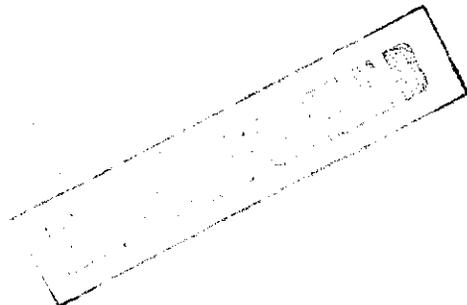


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PROGRESS REPORT

R.9039 - CORPORATE EXPLORATION OF TASMANIAN MINERAL RESOURCES

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DATE : DECEMBER, 1968

I N D E XPageSYNOPSIS

- | | | |
|----|--------------------------------|---|
| 1. | <u>AIM</u> | 1 |
| 2. | <u>REASON</u> | 1 |
| 3. | <u>SUMMARY AND CONCLUSIONS</u> | 1 |
| 4. | <u>RECOMMENDATIONS</u> | 2 |

REPORT

- | | | |
|----|---|---|
| 5. | <u>INTRODUCTION</u> | 3 |
| 6. | <u>ECONOMIC GEOLOGY</u> | 3 |
| | 6.1 Copper | 3 |
| | 6.2 Tin | 3 |
| | 6.3 Iron Ore | 4 |
| | 6.4 Dune Sands | 4 |
| | 6.5 Alluvial deposits | 5 |
| | 6.6 Geochemical anomalies indicative of potential mineral deposits. | 5 |
| 7. | <u>DISCUSSION</u> | 6 |
| 8. | <u>REFERENCES</u> | 6 |
| | Fig. 1. Map - Showing Locality of E.L.16/68 537 S.M. | 7 |
| | Fig. 2. Map - Showing Main Mineral Localities on E.L.16/68 537 S.M. | 8 |
| 9. | <u>DISTRIBUTION</u> | 9 |

A.C.I. CENTRAL LABORATORIESR.9039 NOVEMBER-DECEMBER 1968CORPORATE EXPLORATION OF TASMANIAN MINERAL RESOURCES : PROGRESS REPORTSYNOPSIS1. AIM

To locate mineral prospects in Tasmania of potential interest to the A.C.I. Group.

2. REASON

The desire of A.C.I. to diversify into profitable raw materials.

3. SUMMARY AND CONCLUSIONS

- 3.1 Following a literature survey by the Chief Geologist, an Exploration Licence (E.L. 16/68) covering 537 square miles of land in North West Tasmania was granted to A.C.I. by the Tasmania Department of Mines.
- 3.2 A two week field evaluation of the area was carried out by the Senior Geologist followed by an appraisal of technical data made available by the Department of Mines. This work indicated the presence of copper, iron ore, tin, chromite and possibly nickel within the licence area.
- 3.3 Extensive copper lodes are present which were locally mined in the early part of this century. Potentially important copper deposits may be present in these lodes.
- 3.4 Alluvial tin is present close to the copper lodes but has been extensively worked in the past. New alluvial deposits may be located.
- 3.5 Three isolated magnetite lodes of sufficient thickness to warrant further investigation are present in the licence area.
- 3.6 Some coastal dune deposits have been found to contain tin, chromite, zircon and rutile. One dune sample contained 0.41 lbs. tin per cubic yard associated with chromite, zircon and rutile.
- 3.7 A thin alluvial deposit near the Arthur River, assayed 0.83% tin for the -16 mesh screen size.
- 3.8 Interesting copper, nickel and zinc geochemical anomalies are present in the centre of the licence area which may be related to potentially important mineralisation.
- 3.9 The work carried out to date is encouraging and justifies further extensive geological exploration.

4. RECOMMENDATIONS

It is recommended that:

- 4.1 The area be examined from the air by helicopter to evaluate the problems of operating field parties and to examine numerous small scattered copper and iron ore workings.
- 4.2 The area containing the copper lodes be mapped in detail and the old workings accurately surveyed with a view to diamond drilling areas of particular interest.
- 4.3 The magnetite lodes be re-examined and geochemical surveys carried out to trace the lateral extent of the known lodes and to attempt to locate new lodes. Should this work be successful detailed mapping of costeans will be required followed by diamond drilling at selected points.
- 4.4 Detailed sampling by hand auger drilling be carried out over the older dunes around Temma and further reconnaissance sampling of the older dunes along the coast line be undertaken.
- 4.5 Application be made to the Tasmanian Department of Mines in Hobart for the area covered by the relinquished exploration licence 16/68 where heavy minerals of economic potential have been proved by drilling.
- 4.6 The alluvial gravels and sands be mapped and sampled in the Arthur River area and around Balfour.
- 4.7 The areas showing nickel, copper and zinc geochemical stream anomalies be investigated by mapping and geochemical techniques.
- 4.8 In order to implement the above recommendations and to justify our interest in licence EL/16/68 a team of two geologists and two assistants be formed to work under the Senior Geologist.
- 4.9 Adequate base camp facilities and transportation be provided for the geological field team. A suitable base camp, built by Broken Hill Pty. Ltd. exists at Balfour and attempts should be made to lease this property.

5. INTRODUCTION

Following a literature survey by the Chief Geologist, A.C.I. Operations Pty. Ltd. applied for an area in North West Tasmania where it was believed potential alluvial chromite deposits existed. On the 4/11/68 the Tasmanian Mines Department granted an exploration licence (No.16/68) for 537 square miles (shown in figure 1, together with the adjacent exploration licences).

A two week field visit to the area was made by the Senior Geologist from the 19.11.68 followed by a visit to the Department of Mines in Hobart where records of all previous work within the licence area were examined. A reinterpretation of the available data has been made in the Technical Centre at Sydney.

6. ECONOMIC GEOLOGY

This report evaluates the mineral potential of the licence area, based on a 2 week geological field visit, records of old mines, prospecting trenches, and drill holes and from an interpretation of an extensive stream sediment geochemical survey undertaken by Pickands Mather International.

6.1 Copper

Copper bearing lodes in a country rock of interbedded quartzites, shales and siltstones are present along a North-South trending line for several miles to the West of Balfour township (see figure 2).

These copper lodes were prospected early in this century and two mines established which produced high grade copper ore for export. The workings of the mines were less than 200 feet in depth and it is likely that unexploited reserves of copper are present at greater depth. The main lodes vary between 3½ and 30 feet in width and from published data appear to occur as a series of lenses. In the past only the lode material has been exploited but reports indicate that the country rock on either side of the lode contains lenses, pods and disseminated patches of copper ore.

All production ceased in the 1920's, presumably due to the low price of copper at the time. The leases over the main copper lodes were held until 1967 by the Balfour Mining Syndicate although Broken Hill Pty. Ltd. surveyed the copper mines in 1965 whilst investigating a tin prospect under a farm out agreement with the Syndicate. This agreement excluded all copper deposits.

There is considerable potential along the copper lodes which justifies further geological exploration and evaluation.

6.2 Tin

Tin mineralisation is restricted to the area of Specimen Hill, ½ mile West of Balfour township (see figure 2). This area was thoroughly investigated by Broken Hill Pty. Ltd. during 1963-5. Numerous very thin quartz veins were located, some containing small amounts of tin but the overall tin content was too low to justify open pit mining and the veins were not thick or rich enough

for conventional mining techniques to be economical. Prospects for locating thick tin bearing lodes in the area are not good.

Alluvial tin has been worked extensively in the past in river valleys to the North of Specimen Hill and geological mapping of the adjacent copper lodes may lead to the discovery of new tin bearing alluvial deposits.

6.3 Iron Ore

Three isolated lodes of magnetite ore have been known in the licence area for many years (see figure 2) and all possess the same trend. In 1967 Pickands Mather International investigated the northern two occurrences but restricted their work to the already known outcrop. Geophysical and geochemical techniques were used over the lodes and both lodes were drilled with intersections of 40 feet and 66 feet of 30% and 50% magnetite ore at the Nelson River and Temma lodes respectively. The geochemical work at the Nelson River showed high zinc and lead geochemical anomalies to the North West of the drilled area. The magnetite lodes are associated with ultrabasic intrusive rocks and there is the possibility that lead and zinc ores may be associated with the magnetite.

The existing data justifies further mapping and geochemical investigations to trace the lodes laterally and to determine whether there are additional mineralised lodes in the area.

6.4 Dune Sands

The coastal zone is characterised by extensive sand dunes, two generations of which have been recognised. Spot sampling of the dunes indicates that appreciable amounts of heavy minerals are present in the older, fine, non shelly sands but that the yellow, shelly, dune sands are barren.

Bulk grab samples from three distinct dunes of the older type between Temma and Bluff Point gave the following results when subjected to bromoform separation and microscopic examination (see figure 2 for location). The cassiterite values are based on X-ray fluorescence analysis and must be considered only as rough indication of the tin content.

<u>Sample No.</u>	<u>Tas.15</u>	<u>Tas.16</u>	<u>Tas.20</u>
% Heavy minerals	0.86	1.30	1.30
% Chromite in heavies.	8.3	13.7	9.5
% Rutile in heavies.	1.3	15.5	11.6
% Zircon in heavies.	2.0	5.5	2.7
% Cassiterite (approx.)	1.8	0.16%	Trace

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The cassiterite content of sample No.Tas.15 which represented a bulk sample over a 20 foot auger hole is equivalent to 0.41 lbs. of tin per cubic yard. The presence of chromite, rutile and zircon with minor amounts of tin in the other samples indicate that further exploratory work should be carried out over the area of older dunes.

On the North-West corner of the exploration licence, Pickands Mather International have carried out a detailed investigation of three square miles of sand dunes (older type) within exploration licence 16/67. The results of their drilling proved 3 million cubic yards of sand with a heavy mineral content of 3.6% (108,000 tons total). The heavy concentrates contained 2.5% Rutile, 5% Zircon and 0.098% Cassiterite. It is considered likely that chromite will also be present in these sands.

Pickands Mather have now released this small area which would add considerably to any mineral reserves found within the A.C.I. licence area.

6.5 Alluvial deposits

A thin alluvial deposit located beneath recent sand dunes on the coast North of the Arthur River (see figure 2) contains 5.93% of heavy minerals (-16 mesh size) comprising 54.8% chromite 4.6% Rutile, 7.9% Zircon and 14% Cassiterite (0.8% tin overall). The area and thickness of this deposit is small but it should be traced inland with a view to locating larger developments of these mineral sands which are of outstanding grade.

High level alluvial gravels are present in the Roger River area and contain 0.7% of heavy minerals including chromite. Similar deposits in the adjacent exploration licence EL 5/68 held by Quest Exploration Pty. Ltd. have yielded 2.8% of chromite and further investigation of these gravels is required to determine whether similar rich concentrations of heavy minerals exist in the A.C.I. licence area.

6.6 Geochemical anomalies indicative of potential mineral deposits.

Pickands Mather International carried out an extensive stream sediment geochemical survey throughout the licence area in 1967. The results of the survey have been interpreted and at Balfour show a copper anomaly coincident with proven copper lodes. Additionally coincident nickel and zinc anomalies are present to the North East of Mount Balfour (see figure 2.)

A series of coincident nickel, copper and zinc anomalies are present between Balfour and the Arthur river associated with faulting, folding and Cambrian basic rocks. Similar but smaller anomalies occur on the eastern edge of the licence area South of the Arthur in a similar geological environment. All the anomalies should be further investigated as they may lead to the discovery of nickel, copper and zinc mineralisation.

7. DISCUSSION

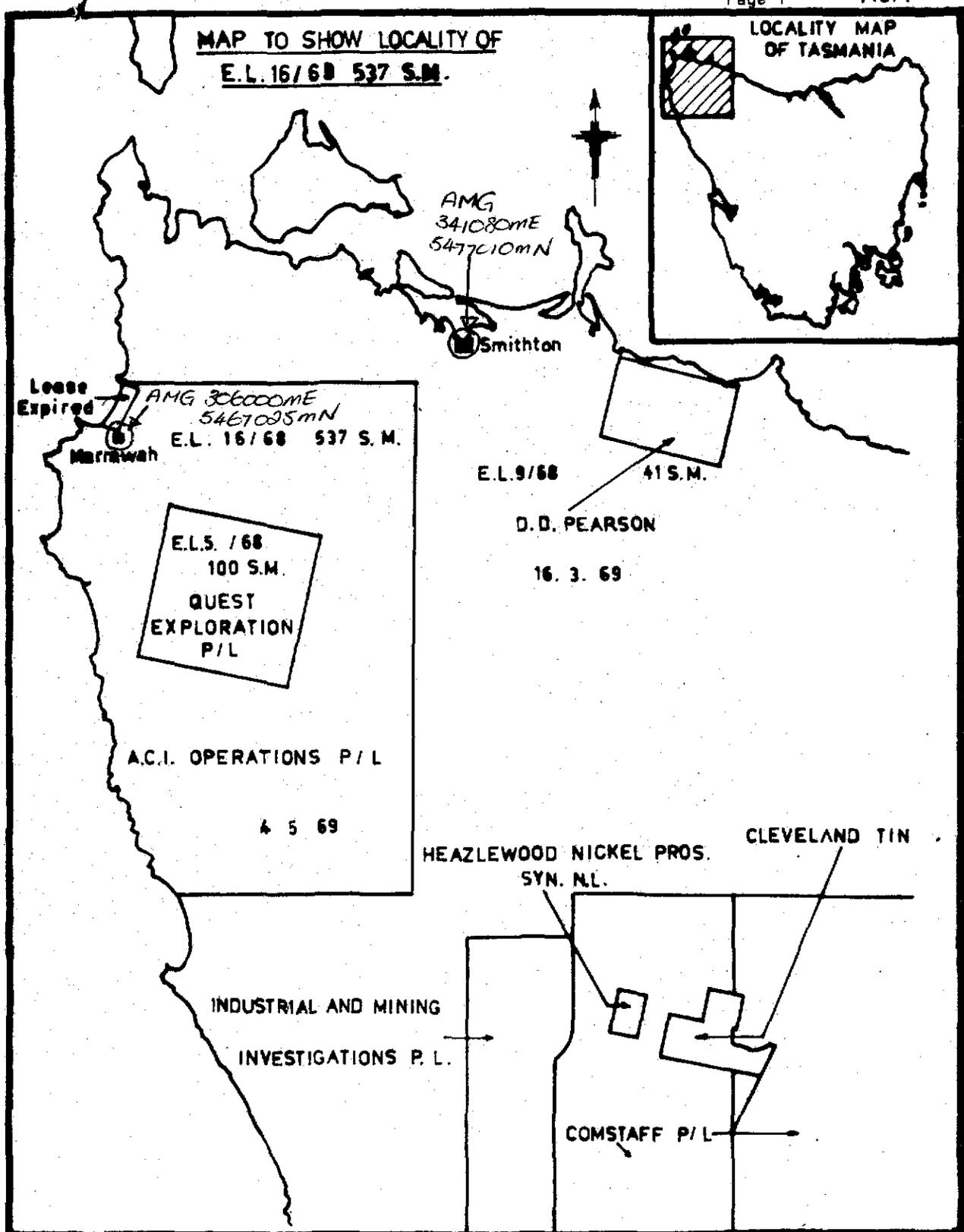
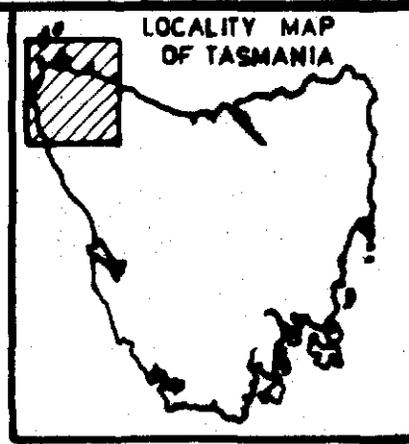
From the small amount of work carried out to date the A.C.I. licence area contain significant amounts of lode copper and iron ore. The dune sands and alluvial deposits also show promise as sources of chromite, zircon, rutile, and tin. In order to evaluate fully all the prospects in the area it is essential that two field parties consisting of a geologist and field assistant be formed, led and co-ordinated by the Senior Geologist.

The physiography and climate of the licence area is such that productive field work can only be carried out during summer months and some form of permanent base camp is required in the Balfour area. Broken Hill Pty. Ltd. built a large galvanised metal camp in 1965 which is still in good order. Approaches should be made to obtain this camp on lease for the duration of the Company's interest in the Balfour part of the licence.

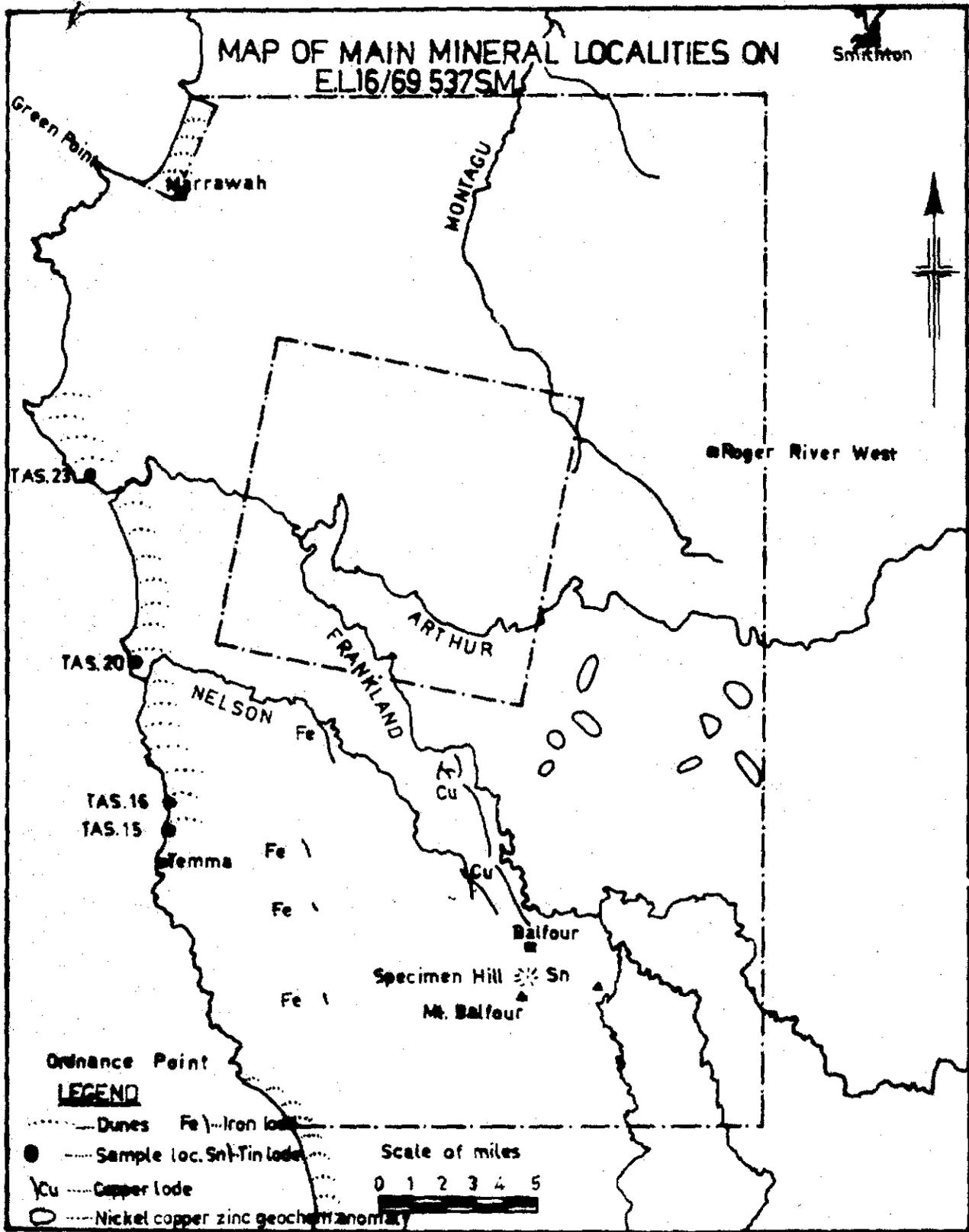
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**MAP TO SHOW LOCALITY OF
E.L. 16/68 537 S.M.**



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Smithton

Green Point

Murrawah

MONTAGU

TAS.23

TAS.20

TAS.16
TAS.15

NELSON

FRANKLAND

ARTHUR

Temma

Cu

Cu

Balfour

Specimen Hill

Mt. Balfour

Roger River West



9. DISTRIBUTION

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