To J. S. Brock
From A. L. Sangster
Subject Geology of the M.C. Group.
Date July 28/66.

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Introduction.

The M.C. group ~~was located on Big Timber Creek~~ is on the Shelden Lakes area on Big Timber Creek, Six miles upstream from its confluence with the Ross River. The claims were staked ~~to cover~~ on a ~~rusty peaty~~ limenitic peat bog which bore low geochemical assays in molybdenum.

Geology

Outcrop is ~~sp~~ non existant on the MC groups except along Big Timber Creek and in the area between the creek and the west side of the grid.

The most prominent rock type is a massive, medium grey to reddish porphyritic (hornblende, feldspar) andesite. Minor, ~~none~~ basic varieties were seen. Flow banding is locally developed ~~but~~ the attitudes are highly irregular.

Medium grained, massive, granodiorite outcrops in both the northern and southern parts of the claim group. Both intrusives are similar. The intrusive typically contains 5 to 10 percent quartz, 15 to 35% mafics (both biotite and hornblende) and both feldspar are white. ~~A dike which crosses~~ Granodiorite dike crosses Big Timber Creek at a waterfall near the southwest corner of the claim group and appears to be faulted against a larger intrusive mass. Lack of outcrops above the canyon prevents delineation of this structure.

~~Contact~~ Exposure along Big Timber Creek indicates a width of about 1 mile for the northern intrusive. Neither contact is exposed and the amount and type of contact alteration could not be observed. The southern contact of this intrusive is thought to lie immediately north of the peat bog. This is infered from chilled intrusive float along line 24W and similar outcrops off the end of the base line. This contact can probably be platted more accurately when the results of the magnetometer survey have been plotted.

The low resty area from which molybdenum values were obtained is a peat bog which contains local occurrances of flour-like bog limenite typical of such environments. The location was occupied by a small lake and both inlet and outlet channels can be identified. No source of molybdenum was found.

The presence of kettle lakes, hummocky moraine, and discontinuous eskers indicate that the last glacial effects were due to stagnant ice conditions. Consequently, overburden thickness ~~is probably~~ ~~due~~ ~~quite thick~~ is probably quite variable.

~~Nothing of economic interest was found.~~

No mineralization of economic interest was found.

In the authors opinion, the environment represented by the intrusives on the M.C. grid is not that typical of the Coast Range type of large, low grade molybdenum deposits. The intrusive is too basic, ~~and~~ shows little compositional variation and appears to be a result of a single stage of intrusion. No siliceous, potash rich dikes or lamprophyre dykes were seen. This does not preclude the existance of a smaller, contact type molybdenum deposit

77-97 - Fine grained magnetite with pyrite and pyrrhotite and sparse chalcopyrite.

97-101 Calcite, garnet, feldspar skarn.

101-108 Sphalerite, galena and quartz.

108-136 Sugary quartz rich rk with minor skarn. Minor. Disseminated pyrite and stringers of sphalerite and galena.

136-301 quartz-feldspar porphry - sparse pyrite - Sparse fluorite with sphalerite.

Hole # 3

Location. 8oath of stream 100' yds W of #2.

Attitude. Unknown - probably vertical or slight dip north.

0-70' overburden.

70-90 - tuff. - disem pyrite 82-90.

90-92 - Highly weathered rusty rk.

92-95 - ~~Massive~~ Heavy pyrrhotite.

95-178 ~~Mas~~ Fine grained magnetite with ~~sp~~ sparse chalcopyrite - includes 2 ~~dikes~~ rich sections of massive pyrrhotite

178-190 tuff with disem magnetite

190-310 - skarn.

Hole #4

Location - 100 yards west of hole #3 - South side of creek.

0-26 - overburden.

26-44' - brecciated tuff

44-60. - Silicious breccia - qtz veins with pyrite.

60-73. - garnet in magnetite + pyrite

73-96 - fine grained magnetite with pyrite - sparse chalcopyrite at 95'

96-108 - microbrecciated porphry + minor included skarn - rusty weathering due to disem py

108-195 - microbrecciated porphry - pyrite disseminated

at 175-79 and 180-90 - minor. disseminated sphalerite and galena (not split.

Kulan Little Salmon Lake Prospect, Kerr Addison Mines Ltd

~~Generalized core log~~

A cursory examination of the Kulan Little Salmon Lake Prospect of Kerr Addison Mines located the four drill holes ~~on the main showing shown on the accompanying map~~. The following is a generalized log of these holes.

Hole # 1.

Location - below bluff above east end of gossan - most easterly hole.

Attitude - 45 degrees N.

From	To	Remarks.
0	32.	No core - probably overburden + talus.
32	- 93.	Siliceous Tuff - (white to greenish - fine grained)
93-~~89~~ -	97	Calcite, garnet - feldspar skarn.
97 - 109		Massive fine grained Magnetite with pyrite ~~and~~, pyrrhotite sparse cpy
109 - 110.		Sphalerite, ~~and~~ pyrite and galena in skarn.
110 - 120		Fine grained magnetite with pyrite and pyrrhotite. Sparsely disseminated sphalerite and galena
120 - 127		Coarse grained sphalerite and galena in siliceous breccia.
127 - 139		Sparse sphalerite and galena in highly altered breccia.
139 - 162.		~~Skarn~~ Sugary quartz rich rock - origin unknown, but maybe contact phase of intrusive.
~~139~~		- traces of galena.
162 - 309.		quartz - feldspar porphry - traces of galena and fluorite.

Hole # 2.

Location 200' west of Hole # 1. Above west end of gossan.

Attitude 45° N.

0 - 20	Overburden.
20 - 56	Siliceous tuff, sparse pyrite.
56 - 57	Calcite vein.
57 - 59.	green, fine grained chloritic rock, sparse pyrite
59 - 77	fine grained magnetite with pyrite and pyrrhotite
at - 77.	6" sphalerite + quartz.

Diamond drill logs of the 4 holes put down by Kerr Addison are as follows.

Geophysics.

The ~~area~~ large airborne E.M. Anomalies on the C grid & Carol Group ~~claims~~ coincided with an areas of ~~complex~~ ~~faulting~~ ~~fracturing~~ limestone containing graphitic shear zones.

No explanation for the airborne magnetic anomalies was found.

Conclusion.

Geological mapping of the ~~area~~ C-grid and Carol groups indicate nothing of economic interest. The Kulan showing is a skarn magnetite deposit which contains only minor lead and zinc. The deposit is too small and of too low grade to be of economic importance.

66 68 76
64 72 80
64 84

To: E. O. Chirkolm
From: A. L. Sangster
Subject: Geology of the A and B grids, Maganely Group.
Date: June 2/66.

Introduction.

Geology of the A and B grids of the Maganely group is complete. The rock types present are graphitic chlorite schist, quartzite and limestone. Outcrops is generally sparse over the ~~E.M.~~ airborne E.M. anomalies[1], however they do coincide with occurrances of graphite. (Two copper showings on the A group were investigated but neither are of economic significance.)

Geology.

The ~~chlorite schist~~ unit mapped as chlorite schist includes several ~~rock types~~ related rock types. Along the north side of A grid, the unit consists primarily of dark green, fissile chlorite schist ~~and~~ containing conformable quartz-feldspar lenses up to 1 foot thick and 4 feet long. Graphitic bands are common. Higher up in the sequence to the ~~east~~ north, chlorite becomes less abundant and with increasing quartz and feldspar, grades into a white to brownish, thin bedded, sheared quartzite. Local areas of rusty weathering quartzite are a result of the presence of finely disseminated pyrrhotite. Fine grained, dark grey graphitic is found in the transition zone between the quartzite and chlorite schist. ~~Remnant~~ Bedding in the quartzites ~~has been highly contorted~~ has been highly contorted by flow folding.

1. Ref. Airborn E.M. Anomalies outlined on Maganely group line cutting plan.

To: E. O. Chisholm

From: B. L. Sangster

Subject: Geological Reconnaissance of the Rat Group

Date: May 20/1966.

Introduction

Reconnaissance geology was carried out on the Rat Group on May 20, 21, 22/1966 to investigate the occurrence of lead float in a small valley near the south end of the claim gro

To E. O. Kirkham

From A. L. Sangster

Subject. Rat Group

Date

Introduction.

Reconnaissance geology was carried out on the Rat group on May 20, 21, 22 / 1966 to investigate the occurrence of lead float in a small valley near the south end of the group. Those present were B. Harvey, ~~Skarnan~~ A. Sangster, T. Skarnan, and B. Watson. The author was involved (1) only on May 20, 21 and consequently the report covers only claims 25 to 50.

Location.

The Rat group is located three miles southwest of the Pelly River immediately northeast of the Tintina fault. The south east end of the claim group is bounded by Danger creek.

Geology.

The ~~Rat~~ north east end of the claim group is underlain by a series of ~~the~~ altered clastic sediments and volcanics which strike west southwest and dips at 20 degrees to the south (Map 1)

~~The lower unit consists~~ A sequence of interbedded impure quartzite sediments and ~~lava~~ purplish hornfels is overlain ~~by a purple hornfels quartz pebble microconglomerate~~ ~~with a purple~~ by a purple hornfels containing ~~some~~ abundant small (2 mm) spherical quartz grains. ~~which is in turn overlain~~ Outcrops of green altered andesite caps the hill ~~south of~~ on claims 46 and probably overlies the sediments to the northwest. Northerly trending cross faults ~~cut~~ the claim group are probably ~~not~~ related to the Tintina fault.

Sulphide mineralization is restricted to minor disseminated pyrite + pyrrhotite in the purplish hornfels.

Geochemistry

Conclusion

~~The~~ Geological reconnaissance of the ~~Rat~~ ~~group did not~~ to north western half of the Rat group did not indicate the presence of minerals of economic interest

CS

Rat Group.

Geology

Rock Types

The unit mapped as chlorite schist includes several related rock types. Along the north side of the A grid the unit consists primarily of dark green fissile chlorite schist containing abundant, ~~one~~ conformable, coarse grained quartz-feldspar lenses up to 1 foot thick and 5 feet long. Graphitic bands ~~were~~ are present but lack of outcrop prevented determining their extent. ~~To the~~ North ~~the quartz~~ along its northern contact, quartz mica and quartz feldspar porphyry are commonly interbedded with the chlorite schists. ~~etc~~

~~contortion~~ With increasing quartz content the chlorite rocks grade into a ~~quartz~~ white to buff, ~~fine~~ thin bedded feldspathic Quartzite. Shearing is intense ~~but~~ and where original bedding is seen it shows ~~the~~ intricate microfolding typical of plastic deformation. Minor disseminated pyrrhotite was seen both in the quartzite and argillaceous members. The two areas of concentration are spatially related to the two airborne mag anomalies.

The limestone is ~~one~~ in fault contact with the quartzite and chlorite schist everywhere but in the northeast corner of B grid where the limestone conformably overlies the quartzite. The limestone is light to medium grey and locally recrystallized. Bedding is locally preserved. Two copper showings have been found in the limestone on A grid

Structure

~~Bedding~~ The quartzite and schistose rocks have been ~~highly~~ plastically deformed and sheared. The ~~shearing~~ is roughly conformable to the overall trend of the bedding where observed. On the other hand, the limestone shows extensive faulting and much of the shearing has apparently been destroyed by recrystallization

~~The A+B grids~~

The rocks on B grid and the northern half of A grid form the north limb of an anticline whose apex strikes N E. The fold has been faulted along the apical plane and that the eastern limestone block on A grid forms part of the southerly dipping limb and the western block part of the northerly dipping limb.

Economic Geology

Showings. Two copper showings were found on the south slope of the western limestone block on A grid.

The number one showing lies just north of the base line at 40°W west. Quartz lenses up to 3 inches wide ~~to~~ extending over a length of 30 feet and containing disseminated chalcopyrite, altering to ~~malachite~~ malachite occurs in a small shear zone. The occurrence is of no economic importance

The number 2 showing occurs at the base of the limestone approximately below 0000 W. A vein of disseminated chalcopyrite ~~1/4~~ 1/2 inch quartz calcite veins in the cliff face over a lateral distance of 200 feet and steady throughout a belt of limestone 10 feet wide. A ~~bedding~~ bedding fault lies 20 feet up dip from the occurrence. The largest vein is 75 feet long and up to

3 feet wide. Minor patches of chalcopyrite up to 1' square occur in recrystallized limestone. The occurance is of no economic significance

Geophysics (Canborne).

A ~~Strict~~ ~~South~~ EM anomaly: Shearing in ~~the limestone~~ and the presence ~~Shearing parallel to the~~ of a linear series of scarps in the limestone ~~parallel to the EM anomaly~~ suggest the presence of a fault underlying the edge of the valley underlying ~~this~~ anomaly. Graphite has developed in smaller shears in the limestone and may be the conductor in the larger fault. The linear series of anomalies to the north-west past the southwest corner of A Strict may represent the extension of this fault.

B ~~Strict North EM~~ Anomaly: Outcrop is sparse over the anomaly. However ~~in the fourteen graphs~~, 2 outcrops ~~(B1 B2)~~ Outcrop ~~strong shears~~ of graphitic schist indicate that the conductor is probably graphite.

C ~~Strict, N diagonal~~ Anomaly, ~~East half~~

Outcrop is sparse over the anomaly but small amounts of graphite were found south of the fault on the north end and ~~to~~ immediately to the west of the south end. No reason for the continuation of the anomaly over the limestone contact was found. ~~It is~~ The anomaly ~~appears to~~ graphitic shearing in the rocks and must be related to another structure, possibly original bedding or a fault. There is no geological or topographic evidence for a fault. Sparely disseminated pyrhotite occurs in the quartzites immediately ~~east~~ of the anomaly ~~north~~ south west of the fault

D Anomaly. The ~~anomaly is~~ of the anomaly cuts one outcrop which contains ~~sparely~~ disseminated pyrhotite No further information is known.

E Anomaly. ~~No~~ Due to lack of outcrop, no geological information on this anomaly was ~~found~~ obtained.

Conclusion.

Intro.

Geology of the C grid and Carol C claims, Magundy Group has been completed. Limestone is the predominant rock type with minor biotite and chlorite schist. Faulting is extensive. Graphite is associated with the airborne E.M. Anomalies. No showings were found on Atlas C claims. The magnetite, sphalerite galena showing of Kerr Addi The Kulan, Little Salmon Lake showing was investigated mapped and available core examined, but the mineralized zone is too small and contains little Zn and Pb.

Geology.

White to grey, sugary limestone underlies most of the C grid. On the northern ⅔ of the grid the limestone dips gently at 25-30 degrees towards the south and is faulted synclinal axis along the south stream. South of the stream, the limestone dips approximately 45 degrees north. Chlorite graphitic, chlorite schist underlies the limestone in the southwest corner of the grid and biotite schist outcrops a few thousand feet north of the grid.

The limestone on the Carol group is highly faulted and probably forms the south limb of the syncline. Biotite gneiss and mixed limestone and chlorite schist occur along the northern limit of outcrop.

Limestone ~~occurs~~ The limestone, striking north-west and dipping 35 degrees to the north, extends 1 mile south of the Carol group where it is in fault contact with green and white banded tuff (Greene, A.S.C paper). A medium grained granite porphyry with fine grained quartz-feldspar ~~porphyry~~ porphyry at its margin has been intruded along the fault and has locally formed rills in the tuffs.

Faulting is prominent in areas of limestone. The larger faults approximate an east-west strike and the north side is commonly upthrown.

No sulphide mineral occurrences were found on either the C grid or the Carol claims.

Kulan - Little Salmon Lake Pb-Zn Showing.

The showing The Kulan showing, formerly held by Kerr Addison Mines Limited, occurs at the base of a bluff on the south south side of a small lake 1½ miles south of the road east of the north east corner of B grid.

Magnetite with minor sphalerite and galena occur along the contact of between a fine grained pink quartz-feldspar porphyry and overlying tuffs. Pyrite, pyrrhotite, chalcopyrite and arsenopyrite are minor. Drilling by Kerr Addison indicates that the Sphalerite and galena occurs in 12-18" wide quartz veins cutting the magnetite and as minor streaks and disseminations in the porphyry. Calcite, ~~pink~~ dolomite garnet, feldspar skarn has developed around the mineralized horizon. The magnetite band is approximately 30 feet thick and has been traced for 1400' by diamond drill and dips 25 degrees south.

[Galena & Pyrite]