

Q78163

362001

78

LYELL E.Z. EXPLORATIONS

Queenstown

Report on

**ANOMALY 20/6**

MIS FILED

59-280

1/2

Anomaly 20/6

L.E.E. May 59

Report No. G92

AMG REFERENCE POINTS ADDED

May '59

362001

W

000

362002

28th April,

9

To: Mr. G.F. Hudspeth.

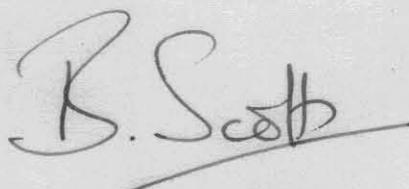
Anomaly 20/6

The accompanying reports describe the geological and geophysical setting of airborne anomaly 20/6. There was no geochemical soil sampling carried out over the grid owing to the contamination of the soil by the copper sulphate in the porous pots used in the self potential survey.

The airborne response has been confirmed and the ground evidence is that the anomaly is due to thin selvages of graphite within the carbonaceous shales which occur in the grid area.

Conclusions

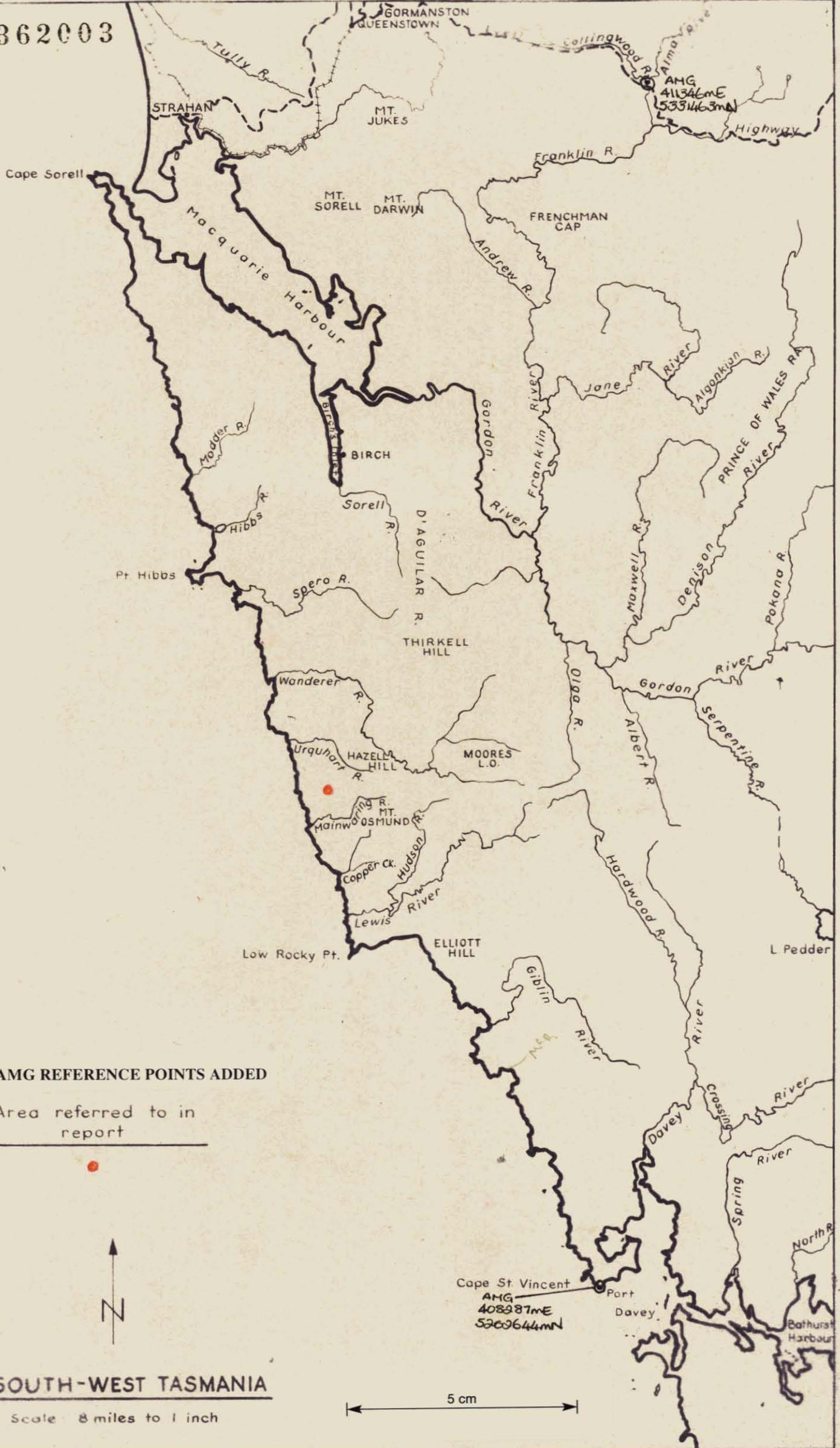
No further work is warranted on this anomaly.



Chief Geologist, L.E.E.

001

362003



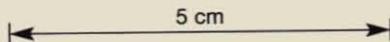
AMG REFERENCE POINTS ADDED

Area referred to in report



SOUTH-WEST TASMANIA

Scale 8 miles to 1 inch



I. GEOLOGY SECTION - ANOMALY 20/6

1. Dates of Investigation: 30th November to 4th February.

2. Man days in the Field:

<u>Personnel:</u>	Geologists:	B. Scott
		M. Audley-Charles
	Geophysicists:	B.M.R. Party
	Bushmen:	R. Martin & Party

3. Location: The northern end of anomaly 20/6 is located in the headwaters of Cypress Creek, some 17 miles south of Birch. It is within photograph 23/923/113, approximately 400 feet on photo-bearing 315° from its principal point.

4. Topography

The topography consists of the ridge and valley type, the features conforming to variations in the hardness of the country rock and parallelling the regional strike of 160° (magnetic). The well drained ridges, which are 25 to 75 feet above the valleys, carry tall straight timber (swamp gum, myrtle and sassafras) up to 150 feet high with little or no undergrowth. In contrast the intervening valleys are swampy with a stunted, dense growth of manuka, honeysuckle and bauera up to 30 feet in height.

5. Geology

A. Lithology

Within the grid the country rock consists of an interbedded chert and black shales with a general strike of 160°, dip vertical or steeply to the west. This band forms part of a belt of such rocks which is up to 1500 feet wide which in a broader province is within the shales/greywackes/tuffs/basic lava series of the Dundas Group placed between the Osmund Syncline to the east and the coast to the west.

The chert is typically a tough fine-grained rock which is black/grey in colour. It contains occasional blebs of pyrite, particularly at the section exposed in the waterfall at grid location 28S/1W (see Table 1). The black shales are thinly laminated and contain 2½ to 3½% pyrite with 1 to 2% total carbon. They are calcareous, with about 6% carbonate content, expressed as calcium carbonate.

B. Structure

In this area of Dundas Group all bedding dips, with one noted

003

exception, are either vertical or steeply to the west. The exception dips steeply to the east, but the strata associated with this observation have been demonstrated to be upside down. Using this interpretation and the results of the regional mapping, the sediments in the anomaly area are on the west limb of an anticline which is overturned to the east (i.e. fold axes dips to the west). Strike faulting is prominent in the area which has caused some brecciation of the chert bands and the formation of thin films or bands of graphite within the black shales (less than 1/16" thick).

### C. Mineralisation

As has already been mentioned, the observed sulphide mineralisation consists of finely disseminated pyrite in the black shales and occasional blebs of the same sulphide in the chert. It is interesting to note that the pyrite in the shale is very fine grained and it is not visible in the hand specimen. It is considered that these sulphides were laid down at the same time as the sediments (syngenetic) and that they do not represent mineralisation of economic interest.

TABLE I

Analyses of Chert & Black Shale from Anomaly 20/6

	Location	Cu	Fe	S	Total Carbon	CO <sub>2</sub>	Pyrite	CaCO <sub>3</sub>
Chert	Waterfall at 4GS/1W (3 samples)	0.09%	21.07	21.63	-	3.0	40.31	6.9
Black Shale	(a) Traverse 38S, 180' - 320' W (4 samples)	0.02	1.35	1.21	1.00	-	2.24	-
	(b) Base line - 5S to 4GS (9 samples)	-	1.49	2.24	1.83	2.7	3.24	6.1

20th March,

9

A.E.M. Anomaly 20/6

This strong electrical linear - best line, 550: 1.2 degrees low frequency phase shift at 500' in a ratio of 1.56 with the high frequency - was the object of an intensive ground investigation.

The Bureau of Mineral Resources covered two miles of strike length at 400' intervals with electromagnetic (Slingram), self-potential and magnetic surveys. In addition, several and quite extensive checks were made of the electromagnetic axes with the Afmag unit of the McPhar party.

All this work merely served to confirm and define a major non-magnetic conducting horizon, albeit resolved into several parallel and/or en echelon components. No mineralisation, apart from traces of pyrite, was evident; indeed, it was known early that the horizon was graphitic, and subsequent trenching definitely correlated black carbonaceous zones with the individual electrical axes. Further elaboration of the geophysical expression, therefore, was considered unrealistic; and, accordingly, subsequent gravimetric checking was kept to a minimum.

Six gravimeter traverses, in two groups of three, were run over judicious sections of the electrical horizons. Results showed a density consistency in the bed-rock environment that was not disturbed by the varying positions of the conductor indications from traverse to traverse. Thus, correlations at stations 4W/32S and at 1W/68S between positive gravity anomaly and em. are incidental to the transgression of conductor horizons across gravitational strikes. For example, the gravity expression at 4W/32S

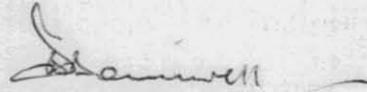
005

362007

- 2 -

is seen to persist across lines 64S - 72S inclusive with almost exact duplication of magnitude and relative position, but divorced from the electrical axes.

Two implications are clear: one, the gravity survey has confirmed the cause of conduction as being due to carbonaceous stringers in a sheared shale series; two, the economic import of the air-borne anomaly is nil.



J.B. BONIWELL

515  
LYELL - E.Z. - EXPLORATIONS

362008

691

Q78

28th April,

1959

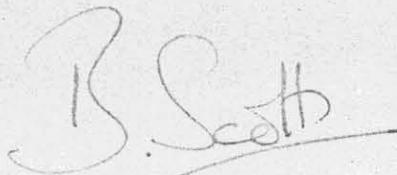
To: Mr. G.F. Hudspeth.

Anomaly 20/4

The accompanying report describes the geological and geophysical setting of airborne anomaly 20/4.

The geological report is incomplete owing to the resignation of one of the field geologists during January; for the same reason no soil samples were collected.

The airborne anomaly, itself a weak response, was not relocated on the ground and no further work is justified in the area.



Chief Geologist, L.E.E.

I. GEOLOGY SECTION - ANOMALY 20/4

1. Dates of Investigation: 31st January to 19th February.
2. Man days in the field:

Personnel: Geophysics: B.M.R. party  
Bushmen: R. Martin & party
3. Location: Anomaly 20/4 is located approximately 16 miles south of Birch, in the headwaters of Cypress Creek. It is within photograph 22/923/123, approximately 1 mile photo SW of its principal part.

4. Topography

The topography is a northerly continuation of that seen in the Anomaly 20/6 area. It shows the same ridge and valley configuration, these features conforming to variations in the hardness of the country rock and parallelling the regional strike of  $160^{\circ}$  (magnetic). The well drained ridges carry tall straight timber (swamp gum, myrtle and sassafras) with little or no undergrowth. In contrast the intervening shallow valleys are swampy with a stunted, dense growth of manuka, honeysuckle and bauera.

5. Geology

The geology of the grid was not mapped in any detail at all but from reconnaissance work the geology appears to be similar, if not identical, with that of 20/6. Anomaly 20/4 occurs about 1 mile north of 20/6 and in a direct strike continuation of the associated chert/black shale association found at the latter locality.

Mineralisation

Apart from reports of syngenetic pyrite within the black shales, no other sulphide mineralisation has been established.

20th March,

9

A.E.M. Anomaly 20/4

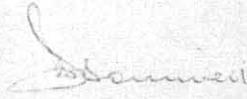
The airborne expression is not only weak, broad and lacking in character, but is extremely vague in its disposition across four flight lines. At only one point - line 554, fiducial 1080 - is there any high frequency correlation with the low frequency response, and this is not exact, poor in character, and of a very low order (ratio .38). As the low frequency recording is far less stable, that is, it is far more likely to record anomalies induced by air turbulence, the very lack of high frequency correlation elsewhere immediately reduced these low frequency expressions to insignificance.

The anomaly occurs entirely within the Dundas Group, and within a wide belt of aeromagnetic activity which, although intense, merely reflects, in a regional sense, the presence of an ultra-basic basement rock. As the geology presumes nothing of interest, and as it has been seen that the electrical anomaly itself has nothing to commend it, it is difficult to see any reason for the ground follow-up.

In view of the above unrealities, it is not surprising, therefore, that the ground electromagnetic (Slingram) results did not disclose a conductor, in fact, they are completely featureless. Some magnetic activity occurs in the East of the grid area; but while it remains unsupported by other evidence, it is of no immediate import, as it could be identified readily with some local expression of the ultra-basic intrusion.

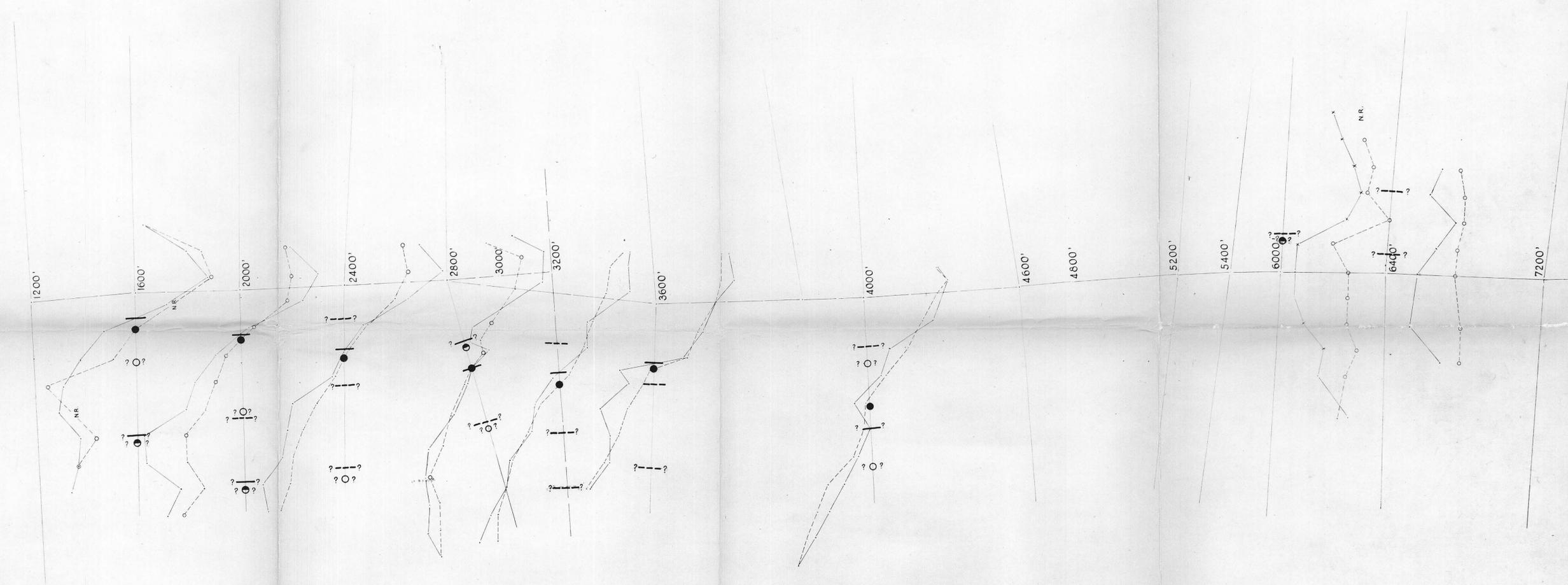
018

The actual field work was performed by the Bureau of Mineral Resources in February, 1959. The results, therefore, will be presented separately.



J.B. BONIWELL

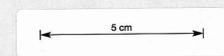




Conductor axis established ●  
 Location of conductor axis uncertain ○  
 Possible conductor axis ?○?

High —  
 Low ?—?  
 ?—?

References  
 140 cps. —  
 480 cps. —  
 Low reliability of Reading.....○



362013  
59-280

LYELL E.Z. EXPLORATIONS  
 QUEENSTOWN  
**ANOMALY 20/6 CYPRESS CK.**

Survey		Scale	
Geology		Hor. 200 ft. to 1 inch	S5 Sheet No. 12
Geophysics	D.B. Sutherland	Vert. 20° to 1 inch	
Geochemistry			Checked by J.R.G. Date 27.6.59 014
Drawn	D.B. Sutherland		
Traced	J.R.G.		

AFMAG