Q79 No 20.

367001

# THE GEOLOGY OF THE LEWIS RIVER PROSPECT

Anomaly 24/8
I.G.S. 4/5/59.
(+ ATTACHED FIGURES).

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# LYELL - E.Z. - EXPLORATIONS

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4th May, 1959

To: Mr. G.F. Hudspeth.

Anomaly 24/8

The accompanying reports describe the setting of geological anomaly 24/8, the Lewis River Prospect. This prospect had no expression in the airborne electromagnetic survey and was investigated solely on the basis of mineralisation which is known to exist in the area. This mineralisation consists primarily of manganese and iron with some disseminated copper but its grade and extent are not encouraging and no further work is justified on the prospect.

B. Scott

Chief Geologist, L.E.E.

# LYELL - E.Z. - EXPLORATIONS

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## THE GEOLOGY OF THE LEWIS RIVER PROSPECT

1. Dates of Examination: 4.1.59 to 17.1.59

2. Man Days in the Field: 53

Personnel: Geologist: I.M. Paltridge
Student: K. Fletcher
Bushmen: D.H. Watson
R.J. Bennett
J. Mands

3. Summary

This prospect has no expression on the airborne geophysical charts and has been investigated solely on the basis of the mineralisation known to exist there. This occurs in a narrow dyke which dips to the west at about 60°. However, the low assays and the small size of the outcrop indicate that it is of no economic interest.

Geologically, the prospect is situated in a fairly favourable area near a granite contact and a system of faults. Against this must be set the fact that the Cambrian metaquartzites, which form the bulk of the rock exposed in the area, do not favour extensive mineralisation.

4. Introduction

The Lewis River Prospect is situated (Plate P25R) on the south side of the Lewis River about 4.7 miles from the mouth and 29 miles south of Birch in an area of generally mild relief. Over the whole of the area mapped, the greatest difference in elevation was about 75 feet. The prospect consists of one main exposure near the northern end of the grid and several insignificant exposures elsewhere. On all of these, small shafts and trenches have been sunk, but they could not be inspected as they were filled with water. The area is covered by air-photo 24B/933/118.

During the course of examining this prospect, one day was spent at Pender's Prospect on the coast just south of the Lewis River. This prospect is described in report G85.

5. GEOLOGY

Stratigraphy and Sedimentation

The sedimentary rock types found on this prospect are altered sediments of the Dundas Group and Recent alluvial silts and muds. The geology is shown on plate S3/1.

The Cambrian Dundas rocks are metaquartzites, slates, etc. which have a well developed cleavage. Generally, they are difficult to map as the differences between beds are very slight and to prepare a satisfactory map considerable trenching would have been required. This was not considered justifiable. The sediments range from silt to medium sand in grain size, and are grey, black or yellow in colour with abundant quartz porphyroblasts. The characteristics of these rocks visible in hand specimen show that they were deposited in a geosynclinal environment, but the lithologies represented are not types which might be mineralised.

The Recent alluvials form the floors of the valleys in the area and are mentioned solely because of the occurrence of bog-iron ore in them. Several of the old trenches were sunk on more prominent exposures of this material.

Structure

Although bedding is not often seen in these rocks, sufficient was found to enable fairly accurate conclusions concerning the structure to be drawn. The sediments have been folded about axes which plunge at 15° on 338° grid. The crest of the anticline lies to the west of the prospect grid. Immediately east of the grid, a synclinal structure which appears to be part of a large drag-fold was found. The structure is indicated on the accompanying cross-section (Plate S3/1).

In the immediate vicinity of the grid there is little evidence of faulting, indeed, ground evidence is almost nil. However, surrounding the prospect is a fault system which was identified on air photographs. The main prospect is situated at the intersection of two photo-linears towhich the emplacement of the mineralised dyke is no doubt related.

Igneous Rocks

Several small dykes mapped during the course of this examination were found to consist of hard, grey, fine-grained, granular rock with feldspar and xenomorphic quartz. These dyke rocks all show cleavage somewhat less well developed, but having the same attitude as the regional cleavage, and are therefore considered to be older than the deformation. They were intruded along fractures which seem to have some association with jointing in the area.

South of the grid mapped, a small exposure of a fine-grained, almost glassy, black rock (?basalt) with prominent quartz veins carrying a light green mineral unidentifiable in hand specimen (LE1256) was seen. A few small holes had been sunk on this exposure but no mineralisation was encountered. This

rock, which is uncleaved, is probably younger than the deformation.

Some distance to the east of these prospect pits, Elms (1958) mapped a porphyritic biotite granite which he believed to be the source of the mineralisation in this area. There is no reason to alter this belief as the mineralised dyke does not have as well developed a cleavage as might be expected from its geological environment, i.e. it post-dates the development of cleavage in the surrounding rocks, and may well be the same age as the granite.

Mineralisation

The sole mineralised exposure of note was mapped on a scale of 50 feet to 1 inch (plate S3). As will be seen from this plan, the mineralisation fades out to the south and seems to extend north under the thin soil cover. Some distance to the south of the area covered by this plan a similar outcrop was found and traced intermittently southwards for some distance (plate S3). At the northern end, the mineralised zone dips west at 60°, but the dip lessens to about 45° at the shafts.

A chip sample (LE1251) across fresh unweathered material assayed Cu 0.65%, Mn 0.24%, Fe 32.7%.

Grab samples taken across the dumps at the shafts assayed Cu 0.65%, Ag 0.47 oz/ton, Au trace, Mn 0.15%, Fe 25.0%.
It will be seen that in these samples the copper content is the same. Two samples collected from this area by Elms (1958) assayed Cu 0.16%, and 0.07%; Mn 11.4% and 11.8% respectively. It is not known whether the samples are from the same exposure, but if they are then it seems certain that the latter samples were taken from the bottom of the weathered zone where a large quantity of hydrated manganese oxide has collected.

In hand specimen, sample LE1251 is seen to consist of relatively large pyrite phenocrysts (up to ¼") in a matrix of fine-grained quartzose material. This matrix has the appearance of being igneous, but it would be best if this were checked by thin section examination.

Conclusions

1. The mineralisation seems to have taken place along a dyke injected along an axial plane fault or shear in altered Cambrian sediments.

2. Because of the low grade of mineralisation, a large ore-body would have to be located to make this prospect an economic proposition.

There is no indication of a large body on the airborne geophysical results, in fact there is no reponse at all from this area. However, the disseminated

nature of the mineralisation makes it unlikely that the airborne equipment would show any response.

3. Soil sampling has failed to record any geochemical anomaly.

4. Information available indicates that this prospect does not warrant further investigation.

J. Michael Paltridge

Reference: Elms, R.G. 1958 Report on examination of Lewis River Area. L.E.E. Report G47

GEOCHEMICAL INVESTIGATION - LEWIS RIVER PROSPECT

Soil samples 1156 to 1272, lot 13, were collected from this grid and analysed for copper, lead, and zinc.

No significant concentrations of these elements were found. However, it is unfortunate that manganese was not analysed as there is quite a marked quantity of this metal in the mineralised exposures. If nothing else, this could have indicated the behaviour of manganese in soils; information which could conceivably have been of use elsewhere in the exploration programme.

J. Michael Pattridge

# LYELL - E.Z. - EXPLORATIONS

APPENDIX 1



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## RECONNAISSANCE OF PENDER'S PROSPECT

1. Introduction

Pender's Prospect is situated on the coast 2/3rds of a mile south of the Lewis River and about 29 miles south of Birch. No formal mapping was carried out. The prospect is covered by air photo 26/893/117.

2. GEOLOGY

Lithology

The sedimentary rocks here are all cleaved Cambrian metaquartzites which dip at moderate angles to the west.

Some igneous dyke rocks were seen, but these have been altered to chlorite schists.

Structure

The prospect workings are situated on two north-east striking shears which carry pyritic mineralisation.

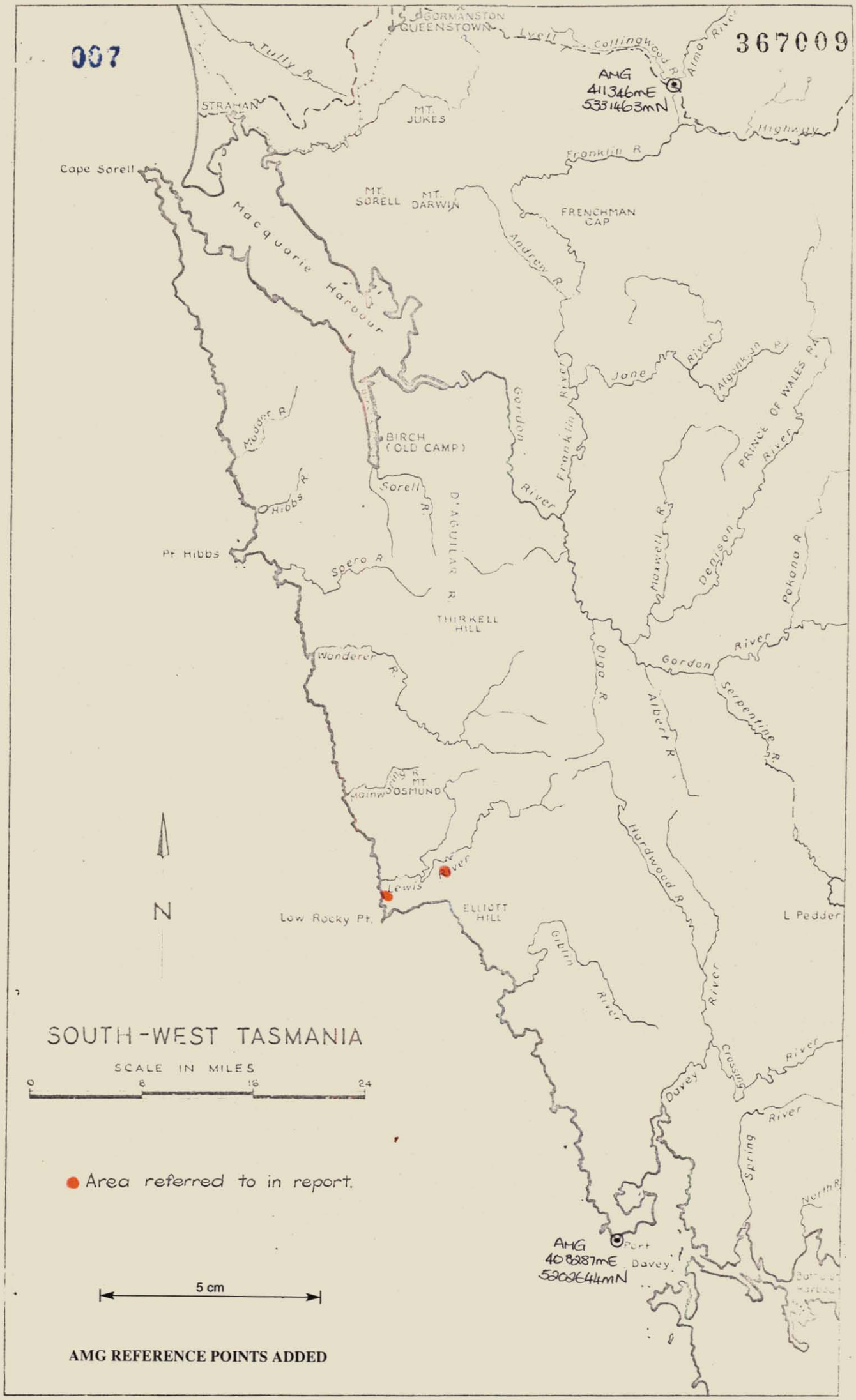
Mineralisation

This consists of pyrite and a very small amount of chalcopyrite in chlorite schists along the shears.

Conclusions

The size and grade of this prospect are too low for it to be of interest.

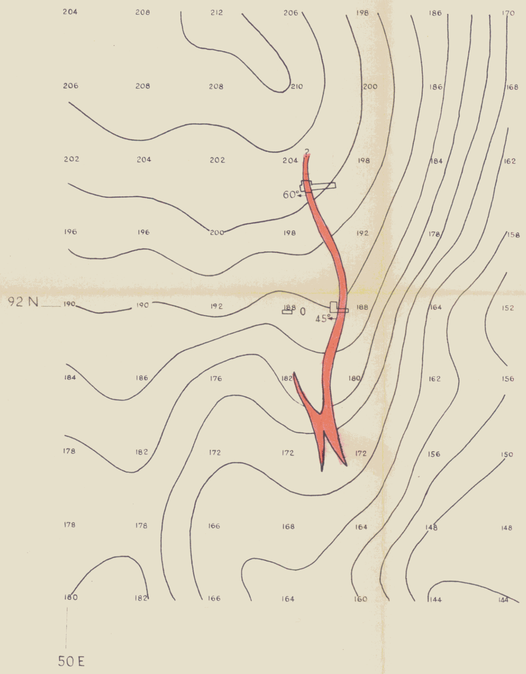
J. Michael Partridge

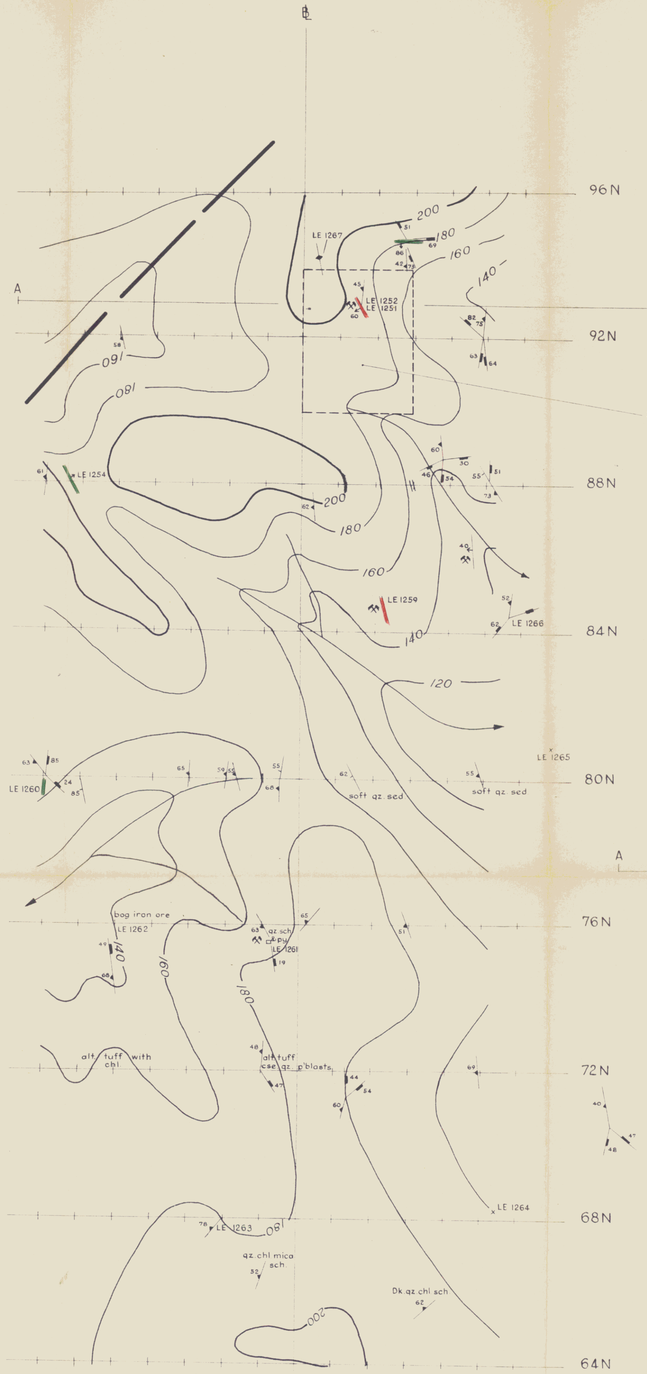



**AMG REFERENCE POINTS ADDED**

## MINERALISED - ZONE

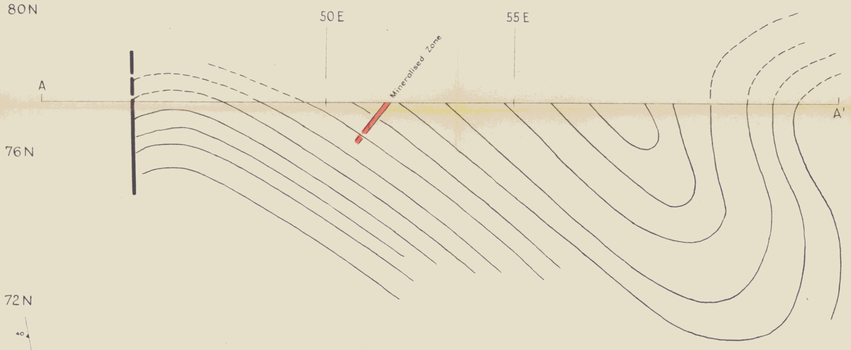
Scale : 50 ft. to 1 inch




## CROSS – SECTION A-A' (Generalised Sketch)

Scale : 200 ft to 1 inch (horizontal)
vertically exaggerated




Mag North

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5 cm

References
Field Books. 19, 14
Photo Nº 24b/933/118
Arbitary Datum
92 N 50 E . 200 ft
Mineralisation
Dykes

LYELL E.Z. EXPLORATIONS
QUEENSTOWN

# LEWIS RIVER PROSPECT

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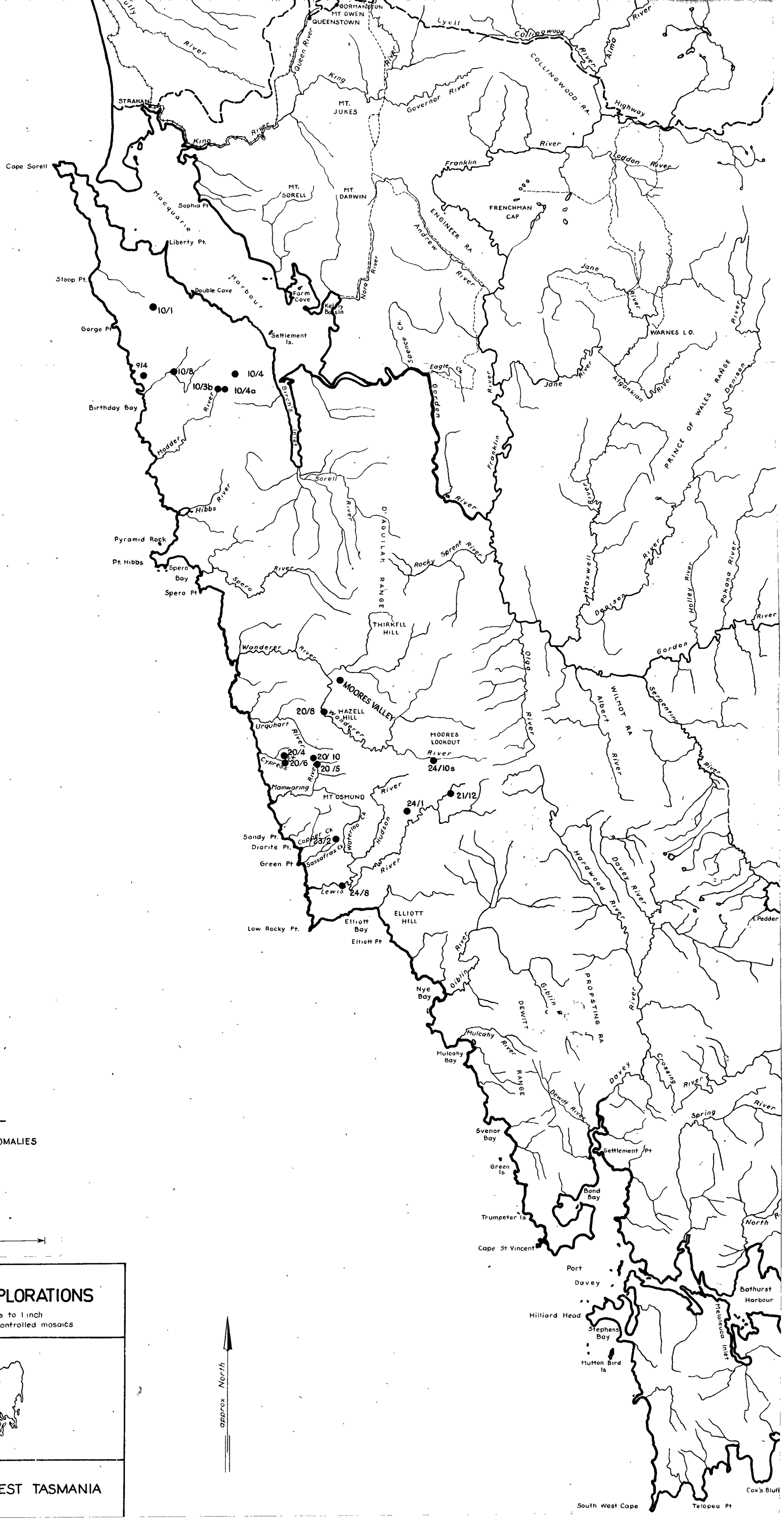
|---|---|---|---|
| Survey | I.M. Paltridge | Jan.'59 | Scale 200 ft to 1 inch |
| Geology | I.M. Paltridge | Jan.'59 | |
| Geophysics | | | |
| Geochemistry | | | |
| Drawn | J.R.G. | Jan.'59 | |
| Traced | D.S. | May '59 | |

GEOLOGY

S 3 — Sheet No. 1

77.5.59




LEGEND

LOCATION OF ANOMALIES

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5 cm

# LYELL E.Z. EXPLORATIONS

Scale. 4 miles to 1 inch
Compiled from uncontrolled mosaics

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R6c

SOUTH-WEST TASMANIA

approx North