803773

Book 2
1987

GEOLOGICAL SURVEY
OF
CANADA
C.S.C. 146-S

124-12B

87-25A
87 25B

72
72A

95A
" B
" C
" D
" E

115E

87-121A

138 Sheet 3

Sheet
87-109 to 114E

1987 Book II

Date	Sta. No.	Spec. No.	Location	Pages
	21 ⊙R7	61 KU-87	"To N. and W. of	1
July 31/87	21-24	61-71	Kruchkowski Plateau"	1-8
Aug 1/87	25-28	72-79	Sulphurets Gl. - East Side	9-15
" 2	29-32	80-88	South Treaty Glacier	15-22
" 3	33-36	89-95	Mitchell - Sulph. Ridge - H. Gl.	23-26
" 4	37-41	96-103	Ridge S. of Suphurets Gl	27-32
" 5	42-44	104-107	Ridge N. of Mitchell Gl.	32-37
" 6	45-46	108-114	Sulphurets Gl. L. N. Side	37-42
" 8	47	115-121	NW of Brucejack Lake	42-46
" 9	48-50	122-130	Ridge N. of Upper Mitchell Gl.	47-52

"Kruchkowski "Plateau" 1
region S. of Hanging Glacier

Foggy Fri July 3/87

- tried to get to Treaty Glacier but couldn't make it

- at OR7-13 - 1793m at Brucejack Lineament.

- massive grey-weathering unaltered andesites to S above & all rusty rocks below lineament to W.

- ~30-40m S of Sta. ~same elev.
- KQ-87-61 typical pale grey, v. alt. sil. 1 pv (5-7%) (minor serc?) rk (W) ~1% [illegible] no obvious mo

-checked crumbly leached
O/C's S & W
~30m SW ~ 3m fault
late pl.-hb? porph. (cut alt)
but mostly alt.
f.g. med. grn-grey
pl.-hb. porph. cut
by ~2-4% qz string
one @ tr. Mo.
- ~100-120m S of Sta.
~ 40cm wide leached
qz vein 170°/85°E fair

- ~10m W of vein
KQ-87-62 typical
alt. f.g. med. green ~ 95
pl. hb.? porph. @
~½% py & ⅛% cp
- nr. break in slope
- pl-hb intr. body ~40-50m
@ ~NS?? ± less alt than
wall rock
- ~30m W of 62
- 110°/60°S fair on foli

2

- same pale grey
alt. rk as 61 but
only 1-3% py?? - sl.
hint of bedding (seds or
tuffs???)

- ~30m W buff weathered
and br
@ dark frag. (local?)
- then scattered poor
quality v. rusty
sil. (~10+% qz veinlets
py (5-7%) pale grey
("white") rks.
KQ-87-63A - ~100m
W of 62 - on hillside
~30m below ridge
crest 1721m
- for ~100m W
same rusty v. pale
(white-grey) v. sil.
& py (~5%) alt. rk. 63B
cut by qz veins (~5%?)
but leached & diff.
to tell % qz veins

63B - qz - py - serc. wallrock
~ 30cm from vein

63C ~ 80cm wide qz
vein stringer system
leached but still
visible sp & gn
- sidehill 1672m above
large snow patch
069°/83°S fair on
vein sheeted qz vein
system

- similar pale grey sil,
py alt rk across
slope but most
o/c's so leached
that can't see
sulph. & det. % qz vein

- 63D - same pale sil?
py alt rk 1650m
~ 150-170m W
along slope
o/c in large branching
snow patch
- local area and bri?

~ 20-30cm NE steep
cal (qz) veins @ diss. py
& tr cp
- ~ 100 m WSW
2 1 & 2m wide
~ SE / steep (75°?) NW
& rending f.g. dark
green-grey post alt
diabase dykes

- ~ 50m? farther pale grn
f.g. py alt. dyke???
63E
- ~ 100m? to sta.

⊙ R7-21 - 1537m
- ~ 10-20m higher
than SW end of
upper moraine
i.e. above cliff
- ~ 200m SE? of moraine
- same pale sil py
(3-4%) alt. rk
KQ-87-63F
- was traversing west

- now traversed S across covered talust meadows to large o/c at head of EW lin. valley
- ~300-400m cover
- small o/c's N of str. py and.br.? & large NS bull qz vein (1-2m??) (barren?) doesn't not cross str.

⊙ R7-22 - 1424m
- in str.
- junction lin str. & snow basin to east
- black graphitic seds in fault
- S. side thick f.g. dark S.S. beds KO-87-64A
- also bl. arg. & ls ∴ part of distal turbidite sequence

OD2°/50°W poor on bedding - probably contorted near fault

64B - ~30m W on N side of lin. - unquestionable
pc (1-2%) alt med grey and.br.
- ∴ fault in lin ~096° trend of Cr.

- ~50-70m W S side 145°/50°SW fair on bedding seds
- ~30mW "str" branches
- fault must lie in N branch because seds on both sides S branch
- seds folded anti ~150mW (i.e. dip both NE & SW but poor o/c

seds. more alt. &
py downhill
~300mt W ⊙R7-22
1320m KO-87-65A
pale. sil. serc py
alt. S.S.
~50mW 65B - same
- o/c is so sh. & alt
& crumbly difficult to
tell that these
are seds -
then changed dir.
to S to next
creek ~100m -
similar alt. seds
but some green & limy 65C
045°/65° ~3-4% py
good
dip dir. on
seds. in creek

⊙R7-23 - 1295m
- small knob S of Cr
- same py alt pale grn
seds
- photo Hanging Gl.
showing "Premier-type" porph.

cutting steep dipping
sl. contorted seds
- also photo W down
Sulphurets valley

- traversed S through
small trees ~ same
elev.
- similar pale grn
sil. py (2-4%)
f.g. alt. rk. - poor
o/c but probably alt
seds. - perhaps minor
c.f.g. alt. pl.-lib por.
- ~200m S below
major snow patch
1279m - KO-87-66A
typical of small
resistant o/c
pale grn. sil. py f.g.
alt. sed.?

- ~70-80m ~ same elev.
in lin. ~102° trend
some evidence of

5

trenching?? near
W end of snow patch.
cockcomb qz 1cm pockets arsenop. - qz vein material on pile i.e. not in situ
KQ-87-67A
- bedrock trenches might be covered by snow
Newhawk Assay
0.781 oz/t Au #RK-87-2
0.724 oz/t Ag "high grade" arsenopyrite - qz grab from pile)

- ~ 3-4 SW - small trench in ~~trees~~ trees
- no obvious vein mat.
- ~ 3-4 m E
KQ-87-67B - S wallrk (pale grn py alt rk) to draw

KQ-87-67C
- ~ 4-5 m E - very py (10-20%) N. wallrock to draw
- ~ 10 m farther east broken bedrock in draw

qz-cal vein material
(w py gn sp & cp
KQ-87-67D 1279 m
best grade material
- several in 30-50 cm blocks well mineralized blocks in stream bed
Newhawk Assay
RK-87-3 0.009 Au 0.857 Ag
* This qz-cal vn may trend ~ EW up valley but could be an entirely separate vn from the qz-arsenopy. vn.
They don't look at all alike.

- Outcrop is very poor in this area & if these samples run the area should be prospected closely.
~100-120 m E to main snow patch.

~12 m E in str. 080°/60°N poss. aft. qz vn in str. bed

6

- ~60-70 m S "heather" knob below snow + bluffs to E
67E - pale grn serc. py alt. rk (poss. and. br. but o/c too small & too much lichen

67F - ~50-60 m E base of bluff - definite med grey alt. and. (bas.?) vol. br. @ ~2-3% diss. po & py climbed cliff to E - base of cliff is very rusty py green and. br.

- br. up most cliff except becomes more subtle towards top & less py?

KQ-87-68A - top South end nr. snow (higher to N) - 1391 m med. green - grey py (1-2% py) rel. mas. alt and. or pos. pl. porph. but too alt to be certain

- ~100 m SE across snow sl. up
KQ-87-68B definite mas. med. green - grey and. br. (pl. phys.) frags (numerous) - some to 30 cm av. ~1-8 cm ~1-2% py
- frag. only readily apparent in good o/c's in snow

- ~100 m SE & up break in slope 1450 m
68C - same grn. mas. and. br. sl. py

~ another 100m SE
~ 100m from previous traverse 1465m
KQ-87-68D
same mas. green and br.
~ 50m SE
bedded clv. grey wackes
170°/25°E poor on bedding
- seen to sit on top of br.??
- ~ 50m S of EW "snow" lin on hill
mas. med. grn
pl. hb porph??
(too much ~~frags~~ lichens to see frags
⊙R7-24 KQ-87-69
- ~ 100m SE top 1480m
mas. med. green
both dark hb porph
& sl. paler med. green
pl. porph 69A

relatively unalt. 8

- some local (1m±) bedded areas - so? origin of rks.
- S.S. dipping W? and lie this bold ridge
- rel. uniform dips? for ~ 150-200m then disruption same large limy concretion
then ~ 400-500m SE of 69A
just before rusty lin
035°/25°NW
poor on 1m thick cgl. bed
~ 150m SSE

KQ-87-70 typical
mas. c.g. butt S.S. - top of snow lin
005°/68°W poor on poss. bedding
~ 5m W of lin

~150m E SE to Brucej. Lin
pale S.S. & red grey
clv. siltst appear
to extend to Lin.
but too cleaved
to det. orientation

- KQ-87-71 - grungy serc. schist (vol.?) (low py) W end "island" o/c E of Brucej. Lin. - although o/c appears as it could be sed.

Camp elev 1338m

Summary

1) In cruddy o/c's difficult to determine rock type, % qz veins, sulph. content & see fragments in volcanic breccias.

2) "Arsenopyrite vein" showing should be prospected more closely - very poor o/c in area, not properly trenched and at least 2 mineralized vein types (arsenop. - qz & qz - cal - py - gn - sp & cp).

3) * Dark sedimentary rocks appear to loose their graphite & become gray [illegible]

Sulphurets Glacier - East Side

Fog, Sun breaking through Sat. Aug. 1/87

- traversed @ Bill Motherwell

- started ~120m S of Brucejack Cr. along ice below ⊙R7-7
grn and. br. & mas. green and.? (bas.?)
KQ-87-72
typical of mat. without frags. ~2-3% pr
- numerous qz & carb (some ank.) gash veins (barren?) & small fault
- some of the mas. units might be dykes
- near Brucej. Cr. some definite

dark grn. subtle vol. br.
@ irregular frags. to 20cm
below Cr. 1041m –
~20m wide zone
of well bedded seds
030°/80° SW fair
on bedding (can't get to off ice)
then atleast 30m
of mas. conformable
grn. rk.
~30m N of Cr. – on close examinat.
of excellent o/c can
see subtle but good
bedded br. 72A &
tuff units – chl-serc.
(talc?) (~1%) med to
dark green

– also faulted in
blocks of turbidites

– and. br for ~20-30m
then in fault contact
@ dark turbidites
– ~60-70m N

145°/82° NE 10
fair to poor on
highly disrupted (photo)
bedded bl. turbidite
– sand matrix around
dark bedded arg.
blocks ∴ pre-consolidated

– ~50m farther very
well bedded unalt
bl. arg ls & siltst.
(distal turbidites
142°/82° NE
good on bedding top NE
– ~50m before
major str. &
dyke cutting
turbidites (photo)
KQ-87-73 – typical
of well bedded bl. arg
& med. greg siltst. fg.
S.S.

~20m N
(1) R7-25 – ~~93~~ 1002m
– at str.

+ ~20m NW of str.
~20m wide
med. grn feld. porph. (grn plag 15-20% & minor lar. whi. k-spar)
dyke KO-87-74
~Premier-type porph
@ faulted contact
cuting seds. –
also small dykes in
area cutting
seds. – some
2-3m thick faulted
grey-grey "pebbly
mudst. debris flow?
units in turbidites
facing W.?
~10m past dyke 170°/88°W fair
on well bedded
turbidites
~30m past dyke 046°/75° dip dir
good on seds in
another fault block
& flame ball & pillow str
73A indicate top N
also convolute lam.

~10m NW photo
excellent distal
dark arg. turbidites
~30-40m NW? to
next bold ridge
~20m wide highly
faulted hb(pl.) porph
dyke 74A 981m
~2m wide NNW
grn dyke cuts meta.
gash veins
– ~30-40 m? dark turb.
– then 5m grn. plag.
porph.
– 2 photos showing
highly faulted
relationship of seds.
& dykes
5m dark seds
then ~20m fault
block along ice
@ felsic syenite
k-spar porph.
74B – photo
30-40% 1-10m k-spar ph
phenos & 15-20% hb Orrichetti

at distance can see these dykes offset by 7 sinistral faults uphill before trees (E side N)

~25m NW photos
grn dykes cutting
seds & truncated
by ~ NS/vert
normal fault
- numerous faulted
blocks in area
& negl. evidency
of thermal meta.
of dark turbidites
165°/88°NE fair
on bedding in
many panels betw.
grn. dykes - near these
dykes small "grn"
halos in seds
~50m NW pt of o/c
in ice 74C -
same k-spar-hb.
syenite porph. as
74B - at least
30m long block
~1/2 - 1% diss. py
NW of syenite porph.
mostly rusty weath. green
py seds @ graphite destroyed

KQ-87-75A ~50m SE
of Sta. po (5%) f.g. brown-grey s.s.
160/85°NE good on
bedding
⊙R7-26-971m
- point of o/c in
- just above ice falls
KQ-87-75B - meta.
& alt. brown (meta. biot.?)
po (~3%) (py) spotted
hornfelsic
- photos W across gl.
- NS & SW dykes in seds
- some qz-cal veins
in area but only
py?
- grn-buff-grey
hornfelsic po seds
continue for ~100m
then ~30m? o/c near
ice of med. gr. po
monz?, porphyry
KQ-87-76A

895m
~80m N ~ 30m v. above
base of large bold
o/c v. alt. rusty
grn. and. br.? 76B
v. highly alt. - might
be intr. because green
seds. continue to N

- ~100m N at str. 862m
at ice 30m long
o/c of chl sh. monz.?
~1-2% py 76C
- only sl. porphy med gr.
could be part of
a larger intr.

- ~100 NE up str.
(~30+m Vert.) Bill
checked o/c same
intr. mat. at ?u - 76D

- cover for ~½ mi
along ice - o/c
high in steep moraine
but didn't check

⊙ R7-27 - 805m
- ~30m N ~~main~~ UE
branch Hanging Gl. Cr.
152/70°NE fair
to poor on
bedded grn o/c brown
- grey hornfelsic py sed.
~5-7% diss. py ← 77A?
- cut by ~ 3-4m wide
green 040°/steep
dyke

- ~40m same only grn -
py hornfelsic alt sed.
77B

- ~10m N then at least
20m wide
"Premier-type"
med. grn. pl.-hb.
porph. (w. scattered
(1-2%) large white
K-spar phenos (~1-15cm dia)
KR-87-7A

~50m N 800m -S side
main stream
same green o/c
indurated py (~5-7%) tr cp?
alt. hornfelsic
grey seds 77C
highly fract. o/c but
~ same NW strike
& steep NE dip
cut by scattered
small dykes

77D - ~30-40m N - N of
main creek
- same horn. highly
alt. pale grey seds
but ~ 1-2% diss. &
½-¾% diss. cp
minor qz stringers
in o/c

- mainly py to north
@ negl. cp? ontr.
- mainly mas. uniform
med. grn + grey intr.

rk? f.g. diorite 14

⊙R7-28 - 778m
- ~100m past str.
pt. of o/c in ice
- f.g. to m.g.
grn chl. - serc. (talc?)
py (4-5%) diorite
or monzodiorite?
@ only tr. cp? KQ-87-79

~30m N KQ-87-79A
same grn. alt. chl.
intr. rk. base of
large o/c
~ 1-2% diss. py
& ¾-1% " cp?

- camp elev. 1375 m

Summary
1) Faults are everywhere
& locally are abundant
& probably major. In

many areas, especially north of Bracejack Creek, unmetamorphosed & unaltered graphitic black turbidites are in fault contact with a variety of dykes. To the north the turbidites are intensely thermally metamorphosed (green & brown (biotite?) - grey & spotted) and altered (>5% py ± po) near dykes & possibly larger intrusions.

2) A great variety of intrusions (mainly faulted dykes???) occur in the area. Perhaps as many as 15 different types. Main ones are grn. pl. &/or hb porph., med. to dark grn "Premier-type" porphyry @ scattered large white K-spar phenos. ± abundant apple green intensely alt. & meta. plag-phenos, syenite porph. (30-40% large white K-spar phenos & 10-15%? smaller dark hb phenos) more equigranular monzonites &/or monzodiorite?, dense pale, med. & dark green f.g. meta. dykes (some cut "Premier-type porphyries") & possible med. to dark grn. equigranular diorite @ diss. py & cp.

3) Dark graphitic sediments definitely become green & grey & spotted without graphite near dykes.

4) A few 2-4m thick pebble mudstone units occur in the dark turbidites (didn't check closely) & the green and. or basalt breccia & tuff is probably in some way closely related to the dark turbidites.

South Treaty Glacier

Sunny & Cloudy Sun Aug. 2/87

⊙ R7-29 - 1403m
- below contorted sed. - straight stretch on glacier
- 2 photos to SSW across glacier - marker bed in anticline - disrupted zone & volcanics above??

- 025°/72°SE on contorted beds
- bl. arg. (mudst.), some pale thin chert beds

- ~150m down ice just above knob otoh @ marker - ~20m above marker
044°/88°SE

fair on curving folded finely bedded ~1-8cm
bl. py mudst. & chert - thin beds difficult to sample KQ-87-80 ~7-10cm bed (sl. thicker than av.)

80A - jet bl. arg ~3m above contact

100°/47° good dip dir. av. tuff contact

- ~1m 80B top of grey py (~3%) rhyolite?
- KQ-87-81 - 5m py rhy tuff? or alt. mafic tuff?
81A ~ 7m bedded py 3% rhy angular tuff @ some lap. frags
- o/c v.! hard & difficult to sample / covered

in mud but can see excellent bedding & delicate rip-up clasts

- 81B - ~11m 1365m hyaloclastite br. @ dark matrix on top of ~30m+ pillow br. unit that seems to pinchout & out into north into black seds. photos

- ~10m grn-grey debris flow? - br. units (can't get off ices)

- ~2-3m well bedded bl. arg. ~20-30m grn grey & sl. maroon grey

mas. debris flow unit N5/70°E good on "curving bedding"
- v. diff. to sample glacial o/c's
- ~100m past pillow lava knob KQ-87-82 from mas. pale grn-grey pebble mudstone debris flow units ~100m before photogenic tuffs

(old o/c's rusty weath.)

OR7-30 - 1348m
- spectacular interbedded maroon & pale grn tuffs photo
- diff. to sample o/c
- overlain by ~40-50m

mas. debris flows
~30-30m maroon
& green "coarse" bedded
pale grn "tuffs" (~10-50cm beds)
KQ-87-83A - rhy. tuff chert? hc sample is harder
- ~10m maroon tuffs
- ~10-15m predominately
@ small white feldc xtls grn. well bedded
chert, rhy tuff? 83B
@ some maroon
interbedded

then ~60m? of
maroon + maroon-
grey hem. epiclastic
rocks ("tuffs")
sand-size, lap-size
much channelling
some X-bed heterogeneous
83C - ~3-5m from
top of unit
- entire maroon unit is
graded @ coarse
br. at base
- ~10m of coarse

green (debris flow?)
breccia exposed under
maroon unit but
couldn't reach o/c
- traversed ~200m
down ice through
maroon unit in
fold
~12-90m
- photos marker maroon
& grn beds & overlying
rusty weath, pale grn-grey Ay mas debris
flow units - ~10-20m
underlying bedded ss
& then mas. drab
olive grn. andesites?
- 008°/70°E ~ bedding
on steep units
crossing ridge

- ~50m farther
005°/65°E fair
on bedded pale green-

debris flow units
KQ-87-84
- ank. rusty weath?
- coarse green br. has given way to lap. - sized & metre (1-3 m) - sized debris flow beds @ elongated scattered grey chert frags to 30 cm long & 5 cm wide
- can see ~ 20 m bedded seds. in steep area above moraine (local low o/c immature graded cgl. s.s. & convolute mudst)
- ~50 m W. start of main vol. unit - bedded at distance but o/c too muddy to see here

KQ-87-85A
pale grey debris flow unit?
- ~ 2-4% diss. po (± pyt & cp?)
- then for +50 m pale grn. - grey pl. (hb) phyric and. br. 85B @ poss. some qz porph?? blocks & frags to 60 cm in dia. 85C small one epiclastic debris flows?
- 40 m W
- 004°/~vert fair on same well bedded units (dip both E & W ~80°)
- ~50 m mas. o/c of same pl. (ep. after hb?) phyric and.

@ scattered large & small frags. and. flow? - good

85D o/c - mas. clean surfaces

poss. 60 m thick unit

~50m @ mas. med. green vol. br. @ numerous large irregular

85E idmygdaloidal clasts some to 20-30cm & one layered unit large granitoid clasts (debris flow?) photo (too smooth & steep to sample

- ~50m @ ns 5-10m from lower contact 85F mas. green and.?

- andesitic unit ~ 250-300m thick?

OKT-31 - 1210 m - pt. of o/c in ice

027°/73° SE good on well bedded dust arg. & silt st. (photo) ~7m thick under mas. grn and. then ~20m thick S.S. beds & then ~10m bl. arg & S.S. & then ~5m grn. S.S. or tuffs & flows & then ~30m thick mas. grn med-grey amyg. flow? unit

KO-87-86 - near top typical - at distance can see well developed columnar joint - then bl. finely bedded arg. & silt st

042°/76° SE good

~30 m? (faults + variable along strike) well bedded dark arg + siltst. + thick debris flow? pebbly mudst. bed.

- then glaciated knob at end of ridge 1175 m >30 m rel. uniform jet bl. arg.

then ~1-3 m grey buff weath. S.S. beds (w pelecypod frags interlayered (w the

KQ-87-87A bl. arg.

- in graded 20-30 cm beds (w fossil frags. near base - tops SE

- going down section

- then ~10-15 m thick bronze weathering dark grey limy "pebbly" mudstone unit 87B with fossils - belemnites an ammonite + a few pelecypods

- transported in debris - underlain by massive graded pale grey + buff weath. S.S. unit 87C

base of limy graded S.S. 30 cm unit

- scoured base

- some thick debris 2-3 m flow? fossiferous units (fos. poorly pres.)

+ then ~20 m down section mas. pale grn - grey pl. phyric and. lap. tuff (w scattered

~1013 m dark frags. 88A

- ~80-90 m NW generally across strike - some significant faults along stream

+ then mas. pale grn - grey pl. phyric and. br. [illegible] 88B

~30m NW photo
coarse grn. br. @
amygd. and frags.
top of 1-2m thick
debris flow unit?
043°/56°SE good
on well bedded
hem. "epiclastics"
br. to mud sized
~many faults in area
-photo maroon-grey
x-bedded c.g. s.s.
truncated (channelled)
by overlying maroon
(debris flow?) br. unit

~20-30m strata
of hem. maroon
"tuffs" & breccias

then mas. green
pl. and KQ-87-88C
- ~80-90m NSW?
~1068m down moderately
steep rock face

mostly and to NW
but many faults 22
~3m interbedded
dark & light seds.
~100m NW
1007m KQ-87-88D
at ice
pale grey debris
flow unit? - angular
scattered frags to 1cm
- as traversed NE started
to go back up section
~100 down ice
145°/~~NW~~ 30°NE
fair on bedding
- went through the
20-30m unit with
fossils (grey weath. in
in recent o/c from under
ice) then up through
massive jet black arg.
unit & into andesitic
units
@R7-32 - 918m
- absolute end
of ice ~N side of valley
only on terrace
by lake
- dark graphitic seds.

– since no marker beds or mas and. cliff-former – must be cutoff by fault

Camp 1386m

Summary

1) Many interlayered volcanic & sedimentary units. Hence, mainly a mixed sedimentary-volcanic sequence. Many units exposed below ice were covered in 1960.
2) Most sedimentary units show evidence of ~~grading~~ deep water deposition (e.g. grading, graphitic, pyritic, many mass flow sedit vol. units, fine uniform bedding, convolute lamination. Even fossils occur in pebbly mudstone units.
3) Most volcanic units are fragmental but one pillow breccia-hyaloclastite unit & one massive cliff-former & one amygdaloidal columnar jointed unit, which are unquestioned

Mitchell – Sulphurets Ridge – Hanging Glacier

23

Sunny Aug. 3/87

– traverse @ Don Harris

⊕ R7-33 – 1858m
– near top of isolated o/c in Snowfield
sl. foliated, chl. (ser.), py (2-6%) alt. and. br? (frags. present but indistinct)

lower NW small o/c 829m
KU-87-89A typical

080°/46°N poor on weak foliation

Westernmost small
o/c much more alt.
056°/68°NW
fair on foliation
qz-serc. py schist
89B -

- western half o/c
good intensely
alt qz-serc-py
schist
- ~1/4-1/2 %? leached
out qz stringers

- 89C - Southern
most highest small
o/c

~100m S to ridge crest
1915m (photo to S)
KQ-87-90 pale qz-serc-py
schist
- minor qz stringers @ poss.
to mo ??

068°/80°NW
poor on fol.

⊙ R7-34 - ~1830 ? wrong
~~1001~~ in needle
- W of 3 o/c's
under snow cornice

011°/vert good
dip dir.
on schistosity
in same pale qz-serc-py
schist
after and. lap tuff
~7-8% py
KQ-87-91 typical

- went back E to ridge
KQ-87-91A
~100m on ridge E of sta.
same pale sil. qz-serc-py
schist after and. br.
& lap. tuff (tuff-br.?) frags
clear on fol. surfaces

⊙ R7-35 - 1900m
- S end of high
pt. on ridge
~10-15m wide?
alt (py) feld. (pl. +
scattered large K-spar)
porph. dyke?? KQ-87-92
traversed down slope S.
~30m of chl. grn.
less alt. py and.
br.
then back into
pale qz - serc. py
schist
~100m S of sta.
92A - typical
- negl. (<1%) qz stringers)

92B ~70-80 SW
1790m
same pale qz
serc. - py alt. rk
(~5-6%? diss. f.g. py)

~70-80m S - 1730m
nr top of bold o/c
≈ 060°/45° NW poor
on poss. bedded
across drawn
~10m SE 92C
f.g. pale rel dense
sil. - py - alt. rk.
tuffs?

~50m S farther down
bold o/c ~2m
late flat diabase
1660m dyke - cuts alt.
zone KQ-87-93
the "keratophyne" of
Kirkham '61
- sl. N dip?
~30m S
dense pale grey
sil. py alt. rk
KQ-87-92D

~70-80m SSE 1578m
-hr base of 2nd
bold o/c mas.
blocky fracture
sl. py. alt. f.g.
pl-hb porph.
KQ-87-94

~70-80m SSW through
rusty siliceous crumbly
py (2-5%) alt. green seds.
or tuffs?? - based
on fracture pattern
may dip ~45-55°N
KQ-87-95
~20-30m before sta

⊙ R7-36 - 1475m
- end of
moraine

~30m E 102°/45°N
poor or poss. bedding
rks. are highly alt.
- some layers are limy

~80-90m SE
at str. ice 1435m
127°/~vert
on buff weath. alt.
py seds. some still
graphitic
- some are v. py (15-20%)
KQ-87-95A

- ~1412m ~100ms
top of Bench at
ice near 2nd str.
same py green
alt. br. limy seds.
95B

- ~20m E
~110°/steep
v. "gashy" qz-cal
bar. vein 2 to 30cm
@ diss. gn & sp
95C
too narrow & discont.
to be of economic
interest

95D – ~80-90m S
~50m NNE
of KQ-87-121
at 1345m
– ken Hicks – "shallow" channel
Sampled the ruby silver veins

Comment oct. 16/87 gash vein @ gn & sp??? ↑ see sample

30m S of KQ-87-121
170° / 85W
~70-80 cm wide ± (pinch + swell)
95E Sulphide-rich vein
@ py-rich sheared pods + lenses + lesser gn + sp 0.040 oz Au/t 1.016 oz Ag/t
camp elev. 1386m

Summary
1) Much of upper area is qz-serc-py schist with few qz veinlets + no evidence of mo.
2) Lower area is highly alt. + meta. py seds (grn-grey-some br.)
3) Hanging Glacier area has many scattered qz-cal-dol veinlets @ py, gn, sp (cp)

Ridge South of Sulphurets Glacier

Sunny August 4/87

⊙R7-37 – 2152m
– EW ridge – ~150-170m
W of NS ridge
– ~150m W – ~100m
wide rusty zone just below steep slope
– 2 photo NW + WNW of Western Can. Min. Prop.
– hackley fractured o/c – meta. f.g.
pl. hb porph ???
@ ~1/4% py
KQ-87-96
~150m SE to peak
2180m similar epid (chl.) med. grn f.g.
rel. mos. meta. rk.
96A (pl. hb rk?) – ~1/2% py – some assoc. epid stringers
– some buff carb alt. 20 [illegible]

+ local foliated zones
- rks appear to be highly faulted

- ~180-200m? N just to E of snow cornice 96B
  - same sl. py pl-hb ? rk.
  - 2067m
  - ~50m NE 135°/33°W pour on foln (large o/c could be slumped)
  - ~50m further N 10m+ wide sl. rusty zone 96C same pl-hb rk but ~ 3-5% f. diss py

- ~100m N (~100m before sta) 96D same alt. py pl-hb porph
  - some areas very distinct hb. xtls

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⊙ R7-38 - 2037m
- high pt on end of ridge
- best o/c so far, obvious course and. some py br. (irregular frags to 30+cm) but still pl.-hb porph matrix 9KQ-87-97 ∴ all of pl-hb rock especially since uniformly f.g. could be extrusive
- ~70-80W on ridge crest 97A - same rk only distinctly rusty weathering & ~ 5+% diss. po

- for ~100m N down steep slope to top snow cornice, all same rusty rk. ~4-5% diss. po+py 98 1945m

~50mN – 1900m
~20m high bluff
trending SE across
snow good resistant
pl-hb por. and. br.
@ large + small frags
– negl. (<¼%) py
~20mN 1873m rust downtr.
base of cliff
above snow
97C – same rk
only ~ 4-5% diss. py
– negl. veins to this pt.

– ~50mN across
snow start of flat
"bench" o/c's in snow
mas. med. grey and. br. @ angular frags
pale weath. to > 30cm
– some amgg.
– still pl-hb xtls
but no obvious py

– some (2-3?) ~ 1m wide
SE trending med. grey
white weath. dykes

cross area
– some rusty sections
– ~100m across white
weath. "flat" o/c's
in snow – all and.
br.
1788m – photo
typical polyhthic
br. poss. some frags
@ pyrox. phenos??
KQ-87-98 typical
of br. ~1% diss. py
– variable Fe staining
area 98 loc. is low

– for ~200m N?
down o/c's beside
large snow patch
to W
coarse poly lithic
and. br. @ some
frags. to > 50cm dia.
– also some dark
frags.

⊙R7-39 - 1640 m (1630 m 1 hr. later)
- N of large snow patch.
f.g. equigranular alt. rk. (and? b KQ-87-99
large + many frags in other o/c's
@ ~10-15%! f.g. diss. py ± po
- despite high sulph content still not particularly rusty

- then traversed SE across slope to E arm of Sulphurets Glacier - br 1st 100 m ~200 m (~½ way) grungy v.f.g. unit med. to dark grn and. or basalt 100

- similar rk to sta. @ variable Fe stains but mostly unstained

⊙R7-40 - 1465 m
- ~20 m above ice ~150 m N of pt. of o/c in ice KQ-87-100 A similar rk but @ ~3-4% v.f.g. diss. py

- ~100 - 130 m N along ice sl. pt. o/c in ice
1480 m
same mas. f.g. grn rk (bas.) minor py 100B

- on good glaciated o/c's can see is a vol. br. @ numerous larger (>30 cm) & small frags.

@ ~200 m N along ice sl. pt. o/c 1345 m
100C - same dark

grn mafic br. (~½-1% py?) - can only see the abundant frags. on very good glaciated o/c's

- ~70-80N along ice ~ EW/82°S poor on possible dark sed. interlayers in mafic vol. br. (some dark frag. units)

- most mafic epid. br. down ice

- then had to go out in ice falls to get around bold mas. grn o/c

- 1240m lower pt of bold o/c KQ-87-101 grn-mas. pl-hb porph and.? tr py

~ 80-100m N
same grn vol.
1192m then wellbedded grey mudstone (debris flow) & bl. graphitic arg. & siltst
0 28°/88°SE good on bedding
thick 10m - 3-4m? buff weath. grey mudst. @ bl. arg rip-up clast
~ 30m N
KQ-87-102
shows typical interbedded bl. & grey mudst.
- scour suggests top SE
~ 50m N
0 30°/88°SE good on bedding photo bedding & rip up

~70–80 m N
012°/88°W
good on bedding

OR7-41 – 1120 m
v. high
– knob of o/c
betw. Arms
of glacier

– then at least
~30 m of
conformable grn and
KQ-87-103 (debris flow?) br
bluff-forming unit
numerous frags
– possibly more dark
seds to north below
& in fault block to E
along ice – but didn't get
camp 1375 m there

Summary

1) Until well-bedded black & pale grey (buff-weathering) mudstones at end of day, never saw a bedding plane in the volcanic breccias. However, as several o/c ridges trend ~SE/NW this might be the trend of the volcanic units.

2) Some areas high on the ridge have significant Fe stains but most of the rocks weather pale to dark grey. Nevertheless most rocks encountered contain at least 1% py (± po) and some contain over 5 to 10%. However, veins in the area are few & far between & tend to be barren late meta. gash.

3) Buff weath. grey mudstones (w dark grey, rip-up clasts are probably mass flow def

Ridge North Side
Mitchell Glacier
Sun & Fog Wed. Aug. 5/87

⊙ R7-42 - 1941m
- high pt. of ridge
- snow N & creeks S

- sheared & cleavage pale & med. grey turbiditic S.S.
- most >1m thick beds m.g. S.S.
KQ-87-104

- ~80m-100m E along ridge 108°/68°N - good on bedding
- some interbedded cleaved bl. arg. @ grey S.S.
- some fos. casts
- mainly felsenmeer along ridge crest

- through depression along ridge
- mainly clr. bl. arg. felsenmeer & then started to climb
- ~200m E of 7-42 sheared unusual immature cgl-br.
KQ-87-104A
highly variable clast sizes from <1cm >1m & some trachytoid syenite porph. clast - 104AA from ~40-50cm dia. clast - could be from intrusion below tr. pt. - probably a series of mass flow deposits - some cgl-br. matrix supported
- ~50m E 152°/78°NE good on interbedded bl. arg. & grey siltst. & gm-grey cgl.

some dark frag. "S.S."
- br. units (partly vol.?)
~60 m ENE uphill 343
104B immature S.S. grn. 163°/85° NE good on bedded immature S.S. siltst., & grn cgl-br.
- grading indicates upright
- some rks approach grn and br.
- ~100 m ENE to sta
- most units appear to be extremely immature
⊙R7-43 - 2042 m
- junction NS & ENE ridges 325/83°
- 145°/83° NE good on bedding cgl (br) + f.g. to c.g. S.S.
- top NE?
KQ-87-104C typical grn immature cgl.-br.
photos - immature cgl.-br. (clasts to 20-30 cm)

- well bedded S.S. & cgl.-br.
- ~40 cm thick reversely graded debris flow bed
- channelling of the S.S. by debris flow
- channel & flames indicate tops east
- also scattered (10 cm) syen. porph. clasts here
- traversed ~S down steep slope
- ~80-90 m S of sta
1975 m 040°/55° NW good on shear or fault zone
- rks become quite highly sheared & chl. (locally graphitic) downhill

- ~50 m S - 1972 m
KQ-87-105
typical of grn sh. cgl-br. w elongate clasts (w ~4-5-1 aspect ratio - elongate along NE fol.

~20m S 048°/65°NW
good on fol. surfaces
(local?) shear zones

~30m SW 160°/84°NE
poor to fair on
bedding

1718m 80-100m SSW
018°/42W good
on small apparent
dextal fault (cuts)
ls bed ~3 other
dextal faults in
o/c

~50ms - 20m N of main talus slope
1692m 024°/36 NW "
fair on fol. fish
surfaces
KQ-87-105A - med grey
sh. mixed seds
some graphitic
patches

~50-60 SSE down
snow o/c to E 1625m
highly fractured rel.
mas. chl. dark grn
rk @ ~3-4% diss
105B minor py? cp?

- ~1% broken qz
veins in o/c

~~30-40m S down snow
same alt. rk @
diss. py & tr cp

then ~150-170m W
along bench to sta.
105C - from talus block of
sedimentary tectonite bn
@ R7-44 - 1532m
- small o/c knob
in grass stream above
"head of large rusty
basin" to SSW
- leached weathered rusty
o/c @ some leached qz veins
pale fig. py (1%) alt. syenite??!

~50m S head of large
1468m basin pale py sil. alt.
rk. 106A ~3-5% py
- scattered mala. stains
~70-80m S down W. side of
draw ("basin") 1385m
- highly alt. pale py (4-5%)
rk. w minor cp 106B
~ scattered mala.
stains in area
- cut by faulted ~NS
1m wide maroon aplitic granite?
dyke 106C - that is
largely barren (i.e.
post sulphides

- downhill mainly rusty
py o/c's
- one area ~4-5
~1m wide ~NS
aplitic maroon granite
dykes
- narrow py screens
bet. dykes
- ~70-80m KQ-87-106D
typical of sil. py alt
wallrock

~50m S - ~1m & at 36
least 7-8m wide dyke
of aplitic maroon granite.
106E - minor diss py

- ~50-60m SE at str.
1195m at least 3-4m wide
area of aplitic maroon
granite @ tr. cpt py
106F & 106G
pale py sil alt
wallrock in area

- ~70-80m SSW
~20-30m o/c
of trachytoid syenite
KQ-87-107 - fairly
uniform

- ~50-60m SSW
- ~10m o/c maroon
poss. minor aplitic granite
mo in fract 107A. - ~10-15%
qz vn in o/c but leached
out near surface

- ~20-30mS in stream
  ~10m o/c pink syenite porph.? KQ-87-107B
  minor cp 2nd biotite?

- ~50-70m SSE
  - low o/c sil py gra alt. rk @ some disrupted bedding & cut by small aplitic granitic dykelets (1-2cm) @ pale chilled margins (i.e. fault position in question)

~25mS to sta.

① R6-13 - 1972m
- @ ice below sta. dark grn. sil py alt. seds.?? or vol.?? some cp in "heavy" py veinlets

camp elev 1360m

Summary

1) Without seeing the top of the ridge would have no idea that the immature sed. rks. trend SE & dip NE. Faults & shears in the cliffs suggest ~NS/mod. W dips. Even within fault panels ~ half way down upper cliffs seds. dip. N.E. Intensity of deformation shows a marked increase towards the base of the upper cliffs.

2) In lower rusty cliffs aplitic maroon granite dykes increase in % towards base of cliffs & in lowermost o/c's apilitic maroon granite & trachytoid syenite dominant. In upper o/c's, aplitic maroon granite dykes definitely appear to postdate the regional py (±cp?) & assoc. alt.

3) Syenite? k-spar porphyry boulders in cgl-bx units suggest that the seds. could be younger than the sy. intrusions

Sulphurets Glacier
Lower North Side
Cloudy Thurs. Aug. 6/87

- started - 30-40m N of ⊙R7-28
- 760m
- same med. green f.g. uniform alt. pl. - hb. porph?
- ~2-4% diss. py but negl. cp

- KQ-87-108 - typical ~100m N along ice from station
- some dark chl. patches as if matrix of br.

- ~25m N
~2m wide
108A monz? porph. dyke 168°/85° SW fair
(w chilled margin cuts mas. alt. chl. fr. gr. grn pl-hb. porph

~¼-½% diss. py

- 108B ~same as 108
~80-100m N of 108?

- cover for ~100m NW (slide)
- KQ-87-109 - 738m pale grey, sil? (albite?) v. hard, mas., dense alt. rt. (w ~2-4% py + po
~1-4% cal stringers in o/c
- some .5-1cm scattered cal. veinlets appear to carry silver minerals sp & minor gn 109A
arg.? 0.013 Au 0.06 Ag New Hawk Assay RK-87-5
- unless very high grade not of economic imp. because veinlets are too small & scattered
- marked spot near ice (w small cairne - ~50N of large grn boulder

- along one veinlets can see specks of sp & gn? & Ag min??? diss. in pale grn alt. wallrock up to 2cm away from veinlet see 109A spec.

- ~150m NW across covered slide (o/c high above at trees)
  - major str. cuts through lateral moraine at 732m

⊙RZ-45 - 720m
- bold o/c ~150m NW where medial moraine intersects edge

~120m NW across more slide material 726m
- o/c of intensely alt. hard pale grey rk. @ well developed hairline fract. stockwork @ py & bleached haloes along fractures

KQ-87-110 - typical alt. pale grey rk. & contains ~3-4% py, tr cp & grey minerals (sp? & ?)

- ~3m wide ductile chloritic sulphi-rich shear (photo) ~054°/80°NW poor ~ orientation of "fish" indicate dextral offset marked on rk. near log debris
  KQ-87-110A & New Hawk Assay
  0.179 Au
  2.15 Ag
  #RK-87-#6
  - possibly 2% Cu in (parts? of?) shear

- ~50m NW ~10m above ice gn br. for ~5-6m along o/c ~1-2% py & minor cp (pos. tr. sp)

~50m NW & uphill sl.
kQ-87-111 - pale grey carb. alt sh. serc. vlt rtc

@ stn. 720m 111A
pale grey carb. alt. py (2-3%) rtc cut by barren cal serc. veinlets - a "platy" min. on sh. surface ~~py~~ py (less likely electron) - similar to 111 & both quite highly sheared @ elongate dark min
- same rtc for ~30m then faulted bl. arg/silt
kQ-87-112
100°/23°N fair on bedded bl. arg & silt
- dark unalt. arg. only local along ice??

- ~150-200m WNW cover across large slide
686m - ~20m above ice level.
gs - carb. veined pale py & po alt. rtc
kQ-87-113
can see contorted sedo. above on steep o/c
- along steepe to W can see faulted segments of bl. arg & silt/st (variable mod. to steep NE dips)
113A ~50 (100max) 113
in mas. pale green highly alt. sl. py (2%) pl. - bb porph??
- could be steep NE rolling in & out of hillside @ mainly steep S dip

- ~160-180m W across large slide & talus slope

~650m ~ ~50-60mV
above str. opposite
toe of glacier

- med. to dark green
chl. highly fractured
(near steep fault?)
mas. alt (~3-4% diss.)
rk KQ-87-114

- ~70-80m W along
base of cliff
same dark grn.
chl. sh. alt. rk
(~3-4% py + po)
@ local cp 114A
- rk. is essentially a
chl. (py) schist

- ~70-80m along
base of cliff
630m 114B same grn.
rk (~30m
before rk fall deposit)
cliff is unstable

~80-90m W - 40m past rock fall A1
~57°/75° good dip
dir. on one
prominent fault
surface same chl.
grn py alt. rk
- fresh broken pieces
from cliff minor
arsenop. xtls @ py
- ~20m farther W
114C - typical same
chl grn alt py rk.
- ~10m W minor cp
assoc. small qz stringer

- ~15m W 114D?
same rk @ cal? stringer
~2-3% py & ½% cp
- o/c ~3-5% gashy
white cal? veins

- ~100m W 114E - 585m
~5m above lake at
pt. of o/c into lake
same grn py chl. alt. rk.

- but frags on some surfaces suggest that this is a vol. br. (bas. or and.?)
- ~10m W at lake outlet cp in veins

- ~150m through aldens & across boulders to sta.

① R7-46 - 586m
- boulder pile base of talus
- ~50-60N of end of lake & ~25m v. above lake level
- some very py alt. rks coming down talus slope

- camp elev. 1359m

Summary

1) Most of the rock along the lower N side of the Sulphurets Glacier are chl. green & altered to an extent that the original rock types are uncertain. Rocks tend to be serc.-chl. tps. In other areas they might be chloritic schists but here the foliation is not well developed.
2) Chalcopyrite, where present, tends to relatively local & mostly very low-grade (≤0.2%). It tends to be assoc. w/ white calcite (± qz?) veinlets
3) Area with dark graphitic seds. may be near a fault. Why they are not altered is difficult to explain.

Northwest of Brucejack Lake

Sunny but heavy fog a.m. Sat. Aug. 8/87

- afternoon traverse too foggy in morning

- ~70-80m N of bridge 1st bench on Gossan Hill

1422m - all high Fe stained v. pale qz - serc.-py schist 070°/85°N fair on foliation

- ~3-4%? qz veinlets
- qz veinlets have been dismembered + boudinaged along foliation

Some ~10 - 30cm qz veins

- ~15m NW

KQ-87-115A typical of pale qz-serc.-py schist

- ~100m W - pt. of o/c into snow off of steep Gossan Hill 1428m
- numerous (~15-25% cross-cutting qz veinlets
- some drusy - pale serc.-py-sil. matrix

115B - could be extension of West Zone

- no trenches
- ~50m NNW ~2-3m f.g. EW pl. - hb. porph dyke cuts alt.

- went to NNW generally along possible trend of West Zone - scattered sl. offset rusty qz veined (10-20%) o/c's along trend but perhaps discontinuous?
- passed sample site 160
- ~150m NNW

~1430m just S of NE lin.

KQ-87-115C typical of pale alt. py (2-4%) rk cut by numerous qz veins ~070°/steep dominant set

- ie. cross veins

- ~20m NNW across draw 115D - qz veins (~5-10%) qz-py-serc. schist

- 170°/53° W poor on one of at least 2 fol. serc-py and. tuff-br. @ elongate lithic + py "clasts"

- sed. component to br. because graphitic + grey to N - fault zone?

- ~30m NNW near top of hill 115E - same pale grey qz-serc-py (4-5%) schist cut by ~10-15% qz veins

- ~50m NNW - same rk 115F - cut by ~15-20% qz stringer - max width of zone ~6-8m.

- ~100E of Brucej. Lin.

- grungy serc. schist (sed or vol.?) to W + then mas. med. green f.g. rel. uniform pl.-hb. porph. to E KO-87-116

~50m ENE - may cut alt. rks.

1482m 125°/72° NW - fair on foliated uniform med. to dark grn. hb and? - top of hill

~100m? NE

- scattered ~SE/NW rusty zones in area

- ~5-10 m wide qz-veined (10-15%) qz-serc. py schist zone KO-87-117A

- ~30m ENE 117B grungy buff sl. schistose and. tuff-br. dark small + med. sized (10cm) elongate frags (top of hill)

~70-80m NE ~40m W of lake 048°/72° NW fair on [illegible] dev. schist [illegible]

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~5mN part of >10m wide
pale qz-serc.-py schist
zone @ ~10+% dismembe.
qz veins (leached out)
KQ-87-118

- c.g. and. br. around
N & E side of lake
dark frags 30-40cm
& smaller frags
- locally graphitic (sed.
component?) near fault
~70-80m ENE of
lake KQ-87-119
typical of serc.
fol. med. grey and br.

- ~10m NE photo mas.
pale grn.-grey sl.
fol. and. breccia @
irregular dark frags
(bombs?) KQ-87-119A
~1-3% weath (oxid. coating)
py cubes
& pale green platy xtls
after pyrox???

~40-50m NE
~102°/55°N fair on
foliation as approach lin.
~100m NNW up lin.
same grn and br. 119B

- then ~150 ~180m SW
to top of high knob
N. of small lake - 1st
grn. then purple feld. phyric
then c.c.g. (50cm angular
blocks)
1550m top of knob
& then f. green and br. 119C
~30mW typical
130°/83°SW fair on
fol. in qz-serc-p
schist zone
~5m wide (faulted?)

⊙ R7-47 - 1550m
- SE end of lake
- very prominent
"dark clast" and br.

- ~180mW along lake
all v. well dev. chl.
alt. grn "dark clast" and br

KQ-87-120
- scattered .5 cm
py cubes (locally?)

Sample site 160 W of lin

- ~60 m W of Brucej. lin.
~15 m+? SW trend? zone
pale grey
of qz-serc-py
schist broken
dismembler qz veins
KQ-87-121
~1986? blasted pit
- and. chl grn alt ~~bu~~ of
local qz-vn-serc.
Schist zone
many Cate~~ar~~ blasted
trenches ~100 m W

One of Ed "old" Heka electrum localities

SW most trenches
above dirty snow
~20-40 cm? + qz vein
system @ high
gr ruby silver tetra
gn + sp KQ-87-121A

* Very well mineralized vein
057°/steep SE
~70 m from NW lin
grn and br.

~70 m SW just before lin str.
107°/75° N poor
on bedding
clv ss. + siltst or epiclastic?
~100 SSE

047°/71° NW poor
on bedding in
c. gr buff S.S.
@ lime concretions
- some pebble + grit
layers - same
units as to south

camp elev. 1417 m

Summary

1) West Zone-type quartz stringers
may continue in lenses +
faulted zones along the

West side of Crossan Hill but no signs of Ag minerals & zones have not been trenched Possibly blasting might locate some Ag minerals but each lense & zone would probably not be as large or continuous as the West Zone. Some interdigitating @ dark sed. along small faults? Area warrants more careful geology.

2) To north much of area is underlain by weakly altered & foliated, chl. (ser.) green andesite breccia (much "dark clast" along E side) with faulted qz-ser-py schist zones with dismembered quartz veins

3) Pale qz-ser-py ± qz vein zones are probably stronger W of Brucejack Lk. - but not in sedimentary rocks.

Upper North Side Mitchell Glacier

Sunny, cool — Sun. Aug. 9/87

- started near OR6-4 2015m
- mottled maroon & green vol. br. (photo green br. & why. overlying 100 m-thick maroon lap. tuff (& red brick)
- W of Fault ~20m S of snow KQ-87-122 typical of massive cliff forming lapilli tuff — ~70m? down in unit — v. uniform
- unit might be >100m thick (~120-130m??)

- lower 10-20m are coarser @ br. frags to 10cm - ~1½m grn br. at base
135°/50°NE fair on sheared bedded brick red tuffs (~5m thick) near fault

- must stay in fault draw to get down cliff but rocks somewhat sheared near fault
- ~5m grangy sh, maroon-grey br.
- ~20m of pale weath. pale green med to dark grey poorly bedded?? 122A what?
~25m W of draw 173°/vert fair on poss. axial clv.
- ~30-35m of rusty weathering coarsely bedded mas. f.g. med. & dark grey S.S. (minor siltst.)
minor sec. py
@ large lime concretions & scattered pelecypods

122B - fossils from local talus
- ~1850m
109°/27°N poor on poss. bedding in mas. S.S. ~100m W of main draw
168°/75°W fair on spaced cleavage
- then ~10m coarse rusty weath py green and br. @ limy matrix near top
- large (10-20+cm) angular frags.
- local faults disrupt stratigraphy
- ~10m brick red br.
- ~15-20m maroon-grey bedded "tuffs" & br.
1823m 073°/50°N good on bedding
- some 10-20cm graded br. beds
- lower 10m rel. mab. lap. tuf.

~60m lower
076°/38° fair on
bedded deep maroon
red tuffs
mar. - red tuff - lap tuff unit
- unit ~30m thick
122D ~½ way in unit
- ~3m coarse grn.
and. br. (w) angular
blocks to ~40-50cm
- then 25m thick
cliff-forming maroon
grey pl phyric mas.
andesite
1738m 122E - ~⅔ way down
- then ~20m green and.
(cliff former) &
+30m maroon pl. phyric
and. br.
~10m wide (NNS) rusty sl. py chl. schist
1648m zone below snowpatch
- some local faults disrupt strati.
OR7-48
- 1600m base main continuous
~150m+ cliff o/c
v. above ice 122F - coarse fol.
pl. phyric and. br.

(w) large (up to 50cm)
elongate pl. phyric grey
frags set in maroon-grey
pl. phyric matrix
- unit is probably at least
30m thick.
- grn & maroon and. & and
br. to W along slope.
~100m W along slope below cliffs
116°/62°N fair to
poor on sl. faulted
maroon-grey
bedded tuff
- mas. & br. and.
across slope pl. phyric
& mostly maroon-grey
~1530m in small stream
345°/65° good dip.
255° dir. of bedding
on contorted maroon
& green tuffs
- photo outsized
pale grey and. pl. porph.
clast (40-50cm) in maroon & g.

tuffs
- ~50m WSW across slope KQ-87-123
- sl. fol. maroon pl. phyric? lap. "tuff"

- side hilled to W
  - can see bedded maroon tuffs (W) outsized clasts abv.

~200m W
1490m ≈086°/40°N poor on mas. bedded grey s.s. + siltst
1490 m - towards top of large talus slope + str.

~20-30m thick unit pale or rhy. tuffs?
~100m W mas white weath. tuffs? or S.S.?
082°/30°N fair on bedding
~20m W KQ-87-124

~100m W 1350m pale
~70-80m above ice
~70-80m wide? qz-serc-py schist zone KQ-87-125

- after pl. phyric and?

- ~100m SSW to small med. green o/c's along ice 1230m
~170-180m E of Lin.
- med. grn-grey f.g. sheared pl.-hb porph? KQ-86-126
- ~20-30 mas. med. green featureless o/c then cover for ~150m W to Brucejack Lin Cr.

⊙R7-49-1212m
- at lineament cutice
- cover for ~10m then pale sericitic gouge
- ~60m W of lin
KQ-87-127
typical pale qz-serc-py schist & minor 1-5% qz veins
~1m W of 127
~2-15cm wide qz vein
127A (W) py gn sp + rhy min?

0.020 Au
4.37 Ag

164°/82°W good on vein over ~1½m 2 other small veins same alt.
Newhawk Assay RK-87-7
- individual vein too small to be of economic interest.
- ~3m W another anastomosing set of 2-15cm qz-carb. veins @ py & Ag (grey) min

0.010 Au
0.68 Ag

127B - Newhawk Assay RK-87-8

- ~25m W typical pale qz-serc-py
127C (7-10%?) host rock
or py?? qz veins?
- very intensely alt.

- ~5m W - centered on ~2m wide qz pod branch ~2-5cm qz veins over ~4-5m @ minor py sp gn greymin etc. 127D

0.011 Au
1.64 Ag

Newhawk Assay RK87-9

- ~30m W 127E
same pale qz-serc-py schist - end of 1st o/c at ice
- ~40m cover to W
- mas. rel. uniform intensely alt pale serc-py (10%?) rk
KQ-87-128 1200

v. few qz-carb veins
128A - ~50m W end of o/c at ice
- same mas. pale serc.
- py intensely alt rk. - might be after and. bn??

- ~120-130m cover

- mas. py (5%) grey sil. alt rk 129
start of pt. of o/c in ice
1187m

~60-70mSW to pt of o/c in ice Sta

⊙R7-50 -

- pt. of o/c in ice ~100mE of main stream

KQ-87-129A is typical pale grey v. hard, sil.? pc 5-6% alt. vk vol. ??

not many veins in area

- some suggestion of dark chl. clasts @ py concentrat.

- ~50mW - 129B can see local areas of med. green alt. chl. Premier-type porph @ scattered large Wh. K-spar phenos

- ~2-3% py?

- Camp elev. 1379m

Summary

1) 1986 geology of this ridge is wrong for the following reasons: a) Dark fos. sedimentary rocks do occur within the volcanic sequence; b) low-angle faults with major offsets do not cut the sequence as exposed in the cliffs; c) cliff-forming units include 2 maroon lapilli tuff & tuff units with white weathering rhyolite above upper unit and rusty weathering fos. S.S. above lower unit; and d) one significant normal fault can explain the distribution of units.

2) Alteration & pyritic pale quartz-sericite-pyrite schist zones occur locally (along faults?) to the E of the Brucejack Lineament

3) Low in the volcanic sequence are probably more immature grey mas. sandstone & siltstone units & possibly another "cherty" well bedded pale green rhyolite tuff unit?? Some of this stratigraphy has some similarities to the rocks along the South Treaty Glacier.

4) The Brucejack Lineament

is probably marked by a major gouge zone as shown by the first o/c's to the W. West of the lineament rocks are extremely altered pale quartz-sericite-pyrite schists.

5) The the silver mineralization in quartz-carbonate veins (~NS) west of the lineament could be significant, even though individual veins are small. The veins occur over a significant width (30+m??). Only if Ag+Au values are high, should the area be explored closely.

KQ-87-130 - miscellaneous specimens off Newhawk dump - primarily showing various vein relationships