Prospecting of Thistle Mountain Area

July 8: Traversed up Smitty's Ck, a left limit tributary of Ballarat located 11 km up Ballarat from the Yukon River. Stream flows south and supplied water to Ballarat Mines Ltd camp in the 1950's. The old flume used to divert the water is still noticeable for 200m upvalley.

The valley is narrow (<15m) and contains a 30cm stream in the center of the valley. The stream is incised 15-20cm into the moss and flows over a coarse gravel and boulder stream bed. Boulders are mixed lithology of Pelly and Yukon Group.

High water is evidenced by debris flow and flood deposits across the whole valley floor and even on the lower portion of the east (left) hillside.

A drained shaft ≤2m deep is located 250m upvalley on the first claim of a co-discovery. The shaft is part of 1988 assessment work and though the bottom is covered with mud, it appears bedrock was not reached. The shaft is just west of the stream and contains 1m of moss/organics with a 30cm layer of gravel and boulders within. Below this fine to coarse gravel and sand mixed with occassional boulders continues to the

bottom of the shaft. Panning gravels showed black heavies, minor red garnets and 1 color.

Upstream the valley narrows down to 5m width, except a room where a knoll rises in the valley 10m to form a wide (50m) swampy bowl behind (upstream of) it. At the headwaters the stream divides into 3 rivulets flowing down ~~a~~ steep poplar and willow lined hillsides. Mining is not feasible on this creek as it is too narrow, even on the co discovery claims, and water would be a problem in dry seasons.

Walked the west slope back. Found limited outcrop of biotite quartz feldspar - quartzite layered schist (Pelly gneiss?). Attitude 311/70W and 290/55W.

July 9 Hiking west slope (left limit) of Ball creek from canyon 1.5 km downstream to camp. Extremely thick brush made traversing difficult. The only rocks were exposed in the canyon and high upon the ridge. Outcrop appears to be east to south east monoclinally folded biotite-quartz-mafic feldspar schists (Banded schist - boundary group between Yukon and Pelly rocks). Dips varied from 31 to 70° SE.

July 15. Testing mined area of Ballarat Creek.
Test holes taken to bedrock using 235 excavator and 1.5 yd3 material washed through a test sluice. The area tested has been previously mined, but an old channel under slide rock has been located on the right limit of Ballarat. The gravels consist of 1-2m coarse sized sand and stones mixed with blocky ~~slide~~ bed rock of Yukon Group (banded schist). On top of gravels is 1-2m of clay/organics, topped by 1-5m of slide rock.

Six holes were tested. Although gold was found in each hole, the gold is fine to flour sized. Comparison of this channel to the area mined previously indicates the pay channel is most likely narrow and contained within and near the present stream course. This area has been mined to greatest advantage already.

July 16: 2km traverse up left limit tributary located 3.6 km upstream from mouth of Ballarat Creek. Valley is 60m wide when it enters Ballarat valley. The trib. floor is flat and swampy. The stream is 1m wide and meanders along the south or left limit side of the valley. A bench along the right (northwest) slope

appears to exist from the mouth to the extent of the traverse, along the main creek.

The valley narrows to 35m width upstream to open up again when the first draw (10m wide V-shaped valley, no bench) enters from the east (left) side.

The creekbed is muddy with coarse to fine gravels and stretches of boulders, dominantly Relly Group lithologies.

Traversed the bench/flat hillslope back to the road, but did not find evidence of washed gravels. No outcrop was seen up high, and no workings were noted on the creek.

July 18: In Dawson researching map sheets 115O/3 and 115O/2 and 115J/15.

July 24: Went to Discovery Pup, near the mouth of Kirkman Creek. A 15m long test trench has been dug alongside ~~this~~ and across this tributary where it flows into Kirkman valley. The trench is filled with water, is 4m deep and did not reach bedrock. Pans of gravels (none stockpiled) was disappointing. Only minor garnet was seen, plus some specular hematite.

Travelled up the right limit of the tributary testing gravels by pan. The gravels are coarse

and contain abundant bronze colored mica. Practically no concentrates and no gold was found. I wonder about bulk stream sediment or silt sampling for ~~these~~ this area. Camped overnite near headwaters Discovery Pup.

July 25: Left the camp set up and traversed overtop the north ridge down into Blueberry Ck. Path taken was west of the routes Ron and I used last year. Upper slopes are ~~loosely~~ thinly covered by poplar and willow, the latter predominantly within drainages off the slopes. The traverse went overtop the highest point on the ridge. Rocks outcropping on the ridge are quartz-feldspar schists with 20% biotite, 10% muscovite. Micas are oriented along planes of foliation. Feldspar is altering to clays and minor sericite can be differentiated. Followed the COR claim line across the south slope of Blueberry. On the east side of the pingo draw rock outcrop became actinolite altered hornblendite. Hiked down to the area where we found the galena and quartz and poked around for a while. No pick to dig with, so exploration was limited. No samples deemed worthy of sampling.

July 26: Late start as camp was demobilized. Back to Ballarat and prepare samples for shipment to town on July 28.

July 28: Traversed the ridge between Kirkman Creek and Noname (Toulcary) Creek. Intended to descend into Toulcary Creek and pan but spotted smoke in the valley near the headwaters. Returned to camp and reported the fire.

July 29: Took the rocker test box down the road to check out some of the tributaries of Ballarat Ck. Spent half the day checking the creek traversed July 9. Tested 200m, 400m and 600m upstream. Found magnetite, garnet, black sands (rutile? ilmenite?) and hematite in the concentrates but no colors. None of the other tributaries tested yielded any colors.

July 30: Hiked up left fork of Kirkman Creek to check at the test pits dug last fall. Four pits work their way upstream to the old cabin that has 9 shafts placed around it. The uppermost pit is 50m downstream of the cabin and has a bedrock drain (trench) started on it. Rocks around here are chloritized, epidotized hornblendites with minor phyllite

Panning the stockpiled gravels showed fine colors 4mm in size. Travelled up the right fork, next. West as far as the boundary between the two leases (1.6km). Here the creek rises for 10m elevation to exist on a plateau upstream. I believe upstream is a primary valley while downstream is a secondary or incised valley. This indicates terraces or benches should exist along the right slope as the left (south) slope is very steep. I recommend testing the right slopes for benches as testing of the creek last year yielded poor results.

Aug 1-6: Continued mapping Thistle Mountain, covering the east flanks. Weather was cold & miserable, so some of the time was spent thawing out on the bulldozer.

Just east of the Thistle repeater tower quartz muscovite schist outcrops. This rock varies from phyllitic to nearly even-tic quartzite going west to east. In places it is intensely foliated and fractured, possibly reflecting shearing. Strikes are 045° with dips from 40-60° SE. Eastward the trend rotates to 060°.

Heading east down the flanks of Thistle Mountain you get into the biotite rich quartz mafic schist. I am calling this a biotite schist

to differentiate it from the hornblendite. Attitude is 072/58S although dips vary to 70s. Chips of quartz lenses / veins have been taken from this area. The quartz is white, opaque to translucent and is lenticular or pod like in form. It appears to parallel foliation and can be followed along the ridges in a discontinuous, wandering zone. It appears to pinch and swell across the top of the ridges.

Traverse the saddle around the headwaters of Thistle Creek and grade eastward into quartzites/ quartz feldspar schists alternating with biotite mafic quartz feldspar schists. This is the banded schist unit, a buffer zone comprising both Yukon Group and Pelly Group rocks.

Contacts between rock types are gradational and it is common to find small tongues of different units within one of a distinct lithology.

Checking the ridge shared by the headwaters of Ballarat, Agate and Danny's Creeks (major trib. of Ballarat) have a thin band of hornblende schist with 50% pink feldspar and quartz layers. Up the ridge you have quartzofeldspathic schists alternating with the banded schist. Quartz muscovite

schist also appears in thin tongues here and there. Off-white fine grained sugary textured (aplitic?) dykes to 1m in thickness are located on the west margins of this ridge. There are also abundant pegmatitic quartz/feldspar dykes, sometimes vuggy. These dykes irregularly outcrop and are impossible to follow across the ridgetop as outcrops are limited to occassional spines between recessed, moss covered meadows. Perhaps we are nearing the "elusive intrusive" of Thistle Mtn.

Continued mapping around the bend in Thistle Creek exposed hematite veined, epidote-chloritized amphibolites (hornblendite). Up to 40% quartz and feldspar as layers and interstitial equiaxial shaped grains. The amphibole is definitely altering to chlorite/actinolite and epidotization of matics & veinlets of epidote infer cooking of this rock compared to the hornblendites to the west, atop Thistle Mountain. Must be an intrusion somewhere.

Once into treeline, the ground is all recessively weathered swamp and moss covered. Rocks outcrop only at the tops of rises between saddles. Outcrop remains hornblendite as far as

Marlin Gulch (occassional quartz muscavite schist, unmappable width). Heading westward the rocks gradually decrease in chlorite/epidote to become weathered and as boring as on Thistle Mtn.

Aug 7-8. Spent the days following the quartz lenses of Thistle Mountain. Thirty four chip samples of the massive, discontinuous, milky white boll quartz lenticles (boudins? sweats?) were taken. These veins are accurately described in G.S.C memoir 284 by H.S. Bostock. On page 106 he mentions the common vein in the Klondike schists being lenticular, discontinuous and pinching/swelling. He also notes they are devoid of mineralization but for iron pyrites. He also notes many of the lenticles assay high values in Au.

The quartz sweats of Thistle Mountain seem to follow foliation and in all cases but two locations, dip with the foliae. The trend varies from 029-070 depending on the host rock location on the ridge.

The veins pinch and swell, often reappearing downslope or upslope a few metres away. This makes it difficult to determine if it is the same vein or a parallel one, as outcrop is limited to only being along the spine.

Limonitic blebs and occassional silver subeuhedral sulfides (marcasite) can be seen in the quartz samples.

One ~~sample~~ vein carried mariposite (1671 & 1672)

Aug 11: Traversed east ridge of Ballarat (below treeline) to camp (from headwaters / thistle Mtn.) Attempted a traverse along the east trending ridge south of Agate Creek but ran into thick brush making outcrop hunting impossible. Walked down into the Ballarat bowl. Talus consists of biotite quartz schist. Out of the fork confluence talus becomes banded schist and quartzite / quartz feldspar schist. The left fork and left tributary at the head of Ballarat Ck contribute most of the water for the creek. No outcrop until in the creek where you have weathered banded schist.

Aug 12: Hike up west slope of Ballarat to retrieve the ATV. Rock outcrop at the right limit tributary before the forks is biotite quartz schist (Yukon Group) trending 082/45S. Outcrop between the forks is banded schist, 062/60SE.

Aug 13: Traversed east slope of Ballarat Creek along ridge between Danny's Creek and Ballarat Creek. Outcrops consist of quartz feldspar schists with coarse grained (pegmatitic) veins of quartz and feldspar. This is the same area looked at

large (>2cm) garnets along contact between Group in qtz → [margin note]

on August 4. Heading to the high point on the traverse proceed into biotite-mafic quartz feldspar gneiss (banded schist?) Strikes vary from 060° to 080°, dips from 27°SE to 60°SE. This is the [illegible] wall or r[illegible] portion of an overturned fold, the nose or hinge being in Ballarat Creek. Pegmatitic felsenmeer is seen around the knob. Once over the knob you get into very thick brush. Talus around here (felsenmeer) is quartzite/quartz muscovite schist Walking becomes impossible, so head down to camp. Came across spines of banded schist and quartzite (very fine grained - metamorphosed rhyolites?). One outcrop of banded schist contained east verging overturned drag folds.

The fold in Ballarat Creek is a steeply north plunging [illegible] verging overturned fold

Aug 14: Traversed east trending ridge north of Agate Creek. At the start of the traverse, alongside the road, is outcrop of chloritized hornblendite dipping vertically to steeply (087°) west. Strike is 100° (east). Off into the bush leaves little hope for outcrop. Two traverses were made, going as far as point 1 Cak 17/18. Exposure was found only along a ridge dropping into the upper left limit tributary of Agate Creek.

Here rock (no outcrop) was a quartz feldspar layered hornblendite. Hornblende is altered to chlorite and rimmed by epidote. Included in this rock are fragments of an apple green to green aphanitic silicious quartz eyed rock (andesite? cooked?). Around post, OR 17/18 found rock of only this unit and will call it a greenstone, as it appears very weakly metamorphosed. Believe there is a shallow intrusion within Agate Creek. As you traverse northerly from these points you get back into altered hornblendite rocks and finally have unaltered hornblendite. I also found the hornblende-potassium feldspar-quartz layered rock in places, east of the altered hornblendite.

Back at the road a sample of altered hornblendite with quartz porphyry andesite freagments was taken (1678). The volcanic had minor sulfides. A soil of hematite red brown coarse dirt was taken from the roadcut here as well (1679)

Aug 16: Day was spent compiling data onto maps and into journal. The geology is starting to come together!

Aug 17: Map road down into Kirkman Ck. Have hornblendite 080/50SE for 1/2 descent. Get into a biotite quartz schist then into a phyllite looking quartz muscovite feldspar schist. The overturned fold noted last year has been obliterated by road building from the outfit that has moved from Kirkman Creek to Ballarat Ck (Fell-Hawk Enterprises Ltd.) Between the switchbacks just before entering the left fork Kirkman valley have a small exposure of massive coarse grained hornblende (harzburgite?)

Aug 18: Mapping Ballarat road from Danny's Creek to the Yukon River. At Danny's Creek is a mafic rich (diorite) quartz feldspar schist. These rocks look like metamorphosed intrusives and can be definitely coined as Kelly Group schists/gneisses Rock type remains this type, becoming less mafic rich downstream. Will label this all Pgd (Kelly Group granodiorite/diorite) Foliation is defined by biotite. At claim PD7699 attitude is 050/52SE From here on the rock becomes gneissic textured with the schistose layers composed of metamorphosed

granodiorites to granites/quartz monzonites
Attitude 064/33SE. At claim P27696 on
down the dips turn north to north east.
Shears appear often in these units, ~~of~~ inferred
from intensely layered and crenulated ~~fol~~ rock
(layers <1mm to 3mm thick)
At the old shop there is an exposed
closed fold. Axial plane is to the north-northeast
with a slight north plunge.
Below the shop is an exposure of the
black, massive amphibole (metagabbro - harzburgite?)
as seen in the cuts of Caley's Dream Inc
and between the switchbacks on Kirkman Creek
Below this amphibolite the rocks are
light colored felsic Pelly Group granites
defined by coarse grained white feldspar in
a finer grained pink feldspar/quartz matrix.
These continue all the way to the Yukon
River, but there is not anymore definite outcrop,
the road only taking approx 1m of sidecutting.

Aug 19: Preparing for a regional look at Pedlar Creek. Plan
on heading upstream and having a look at the
geology and geomorphology of Pedlar Ck.

Aug 20: Carcel Pedlar Ck as a vein system has been exposed in Ballarat Creek. A quartz feldspar dyke/sill cut by vuggy quartz with 5% specular hematite, 5% limonite is exposed for 300 m in Ballarat Ck. Trend is 060 giving a true width of 78m. This system corresponds to soil anomalies found on line 10+00E, 11+00N and 12+00N. Following the system eastward puts you onto the ridge ~~bearing pegmo~~ in the area having the pegmatites and aplites

Aug 22: Spend the day compiling data, describing rocks and sorting samples for shipment.

Aug 23: Trip down river to unnamed left limit tributary of the Yukon River. This stream flows into a slough behind an island across from No name Ck. The stream is 3km long and occupies a terrace of the Yukon River for the first 800m Remnant of Coffee Creek outwash maybe? The stream enters a narrow valley, taking a steep grade to its headwaters. Near the headwaters, another stream enters from the east (right limit) and has ~~what appears to be~~ a hanging valley appearance as it suddenly drops 20m into the valley.

Walking back downstream along the creek

yielded 3 old pits within 100m of each other. The pits were all on the terrace and on the right (east) side of the creek.

The creek itself is less than 1m wide with an incision of 30cm into the valley where it exits the hills, to 3m at the ~~mouth of~~ confluence with the Yukon.

Streambed was composed of coarse gravels and pebbles of Pelly Group schists and intrusive rocks (Coffee Ck granodiorite?). Mucho mica.

Panning was not exciting, but the valley is extremely beautiful and is a good picnic spot.