

OLD GOLD AREAINTRODUCTION:

Work done in this area covered the claim groups Liard 1-90 and Rabo 1-8. They are located on the government claim sheets 105B-15 and 105 G-2 at approximately 61 00 N. lat., 130 15 long. Work was done covering airborne anomalies between Old Gold Creek and Rainbow Creek which flow south into the Liard River. The geophysical and geochemical work was done on three major grid systems, designated "O", "L", and "D", and a small grid designated TF; soil sampling was done on a grid Rabo and on the line TF 1-56. These are located on key map for the area.

Geophysical equipment used for the ground surveys was a Grone Dual Frequency EM Reconnaissance Unit, and a Jalender Magnetometer (Type Number 46-65), measuring changes in the earth's vertical magnetic field to ± 10 gammas.

GRID 'O'

This grid is on the Northwest flank of the Liard River between Old Gold Creek and Rainbow Creek. The base line is 11,600 feet, measured from 0 E. to 116 E. along a strike of N. 105° E.. Cross lines are at 400 foot intervals and are generally 2500 feet long to the North and South. Overburden depth is probably in the range 3 feet to seven feet. Vegetation is spruce trees or heavy buck brush and alder. The slope is generally 3° to 10° to the southwest, except near Rainbow Creek.

PRELIMINARY INFORMATION
Airborne Anomalies

Maganomaly: vicinity 52 E., 6 S., coverin an area of approximately 1000 x 500 feet; maximum intensity is 40 gammas.

Maganomaly: from 76 E., 15 N. to 108 E., 24 S. and about 500 feet wide.

Maximum relief of 100 gammas. EM anomaly at base line 96 E. and 106 E., 22 S.; maximum relief about 1 part per million and ratio in phase to quadrature of 0.9. EM

EM anomaly: 60 E., 18 N.; maximum intensity of 1 part per million and ratio of 0.3.

Mineral occurrences: "Liard Showing" at 26 E., 14 S.. This is a quartz plug about 29 feet wide which is exposed on a 100 foot high cut bank on the northwest side of the Liard. Sparse copper mineralization occurs at contact of quartz and phyllites, and lesser copper is disseminated in the quartz.

~~GROUNDWORK~~

GROUNDWORK DONE ON GRID:

1. Entire grid was soil sampled at 100 foot intervals on the base line and cross lines.

2. Ground EM was done on the area ~~map~~ of the grid above the Liard Showing.

i.e.: 20 E. .5 N.--- 8.5 S.
24 E. 1.5 N.--- 6.5 S.
28 E. 1.5 N.--- 10.5 S.
32 E. 1.5 N.--- 16.5 S.
B.L. 16.5 E.--- 31.5 E.
16 E. 0.5 N.--- 9.5 S.
12 E. 0.5 N.--- 10.5 S.

3. Ground magnetometer work done on 100 E. to 116 E.

RESULTS OF GROUND SURVEYS:

1. Geochemical Anomalies: ~~there is~~ a single value anomaly in zinc of 5600 ppm ^{exists} at 68 E., 14 S.. Apart from this anomaly, another obvious one is a copper anomaly between 48 E., 14 S., and 60 E., 4 S. Also, there is a 2100 ppm copper anomaly at 56 E., 23 S.; this is bordered by only one threshold value of 62 ppm copper. No obvious lead anomalies are present, but certain areas of one for two stations do show threshold-type values
2. Magnetometer anomalies: in the area of 100 E. to 116 E., no anomalies were located.
3. EM Anomalies: trending northwest to east-northeast from the vicinity of the Liard Copper Showing.

INTERPRETATIONS:

1. The zinc anomaly at 68 E. 14 S. could possibly be due to zinc contamination in the laboratory at the time of analysis; the values of zinc concentrations of the surrounding stations are not above background level. Also, the anomaly could be due to a single piece of ~~a~~ float.
2. The copper anomaly between 48 E., 14 S. and 60 E., 4 S. could be associated with the Liard copper Showing. The ground EM above the Showing trends in the direction of the copper anomaly, ^{something} which lends strength to this theory. Downhill dispersion of the copper anomaly would account for the lengthening ~~of~~ to the south below the possible intersection with the EM anomaly. Further, the airborne magnetometer ~~anomaly~~ anomaly at 56 E., 6 S. coincides with this copper anomaly. ~~An Iron-rich~~ Pyrrhotite is associated with copper mineralization in the Old Gold area.
3. The airborne mag anomaly ~~is~~ from 76E, 15N to 108E, 24S was not correlated with any geochem anomaly and was not observed by the ground mag between 100E and 116E. Therefore it must be in the region of 100E and to the west. This anomaly could represent an argillaceous bed with visible pyrite and perhaps associated pyrrhotite. Or it could be an andesite dike with associated pyrrhotite as have been found in a number of cases in the area.
4. The small airborne E.M. anomalies could represent concentrations of pyrite or graphite.

RECOMMENDATIONS:

1. More E.M. and mag ~~xxx~~ work in the area of the Liard Cu Showing
2. Hand-trenching in this area, and also at 56E, 23S.
3. Resample 68E, 14S.

(X)

Grid "1"

The base-line runs 8000 feet across a mountain shoulder between Rainbow Creek and West Rainbow Creek at strike $N 78^{\circ} W$. The cross lines are generally 2000 feet to the north and south. The slopes are up to 20 degrees towards the east from B.L. 30W to B.L. 0W, and 0 to 5° from B.L. 30W towards West Rainbow Creek.

Preliminary Information: Airborne Anomalies:

- E.M. anomalies:
- (a) situated just ~~to~~ north of base-line a continuous from 0W to 1.6W. Intensity of up to 20 ppm and ~~ratios~~ ratios ~~up to~~ of in phase quadrature of 2.5 or less.
 - (b) from 52W 25N to 60W 25N. Max intensity of 7.5 ppm and ratios of 2.5 or less.
 - (c) 8W 15S ~~to~~ has max. intensity of 1 ppm and ^{max.} ratio of 2.2.

E.M. and mag anomaly: vicinity B.L. 56W. (But note that the E.M. anomaly is placed differently on the Jacksonwood Preliminary E.M. map).

Mag anomaly: Running 1° to B.L. at 80W and also cutting across L 72, 175.

Ground ~~work~~ Work Done on Grid:

E.M., mag, and soil sampling was carried out on the entire grid as indicated on the Key Map for Old Gold Area, (except that E.M. coverage of 72W not completed).

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Results of Ground Survey

(1) Geochemical Anomalies:

- a) Cu: 110 ppm. at 28W, 19S. The next down slope value of 39 ppm. is slightly above threshold.
- b) Zn: Nothing anomalous
- c) ~~Pb~~ Pb: Nothing anomalous.

(2) E.M. Anomalies:

- a) At north ends of lines 4W to 16W. Dip angles ~~are~~ as high as -30 degrees found; and ratios of low frequency/high frequency response are generally of the order of .5-.8, but at 8W 16½N there was recorded a ratio of 1.25.
- b) At north ends of lines 52W to 60W. Dip angles on the high frequency as high as -16 degrees were recorded, but the ratios are generally of the order of .5.
- c) A few one station anomalies were recorded.

(3) Mag Anomalies:

- a) At B.L. 59W ~~to~~ to 52W 6S. The ^{recorded} peak was 734 γ_o where background is later to be 300 γ_o.
- b) At 72W 16S to 72W 20S. The peak is 592 γ_o. This anomaly could be also associated with a low mag reading of 191 γ_o recorded at B.L. 76W.

Geology:

- a) Graphitic phyllites are exposed on the right and left ~~banks~~ banks of Rainbow Creek at about 4W 14N. They have strike NNW and dip 30° to 40° ENE.
- b) Phyllites underlay most of the ~~grid~~ grid area and generally strike WNW with dip 45° S.
- c) There is an outcrop of andesite with minor pyroxite 10 feet ~~to~~ south of B.L. 59W.

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d) Rusty and swampy area at 27N to 30N on
lines 52W, 56W, and 60W.

~~a~~ c) It has been postulated that the apparent
leasy nature of the graphite occurrences
could be the result of a series of
small swamps which occurred in the
geologic past.

①
INTERPRETATIONS:

1. Geochem does not suggest any mineralization of economic potential.
2. Airborne anomalies were approximately correlated with the ground work. In all cases no economic mineral potential was indicated.

In particular:

- a. The E.M. anomaly on the north end of 52W to 60W seems to be associated with a swampy area which may represent a relatively incompetent bed giving rise to increased weathering and thus possibly more conductive ground waters. Perhaps the incompetent bed was graphite. In any case, geochem does not indicate ~~any~~ anomalous metal content.
- b. The E.M. anomaly, vicinity of 4W to 16W on the north end of the lines, can be directly related to the graphitic phyllites which outcrop on Rainbow Creek. The grid lines are only about 35° off the strike of the graphitic phyllites and therefore will not be too indicative of the dip of ~~the~~ this bed.
- c. Small one station E.M. anomalies were not associated with geochem anomalies. They are probably due to minor lenses of graphite.
- d. The mag anomaly B.L. 59W to 52W, 6S can be directly associated with an andesite dike with minor pyrrhotite.

RECOMMENDATIONS:

No further work should be done here.

(3)

Grid "D"

Grid "D" is situated in the upper drainage region of Rainbow Creek. The ~~base~~ base-line is 6000 feet long at strike $N73^{\circ}W$; and the cross-lines are at 400-foot intervals, and are 1500 feet in length to the north and ~~to~~ south of the base-line. The object of the grid was to do a ground survey of coincident mag and E.M. anomalies in the area. The pertinent portion of the ^{relevant} photo-mosaic was ~~poorly~~ poorly put together ~~with~~, — mismatches of photos representing up to one half a mile on the ground occurring; this made it difficult to correlate ground results directly with airborne results.

The grid covers an area of fairly pronounced ~~relief~~ relief with slopes of up to 30° towards the creek. ~~Black-bush and alder cover is very thick~~

Preliminary Information: Airborne Anomalies:

E.M. Anomalies: Values for total in-phase resulted field of up to 22.5 ppm with ~~ratios~~ ratios of 2.5 and occasionally higher occur in the area.

Mag Anomalies: ~~But~~ Relief of 160 γ 's occurs in an fairly extensive anomaly.

Ground Work Done on the Grid:

E.M., mag, and soil sampling was conducted the entire grid. ~~and~~

Results of Ground Surveys:

(1) Geochemical Anomalies:

a) Cu: Background ^{was} judged to be 30 ppm. or less and threshold 50 ppm. The following anomalies occurred:

- (9)
- (i) Extending from 60W, ~~105-155~~ to 32W, 105. The peak values are 2850 ppm. at 56, 105 and 450 ppm at 52W, 85; ~~Both~~ both of these values occur within a few yards of zones of massive calcopyrite float.
- (ii) 48W, 9N to 44W, 9N with values of 280 ppm and 110 ppm. respectively.
- (iii) 60W, 2N :- 490 ppm.
50W, 1N :- 52 ppm.
- (iv) 36W, 5N :- 84 ppm.
- (v) 24W, 8N :- 124 ppm.

b) Zn: Background is about 40 ppm. or less and threshold 60 ppm. Anomalies occur at

- (i) 24W, 11N - 15N with peak of 206 ppm.
- (ii) 32W, 9S with 200 ppm. and value of 67 ppm. occurring 400' to the east.

c) Pb: Background is 20 ppm. or less. Anomalies at

(i) 24W, 12N - 15N to 28W, 8N - 9N. Values of 172 ppm. occur here.

- (ii) 32W, 9S :- 52 ppm.
- (iii) 16W, 13S :- 88 ppm.

(2) Magnetometer Anomalies:

From BL. 25W to 16W, 7N there is an anomaly with peak of 623% where background taken to be 300%.

(3) E.M. Anomalies:

These occur at:

- (i) 60W, 15 - 13.5S to 56W, 15 - 8.5S. Dip angles are as large as -18 degrees and ratios generally about .5.
- (ii) 60W, ~~15N-12N~~ 6.5N - 12N to 48W, 4.5N - 8.5N. The max dip angle is -9 degrees and ratios are generally .2.
- (iii) 24W, 9.5S - 25S to 16W, 12.5S - 25S. Dip angle max. is -23 degrees and the ratios are ~~about~~ .2 or less ~~except~~ except for ~~an~~ abrupt increase to the range .8 - 1.0 for 16W, 20S - 24.5S.

(10)

Geology:

The grid area is generally underlain by phyllites striking NW. Andesite dikes, ~~lenses~~ graphite lenses, and zones of silicification with ~~spores~~ calcopirite mineralization are shown on the 400 feet = 1 inch map of Grid D geology.

Interpretations:

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INTERPRETATIONS:

1. The E.M. anomaly at 60W, 1S to 13,5S to 56W, 1S-8S is not to be directly associated with the massive calcopyrite float; this is supported by the fact that float at 52W,8S can be correlated with only a minor anomaly at that position. The cause of the anomaly could be a wide band of disseminated mineralization or graphite which is common in the area. The latter possibility seems to be reinforced by the lack of a geochem anomaly in the area. of highest E.M. Mag results in this immediate area suggest that pyrrhotite is not associated with the mineralization.
2. The E.M. anomaly on 60W,6.5N-12N to 48W,4.5N-8.5N does not seem to be associated with any extensive Cu mineralization; otherwise it would show up in the geochem. Overburden depth was judged to be in the range of 2-6 feet. Graphitic phyllite was found in Blast-hole #3 ; this is most likely the source of the E.M. anomaly.
3. The E.M. anomaly on 24W,9.5S-22.5S to 16W,12,5S-25S does not coincide with geochem anomalies (except Pb- 88ppm at 16W,13S). Lenses of graphite in phyllites were exposed along the creek and indicated on the geologic map. These should intersect 16W and 24W roughly at 14S and 8S. Also carbonaceous rock is exposed at 16W,21S. This rock change from from graphitic phyllites to very carbonaceous rock may explain the abrupt increase in dip angle ratios at 16W,20S.
4. The ground mag anomaly from B.L. 25W to 16W,7N is directly along strike from the observed andesite dike (they often contain pyrrhotite in this area). The mag probably reflects the sub-outcrop of this dike.
5. The Pb anomaly 24W,12N-15N and 28W,8N-9N does not seem high enough to have any economic significance.

RECOMMENDATIONS:

1. Hand trenching in the vicinity of the zones of massive calcopyrite float on 52W and 60W to determine more accurately the nature of the veins indicated.
2. Hand trenching near the peak on the E.M. anomaly at 56W,5S in order to determine the cause of the anomaly.
3. Extension of the grid to the west, ~~doing~~ doing geochem and E.M.

(2)

OTHER WORK DONE IN THE OLD GOLD AREA.

T.F. SOIL SAMPLES 1-56:

PRELIMINARY INFORMATION:

Airborne Mag Anomaly: located between the upper reaches of Rainbow creek and Quartz creek-----40gammas.

Float: Considerable amounts of calcopyrite float with up th 2% Cu were found in the valley one third mile west of B.L. OW on grid "D".

WORK DONE:

A soil sample line was run at due N. across the highest point of the valley; the geology was noted.

RESULTS:

1. Geochem gave no anomalies.
2. An andesite dike containing up to 1% pyrrhotite was found (indicated on the geology map for grid "D").

INTERPRETATIONS:

1. No Cu mineralization was indicated striking parallel to this valley.
2. The andesite dike is probably the source of the airborne anomaly. The poor matching of photos for the photo mosaic in this area could easily lead to a $\frac{1}{2}$ mile misplacement of the anomaly.

T.F. GRID:

Disseminated calcopyrite in quartz and phyllites was found in place near the top of the left bank of the Old Gold creek canyon, roughly one mile up from the mouth of the creek. The extent of the mineralization was not apparent; however its strike was deduced by lining up 10' wide alteration zones on either side of the creek. No airborne anomaly occurs in the immediate vicinity.

WORK DONE:

A flagged grid was put in on the left bank of the creek above the showing. The base-line is along the strike of the mineralization (N.40°). Three ~~in~~ cross-lines each of 1000' in length were put in at 400' intervals on the B.L. Soil samples were taken and E.M. was run on the grid.

RESULTS:

1. the geochem anomaly is restricted to Cu which extends only thru B.L. 1N and 2N.
2. An E.M. anomaly of max. dip angle -5 and ratios of 2 runs across the grid.

INTERPRETATIONS:

1. The sub-outcrop of mineralization runs only about 400' up from the creek to B.L. 2N.

2. The E.M. anomaly does not indicate extensive mineralization.

RECOMMENDATIONS: Investigate the other side of O.G. creek here.

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RABO GRID: Investigated by Jay Staniford.

TAGGIN OF CLAIMS: All claims were tagged in this area except Liard 83-90 and the Val-Rabo group.

J. Staniford

Notes on Grass Lakes Area

GY and GX Soil Samples:

This is an area of considerable relief, (slopes are up to 30 degrees and the elevation ranges ~~from~~ ^{from} 3300 feet to 5000 feet). There are frequent outcroppings. The GX 1-136 and GY OE-131E soil samples are flagged out on the ground and are located as approximately indicated on the Key Map for the Grass Lakes Area. These samples give preliminary geochem coverage to an extensive, ~~and~~ high intensity ^{airborne} E.M. anomaly ~~which is~~ coincident with a low intensity airborne mag anomaly located 2 1/2 miles to the NNW of Milk Lake. The ~~BRAM~~ GX 1-136 soil samples are contour samples around the base of the hill which is blanketed by the major portion of the E.M. anomaly. The GY OE-131E samples cut across the total length of the E.M. anomaly. The E.M. anomaly has intensities up to 24 ppm and ratios frequently [#] higher than 3.

Results:

a) GX Soil Sample Anomalies:

- (i) GX 40-42: Cu concentrations are greater than 100 ppm. This may be related to the E.M. anomaly 3/4 mile north of the major portion of the E.M. anomaly. This northerly anomaly has intensity of up to 9.4 ppm and the ratio is 9.4/1.8. There is no coincident mag anomaly here.
- (ii) GX 50, 51, 53-55: These Cu anomalies are also possibly related to the above E.M. anomaly.
- (iii) GX 29-38
- (iv) GX 97
- (v) GX 130.

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b) GY Soil Sample Anomalies.

Generally Cu concentrations are considerably above the background values obtained of grid GZ. Out of the 132 GY samples taken, 22 of them have 100 or more ppm Cu. At 93E, an anomaly of 1200 ppm Cu with 290 ppm Zn occurs.

Recommendations:

This area should be covered by a grid with cross-lines at 800 foot intervals, ~~with~~ ~~cross-line spacing should be~~ ~~narrowest~~ ~~to~~ ~~400 feet~~ for the more interesting areas and a geochemical and ground geophysics survey made. The cross-line interval can then be narrowed to 400 feet in the interesting areas. Geology should be done for the area if ground surveys indicate anomalous zones.

A chapter pad is situated on the west side of the 2nd of the three ~~chain~~ chain lakes in the vicinity of GY 50E. This would be a suitable location for a camp to work of those. The E.M. anomaly at ~~GX 44-54~~ GX 44-54 is not covered by the Gum Claims. More staking could be warranted here.

Grid GW:

This grid covers an airborne E.M. anomaly (intensity up to 12 ppm and ratios greater than 4) with coincident low intensity mag anomaly, about 3 1/2 miles west of Milk Lake. The base-line is 6400 feet long at strike N 21°W. The cross-lines are designated 05 to 645 and are at 400 foot intervals except that lines 45, 125, and 605 have been deleted. ~~Area~~ 05 is at

Geology:

an elevation of 4500 feet and 645 at 4000 feet. The area is underlain by Monite schists which sometimes contain magnetite and ilmenite; graphite also occurs as evidenced by soil with high percentages of graphitic materials (at 36S, 13E-16E; 28S, 19S; and 24S, 16E). An intrusive dike outcrops at 52S, 7W-9W; very minor calcopyrite is present in hornfels at 52W 9W. A depression extends from 64S, 10W to 28S, 19E cutting across the hill-side. The areomagnetics indicate that possibly this is a fault.

Results: Geodes not received

Further Work Completed in the Area:

This work is located on the Key Map for the Grass Lakes area, and involves:

- (1) Silt Sampling
- (2) Grid GV, Grid GT, and GR - soil samples on the Gil Group. These grids and lines ~~were~~ ~~not~~ ~~sampled~~ ~~at~~ ~~100~~ ~~feet~~ ~~intervals~~ ~~and~~ ~~put~~ ~~in~~ ~~on~~ are located on the ground with flagging, & were put in with chain and compass. They are soil sampled at 100 feet intervals.
- ~~(3) The Grid and Gun groups~~
- (3) Claim tags were affixed to the claim posts on the Gun and God groups. The Gil group has not been tagged.

Note:

Apart from these maps there are

1. Mag results for 100E \rightarrow 116E on grid "O".
2. E.M. results in vicinity of Liard Cu showing (Grid O)
3. E.M. results in vicinity of Cu showing on Old Gold Creek (T.F. grid).

These results not plotted but are in E.M. & mag field bk

Also note: airphoto mosaics in vicinity of grid "D" have individual photo matching mistakes of up to $\frac{1}{2}$ mile (at 4" = 1 mile).