

979 No 17

370001

GEOLOGY OF AIRBORNE  
GEOPHYSICAL ANOMALY  
23/2  
Wort Hill

59-272

MICROFILMED

Anomaly 23/2  
165 - 4/5/59

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# LYELL - E.Z. - EXPLORATIONS

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4th May,

195<sup>9</sup>

To: Mr. G.F. Hudspeth

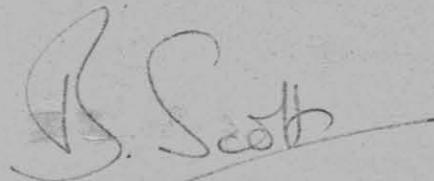
Anomaly 23/2

The accompanying reports describe the geological and geophysical setting of airborne anomaly 23/2.

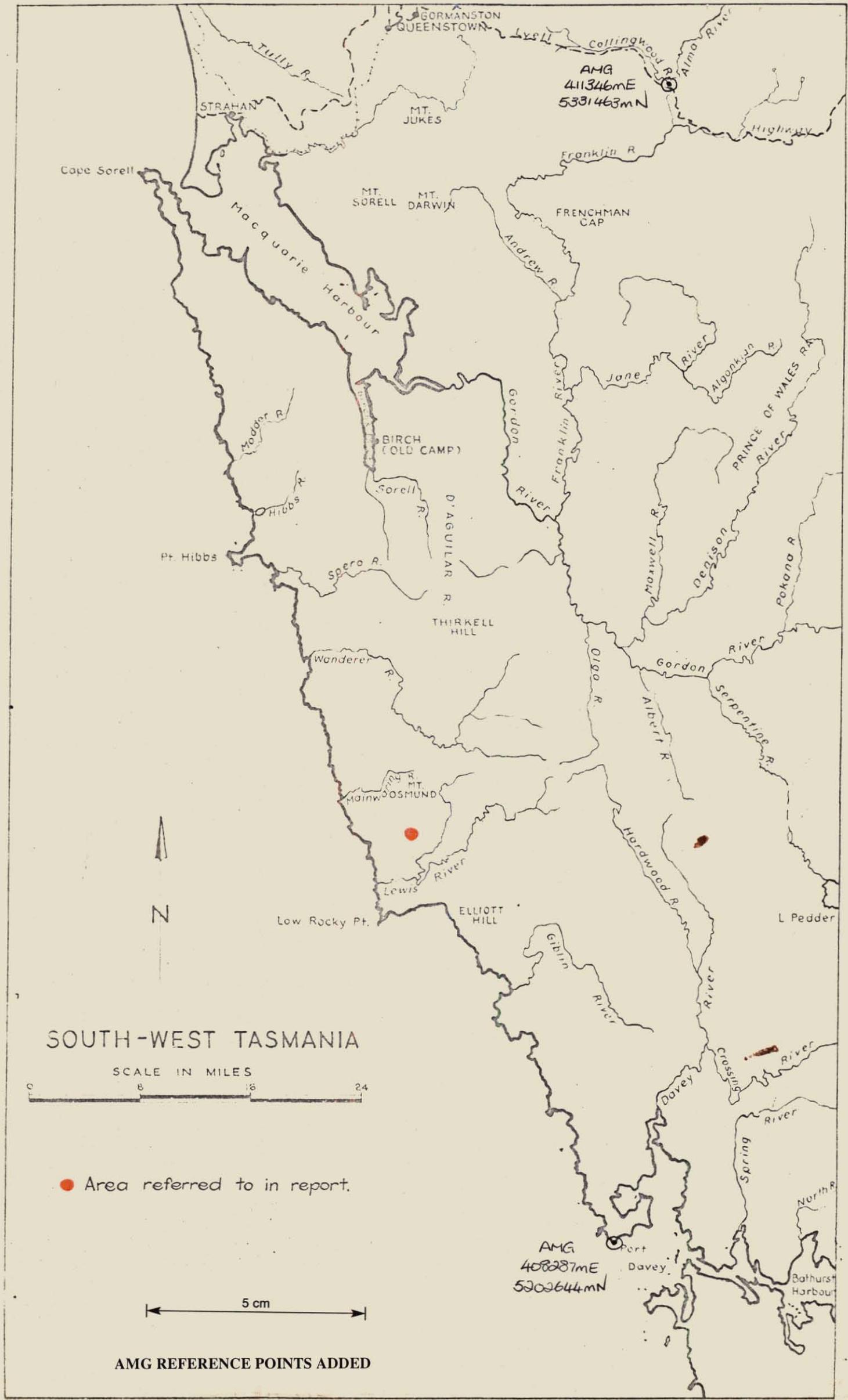
The response has been relocated on the ground in sheared carbonaceous shales which contain up to 4% pyrite. This noted sulphide mineralisation is of no economic consequence and the absence of a gravimetric or geochemical expression eliminates the possibility that larger concentrations exist at depth.

Conclusion

No further work is warranted on this anomaly.



Chief Geologist, L.E.E.

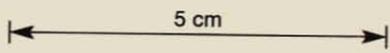


### SOUTH-WEST TASMANIA

SCALE IN MILES



● Area referred to in report.



AMG REFERENCE POINTS ADDED

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I. GEOLOGY OF AIRBORNE GEOPHYSICAL ANOMALY 23/2, WART HILL

1. Dates of Investigation: 13.3.59 to 19.3.59

2. Man Days in the Field: 26

Personnel:

Geologist:	I.M. Paltridge
Geophysicist:	I.M. Sefton
Bushmen:	T.N. Burrell
	D. Scott
	R.J. Bennett

3. Location: Anomaly 23/2 is situated immediately south east of Wart Hill on the extreme south of the Osmund Syncline (Plate P25R), about 24 mile south of Birch. The anomaly is covered by light to moderate bush part of which had been burnt out. The anomaly is covered by air-photo 24A/923/37.

4. Topography:  
The area is one of mild relief at about 300 feet above sea level. Erosion has proceeded to a late stage of development with meandering streams and low lying marshes.

5. GEOLOGY

Lithology

Two rock types outcrop in the area as shown on plate Q24/1. On the western margin of the grid, hard, slightly micaceous metaquartzites with prominent quartz porphyroblasts are found whilst on the remainder of the grid, cleaved, black pyritic mudstones comparable with those found on 20/5 are exposed. Both these rock types have been referred to the Dundas Group of Cambrian age. The latter rock is the host for the small amount of mineralisation found there and is younger than the metaquartzite. A prominent structural feature of both lithologies is the cleavage which dips steeply (60°-80°) to the west.

There is reason to believe that the mudstones and quartzites are conformably related and consequently the mudstones are of no great depth here and thin southwards.

Structure

The axis of the Osmund Syncline is crossed on the eastern end of line 24 and the structure has been mapped in the mudstones. On the western side, the steep contact between metaquartzite and mudstone appears to be a west

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dipping reverse fault, although this fault does not seem to be a major regional structure; in particular it is, if part of the Lyell Shear, merely a branch of it.

This contact is the only indication of faulting seen on the anomaly.

Mineralisation

Trenching on EM indications disclosed prominent pyrite nodules up to 1" diameter on lines 16 and 20. On line 24 a considerable amount of pyrite (10%) confined to a thin bed about  $\frac{3}{8}$ " thick was found. This pyrite, which appears to be epigenetic, was deposited in elliptical blebs parallel to the cleavage in the sediment. Thus there appear to be two controls of mineralisation; cleavage and lithology. Since the EM indications suggest that the conductivity of the material increases to the south, it is likely that further detailed geological mapping south of the present grid will disclose more massive pyrite than that found to date.

On assaying samples from line 24, the following results were obtained:

Cu 0.04%, Fe 2.28%, Au Trace, Ag 0.045 g/ton.

Conclusions

1. The anomaly is situated on pyritic black mudstones, some of which are favourable hosts of pyritic mineralisation, on the western limb of a major syncline.
2. Mineralisation consists of syngenetic pyrite which is disseminated throughout, and epigenetic pyrite in certain bands. The latter mineralisation is controlled by lithology and structure.
3. Since the assay shows no important copper and the host rock of mineralisation becomes thinner southwards, it is unlikely that mineralisation of economic significance will be found south of the existing grid.

*J. Michael Partridge*

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II. GEOCHEMICAL INVESTIGATION 23/2

Samples

Soil samples 1340 to 1390, lot 18, were collected from this anomaly.

Comments

No concentrations of base metals were found in these samples.

*J. Michael Ralbridge*

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23rd April,

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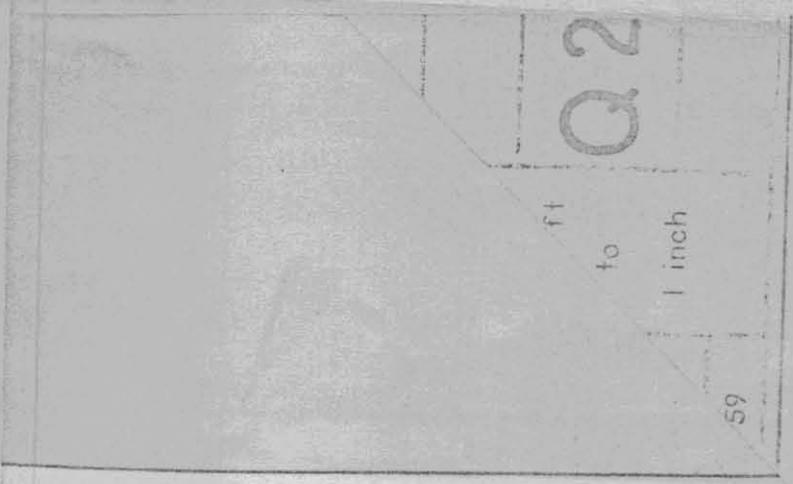
A.E.M. Anomaly 23/2

This is distinctively a one-line anomaly of high order - line 534: 1.8 degrees low frequency response at 430' in a ratio of 0.70 with the high. It occurs, in the regional sense, in Ordovician Owen near its faulted western contact with the Cambrian Dundas Group, and perhaps, therefore, in close proximity to the Lyell Shear.

A major ground conductor, generally dipping grid East at about 60 degrees (although the indicated dip on line 16N is near-vertical, possibly steeply West) and of large dip extent, was traced for 800'. Pertinent field strengths and conductivities increase concurrently to the South under a thinning overburden, from about 50'-20'. The width of the conducting zone appears appreciable and may be as much as 200' in the North.

A structural interpretation based on data derived from gravimetric profiling places the conductor along a shear axis, fairly well recognised by virtue of inferred bedding strikes transgressive to the axial bearing. A more marked density contrast to the West allows the further interpretation of a parallel structure dipping steeply West. This leads to the possibility of step-faulting across the grid area with the West side being successively upthrown. No plunge is apparent.

Some emphasis has been given to the structural setting, as black mudstones, weakly pyritised and apparently of the Dundas Group, have been found to underly most of the grid area. No Owen appears. Pyritisation intensifies, to the extent of 4%, in the vicinity of the conductor to the



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South, but the possibility that larger concentrations exist at depth or immediately South of line 16N is belied by the gravimetric expression which, even in the optimum, allows little increase over that observed.

The magnetics are featureless; they, at least, do not indicate any diversification in the mineralisation. However, any geochemical encouragement, particularly on line 16N, should be traced further South, but unless indications markedly improve, no further geophysics are warranted.

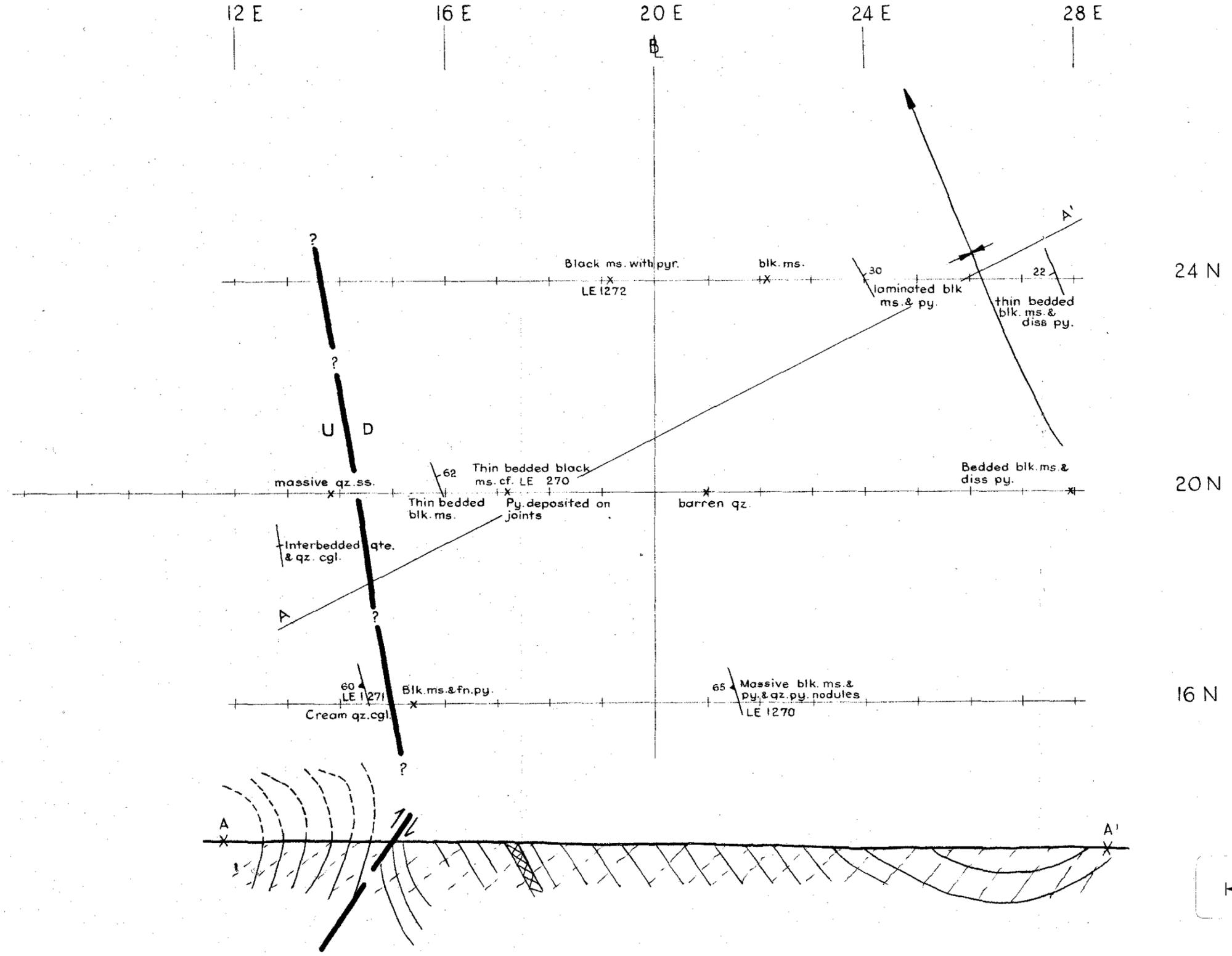
*J. B. Boniwell*

J.B. BONIWELL

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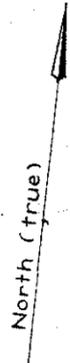
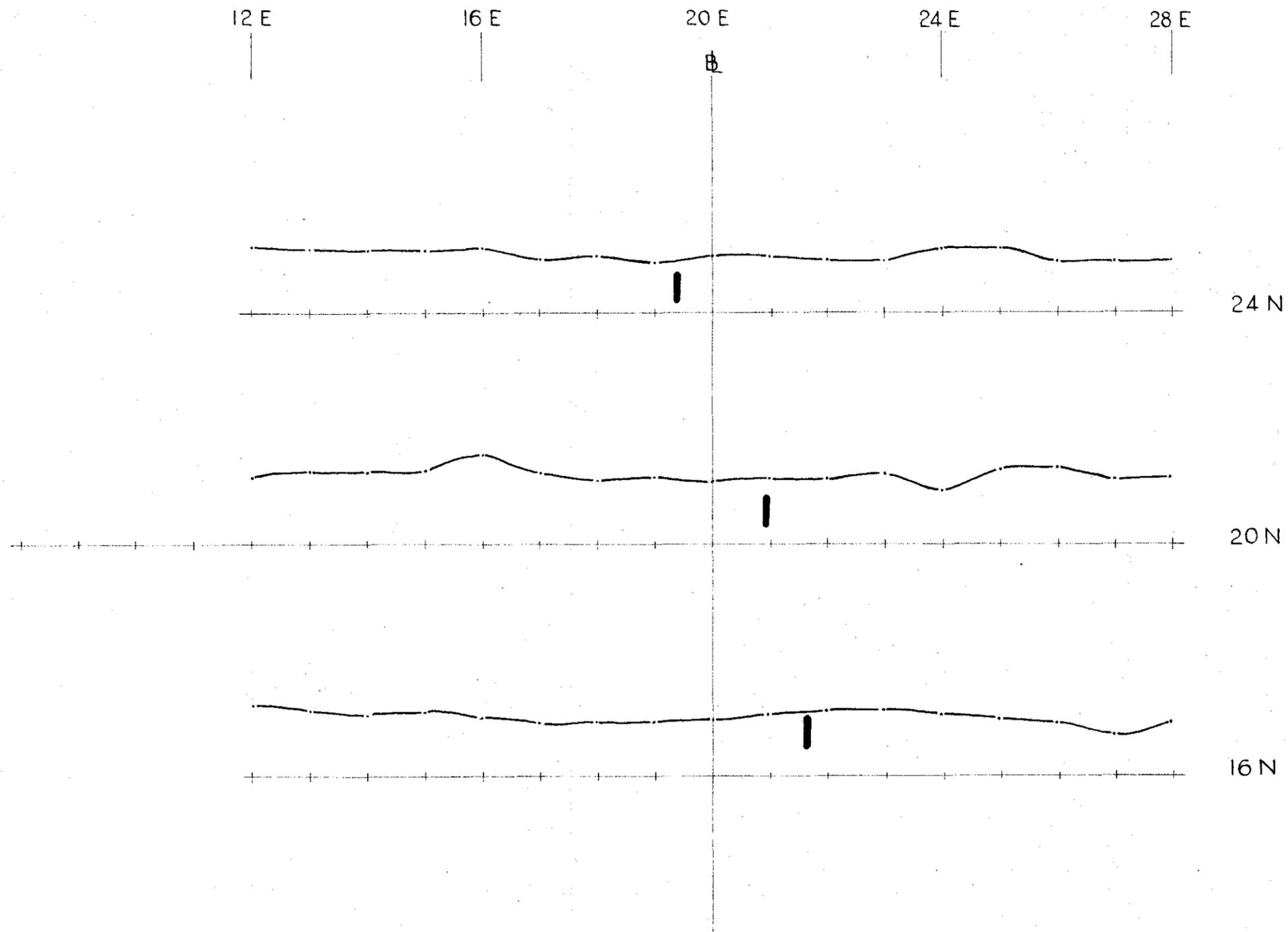
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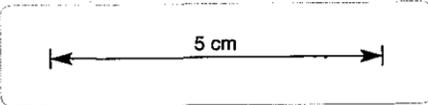


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References	LYELL E.Z. EXPLORATIONS			
	QUEENSTOWN			
<b>ANOMALY 23/2</b>				
370009				
Survey	D.H.W.	Apr.'59	Scale 200 ft. to 1 inch	
Geology	I.M.P.	Apr.'59		
Geophysics				
Geochemistry				
Drawn	I.M.P.	Apr.'59	Checked by: <i>[Signature]</i> Date: 13. 7. 59	
Traced	D.S.	Apr.'59		
<b>GEOLOGY</b>			Sheet No. <b>Q 24</b>	
			Sheet No. <b>1</b>	
			2285	



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References

LYELL E Z EXPLORATIONS  
QUEENSTOWN

ANOMALY 23/2

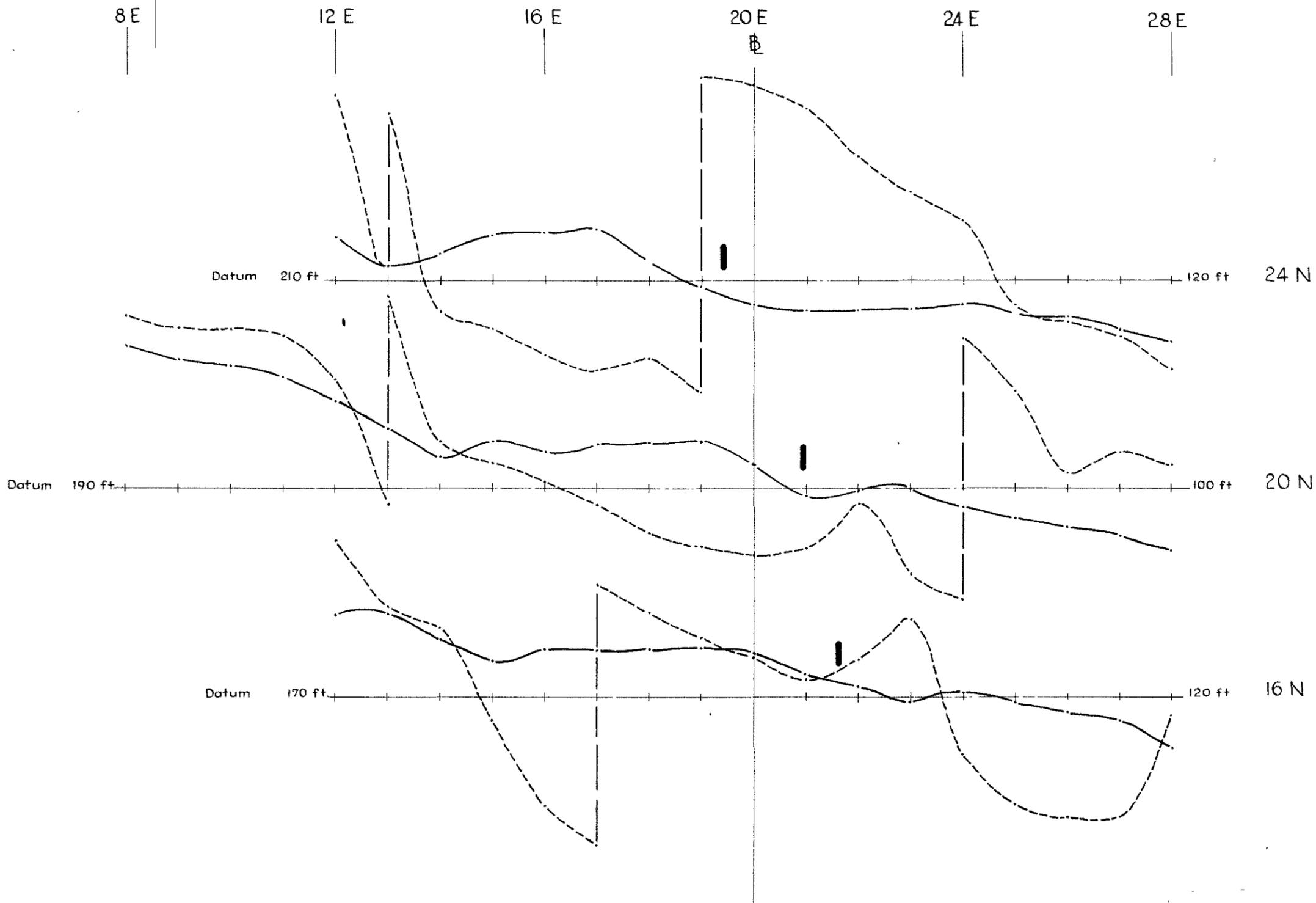
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Survey			Scale
Geology			Hor. 200 ft. to 1 inch
Geophysics	I.M.S., I.M.P.	Mar. '59	Vert. 100 ft. to 1 inch
Geochemistry			
Drawn	I.M.P.	Mar. '59	
Traced	J.R.G.	Apr. '59	

Q24 Sheet No. 3

MAGNETIC

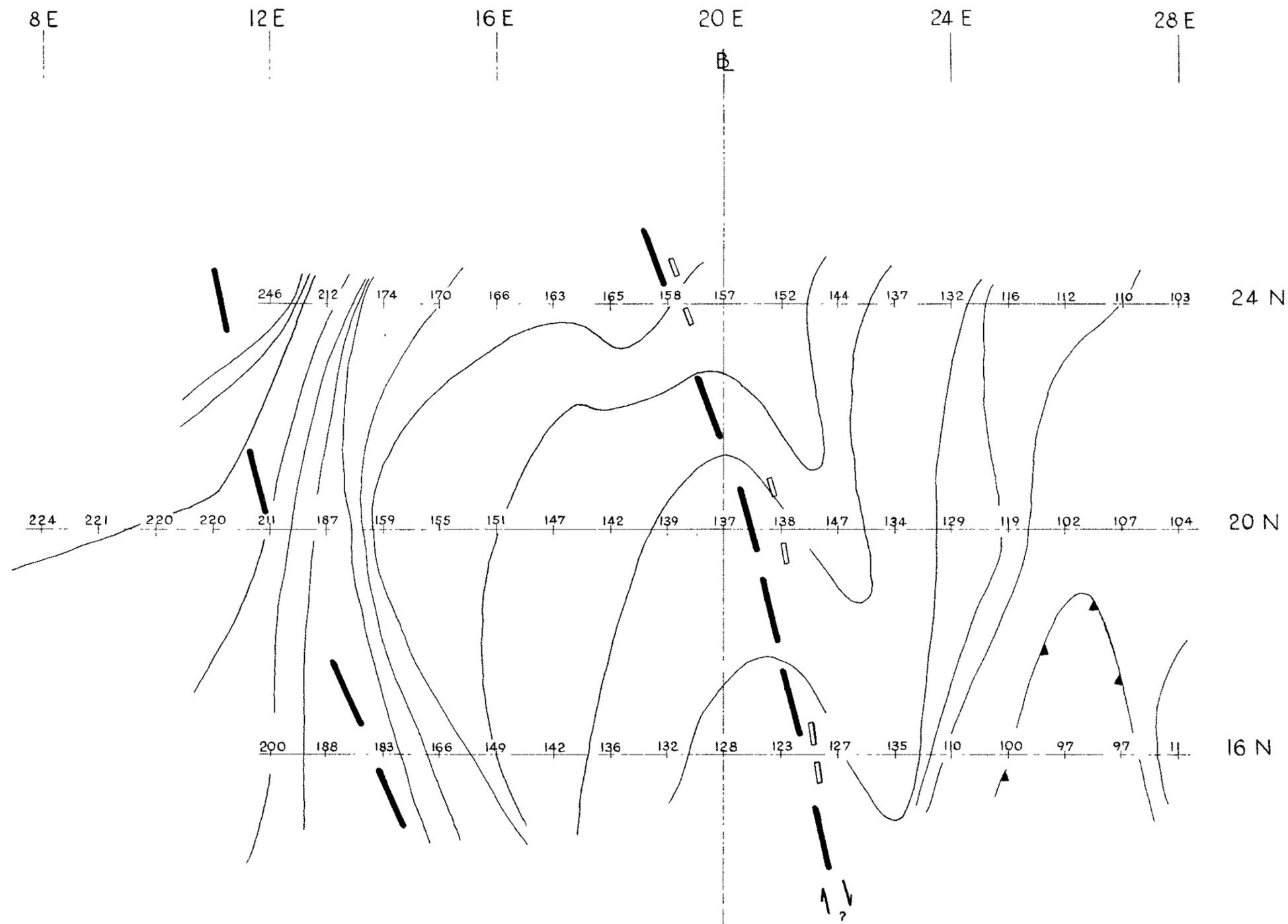
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References Field books 15,22		LYELL E.Z. EXPLORATIONS QUEENSTOWN				
— Bouguer Gravity		<b>ANOMALY 23/2</b>				
- - - Topography						
E.M. Axes		Survey				
$\delta = 2.67 \text{ gms./cc}$		Scale				
<b>BOUGUER GRAVITY</b>		Centigrade	Hor.			
		Geophysics	200' to 1"			
		Geology	Vert			
		20' to 1"				
		Survey	IM.S., T.N.B.	Mar '59	<b>Q24</b>	Sheet <b>4</b>
		Geology	IM.S.	Mar '59		
		Traced	J.G.	April 59	$\Delta g$ 1" = 1.0 mgal	2287
				13.7.59		



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References Topographic contours C.I. 10 ft — Faults — E.M. Axes	<b>LYELL E.Z. EXPLORATIONS</b> QUEENSTOWN			
	<b>ANOMALY 23/2</b> STRUCTURAL INTERPRETATION			
	Survey	J.M. Paltridge	Mar '59	Scale
	Geology			200 ft to 1 inch
	Geophysics	J.B.B.	Apr '59	
GRAVITY	J.B. Boniwell	Apr '59	<div style="display: flex; justify-content: space-between;"> <span style="font-size: 2em; font-weight: bold;">Q24</span> <span>Sheet No</span> </div> <div style="display: flex; justify-content: space-between;"> <span style="font-size: 2em; font-weight: bold;">4a</span> <span>2288</span> </div>	
	D.S.	Apr '59		

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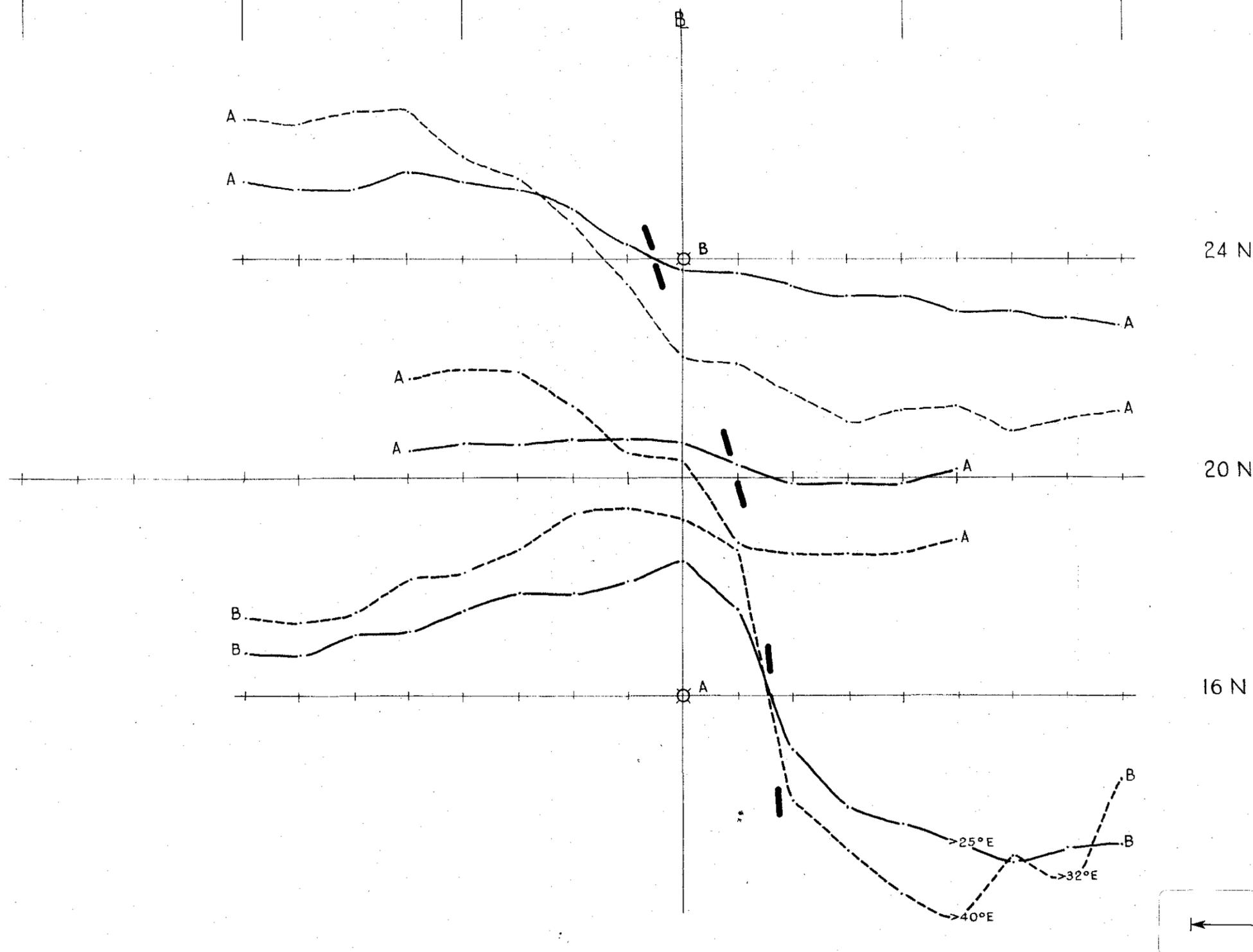
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LYELL E.Z. EXPLORATIONS  
 QUEENSTOWN

**ANOMALY 23/2**

VERTICAL COIL

Survey			Scale	Q24	Sheet No. 10
Geology			Hor. 200ft. to 1 inch		
Geophysics	T.N.B.	Mar.'59	Vert. 20° to 1 inch	2289	
Geochemistry					
Drawn	I.M.P.	Mar.'59			
Traced	D.S.	Apr.'59			

**Q24**

Sheet No. **10**

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