

E.L. 23/71

REPORT CYGNET AREA

for

QUILKO MINING

71_0775

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E.L. 23/71

71-775

CYGNET

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for

QUILKO MINING

865001

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MICROFILMED

LIST OF OUTCROPS IN THE SYENITIC MASS OF CYGNET.

J. HOARDIN
June 1971
(translation)

1. INTRODUCTION

001 A geochemical reconnaissance of the syenitic mountain mass of Cygnet and the surrounding sedimentary formations was undertaken during the period from the 8th to 15th June, 1971, by E. James and J. Hourdin.

This sector is actually covered by an Exploration Licence EL.23/71 granted to Quilko Mining Pty. Ltd., on 12th January, 1971. It was also already the subject of an article "Geology and Geophysics of the Cygnet District" extracted from the Geological Survey Bulletin No.49 of the Department of Mines of Tasmania.

The field trip undertaken by Pechiney (Australia) Explorations Pty. Ltd., had as its aims:

1. To demarcate the syenitic mountain mass and to take a number of samples there, especially in the weathered rough areas where an important percentage of aluminium had been reported.
2. To take geochemical samples from the creeks draining this district, especially downstream from the important sulphide zones.
3. To establish a radiometric blanket of this region in the intrusive rocks.
4. To search for heavy minerals (zircon, magnetite etc.).

2. GEOGRAPHIC AND TOPOGRAPHIC SITUATION

This sector is situated 25 miles south-west of Hobart, on the eastern side of the Huon River. It is formed by a multitude of steep little hills, very wooded, ending in small valleys with considerable regrowth (grasslands - "orchards"). The Huon River estuary forms the Cygnet area into a peninsular, the coast itself being very jagged. The bays and 'points' are numerous there, but Mt. Windsor is the highest point (1262'). The hydrographic system is dense but the streams are accessible only with difficulty, thick brambles cover most of the banks.

The aspect of this system is in general E-W. This sector remains however easily accessible; the roads and tracks there are numerous and well maintained.

3. GEOLOGICAL SITUATION

The studied zone comprises the syenitic mountain mass, its different 'apophysis' or branches and the neighbouring sedimentary rocks.

A. Intrusive Rocks

These rocks are cretaceous and recognised as 'Port Cygnet alkaline intrusives'. They present themselves in the form of numerous small outcrops with an average surface of from 1 to 2 km² or shelves of lesser extent. The outcrops are sparse, and located by their summits. Cultivation is considerable on the slopes and the only

002 visible outcrops are situated in the underminings of the side of the road.

One can observe a great variety of rocks. We pass from a microsyenite to a rhyolite, to a microdiorite, to a syenite and even to a granite; they do not seem to start off again following a precise order but one can nevertheless observe that the edges of the little syenite masses just as the different 'apophyses' seem slightly more siliceous and present a more micro-grained structure. The rock type in the region of the summit of Mt. Wilson is a micro-grained rock, light grey, usually weathered and rough, containing large phenocrysts of feldspars from 1 to 5 cm in size which are probably plagioclase, according to the results of former analysis, also present are small crystals of "ferromagnesian". The rock matrix is formed of tiny grains of blue-grey feldspars and some quartz; the mineral accessories most common are magnetite, pyrites and sometimes garnets.

Although rare in this zone, one must also report a few outcrops of dolerite. This rock in fact is widely scattered throughout the region, especially in the North of the sector.

B. SEDIMENTARY ROCKS

These rocks are all in the Permian. At the base of the series, the 'Tillites' are the most widespread; they constitute a coarse conglomerate formed by numerous semi-angular pebbles of quartzites shales and syenites enclosed in a mudstone. A few rare beds of quartzites rich in pyrites intersect them, especially close to the join with the syenite mass.

There appears then several series of Permian mudstones interrupted by a complex system of 'faults'. The main formations are three - The Quamby mudstone, the Bundella mudstone and the Grange mudstone. The Quamby mudstone is greenish-grey and contains a few beds of pebbles, a little micas and little or no fossils. The other 2 formations, on the other hand, have considerable fossiliferous levels and one can perceive also a few beds of sandstone. These different formations are most often in the lower, more rugged regions.

They have only been, in fact, rapidly studied, the aim of this mission being not only to search the rugged zones rich in sulphides and the zones affected by structural movements.

4. STRUCTURAL ASPECT

This sector was profoundly affected by tectonics, two main directions must have been raised up - NW-SE and SW-NE. 'Mylonites' are quite rare. The most important clay beds range in thickness about a centimetre, in one place we noticed a small vein of fluorite. Most often, the faults show themselves only throughout broken zones with a repetition of 1 to 2 metres in "strength" (thickness?). Veins of quartz are rare, just as, moreover, are shelves of quartzites.

5. RADIOMETRY

A radiometric study was carried out on the 'scintillometre' SRAT SPP2, on all this sector, especially in the syenitic sector. No noteworthy anomaly was uncovered. Only a few zones gave a maximum of 250-300 C/S SPP2 but these can be explained by the fixation of the uranium by the iron in the oxidised zones.

The proper movements are weak.

| | | |
|-------------------|---|---------------------|
| Sedimentary rocks | - | 70-80 cps SPP2. |
| Syenite | - | 125 - 150 cps SPP2. |

A few deep beds were also tested, it seems that no heavy mineral presents a radioactivity of significant value. Moreover, it is worth noting that in the course of geochemical samples, no notable increase in radioactivity was able to be discerned on the alluvial even from the banks of different creeks.

6. MINERALIZATION

The sulphide zones are of considerable size in this sector; they are located, it seems, in the marginal zones of syenitic masses and in the sedimentary formations on the Eastern and South-Eastern slopes of Mt. Windsor. Pyrite is sometimes accompanied by tiny specks of chalcopyrite. Several samples were taken and sent for analysis.

Magnetite is very common in all the intrusive rocks.

In the deeper sedimentary beds most of the black minerals seem to be magnetite. A few zones spangled with gold are also visible in the alluvial taken.

A systematic study of geochemical samples was carried out to search for copper and eventually for "molybdenum".

Syenite was sampled in various places for aluminium. The sample which, at first glance, seems the most interesting, was taken on the right bank of the Huon River, in an abandoned quarry at Surges Bay.

From memory, the results of the analysis made by the Department of Mines of Tasmania give from 15 to 18% ~~4/20z.~~ Al_2O_3

7. ATTACHED DOCUMENTS

- A list of outcrops.
- A geological map of the Cygnet district.
- A map of the geochemical samples on the 1/31,680.
- A list of samples sent to the laboratory for analysis.

Missing
13/1/84

8. CONCLUSIONS

On this sector, no noteworthy radiometric anomaly has been discernible and all hope of uraniferous veins can be abandoned. The important sulphide zones, in spite of the absence of surface indications, leave hope of a more complex surface mineralization, the geochemical results will be more definite.

J. HOURDIN...JUNE 1971.

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List of outcrops in the syenitic mass of Cygnet -

- 1. Copper Alley - In a quarry alongside the road, shelves of quartzites, deep blue in colour, mineralizes in pyrite, the latter is widely scattered in the mass or in the plates in the fractures. One notices also, tiny black specks with metallic flashes, resembling magnetite.

Strength - 10-15 metres.
 Direction - N50W.
 Pendage - N20E.
 Proper movement - 100 cps SPP2.

These quartzites are rocks encased by mudstones of the 'Grange Mudstone formation', finely grained, of a grey colour varying to whitish. One can notice there also, thin beds of pebbles.

- 2. Alongside the road from Lymington to Wattle Grove close to a stream, is an outcrop of a (micro-grained' rock, with a grey matrix of numerous pheno-crysts of feldspars, little or no quartz visible, a few garnets, plates of pyrite in the fractures: microsyenite? (facing the edge).

Proper movement 70-80 cps SPP2.

- 3. Small quarry on the road from Wattle Grove to Cygnet close to a little depression in the syenite mountain mass, whitish rock, finely grained with a few pheno-crysts of feldspars, traces of manganese, presence of numerous black specks with metallic flashes, little or no pyrite.

Proper movement 150 cps SPP2.

Maximum 200 cps SPP2 on this small fractured clay bed with an aspect N10 to 20W. One notices here and there, numerous dry fractures in repetition.

- 4. On the same road, descending to Cygnet, a few rock masses similar to the rock already observed in No.2 but presence of quartz, little or no 'ferromagnesian': feldspars were more numerous but smaller in size gave the rock a speckled appearance.
- 5. On the same road is an abandoned quarry, the rock is finely grained, very dense, of a grey colour very rich in feldspars and with pyrite finely scattered in the mass.
- 6. In the Golden Valley, alongside the road, are dikes of several yards wide of very dense syenite in the constituted 'tillites', with a rock of a conglomerate appearance with numerous pebbles of quartzites, schists, dolerites encased in a grey mudstone.
- 7. On the road from Lymington to Wheatley, level with Beaupre Pt., quarry in use in mudstones with a few fragments of 'tillites'; faulted contact N50W cut by a fault N5E. To, the north, a few outcrops of sandstone. No mineralization visible.

Proper movement 75 cps SPP2.

- 8. Syenite alongside the Huon River, near Harleys Jetty; visible outcrop

about 1 km., rock very dense of light colour, little or no mineralization visible. Proper movement 100 - 150 cps SPP2.

- 005
9. To the north of Petchey Bay, in a stream is a mass of very dense syenite, but of dark colour.
 10. To the South-west of Cygnet in a quarry alongside the road is visible a dike of syenite in the 'tillites'. One notices a zone of mylonites from 0.30 to 0.50 metre in thickness, with clayey plates in the direction N70W, subvertical 'pendage' (dip?) these mylonites are apparant in the 'Golden Valley Fault' and give a maximum of 150 cps SPP2 in radiometry. No samples. Presence of pyrite noted.
 11. On several outcrops, along the road, in the tillites, close to the contact with the syenites, we find mudstones with considerable dissemination of pyrite.
Sample sent for analysis. Proper movement 100 cps SPP2.
 12. Alongside the road, close to a school, sill of microsyenite in fossiliferous mudstones: very weathered rock. Direction of the sill N70W. Proper movement 100 cps SPP2.
 13. Small island of syenite, in the South East of Glaziers Bay: hardly weathered rock very 'diacalse' (rectangular fracture) almost total absence of pheno-crysts.
 14. The same . This sample taken in a quarry.
 15. Taking of several samples of syenite, along the crest line. The proper movement varies between 100 & 150 cps SPP2. Presence of Pyrite. One finds also a few old workings for or with a few small seams of quartz, very flashy, rich in pyrite. Sample sent for analysis.
 16. On another crest line, near the contact with the 'tillites' a few outcrops of syenite but especially numerous lumps of bluish quartzite, rich in pyrite and possibly also chalcopryrite and galena: zone rich in sulphides can be traced about 200 metres around. Also a few outcrops of 'gossan'. Sample sent for analysis.
 17. At the summit and on the Eastern slope of the first 'piton' (peak?), numerous outcrops of microsyenite can be observed: the pheno-crysts are sometimes in a row. At the summit one can notice an outcrop of tillite as well as masses of quartzite with pyrite and chalcopryrite. Proper movement 150-170 cps SPPS. Sample sent for analysis.
 18. At Mt. Windsor, same observations.
 19. Alongside the road, several vein-layers of microsyenite in the mudstones, little or no mineralization visible.

865013 ~~QUANTUM~~

FIELD SHEET

~~QUANTUM~~

ANALYTICAL RESULTS

No 001982

LABORATORIES PTY. LTD., 237 MILTON ROAD, MILTON, Q. 4064.

| COMPANY <u>PECHINEY</u> SAMPLED BY <u>J. HOUARDIN</u> | | CU |
|---|------------------------------|--------|
| SAMPLE TYPE <u>Alumina Sat.</u> DATE <u>24 / 6 / 71</u> | | PPM |
| LAB USE | SAMPLE DESCRIPTION, COMMENTS | NUMBER |
| 1 | <i>Analysis for Cu</i> | ET 00 |
| 2 | | " 01 |
| 3 | | " 02 |
| 4 | | " 03 |
| 5 | | " 04 |
| 6 | | " 05 |
| 7 | | " 06 |
| 8 | | " 07 |
| 9 | | " 08 |
| 0 | | " 09 |
| 1 | | " 10 |
| 2 | | " 11 |
| 3 | | " 12 |
| 4 | | " 13 |
| 5 | | " 14 |
| 6 | | " 15 |
| 7 | | " 16 |
| 8 | | " 17 |
| 9 | | " 18 |
| 0 | | " 19 |
| 1 | | " 20 |
| 2 | | " 21 |
| 3 | | " 22 |
| 4 | | " 23 |
| 5 | | " 24 |
| 6 | | " 25 |
| 7 | | " 26 |
| 8 | | " 27 |
| 9 | | " 28 |
| 0 | " 29 | |

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ET 0

865016 **QUANTUM** FIELD SHEET **QUANTUM** ANALYTICAL RESULTS

| | | | | |
|-----------|---|---|---------------------------|-----------|
| No 001983 | LABORATORIES PTY. LTD., 237 MILTON ROAD, MILTON, Q. 4064. | COMPANY <u>PECUNIEY</u> SAMPLED BY <u>J. HOORD</u> | | CU PPM |
| | | SAMPLE TYPE <u>Alumina soil</u> DATE <u>24 / 6 / 11</u> | | |
| LAB USE | | SAMPLE DESCRIPTION, COMMENTS | NUMBER | |
| 1 | | <i>Analyse for Cu</i> | <i>ET 30</i> | 15 |
| 2 | | | <i>31</i> | 10 |
| 3 | | | <i>32</i> | 20 |
| 4 | | | <i>33</i> | 35 |
| 5 | | | <i>34</i> | 35 |
| 6 | | | <i>35</i> | 40 |
| 7 | | | <i>36</i> | 115 |
| 8 | | | <i>37</i> | 40 |
| 9 | | | <i>38</i> | 35 |
| 0 | | | <i>39</i> | 90 |
| 1 | | | <i>40</i> | 50 |
| 2 | | | <i>41</i> | 65 |
| 3 | | | <i>42</i> | 35 |
| 4 | | | <i>43</i> | 95 |
| 5 | | | <i>44</i> | 15 |
| 6 | | | <i>45</i> | 20 |
| 7 | | | <i>46</i> | 10 |
| 8 | | | <i>47</i> | 15 |
| 9 | | | <i>48</i> | 30 |
| 0 | | | <i>(N° 50 is missing)</i> | <i>49</i> |
| 1 | | | <i>50</i> | 50 |
| 2 | | | <i>51</i> | 25 |
| 3 | | | <i>52</i> | 15 |
| 4 | | | <i>53</i> | 15 |
| 5 | | | <i>54</i> | 5 |
| 6 | | | <i>55</i> | 40 |
| 7 | | | <i>56</i> | 20 |
| 8 | | | <i>57</i> | 70 |
| 9 | | | <i>58</i> | 55 |
| 0 | | | <i>59</i> | 110 |
| | | | <i>60</i> | |

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865017 **QUANTUM** FIELD SHEET **QUANTUM** ANALYTICAL RESULTS

No 001984

LABORATORIES PTY. LTD., 237 MILTON ROAD, MILTON, Q. 4064.

| COMPANY <u>PECHINEY</u> SAMPLED BY <u>J. HOUARDIN</u> | | CU PPM |
|--|------------------------------|-----------|
| SAMPLE TYPE <u>Alluvial Soil</u> DATE <u>24</u> / <u>6</u> / <u>71</u> | | |
| LAB USE | SAMPLE DESCRIPTION, COMMENTS | NUMBER |
| 1 | Analyse for Cu | ET 61 |
| 2 | | 62 |
| 3 | | 63 |
| 4 | | 64 |
| 5 | | 65 |
| 6 | | 66 |
| 7 | | |
| 8 | | |
| 9 | | |
| 0 | | |
| 1 | | |
| 2 | | |
| 3 | | |
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| 5 | | |
| 6 | | |
| 7 | | |
| 8 | | |
| 9 | | |
| 0 | | |
| 1 | | |
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| 5 | | |
| 6 | | |
| 7 | | |
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| 9 | | |
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865018

QUANTUM

FIELD SHEET

QUANTUM

ANALYTICAL RESULTS

No 001985

LABORATORIES PTY. LTD., 237 MILTON ROAD, MILTON, Q. 4064.

| COMPANY <u>PECHINEY</u> SAMPLED BY <u>J. HOURDIN</u> | | CU PPM |
|--|------------------------------|--------------|
| SAMPLE TYPE <u>Rock Sample</u> DATE <u>24 / 6 / 71</u> | | |
| LAB USE | SAMPLE DESCRIPTION, COMMENTS | NUMBER |
| 1 | Analysis for Cu | CY-11-ES 35 |
| 2 | | CY-15-ES 40 |
| 3 | | CY-16-ES 275 |
| 4 | | CY-17-ES 85 |
| 5 | | |
| 6 | | |
| 7 | | |
| 8 | | |
| 9 | | |
| 0 | | |
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |
| 6 | | |
| 7 | | |
| 8 | | |
| 9 | | |
| 0 | | |

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LEGEND

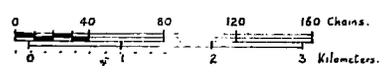
- QUATERNARY
 ALLUVION
 DOLERITE GRAVELS
 BEACH SAND
 PLEISTOCENE GRAVELS
- TERTIARY
 Oligocene
 Eocene
- PERMIAN
 SANDSTONE WITH BARNETTS MEMBRANE
 CYGNET COAL MEASURES
 FERTILE FORMATION
 HIGHLY SANDSTONE
 SANDSTONE MEMBRANE
 SANDSTONE WITH BARNETTS MEMBRANE
 SANDSTONE WITH BARNETTS MEMBRANE
 SANDSTONE WITH BARNETTS MEMBRANE
 SANDSTONE WITH BARNETTS MEMBRANE
- IGNEOUS BODIES
 DIABASE
 GRANITE
 GNEISS
 GYPSUM

Plates

N

Legend.

- Geological boundaries.
- Fault lines.
- Drainage
- Sample location & number.
- Bore with high sulphate content.
- Old gold mines.
- Dyke swarm area with associated widespread disseminated sulphides.



018
 Cygnet, part of area 'J'.
 E.L. 23/71
 QUIZKO MINING Pty. Ltd.

Soil & Sediments: $\square = 0.05 - 0.2\% = 500 - 5000 \text{ ppm}$
 $\circ = 0.005 - 0.05\% = 50 - 500 \text{ ppm}$
 Rock-chips: $\circ = \text{Values as above}$

