325001

LYELL E.Z. EXPLORATIONS
Queenstown

ANNUAL REPORT

Year ending 30th June 1960

62_323

AMG REFERENCE POINTS ADDED

CONTENTS

LIST OF PLANS

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325003

LYELL - E.Z. - EXPLORATIONS

26th July, 1960

The Chairman,
Control Committee,
Lyell - E.Z. Explorations.

Dear Sir,

I beg to submit the following report on the operations of Lyell - E.Z. Explorations for the year ended 30th June, 1960.

GENERAL

The exploration organisation formed in July, 1956 completed its fourth year of active exploration in South West Tasmania and remained under the direction of the original Control Committee comprising

Messrs. G. Hall (chairman) E. Henderson	Electrolytic Zinc Company
H.M. Murray G.F. Hudspeth	Mount Lyell Company

PROSPECTING AREAS

Exploration Licences EL1/59 and EL3/59 - held in the names of the Electrolytic Zinc Company of Australasia Ltd. and the Mount Lyell Mining and Railway Company Ltd. respectively - were substantially reduced in area during the year.

EL1/59, covering land in the Adamsfield district, was reduced from 1521 square miles to 448 square miles on 1st September, 1959 and EL3/59, in the Macquarie Harbour area, from 2878 to 1250 square miles on 10th March, 1960. Both areas are shown on plan No. 1 appended.

The reduction in total area from 4424 to 1698 square miles resulted from the exploration of the three previous years which indicated that the country eliminated has no apparent mineralisation of economic interest.

ORGANISATION

The immediate direction of exploration work remained with the Chief Geologist, Dr. B. Scott, until the close of the year when that officer resigned to return to England.

The services of a Field Engineer were dispensed with in October, 1959 and all matters relating to transport, supply and direction of field labour were then placed in the hands of a Field Foreman, S. Gunton, who was assisted by one stores clerk until the end of the summer and thereafter by the boatman.

Technical personnel varied during the year and the only staff continuously employed were the Chief Geologist and one draughtsman with a second draughtsman for six months. During the summer months, two field geologists were employed together with a gravimetric technician and a field technician from McPhar Geophysics Ltd. of Canada. Towards the close of the year, some additional assistance was engaged for a short period to complete plans and reports and thus bring all work up to date prior to the departure of the Chief Geologist. The work was completed during June and the entire staff was then disbanded.

A limited amount of churn drilling was done under the supervision of a foreman from a Mainland drilling company followed by a short length of diamond drilling supervised by the Electrolytic Zinc Company's drilling foreman.

The drilling crew was made up by Electrolytic Zinc Company men while all other labour for field work etc. was engaged or seconded by Mount Lyell.

Clerical work, stores accounting, cost assembly, typing and printing of plans were done by the Mount Lyell Company's Mine Department under the supervision of the part time Secretary.

The personnel employed during the year is shown below expressed in man/weeks since the numbers varied widely and stated alone do not give a true picture.

	E.Z. Co.	M.L. Co.	Miscellaneous
Geologists	32	8	-
Students	-	-	-
Draughtsmen	4	78	-
Sampler	-	-	-
Geophysicists	10	-	18
Field Engineer	-	14	-
Foreman	1	30	-
Clerk	-	36	-
Cook	-	54	-
Boatman	-	18	-
Carpenters	18	-	-

(cont.)	B.E. Co.	M.L. Co.	Miscellaneous
Bushmen	-	264	-
Drillers	56	-	13
Surveyors	-	-	-
Fitters	-	5	-
	141	487	31

Total man hours were 28,996 of which 22,088 were worked in the field.

BUILDINGS AND BASES

Office

There were no alterations and the building was maintained as needed.

L.E.E. Field

The heliport was not used as such but the hangar continued to serve as the base for radio communication and for stores etc.

Birch Base

With the exception of the hangar building and the jetty, the base was dismantled for transfer to Moore's Valley. The hut belonging to the Lands and Surveys Department was left in position.

Moore's Valley

The cook house and other huts from Birch were re-erected in Moore's Valley in the vicinity of the drilling site to provide winter quarters for the drilling crew.

Cardigan

The hut in the Cardigan Valley was no longer required and was sold.

Fuel Dumps

No dumps were required.

The dump of aviation fuel south-east of Birch Inlet containing 396 gallons established in 1957 for the Bristol Sycamore helicopter was destroyed in a bush fire in January, 1960.

Bushmen's Rest House

The house in Penghana Road was maintained throughout the year as living quarters for bushmen during rest periods.

HELICOPTER TRANSPORT

No helicopter was chartered this year. The exploration work was confined to the Moore's Valley locality to which alternative means of access could be more economically provided.

MOTOR TRANSPORT

Three motor vehicles were purchased by the organisation.

No. 1 Willys six cylinder one ton truck

Bought new Cost £1535

No. 2 Willys four cylinder one ton truck

Bought second hand Cost £931

Both vehicles were required for transport purposes on the Moore's Valley road and neither was registered.

No. 3 Holden Station Sedan

Bought second hand Cost £985

This vehicle was bought to provide transport for stores and personnel between Queenstown and Strahan.

The station sedan gave good service and required only ordinary maintenance.

Both Willys trucks required considerable maintenance and on several occasions communications were interrupted by non-availability.

The nature of the work on which the trucks were engaged was very rough particularly during road building operations and later when transporting drilling and camping equipment. These conditions were aggravated by rough handling in the early stages of the work by bushmen drivers.

At the time the road proposal was conceived, the steepness of the grades and the softness of the ground was not properly appreciated and both vehicles were in fact too light for the work required of them.

Total Road Transport Costs were £2,469.

SEA TRANSPORT

The engine of the launch "Couta" was overhauled and the vessel was painted before the summer season commenced. The launch gave good service and was in sound condition at the end of the year.

Other boats and lighters were hired as needed.

Details were:

"Couta" - for regular communication across Macquarie Harbour		
83 trips	Cost	£528
Lighters - heavy equipment to Birch Inlet	Cost	£230
Trawler "Liawenee" - special trips	Cost	£150
Other ships - 20 trips	Cost	£316

RADIO COMMUNICATION

Adequate radio communication was maintained between field parties, bases and Queenstown with the Teleradios bought in previous years and no new equipment was needed.

NEW EQUIPMENT

New equipment bought during the year is listed on Appendix 1 and had a total value of £4,932.

FOOD

Personnel were maintained in the field as in previous years and the total expenditure on food was £3,224 and the cost per man day was 22/6 compared with 25/- in the previous year.

MOORE'S VALLEY ROAD

A rough access road, 26½ miles in length, was constructed from Birch Inlet to the permanent camp site in Moore's Valley and that work was followed by 4½ miles of subsidiary roads in the valley to drill sites and for further exploration activities.

Work commenced on 25th August, 1959 and was completed on 1st February, 1960 after 1393 hours of bulldozing. The work included two minor bridges and one major one, 85 feet in length, over the Conder river and the total cost of all work was £15,062.

GROUND GEOPHYSICS

Work this year was almost entirely confined to ground geophysics in the Moore's Valley and Wanderer localities. Details are provided in the Chief Geologist's report.

The work was of four types:

1. Magnetometer - done by L.E.E. personnel;

2. Gravimeter - done by I. Sefton on loan from L.A. Richardson of Sydney with L.E.E. assistance.

3. Afmag - } done by McPhar Geophysics Ltd. & L.E.E.

4. Induced Polarisation - }

The major surveys of 3 and 4 were directed and carried out by one Canadian technician with L.E.E. personnel making up the crew.

A small amount of geophysical work was also done at Big Creek and at Pelias Cove under the direction of the Chief Geologist.

Advantage was taken of the opportunity to use the Canadian technician and equipment to examine further old geophysical indications in the Mount Lyell Company's lease in the Great Lyell area. The cost of that work was charged to Mount Lyell.

DRILLING

A churn drill and foreman were hired from Southern States Drilling Company of Victoria at a cost of £63 per week to penetrate the gravels overlying an anomaly indicated by I.P. survey in Moore's Valley. Progress was very slow due primarily to mechanical troubles with the drill and a period of eleven weeks was occupied in advancing the hole through 6" and 5" casing 432½ feet through gravels and clay beds. At the depth quoted the drill entered firm ground and diamond drilling was commenced. Good progress was made to 468 feet when soft or unconsolidated ground was entered and a further 30 feet were drilled under difficulties.which caused suspension of the work at 498 feet.

At the end of the year plans were in hand to resume drilling and complete the test.

The drilling is summarised as follows:

Churn Drill

Casing 6" to 267½ feet

5" to 432½ feet

Shifts worked 70

Average progress per shift 6.18 feet

Diamond Drilling

Size BX.

Shifts worked 20

Average progress per shift 3.275 feet

EXPENDITURE

Expenditure for all purposes for the year ended 30th June, 1960 was £72,807, making the total investment in South West Tasmania to date £299,641.

Details of the expenditure are shown on the cost statement attached to this report.

ARTHUR AREAS

No progress was made with exploration of the area during the year.

CONCLUSION

With the possible exception of the iron deposit at Big Creek, Moore's Valley is still the only prospect to emerge from the widespread exploration of the last four years.

The Induced Polarisation surveys made this year confirmed and extended the anomalies indicated in the previous year but because of the drilling difficulties encountered the anomalies remain untested.

The drilling that was done, however, did serve to indicate that the gravel cover is considerably deeper than anticipated and with the presence of unconsolidated material some 500 feet below the natural surface in water bearing ground must introduce some measure of doubt as to the validity of the anomalies. Deepening of the hole to true bedrock may provide positive evidence as to the source of the anomalies but if not, a difficult decision lies ahead to determine the amount of further drilling to be undertaken.

In conclusion I record my appreciation of the work done by all concerned in the exploration activities during the year and of the continued good relations between officers of both companies.

Yours faithfully,

G. T. Thompson

Manager

APPENDIX 1

L.E.E. EQUIPMENT PURCHASED 1959/60

	Qty.	Unit Price £. s. d	Value £. s. d
Anti-venine serum	4	3.18. 9	15.15. 0
Bottles - filler	4	3.10	15. 4
Blocks - snatch 6"	1	4. 7. 6	4. 7. 6
8"	1	5. 6. 1	5. 6. 1
Dishes - gold panning	2	18. 6	1.17. 0
Gauge - tyre pressure	1	16. 9	16. 9
Grease gun	2	3.12. 1	7. 4. 2
Geophysical equipment (variometer)	1	1078.10. 3	1078.10. 3
Helmets - safety	8	1. 4. 3	9.15. 4
Hose - water (per ft.)	60'	7.10	23.10. 0
- rubber 1½"	60'	3. 7	10.15.10
- polythene 1"	500'	1.10	45.16. 8
Jeep - Willys, 6 cylinder	1		1534.19. 2
- Willys, 4 cylinder	1		931. 0. 0
Jack - Wallaby, 4 tons	1	12. 3. 6	12. 3. 6
Level - Watts Quickset with tripod	1	65.12. 6	65.12. 6
Life-belts	9	2. 4. 0	19.16. 0
Mattock	1	18. 1	18. 1
Picks - D.E.	3	17. 9	2.13. 3
Rule - 3 ft.	1	8. 8	8. 8
Rope - wire ⅜"	300'	8	10. 0. 0
Rasps - wood	3	5. 3	15. 9
Spanner - shifting 4"	1	6. 8	6. 8
6"	3	10.11	1.12. 9
12"	1	17. 8	17. 8
15"	1	1. 9. 3	1. 9. 3
Safe - meat	1	5. 0. 0	5. 0. 0
Screwdriver	1	4. 0	4. 0
Spade	1	1.13. 6	1.13. 6
Shovel - S.H.R.H.	1	18. 1	18. 1
Staff - Hedaile	1	38.10. 8	38.10. 8
Station Sedan - Holden	1		985. 0. 0
Torches - 3 cell	4	14. 9	2.19. 0
Trowel	1	1. 0. 3	1. 0. 3
Trousers - P.V.C. (prs.)	2	2. 9. 6	4.19. 0
Wrench - Stillson 24"	1	1.18. 9	1.18. 9
L.E.E. House Furniture			
Bookcase - open	1	2. 0. 0	2. 0. 0
Cabinet - 4 drawer with cupboard	1	10. 0. 0	10. 0. 0
- open	1	2. 0. 0	2. 0. 0
- pigeonhole	1	2. 0. 0	2. 0. 0
- large photo	1	1. 5. 0	1. 5. 0
- large photo	1	5. 0. 0	5. 0. 0

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APPENDIX 1 (cont.)

	Qty.	Unit Price	Value
		£. s. d	£. s. d
Desk - office - 4 drawer	1	22. 5. 6	22. 5. 6
Stools	5	1. 5. 0	6. 5. 0
Tables - drafting	2	20. 0. 0	40. 0. 0
L.E. HOUSE - Office Equipment			
Box - filing - wooden	1	17. 6	17. 6
Desk calendar	1	7. 6	7. 6
Desk knife	1	5. 0	5. 0
Dividers - proportional	1	1.17. 6	1.17. 6
Pens - Graphos	1	1.15. 0	1.15. 0
Photo-holder	1	2.15. 0	2.15. 0
Scales - 12"	2	11. 3	1. 2. 6
Stencils - set	1	2.15. 0	2.15. 0
Equipment Sold			
Hooks - fern	1	15. 0	15. 0
- slash	6	1.13. 4	10. 0. 0
Radio - Radiola	1	20. 0. 0	20. 0. 0

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325012 Appendix 2

L.E.E. 2

Lyell - E.Z. - Explorations

EXPENDITURE FOR PERIOD ENDED 30th June, 1960.

No. 13(59/60)

7135.8.59. Hingston

	Mt. Lyell	E. Zinc	Total	TO DATE Lyell	E.Z.	Total
1. Administration	263. 9. 5	128.19. 0	392. 8. 5	5588. 2. 6	1707. 8. 7	7295.11. 1
2. Investigations	144. 8. 3	2593. 4. 8	2737.12.11	10206.12. 9	19203. 9. 8	29410. 2. 5
3. Access and Housing	500. 2.11	106.17. 1	607. 0. 0	22338. 4. 2	1786.19. 4	24125. 3. 6
4. Core Drilling	175.19. 5	177.15. 9	353.15. 2	360. 8.11	2438.10. 8	2798.19. 7
5. Exploratory Dev.				2639. 8. 6	1355.11.11	3995. 0. 5
6. Plant	5.13. 6		5.13. 6	4103.17. 5	1078.10. 3	5182. 7. 8
Total	1089.13. 6	3006.16. 6	4096.10. 0	45236.14. 3	27570.10. 5	72807. 4. 8
Balance due to		958.11. 6				

For The Mt. Lyell M. & R. Co. Ltd.

.....General Manager

.....Accountant

For The E.Z. Co. of Aus. Ltd.

.....Superintendent

.....Accountant

Appendix 3

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LYELL - E.Z. - EXPLORATIONS

325013

16th June, x60
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Mr. G.F. Hudspeth,
Manager,
Lyell-E.Z. Explorations.

Dear Sir,

Herewith I present a summary of the exploration work completed by the organisation under my control from 1st July, 1959 to 15th June, 1960.

INTRODUCTION

In contrast to last year's programme where there were 28 separate investigations carried out in an area of several hundred square miles, this year work has been primarily concentrated in one major project covering an area of 20 square miles in the Moore's Valley and Wanderer River localities. These two zones were investigated as a single project and consequently will be referred to as the Moore's Valley project. To the north of this area an investigation was completed on the continuation of the Great Lyell Fault near the D'Aguilar Range and away from this central area two other projects were completed, at Big Creek and Pelias Cove. The position of these localities is shown on the accompanying plate 2, the surveys are summarised in Tables I and II.

MOORE'S VALLEY PROJECT

Introduction (Plate 3)

The area included in this project occurs on the meridional trending Great Lyell Fault which has a similar expression here as at Queenstown in faulting the Dundas Group sediments on its western side against the Owen Conglomerate to the east. The east-west crosscutting faults which had been located in the previous year were further outlined by geophysical methods and these major faults, which are 17,000 feet apart, are associated with a horizontal displacement of the Great Lyell Fault of some 12,000 feet to the east (i.e. right-handed movement). In the recent past the two marginal faults have had a vertical downthrow which has preserved a thickness of approximately 400 feet of unconsolidated sediments on the Valley floor. Beneath this cover, and between the marginal faults, the Great Lyell Fault*

* The continuation of the Great Lyell Fault in Moore's Valley has been named the Moore's Fault.

trends north-east for some 18,000 feet. Owing to this cover of recent sediments, direct observations on these structures are not possible, consequently great reliance has to be placed on geophysical methods of exploration particularly Audio Frequency Magnetics (AFMAG) and Induced Polarisation (I.P.).

A detailed cover was completed with the I.P., gravitymeter and magnetometer on the south edge of the Valley over the eastern extension of I.P. anomalies A, B and C which had been located last year. A reconnaissance cover was completed over the remainder of the Valley with the I.P. and gravitymeter; the AFMAG was used as a reconnaissance tool to investigate a still larger area including the Wanderer River zone and the D'Aguilar Range lines (plate 3). Details of these surveys are given in Tables I and II.

Prior to these investigations the Department of Lands and Surveys, Tasmania, provided an accurately contoured plan of the area, the first of the new topographical map series being prepared for south west and south Tasmania.

An I.P. survey was also completed in the Great Lyell area, near Queenstown, over the electromagnetic anomalies which had been detected by the Bureau of Mineral Resources' geophysical team in 1957. The greater part of this work was in the Mount Lyell Mining & Railway Co. Ltd.'s mining lease but the two most southerly lines (28 and 32) extended into the L.E.E. exploration area. Line 32 contains the feeble southern end of the main anomaly which is north of line 28.

TABLE I

SURVEYS AND LINE PREPARATION

AREA	Line Prepn.	Topo. Surveying	Induced Polsn.	AFMAG	Gravity	Magnetic	Electro-Magnetic
MOORE'S VALLEY	110,500 ft.	65,500	117,200	67,800	64,500	44,700	NIL
D'AGUILAR RANGE	19,200	NIL	12,400	7,200	NIL	NIL	NIL
Sub-total	129,700	65,500	129,600	75,000	64,500	44,700	NIL
BIG CREEK (10/8)	5,700	NIL	NIL	NIL	NIL	4,500	NIL
PELIAS COVE (6/4)	2,800	NIL	NIL	NIL	NIL	NIL	1,400
GREAT LYELL*	NIL	NIL	4,400*	NIL	NIL	NIL	NIL
	138,200	65,500	134,000	75,000	64,500	49,200	1,400

* Only part of the complete survey (lines 28 and 32), the remainder, and part of line 28, is in the Mt. Lyell Mining & Railway Co. Ltd.'s mining lease.

Surveys

Induced Polarisation

In the previous field season (March, 1959) three induced polarisation anomalies were located between lines 10W and 15E. The anomalies terminated to the west but remained open to the east and the detailed work completed at the south edge of the Valley was concerned with tracing their easterly continuation. The extension of anomalies B and C was confirmed; between lines 2OE and 5OE they join to form a single body which can be traced to 5OE. However, on line 6OE there is no longer a definite anomaly, consequently the zone has a lenticular shape resembling an elongated "T", opening to the west. The anomaly zone is approximately 6,000 feet in length with a maximum width of 3,600 feet on the baseline and narrowing to 450 feet on 5OE. The zone trends W.N.W. and parallels the southern boundary fault to the Moore's Valley graben structure which is approximately 1,000 feet to the south. It is placed at right angles to the anticipated trend of the bedding in the basement of the Valley.

The I.P. anomalies are associated with two parallel shear zones which sub-parallel the southern boundary fault. These zones are displaced by a third shear (Moore's Fault) which trends N.N.E., this displacement is left handed (i.e. west side moving south) and this direction of movement could also account for the pronounced bend in the trend of anomaly "C" between lines 5E and 10E and allow anomaly "A" to be the faulted and horizontally offset portion of anomaly "B". These results have allowed an interpretation which is a repetition of the regional favourability of the Moore's Valley structure, that is, the intersection of a meridional trending fault zone by a north-west crosscutting structure.

Moore's Fault can be traced across the Valley to line 76N where it is horizontally displaced by the east-west trending Conder Fault. The former structure can then be followed as far north as line 156N but the intersection of the northern boundary fault and Moore's Fault has not yet been located.

Gravimetric and Magnetic

Gravimetric and magnetic methods were used as an aid to the induced polarisation technique. The entire north to south extent of the Valley was covered with the gravitymeter with a detailed survey over the

I.P. anomalies A, B and C and a reconnaissance cover extending from the "hard rock" (Owen Conglomerate) on the south edge to the Owen Conglomerate on the northern boundary (lines 156N and 19E). The survey provided information which was useful in the structural interpretation but there was no striking gravimetric correlation with the I.P. results. A total of 65,500 feet of levelling was completed for the elevation control required by the gravity work.

The magnetometer survey was restricted to the south edge of the Valley between lines 10W and 20E. Again the results provided information of use in the structural interpretation of the area and also showed a weak magnetic high over the position of the I.P. anomalies.

AFMAG

The survey with the AFMAG unit was to test the intensity of the naturally occurring electromagnetic fields in S.W. Tasmania, and to detect the presence of any conductors which may be present in the basement rocks beneath the 400 feet of Tertiary sediments on the western edge of Moore's Valley (i.e. the original Wanderer Project area). It will be remembered that the location of induced polarisation anomalies A, B and C was first determined by the AFMAG unit in February, 1959.

The naturally occurring fields have a pronounced diurnal variation and are generally stronger at night than during the day and for this reason the surveys last year had to be generally carried out after dark. However, this year the sensitivity of the instrument had been increased two-fold with the result that surveys could usually be completed in the afternoon and early evening.

A total of 75,000 feet was surveyed, primarily along existing tracks and roads and the position of anomalies located is shown in plate 3. The presence of the conductor which was located in last year's AFMAG survey on the site of the induced polarisation anomalies at Baseline/11W was again confirmed and the north-westerly continuation of this zone is considered to have been positioned by the results of this survey along the main jeep road (line 148N EXT.) and line 76N Ext. An I.P. survey was afterwards completed along both of these lines: it confirmed the presence of the conductor on line 76N Ext. which also contained a weak I.P. anomaly. However, the results on line 148N Ext. were inconclusive. Work further to

the west located two conductors, one of which can be correlated with the shear zone which is associated with I.P. anomaly "C".

A survey across the Great Lyell Fault north of Moore's Valley and near the D'Aguilar Range established the largest anomaly detected in the field programme with dip angles of up to 20 degrees. A later I.P. survey confirmed the presence of the conductor which contained a weak I.P. anomaly.

In summary, the AFMAG unit was successful in detecting conductors which are covered by several hundred feet of unconsolidated sediments, and which provide targets for detailed induced polarisation work.

Diamond Drilling

Hole L8 was commenced on 18th January, 1960 to test I.P. anomaly "A"; the hole is located on the western edge of this anomaly and its position is marked on plate 3 with a section on plate 4. The hole was started with a churn drill in order to penetrate the unconsolidated sands and gravels and this type of drilling was taken to 432½ feet. Diamond drilling was continued from this depth to 498 feet. To 407 feet the hole passed through sands and gravels with occasional bands of clay; the rock particles consisted primarily of quartzite and quartz mica schist but below 248 feet particles of gabbro became relatively common. Below 407 feet the sediments hardened considerably and the drill made slow progress through a rock which apparently consisted almost exclusively of particles of gabbro. Diamond drilling from 432½ feet confirmed this observation and the core showed the rock to be a conglomerate made up primarily of particles of gabbro set in a matrix of similar derivation. Core recovery to 468 feet was good (84%) but from 468 to 498 feet recovery was poor (16%) with the caving of the hole, as already reported in the Manager's section.

Summary

The results to date show that hole L8 has penetrated into hard rock beneath the unconsolidated sands and gravels which are normally seen in Moore's Valley. However, insufficient depth has been reached to identify the cause of I.P. anomaly "A".

BIG CREEK - ANOMALY 10/8

The anomaly was first investigated in the general campaign of the ground follow-up of anomalies in March, 1959. As a result of the discovery of hematite/magnetite mineralisation, further work was carried out during

this year. The work outlined a lense of massive hematite/magnetite 1475 feet in length and with a maximum width of 170 feet (plate 5). The field work and assays show that the mineralisation is iron oxide containing negligible quantities of base metals, as shown in Table III.

TABLE III

BIG CREEK HEMATITE/MAGNETITE MINERALISATION

Fe	Cu	Pb	Zn	S	P	Ti	SiO_2
67.76%	0.04%	0.02%	0.25%	0.50%	0.01%	Nil	2.10%

Average of four samples, assays by Mt. Lyell Assay Office.

Using a tonnage factor of 8 cu. feet/long ton, the lense contains 1,560,000 tons of hematite/magnetite per 100 feet of vertical depth. However, with the absence of sulphide mineralisation within 100 feet of the surface (as shown in a river section), it can only be regarded as a source of iron ore. Therefore, despite its freedom from impurities, taking into consideration the isolated position of the lense (plate 2) and the relatively small tonnages involved (4,700,000 tons to a depth of 300 feet), no further work is warranted at the present time.

PELIAS COVE - ANOMALY 6/4

Hematite mineralisation was first discovered on the western side of Macquarie Harbour in the 1956-1957 season (plate 2). Later work outlined a width of 39 feet of mixed hematite with minor sulphides (50%) and country rock (50%). In the year 1957-1958 an unsuccessful attempt was made to trace the southerly continuation of this zone by diamond drilling (plate 6). Recent work has consisted of an electromagnetic survey, with the McPhar R.E.M. gear. Using the set-up technique, the R.E.M. transmitter was placed at the outcrop of the hematite and traverses were run at 200 and 400 feet separations; no anomaly was located in the dip angles as shown on plate 6. The negative results of the diamond drilling and the electromagnetic survey demonstrate that the mineralisation does not persist along its strike and no further work is warranted on this prospect.

ARTHUR AREA

No field work was carried out in the Arthur area during this year. A small amount of office work was completed in the examination of the aerial

photographs of the Adamsfield-Mt. Picton area but the work essentially remains at the same level as in last year's annual report.

GENERAL

Draughting

During the year the drawing staff have been fully engaged in the completion of plans and sections to accompany the 27 reports which have been issued during this year and on specialised projects in the Moore's Valley area. In all, 80 original plans have been prepared and 95 printed plans issued, approximately 50% of these being coloured by hand. In addition, prints have been prepared for use as working sheets.

Compilation Work

A series of reports and plans have been prepared during the year which compile the geological information collected during the last four field seasons (plates 7, 8 and 9). The reports are:

1. Precambrian Rocks in South-west Tasmania;
2. Cambrian Rocks in South-west Tasmania;
3. Ordovician Rocks in South-west Tasmania;
4. The Ultrabasic Rocks in South-west Tasmania;
5. Cainozoic Rocks of the Macquarie Harbour Graben;
6. Structure of South-west Tasmania.

These are short reports which have been prepared for the Geological Society of Australasia for inclusion in their projected book on Tasmanian Geology.

7. Comments on the Cainozoic History of Western Tasmania;
8. Erosion Levels in Western Tasmania;
9. Lower Palaeozoic Unconformities in S.W. Tasmania;
10. Structural Geology of S.W. Tasmania.

These papers have been submitted to periodicals in Australia for publication.

11. Mineral Exploration in S.W. Tasmania.

This paper was prepared in conjunction with the Field Engineer and has been submitted to the Australasian Institute of Mining and Metallurgy.

GENERAL CONCLUSIONS ON THE YEAR'S WORK

Gordon Area

The geophysical surveys in Moore's Valley proper have shown the complete outline of anomalies A, B and C and drilling is continuing into Anomaly "A" to determine the cause of the I.P. anomalies. No further induced polarisation anomalies of consequence have been located in the Valley although the data collected in these surveys have allowed the development of a map showing the broad structural geology of the basement rocks beneath the cover of unconsolidated sediments. Work to the west and north of Moore's Valley (Wanderer River and D'Aguilar Range) has demonstrated the usefulness of the AFMAG unit as a reconnaissance tool for locating conductors suitable for attention by the slower and more expensive I.P. technique.

First Priority

Completion of drilling into the I.P. anomalies A, B and C to determine their cause.

Second Priority

This remains essentially the same as last year. Projects 1 and 2 below have been commenced but not completed; both areas are suitable for the AFMAG technique of survey in the first instance with the induced polarisation unit being used at a later stage over favourable AFMAG anomalies.

1. Wanderer Project;
2. Great Lyell Fault two miles north and two south of Moore's Valley.
3. Anomalies 6/3 (Prince Darwin) and 19/1 (Serpentine), see Table II.

Arthur Area

Further regional mapping is required in the Adamsfield-Mt. Anne area concentrating on the Mt. Wedge zone (7 miles south of Adamsfield) at the base of the Owen Conglomerate. In addition the survey on anomaly A5/1 remains to be completed (see Table II).

Yours faithfully,

Chief Geologist, M.R.E.

TABLE II

SUMMARY OF INVESTIGATIONS

Anomaly	Geology	Magnetic	Vertical Coil	AFMAG	Gravity	I.P.	Diamond Drilling	Further Interest	Report No.
Moore's Valley	/	/	-	/	/	/	/	Diamond Drilling	G103, G107 G111, GP28 to GP33
Great Lyell	-	-	-	-	-	/	-	Yes	GP30, GP34
Big Creek (10/8)	/	/	-	-	-	-	-	As iron ore	G112
Pelias Cove	/	-	/	-	-	-	/	Nil	G113

REMAINING ANOMALIES

Area	Comments	Location	Report No.
Prince Darwin (6/5)	Magnetite, hematite and chalcopyrite mineralisation. Magnetic and electromagnetic anomaly (airborne).	12 miles south of Queenstown.	G15; GP5 and GP16.
Serpentine (19/1)	Magnetic anomaly (airborne)	50 miles south east of Queenstown.	GP16
Adamsfield (A5/1)	Airborne electromagnetic anomaly	4 miles west of Adamsfield.	GP26; G97

020

Appendix 4

325022

REPORTS ISSUED 1st JULY, 1959 - 30th JUNE, 1960

General Reports (G)

G97	Airborne Geophysical Anomalies - Adamsfield, Arthur Area
G98	Magnetic Surveys - Moore's Valley
G99	Road - Birch Inlet to Moore's Valley
G100	Reduction of Exploration Licence Areas
G101	Hazell Hill - Regional Geology
G102	Summary of Precambrian of S.W. Tasmania
G103	Comments on Cainozoic History of Western Tasmania
G104	Precambrian of S.W. Tasmania
G105	Lower Palaeozoic Unconformities - S.W. Tasmania
G106	Ordovician of S.W. Tasmania
G107	Proposed Field Programme to December, 1959
G108	Summary of Modder Ultrabasics
G109	Prospecting in South Edge of Moore's Valley
G110	Field Programme - late January and February, 1960
G111	Structural Geology of Western Tasmania
G112	Airborne Anomaly 10/8, Report No. 2
G113	Investigation of Pelias Cove Prospect
G114	Cainozoic Rocks of Macquarie Harbour Graben
G115	Standard Practice List

Geophysical Reports (GP)

GP27	Geophysical Survey of East Darwin
GP28	Gravity Surveys in Moore's Valley - Preliminary Report
GP29	Moore's Valley - Gravity and Magnetic Surveys - November/December, 1959
GP30	Report on the Induced Polarisation and Resistivity Survey in 1959-1960 at Moore's Valley and Queenstown.
GP31	Report on the Afmag Survey in Moore's Valley, Tasmania
GP32	Report on the Induced Polarisation and Resistivity Survey in Northern Moore's Valley, 1959/1960
GP33	Supplementary Report No. 1 on the Induced Polarisation Survey on Southern Moore's Valley
GP34	Supplementary Report No. 1 on the Induced Polarisation and Resistivity Survey in the Great Lyell Area, Queenstown, Tasmania for the Mount Lyell Company

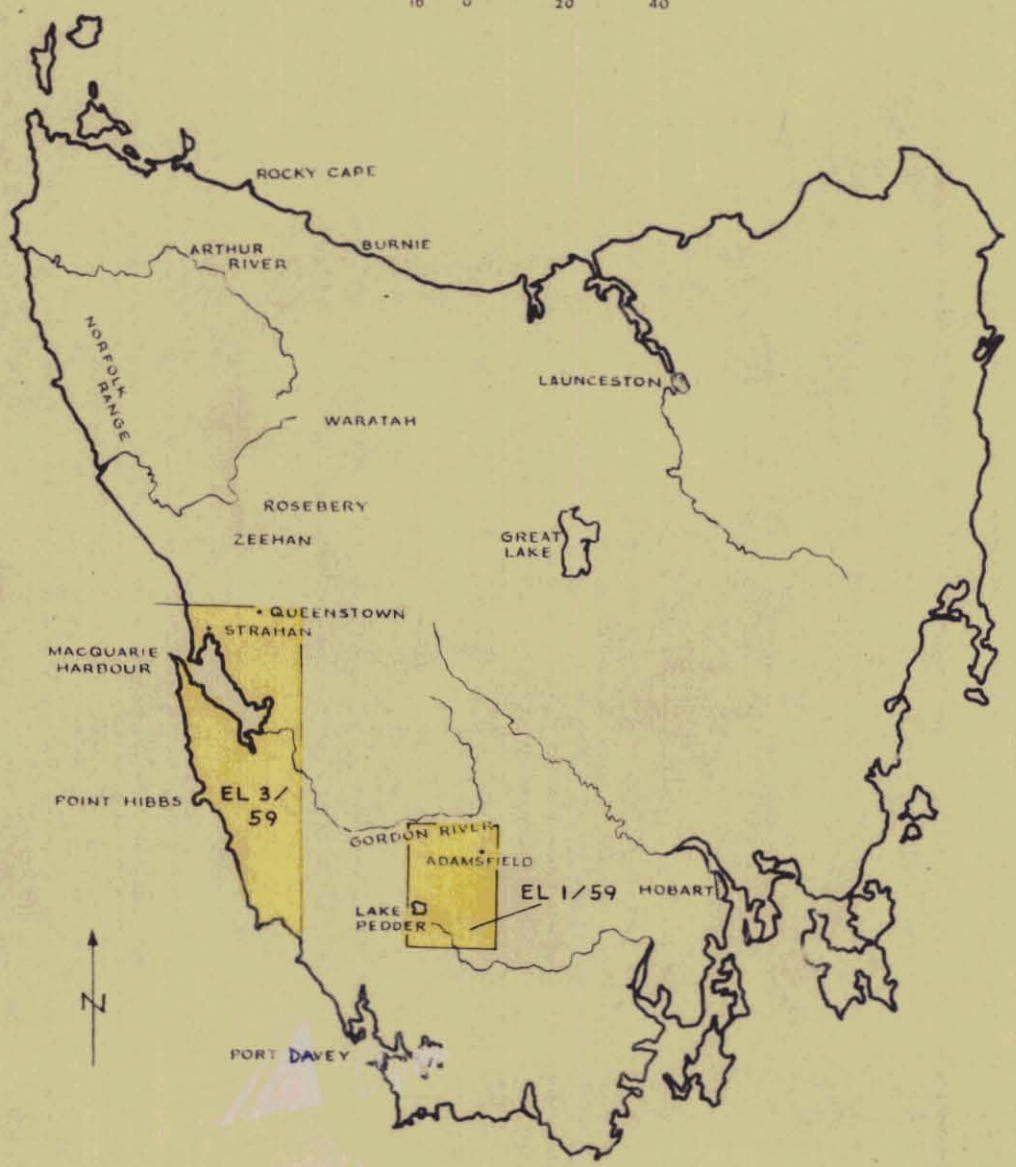
010

325023

TASMANIA

Scale in miles

10 0 20 40



EXPLORATION LICENCES

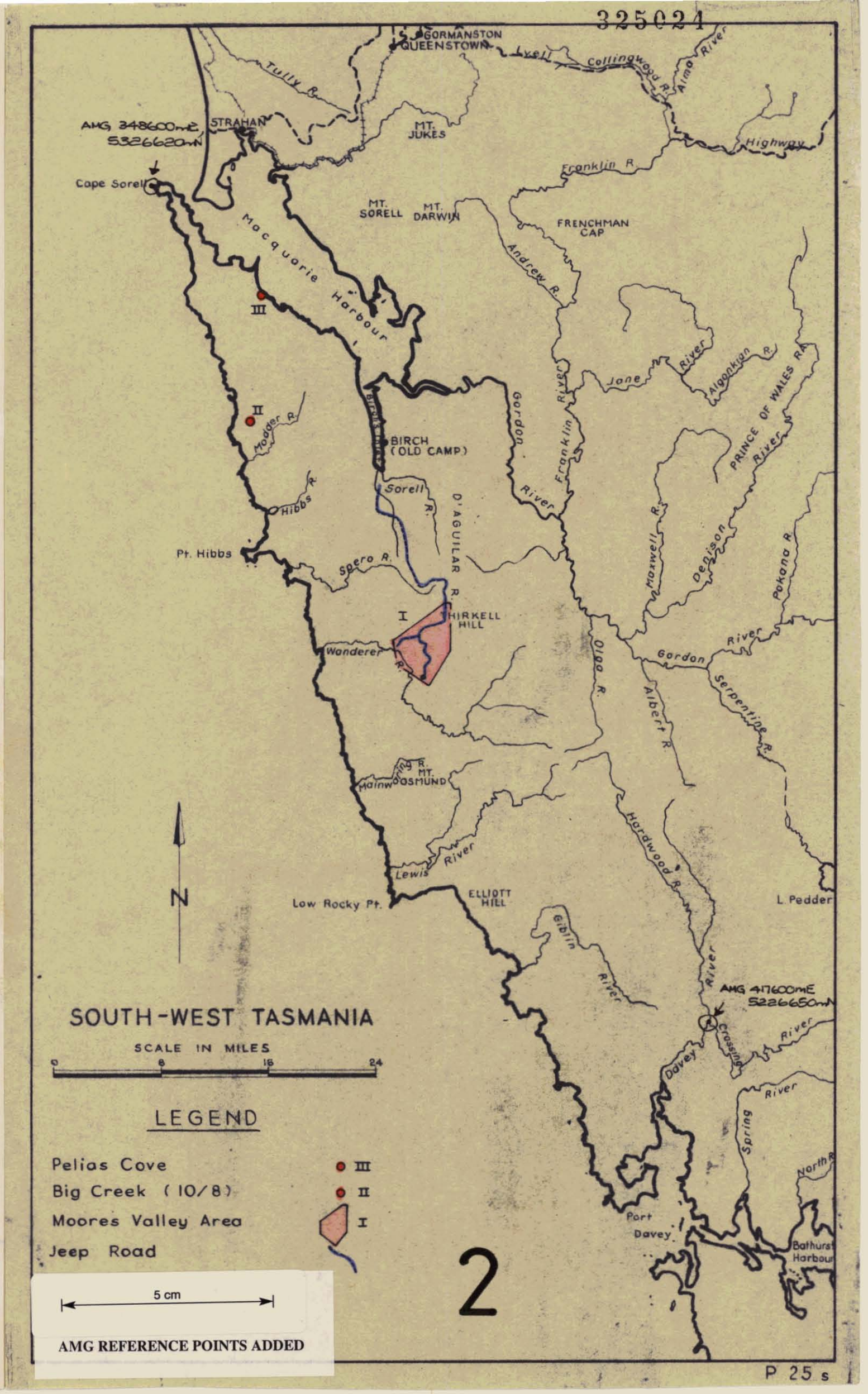
EL 1/59	E.Z. Co. of A'Asia Ltd.
EL 3/59	Mt. Lyell M.& R. Co.Ltd.

5 cm

Plan 1

021

325024


GORMANSTON
QUEENSTOWN
Tyell
Collingwood R.
Almo River
Tully R.
AMG 348600mE
5326620mN
STRAHAN
MT. JUKES
Highway
Franklin R.
Cape Sorell
MT. SORELL
MT. DARWIN
FRENCHMAN CAP
Macquarie Harbour
Andrew R.
III
II
Modder R.
BIRCH (OLD CAMP)
Birch's Inlet
Gordon River
Franklin River
Jane River
Algonkian R.
PRINCE OF WALES RA.
Sorell R.
D'AGUILAR R.
Hibbs R.
Pt. Hibbs
Spero R.
Maxwell R.
Denison River
Pokana R.
I
THIRKELL HILL
Wanderer R.
Olga R.
Albert R.
Gordon River
Serpentine R.
Loddon R.
MT. OSMUND
Mainwaring R.
Hardwood R.
Lewis River
Low Rocky Pt.
ELLIOTT HILL
L. Pedder
Giblin River
Davey River
AMG 417600mE
5226650mN
Crossing
Spring River
North R.
Port Davey
Bathurst Harbour
N
SOUTH-WEST TASMANIA
SCALE IN MILES
0
8
16
24
LEGEND
Pelias Cove
Big Creek (10/8)
Moores Valley Area
Jeep Road
III
II
I
5 cm
AMG REFERENCE POINTS ADDED
2
P 25 s

Photomosaic Ic

2273

LYELL E.Z. EXPLORATIONS
QUEENSTOWN 60-323.

MOORES VALLEY
GENERAL GEOLOGY

Survey			Scale		
Geology	B.S., R.G.E., P.R.	1957/1960	2200 ft. to 1 inch	R 10	Sheet No. a
Geophysics	Mc Phar	1959/1960			
Geochemistry					
Drawn	P.R., B.S.	March 1960			
Traced	R.E., D.S.	March 1960			

SCALE
0 FT. 2200 FT. 4400 FT. 6600 FT. 8800 FT.

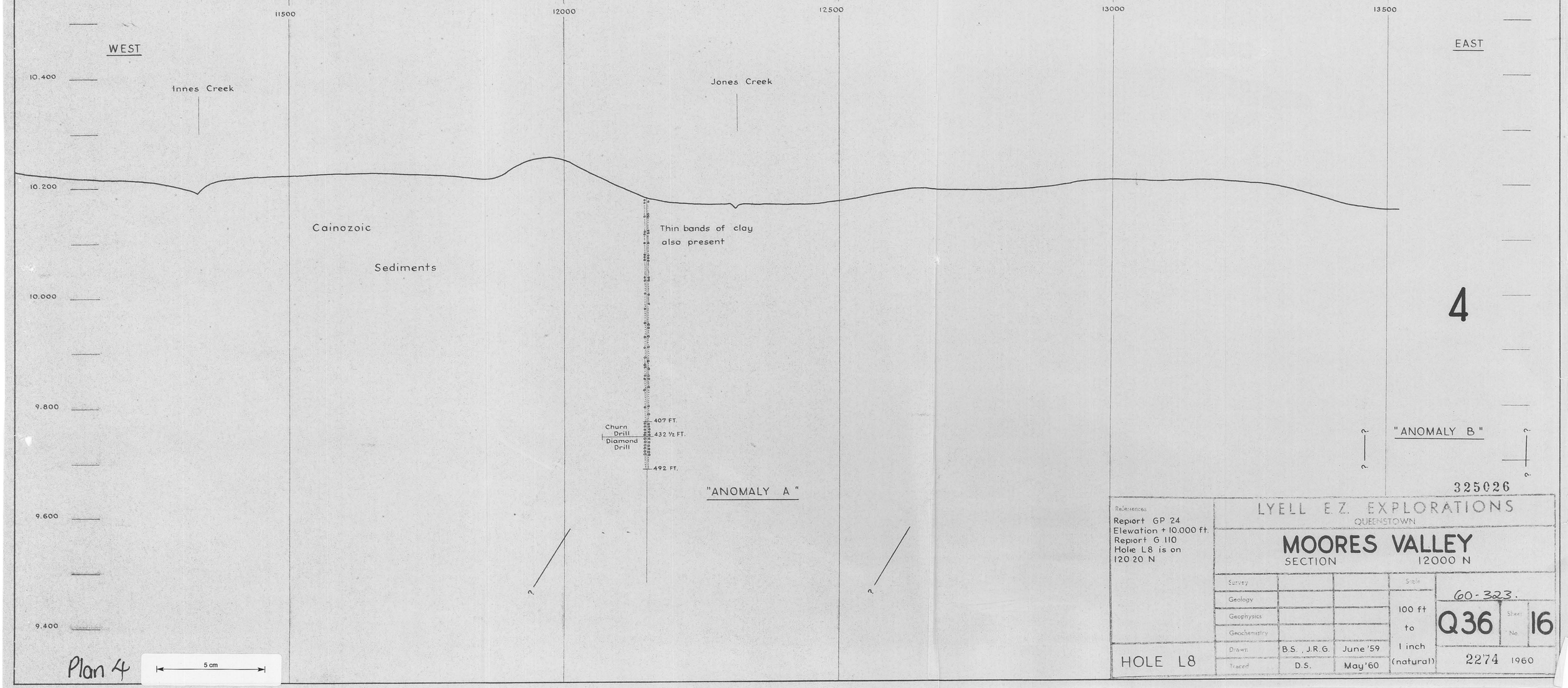
approx North

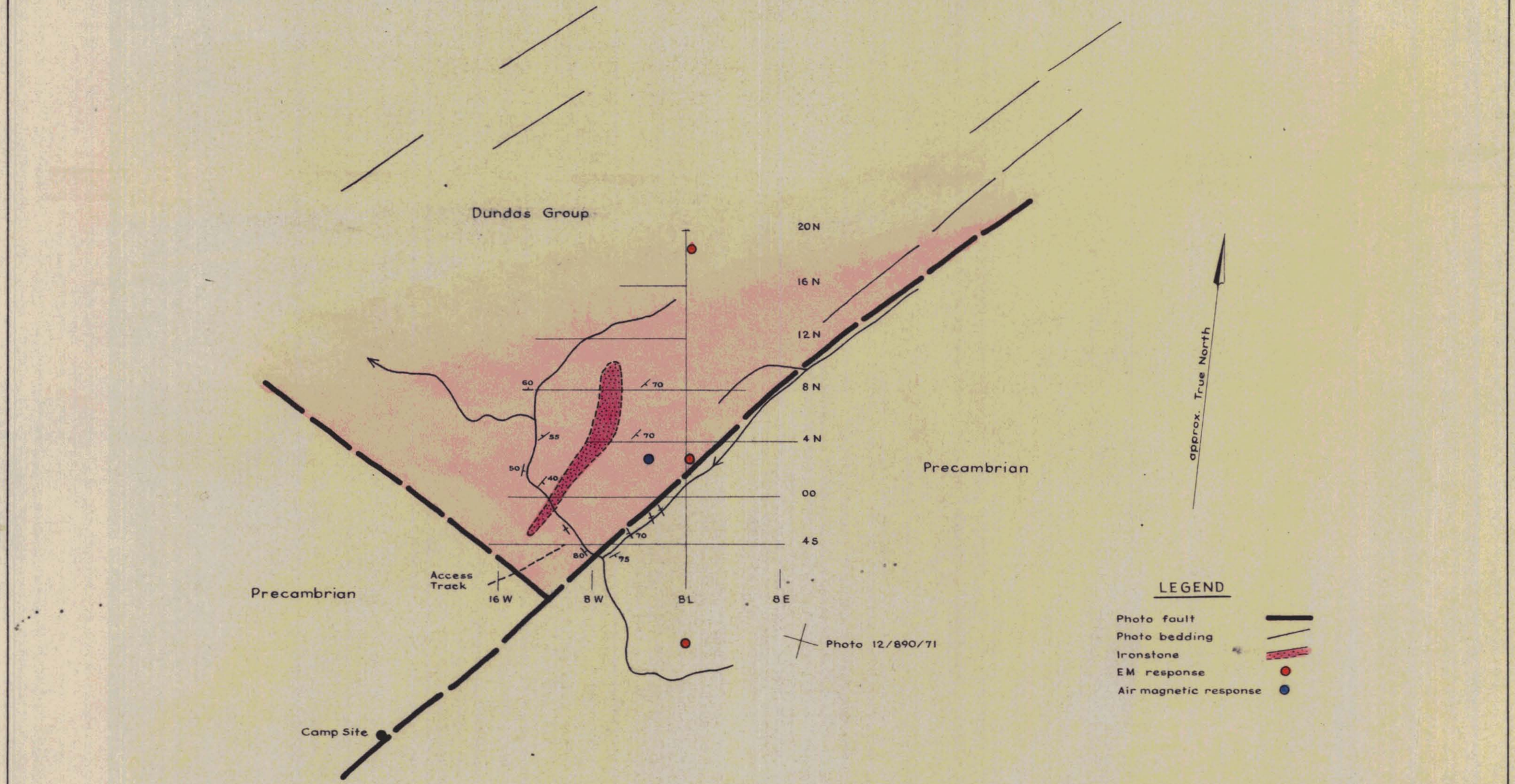
LEGEND

Bedding
Boundary
I.P. Lines completed
I.P. Anomaly
Fault
Anticline
Syncline
Afmag Crossover
Resistivity Trend / Probable Fault

8 N
00
Jeep Road
Cainozoic
Δ THIRKELL HILL
Owen Conglomerate
Dundas Group
Position partly by aeromagnetic survey
148 N Ext.
Colin Rvt.
Conder River
19 E
Exposed positn
40 E
Position by I.P.
Position by aeromagnetic survey
Moores Fault
Baseline
156 N
76 N Ext.
Innes Fault
Jones Fault
Conder Fault
128 N
108 N
A
B
C
76 N
10 W
10 E
12 N
20 S
40 E
44 N
60 E
40 S
Cainozoic
Dundas Group
Owen Conglomerate
Cainozoic
Dundas Group
Oo

325025
Plan 3


11500
12000
12500
13000
13500
WEST
EAST
10.400
10.200
10.000
9.800
9.600
9.400
Innes Creek
Jones Creek
Cainozoic
Sediments
Thin bands of clay
also present
Churn Drill
Diamond Drill
407 FT.
432 ½ FT.
492 FT.
"ANOMALY A"
"ANOMALY B"
?
?
?
?
4
325026
References
Report GP 24
Elevation + 10.000 ft.
Report G 110
Hole L8 is on
120 20 N
LYELL E.Z. EXPLORATIONS
QUEENSTOWN
MOORES VALLEY
SECTION 12000 N
Survey
Geology
Geophysics
Geochemistry
Drawn B.S., J.R.G. June '59
Traced D.S. May '60
Scale
100 ft to 1 inch (natural)
60-323.
Q36
Sheet No. 16
2274 1960
HOLE L8
Plan 4
5 cm



325027

Paleozoics

LYELL E.Z. EXPLORATIONS
QUEENSTOWN

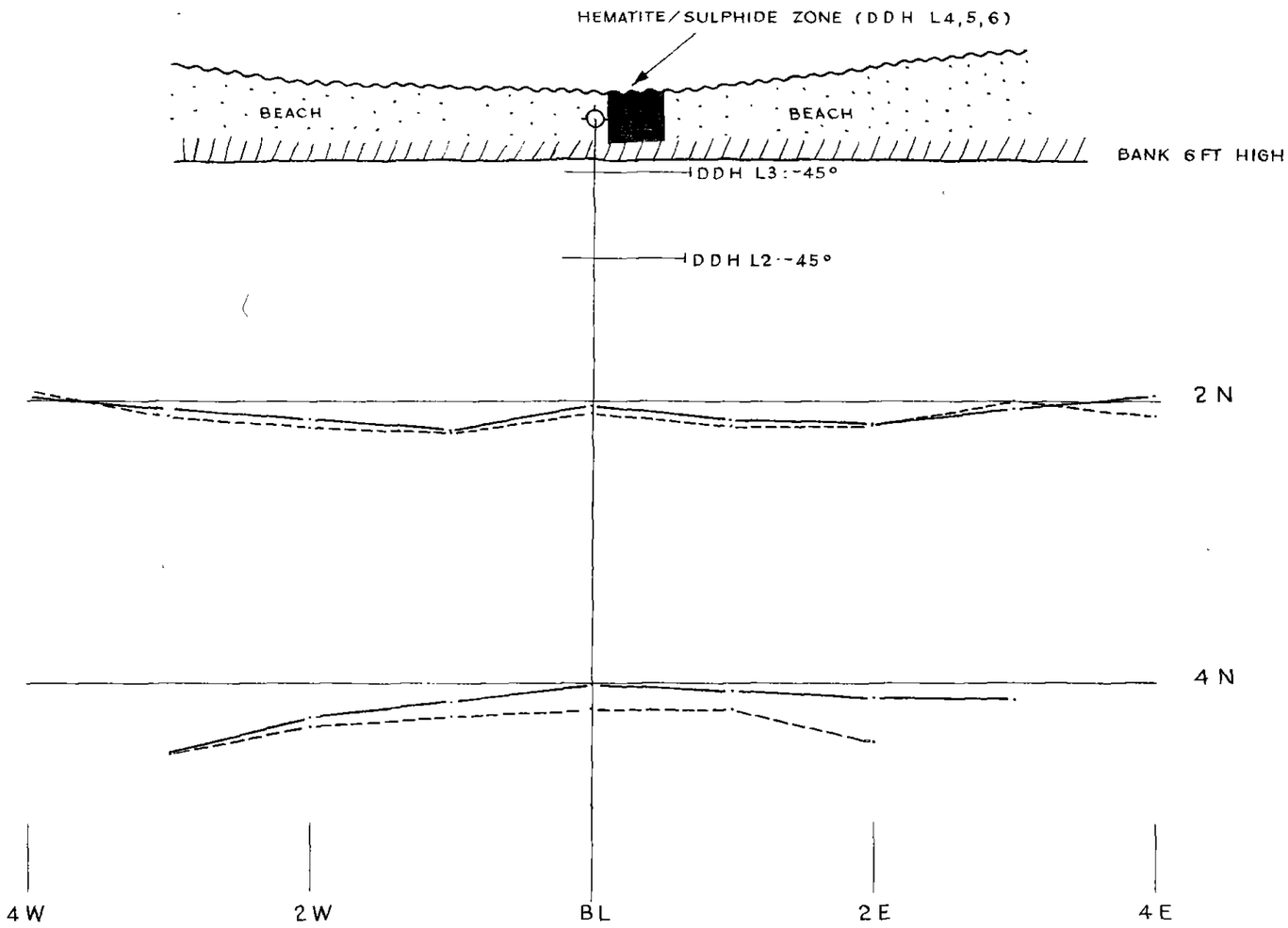
ANOMALY 10/8

60-323.

Survey			Scale	2275
Geology	B.S.	1960	750 ft to 1 inch	Q51 Sheet 1a
Geophysics				
Geochemistry				
Drawn	B.S.	1960		P. Rodda June 2, '6
Traced	D.S.	1960		

Plan 5

5 cm



325028

1000 cps ——————

5000 cps - - - - -

5 cm

Plan 6

NYRAL EXPLORATIONS

PELIAS COVE

60-323

2276

Geology	BS	1957	Hor. 1" = 100'
Geophysics	BS	1960	
	BS	1960	Vert 1" = 20°
	DS	1960	

Q 50 Sheet No 11

Drawn by: L. Rodda

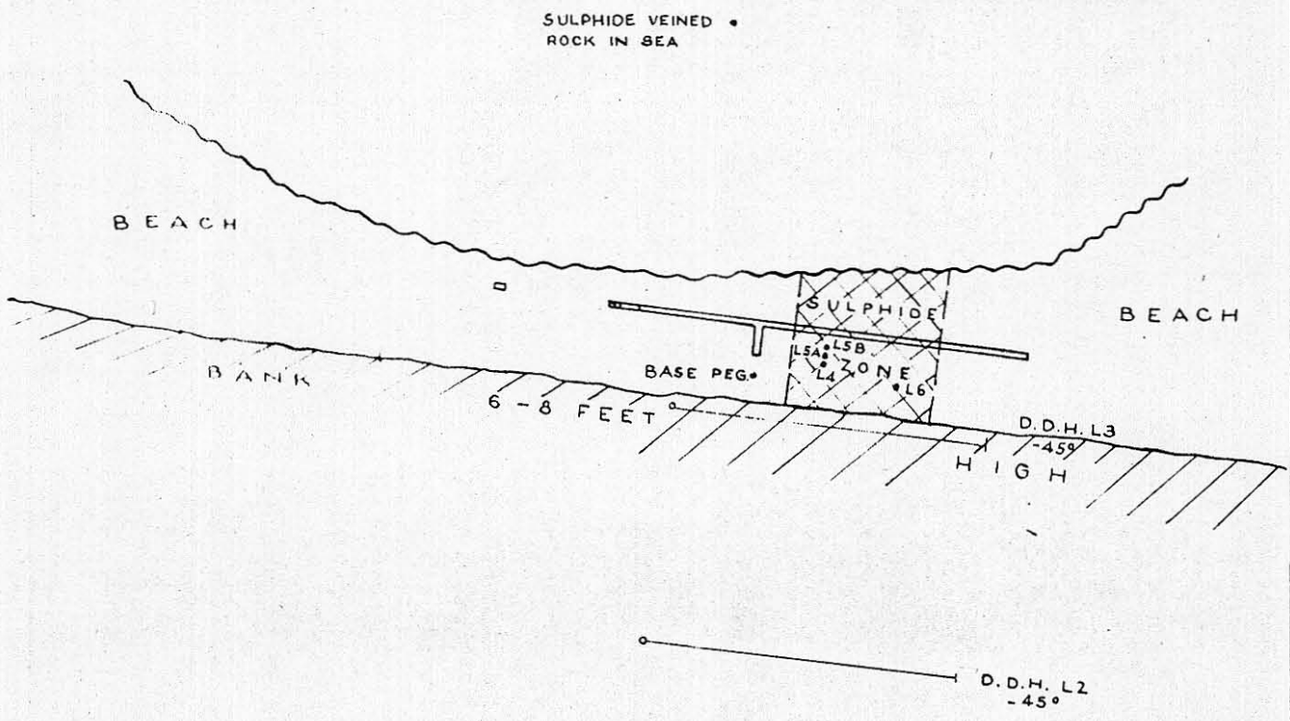
Date: June 2, '60

OZZ

60-323

PELIAS COVE PROSPECT
DRILLING

325029



BEACH
ASSAYS

Cu	Pb	Zn	Ag	Au	Fe
0.2 %	1.5%	0.9 %	0.15	0.006	42.1 %
0.04%	Tr	1.1 %	0.135	0.010	38.3 %

Gold and silver in ozs/ton
by width, the sulphide zone
on the beach is 50% sulphide.

BUSH

BUSH

BUSH

5 cm

N

1" = 50 FEET

2578—64

Plan 6a

L.E.E.
P16a

TULLAH

ROSEBERY

WILLIAMSFORD

DUNDAS

ZEEHAN

SECTION A - A'

? ? ? ?

QUEENSTOWN

STRAHAN

AMG 348600mE, 5326620mN

CAPE SOREL

SECTION B - B'

MACQUARIE HARBOUR

PT. HIBBS

SECTION C - C'

approx North

SECTION D - D'

ELLIOTT BAY

AMG 412700mE, 5208700mN

PORT DAVEY

SOUTH WEST TASMANIA

SCALE IN MILES

0 8 16

ROCKY CAPE

QUEENSTOWN

ADAMSFIELD

PORT DAVEY

Q47a

LEGEND

- CAINOZOIC
- TERTIARY BASALT
- UPPER DEVONIAN PERMIAN
- ELDON GROUP / UPPER JUNEE GROUP
- OWEN CONGLOMERATE
- DUNDAS GROUP
- PRECAMBRIAN
- GRANITE

5 cm

AMG REFERENCE POINTS ADDED

60-323

Plan 7

2277

030630

TULLAH

ROSEBERY

WILLIAMSFORD

DUNDAS

ZEEHAN

QUEENSTOWN

LINDA DISTURBANCE

STRAHAN

CAPE SORELL

MACQUARIE HARBOUR

EAGLE CREEK DISTURBANCE

PT. HIBBS

MOORES VALLEY DISTURBANCE

ELLIOTT BAY

PORT DAVEY

approx. North

SOUTH WEST TASMANIA

SCALE IN MILES

0 8 16

ROCKY CAPE

QUEENSTOWN

ADAMSFIELD

PORT DAVEY

Q47 b

LEGEND

- CAINOZOIC
- TERTIARY BASALT
- ELDON, JUNEE, DUNDAS } GROUP
- PRECAMBRIAN
- GRANITE
- ULTRABASIC
- ANTICLINE
- SYNCLINE
- FAULT (F, F F)
- TREND IN DUNDAS GROUP
- TREND IN PRECAMBRIAN

5 cm

2278

Plan 8

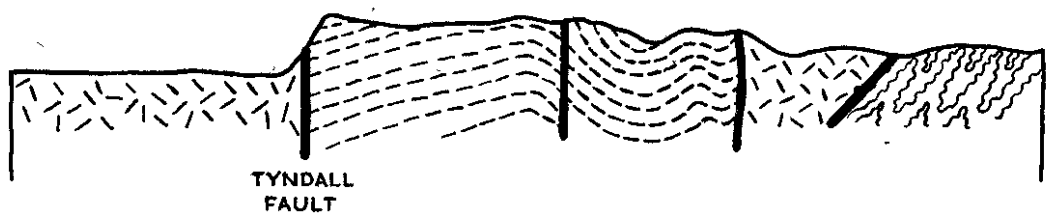
60-323

3250 31

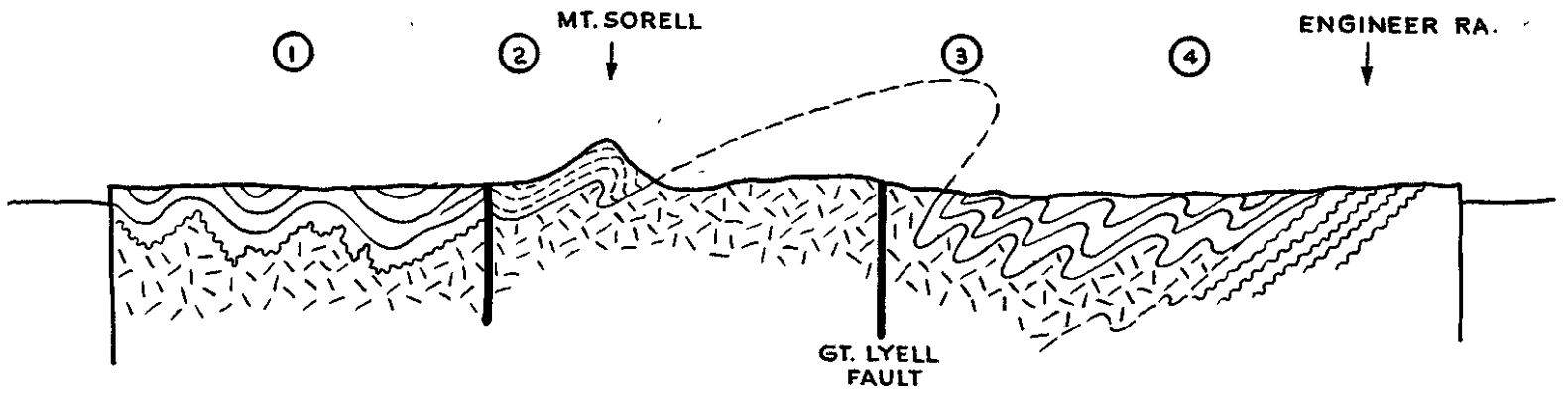
SECTION A-A

WEST

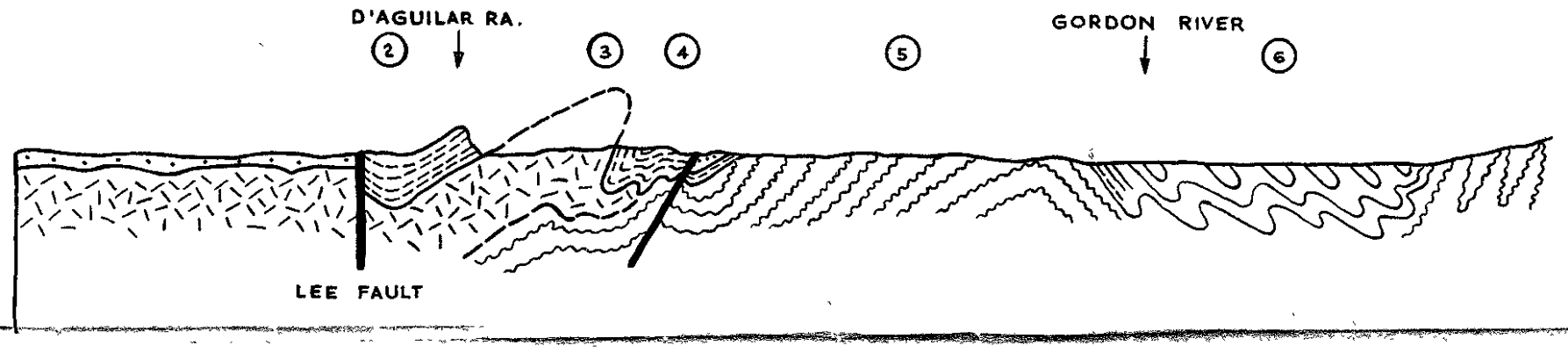
EAST



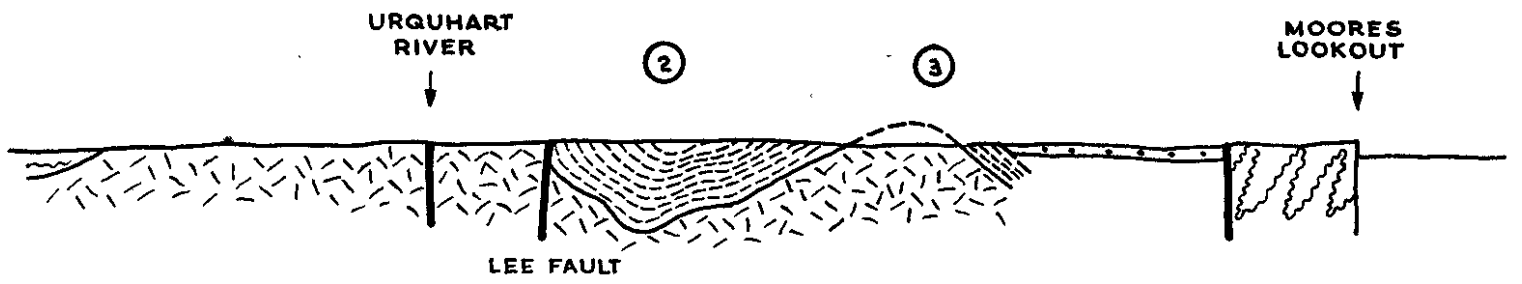
SECTION B - B'



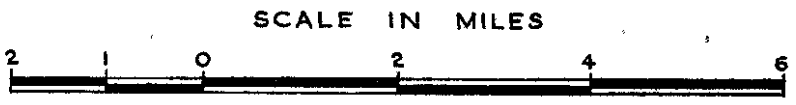
SECTION C - C'



SECTION D - D'



SCALE IN MILES



LEGEND

CAINOZOIC

ELDON GROUP
UPPER JUNEE GROUP

OWEN CONGLOMERATE

DUNDAS GROUP

PRECAMBRIAN UNCONFORMITY

FAULT