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TO: W. M. SIROLA  
FROM: FRED CHOW  
SUBJECT: Tatlayoko Lake Project -  
Period July 8th to August 4th, 1968.

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Dear Bill:

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During the period between July 8th and August 4th, 1968 the area covered by the field parties are mainly in Triassic formations. Considerable time was spent on follow-up work on the mineral find in Area 13.

Coverage in Area 6, in Jurassic and Cretaceous sediments, is not complete; a small area remaining when the crew was shifted to Area 13. Prospecting in Area 10 was confined to the higher regions in the north; concentrating on Triassic rocks and their contact with intrusives plus the granitic plugs in Cretaceous volcanics towards the west.

No work was done in Area 11.

Two crews were placed in Area 13 to concentrate on the mineralized area.

Area 14 (Homathko Mtn.) coverage commenced ten days ago.

No mineralization of value was found in Areas 6, 8, 9 and 10 during the work period. These areas were found to be nearly barren of sulphide mineralization, and showed no significant geochemical assays. Molybdenum was found in altered volcanic float west of Area 10 near the western edge of the granitic plugs. The mineralization was found to be localized at one location and further prospecting

did not reveal any more of the same.

Area 13 is the only area which commanded some interest. Mineralized copper-molybdenum float was found in glacial moraine near the headwaters of Stekelan Creek and subsequently three zones were located in place. All of these showings are Cu-Mo mineralization in joint planes and quartz veins. Although the mineralization is widespread, the joint planes and quartz veins are few in number per square area. The veins are not wide and rich enough to make the overall grade attractive.

The showings occupy mountain ridges which outcrop above the snow and glaciers. None of these contain significant mineralization to be worthy of further work. Neither do the moraine or talus give any evidence of richer mineralization.

A total of 58 mineral claims were staked on the first two showings to protect the ground while work was being conducted, but these mineral claims will not be recorded.

Geochemical Field Tests: - The Holman test has not proved satisfactory for this area. Due to an unknown reason, or reasons, the test has often failed to detect copper, and more often has given "false" positives. Therefore, all crews are now equipped with the Rubenic kit to check the Holman positive readings.

Following is a detailed report on the work done in each area during the period:

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Area #1: (51°30' - 45' Lat./ 124°15' - 30' Long) 92N/9 W½

Party #5 spent one day prospecting the upper zone of the red mountain gossan on Niut Mtn. west of Tatlayoko Lake. Minor amount of chalcopyrite was found in quartz-calcite filled veins. No copper minerals were seen in the andesite or diorite. Some of the andesite contain about 0.5% pyrrhotite.

Silt and soil samples show 20 - 250 ppm Cu (av. 130) and 0 - 36 ppm MoS<sub>2</sub> (av. = 7).

The entire gossan zone was not traversed. Further work is contemplated for the southern end.

Area #6: (51°30' - 45' Lat./ 124°00' - 15' Long.) 92N/9 E½

Party #2 was moved out of this area and moved into area 13 on July 11th to add effort in tracing the mineral occurrence near Moore Peak.

Nothing of interest was found in Area 6 to that date. The silt and soil samples continued to show low values in copper and molybdenum. No further work is planned for the area until all the Triassic rocks have been covered.

Area #8: (51°15' - 30' Lat./ 124°00' - 15' Long.) 92N/8 E½

Party #5 spent four days traversing along Tredcroft Creek (SW corner of map sheet), and up the west side of Chilko Lake to complete the area which was by-passed earlier in favour of Area 13.

Geology and Mineralization: - The SW corner area is structurally favourable though no mineralization of value was found in the Cretaceous volcanics south of Tchaikazan Fault, nor in the Jurassic and Cretaceous sediments on the north.

Geochemical Results: - Results from silt samples did not show any significant Cu or Mo values. Nothing was revealed over the air magnetic highs and lows along the fault.

Area #9: (51°45' - 52°00' Lat./ 124°45' - 125°00' Long.) 92N/15 W½

Party #4 completed the coverage of the area on July 19th.

Geology and Mineralization: - The remaining area traversed is in higher ground and is occupied mainly by Triassic rocks and the mass of granitic intrusive extending from Tatlayoko Lake. The area is bounded by the Tchaikazan Fault and two thrust faults, all striking northwesterly. All the rocks seen are quite fresh and unaltered. The intrusive is composed of granite, diorite and granodiorite. Pyroxene is the main mafic mineral with magnetite and biotite in minor amounts. No copper minerals nor other valuable mineral was found.

Geochemical Results: - Tests show no MoS<sub>2</sub>, a general low of 20 ppm Cu in the volcanics and sediments, and a uniform 40 ppm Cu in and around the intrusive.

Area #10: (51°30' - 45' Lat./ 124°45' - 125°00' Long.) 92N/10 W½

Plus Area 9 (joins Area 10 on North)

Area 15 ( " " " " West )

Area 5 ( " " " " Northwest)

Party #1 traversed the area cut by the two major NE faults along Mosley Creek in Area 10. The area immediately south of the fault was found difficult to traverse because of piled-up old burn. Areas to the south was then left for a later date and will be worked from the top down.

The Triassic rocks on the north was examined next, then the granitic plugs towards the NW corner of the map sheet.

Following this the contacts of the Coast Range batholith towards the west and southwest (Area 15 and 5) is being prospected, and will be completed within a few days.

Geology and Mineralization: - The Triassic formations traversed was found to be all sedimentary rocks, composing of argillites, sandstone, conglomerates, and limestone.

Minor occurrences of pyrite and arsenopyrite in quartz veins was seen in the sediments. These were old showings, worked probably for Au in former days. They are located near diorite plugs, one of which showed minor disseminated chalcopyrite.

The Cretaceous volcanics west of the Triassic formation show moderate to high alteration in areas adjacent to the intrusives. Two intrusives were located in Area 10 - small, barren syenite and granodiorite plugs. Also two plugs were found within Triassic sediments west of the large granitic mass in Area 9. They are medium grained, hornblende diorites. One showed minor disseminated chalcopyrite and pyrite, also magnetite and fracturing.

The larger and elongated granitic intrusive shown on Tipper's sketch map was found to be a rounded mass about 3 miles across. It is mainly a pink granite with quartz diorite, fine to medium grained and of varying mafic composition - hornblende to pyroxene to biotite.

Minor occurrence of molybdenum and chalcopyrite with pyrrhotite and pyrite was found at the southern contact with volcanics. Rusty zones in the areas are pyritized volcanics.

Geochemical Results: - Silt and soil samples did not show any interesting values.

Area #11: (51°30' - 45' Lat./ 124°30' - 45' Long.) 92N/10 E½

No work was done in this area.

Area #13: (51°15' - 30' Lat./ 124°15' - 30' Long.) 92N/8 W½

Party #5 continued work in this area and Party #2 was shifted here when mineralization was found. Party #5 covered the Stikelan Creek drainage and Party #2 covered the Nostetuko River system.

Nothing of interest was found in the Cretaceous volcanics or in the Jurassic and Cretaceous sediments on the northern part of the map sheet. The airborne magnetic anomalies over the low lying area of Stikelan Pass are yet to be explained.

Geology and Mineralization: - A large portion of the area in the middle of the map sheet is overlain by Triassic volcanics and sediments and is in contact with the Coast Range Batholith and Cretaceous sediments on the south. It is separated by the Blackhorn Thrust and a

major fault from the Cretaceous sediments and volcanics on the east. A subsidiary E-W fault divides the Triassic and Cretaceous formations on the south.

In general, the volcanics and sediments show a brown weathering, the granitic contacts show a darker rust, and a bright reddish-brown where the rocks are mineralized with pyrite and/or pyrrhotite.

Copper and molybdenum mineralization was found in float in the glacial moraine and talus slopes near the headwaters of Stikelon Creek. The mineralization was traced to its source, high in the mountain ridges and peaks where the granitic rocks outcrop above the snow and glaciers. No doubt, some mineralization occur below the glaciers and talus.

The first find is located on the south side of a cirque, 1.7 miles S30E of Moore Peak, ( $51^{\circ}19'$  Lat./  $124^{\circ}24'$  Long.) at the 8000-foot elevation.

The next find is located  $2\frac{1}{4}$  miles due south of Moore Peak, also on the south side of a cirque (next cirque to the south), at 7000-foot elevation.

The third is located 5.8 miles S30E of Moore Peak, at the head of Stikelon Glacier, at 9000-foot elevation. It is on the divide separating this glacier with Tudcroft (?) and Hamilton Glaciers.

At the first location, the mineralization occur in joint planes and quartz veins in quartz diorite and quartz monzonite. Three

sets of joints were noted: 115° dip 23° NE, 136° dip 36° NE and 144° dip 56° SW.

Most of the mineralization occur on the easterly dipping set and favours the lowest angle planes.

The joints are spread out about 5 feet apart, though not all the joints are quartz-filled and mineralized. The joints are hair-line fractures or quartz-filled up to 2" - 3" wide.

Chalcopyrite occurs in blebs and blobs, sometimes in masses up to 3/8" thick and 2 inches round. Molybdenum occurs in blobs, often as rosettes, and its occurrence is a fraction of the amount of chalcopyrite. Guesstimate would be 20 to 1 ratio. Pyrite is not a common mineral.

Mineralization associated with pyrrhotite in pink feldspar bands within a more felsic rock was found on the northern flanks of the glacial moraine, but was not found in place. This could be a local type. Talus rock of this type was found with volcanics and sediments on the north side of the cirque but mineralization was sparse.

At the second location, the occurrence and mineralization is in joints and quartz veins in quartz diorite. Again three sets of joints were noted, namely: N10W/dip 80NE, N30W/dip 86°SW, and N70W/dip 50°SW.

The joints spacing are irregular, ranging from 6 inches to 10 feet, averaging 4 feet to 5 feet. Not all the joints and quartz veins are mineralized, but more so than at the first location. The joints are hair-line fractures to quartz-filled veins up to 2" to 3" wide. Wider veins were seen but most of them show sparse mineralization.



Pink feldspars are not common, well-formed quartz crystals are abundant in some veins compared to the massive type at the first location. A trace of bornite and covellite was seen in the talus.

The overall grade is still too low to be of any commercial value. A rough estimate is: 0.08% Cu and 0.002% MoS<sub>2</sub>.

At the third location, the occurrence and mineralization is similar to find #2 but less abundant. Although the outcrop is exposed over a much smaller area, the outwash and talus material does not reveal much mineralization of quantity and quality.

Mineralization in a dark diorite was found on a moraine but was not located in place.

Geochemical Results: - Geochemical assays on silt samples gave a constant low reading of 20 - 40 ppm Cu and 0 - 2 ppm MoS<sub>2</sub> along the main and subsidiary drainage system leading from #1 and #3 mineralized areas. No. 2 zone showed a background of 20 - 40 ppm Cu and 0 - 2 ppm MoS<sub>2</sub>, with highs of 60 - 125 ppm Cu and 1 - 2 ppm MoS<sub>2</sub>.

Amongst the moraine and below the talus immediate to the mineralized zone in the 1st and 3rd area the silts (glacial rock flour) showed 20 - 40 ppm Cu and 0 to 1 ppm MoS<sub>2</sub>, with one high sample (40 Cu/ 40 MoS<sub>2</sub>).

In the second area, the silts ranged from 40 - 60 ppm Cu and 0 - 1 ppm MoS<sub>2</sub>, with one high sample (300 Cu/ 4 MoS<sub>2</sub>).

The gossan zone, in sediments and/or volcanics at or near the granitic contact on the north side of the cirque showed the normal pattern of high and lows in the presence of Cu mineralization (60 - 200 ppm Cu). No MoS<sub>2</sub> was detected in the gossan samples.

In contrast, the drainage system north of Moore Peak which flow north then west into the Nostetuko River show higher Cu background - low of 40 ppm Cu and high of 60 ppm Cu, with no detectable  $\text{MoS}_2$ . The Triassic rocks within the cirque are composed of argillites, sandstone, volcanics and agglomerates. Some of the argillites contain 3% fine-grained pyrite, with "suspected" chalcopyrite.

The Holman test showed a color change to purple color with a pinkish color at the nimiscus on all the silts collected from the main drainage leading from #1 and 3 locations. These silts assayed 20 - 40 ppm Cu and a few 60 ppm values in the field laboratory. Silts collected on the side streams showed similar values but did not give any kind of color change to the Holman solutions.

The #2 area did not exhibit this phenomena. Another area (#14) showed the same color change in one stream.

Staking: - A total of 58 mineral claims were staked in the #1 and #2 areas between July 18 - 25th. Since the mineralization found to date is not considered to be of economical value these claims will not be recorded.

Area 14: ( $124^{\circ}30'$  -  $45'$  Lat./  $51^{\circ}15'$  -  $30'$  Long.)  $92\text{N}/7\text{E}\frac{1}{2}$

Party #4 was moved from Area #9 into this area upon completion of the coverage. Emphasis will be placed on the areas covered by Triassic rocks and the contacts of the intrusives.

Geology and Mineralization: - The upper half of the map area the Cretaceous sediments are thrust upon the Triassic formation. The

latter lying in the middle one-third of the map area. Tertiary granites occupy the southern one-third of the map sheet.

A pistol shaped granitic intrusion cuts across the Triassic formation, the Blackhorn Thrust and into the Cretaceous sediments.

The area traversed to date is the two northerly flowing drainages on the SE side of the map area. The glacial stream east of Mt. Queen Bess flow north then west into Nostetuko River. Triassic volcanics with minor sediments (sandstone) occupy the entire valley, with granitic intrusives (probably mainly quartz diorite) surrounding the valley thus forming the two high ranges. The southern contact is at the headwater of the glacier.

Minor pyrite was found in white, siliceous volcanic rock. A spot chalcopyrite in a volcanic float was seen about 2 miles from the mouth of the stream.

Geochemical Results: - No significant values were obtained. One Holman test positive sample showed only 40 ppm Cu. Silts taken near the granitic contact showed a slight increase in copper values - 50 to 80 ppm Cu compared to a background of 40 ppm Cu. No  $\text{MoS}_2$  was detected in the most easterly stream.

Stonsayako River area showed a lower background of copper. A slight increase in copper is noted in the silt samples nearer to the granitic contacts, also a showing of  $\text{MoS}_2$ . Two Holman positive samples tested only 20 ppm in the laboratory here. Four silts, three from the river and one from one of its tributaries, turned the solution to a purple colour (similar to Stikelan River).

These assayed 3/30 ppm and 1/50 ppm Cu.

The glacial stream (Stonsayako River) east of Homathko Pk. originates at Mantle Glacier. The granitic contact lies under the glacier towards the south.

A small outcrop of granite is located on the west bank of the river about  $2\frac{1}{4}$  miles from its mouth.

No mineralization of interest was seen.

Area 92N/16 W $\frac{1}{2}$ , Location  $51^{\circ}49.6'$  Lat./  $124^{\circ}13.3'$  Long.

An air magnetic anomaly located 8 miles due north of Choelquoit Lake was checked out and was found to be a strip of altered volcanics which contained about 4% magnetite. No sulphides or other valuable mineral was seen.

Two soil samples taken downhill from the anomaly showed 8 and 175 ppm MoS<sub>2</sub>. Additional soil samples taken along the line traversed showed no trace of the element.

#### Pemberton Area:

W. Sirola and F. Chow visited the Salal Creek property near Pemberton, B.C., also spent a short time scouting the adjacent area by helicopter to "feel out" the mineral possibilities of the area.

The Salal Creek gossan zone covers an area about 4 square miles, with an impressive leached copping. A deep cut by a water course NE of the campsite was examined, also the outwash material downslope. Molybdenum found to be closely associated with pyrite and in turn,

occurs only in narrow quartz veins. Both mineralization and quartz veins are noticeably scarce.

One silt sample from a small stream NE of the campsite assayed 20 ppm Cu, 8 MoS<sub>2</sub>, 20 Pb, and 20 Zn. Another silt sample downslope from the deep cut tested 60 ppm Cu, 35 MoS<sub>2</sub>, 25 Pb and 20 Zn.

Proposed Plans For Project:

- 1) Party #1 will move into the remaining Triassic formation in the SE corner of Area 10. The terrain is rugged and much of it is snow covered. It is the best time of the year to do any prospecting.
- 2) Party #2 will continue in Area 13 to cover the remaining area. The crew will then be moved into Area 11 to traverse the Triassic rocks in the SW corner of the map sheet.
- 3) Party #4 will be moved to Area 16 (51°15' - 30', 124°45' - 125°00') to traverse the Triassic formation and granitic contacts if possible in the triangular area between Homathko R. and Mosley Creek.
- 4) Party #5 will continue working in Area 14 to cover the Triassic rocks and granitic contacts.

The above Triassic areas are expected to be completely covered about the last week in August. Cretaceous sedimentary areas within the map area could be examined during the remaining season.

All the U.B.C. students will be leaving on or about August 31st.

Respectfully submitted,

(signed)

Fred.