

GENERAL REP NO 17

352001

LYELL E.Z. EXPLORATIONS  
Queenstown

**MICROFILMED**

59-290

ANNUAL REPORT

Year ending 30 th. June, 1959

Annual Rep, year ending 30/6/59.

L.E.E. 12/8/59

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LYELL - E.Z. - EXPLORATIONS 352002

12th August, 1959

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, 1959.

GENERAL

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

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

PROSPECTING AREAS

The total area for exploration was slightly increased in April,  
1959 by the addition of 25 square miles at Adamsfield which previously was  
excluded from Licence No. 337. That addition made the total area in the  
Arthur concession 1546 square miles and with the 2878 square miles of the  
Gordon Licences brought the total area to 4424 square miles.

Following changes in State Legislation, all five original  
Special Prospector's Licences were surrendered early in 1959 and replaced  
by two Exploration Licences.

Arthur Licences Nos. 336, 337 and 338 in the names of Lindeman,  
Scott and Gregory were replaced by Exploration Licence No. EL 1/59 in the  
name of the Electrolytic Zinc Company of Australasia Ltd.

Gordon Licences Nos. 307 and 308 in the names of Murray and  
Hudspeth were surrendered in favour of Exploration Licence No. EL 3/59 in  
the name of the Mount Lyell Mining & Railway Company Ltd.

AMG REFERENCE POINTS ADDED

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ORGANIZATION

The immediate direction of exploration work continued in the hands of Dr. E. Scott whose title was changed to Chief Geologist.

All matters relating to transport, supply, engagement of labour and housing were attended to by Field Engineer H.W. Spooner who was assisted by a foreman and two stores clerks.

The technical personnel under the direction of the Chief Geologist varied during the year. Three draughtsmen were employed full time as were two field geologists. A third geologist was attached for five months and a further for two months. Two students were engaged for three months during the University vacation. A gravity meter operator was engaged for two months, a geophysical party from the B.M.R. for two months and a second party from McPhar Geophysics of Canada worked for 2½ months. A senior geophysicist was employed for three months.

No diamond drilling was done and all labour required for field work and supply was derived from the Mount Lyell Company.

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

Total personnel employed during the summer season is summarised below:

	E.S. Co.	M.L. Co.	Miscellaneous
Geologists	4	1	-
Students	-	2	2 (B.M.R.)
Draughtsmen	-	3	-
Sampler	-	1	-
Geophysicists	-	1	1 (Gravitometer) 3 McPhar 2 B.M.R.
Helicopter Crew	-	-	4 Helicopter Utilities
Field Engineer	-	1	-
Foreman	-	1	-
Clerks (Storesmen)	-	2	-
Cook	-	1	-
Boatman	-	1	-
Bushmen	-	19	-
Surveyors	2	-	-
	6	33	12

TOTAL 51

The total number of man days spent in the Exploration areas on investigational work was made up as follows

Geological Examination	}	5140
Geophysical Examination		
Geochemical Examination		
Diamond Drilling		811

The total number of people engaged considerably exceeded that of the previous two years and was due primarily to the very large amount of line cutting involved in the geophysical examination of ground anomalies. That phase of the work having been largely completed this year, the numbers for future needs are likely to be not more than half those of this year.

BUILDINGS AND BASES

Office

A new bedroom block was erected by L.S.E. in the yard at L.S.E. House and that addition allowed the original building to be used almost entirely for office accommodation.

L.S.E. Field

The heliport was again rented to L.S.E. by the Mount Lyell Company who maintained it in good order. An office for use by the air crew was added to the hangar building by the Mount Lyell Company and relieved the former congestion in the Field Superintendent's office.

During the summer the helicopter company was charged £7 per week for use of the hangar and office.

Birch Base

No alterations or additions were made at Birch by L.S.E. and very little maintenance was required.

An additional hut was erected by the Mount Lyell Company for the Department of Lands & Surveys and remains the property of that Department.

Moore's Valley

A timber and iron hut was erected at the end of the season to make a depot for equipment required again next summer and for bulk food supplies.

Cardigan

The hut in the Cardigan Valley was not used but was inspected regularly.

Fuel Dumps

No advanced dumps were required.

Bushman's Rest House

The Mount Lyell Company's house in Pengham Road together with all necessary accommodation equipment, cooking utensils, crockery etc. was maintained as living quarters for bushmen during their rest periods. Power and light only were charged to L.E.R.

HELICOPTER TRANSPORT

A Bell 4702 helicopter was chartered from Helicopter Utilities Pty. Ltd. from 30th November, 1958 until 15th April, 1959 at a fixed cost of £2,100 per month plus £20 per flying hour. All fuel was provided by the owners and there was no positioning charge.

The same Company had two other helicopters working in Western Tasmania during the summer, another Bell 4702 and a Miller. Limited use was made of both machines by L.E.R. during periods when our machine was unavailable by reason of accident or routine maintenance and, on several occasions, for additional work.

The general performance of the Bell 4702 helicopter was very good and much superior to that of the Djinn used in the previous year. The aircraft has excellent flying characteristics, good load carrying properties and adequate power to operate safely under West Coast climatic conditions. The service given by Helicopter Utilities Pty. Ltd. and its pilots was also good and the charter can be described as a happy one.

Statistics relating to the helicopter operations are set out on the following page.

The figures are interesting in that they reveal a performance generally better than for either of the previous two years.

The average load at 257 lbs. considerably exceeds that of the previous year (146 lbs.) and the flying cost at 0.60d. per lb./minute compares with 1.04d. last year and 1.00d. for the previous year.

It is not easy to establish a full load figure for the Bell helicopter because of the variable distances flown and the variable weather conditions. Four hundred pounds seems to be a reasonable estimate under the conditions of usage and if that be adopted, then with an average flight

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HELICOPTER STATISTICS - FIELD SEASON - L.E.S. - 1958-1959

	BELL 4702 AIRCRAFT - UTC & UFB		HILLER - THD		TOTAL
	L.E.S.	OTHERS	L.E.S.	OTHERS	
Number of flights	526	90	8	14	638
Number of flight sections	1587	215	15	27	1844
Charge time (hours-minutes)	413-52½	30-55	7.45	2.16	454-28½
Nett flying time (hours-minutes)	415-52½	30-55	7.45	2.16	454-28½
Passengers carried	1036	87	9	3	1135
Total passenger and freight load carried (lbs.)	375,259	47,818	5245	5900	432,802 (195 tons, 16 cwt., 3 qrs., 4 lbs.)
Average flight section load (lbs.)	235½	222½	350	219	257 (average)
Pound minutes flown	7,051,190	616,340	162,000	31,650	7,841,180
Total operating cost per hour	£42. 14. 0	£50	£50	£50	£43. 7. 1
Total cost/lb. minute	0.604.	0.634.	0.574.	0.864.	0.6034.
Total expenditure	£17,656.11.8	£1545.16.8	£587.10.0	£115. 6. 0	£19,705. 5. 0

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load of 235½ lbs. the aircraft was operated at a loading efficiency of 60%. The much heavier average load carried by the Miller machine is purely fortuitous and does not indicate greater capacity. For the small number of flights made for L.E.E. the aircraft happened to be loaded to near the limit of its capacity.

OTHER TRANSPORT

Other transport used for communication, transport of supplies etc. was as follows:

A. Motor Vehicles

Two Mount Lyell Utility trucks and one heavy truck and one E.S. Company Land Rover

23,652 miles Cost £993.17. 2

B. Boats

Lighter - to take Land Rover and equipment to Birch

Cost £100. 0. 0

Trawler "Liawenee" for bulk fuel supplies and for communication with Birch in weather too rough for small craft. 8 days

Cost £400. 0. 0

Launch "Corta" for regular communication with Birch 41 trips

Cost £249. 0. 0

Launch "Why Worry" for special work 2 trips

Cost £ 35.10. 0

C. Light Aircraft

For reconnaissance and food drop 6 hours, 5 minutes

Cost £ 75. 0. 0

Total £1849. 7. 2

The launch "Corta" is a 36 ft. diesel-engined work boat bought by L.E.E. second-hand in Strahan for the sum of £1000.

It is a sound and seaworthy boat in good order and well suited to Macquarie Harbour conditions. It was operated by a Mount Lyell employee as required.

RADIO COMMUNICATION

Adequate communication was maintained between field parties and Queenstown with the six Teleradios and three Pye radios bought in the previous two years.

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A small 1½ h.p. petrol driven charger was assembled and used at Birch to keep batteries charged and save their transport to Queenstown.

EQUIPMENT

There was a substantial increase in equipment needed for field operations and total new expenditure was £5,020. 4. 1.

Added to the sum reported last year, total expenditure to date has been £11,211. 10. 10.

The stock sheets attached to the report list the new equipment bought. It will be noted that major items were the motor launch, £1,000, and two Sharpe magnetometers, £614. The remainder of the expenditure was almost entirely for camping equipment needed because of the much larger number of men employed.

Write off of stock was £624. 4. 1 and the details are recorded on the statements. The total figure includes the sum of £102. 16. 0 which was the loss on 30 radio batteries used over the last two years and sold at the end of the last field season.

FOOD

All personnel working from advanced bases or field camps were supplied with food free of charge. The total expenditure on food was £3,941. 12. 1 and the cost per man day 25/-.

The latter figure was higher than for the previous year and is considered to be excessive. For the next season, the ration scale is to be revised and the number of food items reduced. Wastage in camps was considerable and in the coming year it is proposed that the Foreman and Field Engineer exercise such closer control.

DIAMOND DRILLING

No drilling was undertaken.

GROUND GEOPHYSICS

Ground geophysics constituted the major part of the work done during the field season. Details of the work are given in the report of the Chief Geologist attached and the results are summarised therein.

Before the commencement of the field season the need of an

experienced geophysicist to direct the ground follow-up of aerial geophysics was realised but no suitable applicant could be found. Consequently an arrangement was made with Rio Tinto Australia Ltd. to hire a senior geophysicist, J.E. Bonivell, from them for a period of 3 months. Bonivell was housed in Queenstown during his engagement and was of considerable assistance with the direction, co-ordination and interpretation of the work done by the B.M.B., McPhar and L.E.E. parties. His work was particularly useful in the reduction and interpretation of gravimeter surveys.

The services of H. Hancock from Adastra Hunting Geophysics were also availed of for consultation and grading of aerial anomalies in order of priority.

Ground work was divided roughly into four groupings:

AEMG and I.P. surveys by the McPhar party;

Electromagnetic work by the B.M.B. party;

Gravimeter survey by I. Sefton (who was engaged with the instrument from a Sydney Consultant);

Miscellaneous (including Magnetometer, R.E.M., Vertical Loop, etc.) by L.E.E. parties.

The geophysical work involved much line cutting by the bushmen, as detailed by the Chief Geologist in his report, and having regard to that, the progress made with ground work was good.

#### EXPENDITURE

Expenditure for all purposes for the year ended 30th June, 1959 was £88,044. 6. 11, making the total investment in South West Tasmania £226,833. 17. 7.

Details of the year's expenditure are shown on the cost statement attached to the report.

#### PROGRESS OF EXPLORATION

The first two years of exploration work were largely concerned with map making and regional geology to locate areas favourable for mineralisation and to aerial geophysical work to locate anomalies within the favourable parts. The investigations were spread over large areas and a very large amount of information had to be assembled, sifted and recorded on plans and in reports.

At the end of the second year it was known that in the Gordon areas some 475 square miles alone out of the original 2878 square miles could be regarded as of interest.

The work of the third year has served to reduce and define still further the areas worth detailed and final investigation. Now the area of real interest is only 30 square miles of which 12 square miles are in one block in Moore's Valley.

Less work has been done in the Arthur areas but all the evidence available indicates that final interest is centred in about 30 square miles only.

The Lyell - N.S. organisation has therefore largely completed its initial objective and a new phase of detailed and localised investigation with drilling as part of the programme will be embarked on in the next summer.

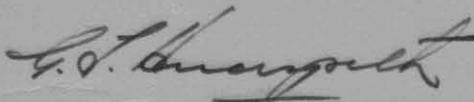
These matters are elaborated in the Chief Geologist's report but he wisely makes no forecast of ultimate success or failure.

The prime prospect located by the exploration organisation lies buried under an unknown depth of gravels in Moore's Valley. Its presence was decided by structural reasoning and analogy with structures at the Mount Lyell field. Ground geophysical work over part of the area has indicated the presence of conductors. More geophysical work is required to define these conductors and test for the presence of others but finally drilling alone will determine the economic importance of the indications.

#### CONCLUSION

In conclusion, I record my appreciation of the efforts of all personnel employed during the year and of the good relations between officers of both Companies.

Yours faithfully,



Manager

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## Lyell - E.Z. - Explorations

EXPENDITURE FOR PERIOD ENDED 30th June, 1959

No. 13(59/59)

3502.8.56 Hingston

	Mt. Lyell	E. Zinc	Total	TO DATE		
				Lyell	E.Z.	Total
Administration	123.19.11	125. 0. 0	248.19.11	6283.16. 8	1640.10. 0	7924. 6. 8
2. Investigations	224.18. 0	527.16. 7	752.14. 7	17907.18. 2	27821.17. 0	45729.15. 2
Access & Housing	92.16. 7	48. 7. 5	141. 4. 0	28625. 2. 9	741.19. 9	29367. 2. 6
4. Core Drilling				107. 9. 5		107. 9. 5
Exploratory Dev.						
Plant	34.15. 6		34.15. 6	4301. 8. 4	614. 4.10	4915.13. 2
<b>Total</b>	<b>476.10. 0</b>	<b>701. 4. 0</b>	<b>1177.14. 0</b>	<b>57225.15. 4</b>	<b>30818.11. 7</b>	<b>88044. 6.11</b>
Balance due to		112. 7. 0		13203.11.10		

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

.....General Manager

.....Accountant

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

.....Superintendent

.....Accountant

LYELL - R.A. - EXPLANATIONS

Plant and Equipment Purchased and On Hand 30. 6.59

	Plant & Equipment Purchased			Lost or Destroyed		On hand 30. 6.59	
	Qty.	Unit Price	Value	Qty.	Value	Qty.	Value
Anti-venine serum	.			8		.	
Axes	17	1.10.10	26. 4. 2	11	16.19. 2	14	21.11. 8
Axes - half	3	1.13.11	5. 1. 9	3	5. 1. 9	3	5. 1. 9
Aerials - radio	.	6. 0		3	18. 1	3	18. 1
Auger - 1"	1	12. 6	12. 6	1	12. 6	.	
Adze	1	1. 2. 4	1. 2. 4	.		1	1. 2. 4
Bags - sleeping envelopes	18	1. 4. 9	22. 5. 6	8	19.18. 0	34	42. 1. 6
Bags - sleeping	18	11.17. 6	213.15. 0	3	35.12. 6	32	380. 0. 0
Bandages - constriction	.			.		4	2.16. 8
Batteries - radio <sup>x</sup>	16	7. 4. 7	115.13. 4	.	137. 2. 4	.	
Battery charger - portable	1	110. 0. 0	110. 0. 0	.		1	110. 0. 0
Battery carrying straps	4	4. 0	16. 0	2	8. 0	2	8. 0
Basins - large	6	13. 1	3.18. 6	3	1.19. 3	13	8. 9. 9
Basins - small	3	9. 6	2. 7. 6	6	2.17. 0	10	4. 15. 0
Beaters - egg	.			.		1	10.6
Billies - aluminium and tins	33	11. 1	18. 5. 9	48	26.12. 0	19	10.10. 3
Blankets - single	36	2.11. 3	92. 5. 0	8	20.10. 0	80	205. 0. 0
Boat - fibre glass 8'4" x 3'9"	.			.		1	74. 5. 2
Boilers - aluminium	4	2. 5. 9	9. 3. 0	6	13.14. 6	7	16. 0. 3
Boot lasts	4	18. 6	3.14. 0	4	3.14. 0	2	1.17. 0
Boards - mapping	6	1.10. 0	9. 0. 0	.		11	16.10. 0
Bowls - soup	51	3. 3	8. 5. 9	.		51	8. 9. 9
Books - First Aid	.	5. 0		4	1. 0. 0	6	1.10. 0
Bread board	1	8. 9	8. 9	.		1	8. 9
Brooms - assorted	.	13.10		2	1. 7. 8	4	2.15. 2
Brushes - scrubbing	2	3. 9	7. 6	.		2	7. 6
Buckets - canvas	.	1. 2. 4		4	4. 9. 4	2	2. 4. 8
Buckets - metal	4	10. 6	2. 2. 0	6	3. 3. 0	4	2. 2. 0
Buckets - wringer	1	2. 2. 6	2. 2. 6	.		1	2. 2. 6
Bottles - decanting Sandigga (20 lb.)	4	1.17. 6	7.10. 0	.		4	7.10. 0

Plant and Equipment Purchased			Lost or destroyed		On hand 30. 6.59	
Qty.	Unit Price	Value	Qty.	Value	Qty.	Value
Cans - watering	.	1. 3. 6	1	1. 3. 6	1	1. 3. 6
Carborundum stones	18	5. 0	18	4.10. 0	7	1.15. 0
Cleaners - plate scrapers	.		12	1. 7. 0	.	
Cloths - dish	8	3. 9	10	1.17. 6	4	15. 0
Coats - waterproof (3)	.		.		8	36.16. 0
Coats - waterproof - japara	17	2. 2. 0	.		32	67. 4. 0
Containers - plastic	.	4. 2	1	4. 1	4	16. 8
Clocks - alarm	1	1.14. 6	.		1	1.14. 6
Chisels - wood - 1"	1	12. 6	.		1	12. 6
Cylinders - Handigas	66	2. 1. 9	6	12.10. 6	60	125. 5. 0
Dishes - baking	4	10. 9	6	3. 4. 6	3	1.12. 3
Dishes - gold panning	5	12. 6	7	4. 7. 6	6	3.15. 0
Dishes - pie	11	11. 6	6	3. 9. 0	5	2.17. 6
Dishes - cake	4	7. 6	.		4	1.10. 0
Dixies	2	17.11	.		2	1.15.10
Drums - 12 gallon	9	2. 0. 0	3	6. 0. 0	6	12. 0. 0
Drum - openers	2	1. 0. 0	.		2	2. 0. 0
Files - 10" & 12"	.		6	16. 0	.	
Files - Surform	.	1. 6. 6	1	1. 6. 6	1	1. 6. 6
First Aid Kits - large	2	5.19. 1	1	5.19. 1	6	35.14. 6
First Aid Kits - small	.	1. 6. 0	2	2.12. 0	3	3.18. 0
Fly - tent - 14' x 16' x 12 oms.	18	28. 7.10	1	28. 7.10	29	825. 7. 2
Fly - tent (S.H.) - 14' x 16'	.		.		1	7. 0.10
Forks - large table	27	3. 4	7	1. 3. 4	39	6.10. 0
Forks - small table	19	5. 3	29	7.12. 3	16	4. 4. 0
Forks - meat	.		1	17. 6	2	1.15. 0
Forks - long handled - 10 type	.		.		1	18. 6
Flooring - industrial (sheet)	.		.		1	2. 4. 8
Frames - fire	5	1.15. 0	.		5	8.15. 0
Grillers - steak	3	10. 6	4	2. 2. 0	6	3. 3. 0
Ground sheets	12	2. 6. 8	1	2. 6. 8	35	81. 13. 4

Plant and Equipment Purchased			Lost or destroyed		On hand 30. 6.59		
Qty.	Unit Price	Value	Qty.	Value	Qty.	Value	
Handigas Filling Cabinet	1	21. 0. 6	21. 0. 6	.	.	1	21. 0. 6
Hammers - drill	.	.	.	.	4	2. 2. 4	
Hammers - claw	7	1. 1. 4	7. 9. 4	3	3. 4. 0	6	6. 8. 0
Hammers - engineers	2	10. 9	1. 1. 6	.	.	3	1.12. 3
Hats - sea'westers	11	10. 3	5.12. 9	9	4.12. 3	20	10. 5. 0
Haversacks	8	2. 3. 8	17. 9. 4	5	10.18. 4	7	15. 5. 8
Hooks - slash	21	1.13. 6	35. 3. 6	13	21.15. 6	20	33.10. 0
Hooks - fern	5	15. 0	3.15. 0	1	15. 0	7	5. 5. 0
Hose - rubber 1 1/2"	.	.	.	15'	3.18. 9	.	.
Hose - rubber 3/4"	.	.	.	.	.	180'	33.15. 0
Hose - suction 3/4"	.	.	.	.	.	15'	3. 6. 3
Hose - suction 2"	.	.	.	.	.	30'	14.15. 0
Hose - rubber 1 1/2"	60'	.	10.18. 8	.	.	60'	10.18. 8
Hose - canvas 2"	60'	.	22. 7.10	.	.	60'	22. 7.10
Hoe	1	9.11	9.11	1	9.11	.	.
Hypodermic needles	4	1. 2	4. 8	11	12.10	12	14. 0
Hypodermic syringes	2	10. 5	1. 0.10	3	1.11. 3	6	3. 2. 6
Jugs - assorted	.	17. 8	.	1	17. 8	10	8.16. 7
Kettles	.	.	.	.	.	1	3. 5. 0
Knives - bread	2	7. 1	14. 2	.	.	7	2. 9. 7
Knives - carving	2	13. 8	1. 7. 4	6	4. 2. 3	6	4. 2. 3
Knives - table	29	5. 6	7.19. 6	22	6. 1. 0	38	10. 9. 0
Knife - vegetable	1	4. 6	4. 6	.	.	1	4. 6
Launch - "Centa"	1	1000. 0. 0	1000. 0. 0	.	.	1	1000. 0. 0
Lamps - Handigas	1	4. 4. 6	4. 4. 6	.	.	1	4. 4. 6
Lamps - carbide	.	.	.	.	.	1	2. 5. 3
Lamps - hurricane	.	.	.	.	.	1	17. 7
Lamps - Coleman	7	6.15. 0	47. 5. 0	.	.	9	60.15. 0
Lamps - Tilley	.	6.18. 6	.	.	6.18. 6	7	48. 9. 6
Indies	2	3.11	7.10	.	.	3	11. 9
Levels - spirit	.	.	.	.	.	1	18. 6

	Plant and Equipment Purchased			Lost or destroyed		On hand 30. 6. 59	
	Qty.	Unit Price	Value	Qty.	Value	Qty.	Value
Li-Los - rubber 80" x 30"	19	6. 6. 0	119.14. 0	1	16.16. 0	35	220.10. 0
Ladders	1	16. 0. 0	16. 0. 0	.		1	16. 0. 0
Ladders - step	1	10. 0. 0	10. 0. 0	.		1	10. 0. 0
Magnets	6		2. 2. 4	.		6	2. 2. 4
Map and photo holders	4	1.17. 1	7. 8. 4	.		8	14.17. 0
Washers - vegetable	2	3. 9	7. 6	.		2	7. 6
Wattocks	5	14. 6	3.12. 6	4	2.18. 0	7	5. 1. 6
Mirrors	2	6. 0	12. 0	2	12. 0	.	
Mugs - dish	2	1.10	3. 8	7	12.10	7	12.10
Mugs - drinking	30	4. 9	7. 2. 6	12	2.17. 0	57	13.10. 9
Nets - cargo	.			.		4	62.10. 0
Ovens - camp	2	4.18. 6	9.17. 0	1	4.18. 6	5	24.12. 6
Pans - frying	3	17. 6	2.12. 6	4	3.10. 0	10	8.15. 0
Rents - waterproof	22	4. 9. 0	97.18. 0	4	17.16. 0	31	137.19. 0
Picks - S.S.	7	18. 9	6.11. 3	6	5.12. 6	5	4.13. 9
Picks - D.S.	1	17. 6	17. 6	.		1	17. 6
Picks - geologists	.			.		6	12. 0. 0
Pillows	.			.		13	9. 8. 6
Pillow cases	.	4. 4		9	1.19. 0	6	1. 6. 0
Plates - large	19	5. 5	5. 2.11	21	5.13. 9	39	10.11. 3
Plates - small	19	1. 5	1. 6.11	.		28	1.19. 8
Pliers	3	6.10	1. 0. 6	6	2. 1. 0	4	1. 7. 4
Plumbobs	4	3. 6	14. 0	2	7. 0	2	7. 0
Poles - hanging - sets	5	1.10. 0	7.10. 0	4	6. 0. 0	1	1.10. 0
Pumps - kero	4	5. 6	1. 2. 0	7	1.18. 6	5	1. 7. 6
Radios - Teleradio 5A	.			.		6	1201. 4. 6
Radios - Pye - portable	.			.		3	180. 0. 0
Radio - Radiola - table model	.			.		1	25. 0. 0
Radio covers - canvas	.	2.10. 0		1	2.10. 0	4	10. 0. 0
Radio poles - sets	1	1.10. 0	1.10. 0	.		5	7.10. 0
Rakes - garden	.			.		2	1.13. 1

352014

Plant and Equipment Purchased			Lost or destroyed		On hand 30. 6. 59		
Qty.	Unit Price	Value	Qty.	Value	Qty.	Value	
Rasps - wood	6. 7		7	2. 6. 1	2	13. 2	
Ration packs - emergency	10	168.10.10	.		10	168.10.10	
Refrigerators - kerosene	.		.		2	139. 0. 0	
Rope - wire 1"	.		.		250'	14.11. 8	
Rowlocks	.		.		1	4.10	
Rucksacks - Bergen	23	9.10. 0	218.10. 0	1	9.10. 0	32	504. 0. 0
Rucksacks - Paddi Hallen	.			.		3	27. 8. 3
Rules - folding 3'	.			.		2	16.10
Safes - Simpson	.			4	13.18. 0	.	
Safes - ment - steel	5	2. 0.10	10. 4. 2	8	16. 6. 8	4	8. 3. 4
Sampling sheets - rubberised	4	1. 3. 8	4.14. 8	.		9	10.15. 0
Saucepans	6	1. 0. 0	6. 0. 0	.		6	6. 0. 0
Saws - hand - 26"	.			.		2	3. 8. 6
Saws - bow	1	2. 6. 3	2. 6. 3	.		1	2. 6. 3
Saws - crosscut - 6'	1	6.19. 6	6.19. 6	.		1	6.19. 6
Saws - crosscut - 4'6"	1	5.10. 0	5.10. 0	.		1	5.10. 0
Scales - spring	2	5.15. 0	11.10. 0	1	5.15. 0	6	34.10. 0
Screw drivers - 6"	.			.		1	3. 1
Shakers - salt and pepper	1	8.11	8.11	.		1	8.11
Sheets - single	.	1. 0. 9		11	11. 8. 3	22	22.16. 6
Shovels - S/H R.M.	6	14. 7	4. 7. 6	.		15	10.18. 9
Shovels - L/H R.M.	.	14. 8		1	14. 8	.	
Slices - fish	1	2. 4	2. 4	5	11. 8	6	14. 0
Snake-bite outfits	.			16	1.12. 0	.	
Spades	1	17. 6	17. 6	1	17. 6	.	
Spanners - shifting 4"	.			1	6. 8	.	
Spanners - shifting 12"	.			1	1. 8.11	.	
Splints - Liston - sets of 5	.			.		4	15. 0. 4
Spoons - baking	.			2	5. 6	2	5. 6
Spoons - dessert	18	3. 9	3. 7. 6	10	1.17. 6	41	7.13. 9
Spoons - table	6	6. 3	1.17. 6	.		13	4. 1. 3
Spoons - tea	30	9	1. 2. 6	23	17. 3	30	1. 2. 6
Sprayers - fly	3	4. 2	12. 6	5	1. 0.10	7	1. 9. 2
Stretchers - Furley	.			.		5	35. 7. 1
Stretchers - camp	4	3. 0. 0	12. 0. 0	.		18	34. 0. 0

352015

Plant and Equipment Purchased			Lost or destroyed		On hand 30. 6.59		
Qty.	Unit Price	Value	Qty.	Value	Qty.	Value	
Stoves - Coleman - kerosene	2	10.18. 6	21.17. 0	2	21.17. 0	6	65.11. 0
Stoves - Primus	.			.		2	7.19. 0
Stoves - Handigas	10	11. 6. 9	113. 7. 6	.		10	113. 7. 6
Stools - wooden	.			.		5	1. 0. 0
Stillsons - 24"	.			.		1	1.14. 9
Stillsons - 18"	.	19. 0		1	19. 0	.	
Strainers - vegetable	1	6. 3	6. 3	.		1	6. 3
Snips - tin	1	11. 8	11. 8	1	11. 8	.	
Scissors	1	1. 5. 6	1. 5. 6	.		1	1. 5. 6
Table tops	3	2.15. 0	8. 5. 0	3	8. 5. 0	3	8. 5. 0
Table cloths	.	9. 6		1	9. 6	.	
Tapes - steel - 66'	.	3.10. 0		.		1	3.10. 0
Tapes - rope - 100'	12	2.10. 0	30. 0. 0	15	37.10. 0	.	
Tapes - metallic - 100'	6	1.16. 7	10.19. 6	.		6	10.19. 6
Tapes - spring - 6'	4	5. 2	1. 0. 8	.		4	1. 0. 8
Tapes - linen - 100'	2	2.10. 5	5. 0.10	.		2	5. 0.10
Teapots	2	3. 2. 9	6. 5. 6	3	9. 8. 3	8	25. 2. 0
Tents - 12' x 10' x 12 ozs.	14	30. 6. 2	424. 6. 4	1	30. 6. 2	21	636. 9. 6
Tents - 10' x 8' x 12 ozs.	2	20. 5. 0	40.10. 0	.		4	81. 0. 0
Tents - hikers - one man	1	5.19. 6	5.19. 6	2	11.19. 0	2	11.19. 0
Tents - hikers - two men	11	11.10. 6	126.15. 6	3	34.11. 6	12	138. 6. 0
Tent poles - sets	.	1.10. 0		5	7.10. 0	2	3. 0. 0
Tins - bread	.	1.10. 0		.		1	1.10. 0
Tin openers	9	1. 6	15. 6	8	12. 0	8	12. 0
Torches	8	1. 0. 2	8. 1. 4	11	11. 1.10	5	5. 0.10
Towels - tea	14	4. 8	3. 5. 4	11	2.11. 4	23	9. 7. 4
Towels - hand	1	12. 3	12. 3	.		3	1.16. 9
Trowels	.	9. 6		.		6	2.17. 0
Trolley (L.R.R. Field)	.	23.12. 6		.		1	23.12. 6
Umbrella	.	2.18. 6		.		1	2.18. 6
Vices	2	4.12. 6	9. 5. 0	1	4.12. 6	1	4.12. 6
Wheelbarrow - rubber tyred	1	16.15. 8	16.15. 8	.		1	16.15. 8
Wedges - splitting	4	5. 0	1. 0. 0	4	1. 0. 0	.	

352016

Plant and Equipment Purchased			Lost or destroyed		On hand 30. 6. 59	
Qty.	Unit Price	Value	Qty.	Value	Qty.	Value
<u>L.E.E. HOUSE - GEOCHEMICAL EQUIPMENT</u>						
Broom - banister	.	3. 6	.	.	1	3. 6
Cabinet - steel with trays	.	50. 0. 0	.	.	1	50. 0. 0
Dust pan	.	7. 6	.	.	1	7. 6
Fan - exhaust 9"	.	15.19. 6	.	.	1	15.19. 6
Mallet - wooden	.	2. 0. 0	.	.	1	2. 0. 0
Pestles & mortars (sets)	.	13. 4	.	.	2	1. 6. 8
Sieves	.	5. 0. 0	.	.	2	10. 0. 0
Sample boxes	.	5. 0. 0	.	.	6	30. 0. 0
Sampling spikes	.	3. 0. 0	.	.	6	18. 0. 0
Sheets - plastic	.	5. 0	.	.	24	6. 0. 0
Table 12' x 2'	.	20. 0. 0	.	.	1	20. 0. 0
Tools	.	8. 9	.	.	6	2.12. 6
<u>L.E.E. HOUSE - FURNITURE</u>						
Cabinets - plan filing - 6 drawer	1	77. 0. 1	77. 0. 1	.	4	308. 0. 4
Cabinets - photo filing - 6 drawer	.	126.10.11	.	.	1	126.10.11
Cabinets - films - 4 drawer	.	36.13. 4	.	.	1	36.13. 4
Chairs - telephonist	.	9. 8. 3	.	.	1	9. 8. 3
Chairs - kitchen	.	2.10. 0	.	.	3	7.10. 0
Chairs - straight back	1	5. 2. 0	5. 2. 0	.	1	5. 2. 0
Drawing board and frame	.	7.10. 0	.	.	1	7.10. 0
Desks - office - 4 drawer	1	22. 5. 6	22. 5. 6	.	2	42. 7. 3
Tables - draughting - 3 trestle	.	50. 0. 0	.	.	1	50. 0. 0
Tables - draughting	.	20. 0. 0	.	.	3	60. 0. 0
<u>L.E.E. HOUSE - EQUIPMENT - DRAWING OFFICE</u>						
Basket - waste paper	1	1.18. 6	1.18. 6	.	2	3.17. 0
Books - Walkers Loose Leaf	2	3. 2. 9	6. 5. 6	.	3	8. 0. 6
Barometers - 3" aneroid	3		84. 7. 3	.	3	140.15. 3
Compasses - prismatic	3	17. 0. 0	51. 0. 0	.	3	51. 0. 0
Desk Calendar	.	7. 0	.	.	1	7. 0
Durex dispenser	.	1.12. 6	.	.	2	3. 5. 0

352017

Plant and Equipment Purchased			Lost or destroyed		On hand 30. 6.59	
Qty.	Unit Price	Value	Qty.	Value	Qty.	Value
Guillotine	6.14. 0		.		1	6.14. 0
Lettering guides - 1/4", 1/2", 1"			.		3	3.14. 6
Letter tray (oak)	1. 2. 6		.		1	1. 2. 6
Magnetometers - Sharpe	307. 7. 5	614.14.10	.		2	614.14.10
Map and photo holders			.		7	13. 0. 2
Musbering machine	4.14. 8		.		1	4.14. 8
Optical squares (double pentaprisms)	9. 4. 9	46. 3. 9	.		5	46. 3. 9
Parallel ruler	4.10. 0		.		1	4.10. 0
Pens - crowquill			.		36	16. 6
Pens - Graphos	1.15. 0		.		1	1.15. 0
Pens - contour	15. 0		.		1	15. 0
Penholders - sapping	10		.		6	5. 0
Pen prickere - Harling	5. 6		.		2	11. 0
Pencil sharpener	2. 0. 0		.		1	2. 0. 0
Perforator - Velox	14. 6		.		1	14. 6
Protractors - W. & G.	9. 6	19. 0	.		4	1.18. 0
Scales, 10-40, 30-60, 60-90.	10. 6		.		6	3. 3. 0
Scales, 12", No. 512, W. & G.	10. 6		.		2	1. 1. 0
Scales, 12", No. 712, W. & G.	10. 6		.		2	1. 1. 0
Stamp - rubber - L.K.E.	5. 5		.		1	5. 5
Stamp - plans	1.13. 0	1.13. 0	.		1	1.13. 0
Stamp pad - self inking	15. 0	15. 0	.		2	18. 3
Set square - 13" celluloid 60°	11. 6		.		2	1. 3. 0
Set square - 13" celluloid 45°	11. 6		.		2	1. 3. 0
Straight edge - steel	4.10. 0		.		1	4.10. 0
Straight edge - wood	5. 0		.		1	5. 0
Stereoscope - "Sirius"	45. 9.10		.		1	45. 9.10
Stereoscope - pocket	2. 0. 0		.		2	4. 0. 0
Stereograph - multi	60. 0. 0		.		1	60. 0. 0
Scissors	19. 6		.		1	19. 6
Maps, charts etc.			.			649. 2. 0

352018

Plant and Equipment Purchased			Lost or destroyed		On hand 30. 6.59	
Qty.	Unit Price	Value	Qty.	Value	Qty.	Value
<u>BIRCH INLET CAMP</u>						
Basins - wash hand (S.H.)	•	2. 0. 0	•	•	2	4. 0. 0
Boiler - Black Jack	•	15. 0. 0	•	•	1	15. 0. 0
Cupboard	•	2. 0. 0	•	•	1	2. 0. 0
Copper cylinder - 40 gal.	•	7. 0. 0	•	•	1	7. 0. 0
Copper stand and copper	•	3. 0. 0	•	•	1	3. 0. 0
<u>Fire Extinguishers</u>						
7 1/2 lb. dry chemical	•	19.19. 0	•	•	1	19.19. 0
2 1/2 lb. CO <sub>2</sub>	•	17.10. 0	•	•	1	17.10. 0
Soda-acid	•	12.15. 0	•	•	1	12.15. 0
C.O. <sub>2</sub>	•	5.12. 6	•	•	2	11. 5. 0
Pump - Alcon with J.A.P. motor	•	30. 0. 0	•	•	1	30. 0. 0
Stretchers - built in	•	3. 0. 0	•	•	4	12. 0. 0
Six	•	10. 0. 0	•	•	1	10. 0. 0
Stove - fuel	•	30. 0. 0	•	•	1	30. 0. 0
Table - 16' x 3' (with shelf)	•	10. 0. 0	•	•	1	10. 0. 0
Table - 6' x 3' (2 trestles)	•	5. 0. 0	•	•	1	5. 0. 0
Table - 14' x 2'6" (4 trestles)	•	10. 0. 0	•	•	1	10. 0. 0
Tank - 400 gal.	•	5. 0. 0	•	•	1	5. 0. 0
Trolley - 2 ft. gauge	•	15. 0. 0	•	•	1	15. 0. 0
Wash Troughs (S.H.)	•	2. 0. 0	•	•	1	2. 0. 0
<u>ON MOTOR LAUNCH "CORA"</u>						
Bottles - water - 1 gal.	2	7. 6	15. 0	•	2	15. 0
Drums - 4 gal.	2	5. 0	10. 0	•	2	10. 0
Fire extinguisher - 1 qt. C.O. <sub>2</sub>	1	5.12. 6	5.12. 6	•	1	5.12. 6
<u>Tools</u>						
Engineers hammer	1	6. 7	6. 7	•	1	6. 7
Hand drill	1	1.19. 6	1.19. 6	•	1	1.19. 6
Back Saw	1	13. 5	13. 5	•	1	13. 5
Screw drivers (4" & 8")	2	4. 4	8. 9	•	2	8. 9
Shifting spanner 12"	1	1. 9. 6	1. 9. 6	•	1	1. 9. 6
Shifting spanner 6"	1	16. 5	16. 5	•	1	16. 5
Ring spanners S.A.E. (set)	1	2.19. 4	2.19. 4	•	1	2.19. 4
Batteries sold	30		£5054.17. 7			£624. 4. 1
			137. 9. 6	Loss on batteries		102.16. 0
			<u>£5020. 4. 1</u>			<u>£727. 0. 1</u>
						<u>£10201. 7. 4</u>

352019

019

# LYELL - E.Z. - EXPLORATIONS

352020

30th June, 195<sup>9</sup>

Mr. G.F. Hudspeth,  
Manager,  
Lyell - E.Z. Explorations.

Dear Sir,

Herewith I present a summary of the exploration work done by the organisation under my control from 1st July, 1958 to 30th June, 1959.

1.

## INTRODUCTION

The area held under mineral lease remains the same as in the previous year but the five original Special Prospecting Licences were consolidated into two exploration licences:

Arthur Area	Exploration Licence 1/59 of 1521 square miles
Gordon Area	Exploration Licence 3/59 of 2878 square miles (excluding Port Davey area)

The extent of these licences is shown in Plate 1.

Exploration during the year has been primarily carried out in the Gordon Area.

2.

## GORDON AREA

Field work in this area was concentrated in a zone of 475 square miles west of a line joining Elliott Bay to the mouth of the Gordon River. This zone, which contains the southerly extent of the Lyell Shear and associated sediments of the Dundas Group and Owen Conglomerate, forms the top and second priority areas of exploration as summarised in last year's annual report. In the year 1957-1958, the "Canso" aircraft, carrying airborne geophysical instruments, had been flown over this area and the regional mapping programme had been completed. The results of this airborne survey became available during the latter part of 1958. The field work this year consisted essentially of the ground examination of selected airborne geophysical anomalies, selected geological anomalies and regional mapping associated with these two investigations. The results of this work are summarised in Tables I and II.

No field work was carried out in the third, low priority zone of 2525 square miles which largely consists of Precambrian metamorphic rocks.

### I. Geophysical Anomalies

The airborne electromagnetic unit and total intensity magnetometer carried in the "Canse" aircraft registered a large number of anomalies from which a priority list of fifteen were investigated during the summer (Table I and Plate 3). These anomalies were all positioned in rocks of Owen Conglomerate, Dundas Group or Upper Precambrian. They were relocated on the ground with the dual frequency vertical loop unit which provided both a reconnaissance and detailed coverage of an area of usually 800' x 1600' about the presumed position of the cause of the airborne anomaly. Further discrimination of the causes of conduction was obtained by the use of a gravity meter, magnetometer, geological mapping and soil sampling.

Of the fifteen airborne anomalies investigated, nine were confirmed on the ground, a recovery of 60%. However, when it is considered that four of these anomalies would normally not have been considered for ground follow-up due to their lack of authenticity, a recovery of 82% would have been achieved versus the world figure of 80 to 85%. Thus the airborne survey was successful in detecting genuine bedrock conductors, but of those recovered only one (10/8) shows mineralisation of sufficient intensity to warrant further investigation. The regional picture of this zone is shown on Plate 4. The ground investigation here has located a zone of hematite/magnetite mineralisation varying in width from 15 feet to 250 feet in the north with a known strike length of at least 1,500 feet. Apart from very minor copper staining, no sulphides have been detected at the surface but the location requires deeper testing and the outlining of its full strike length.

During the campaign, 938 soil samples were collected from fourteen geological and geophysical anomalies, an average of 67 per anomaly. These were normally analysed for the traces of lead, zinc and copper and less normally for nickel and chromium, which could be expected to be concentrated in residual soils derived from mineralised ground.

## II. Geological Anomalies

Geological anomalies were selected on the basis of conditions thought to be favourable to mineralisation, such as the intersection of a north-west crosscutting fault and the Lyell Shear (20/9, 20/10 and Moore's Valley) or a prospect with known mineralisation (6/4 Prince Darwin, 6/3 Pelias Cove, 13/1 Birthday Bay, 18/12 Nicholls Range and 24/8 Lewis River). The results of these investigations are summarised in Table I and Plate 3 which show that four (6/3, 6/4, 20/9 and Moore's Valley) remain to be investigated further. Geological anomalies were normally investigated by mapping and soil sampling, with the exception of the Moore's Valley area.

The greatest single effort during the summer season was concentrated in Moore's Valley since in a regional sense this area is the most important structural setting for sulphide occurrence in S.W. Tasmania. The area occurs on the north-south trending Lyell Shear which has a similar expression here as at Queenstown in that it faults the Dundas rocks to the west against the Owen Conglomerate on its eastern side, involving a vertical movement of at least several hundred feet. The existence of hitherto suspected east-west crosscutting faults was confirmed on the north (Thirkell Fault) and south (Hazell Fault) sides of the Valley and these major faults, which are 17,000 feet apart<sup>1</sup>, appear to have horizontally displaced the Lyell Shear some 12,000 feet to the east (Plate 5). In the past these two marginal faults have formed the Valley with a vertical downthrow of at least several hundred feet: in the recent past this rift-valley was filled with sand and gravel but this cover has since partly been removed by erosion, leaving an estimated thickness of 300 to 400 feet of unconsolidated sediments on the Valley floor. Beneath this cover and between the marginal faults, the Lyell Shear regionally trends north-east for some 18,000 feet. Parallelling these two marginal faults, minor east-west faulting is strongly suspected to occur throughout the basement of the Valley, which steps the Lyell Shear to the east. Consequently it appears that conditions exist here which are very similar to those which have localised the sulphide mineralisation at Queenstown.

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1. For a comparison, the Comstock-Linda crosscutting structure at Queenstown forms a zone about 25,000 in width (north to south) from the Sedgwick to the South Owen Fault.

Owing to this cover of recent sediments in Moore's Valley, great reliance has to be placed on geophysical methods of exploration. Because of their thickness, and the presence of horizontal conductors such as clay bands, the more conventional electromagnetic loop methods (airborne and ground) could not penetrate these sediments. However, the Audio Frequency Magnetic (AFMAG) and Induced Polarisation techniques were entirely satisfactory in achieving this penetration. Reconnaissance surveying with the AFMAG instrument revealed an anomaly on the south side of the Valley and the Induced Polarisation work was concentrated in this area. In all, approximately half a square mile out of a top priority area estimated at four square miles was investigated and three bedrock anomalies of considerable depth extent were detected during the four weeks that the equipment was in use. Auxiliary geophysical methods were used (gravimetric and magnetic) over the three anomalies A, B and C outlined above (Plate 6). These provided data which reflect structural trends in the basement but there was no apparent striking gravimetric correlation with the I.P. results. When further ground work is commenced, the first area to be surveyed will be the eastern extension of these three anomalies towards their point of convergence.

54,100 feet of line was stadia surveyed in the Valley for the control of the gravity work and as a basis for the topographical contouring of the area. The footages of the various geophysical methods is given below in Table 1.

Table 1			
Geophysical Surveys - Moore's Valley			
Magnetic	AFMAG	Gravity	Induced Polarisation
59,400	26,400	30,500	65,800 (55,000 of total line, other footages are same line at varying electrode separates)

III. Regional Mapping

A. Moore's Valley

Regional mapping was carried out on the north and south sides of Moore's Valley at Thirkell Hill and Hasell Hill respectively. This

mapping was concerned with the accurate location of the Lyell Shear, the two marginal faults (Thirkell and Hazell Faults) and the stratigraphy of the associated Owen Conglomerate and Dundas Group. The firm establishment of these features allows their projection underneath the unconsolidated gravels and sands which cover the Valley and this, with the geophysical data obtained, enables a rational picture of the geology of the basement to be established.

Regional mapping in the Valley itself was concerned with an estimate of the thickness of the unconsolidated sediments, and their detailed stratigraphy for use in the planning of any proposed drilling of the area.

#### B. Modder River

This mapping was carried out as part of the investigation of anomalies 10/3b, 10/4 and 10/4a. On the basis of photo-interpretation and the results of the airborne magnetic survey, a hitherto undiscovered belt of ultrabasic rocks was detected at the Precambrian/Dundas Group contact trending south-westerly from Macquarie Harbour for fifteen miles towards the West Coast at Point Hibbs. The ground work confirmed the presence of this belt and its structural setting but at the point examined associated nickel mineralisation was too disseminated to be of economic significance.

#### C. Wanderer Project

The crosscutting structure at Moore's Valley is considered to extend to the west of the Lyell Shear as a single fault zone. Three miles to the west of the Shear, this zone intersects and ends a major north-south fault which has been traced through Birch Inlet and southwards to this point, a distance of 20 miles. Ultrabasic intrusives are associated with this north-south fault and thus, in a regional sense, there exists structural/lithological controls favourable for the occurrence of sulphide mineralisation. This intersection is covered by the same blanket of unconsolidated sediments as in Moore's Valley and consequently a similar reliance must be placed on geophysical methods of exploration (Induced Polarisation, gravimetric and magnetic).

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3.

ARTHUR AREA

I. Airborne Geophysics

The combined airborne geophysical survey (magnetic, electromagnetic and radiometric) was completed on 9th September, 1958 with a total of 540 line miles being completed, 120 of which were flown in the preceding financial year. This total figure is considerably less than the original estimate of 1,500 line miles owing to the rugged nature of the terrain which prevented many aircraft traverses. Five airborne anomalies were selected on their favourable geophysical appearance and geological position (Plate 7).

II. Office Work

The 30 chain and 80 chain to one inch geology compilation sheets were completed by the end of 1958. This work, which was based on the photo interpretation completed in the previous year and known geology, demonstrated that large areas which had been mapped on the State Survey map as belonging to the Owen Conglomerate and Dundas Group were actually Precambrian rocks. These two favourable rock groups are now known to be restricted in extent to the north of the concession around Adamsfield and in the south at Prion Bay, thus considerably reducing the area of interest. A fault of regional effect (Picton Fault) was traced from the south coast to Adamsfield and beyond, a distance of approximately 90 miles. Consequently, the top priority zone in the Arthur concession became centred about this fault where it transgressed the Dundas and Owen Conglomerate rocks. This zone comprises 75 square miles, 85% of which is centred between Adamsfield and Mount Anne and 15% in the Prion Bay area. Fortunately, the "Canoe" aircraft was able to fly a large part of this northern area and on the basis of this survey the area of interest in this northern zone can be reduced by half.

III. Ground Geophysics and Regional Mapping

Three of the five airborne anomalies (A6/1, 6/2 and 5/1) were accessible by Land Rover and these were investigated during May of this year (Table I). Anomalies 6/1 and 6/2 occur in <sup>an</sup>ultrabasic intrusion and have no further interest. Anomaly A5/1 occurs near a branch of the Picton Fault which brings the Dundas rocks against the Owen Conglomerate and it

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warrants further geological and geophysical work.

Regional mapping (Table II) of the Adamsfield area was carried out in conjunction with the geophysical investigations. The mapping of approximately 20 square miles confirmed the presence of the Pictou Fault and associated rock types. The ultrabasic intrusion at Adamsfield was also included in the area mapped.

The southern area of interest at Frion Bay was mapped by traversing the sea coast. The mapping indicates that this area is of no economic significance.

4.

DRAUGHTING

During the year the drawing staff have been fully engaged in the completion of plans and sections to accompany the 43 reports which have been issued during this period, the 30 chain and 80 chain geological series and on specialised projects such as the detailed plans for Moore's Valley. In all, 210 original plans etc. have been draughted and 500 printed plans issued, 60% of these being coloured by hand. In addition, a large number of prints have been prepared and used as working sheets.

5.

GENERAL CONCLUSIONS ON THE YEAR'S WORK

A. Gordon Concession

The exploration programme began in December, 1956 with an area of 3,000 square miles (including Port Davey). The main object of the field campaign of 1957-1958 was to eliminate areas which were distinctly unfavourable to mineralisation and on the basis of regional geological mapping, this large area was reduced to a priority zone totalling 475 square miles, with top priority being placed on the Moore's Valley structure (15 square miles). The work which has been summarised in this report has further reduced this area of 475 square miles to one totalling 20 square miles, largely on the basis of the airborne geophysical surveys and corresponding ground follow-up. This area is made up as follows:

First Priority A zone of 12 square miles in Moore's Valley.

An area 1 mile x 4 miles centred about the Lyell Shear will receive first attention.

026

Second Priority This comprises an area of approximately 8 square miles made up from disconnected areas as follows:

1. Wanderer Project;
2. Lyell Shear two miles north and two south of Moore's Valley;
3. Anomalies 6/3 (Prince Darwin), 6/4 (Pelias Cove), 10/8 (Big Creek) and 19/1 (Serpentine).

Approximately 85% of this area of 20 square miles is in or near Moore's Valley.

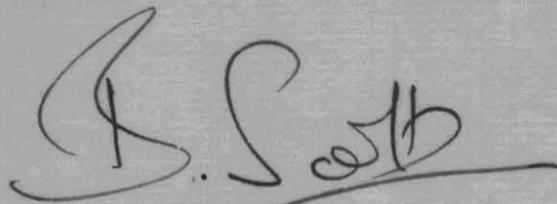
B. Arthur Concession

During the previous year's work, the area of interest in this concession was reduced from the original figure of 1521 square miles to one of 450 square miles. Further regional work and the airborne geophysical survey have reduced this area to one of 30 square miles, centred along the Pictou Fault in the Adamsfield-Mount Anne zone.

C. General

The area for intensive investigation has been reduced to 50 square miles, just over 1% of the former total concession area of 4,500 square miles. This has been achieved with the combination of geological mapping, photo-interpretation, airborne and ground geophysics. Within this 50 square miles a priority zone of 12 square miles has been outlined in Moore's Valley and it is this zone which contains the factors most likely for the occurrence of sulphide mineralisation.

Yours faithfully,



Chief Geologist, L.E.S.

APPENDIX IGeophysical Ground Parties - Gordon Area

Three ground geophysical parties were used for all or part of the season in the Gordon area, as follows:

1. Bureau of Mineral Resources Party

This party consisted of two geophysicists with assistants. The equipment included horizontal loop apparatus (Slingram and Turam), a self-potential unit and a magnetometer. The party were responsible for the investigation of airborne anomaly 20/4 and 20/6, and the magnetic survey in Moore's Valley. In addition orientation surveys were run in the Valley with the other geophysical equipment, but it could not detect the basement anomalies localised by the "AFMAG" and Induced Polarisation apparatus.

2. McPhar Geophysics Ltd.

This party consisted of one geophysicist and one technician, with assistants. The equipment consisted of the big vertical loop unit (which was later transferred to the L.E.E. geophysical party), the AFMAG and Induced Polarisation apparatus. Initially the party investigated anomalies 20/5N and 20/5S with the big loop, but the remainder of the time was spent in Moore's Valley with the AFMAG and I.P.

3. L.E.E. Geophysical Party

This party consisted of a geophysicist, geologist, instrument operator and assistants. The equipment consisted of the big vertical loop unit, the reconnaissance electromagnetic unit, gravity meter and magnetometer. Eleven of the fifteen airborne anomalies and the gravity survey in Moore's Valley were completed by this crew.

TABLE I

SUMMARY OF WORK COMPLETED ON ANOMALIES

1. AIRBORNE GEOPHYSICAL

A. Gordon Area

Anomaly No.	Geology	Geochemistry	Magnetic	Electromagnetic		Self Potential	Afmag	Gravity	Ground Confirmed	Further Interest	Report No.
				Vertical Coil	Slingram						
9/4	/	/	/	/	-	-	-	/	Yes	Minor	090
10/1	/	/	/	/	-	-	-	/	Yes	Nil	088
10/3b	/	/	/	/	-	-	-	/	Yes	Nil	089
10/4	/	/	/	/	-	-	-	/	Yes	Nil	094
10/4a	/	/	/	/	-	-	-	/	Yes	Nil	089
10/8	/	/	/	/	-	-	-	/	Yes	Yes	086
20/4	/	-	/	-	/	/	-	-	No	Nil	091
20/5N	/	/	/	/	-	-	-	-	No	Nil	083
20/5S	/	/	/	/	-	-	-	-	No	Nil	083
20/6	/	-	/	-	/	/	/	/	Yes	Nil	092
20/8	/	-	/	/	-	-	-	/	No	Nil	080
21/12	/	/	/	/	-	-	-	/	No?	Nil	087
23/2	/	/	/	/	-	-	-	/	Yes	Nil	081
24/1N	/	/	/	/	-	-	-	/	Yes	Nil	082
24/1S	/	/	/	/	-	-	-	/	No	Nil	082

One magnetic anomaly (19/1) remains to be tested.

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B. Arthur Area

TABLE I (cont.)

Anomaly No.	Geology	Geochemistry	Magnetic	Vertical Coil	Ground Confirmed	Further Interests	Report No.
A5/1	/	/	/	/	Yes	Yes	897
A6/1	/	-	/	/	Yes	N11	897
A6/2	/	-	/	/	Yes	N11	897

Two anomalies (A5/5 and A12/2) remain to be investigated.

2. GEOLOGICAL

Gordon Area

Anomaly No.	Geology	Geochemistry	Magnetic	Afmag	Gravity	Induced Polarisation	Further Interest	Report No.
20/9 <sup>N1</sup>	/			-	-	-		
20/10	/	/	-	-	-	-	N11	885
24/8	/	/	-	-	-	-	N11	884
Moore's <sup>N2</sup> Valley	/	-	/	/	/	/	Yes	877, 879 880, 896

<sup>N1</sup> Not completed at the end of the field season.

<sup>N2</sup> Orientation surveys with the vertical coil, tures (horizontal coil) and self-potential apparatus were also completed.

Two geological anomalies remain to be investigated, 6/4 at Prince Darwin and 6/3 at Pelias Cove. Anomaly 13/1 at Birthday Bay has been rejected on the basis of the investigation of the nearby geophysical anomaly 9/4, and anomaly 18/12 (Nicholls Range) on the basis of the general unfavourability of the Precambrian.

352030

TABLE II  
SUMMARY OF REGIONAL MAPPING

1. GORDON AREA

LOCATION	OBJECT	REMARKS	REPORT NO.
A. Russell Hill	Mapping of south edge of Moore's Valley	These three investigations (A to C) in conjunction with the geophysical work in Moore's Valley allow the establishment of a map showing the geological features beneath the Tertiary sediments on the basement of the Valley.	G80
B. Thirkell Hill	Mapping of north edge of Moore's Valley		G79
C. Moore's Valley	Stratigraphy of Tertiary sediments, evidence of Tertiary faulting		G77 G96
D. Koddler River	Mapping of Precambrian-Dundas boundary and associated ultrabasic rocks		G89

2. ARTHUR AREA

LOCATION	OBJECT	REMARKS	REPORT NO.
A. Adamsfield	Mapping Owen Conglomerate and underlying sediments, position of ultrabasic rocks, location of Picton Fault.	These two investigations provide a skeleton for the regional mapping and photo-interpretation as they are the two critical "type" areas of the Arthur concessions.	G97
B. Prion Bay- New River lagoon	Mapping Owen Conglomerate and underlying sediments, location of Picton Fault.		G76

REPORTS ISSUED 1st JULY, 1958 - 30th JUNE, 1959General Reports (G)

- 068 The Tertiary Sediments of Macquarie Harbour, Tasmania.
- 069 Permian-Triassic Cover in Southern Tasmania.
- 070 Factors in Assuming a Fault Valley within Moore's Valley.
- 071 Thickness of Tertiary Sediments in Moore's Valley.
- 072 A Preliminary Report on the Structure of West Tasmania in Relation to Mineralisation.
- 073 Report on Serpentinite in the Gordon Concession.
- 074 Field Programme - November/December, 1958 and Early 1959.
- 075 A Preliminary Summary of the Final Report on the Geology of Point Hibbs.
- 076 Preliminary Summary of the Geology near Rocky Boat Harbour, S. Tasmania.
- 077 Report on Geology of Moore's Valley.
- 078 Arthur Area - Ground Investigation, May 1959.
- 079 Geology of Whirkell Hill Area.
- 080 Report on Hazell Hill Area, and 20/8 Area.
- 081 Geology of Airborne Geophysical Anomaly 23/2, Wart Hill.
- 082 Geology of Airborne Geophysical Anomaly, 24/1, Hudson River.
- 083 Geology of Airborne Geophysical Anomaly 20/5, Malmaring River.
- 084 Geology of Lewis River Prospect.
- 085 Pender's Prospect (in 084).
- 086 Geology of Airborne Geophysical Anomaly 10/8, Wanderer River.
- 087 Geology of Airborne Geophysical Anomaly 21/12, Jean Valley.
- 088 Geology of Airborne Geophysical Anomaly 10/1, Albion Creek.
- 089 Airborne Geophysical Anomaly 10/3b, 4a, Modder River.
- 090 Airborne Geophysical Anomaly 9/4, Big Creek.
- 091 Airborne Geophysical Anomaly 20/4, Cypress Creek.
- 092 Airborne Geophysical Anomaly 20/6, Cypress Creek.
- 093 Provisional Programme - Gordon and Arthur Areas, 1959/1960.
- 094 Airborne Geophysical Anomaly 10/4, Modder River.
- 095 Investigation of Anomalies - Gordon Area, 1958/1959.
- 096 Geophysical Surveys in Moore's Valley, S.W. Tasmania.

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REPORTS ISSUED 1st JULY, 1958 - 30th JUNE, 1959 (cont.)

Geophysical Reports (GP)

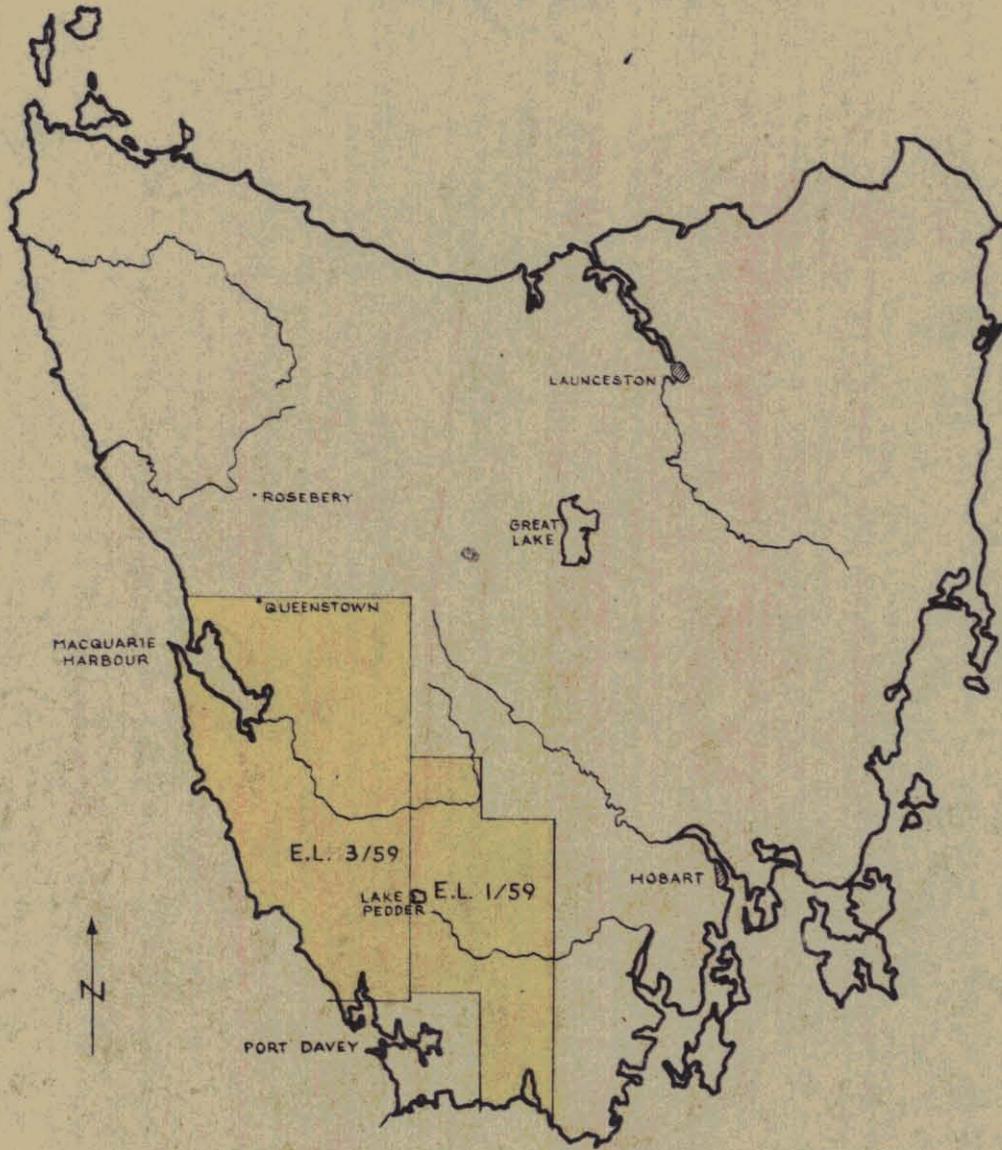
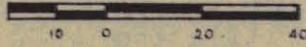
- GP11 Airborne Geophysics - Fixed Wing and Helicopter.
- GP12 Combined Airborne Geophysics - Canso Aircraft, Electromagnetic Survey.
- GP13 McPhar R.E.M. Unit - Summary of Field Tests.
- GP14 Airborne Geophysics - Canso. Visit of H. Love, A.H.G. Pty. Ltd., to Queenstown.
- GP15 Preliminary Report on the Interpretation of the Airborne Geophysical Results.
- GP16 Analysis of Airborne Geophysical Anomalies, S.W. Tasmania (Report No. 1 - A.H.G. Pty. Ltd.).
- GP17 Analysis of Airborne Geophysical Anomalies, S.W. Tasmania (Report No. 2 - A.H.G. Pty. Ltd.).
- GP18 McPhar Geophysics Ltd. Programme - January, 1959.
- GP19 Number cancelled.
- GP20 Number cancelled.
- GP21 Activities of McPhar Crew - February, 1959.
- GP22 Preliminary Report on Anomaly "A" - Moore's Valley.
- GP23 Report on the Afmag Survey in Moore's Valley.
- GP24 Report on the Induced Polarisation Survey in Moore's Valley.
- GP25 McPhar Crew Programme - March/early April, 1959.
- GP26 A.H.G. Pty. Ltd., - Report No. 3, A.H. 125, Arthur Area.

033

# TASMANIA

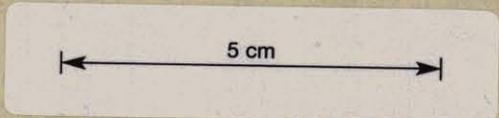
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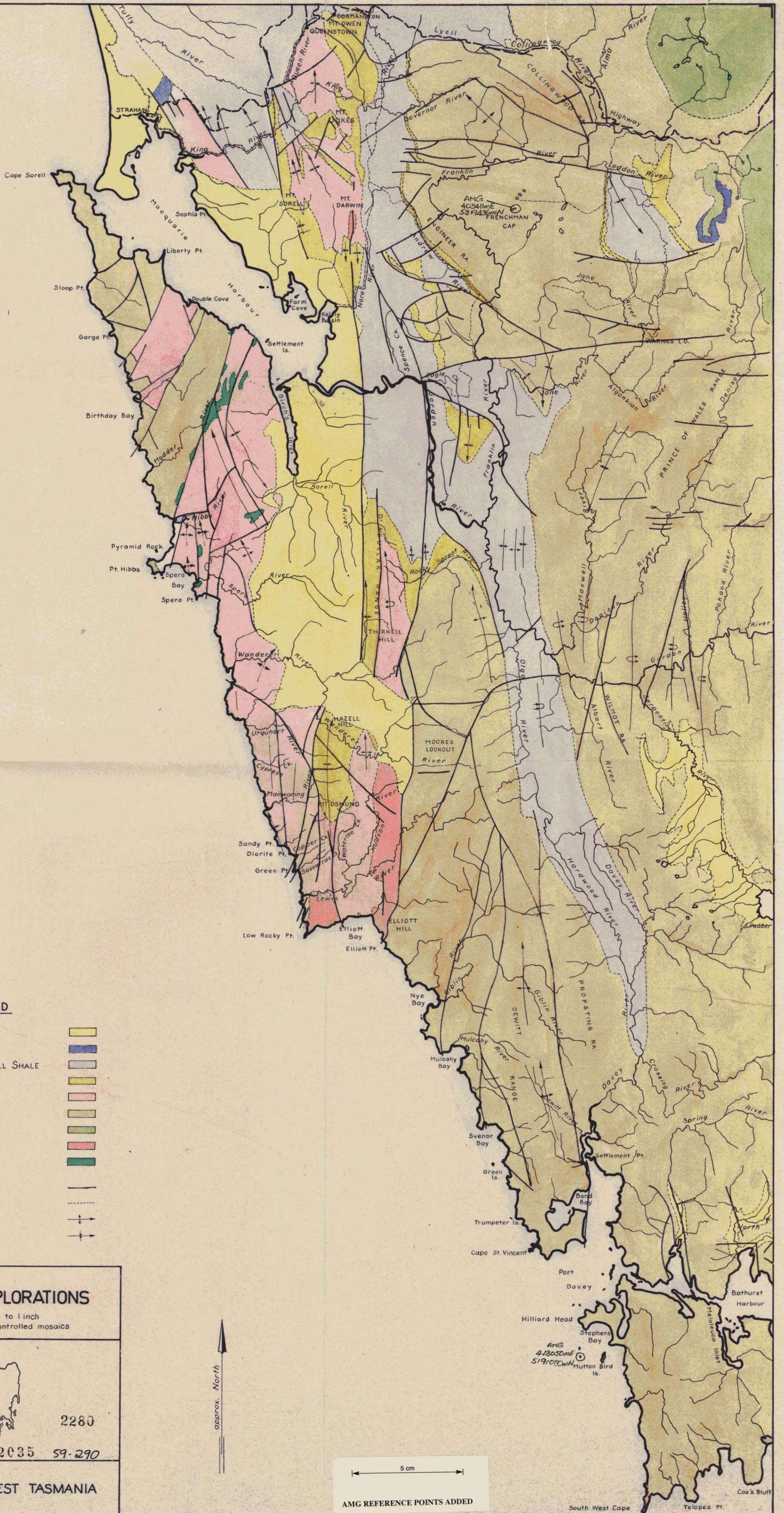
Scale in miles



## EXPLORATION LICENCES

- E.L. 3/59     Mt. Lyell M & R Co.
- E.L. 1/59     Electrolytic Zinc Co.





**LEGEND**

- TERTIARY & RECENT
- PERMIAN
- CAROLINE CK. BEDS TO BELL SHALE
- OWEN CONGLOMERATE
- DUNDAS GROUP
- PRECAMBRIAN
- DOLERITE (JURASSIC)
- GRANITE
- SERPENTINE
- FAULTS
- BOUNDARIES
- ANTICLINES
- SYNCLINES

**LYELL E.Z. EXPLORATIONS**

Scale: 4 miles to 1 inch  
Compiled from uncontrolled mosaics



2280

352035 59-290

approx. North

5 cm

AMG REFERENCE POINTS ADDED

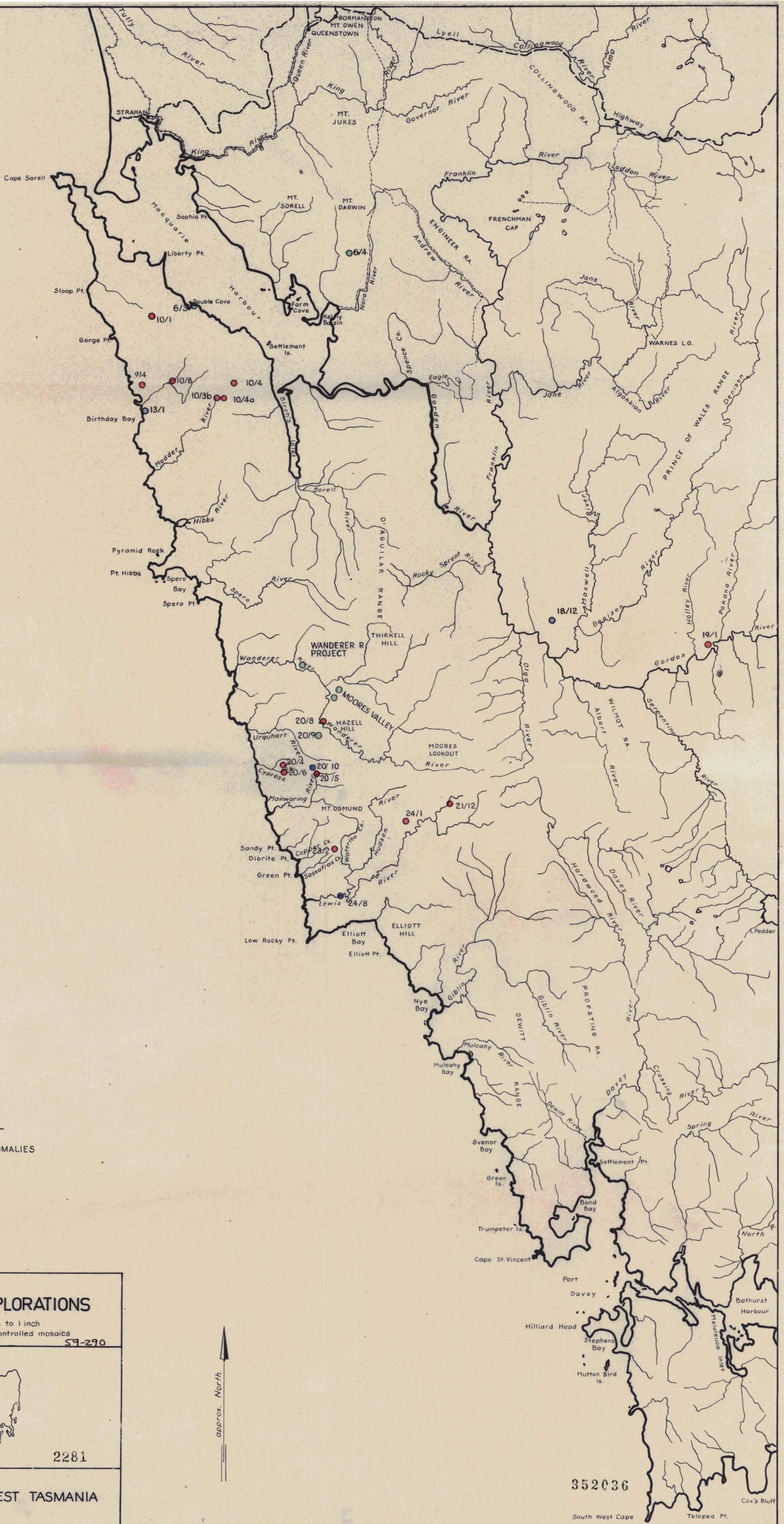
R60

SOUTH-WEST TASMANIA

South West Cape

Telopea Pt.

Cox's Bluff



**LEGEND**

LOCATION OF ANOMALIES

- AIRBORNE**
- Investigated
- Remaining
- GEOLOGICAL**
- Investigated
- Remaining

**LYELL E.Z. EXPLORATIONS**

Scale: 4 miles to 1 inch  
 Compiled from uncontrolled mosaics  
 59-290



2281



**R6c**

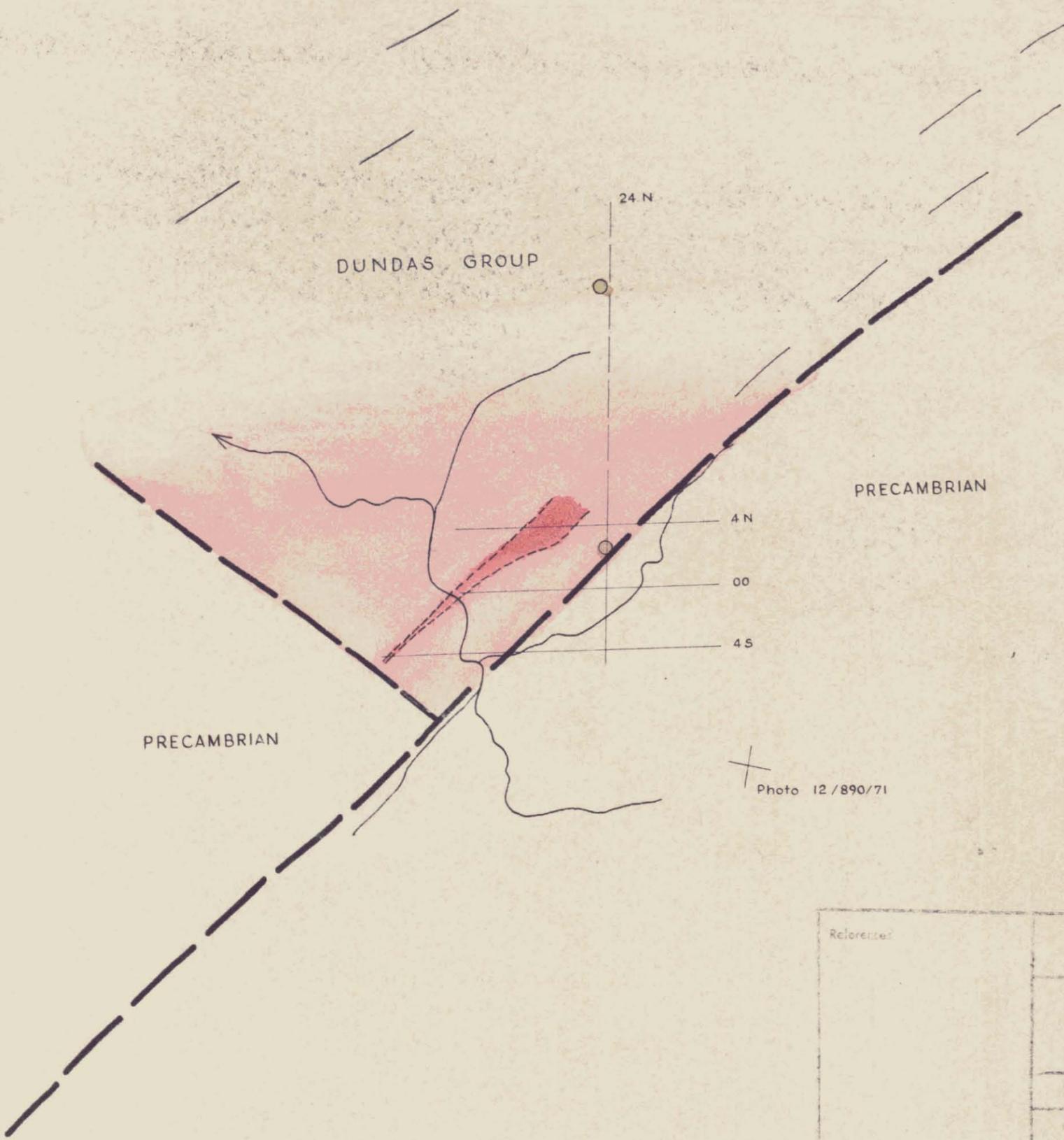
SOUTH-WEST TASMANIA

352036

South West Cape

Teloepa Pt.

Cox's Bluff



**LEGEND**

- Photo fault
- Photo bedding
- Existing grid
- Extensions to grid
- Airborne e.m. response
- Mineralisation

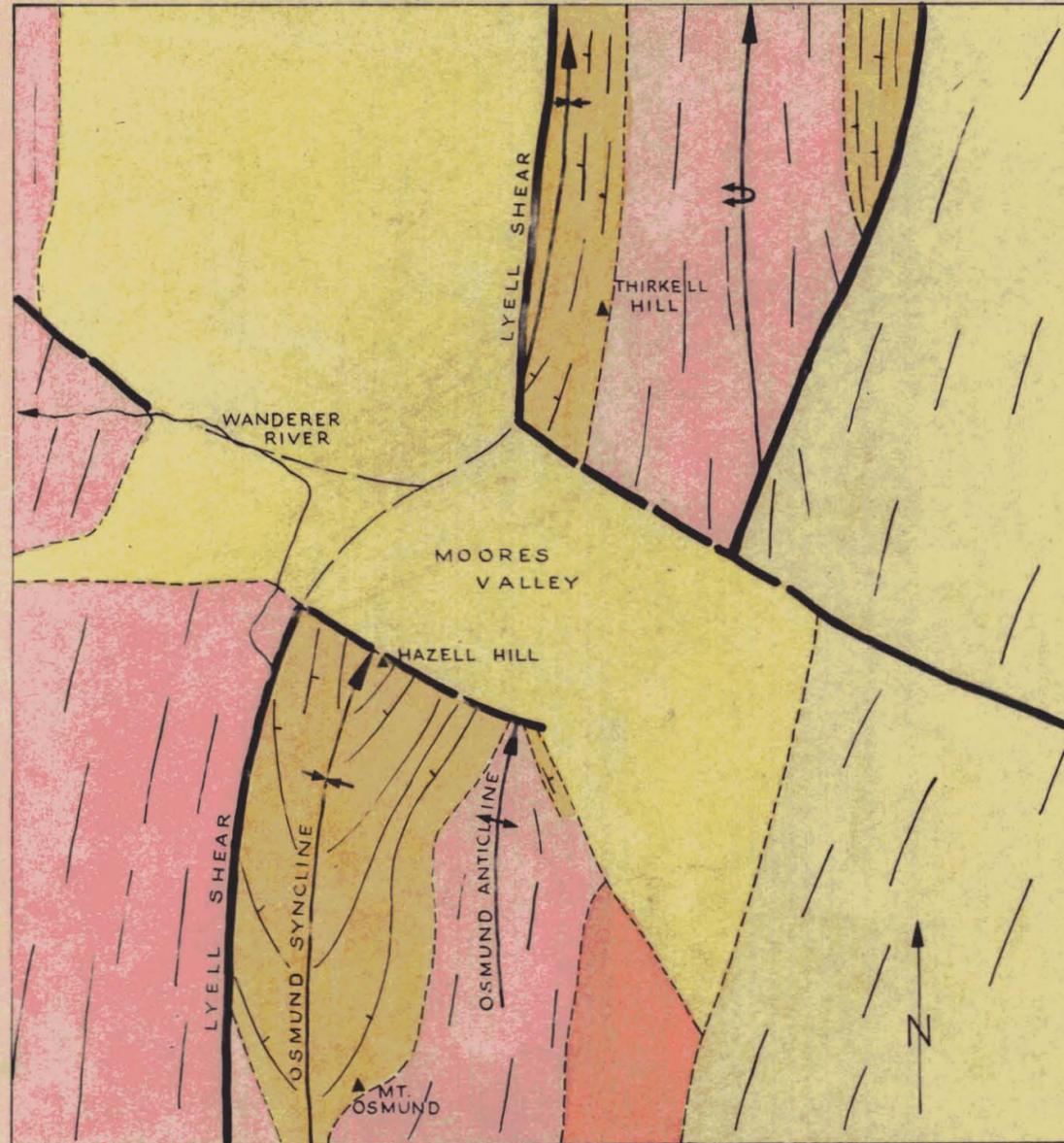
352037

Referred to: <b>LYELL E.Z. EXPLORATIONS</b> QUEENSTOWN					
<b>ANOMALY 10/8</b>					
59-290					
Survey Geology Geochemistry Gravity Magnetism Resistivity	Scale 750 ft to 1 inch approx.				
REGIONAL GEOLOGY	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="width: 100px;">B.S.</td> <td style="width: 100px;">Apr '59</td> </tr> <tr> <td>D.S.</td> <td>May '59</td> </tr> </table>	B.S.	Apr '59	D.S.	May '59
B.S.	Apr '59				
D.S.	May '59				
<table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td style="width: 100px; text-align: center;"> <b>Q 29</b> </td> <td style="width: 50px; text-align: center;">           Sheet  <b>1a</b> </td> </tr> <tr> <td colspan="2" style="text-align: center;">           No. <b>2282</b> </td> </tr> </table>		<b>Q 29</b>	Sheet <b>1a</b>	No. <b>2282</b>	
<b>Q 29</b>	Sheet <b>1a</b>				
No. <b>2282</b>					

5 cm

034

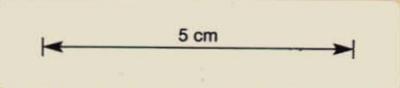
MOORES VALLEY - PLAN

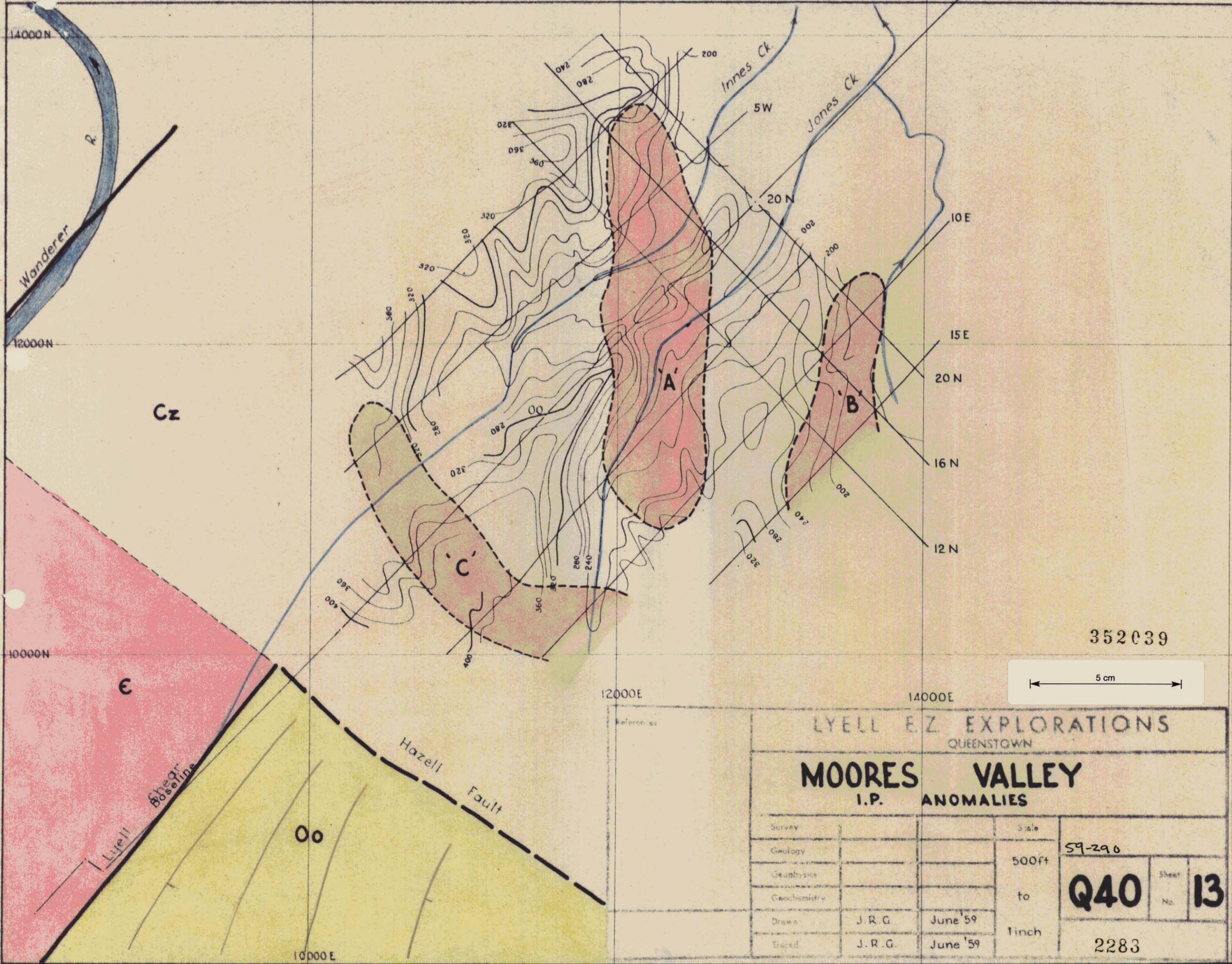


LEGEND

Scale : 1 inch approx. 2 miles

- |                   |   |              |   |
|-------------------|---|--------------|---|
| Tertiary & Recent |  | Dundas Group |  |
| Owen Conglomerate |  | Precambrian  |  |
| Granite           |  | Faults       |  |





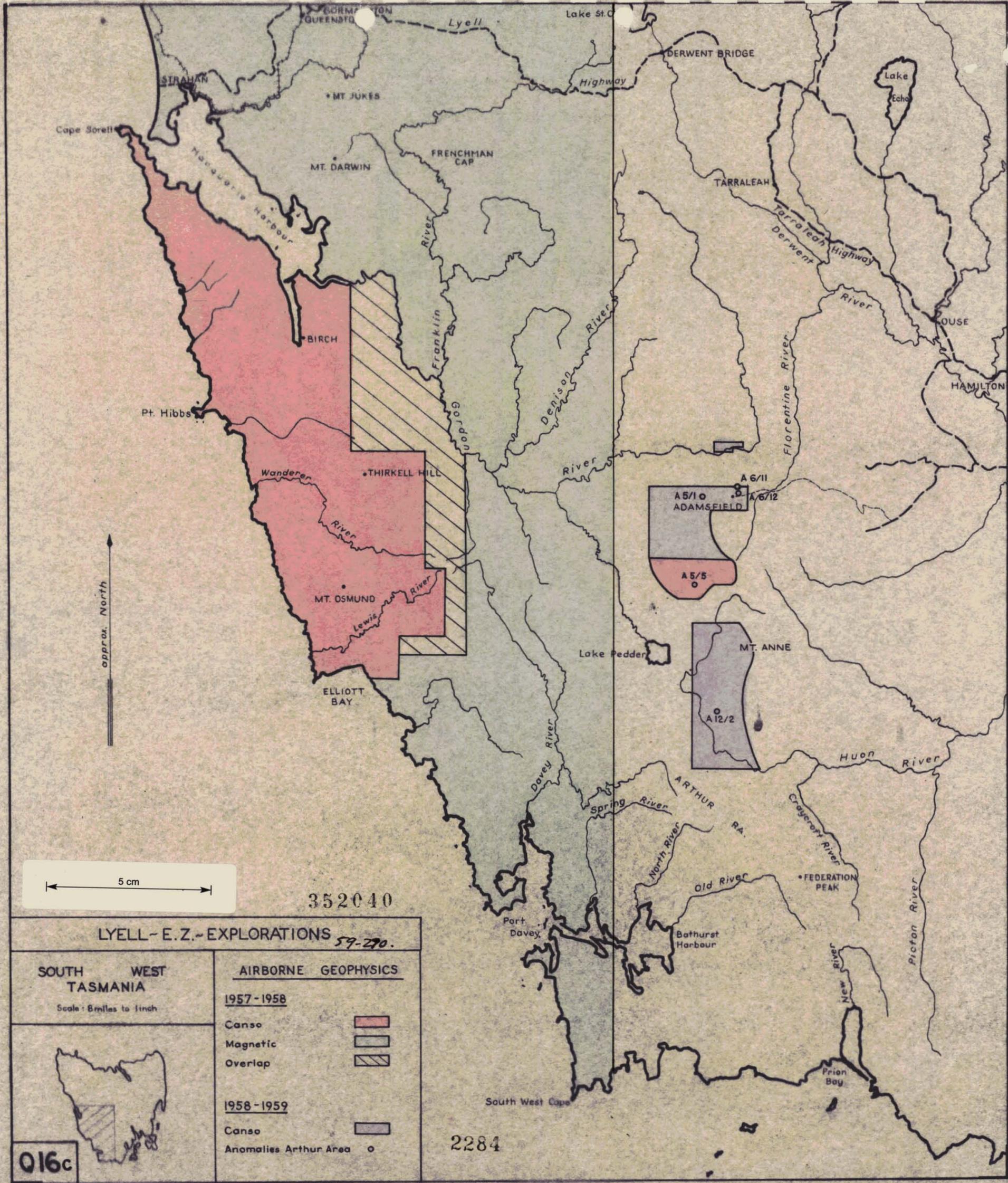
352039



LYELL E.Z. EXPLORATIONS  
QUEENSTOWN

**MOORES VALLEY**  
I.P. ANOMALIES

Survey		Scale	59-290	
Geology		500ft	<b>Q40</b>	Sheet No. <b>13</b>
Geophysics		to		
Geochemistry		1inch	2283	
Drawn	J. R. G.	June '59		
Traced	J. R. G.	June '59		



approx. North

5 cm

352040

LYELL - E.Z. - EXPLORATIONS 59-270.

SOUTH WEST TASMANIA  
Scale: 8 miles to 1 inch

AIRBORNE GEOPHYSICS	
<u>1957-1958</u>	
Canso	
Magnetic	
Overlap	
<u>1958-1959</u>	
Canso	
Anomalies Arthur Area	



016c

2284