

General Rep No 6

351001

FIELD PROGRAMME  
November ~ December  
1959

59-291

**MICROFILMED**

Field Programme - Nov &  
Dec, 1959.

L.E.G. 16/9/59.

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LYELL - E.Z. - EXPLORATIONS

G1087

351002

16th September, 1959

To: Mr. G.F. Hudspeth.

Field Programme - November and December, 1959

In the Annual Report for the year ending 30th June, 1959, the following areas remained to be tested:

<u>Gordon Area</u>	<u>Arthur Area</u>
Moore's Valley	Anomaly 5/1
Anomaly 10/8, Big Creek	* Anomaly 6/1
Wanderer Project	* Anomaly 6/2
Anomaly 20/9, Mainwaring	Mt. Wedge
Anomaly 6/3, Pelias Cove	
Anomaly 6/4, Prince Darwin	
* Anomaly 19/1, Serpentine	

Those marked with an asterisk are only accessible via helicopter transport, others are attainable by foot or wheeled vehicles.

It is proposed that work during November and December of this year be restricted to the Gordon Area in Moore's Valley, the Wanderer Project and anomalies 10/8, 20/9 and 6/3.

Attached is a detailed outline of the field programme and personnel requirements for the months of November and December. An additional programme outlining work for 1960 will be submitted after the results of the surveys mentioned in this report come to hand.

Table 6 at the end of the report details personnel requirements. It is difficult to arrive at a final figure for the number of bushmen required as this depends on the variable factors of weather, density of bush and rate of progress of the geophysical work. Consequently the figure of 13 given in this Table may have to be slightly increased, or decreased, as the season proceeds.

A gravimeter and operator will be required in Queenstown by 23rd October.

The commencing date of 12th October used in this report has been taken as a reasonable estimate for the road from Birch to Moore's Valley to

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reach the northern edge of the latter locality.

I. MOORE'S VALLEY

The field programme for Moore's Valley will first consist of ground geophysics, using the gravimetric, magnetic and induced polarisation techniques. The initial programme, which is detailed below, should be finished before the Christmas break of this year thus allowing a further geophysical programme and recommendations regarding drilling to be available before the New Year. A geologist will be permanently stationed in the Valley. The personnel for the magnetic and topographical surveys can be supplied from existing staff. McPhar Geophysics Ltd. are to supply their own technician for operating the I.P. gear, a consultant geophysicist will be required for the interpretation of the magnetic and gravimetric results and also possibly for the operation of the gravimeter in the field.

Ground Geophysics

1. Induced Polarisation

The immediate top priority work is to cover the apparent eastward extension of the existing I.P. anomalies A, B and C. This is detailed as under:

<u>Line</u>	<u>Priority</u>	<u>Length</u>	<u>Existing</u>	<u>Extension</u>
20E	1	16N to 20S	-	3600
25E	5	12N to 20S	-	3200
30E	2	12N to 20S	-	3200
35E	6	12N to 20S	-	3200
40E	3	12N to 20S	-	3200
45E	7	12N to 20S	-	3200
50E	4	12N to 20S	-	3200
				22,800
<u>Total</u>		<u>=</u>		<u>22,800 ft.</u>

This I.P. work should take 10 working days. These lines would be surveyed at an electrode separation of 400 feet. After the completion of lines 20E, 30E, 40E and 50E the lengths of the intervening lines may be varied.

Further I.P. work would await the results of this survey and would be planned in conjunction with McPhar personnel. However, in principle it would commence from the existing detailed area and work northwards across the Valley. An electrode separation of 800 feet with lines 1000 feet apart would probably be used.

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2. Gravity 31,600 feet

The programme for the gravity survey can be broadly divided into three: a detailed control about the existing I.P. anomalies, a regional control from outcrop to outcrop across the Valley from Hazell Hill to Thirkell Hill and a detailed control over any additional anomalies that may be located by the I.P. These first two are detailed as under:

A. Detailed Control

<u>Line</u>	<u>Priority</u>	<u>Length</u>	<u>Existing</u>	<u>Extension</u>
10W	9	8S to 40S	800	2400
5W	8	11S to 20S	900	-
B.L.	7	19S - 40S	2100	-
10E	6	11S to 40S	2900	-
15E	5	00 to 26S	2600	-
20E	1	20N to 40S	-	6000
30E	2	12N to 20S	-	3200
40E	3	12N to 40S	-	5200
12N	4	40W to 55E	-	5500
<u>Total = 41,700 feet</u>			<u>9,300</u>	<u>22,300</u>
<u>Total = 31,600 feet</u>				

Readings will be taken every 100 feet, totalling 316 stations (excluding control points) and should take 7 working days (45 stations/day).

B. Regional Control

This survey is necessary in order to allow a more balanced interpretation of the gravity results from the detailed surveys to be carried out in this season, and those which were completed during the previous season. It would consist of a traverse from Hazell Hill to just south of Thirkell Hill, that is from outcrop to outcrop across the Valley. This would be run along the baseline and its extension, 3 long NW-SE traverses more or less equally spaced on the baseline would complete this framework.

<u>Line</u>	<u>Priority</u>	<u>Length</u>	<u>Existing</u>	<u>Extension</u>
B.L. <sup>red.</sup>	1	24N to 200N	13600	4000
12N		Included in detailed survey (A) above.		
76N 92N 156N 160N	2	32W to 55E	3800	4900
	3	20W to 48E	-	6800
			<u>17,400</u>	<u>15,700</u>

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Total = 33,100 feet

The baseline from 40S to 24N has either already been covered with the gravitometer or will be under the detailed survey which has already been outlined.

Readings every 100 feet totals 331 stations, excluding control and should take 7 working days (45 stations/day).

3. Magnetic

<u>Line</u>	<u>Priority</u>	<u>Length</u>	
12N	1	40W to 55E	9500
10W	2	20N to 40S	6000
5W	3	20N to 20S	4000
B.L.	4	20N to 20S	4000
5E	5	20N to 20S	4000
10E	6	28N to 40S	6800
15E	7	24N to 20S	4400
20E	8	20N to 40S	6000
			<u>44,700</u>

Total = 44,700 feet

With readings every 100 feet this totals 447 stations, excluding control points, and should take 8 working days (60 stations/day).

All of this footage is either prepared or will have to be prepared for the I.P. or gravity survey. When the results of this magnetic work are available, and in conjunction with the B.M.R. work carried out last year, a decision can be reached as to the desirability of continuing this technique in the Valley.

4. Topographical Surveying

Each gravity station will have to be determined to an accuracy of 6 inches in elevation, this length totals 64,700 feet. As this height has to be determined at the exact location of the gravitometer set-up, the topographical survey cannot be started until after this former work has commenced. Also the lines covered exclusively by the I.P. will have to be positioned (12,800 feet).

Total for Survey = 77,500 feet

Stadia work will be of sufficient accuracy and for this two staffs and a theodolite (direct reading to 20 seconds) will be required.

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TABLE 1

SURVEY LINE FOOTAGE - MOORE'S VALLEY 1959-1960

DETAILED COVER

LINE	I.P.	GRAVITY		MAGNETIC	PREPARED	TO BE PREPARED
		Common with I.P.	Not	All common with I.P. or gravity		
12N	-	-	5500	9500	4000	5500*
10W	-	-	3200	6000	3600	2400*
5W	-	-	900	4000	4000	-
B.L.	-	-	2100	4000	4000	-
5E	-	-	-	4000	4000	-
10E	-	-	2900	6800	6800	-
15E	-	-	2600	4400	4400	-
20E	3600	3600	2400*	6000	-	6000
25E	3200	-	-	-	-	3200
30E	3200	3200	-	-	-	3200
35E	3200	-	-	-	-	3200
40E	3200	3200	2000*	-	-	5200 Total
45E	3200	-	-	-	-	3200
50E	3200	-	-	-	-	3200
<b>Total</b>	<b>22,800</b>	<b>10,000</b>	<b>21,600</b>	<b>44,700</b>	<b>30,800</b>	<b>35,100</b>

Total = 31,600 ft.

Total = 65,900 ft.

\*Especially for gravity work = 12,300 ft.

Table 2

SURVEY LINE FOOTAGE - MOORE'S VALLEY 1959-1960

REGIONAL GRAVITY SURVEY

Line	Length	Prepared	To be Prepared
92N	8700	3800	4900
160N	6800	-	6800
B.L.	17600	13600	4000
<b>Total</b>	<b>33,100</b>	<b>17,400</b>	<b>15,700</b>

GRAND TOTAL FOR GRAVITY WORK (TABLES 1 & 2) = 64,700 feet

Of this footage 28,000 feet have to be prepared especially for gravity work.

GRAND TOTAL FOR LINE PREPARED = 48,200 feet

GRAND TOTAL TO BE PREPARED = 50,800 feet

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Build Up of Programme

The commencement date of 12th October has been taken as a starting point only as an estimate. Obviously, the programme will commence as soon as possible, the phasing of the operation is the essential point to note.

12th October 4 bushmen (T. Burrell plus 3 others) into Moore's Valley from Birch. Transfer of gear to the Valley, construction of camp, beginning of line preparation as soon as feasible.

26th October Gravity, magnetic and topographical surveys commence. J. Gillie and a gravimeter operator/geophysicist and cook to Moore's Valley. J. Gillie and T. Burrell will act as surveyor and assistant, and magnetometer operator and assistant. The remaining three bushmen will proceed with line preparation.

2nd December McPhar party and gear to Birch and Moore's Valley. This party will consist of a McPhar man, and 4 others to be supplied by L.E.E.: a transmitter operator (McPhar request a university student) and 3 bushmen. The resident geologist (R.G. Elms) will proceed to the Valley with the McPhar party. Apart from other duties which may be assigned to him in this initial period he will be primarily occupied with the geological mapping of the Hazell Hill area and direction of the line preparation.

TABLE 3

PERSONNEL AT MOORE'S VALLEY TO CHRISTMAS, 1959

	<u>BUSHMEN</u>	<u>Inst.Op./Technician</u>	<u>Geoph./Geol.</u>	<u>Spare*</u>	<u>Total</u>	<u>Acc. Total</u>
12 Oct.	3	1 (T. Burrell)	-	2	6	-
26 Oct.	1 (cook)	1 (J. Gillie)	1 (Geoph.)	-	3	9
2 Dec.	3	2 (Student & McPhar)	1 (R.G. Elms)	-	6	15
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\*Spare Accommodation Chief Geologist, Field Engineer and visitors.

The 4 bushmen preparing the track Moore's Valley - Wanderer extension

Project will be at the Valley camp for a few days after 9th November.

An office tent (12' x 10') will be required at the camp.

Depending upon the rate of progress of the I.P. survey, two additional bushmen may be required about 9th December.

II. BIG CREEK - ANOMALY 10/8

This is not accessible from Moore's Valley but it can be reached on foot with relative ease from the west shore of Macquarie Harbour, two miles west of Asbestos Point. The distance is approximately 7 miles and it is over open button grass plain except for the valley of the Big Creek which has to be crossed to reach 10/8. However, in the first instance a walking track would suffice.

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9 Nov. The programme would consist of completely outlining the length of the mineralisation discovered in the previous season. This would be done by geological mapping, R.E.M. and magnetic work and trenching. Since the strike length of this mineralisation is not known it is difficult to provide a figure for the line footages required but an estimate of 10,000 feet should suffice.

TOTAL ESTIMATED LENGTH = 10,000 feet

Build Up of Programme

9 Nov. 3 bushmen (2 bushmen plus 1 instrument operator/bushman) to establish track from Harbour to anomaly site. Most of the camping gear will have to be dropped at the site by a fixed wing aircraft. 7 Dec. Similarly food can be supplied to the party by the same procedure. IV. Communication with this party can be maintained with a Pye portable transceiver. The geologist (I.M. Paltridge) will proceed to the site as soon as the track is established.

It is estimated that the programme will take 4 weeks to complete.

TABLE 4

PERSONNEL AT BIG CREEK CAMP

9 Nov.	<u>Bushmen</u>	<u>Bushman/Instr. Op.</u>	<u>Geol.</u>	<u>Total</u>
length, 400 feet	2	1	1	4

At the completion of this work the desirability of drilling this mineralisation can be fully evaluated. The party would proceed to the Wanderer Project.

III. WANDERER PROJECT

This area of interest, which is 2½ miles to the north west of the zone of immediate survey in Moore's Valley, is at the intersection of the north-south trending Birch ultrabasic belt and the inferred westward extension of the crosscutting structure at Moore's Valley. It is covered by the Cainozoic sediments which exist in the Valley and is a target for an I.P. survey with possible gravimetric work. However, an initial magnetic survey is necessary to delineate the zone of top priority of work for the I.P. gear.

The magnetic survey would in the first instance be of a reconnaissance nature. Seven east-west lines each 1000 feet apart and 8000 feet in length would be required for this work. Further work would be based on these results; before I.P. work commences a gravity survey may be required.

TOTAL ESTIMATED LENGTH = 56,000 feet

The area of interest is located on photographs 20/924/47 and 48.

Build Up of Programme

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- 9 Nov. Four bushmen into Moore's Valley to establish a track from the Moore's Valley camp to the Wanderer Project area. For the first few days these men will be based at Moore's Valley. Once the track is into the area the four can commence line preparation. The party would need to be supplied with food and camping gear by fixed wing aircraft.
- 7 Dec. Party from anomaly 10/8 (I.M. Paltridge and 3 bushmen) into area making a total for this party of one geologist, one bushman/instrument operator and 4 bushmen.

TABLE 5

	<u>Bushmen</u>	<u>Bushman/Inst. Op.</u>	<u>Geol.</u>	<u>Total</u>
9 Nov.	4	-	-	4
7 Dec.	6	1	1	8

IV. ANOMALY 20/9, MAINWARING RIVER

This geological anomaly is some 3 to 4 miles south of Moore's Valley and it can be readily reached on foot from this location. It can be supervised by the geologist in the Valley, the line preparation will be given second priority over the preparation of lines here and at the Wanderer Project. Three east-west traverse lines are required, each of 1000 feet in length, 400 feet apart.

TOTAL LENGTH = 3,000 feet

V. ANOMALY 6/3, PELIAS COVE

This geological anomaly is located near Double Cove on the west side of Macquarie Harbour. It is readily accessible by motor launch.

The anomaly initially requires R.E.M. traverses, 800 feet in length and 400 feet apart with the first traverse on the beach.

TOTAL ESTIMATED LENGTH = 2400 feet

This anomaly would have second priority over the Moore's Valley and the Wanderer Project, consequently no firm dates can be set for this work.

*B. Scott*  
 Chief Geologist, L.E.E.

TABLE 6

FIELD PERSONNEL REQUIREMENTS

	<u>Bushmen</u>	<u>Inst. Op./Technician</u>	<u>Geoph./Geol.</u>
12 Oct.	3	1 (T. Burrell)	-
26 Oct.	1 (cook)	1 (J. Gillie)	1 (Geoph.)
9 Nov.	6	1 (P. Russell)	1 (I.M. Paltridge)
2 Dec.	3	2 (Student & McPhar)	1 (R.G. Elms)
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	<u>13</u>	<u>5</u>	<u>3</u>