

000

183001

P2-2-3 F

*Plan Geological
Drawing office*

STATUS OF BIG 'H' PROSPECT

NEAR MT. HEENSKIRK, TASMANIA

MARCH, 1967

EL 12/65

MICROFILMED

4th March 1967

Mr. B.E. Kennedy
Pickands Mather & Co.
2000 Union Commerce Building,
Cleveland, Ohio

Dear Sir,

The following deals with the progress of investigations of tin mineralization at Big 'H' in the Heemskirk district. This work has been conducted under the supervision of Mr. Vic Wuerch and the attached four maps show the results of geophysical-geochemical surveys and diamond drilling carried out to date. A geological survey at 1" - 100' has been completed and this report will be submitted within the next few days.

Maps accompanying this brief are not colored for the sake of expediency but show all pertinent information:-

1. Magnetometer results: Scale 1" = 200'
2. Tin in soils: Scale 1" = 200'
3. Electro-magnetic survey over parts of the Big 'H' Prospect (Broadside Method): Scale 1" = 200'
4. Magnetics and soil geochemistry in relation to drilling over the far eastern portion of the Big 'H' Prospect:
Scale 1" = 50'.

(All maps missing - not on Microfiche)

Big 'H' Prospect covers an East-West magnetic trend for a distance of 6000' and representing an eastward extension of a tin-bearing zone as explored by Placer Development on leases 13M59, 16M62, 17M72 (350,000 tons at 0.86% Sn or 625,000 tons at 0.66% Sn to depth of 300')

Tin mineralization (cassiterite) has to date been recognized as being associated with concentrations of magnetite within ultrabasic (serpentinite) host rocks which in turn may be in contact with Devonian granites and Precambrian sediments (argillites, siltstones). In view of this Sn-magnetite association, ground magnetic anomalies provide obvious drill targets. DH.H.101 probably missed the more important Sn-magnetite zone, but nevertheless intersected a 4' magnetite-sulphides zone containing 0.45% Sn. (Logs of H.101 and tin analyses are attached).

By including tin values immediately above and below this 4' zone, one arrives at 16' containing 0.245% Sn. Although not spectacular, this intersection confirms that tin mineralization occurs within magnetic highs and that the highest and most extensive, should be examined. With this in mind, H.102 was drilled (see map). It was stopped at 565'. No mineral zones of interest were intersected presumably because of a southerly dip of the magnetic body. H.103, located on section 61+50E on magnetite outcrops, is therefore drilling northwards (-45°) not only to explore the "Area 2" magnetite zone but also the "Area 1" body. Drilling is to commence in two day's time. Should the premise of a southerly dip prove to be correct and Sn intersections encouraging, it is recommended that the following be undertaken:-

1. Test areas "L", "2", "3" and "4" in turn by short (\pm 400') diamond drill exploratory holes. It is believed that the magnetite zones

of the 4 areas represent separate bodies and which may prove to be quite shallow.

2. Should the results of (1) prove encouraging, detailed drilling should be initiated with short angle holes at intervals of say 150' along the strike to prove grades and tonnages.
3. If the results of (1) prove discouraging, it is proposed that a less intense magnetic anomaly, but one with an accompanying geochemical soil anomaly, be drilled in the hope that such a diffuse magnetic high could mean a more continuous magnetite zone at depth and laterally (eg. immediately north of peg 23+00E on base line or immediately south of peg 41+00E on base line).

In the meantime limited geological mapping, soil and magnetometer surveys should be conducted in an area of a northerly trending magnetic zone, more or less near and parallel to line 22+00E, in an attempt to outline other areas of interest and possible significant potential. This latter program should at this stage require relatively little time and effort.

By way of summary the following is put forward:-

In the area of the Big 'H' Prospect tin mineralization has been recognized to be associated with magnetite rich zones giving rise to well defined magnetitic trends, significant tin dispersion halos in soils and well-defined EM cross-overs. Cassiterite occurs finely disseminated in magnetite-bearing ultrabasic rocks (calc-silicate rocks). Magnetite, pyrrhotite and pyrite are the most abundant metallic minerals when present but also observed were cassiterite, arsenopyrite, chalcopyrite, sphalerite, galena, tetrahedrite and marcasite. Although magnetite-

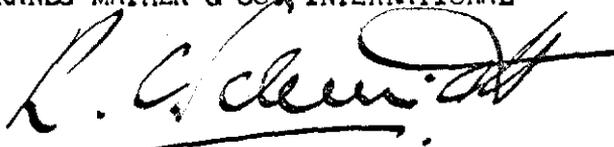
cassiterite zones seem to be confined to what are considered to be ultrabasic intrusive dykes, the possibility of cassiterite-bearing sulphide zones within sediments (argillites, dolomites) should not be discounted, particularly in view of the mineralogical and stratigraphic similarity of the Big 'H' Prospect with the Renison Bell, Mt. Cleveland and Mt. Bischoff tin deposits. In this regard the classical ore environment argillites-limestones-granites, is brought to mind and the fact that it is indeed represented by the Big 'H' Prospect. This in turn points to the important possibility of base metal sulphides occurring in the area; viz, Placer Mining's drilling showed chalcopyrite to be present (D.H. N 8 296'2" - 298' 8.67% Cu) and a gossan north of 15+00E assayed over 20% Zinc.

Genetically it is visualized that older sediments (Precambrian) including shales, quartzites, dolomites etc were intruded by basic and ultrabasic dykes (Cambrian) containing the usual high proportions of disseminated magnetite. This system was in turn invaded by the important Devonian mineralizing granites (tin, copper, lead, zinc, gold, silver etc.) causing possible concentration by mobilization of magnetite in the ultrabasics and subsequent replacement of magnetite by cassiterite.

By way of final assessment it is stated that the Mt. Heemskirk district represents an important mineral field with reported rich occurrences of tin, copper, lead, zinc, and silver. Unfortunately these have proven in all instances to be small and this distinct possibility may apply to the Big 'H' Prospect. A further noteworthy aspect is the fact that cassiterite in magnetite tends to be very finely disseminated with the result that recoveries are never much more than 60% to 65%. This

factor would thus tend to "dilute" considerably the value of a tin ore. Nevertheless, serious thought should be given to a regional evaluation of the district by detailed geochemical stream sediment surveys or airborne magnetometer surveys, particularly should the results of drilling in the coming weeks prove encouraging.

Yours very truly,
PICKANDS MATHER & CO., INTERNATIONAL



R.C. Schmidt

RCS/gmm

006

See maps in
81-1597 and
81-1521

1.83007

DRILL HOLE: H.101
DISTRICT: North Heemskirk-Big H
LOCATION: 1600'E, 775'N
INCLINATION: 45°
DIRECTION: South

<u>From</u>	<u>To</u>	<u>DESCRIPTION</u>
0.0	102.0	<p><u>ARGILLITE</u> Grey foliated argillite, evenly grained with alternations of grey pelitic and very thin leucocratic bands, and containing veins up to 1/4" of a light-colored, fairly soft mineral. Sulphides are very fine-grained and occur in thin veins, on joint planes and also in rarer stringers of dark ferromagnesians. Light green soapy serpentinous (?) mineral on some joint faces. Foliation commonly crenulated with delta angles generally 0° - 30°.</p> <p>3" of soapy rock at 42.0 containing a light bronze resinous coarse-grained silicate and locally concentrated fine-grained sulphides.</p>
102.0	264.0	<p><u>ALTERED ULTRABASIC ROCK</u> Patchy green and white altered rock, slightly micaceous in parts, with biotite and chlorite and minor disseminated sulphides. White minerals are probably calcic silicates. No carbonate throughout Order of abundance of sulphides is about 5%. Rock is generally fine-grained and hard Zone 167.0 - 170.0 has a coarse-grained igneous texture with feldspar laths in a mafic groundmass.</p>
264.0	276.0	<p><u>QUARTZITE</u> Grey to black very fine-grained cherty, banded quartzite (Delta angle = 0°) with minor disseminated sulphides.</p>
276.0	287.0	<p><u>ALTERED ULTRABASIC ROCK</u> Recrystallised, white and green altered rock, medium-grained hard with disseminations and veins of minor sulphides.</p>
287.0	326.0	<p><u>CLAYEY SAND</u> Decomposed clayey sand, micaceous 287.0 - 291.0 and containing some carbonate around 326.0 Poor recovery - no core 291.0 - 317.0</p>
326.0	461.0	<p><u>CARBONATE ROCK</u> Medium-grained, fairly massive, generally white to grey with green mafic minerals and minor brown vitreous ferromagnesian (olivine?) calcite sometimes dark color but still has vigorous effervescence with HCl. Rock contains less carbonate 430.0 - 461.0 and has green ferromagnesians and serpentine slickensides. Grades into lower formation. Sulphides not common.</p>
461.0	470.0	<p><u>ALTERED ULTRABASIC ROCK</u> Dark-green massive altered ultrabasic with variable grain size.</p>

100

- 461.0 470.0 cont. Little light-colored minerals. Veins and disseminations of moderate sulphides (>10%) Minor calcite phases. Slight foliation marked by alignment of sulphide blebs (Delta angle 40° - 60°) 9 ft. containing 0.20% Sn.
- 470.0 474.0 MAGNETITE
Black and green rock containing fine-grained magnetite (~70%), green amphibole (?) and chlorite. Sulphides throughout. 4 ft. containing 0.45% Sn.
- 474.0 495.0 ALTERED ULTRABASIC ROCK
Medium-grained with fibrous radiating amphiboles (?) Coarse-grained chloritised phase 487.0 - 490.0 contains about 20% sulphides with biotite crystals at 487.0 Thin sulphide veins (Delta Angle = 60°) 3 ft containing 0.10% Sn.
- 495.0 499.0 SULPHIDE ZONE
Abundant sulphides, partly pyrrhotite with pyrite and minor chalcopyrite in a fine-grained green host rock.
- 499.0 526'9" ALTERED ULTRABASIC ROCK
Fine to medium-grained, green-grey with some carbonate. Sulphides rare.

END OF HOLE

