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E. L. 5/77

UPPER FORTH VALLEY, TASMANIA

REPORT FOR 6 MONTHS TO NOVEMBER 1979

BY

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79/SYD/19

OCTOBER, 1979.

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Not received.

See TCR 99-1399

1. INTRODUCTION

During the period, the stream sediment geochemistry was carried out and the results were analysed and interpreted. The resulting anomalous areas were inspected by geological mapping and prospecting. Prior to any geological mapping on the E.L., the Oakleigh Creek Mine and environs were geologically mapped in detail with a view to determining any controls of the mineralized vein which might exist. The information gained from the mine area could then be applied regionally in the search for other veins.

2. LOCATION AND ACCESS (FIGURES 1 & 2)

E.L. 5/77 is situated on the eastern side of the Upper Forth River Valley in rugged, mountainous, isolated terrain. To the west, on the opposite side of the Forth River, is located the Cradle Mountain-Lake St. Clair National Park, having the river as its boundary. The Forth River flows north, discharging into the Bass Strait near Devonport.

The E.L. can be reached from Devonport by sealed road as far as the Lemonthyme Power Station, which is 20 km from the E.L. via a gravel road.

3. GEOLOGICAL SETTING (FIGURE 3)

In the Forth Valley the rock types include quartzite, mica schist and quartz mica schist of the Fisher Group with a general strike slightly east of north and dips of between 15° and 30° to the south-east (Macleod, 1961). At the Oakleigh Creek Mine the strike varies from 082° to 108° magnetic and dips from 15° to 27° in a northerly direction. The metasediments are abundantly veined by white quartz and locally sheared along planes trending north-north-west. These shear planes served as structural controls in the localization of copper and wolfram mineralization in the Forth Valley.

Most of the rocks in the Fisher Group have been derived from orthoquartzite and siltstone and metamorphosed to greenschist facies.

Two small granitic intrusions (adamellite of mid-Devonian age) occur within the E.L., the Birthday and Lone Pine Granites, both of which outcrop on Patons Track. They are the source of the wolfram, tin and copper-mineralization in

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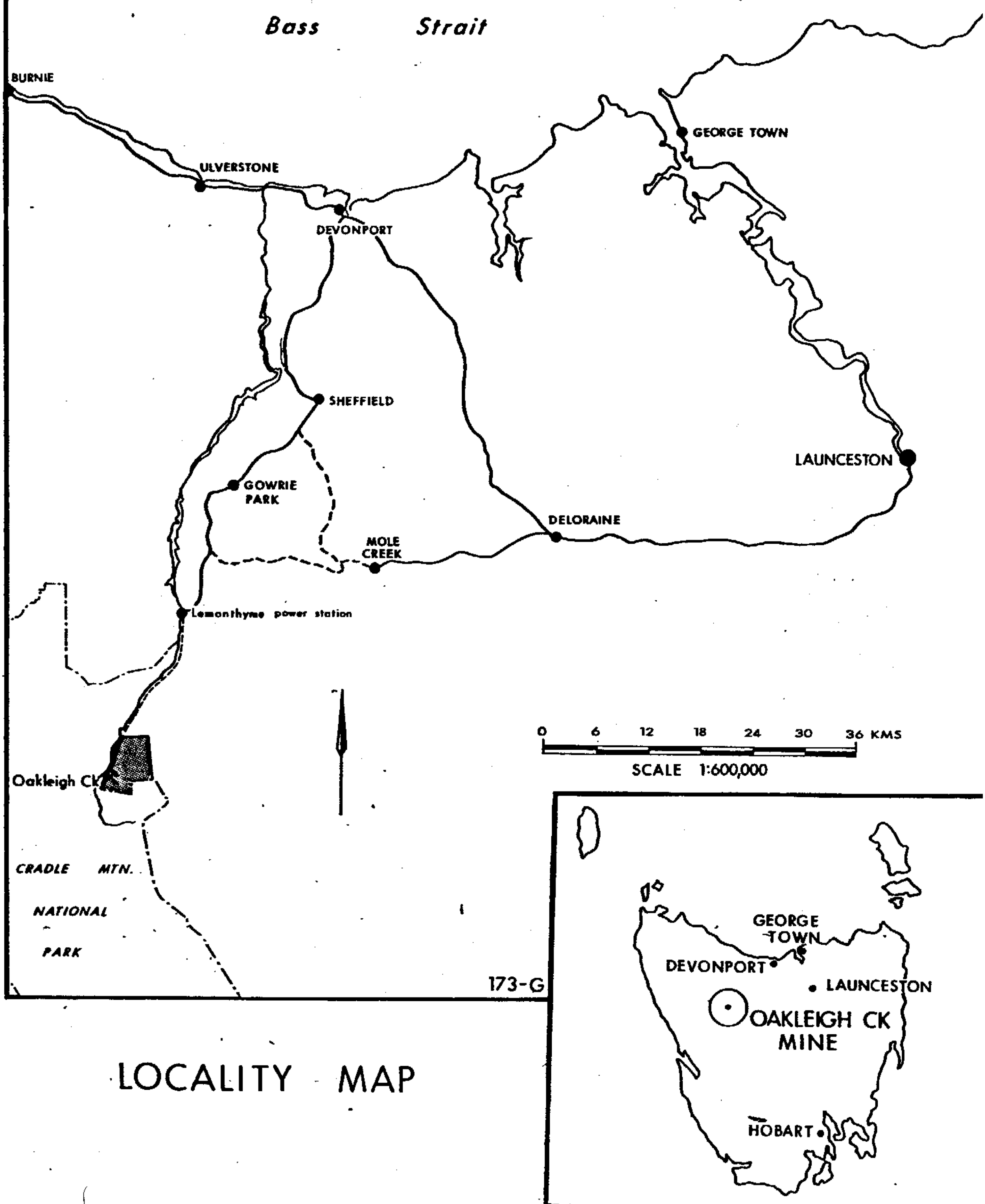
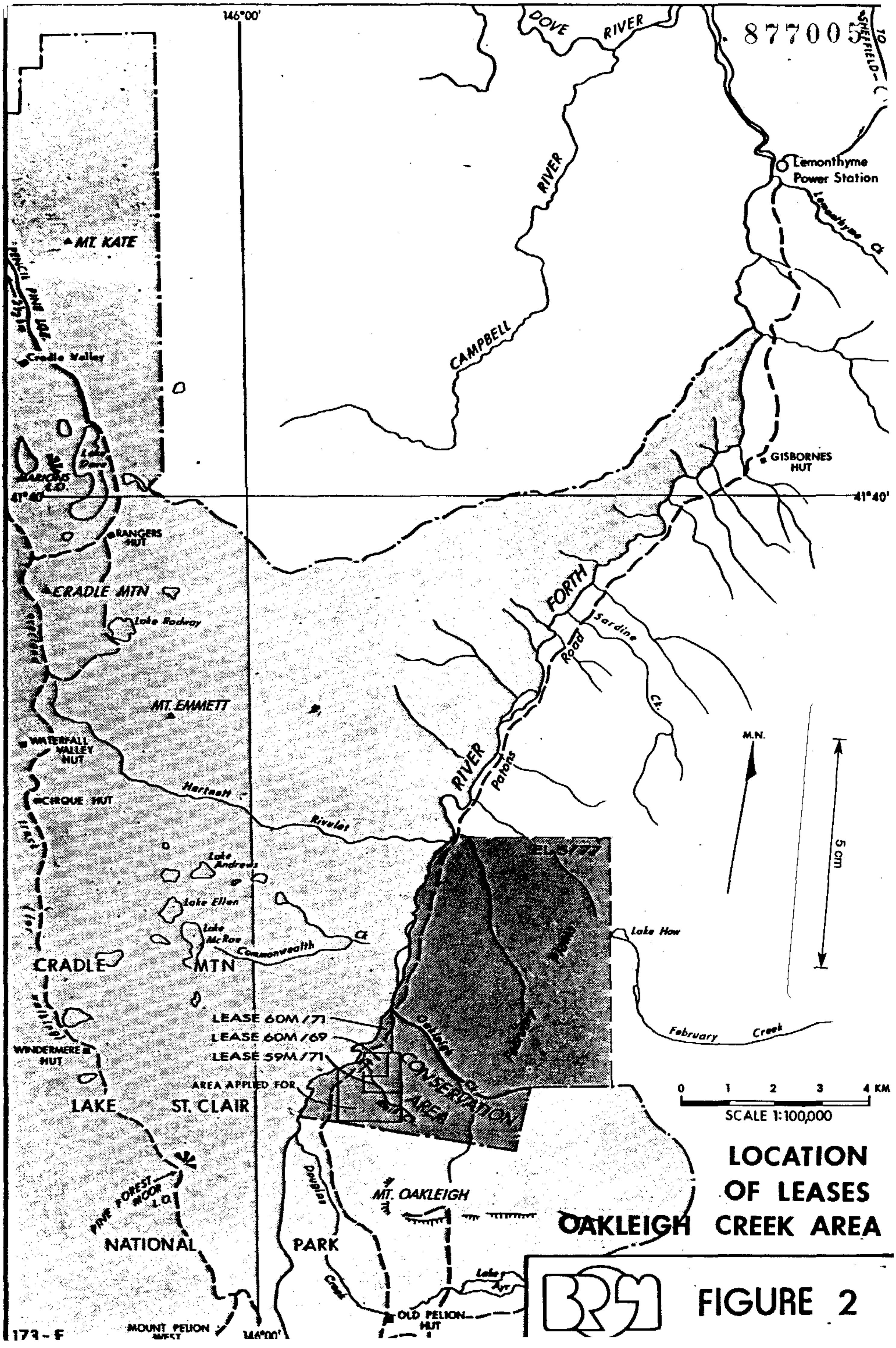


LOCALITY MAP

5 cm

FIGURE 1



LOCATION OF LEASES OAKLEIGH CREEK AREA

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FIGURE 2

the district. The granite is discordantly intrusive into the Precambrian Fisher Group. The granite contains biotite and muscovite (with the latter predominating in some exposures), pinkish white feldspar and coarse quartz. Tourmaline, molybdenite and arsenopyrite have been noted. Near its contact the granite commonly develops large phenocrysts of feldspar and abundant biotite.

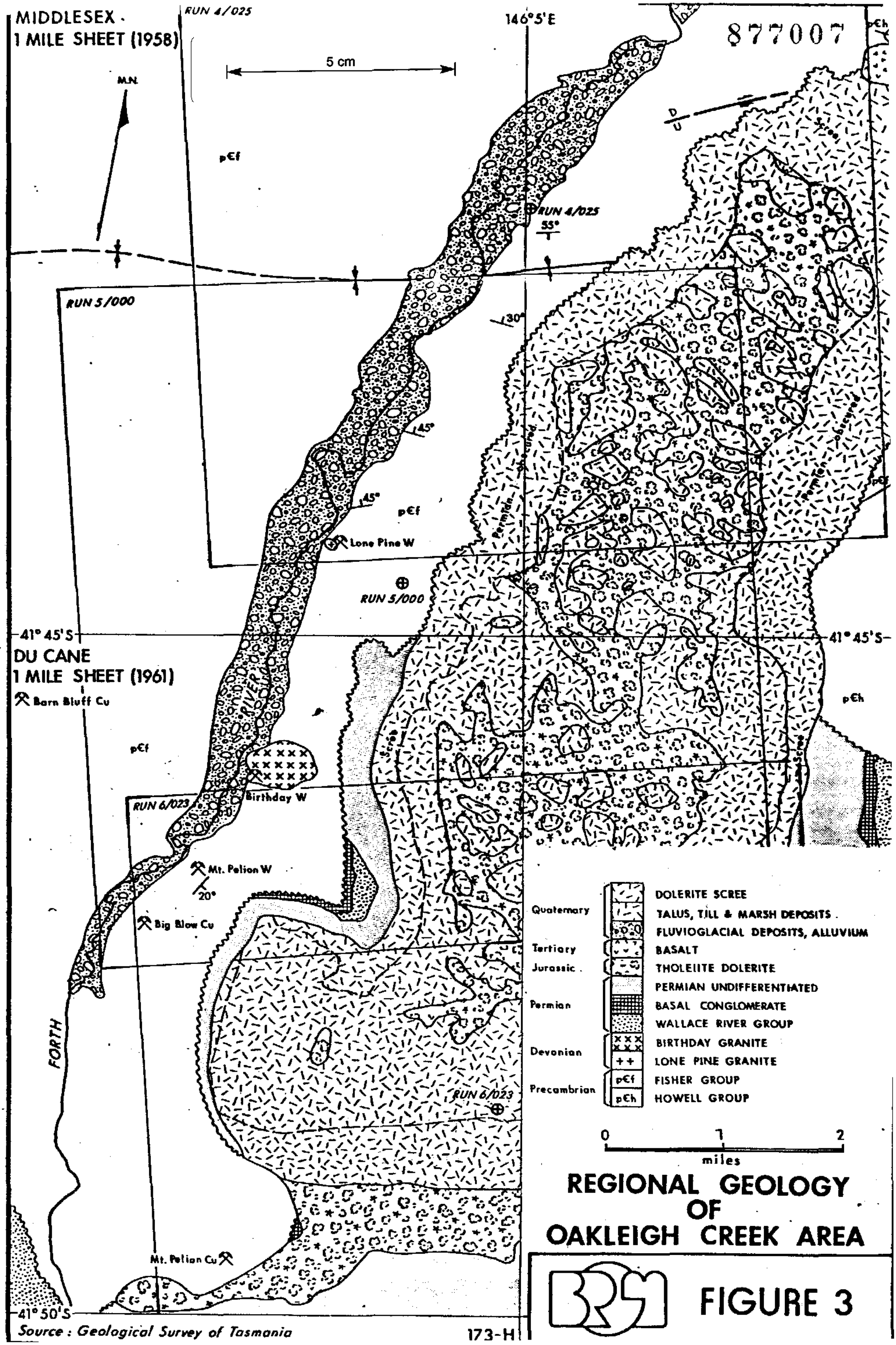
Quartz veins associated with the granites cut both the intrusives and Precambrian sediments. Of the veins observed, only the Birthday Granite Prospect and the Oakleigh Creek Wolfram Prospect are mineralized and they contain wolframite, pyrite, cassiterite and rare molybdenite. The Lone Pine Prospect adjacent to the granite intrusive consists of a single very narrow vein of arsenopyrite with only traces of wolframite. The vein within the Lone Pine granite was barren wherever it outcropped.

On the more gradual slopes encountered on the lower parts of the Valley, there is deep dolerite scree, with little or no outcrop of the Precambrian sediments. The drainage in this area is diffuse, most of it being by seepage through the dolerite scree and into the Glacial gravels filling the valley floor. The major structure in the Precambrian is a series of subparallel east-west folds. The folds are open and asymetrical with their axial planes dipping to the north. Minor structure in many places is intense, with the less competent schists being strongly distorted between the more competent quartzites.

4. STREAM SEDIMENT GEOCHEMISTRY (PLATE 1)

A follow-up stream sediment survey of the six major creeks within the license which drain the Forth River was carried out following the inconclusive results obtained in the earlier reconnaissance survey.

A full discussion of the results is recorded in B.R.G.M. report 79/SYD/08. A critique of this report by E. Wilhelm (B.R.G.M. Head Office Orleans, France - internal memo) points out that the interpretation of the analytical data should be treated with caution as it is based on the statistical threshold of anomalies on only 56 samples. Of the 56 samples, only one was anomalous in tungsten based on a statistical threshold. This is located in Reid Creek below the mine. He points out that most of the samples from Reid Creek show tungsten 50ppm, and that this is a more reasonable value to determine anomalies



REGIONAL GEOLOGY OF OAKLEIGH CREEK AREA

FIGURE 3

He also considers that a lower threshold for Sn, As, Bi can be applied based on the results obtained from Reid Creek (Sn > 200 ppm, As >130 ppm, Bi > 20 ppm).

Using these values, numerous polymetallic anomalies are evident in the area (using only the results for the -20+80 mesh fraction). In addition to Reid Creek, anomalies in W, Sn, Bi at Oakleigh Creek and Freak Creek are evident. These two creeks are adjacent to the Birthday Granite intrusion, with known mineralized veins. It is possible that the two samples furthest upstream in Oakleigh Creek (W > 100ppm and Sn > 500 ppm) are not related to the known vein deposits. The polymetallic anomaly on Lone Pine Creek can be explained by the presence of an arsenopyrite vein in close proximity to the creek.

5. GEOLOGY

Regional and detailed geological traverses of the area were undertaken during the period. The detailed geology was confined to an area around the Oakleigh Creek Mine in an effort to determine the setting and controls for that vein. Any geological controls outlined in the mine area could then be applied to the rest of the licence.

5.1 Detailed Geology - Oakleigh Creek Mine:

Detailed geological mapping of the surface and underground workings at the Oakleigh Creek Mine has been completed. The main host rock for the vein is a massive micaceous quartzite, often silicified in close proximity to the vein. The quartzites strike east-west and dip from 15 to 25° to the north at the 240 and 280 level portals. These quartzites are strongly jointed, one of the three major joint systems is subparallel to the vein (strike 170° dip 75°east), and has apparently provided a definite channel for the mineralizing solutions during emplacement of the vein.

Toward the southern end of the 240 and 280 levels, a fault block of thinly laminated quartz-mica schist is present. The schist is poorly jointed and the vein splits into numerous thin (<4cm) veins as the siliceous solutions apparently had no definite channel to follow. On entering the schist, the vein decreases from 30 - 50 cm wide to 2 - 3cm wide within 50 to 70m of the fault. This fault is of pre-vein age as it is cut by the vein and is healed by quartz. The schist and quartzite are silicified in a zone up to 30m wide on either side of the fault.

The vein is not displaced by any major faults where exposed in the 240 and 280 levels.

An anticline in the quartzites, whose axial plane strikes east-west, cuts the vein. This is of little significance, as the vein is not affected.

The prerequisites for the economic mineralization at the Oakleigh Creek Mine are:

- Host rock should be a massive silicified, well jointed, quartzite.
- The joints should be approximately meridinal with a steep dip to the east, as they are the dominant joints at Oakleigh Creek and the Birthday.
- A granite plug to provide a tungsten source should be close, but need not necessarily outcrop.

5.2 Regional Geological Mapping of the E.L. (Plate 1)

Geological mapping within the E.L. was confined to road cuttings, exposures in creek beds and to the Birthday Granite and Lone Pine Granite areas. Because of a thick vegetation and overburden cover, other exposures are rare. Rock types and structure as mapped are shown on Plate 1. Both schist and quartzite are present on Patons Road. Bedding attitudes generally strike east-west with a shallow dip to the north. No obvious folds are present although lack of good outcrop could prevent detection.

Massive quartzite, containing minor quartz veins, outcrops south of the Big Bend Creek in a road cutting. This was of interest, as a possible host however lack of outcrop away from the road prevented any follow up mapping.

The Lone Pine Vein was inspected and found to be hosted by a highly sheared quartz-mica schist. The vein itself is less than 4cm wide with abundant arsenopyrite. Minor wolframite was observed in the vein at only one location. The vein is exposed in several workings over a strike length of some 100 metres. Just south of Lone Pine Creek is a small outcrop of a quartz-feldspar-biotite-muscovite-granodiorite. A small irregular quartz vein occurs within the granite and shows no evidence of mineralization. At the contact with the granite, schist is intruded by a fine grained granitic vein.

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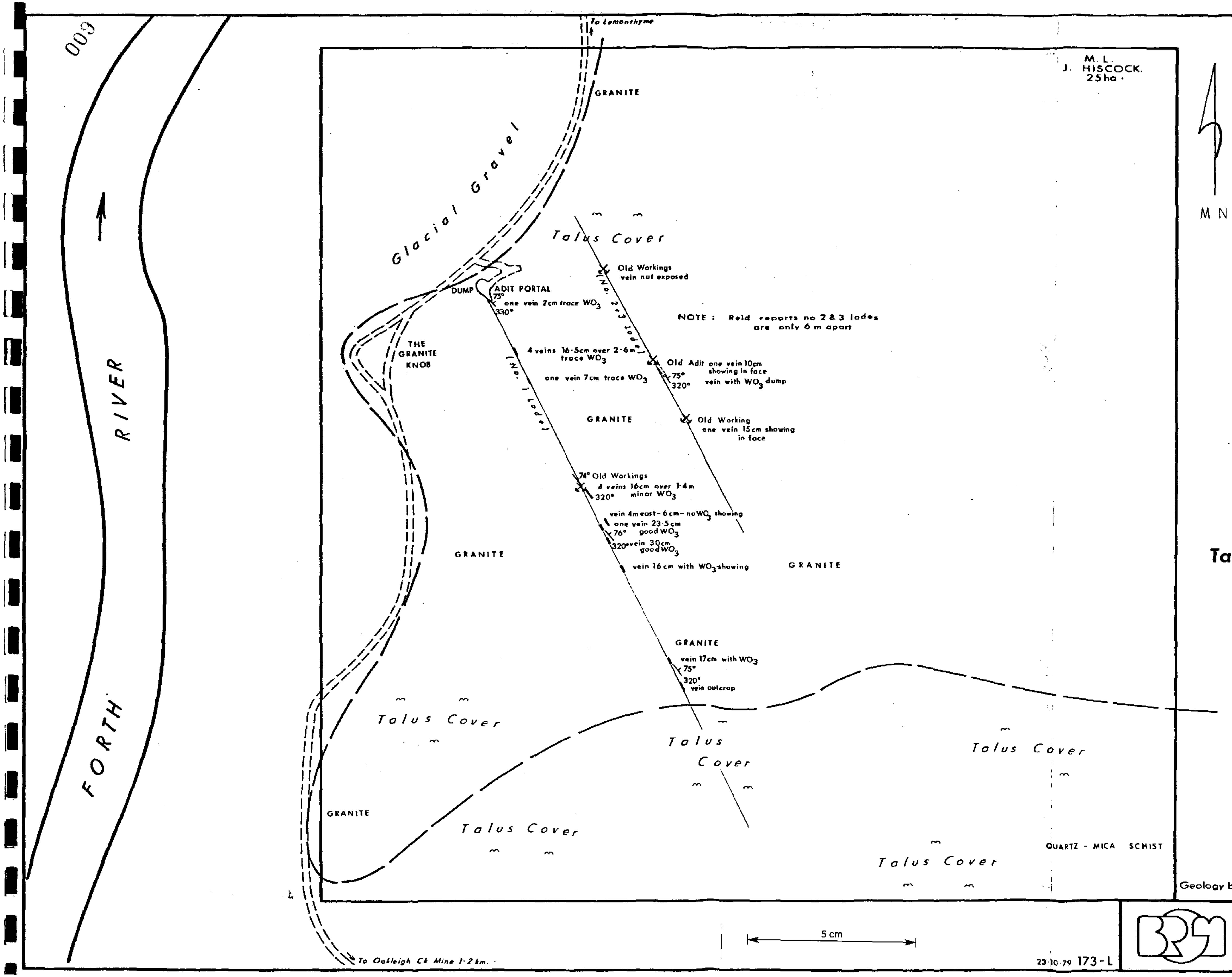

Tape & Compass Survey

BIRTHDAY PROSPECT

SCALE 1:2,000

Geology by W. P. Ayling, July 1979

BRM **FIGURE 4**

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The Birthday Granite (quartz-feldspar-biotite-muscovite granodiorite) was mapped more precisely. The veins within the granite follow a distinct joint system striking 330° dipping 78° east. An altered granite zone 15cm wide either side of the main vein is present. The vein ranges in width from 2cm up to 30cm, with an average vein width of about 15cm in outcrop. Wolframite is showing in the vein, which has been exposed over a strike length of 250m. Mapping along Oakleigh Creek adjacent to the Birthday Granite located outcrops of micaceous quartzite. Good outcrop in this area is rare and no evidence of veins was seen in outcrop.(see figure 4).

6. CONCLUSIONS & RECOMMENDATIONS

The following points can be made from the studies done on the E.L. to date.

1. The stream sediment geochemistry located two anomalies in Oakleigh and Freak Creeks, similar to that on Reid Creek.
2. Quartzite is the most favourable host rock for an economical vein deposit.
3. Granite must be present or close for an area to have potential.
4. The area from the Oakleigh Creek Mine to Freak Creek is considered to hold the most potential for the location of another economically sized vein.
5. The area north of Freak Creek to the E.L. boundary is considered to have little potential.

It is recommended that the area around the Birthday Granite be prospected further, by mapping, geochemistry and/or trenching, in an effort to determine the potential of this area.

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UPPER FORTH VALLEY - TASMANIA

Stream Sediment Geochemistry and Geological Map

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REPORT : 80 / SYD / 10 DATE : November 1980	FILE NO: 173 - 1b	DATE DRAWN : 13/11/80 D.J.P.	~~FIGURE 2~~ Plate 1

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