitic feldspar phenocrysts. Unaltered black biotite occurs for the first time down hole. A few large coarse grained tourmaline intergrowths occur.														
				At 70.5, a 1m bleached argillized zone, with a few narrow crush zones, occur.														
					4081	72.0	73.0	100	<.01					.01	.01	2.1	<.1	<.1
					4082	73.0	74.0	100	<.01					.01	<.01	1.9	<.1	<.1
				74.7-118.4 STRONGLY ARGILLISED AND MINERALISED GRANITE WITH SEVERAL THIN APLITES AND FRACTURE ZONES.	4083	74.0	75.0	100	<.01					.01	<.01	1.8	<.1	<.1
					4084	75.0	76.0	100	<.01					.01	.01	1.5	<.1	<.1
					4085	76.0	77.0	100	<.01					.02	<.01	4.1	<.1	<.1
74.7	77.5	2.8	100	Moderately strongly argillised, very pale brown-yellow granite. Weak-moderate fracture, softish with abundant sericite. Same granite as those described previously, but more altered.	4086	77.0	78.0	100	<.01					.02	.01	3.5	<.1	<.1
					4015	78.0	79.0	100	.05	<0.01	<.1	<.01	<.01	.35	<.01	7.5	.4	1
					4016	79.0	80.0	100	.60	0.01	<.1	<.01	.01	1.00	<.01	13.1	1.2	1
					4017	80.0	81.0	100	.84	0.01	<.1	<.01	.02	1.81	.01	12.9	2.7	2
77.5	78.6	1.1	100	Dark yellow grey-brown granite, weakly fractured. Abundant quartz with large brown sericite-quartz intergrowths harder than above. Quartz-sericite altered.	4018	81.0	82.0	100	.08	<0.01	<.1	<.01	.05	.51	.01	7.3	4.8	3
					4019	82.0	83.0	100	.43	<0.01	<.1	<.01	.02	.25	<.01	11.8	2.5	2
					4020	83.0	84.0	100	.44	<0.01	<.1	<.01	.01	.04	<.01	9.6	.5	1
					4021	84.0	85.0	100	1.25	<0.01	<.1	<.01	.30	.02	.01	5.1	.1	5
78.6	80.9	2.3	100	Pale green-yellow granite. Argillised with abundant sericite (green). Reddish sericitic feldspar phenocrysts also occur. Accessory pyrite and sphalerite become abundant with depth.	4022	85.0	86.0	100	.80	<0.01	<.1	<.01	.07	.02	.02	4.1	.1	1
					4023	86.0	87.0	100	.02	<0.01	<.1	<.01	.08	.08	.01	3.3	.1	1
					4024	87.0	88.0	100	.03	<0.01	<.1	<.01	.03	.05	<.01	4.6	.2	<.1
					4025	88.0	89.0	100	<.01	<0.01	<.1	<.01	.01	.06	<.01	4.2	<.1	<.1
80.9	82.1	1.2	100	Fine grained (<1mm) granite with an equigranular 'sugary' texture. Pale green with a 'greisened' appearance. Minerals present are quartz, sericite and pyrite. Two patches (approximately 20cm thick) of similarly altered coarse grained granite occur at 81.4 and 81.8, at 45° CA.	4026	89.0	90.0	100	1.42	<0.01	<.1	<.01	.02	.03	.01	5.6	<.1	<.1
					4027	90.0	91.0	100	.01	<0.01	<.1	<.01	.01	.07	<.01	4.0	<.1	<.1
					4087	91.0	92.0	100	<.01					.02	<.01	3.4	<.1	<.1
					4088	92.0	93.0	100	2.18					.04	.03	5.9	<.1	1
					4089	93.0	94.0	100	.05					.05	<.01	4.7	<.1	<.1
					4090	94.0	95.0	100	.01					.02	<.01	5.7	<.1	<.1
82.1	101.8	18.4	100	Yellow brown granite. Large sericitic patches intergrown with quartz destroys all original textures. Coarse grained with accessory tourmaline and pyrite. Numerous very thin quartz veinlets. At 83.5, a 10cm thick green and purple fluorite vein with minor brown sericite.	4091	95.0	96.0	100	.01					.04	.01	4.5	<.1	<.1
					4092	96.0	97.0	100	.01					.03	<.01	5.4	.6	<.1
					4093	97.0	98.0	100	.01					.02	<.01	4.9	<.1	1
					4094	98.0	99.0	100	.55					.01	.01	6.0	<.1	<.1
					4095	99.0	100.0	100	.47					.01	.01	10.0	<.1	<.1
				At 85.4, a thin, 1 cm vein of pyrite fluorite.	4096	100.0	101.0	100	.94					.01	.01	6.5	<.1	<.1

HOLE NO. FED 25

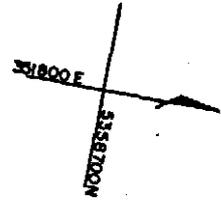
GOLD FIELDS EXPLORATION PTY. LIMITED DIAMOND DRILL HOLE PLOT

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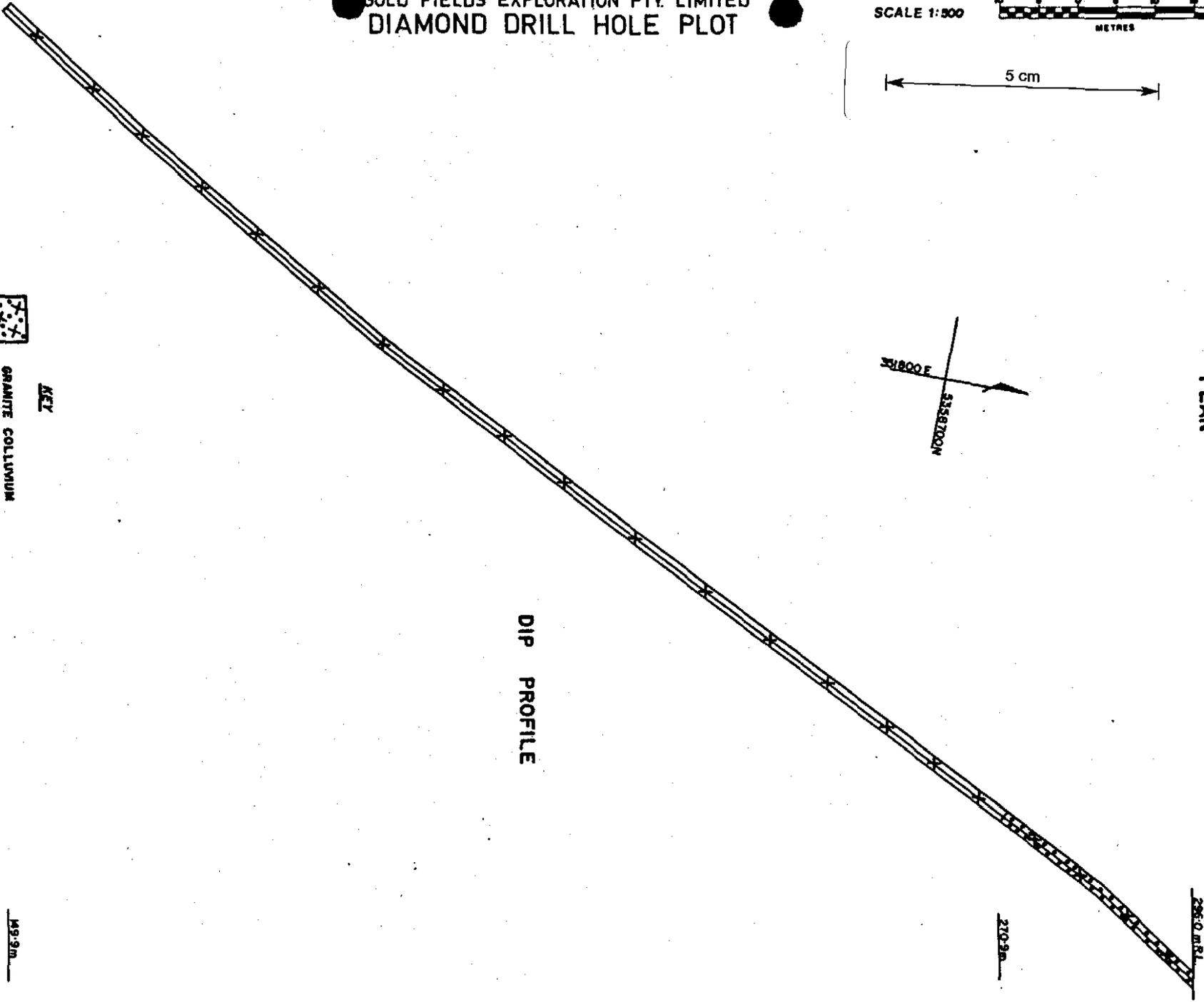
PLAN



527067

5358735 N
331871 E

066



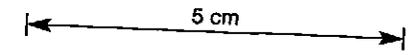
GRANITE COLLUVIUM
 MEDIUM-COARSE GRAINED GRANITE
 FINE GRAINED TOURMALINISED GRANITE
 FINE GRAINED APLITIC GRANITE



ALTERED
(SERICITISED)

NEV

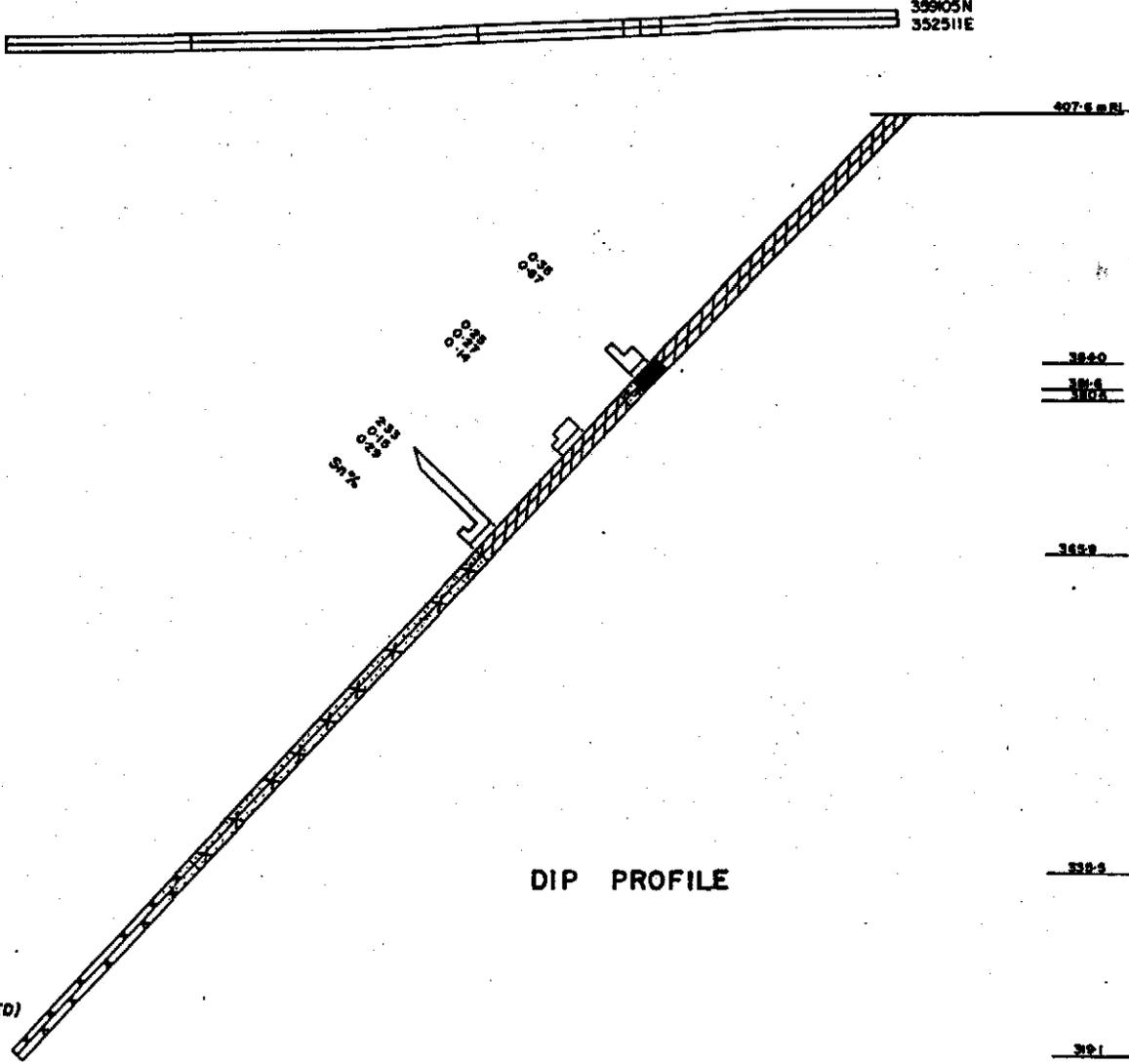
149.9m



PLAN

35949N
35244E

35905N
352511E



307-S.M.B.I.
3640
3635
3630
3625
3620
3615
3610

KEY

-  SULPHIDE BEARING ARGILLISED GRANITE
-  MASSIVE & SEMI-MASSIVE SULPHIDES
-  MEDIUM-COARSE GRAINED GRANITE
-  FINE GRAINED TOURMALINISED GRANITE
-  FINE GRAINED APLITIC GRANITE
-  ALTERED (SERICITISED)

DIP PROFILE

527069

070

527071

GOLD FIELDS EXPLORATION PTY. LIMITED

DRILL CORE LOG AND ASSAY DATA

PROJECT: Federation

HOLE NUMBER: FED 26

Page: 2.

Page:

ULV. PRESS

INTERVAL		RECOVERY		DESCRIPTION	(all wt% except Ag, Bi, & Sb which are ppm) ASSAY DATA												Bi	Sb	F		
From	To	m	%		Sample No	From	To	Rec. %	Sn	SoL Sn	S	As	Cu	Pb	Zn	WO ₃				Fe	Ag
				and sulphides, predominantly pyrite-make up the major phases present. Weakly to unfractured, typical of argillic alteration, overall a relatively soft rock. Granite is yellow-green grey, very pale and primary textures are difficult to discern. Pyrite occurs as fine grained disseminations (alteration product of micas) and as veinlets. Sphalerite and possibly tetrahedrite forms veins - irregular with a quartz gangue and coarse grained disseminations.	3261	4.8	5.8	100	<.01	<0.01	.5	<.1	.01	.14	.97	<.01	3.9	3	<10	50	0.21
					3262	5.8	6.8	100	<.01	<0.01	.2	<.1	.01	.09	.34	<.01	3.7	2	<10	50	0.04
					3263	6.8	7.8	100	<.01	<0.01	.1	<.1	<.01	.11	.23	<.01	2.2	1	<10	40	0.01
					3264	7.8	8.8	100	<.01	<0.01	.1	<.1	<.01	.13	.18	<.01	3.2	1	<10	40	0.01
					3265	8.8	9.8	100	<.01	<0.01	.4	<.1	.01	.14	.22	<.01	4.0	4	20	80	<0.01
					3266	9.8	10.8	100	<.01	<0.01	.3	.4	.01	.04	.38	<.01	12.0	6	40	160	0.01
					3267	10.8	11.8	100	<.01	<0.01	.1	<.1	<.01	.04	.09	<.01	6.2	2	20	70	0.02
					3268	11.8	12.8	100	<.01	<0.01	<.1	<.1	<.01	.01	.04	<.01	3.4	1	10	40	0.01
				At 5.4, a 2mm thick veinlet of quartz - mixed sulphides and accessory fluorite. 0° CA for 40cm.	3269	12.8	13.8	100	<.01	<0.01	.1	<.1	.01	.36	.10	<.01	6.9	7	30	100	0.19
				AT 5.8, a 2cm thick vuggy vein of crystalline dog-tooth quartz + sulphides, at 70° CA.																	
7.9	9.3	1.4	100	Strongly argillised granite, softer more crumbly than above. Texture is vuggy, possibly due to leaching of some clays. Quartz sericitised feldspars, small euhedral pyrite cubes predominate, with rare disseminateions and veinlets of polymetallic sulphides.																	
9.3	13.0	3.7	100	Quartz-sericite altered granite, with abundant yellow-green sericite. No veining, rare sulphides. A yellow-grey rock, with colourless quartz, and pseudomorphed feldspars- dark yellow-green rims, light yellow brown centres and smaller feldspars deep green-yellow. Original texture is gone.																	
				At 9.5, a 5 cm zone of pervasively developed quartz, sericite and pyrite, fine grained.																	
				At 10.5, a 1cm thick, 70° CA massive sphalerite vein.																	
					3270	13.8	14.8	100	.01	<0.01	.6	<.1	.02	.05	.47	<.01	3.6	5	10	60	0.06
13.0	14.5	1.5	100	Argillised, "bleached" pale yellow granite. Rock is now composed of clay and quartz; softer and more fractured than typical argillic alteration.	3271	14.8	15.8	100	.01	<0.01	1.2	<.1	.03	.10	1.36	<.01	6.2	8	<10	100	0.01
					3272	15.8	16.8	100	<.01	<0.01	.5	<.1	<.01	.06	.18	<.01	6.8	3	30	100	0.01
					3273	16.8	17.8	100	.01	<0.01	<.1	<.1	<.01	.04	.13	<.01	1.9	2	30	30	0.01
				At 14.0, a veinlet system 5cm wide, of massive pyrite, and sulphides with minor fluorite. The sulphides are acicular with metallic lustre.	3274	17.8	18.8	100	<.01	<0.01	<.1	<.1	<.01	.02	.05	<.01	2.4	1	10	40	0.01
					3275	18.8	19.8	100	<.01	<0.01	<.1	<.1	<.01	.01	.03	<.01	2.1	2	10	30	0.04
					3276	19.8	20.8	100	<.01	<0.01	.1	<.1	<.01	.02	.04	<.01	1.9	1	<10	40	0.01
					3277	20.8	21.8	100	<.01	<0.01	.4	<.1	<.01	.06	.80	<.01	3.9	1	<10	40	0.02
14.5	22.8	8.3	100	Strongly altered granite, consisting of quartz, sericite and	3278	21.8	22.8	100	.01	<0.01	.2	<.1	<.01	.09	.39	<.01	4.1	2	10	60	0.01

077

527078

GOLD FIELDS EXPLORATION PTY. LIMITED
 DRILL CORE LOG AND ASSAY DATA

PROJECT: Federation

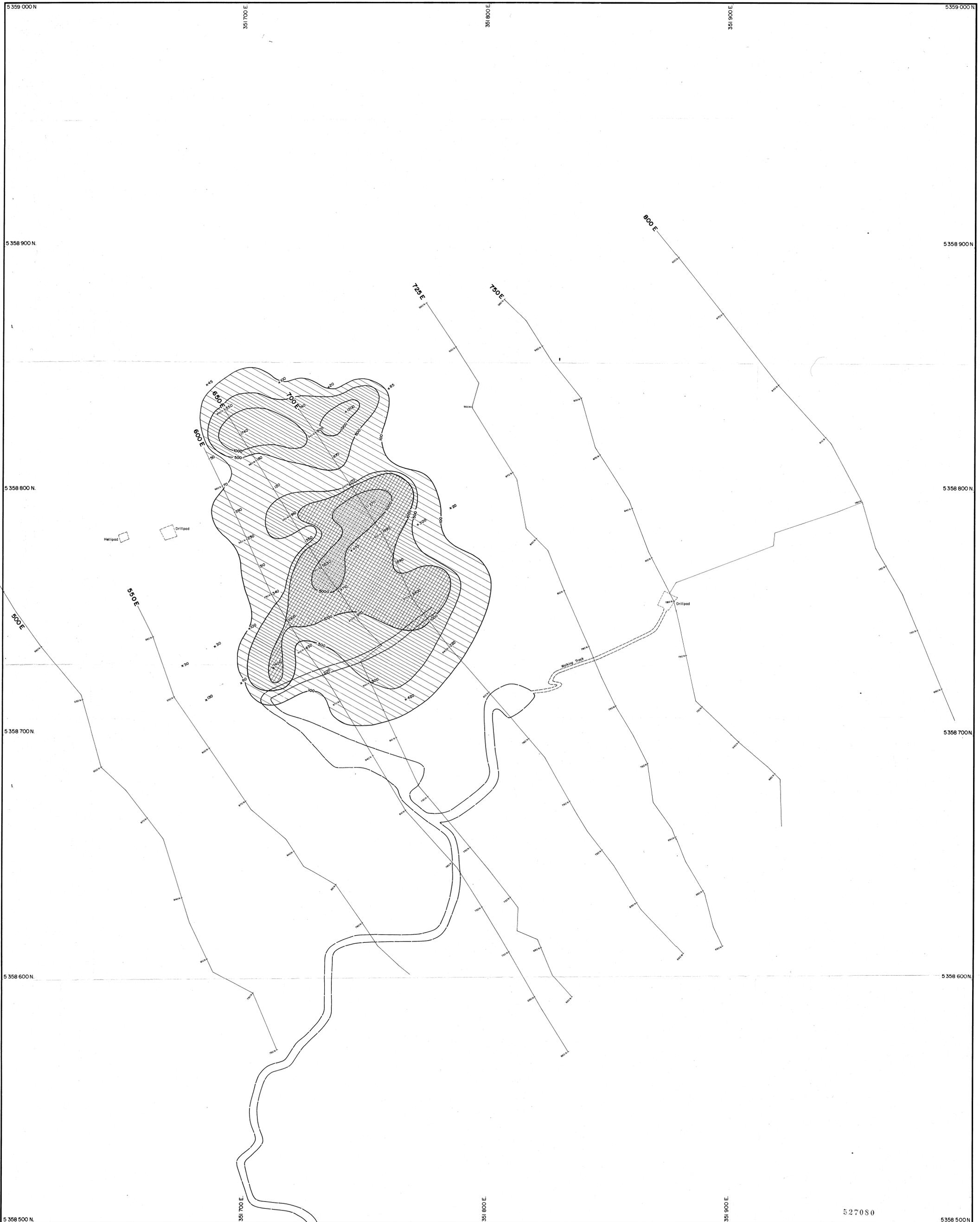
HOLE NUMBER: FED 26

Page: 9.

Page:

INTERVAL		RECOVERY		DESCRIPTION	(all wt%, except Ag, Bi, & Sb which are ppm) ASSAY DATA													
From	To	m	%		Sample No	From	To	Rec. %	Sn	Sn Sol	S	As	Cu	Pb	Zn	WO ₃	Fe	Ag
92.7	94.9	2.2	100	Pale yellow-green granite. Strongly argillised. Disseminated pyrite becomes common, varying from 5 to 25% by volume. Granite texture is still obvious with large yellow clays pseudomorphing feldspar phenocrysts. A few vugs are filled with quartz needles and fluorite. Fractures are rare, the rock is soft. Pyrite is predominantly fine grained with a few coarse grained cubes. At 93.4, a 10cm clay rich (lime green-sericite) zone with minor pyrite.	3329	94.5	95.5	100	.03	<0.01	2.2	<.1	<.01	<.01	.02	<.01	10.2	1
					3330	95.5	96.5	100	<.01	<0.01	.8	<.1	<.01	<.01	.03	<.01	9.5	1
					3331	96.5	97.5	100	.01	<0.01	4.4	<.1	<.01	<.01	.04	<.01	19.4	2
					3332	97.5	98.5	100	.20	<0.01	6.2	<.1	<.01	.01	.14	<.01	10.4	2
					3333	98.5	99.5	100	.04	<0.01	5.7	<.1	<.01	<.01	.02	<.01	20.9	2
					3334	99.5	100.5	100	<.01	<0.01	1.5	<.1	<.01	<.01	.02	<.01	11.6	2
94.9	95.9	1.0	100	Quartz sericite altered granite. Well developed intergrowths of sericite and quartz, yellow-green in colour. Quartz (secondary) is pervasive and large blotches of sericitic clays represent feldspars. Mica pseudomorphs are absent. Accessory tourmaline occurs. Weakly fractured.														
95.9	97.8	1.9	100	Green argillised granite. A moderate content of sulphide- mainly pyrite exists (approximately 5-10% vol.) Green sericite-chlorite is abundant, quartz is very minor. Weakly fractured, moderately and unveined. A few brown hematitic stained clays occur. At 97.4, a 10cm pale coloured clay seam with sand sized rock fragments occur.														
				97.8-122.8 WEAKLY ALTERED, TOURMALINISED, FINE GRAINED GRANITE.														
97.8	101.6	3.8	100	Greenishgrey granite. Fine grained and pyritic (10-20% by volume). Moderately fractured and crumbly in places (a 30cm zone at 98.3). Pale green sericite is abundant with minor red-brown hematite. Veinlets of pyrite quartz and tourmaline (all at 45°CA) are common, as are patches of quartz tourmaline intergrowths. After 99.3, pyrite-becomes uncommon.														
101.6	122.8	21.2	100	Pale greenish-yellow-brown granite. Fine grained and equigranular - producing a sugary texture. Weakly altered to unaltered and unfractured. A few feldspars are replaced by pale brown sericite.														

B1	Sb	F
20	30	0.04
20	50	0.01
40	70	0.01
30	70	0.02
40	60	0.02
20	40	0.01



5 359 000 N
5 358 900 N
5 358 800 N
5 358 700 N
5 358 600 N
5 358 500 N

5359 000 N
5358 900 N
5358 800 N
5358 700 N
5358 600 N
5358 500 N

351 700 E
351 800 E
351 900 E

500 E
550 E
600 E
650 E
700 E
725 E
750 E
800 E

- Geochemistry Data**
- < 100p.p.m.
 - 100-500p.p.m.
 - 500-1000p.p.m.
 - 1000-5000p.p.m. > 5000p.p.m.

527080

5358 500 N

GOLD FIELDS EXPLORATION PTY LIMITED

AGNEW GRID 001

ANOMALY I

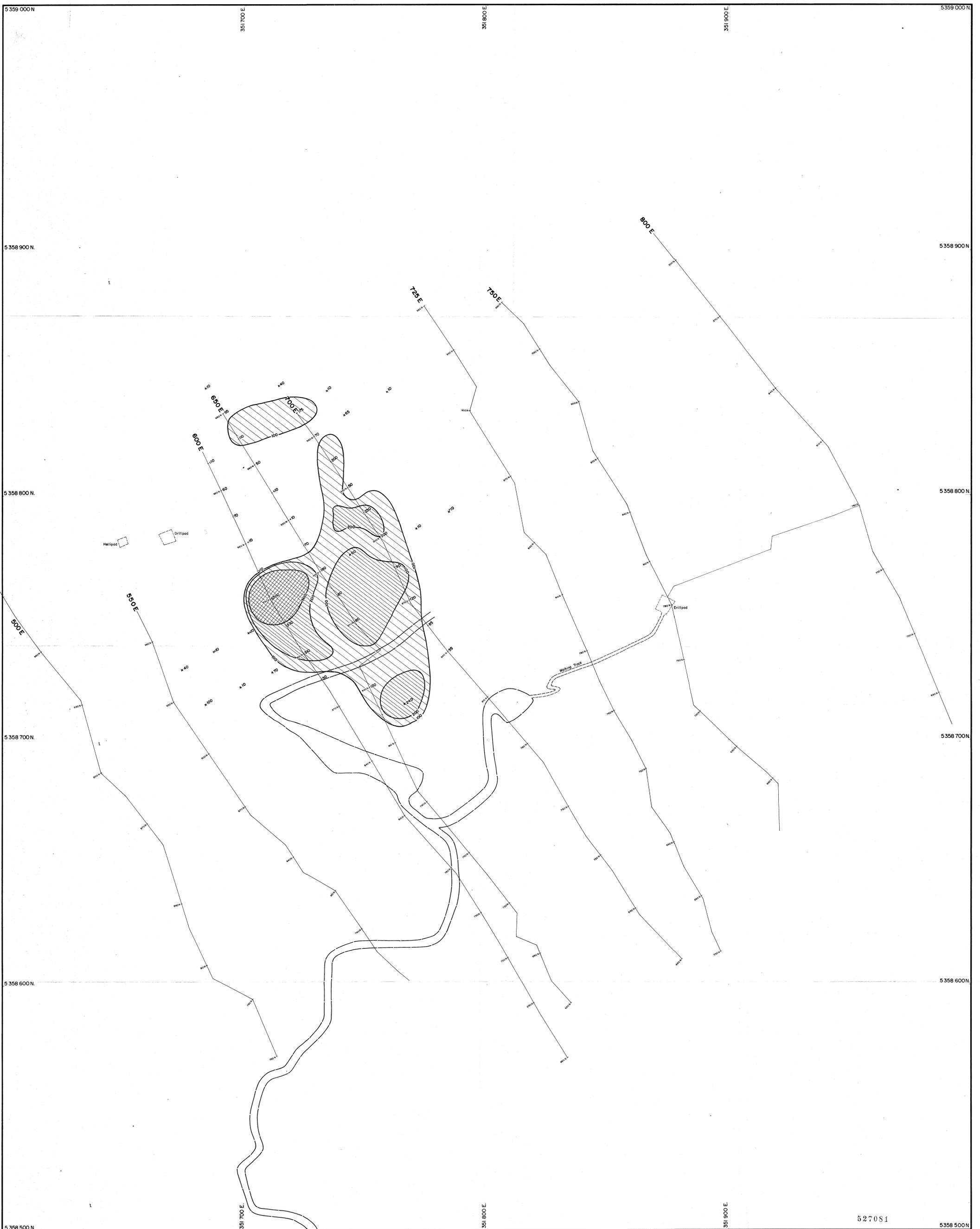
Sn GEOCHEMISTRY

(POWER AUGER)

SCALE 1:500

DRAWN BY D.J.K.	FILE NO
DRAFTSMAN S.J.F.	FIG 3
DATE May, 83	
REVISIONS A.J.C.	

5 cm



5 359 000 N
5 358 900 N
5 358 800 N
5 358 700 N
5 358 600 N
5 358 500 N

5 359 000 N
5 358 900 N
5 358 800 N
5 358 700 N
5 358 600 N
5 358 500 N

351 700 E
351 800 E
351 900 E

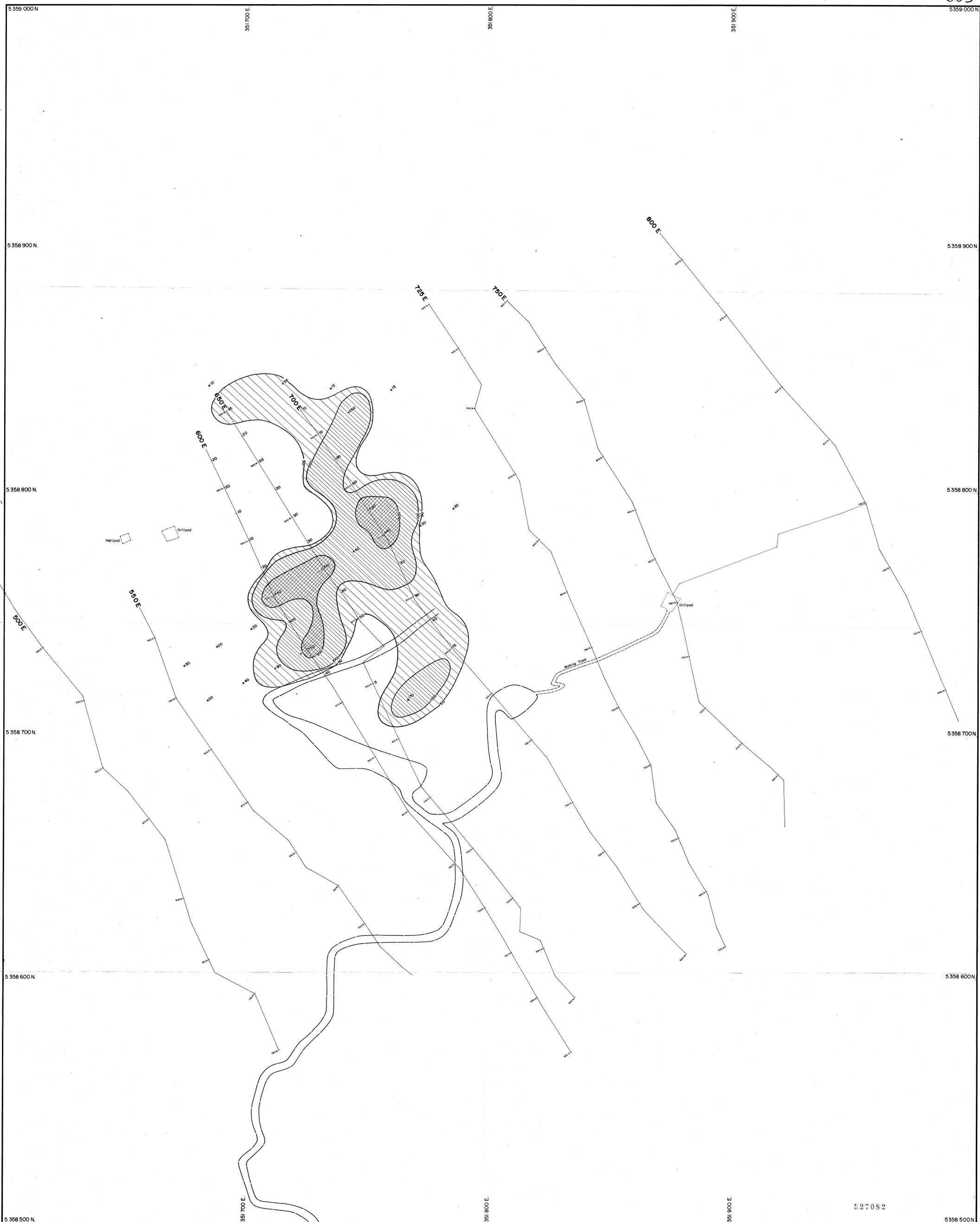
600 E
650 E
700 E
725 E
750 E
800 E

- Geochemistry Data**
- < 100 p.p.m.
 - 100-200 p.p.m.
 - 200-500 p.p.m.
 - > 500 p.p.m.

527081

5358 500 N

GOLD FIELDS EXPLORATION PTY LIMITED	
AGNEW GRID	002
ANOMALY I	
Cu GEOCHEMISTRY	
(POWER AUGER)	
SCALE 1:500	
DRAWN BY D.J.K. DRAFTSMAN S.J.F. DATE May-83 REVISIONS A.J.C.	FILE NO. FIG4



Geochemistry Data

[White Box]	< 50 p.p.m.
[Diagonal Lines]	50 - 100 p.p.m.
[Cross-hatch]	100 - 300 p.p.m.
[Stippled]	> 300 p.p.m.

GOLD FIELDS EXPLORATION PTY. LIMITED

AGNEW GRID 003

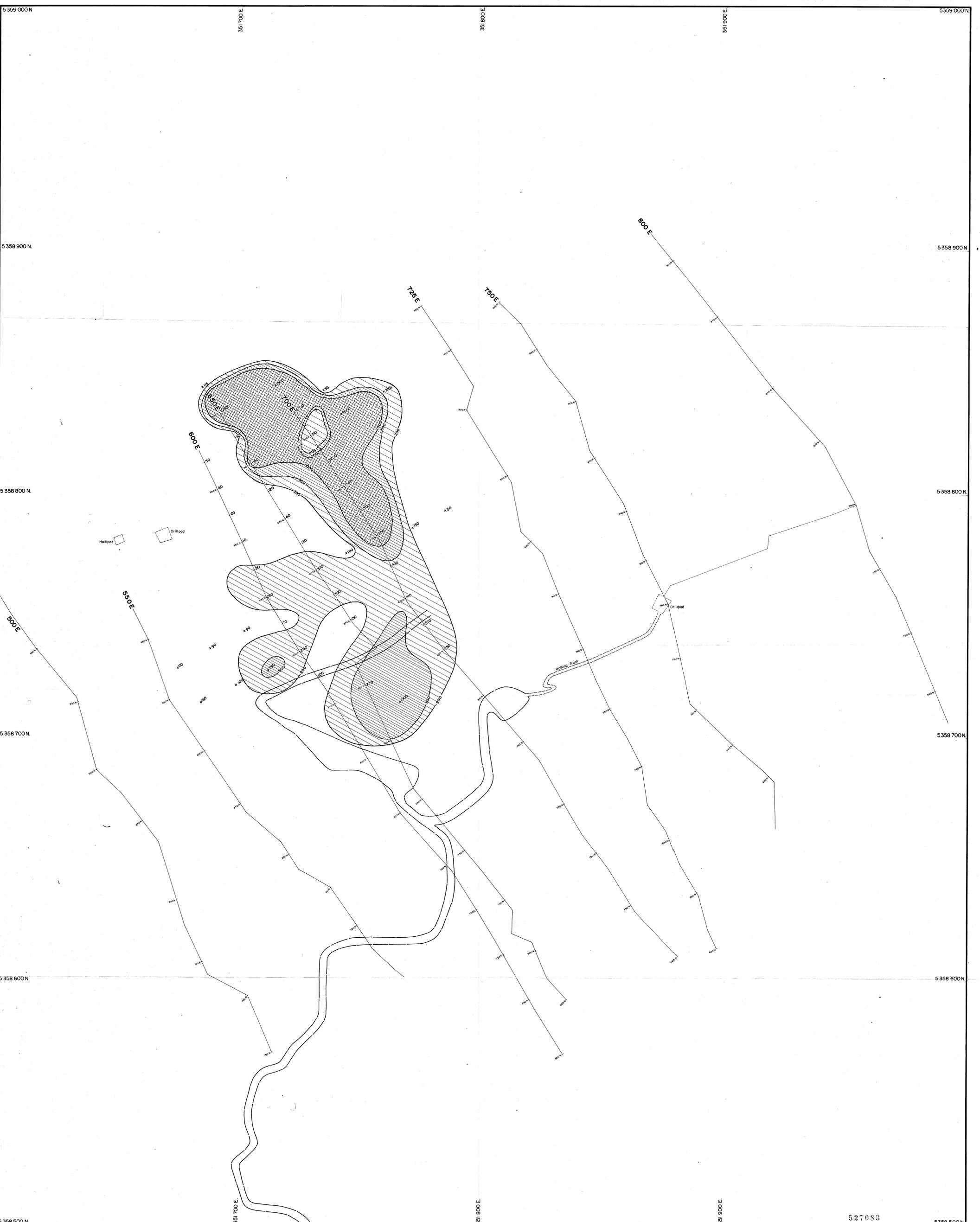
ANOMALY I
Pb GEOCHEMISTRY
(POWER AUGER)

SCALE 1:500

5 270 82

DRAWN BY	D.J.K.
DRAFTSMAN	S.J.F.
DATE	May 83
REVISIONS	A.J.C.
FILE NO.	

FIG 5



- Geochemistry Data**
-  < 200 p.p.m.
 -  200-500 p.p.m.
 -  500-1000 p.p.m.
 -  > 1000 p.p.m.

527083

5358 500N

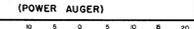
GOLD FIELDS EXPLORATION PTY. LIMITED

AGNEW GRID 004

ANOMALY I

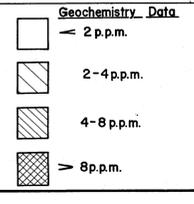
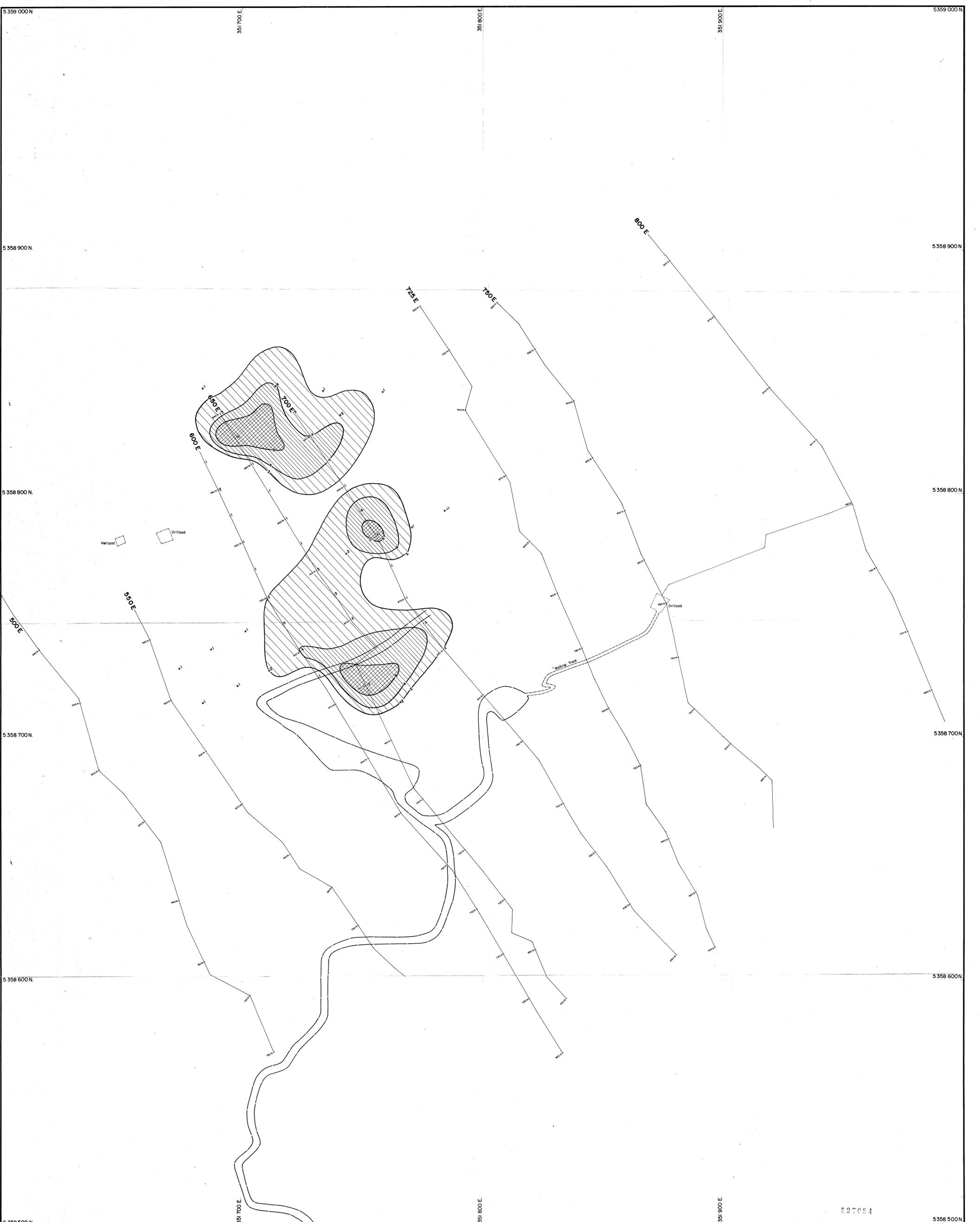
Zn GEOCHEMISTRY

(POWER AUGER)

SCALE 1:500  METRES

DRAWN BY D.J.K.
DRAFTSMAN S.J.F.
DATE May 83
REVISIONS A.J.C.
FILE NO.
FIG 6

5 cm

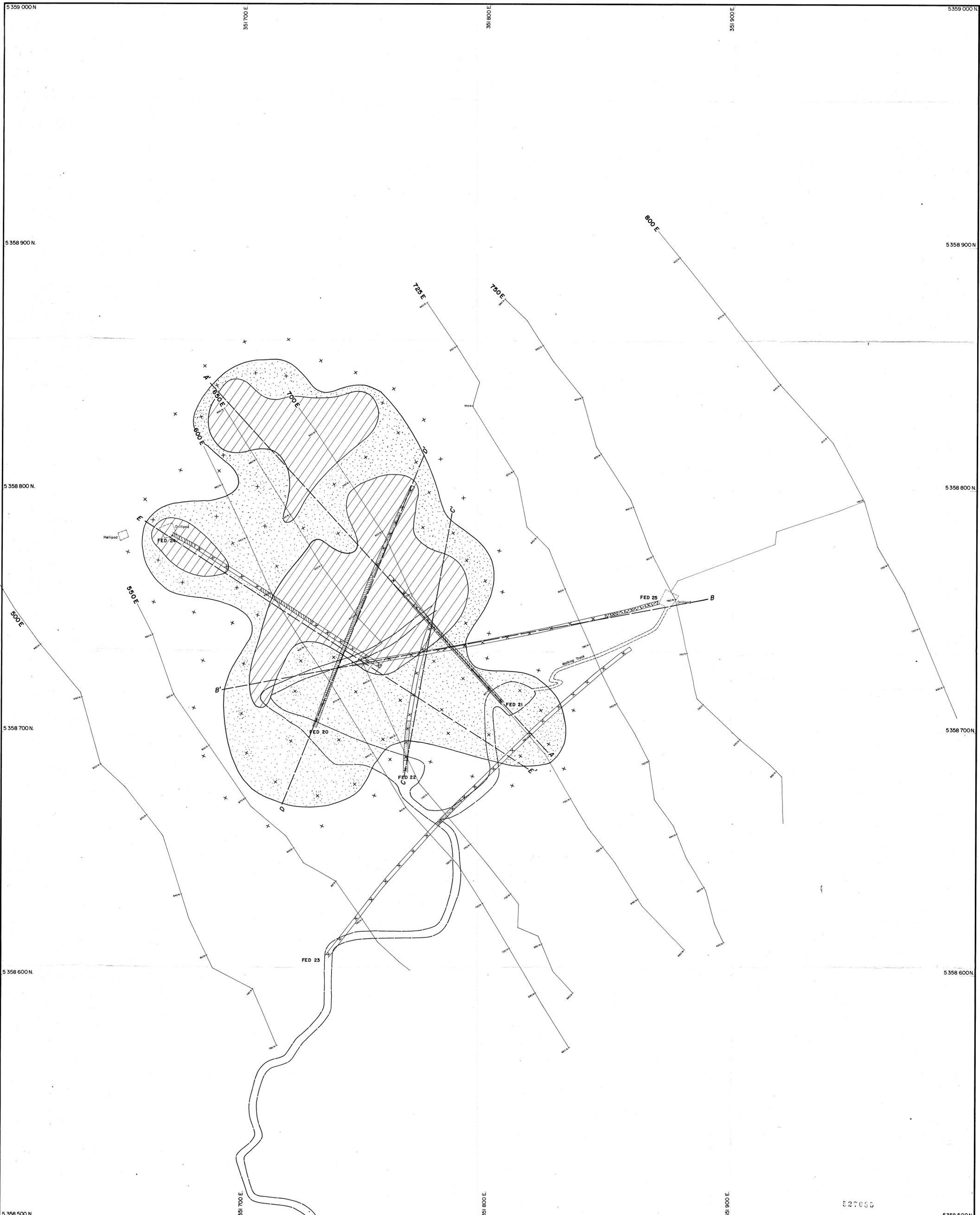


527084

5358 500N

GOLD FIELDS EXPLORATION PTY LIMITED	
AGNEW GRID 005	DRAWN BY D.J.K.
ANOMALY I	DRAFTSMAN S.J.F.
Ag GEOCHEMISTRY	DATE May 83
(POWER AUGER)	REVISIONS A.J.C.
SCALE 1:500	FILE NO.
	FIG 7

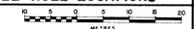
5cm



027055

A'----- CROSS-SECTION LINES

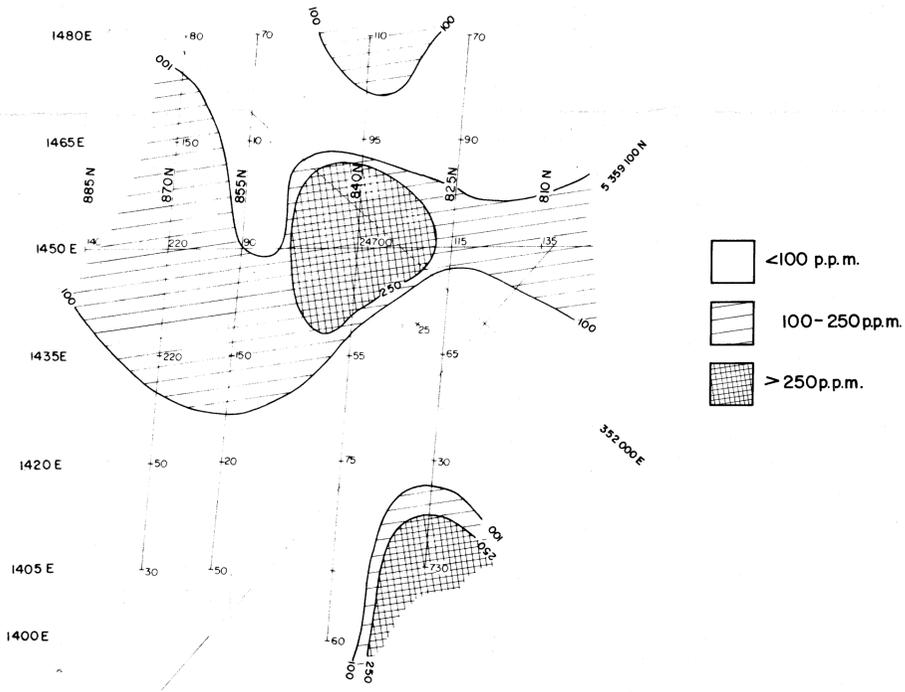
- Legend**
-  SULPHIDE BEARING ARGILLISED GRANITE
 -  MEDIUM-COARSE GRAINED GRANITE
 -  GRANITE COLLUVIUM
 -  ALTERED (SERICITISED)

GOLD FIELDS EXPLORATION PTY LIMITED	
AGNEW GRID	
ANOMALY I	
INTERPRETIVE GEOLOGY	
&	
DRILL HOLE LOCATIONS	
SCALE 1:500	FILE NO.
	FIG 8

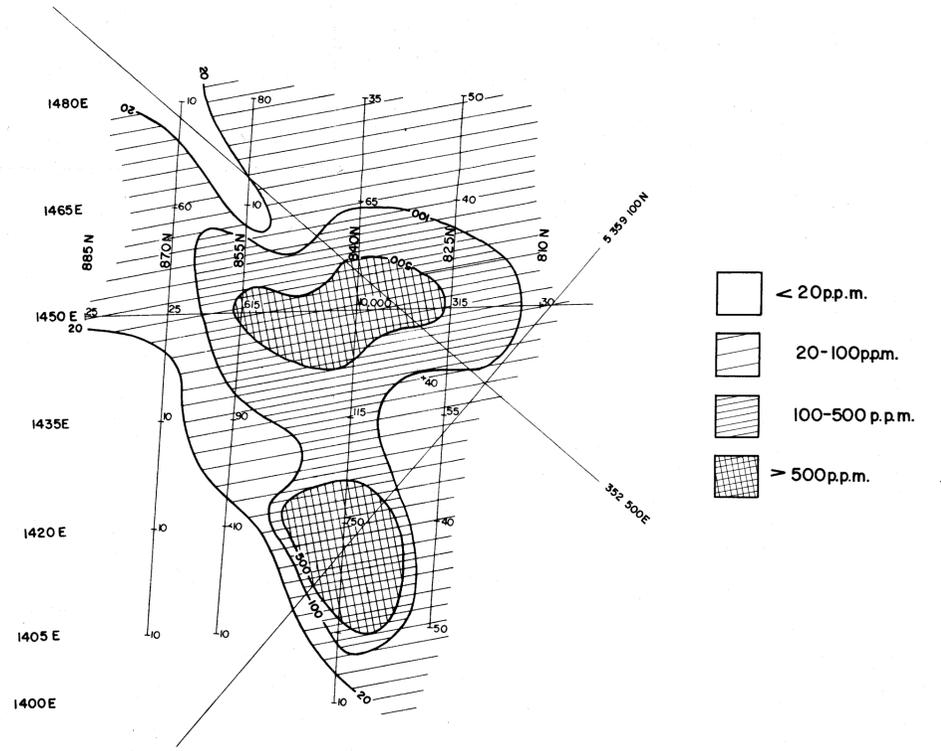
006
 DRAWN BY D.J.K.
 DRAFTSMAN S.J.F.
 DATE MAY, 1983
 REVISIONS A.J.C.
 FILE NO.

5 cm

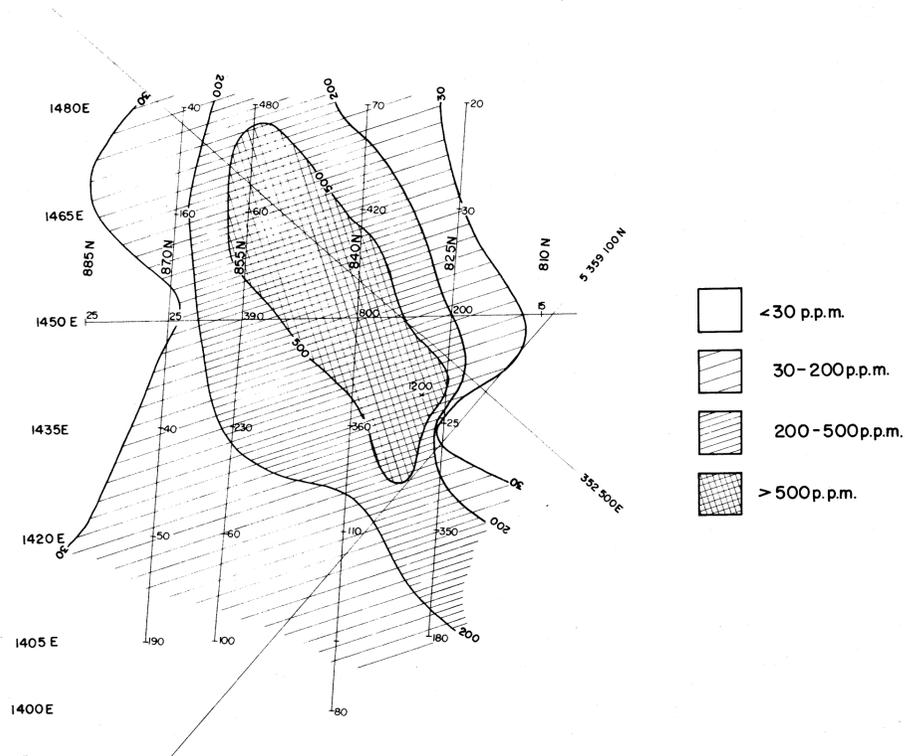
Zn GEOCHEMISTRY
(POWER AUGER)



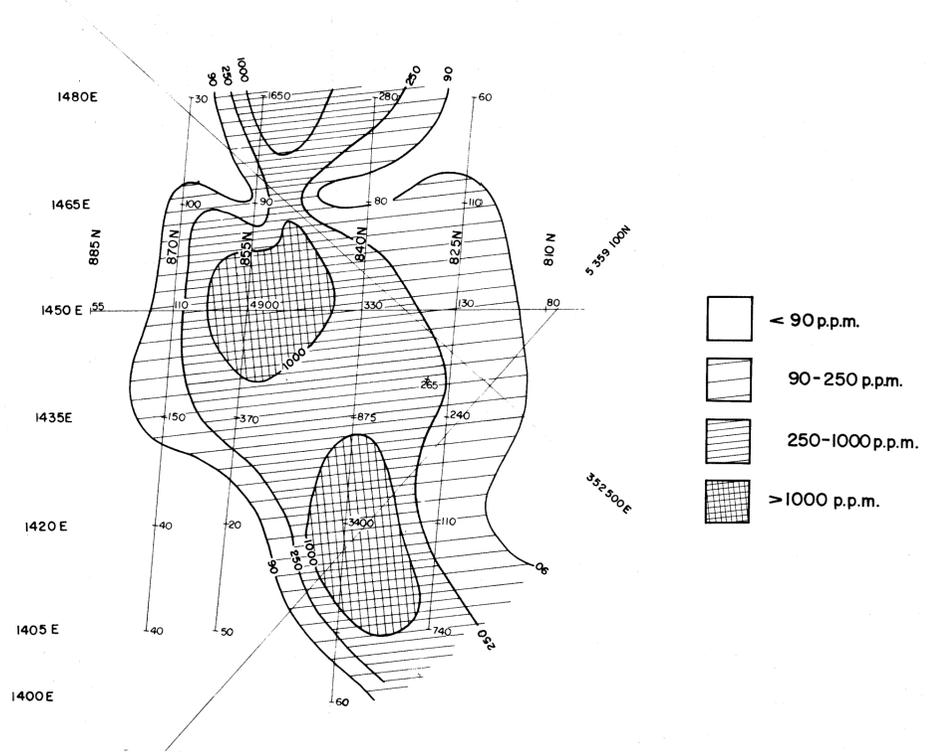
Cu GEOCHEMISTRY
(POWER AUGER)



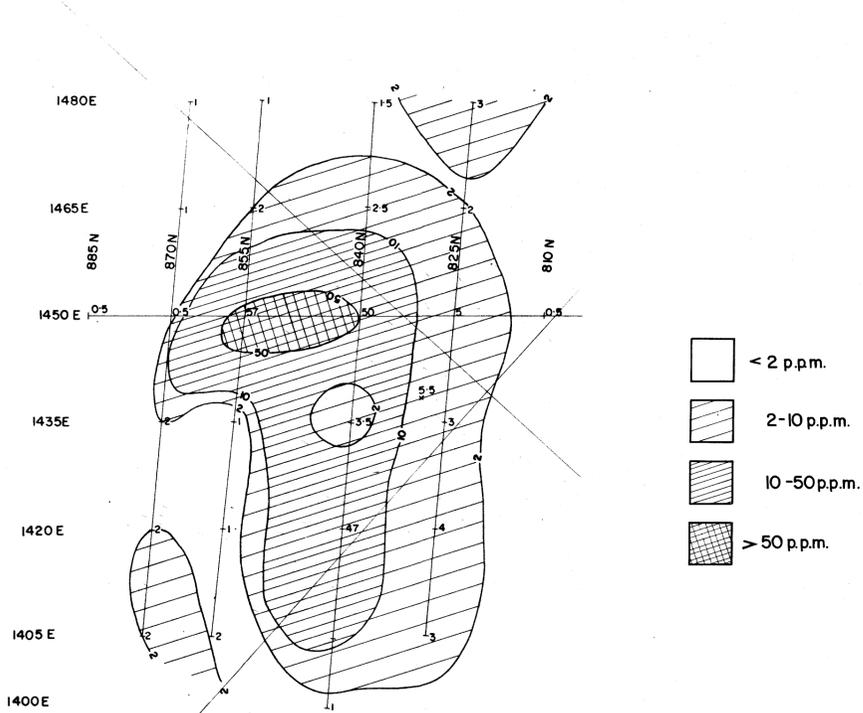
Sn GEOCHEMISTRY
(POWER AUGER)



Pb GEOCHEMISTRY
(POWER AUGER)



Ag GEOCHEMISTRY
(POWER AUGER)

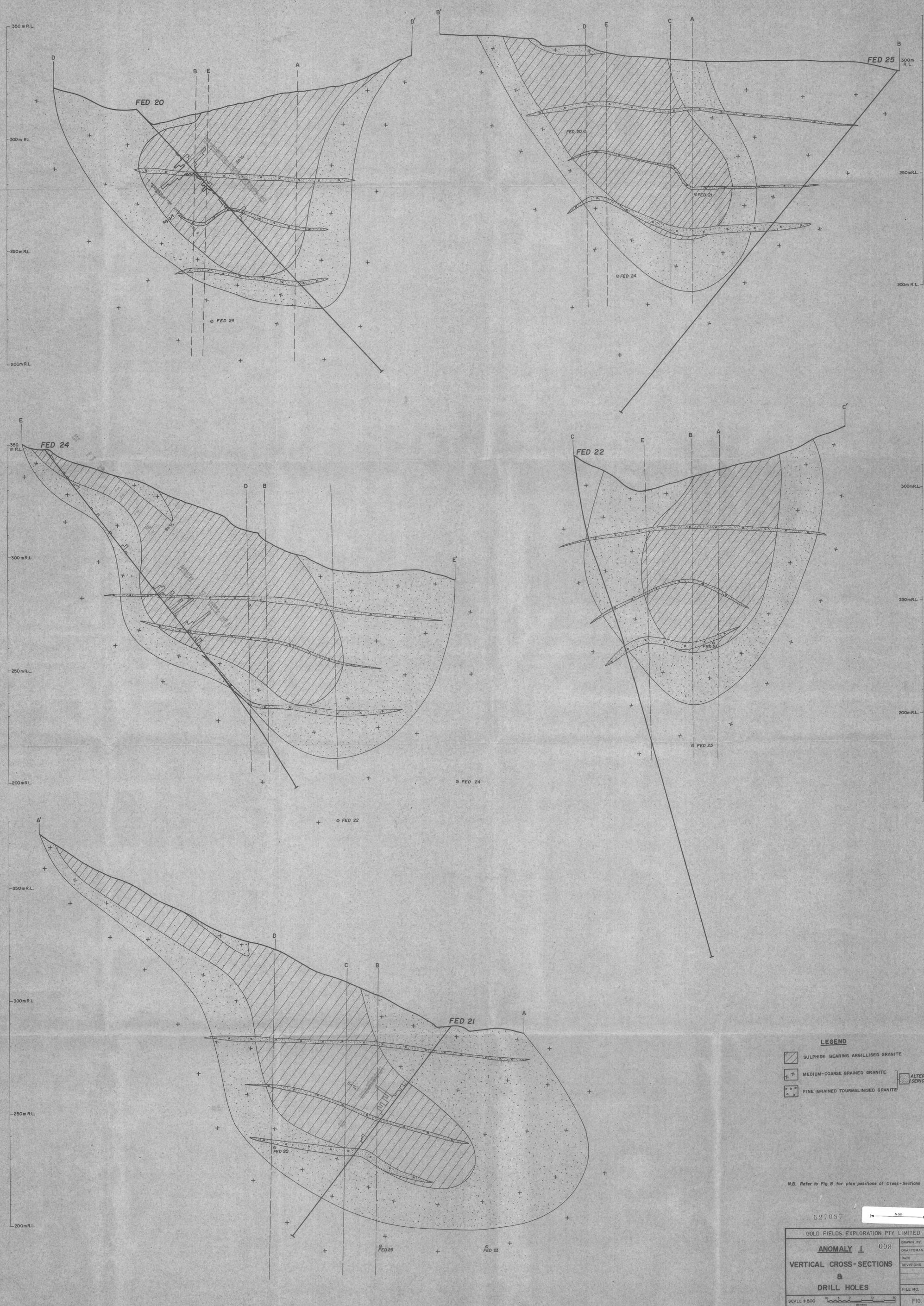


TD II	TD I2	TD I3
TE II	TE I2	TE I3
TF II	TF I2	TF I3

527086

5 cm

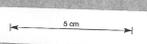
GOLD FIELDS EXPLORATION PTY. LIMITED	
AGNEW GRID	DRAWN BY : D.J.K.
ANOMALY I	DRAFTSMAN: S.J.F.
007	DATE : JULY, 83
Sn,Cu,Pb, Zn & Ag	REVISIONS : A.J.C.
Bedrock Geochemistry	FILE NO.
SCALE 1:500	FIG. 9



LEGEND

-  SULPHIDE BEARING ARGILLISED GRANITE
-  MEDIUM-COARSE GRAINED GRANITE
-  FINE GRAINED TOURMALINISED GRANITE
-  ALTERED/SERICITISED

N.B. Refer to Fig. 8 for plan positions of Cross-Sections

327087 

GOLD FIELDS EXPLORATION PTY LIMITED	
ANOMALY 1	008
VERTICAL CROSS-SECTIONS	
&	
DRILL HOLES	
SCALE 1:500	FIG 12
DRAWN BY: A.C.	FILE NO.
DRAFTSMAN: S.F.	
DATE: JUN 1992	
REVISIONS:	



527088

RENISON LIMITED

SWEENEY'S MINE 009

PROPOSED WINKIE - STYLE DIAMOND DRILLING & INTERPRETATIVE GEOLOGY

GEOLOGIST: S. J. COOPER
 DRAUGHTSMAN: F. A. COOPER
 DATE: July 78

SCALE 1:500 METRES

FIG. 16

BOUNDARIES

DEFINITE: ——— (0.25 mm)

APPROXIMATE: - - - - - (0.25 mm)

INFERRED: ······ (0.25 mm)

ALTERATION

DEFINITE: ——— (0.25 mm)

APPROXIMATE: - - - - - (0.25 mm)

INFERRED: ······ (0.25 mm)

NOTE: A.E. = No Exposure

ALTERATION

Argillic alteration

Quartz / topaz

Sulphides

Tourmaline nodules

ROCK TYPES

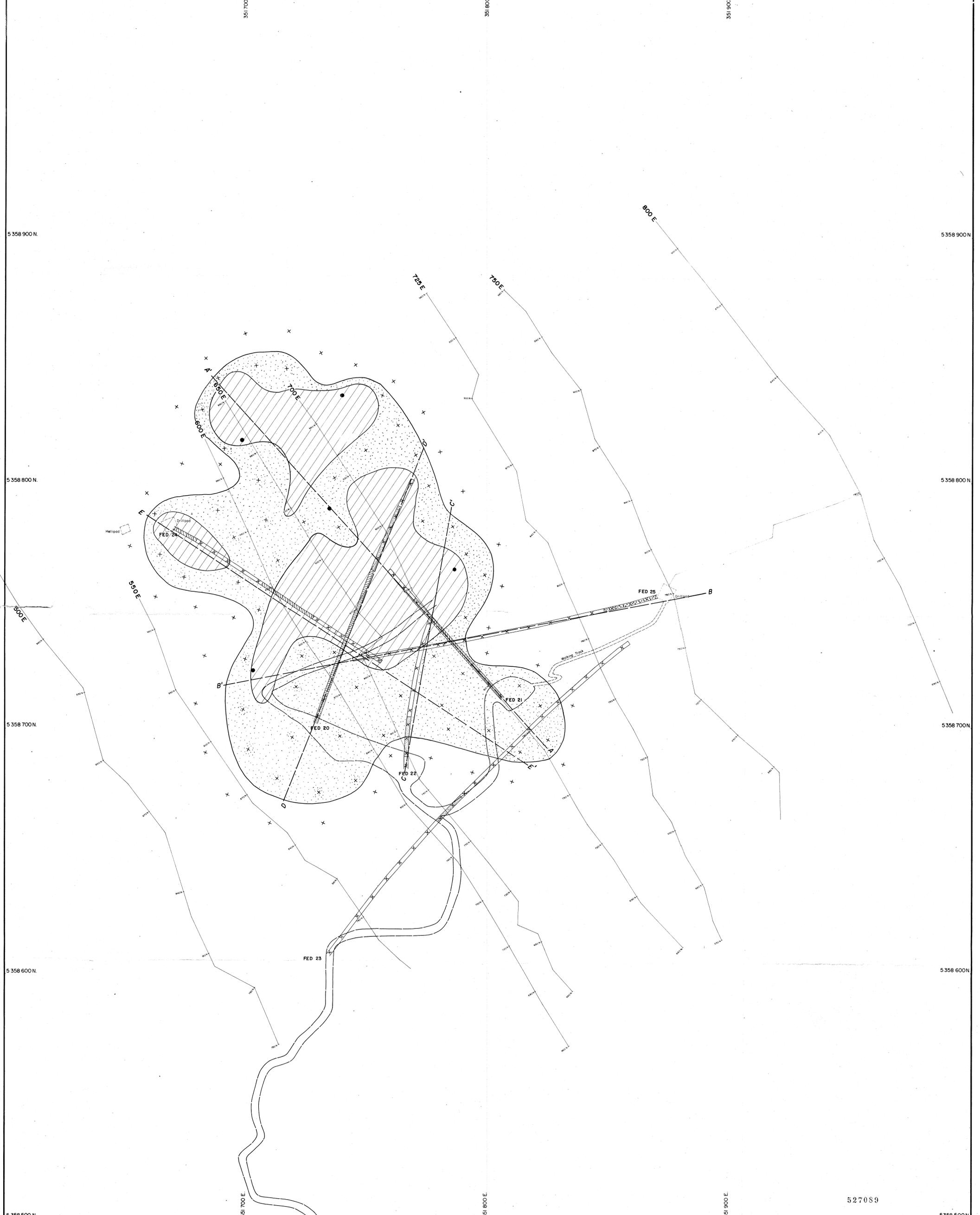
XX Fine grained 'white' granite

□ Coarse grained 'red' granite

Major streams (approximate)

● PROPOSED VERTICAL DRILL HOLE

NOTE: Hole depths are anticipated to be between 25 & 60m. The proposed holes south & east of the workings are designed to test possible buried extensions of the tabular mineralisation shallowly.



NOTE: Hole depths are anticipated to be between 25 & 50m.
 The flat-lying mineralisation is thought to be significantly thinner than the Sweenys' tabular body, consequently the proposed holes are more widely spaced.

A'----- CROSS-SECTION LINES

- Legend**
- SULPHIDE BEARING ARGILLISED GRANITE
 - MEDIUM-COARSE GRAINED GRANITE
 - GRANITE COLLUVIUM
 - ALTERED (SERICITISED)
 - PROPOSED VERTICAL DRILL HOLE

GOLD FIELDS EXPLORATION PTY LIMITED	
AGNEW GRID 010	
ANOMALY I	
PROPOSED "WINKIE-STYLE"	
DIAMOND DRILLING &	
INTERPRETATIVE GEOLOGY	
SCALE 1:500	FIG. 17

5cm