

71-729

**MICROFILMED**

000

PICKANDS MATHER & CO INTERNATIONAL

911001

BASIN LAKE PROSPECT - TASMANIA - E.L. 12/65  
HISTORY AND RECOMMENDATIONS FOR FURTHER WORK

**List of Maps:**

- a) Queenstown Area Geology 1 inch : 1 mile
- b) Queenstown Area IP Traverses 1 inch : 1 mile
- c) Basin Lake 1 inch : 400 feet
- d) Basin Lake Prospect -  
Resistivity Contour Map 1 inch : 300 feet
- e) Basin Lake Prospect -  
Metal Factor Contour Map 1 inch : 300 feet
- f) Basin Lake Prospect -  
Frequency Effect Contour Map 1 inch : 300 feet

BASIN LAKE PROSPECT - TASMANIA - E.L. 12/65  
HISTORY AND RECOMMENDATIONS FOR FURTHER WORK

Reconnaissance geologic and geochemical work began in the Queenstown district early in 1966. By mid 1966 several geochemical anomalies had been located in areas surrounding Queenstown, i.e. Roaring Meg, North Queen River, Lynch Creek and Airport anomalies. Geochemical results from reconnaissance stream sediment sampling along the Cambrian volcanic-Ordovician conglomerate contact, to which all mineralisation at Mount Lyell is directly related, were largely negative; however, reconnaissance geological work showed that a large portion of this contact was covered by a thick glacial moraine indicating that the geochemical technique was ineffectual. In E.L. 12/65 monthly report for June, 1966 a recommendation was made to investigate the Cambrian-Ordovician contact in the Queenstown district by geophysical means. The electro magnetic method was mentioned.

Exploration activity in the Queenstown district for the remainder of 1966 and to about August, 1967 consisted of detailed work on Roaring Meg, North Queen River, Lynch Creek and Airport grid systems; this consisted of detailed geologic mapping, soil sampling, electromagnetic, magnetic and induced polarisation surveys, as well as drilling 8 diamond drill holes. Drilling results showed that although favourable rock types and alteration were present, sulphide mineralisation was very sparse. Best widely spaced copper intersections were 10' of 0.43%, 20' of 0.21% and 6' of 0.43% in the first hole drilled with only

-2-

traces of silver and gold. Drill hole locations were guided largely by induced polarisation data - the electro magnetic method with available equipment proving uninterpretable.

A detailed geologic mapping and geochemical stream sediment sampling program began during August, 1967 along the Cambrian-Ordovician contact which stretches for 13 miles from the King River Gorge to the Northern boundary of E.L. 12/65 (not including areas controlled by Mt. Lyell Mines). This survey was completed in October, 1967 with negative geochemical results and confirmation of the presence of a thick glacial moraine overlying the Cambrian-Ordovician contact for a distance of over 4 miles in the Basin Lake area. It was then decided to perform a reconnaissance, 500' dipole, induced polarisation survey parallel to the contact for its entire length within our licence area.

McPhar Geophysics were contracted to perform the reconnaissance survey which then began in February, 1968 and finished in April, 1968. The survey indicated anomalous IP zones at 8 localities along the 13 mile long traverse line; the strongest of these, immediately north of Basin Lake, to be detailed with 300' dipole IP during the 1968-1969 field season.

*Plan was  
got it?*

Field operations by PMI's geophysical crew began on the Basin Lake anomaly during November, 1968 and were completed in January, 1969. A weak, but well-defined IP anomaly was delineated measuring about 4800' from South to North (North end open) and from 300' to 800' in width. In late December, 1968 the decision was made to investigate the IP anomaly at least at two points by diamond drilling.

During the period 20 January through the month of May, 1969 four drilling methods were utilized in attempting to penetrate the glacial overburden. These are listed below with their performances:

<u>Drill Type &amp; Method</u>	<u>Result</u>
1. Joy 22B Diamond Drill roller and diamond bits	- one hole drilled and cased to 23'3".
2. Airtrak - open hole	- reached depth of 55' and 80' in two holes - unable to case.
3. Reich - grouting method	- two holes cement cased to depth of 20' and 50' - 50' hole later collapsed - never reached bedrock.
4. Churn Drill (cable tool)	- 3 holes drilled and cased to 4', 8' and 10', abandoned because of buckling casing.

Negotiations with Atlas Copco began in April to utilize their overburden drill, however, it was first necessary to complete an all-weather access road to the drill sites to allow passage of the heavy drill machine. The new access road was completed at the end of April and Atlas Copco's drill and crew began drilling operations in June. A lack of critical parts, however, delayed effective drilling until early August.

By the end of August the Atlas Copco drill had reached a final depth of 215' after penetrating the glacial overburden at 70' depth. Although the hole was cased only to 65' it was felt possible to diamond drill deeper utilizing the same drill hole at some later date.

A suitable drilling contractor to complete the diamond drill portion of the drill hole was not located until about mid-January, 1970 when A.S. James Drilling Company was contracted to do the work. Their drilling operation began on 5 March. The first drill hole - BL 801 - was completed at 746½' on 8 April.

The second hole - BL 802 - was begun on 17 April. After penetrating glacial overburden at 127' by using tricone and diamond bits with bentonite mud, drilling proceeded to a final depth of 222' in bedrock, by 23 May, 1970. At this point the contractor refused to drill further claiming his crews objected to the bad living and working conditions.

Drill hole logs are attached. In summary the drilling showed:-

- BL 801: 0'-70' - Glacial moraine - large conglomerate boulders in a wet sandy gravel.
- 70'-431' - Grey-black slate with sparse disseminations and numerous veinlets of pyrite, bedding angle =  $5^{\circ}$  to core axis.
- 431'-484' - Porphyritic quartz-andesite containing up to 5% disseminated pyrite and variable small amounts of galena-sphalerite. Best mineralised zone - 439' to 474' averaged 0.15% Pb and 0.08% Zn. Foliation angle =  $5^{\circ}$ .
- 484'-749'6" - Porphyritic quartz andesite - very slight sulphide mineralisation. Foliation angle =  $5^{\circ}$ .

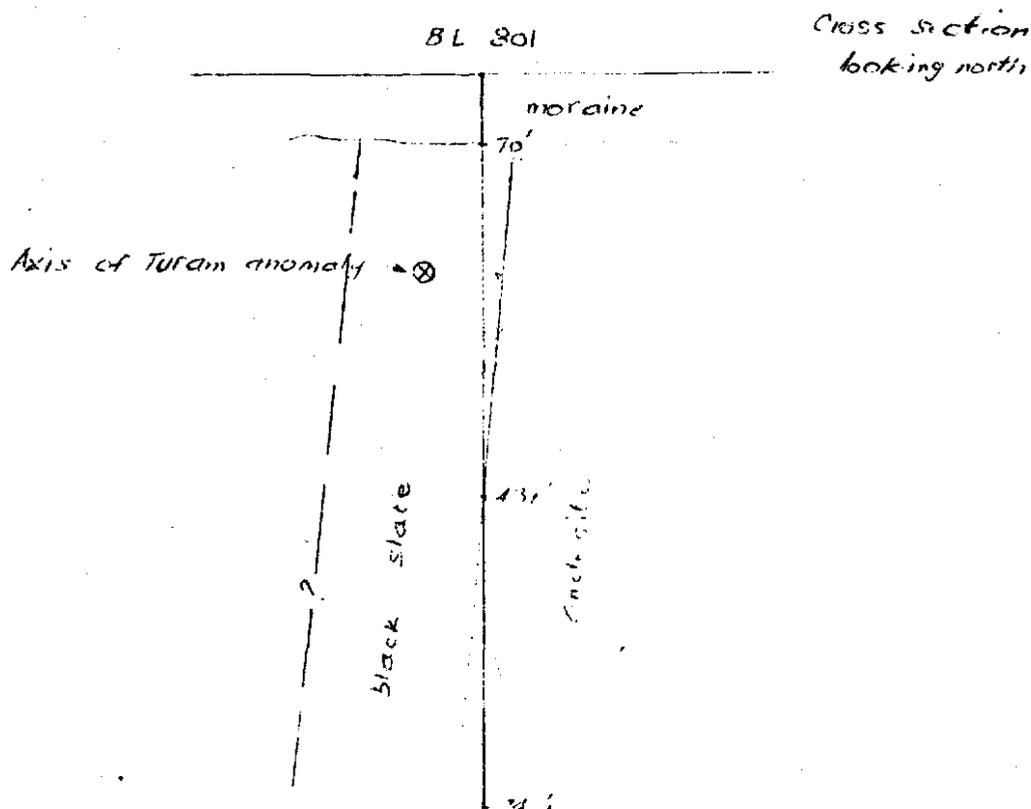
Bottom of hole

- BL 802 0'-127' - Glacial moraine.
- 127'-207' - Chlorite schist - very soft - 1% core recovery.
- 207'-222' - Chlorite-sericite schist containing disseminated pyrite - minor chalcopryrite and veinlets of galena-sphalerite. 207-222' averaged 0.46% Pb, 0.18% Zn, 0.04% Cu. and nearly  $\frac{1}{2}$  oz. Ag.

Bottom of hole

Field operations resumed at Basin Lake prospect on 15 September, 1970 when track cutting began for a Turam Electromagnetic Survey. The Turam Survey was decided upon because mineralisation in drill hole BL 802 suggested the presence of massive type lead-zinc ore rather than low-grade "porphyry type" copper mineralisation. Work done earlier by the B.M.R. in Comstock and Cape Horn areas had shown that these ore bodies yielded excellent Turam responses. The actual Turam Survey, conducted by Seigel Associates, was completed on 26 October. A line of strong electromagnetic conductor was detected paralleling the I.P. anomaly, a distance of about 1600'. (See attached map and Seigel's report.)

Because drill hole BL 801 is located only about 60' from the axis of the Turam anomaly on cross line 20,900'N, cores of black slate from this drill hole were tested by Seigel Associates to determine electromagnetic properties. These tests indicated that a thickness of 20' to 45' of this material could produce the anomaly located by the Survey. Although the drill hole and the axis of the Turam anomaly are separated by about 60 feet, this could be accounted for by dip of the rock. See sketch below.



Conclusions we can draw on Basin Lake explorations to date are:-

1. Exploration costs are high because of bad access, generally bad weather and very difficult drilling conditions.
2. Drilling the glacial overburden, although very difficult and slow, is economically possible by utilizing a heavy drill machine, Tricone and diamond bits with bentonite mud and patience. Luckily the moraine is not as thick as originally thought.
3. The Turam anomaly is probably caused by the black slate which was encountered in drill hole BL 801, but not in BL 802.
4. The lack of black slate in BL 802 indicates the porphyritic andesite and the sericite-chlorite schist with their contained disseminated sulphides and sulphide veinlets are the primary causes of the I.P. anomaly and this was only partly tested in BL 802.
5. The real tragedy at Basin Lake is not the high road construction and drilling costs, but the fact that the drill contractor did not complete BL 802.

#### Recommendation

If drilling conditions were not as bad as they are at Basin Lake, it would be recommended that one or two of the angle holes suggested by Seigel Associates (before they learned results of conductivity tests on the drill cores) be drilled. This would then probably explain completely the cause of the Turam anomaly. Instead it is recommended that examination of the I.P. Anomaly be continued by either extending BL 802 or drilling another drill hole nearby, since it is not known if the previous contractor removed the broken-off core barrel.

from the bottom of BL 802. To completely rule out the possibility of better I.P. responses existing further to the North of our present grid, it is also recommended that I.P. traverses, on 400' line spacing be performed in the area between grid crossline 24,200'N and the northern boundary of E.L. 12/65 - a distance of about  $\frac{1}{2}$  mile.

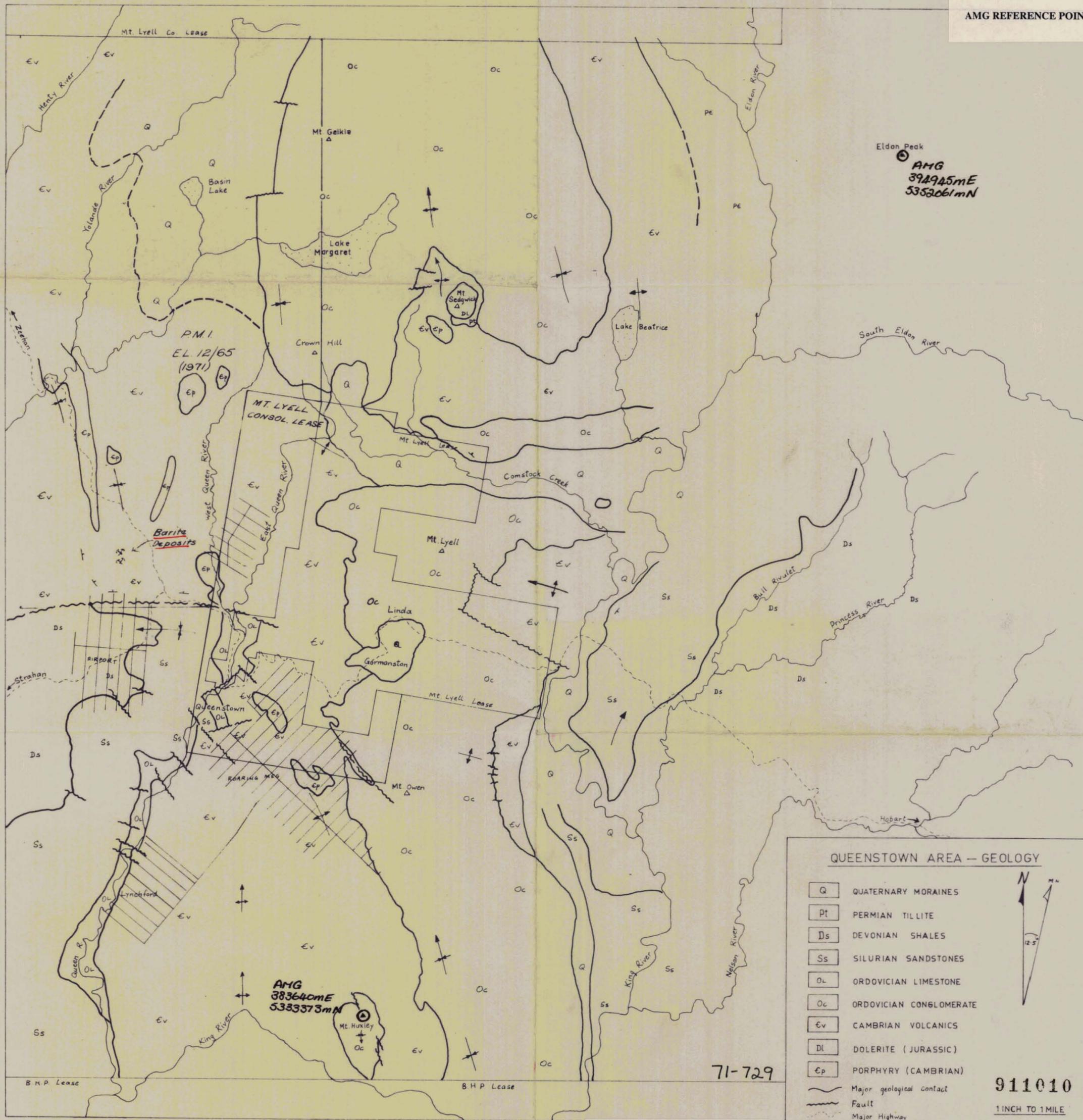
Recommendation for future work in remainder of E.L. 12/65

About 8 square miles of the remainder of E.L. 12/65 remain uncovered by regional stream sediment geochemistry. Since this area is underlain by Cambrian Mt Read Volcanics - host rock for My Lyell and Rosebery ore bodies - it is recommended that the stream sediment sampling be completed. A two man field crew could complete this in less than one month.

Also recommended is the establishment of an approximate  $\frac{1}{2}$  square mile grid to cover an area surrounding the Madam Howard Plains Barites deposit - located immediately North of Queenstown Airport. Activities here to consist of soil sampling, geologic mapping and I.P. surveys (with possible Turam surveys) to investigate for stratiform silver-lead-zinc deposits similar to those at Rosebery in a similar environment.

H.V. WUERCH

16.2.1971



Eldon Peak  
 AMG  
 394945mE  
 5352061mN

AMG  
 383640mE  
 5333373mN

QUEENSTOWN AREA - GEOLOGY

- Q QUATERNARY MORAINES
- Pt PERMIAN TILLITE
- Ds DEVONIAN SHALES
- Ss SILURIAN SANDSTONES
- Ol ORDOVICIAN LIMESTONE
- Oc ORDOVICIAN CONGLOMERATE
- Ev CAMBRIAN VOLCANICS
- Dl DOLERITE (JURASSIC)
- Ep PORPHYRY (CAMBRIAN)
- Major geological contact
- Fault
- Major Highway



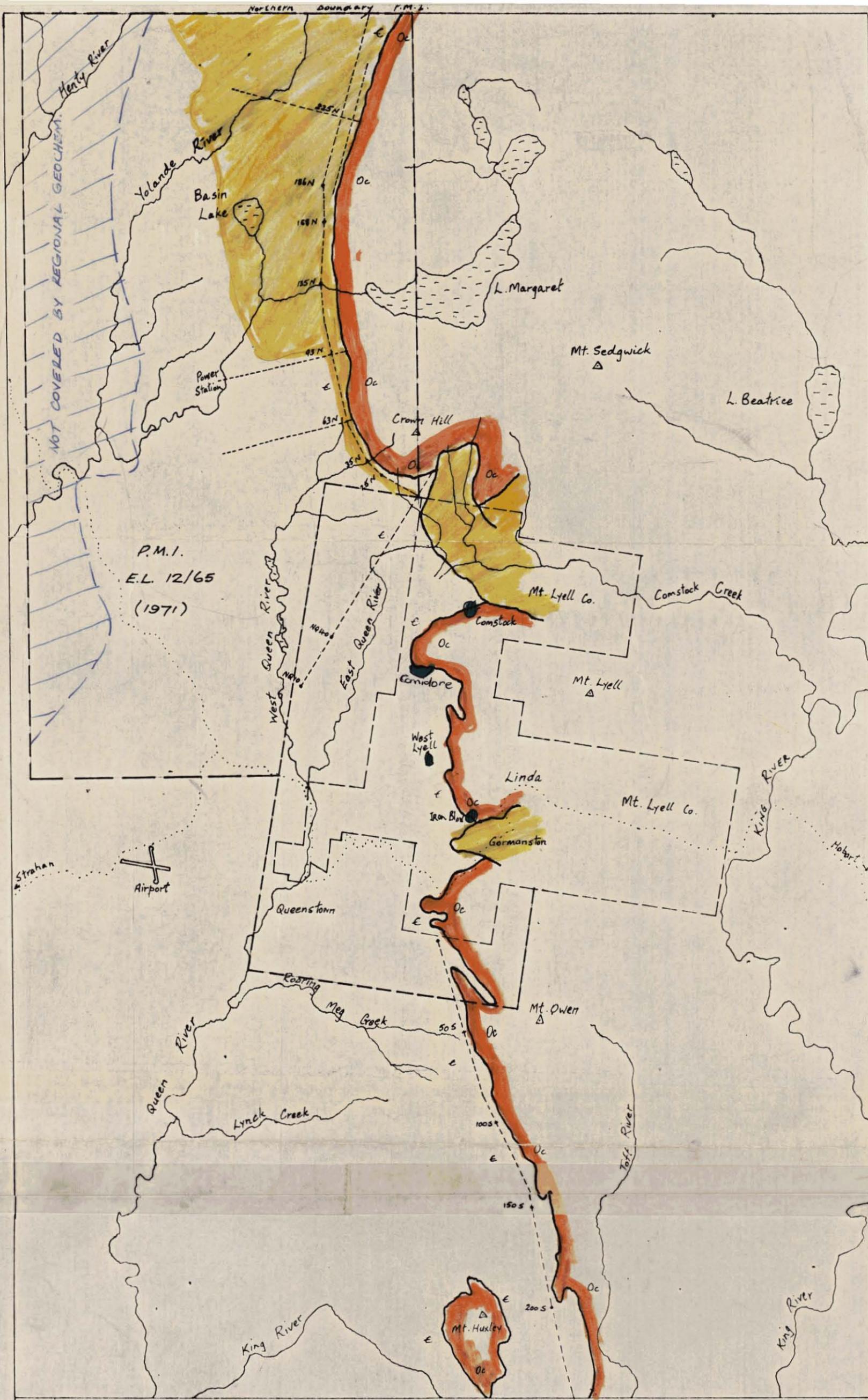
911010  
 1 INCH TO 1 MILE

71-729

5 cm

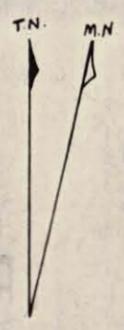
Map (a)

4788

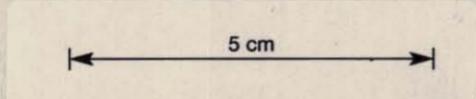


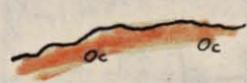
71-729

QUEENSTOWN AREA  
IP TRAVERSES



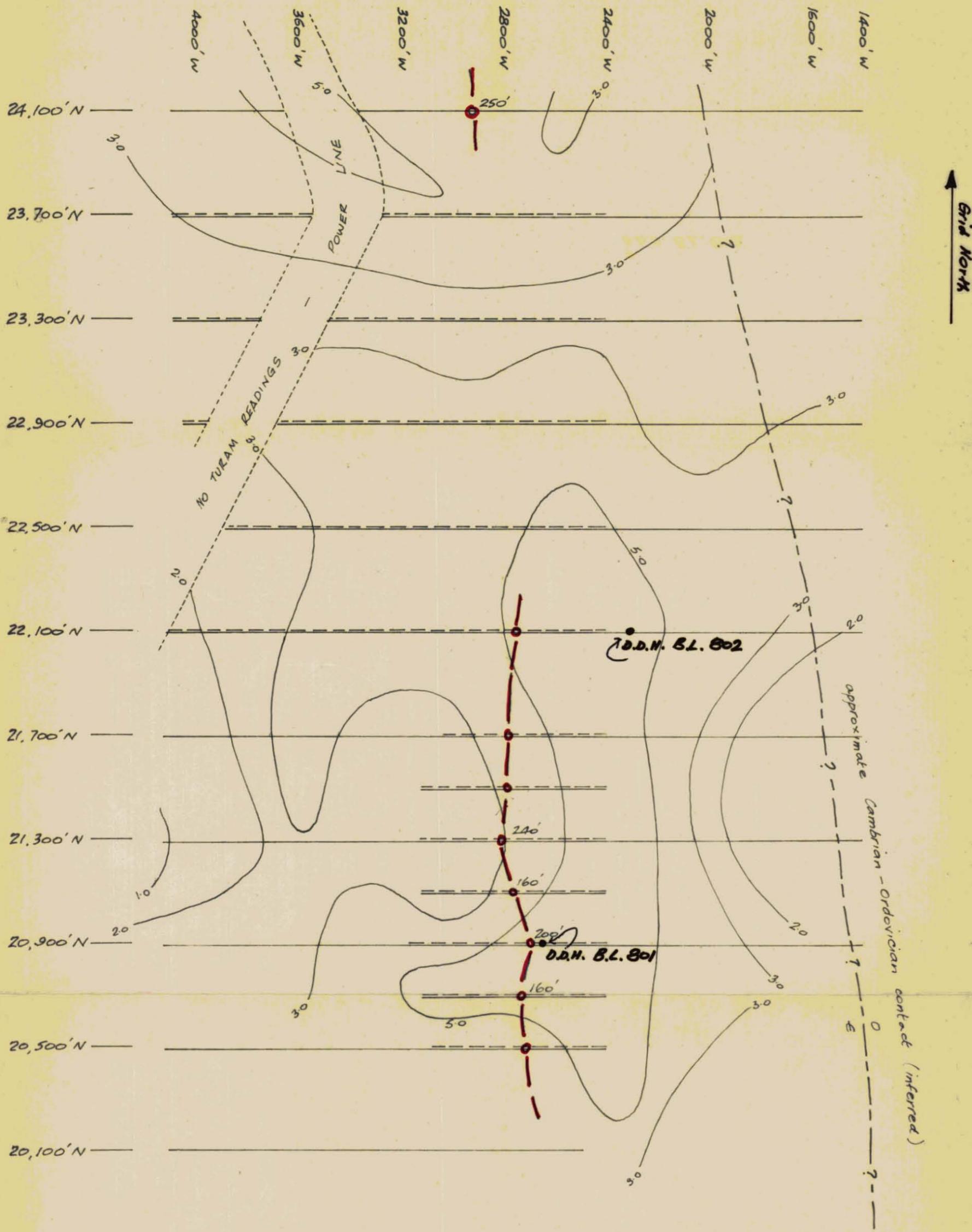
SCALE 1" to 1 mile



- I.P. Survey Line - - - - -
- Major roadway - . . . . .
- Cambrian-Ordovician Contact 

712-3





3.0 I.P. Frequency Effect Contours  $N = 4$

 Turam Conductor axis

Turam Coverage  
 —————  $H_z = 800$   
 - - - - -  $H_z = 400$

911012

71-729

# BASIN LAKE

Scale : 1" = 400'

Map (C)

712-7

4786

