

896427

1986 FIELD NOTES



WATERPROOF
WF 7 FIELD

R. D. PENHALL LTD.
CANADA

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* see files for xerox copy
of notes & reports + maps
to accompany notes

86/08/26

Nickel Plate Mine

Sills (w/190Ma) cut up the Nicola Lemy
siltstones

- as Telluride skarn

- ore at outer skarn boundary

- 7 MTons @ 0.15oz Au open pit

- 1.5 Mounces produced so far -

- mine started 1902, Mill @ Hedley

- Gold in sulphides u. with arsenopyrite

- Skarn prograde. Fe pyrox garnet
retrograde Trem cal gbt
some scarp. axenite

gold + Tellurides together

- sulphides mainly open space filling

- ore with retrograde phase

Milling

Crush 80% - 400 mesh / cyanide

Sill margins / dyke - sill jns

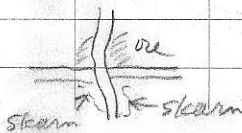
- sills often skarned / some mineral

- mined 2500' down dep from surface
- fold axis control also
- skarn + ore with sills - lithologic control but gold structurally controlled
- need outer edge of skarn + structural complication to make ore
- retrograde tremolite
- ore presens pyrrho cpy (some gersdorffite) (Ni sulpharsenide)
ratios vary
- CO can be 1/3% but spotty
- Ballday - some electron

TORONTO STRIKE - sills emanate from it

- compon the same

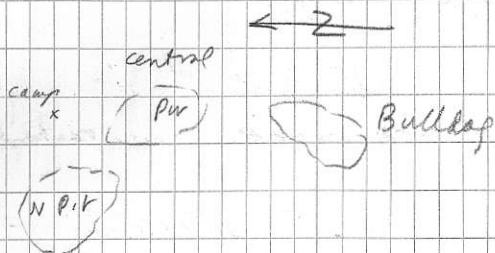
Dykes + sills synchronous although some dykes cut sills



Sunnyside 450 zone
avg grade was 0.9oz

2

one solus / skarning post sills but may be related to the igneous event.



- 2700 TPD planned / cutoff .0502

- Mine area - sills bleached.

by diopside replacement + Ksp

- trem-actinolite replaces garnet + pyroxene

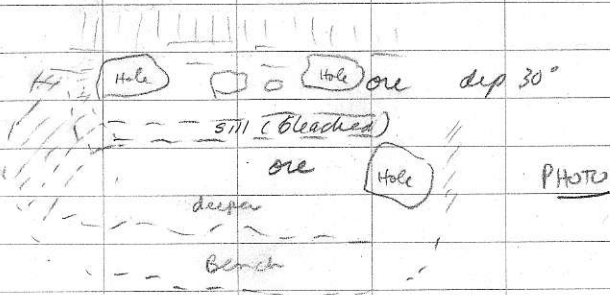
- Bulldog c9 pyrox calcite pyrrho ± arseno
- grades ~ 202 Au

Question relationship of carbonate + sulphide to gold? None apparent

Will gold be there? Depends on where you are - in Nickel Plate, arseno = gold elsewhere, no

- look for retrograde minerals

- Wallrock - dk pg limy argillite
- Silver - related to copper more than gold - rel. low
- Co, Bi are closely related to gold - also As, Te?
- very minor Hg, Sb
- Depth Temp. 400°C prograde
prob. a few km - mesothermal
- are .15 Ag ~ .05 Pb: Ratio high



old Glory Hole - will be in the
new open pit

one was followed down dip - 2500'
 max width - 300' width 100 - 150'
 zone with several sills + one
 zones within it

Nickel Plate 1.0 million
 others 0.5 million

Nickel Plate Fraction 0.5 million

Total 2 million

Bruce well
 tend to be
 grossularite

grossular-
 andradite
 series

Glory Hole - skarn chert / pink garnet / bleached
 rock, coarse calcite pods (should have
 excellent fluid inclusions)

- IF someone collects + documents samples -
 Bancroft would be willing to look at the
 inclusions

- Garnets - strained (birefringent)

Washington State

Ungast (with Meinert)

Bull Dog Adit

grade ~ 0.202 - measure

arsenopy^{cr}!! essentially at
the marble line

Seds above ^{below} have slight
calc silicate alter

20-25' thick / 150' wide

500' down dip

- m/s as lenses

- overall 0.202

Upward → pyrox skarn

altered volcaniclastic?

locally dk gray ls → white marble

A cut by pyrox veinlets

→ diopside-wollastonite skarn

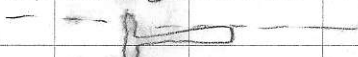
local sphal pyroxenite tetrahedrite

(electrum with sph/sphal)

younger?

photo

m/s



calc. CR

samples 86-1 to 3

process

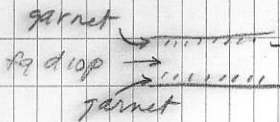
1st decarbonized

creates more porous pyrox skarn

SUNNYSIDE 250

Coarser beds run well - c_q drop/cal sulphide

Contact skarn (bedding skarn)



CO₂ removed / fluid allows rx with adp. rock

Compos. change minimal
- mainly reflects original composition

ENDO SKARN - in diatitic intrusives

EXO " - in CR

LUNCH

Mascot gas cutie from Buxton Investments
- they have ~5% MPI

Capital cost ~\$75M CIBC

→ A Portal / Nickel Plate Deposit

TOP OF DICKSON DECLINE

Goes 1500' down - ore

Beds all above it

Thrust is below no longer

where Gerry has mapped - a 'thrust?'
 has sand above a upper package
 tuffs below.

Bath sample spot - A level ^{All} ~~at~~ Drift

Ferrous bit garnet calcite skarn -
 dissemin arsenic

garnet 'veins', masses, layers

Ran ~ 0.1502

'Red' Horizon in old mine usage

[they color coded beds

w purple red orange yellow]

sample 86-4

Beyond stop 1-4

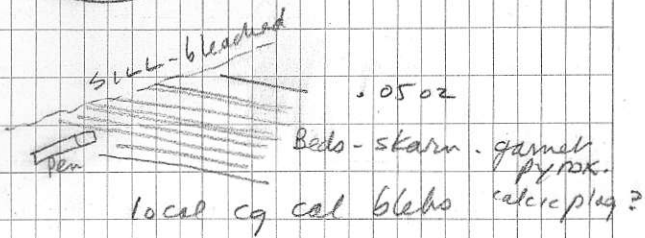
Bleached endoskarn dyke

Dropside / icspan (new)

next stop: stop A04

skarned sed cut by andoskarned
sill @ low of to beds

2 photos



GENERAL

* local oxinite (glory hole)

magnetite - several ages BUT not
prominent - in sulphide zones

— END OF TOUR —

NI CO BI good pathfinders

Sequence

↑ more & more volcanic rx
Seds

86108/27

Bralorne

~ 1 MT @ 250z (150,000 of -45)
8th level is level we will visit
(main working level)

Cadwallader fault system
seap bonded flt couple

- Diorite 250 Ma Pyrox Hb (alkaliodiortite)
intrudes Ferguson Fm, Bridge R
Gp - ribbon cherts

- Greenstone in between the two flts
are TR?

Cashed 1500 m long 1500 m deep

Undergrad 857 vein - main producer

Production 4.15 million oz from 8 MT of ore
(1900-1971) (avg .546z)

sulphide in vein
1-3% py / arsenic

vein is ribboned

Deep plumbing system

Nwd - shallower

Carbonate in vein - some

alt. is carbonate in CIR

Gold - streaks, u. w. pyrite (in halos

of gray gtz around pyrite)

mainly in HW?

veins - on echelons gash Fractures

Gold is locally in Hg shoots

'Bonanza' ore was more common in
the Pioneer system.

Purpose - to map 925/15W to put mentz
in regional setting.

Paleozoic cherts/graphitic

Triassic pillow lavas - Pioneer

↓ argillites } Harley
 ↓
 volcanics }

Underground - will visit

- 57 vein
- 812 vein (A11Hambra)

Veins have carbonate alter halos -
fuchsite (from serpentinite)

Diorite → 'paper schist' → carbonate
alter → vein.

812 vein

stakes 070 here

ribbon gtz

rusty wtrg

vein narrow / alter narrow

Host rock Diorite

Early ~~carbonate~~ gtz - epid -
pre-hydrothermal veinings
pre-ore?

Diorite texture highly variable - lots
of assimilated Pioneer gneiss

veins - ribboned sulphide big
sulphides in the ribbons
arrows mainly

ankerite carb alt adjacent

sulphide also occurs in
CR adjac. to vein

carb alt. - hb → buff ∴
are near a vein

51 Vein

Rebboned gtz with strong
carbonate alt. halo (photo 20)

Bx fd zone in vein (photo 21)

Further along - rebboned gtz vein

(photo 22)

CR still diorite

zircon in process

albite No granite diorite (K/A)
intra/post vein gran hb /
peg dyke (90 Ma) (nearby 210)

albite - pre-mineral but
associated?

vein - ribboned thickened inside
+ CR also

- nearby - albite dyke (sub-parallel to vein) - pre-mineral
- here is ~2m wide

There are late ~~quartz~~ white to black
carbonate veins (calcite)

BENDOR PLUTON 50-55 Ma

The sampled vein is at the edge of the
albite + in the albite

ELSEWHERE IN AREA

Scheelite in veins - different part of
the system.

No change in grade / mineralogy / actn
with depth

Diorite - qtz ~ 10%

Hb → chl / carb (causes buff color)

Buff carbonate

↓
qtz carb white mica arsenic py
vein

- shearing may or may not be present with veins
- fuchsite - with chromite from ultramafic(?)
- plagioclase - albite
albitization may occur but is tricky to recognize
- carbonate zone - feldspar destruction
- albite in decussate may reflect the regional greenschist metamorphism

DRILL CORE - Normines Pacific Eastern Prop
Ferguson - graphitic metachert
folia may also be chloritic
or bio + garnet in higher grade rocks

- where strained, gets pulled apart,
then to pebble box

- Bounding Faults
Cudwallader / Ferguson

- cut by Wb plagiopy

President ultramafic - marks
base of Ferguson Fault

Motherlode - Penderosa slate localizes
strain - ^(parallel) related to serpentine

Congress

↓ vein
kaol/hallogskel/ser
carbonate
crackled zones - amorphous carbon in
fresh rock

Properties outside Borlome Belt
gold is generally related to
ppm dykes
try Rb/Sr ?

R/Hurley - has Bridge River
clasts

Cret. Taylor

Bridge R + Hurley
also rhyolite

PIONEER MINE

serpentinite just to the north
on the road

— Highway stop 1 —

Old Diabase cut by soda
(Bralorne intrusion)
granite

contact bxt'd with many
veins of soda granite

soda granite has Harley
Pioneer greenstone in both
diabase and soda granite
(remember the Qtz ^{epidote carbonate} ~~veinlets~~
undergr'd at Bralorne)

soda granite

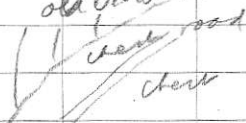
Qtz albite ch after Hb

(photo 26)

STOP 2 -

Ferguson Chert

old road



Base of R - pillows over chert -

Contact u. sheared

Pillow lava probably Pioneer

Heavily sheared

cut by westerly shears with
up to .2502 an in shears cutting
the pillow lavas

- assoc carbonate alter

sample 86-5

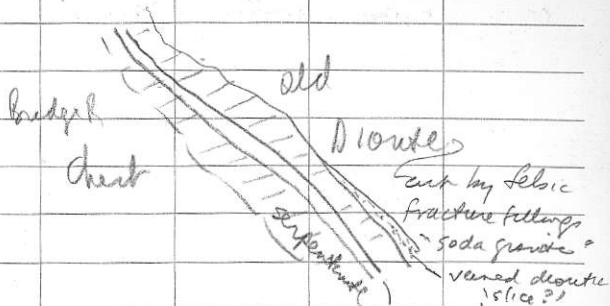
chl w/c	carb. volc.	K F B	sulph + ser gr	Qtz stib. Co ₂	ser sulph ser + gr	carbonatized rock	chl lava

graphitic
fuge

HOWARD VEIN

- Lunch -

STOP



ascending
to BMC

Old Diabase intrudes chert
 serpentinized intrudes contact
 (follows semi-circular contact)
 and then serp. intruded by Tert. dike

STOP

Noel/Hurley argillites and
 Hurley volcanics
 gtz & epid amygdules

STOP

Black argillite - over lavas

STOP

conglomerate - above arg -
 1st chert

Ferguson & Triassic
 Rushmore - all fossils Carman / Norian
 from this type of rock

R. D. ... ALL ... AMONG IN ... DUKESAK WATERPROOF

strip Sandy \rightarrow pebbly sediment - beds
0.2 to 1 m shown by pebble trains

86/08/28

Black Dome Deposit

The office is at the mine

Epithermal / Eocene Rocks

Veins ■ NE strike / steep

vein 1 Dip $50-60^\circ$ NW

" 2 Dip $60-65^\circ$ NW

Other veins ill-explored, steep eastward

Basalt + Silver in Eocene rx but there
is a post-ore basalt & cap on
Black Dome mtn

Basalt section

~ 300 m upper andesite [dax → and]
[includes the 'daxite dome']

75m → Rhyolite (flows, tuffs); local and flows
pinches to the north

Lower Andesite

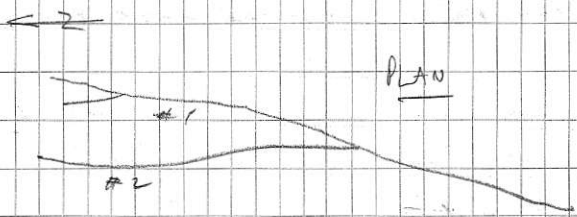
Eocene package ~ 1500 m total thickness
(check →)

Flat-lying 20° or less dips

NE fcs - dip slip $\sim 25m$ (10-35m)
possible strike slip (not sure)

X fcs - displaces S block down $\sim 35m$.

Close to centre but not identified



mill

tail
pond

camp

And dykes
cut & altered
by ore

#1 + 2 veins

Andinite also occurs as dykes - tricky to distinguish.

Ore system

top-2200m - bottom $\sim 1850m$

ore mostly dies out $\sim 1930m$

actn off
veins narrower

Long. section, #1 vein

ORE Qtz veins stockwiles, shoots, pods
along fault

1 1/2 - 3 m wide shoots

12 → 60 m (avg 25 m) strike length

75 - 80 (or 90) m down dip

no preferred plunge seen

Dufts @ 1920 + 1960 m elevations
(no ore grade to date)

ORE gold, ^{silver}~~silver~~, electrum, pyrite
- silver selenium sulphide
- silver selenide

(univ. of Alta student - microprobe)

Accessory: cpy cct galena (minor sphal)

NO zoning recognized yet

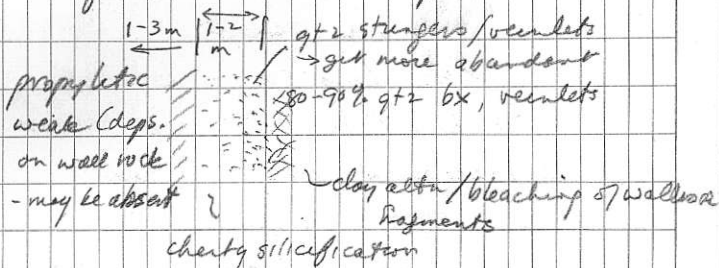
Reported - tetrahedrite / etc

Ag₂ (Se, S)
naum

Ag₂ Se 13
ag

Pyrite in veins + wall rocks
Cpy in veins, 'random'

Altn silicification most important



clay - illite, montmorillonite, kaolinite

Qtz vein stockworks - narrow to 2 m

Phylites have botryoidal qtz spheres, often with hollow cores - follow bedding - spherules - textures vary (pisolites?)

Barren Ps - identified by student [Ecelstan] - in CR.

No sulphates recognized

Qtz veins - fairly large cavities; lots of wrg to a fair depth

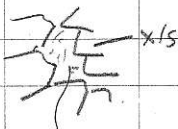
often filled with rock clasts or mud.
- No rhythmic banding

Gold

cg x15 - no good

sugary gtz - have mineralog

Gold + silver in silicified bgs also



sugary gtz + gold & black mineral
(arsenides?)

Homog 275°C low salinity (almost nil)
-315°C 0.7-2.0 wt % NaCl
low CO₂ system
oxygen isotopes - meteoric water
80¹⁸O .15 - 1.78

dore bars ~30-75% silver

Heads running ~0.7 oz

Au / Ag ratio 1 / ~4 variable

Daily Tonnage 130 - 150 tons / day

Recoveries low 90's Au
" 80's Ag

Mill - mainly gravity - no cyanide needed

STOP 1

#1 vein trench strike 040°

ore green ^{line} vein = orange

STOP 2 #1 vein

Reschen missed it due to fill

values ~ 88 gm/ton 20 m long

~ 5 m wide

General grade of veinings + siliceous

Ore anom in As Sb

Pb Zn Cu

CR - prochlorite rhyolite

ore zone - ~~clay~~ clay actn / silice +
gfz stockwork, limonite actn

FW rhy

HW upper andesite

— hand —

Underground Tour

South portal 1960 level

Vein hosted by rhyolite here

Portal - pisolitic rhyolite

3 Sublevel stop shoot
averages > 50 gm/tonne
over 124' strike length

sheared by ore shoot. Silic Bxt'd

CR did not run

cq grt xls had gold in

'wires' in xl terminations

Along drift

RW has gl, bx & vases

from flow banded vhy to

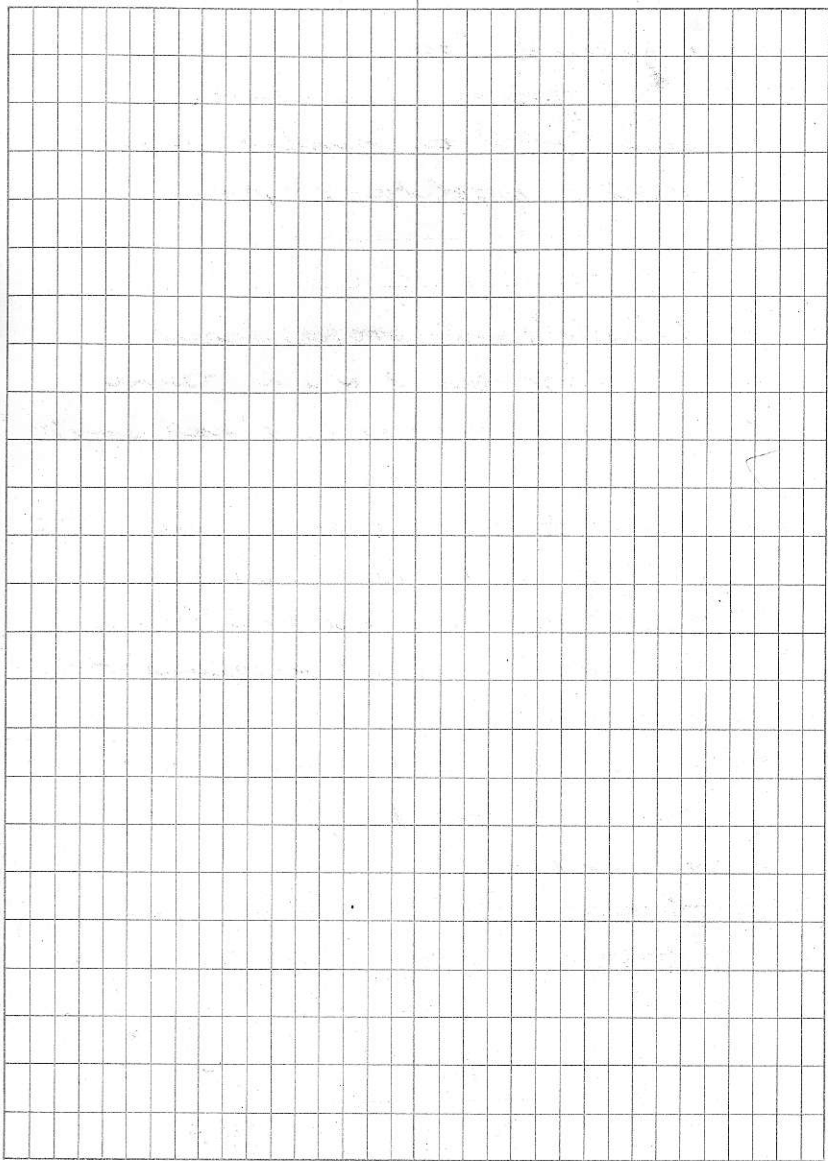
lap tuff w. altered clasts

silicification decreases quickly

away from the vein

Lap Tuff is base of

rhyolite unit



86/09/29
29/08/86

Mosquito Creek Cold Mine

Richard Hall

new extension of Island Mtn Mine
(to SW is Carbon Cold Qtz)

- Hecla has dropped their option
underground development
drift on the 1st or two levels
to find x tons of ore / linear foot
of drift

Osium 1965-67 mined 80%₂₀

replacement ore avg 0.66 oz Au - 6 tons/ft
+ 2 tons/ft of development drilling
THEY GOT A FAME GRANT

Mosquito Ck - Richard tried to remap
the mine

Lots of drilling / developed on 4 levels
Trying to develop a stratig. picture

- can only look at the 1st + 2nd levels
first

- Mainly replacement ore will be seen

- Qtz (rem) ore not important at Mosq. Ck

Otr veins - cosalite with gold
(Bi sulphide)

also 140 Ma cluster — K/Ar sericite in
if good - molyb post - dates ^{several mines}

Richard relates molyb to transcurrent
movement on Willow Creek fault
- started ~ 140 → through Cretaceous?

ore samples - gtz / py / gold
- gtz / cosalite / gold

Flat faults - important - subparallel
and controls death of limestone

- plunge - down axis of ore

- ore bodies folded, faulted &
cleaved & retilled

- lensation formed due to movement on
Willow Creek fault?

Flat fss with variable orientations due
to rotation? (Bruce)

Isoclinal folding early - but
there are several generations of
cleavage - later lineation
has marked stretching. - ore zones
parallel to stretch line - therefore
pipe-like ore is due to stretching
deformation (shear involved also?)
- Qtz veins also deformed - but differently.

old fold axes were also likely
rotated into the last stretch

Barkerville + Cariboo terranes separ-
ated by the Pundata Thrust = see notes

Qtz veins - high angle and conformable

Richard has no surface geol. info
- where is it? _____

PORTAL

qtz - chl - carbonate nodules (calcite)

thinly bedded, gen. sst size

→ talc dol py rock with

qtz carb py stringers

runs 1000 pp billion cu often

— VERY IMPORTANT MAPPING UNIT —

Derived from TUFF?

[Caen appears to add Dolomite]

Start in core of syncline - upper stratig

on 1st level - main 1st

Partial sheared limy bands (sh parting)

① on main band 1st

qtz ven folded with axes parallel to the strong lineation

rocks calc / talcose schistose

qtz has py & bull qtz

② Crosscut - Tuga stripe

Thinly bedded dol gypite

— phylitic —

(3) Back in the main unit - the
'1st' [Schist] has ~~to~~ light gray +
dark gray zones can to a meter +
wide - cut by late un deformed
qtz veins

(photo) Fold axes of older
qtz veins are || to line

Pale, talcose zones are pyritic
- do not see much in gold

'1st' unit generally pyritic
+ anore in gold

Folds + folds folding folds

(4) Photo of refolded silic list
finely layered graphitic /
limonite / qtzose
dol talc pyrite

tan colored in core

dol porphyroblasts

talc parting

otherwise
qtzite

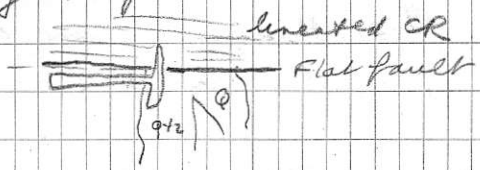
Rock type varies OR?

alt. variations

In cross cut - orange w/ g thin
banding / talcose cleavage / limy
layers 'Quartzite'

- Qtz veins have spindly dol with
ankerite

(5) photo of Qtz vein cut off by
a flat fault

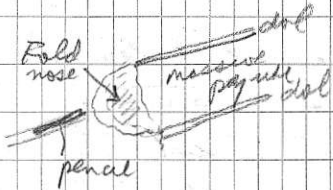


Qtz veins several trends / large pyrite
masses

then replacement ore (photo)

(6)

(photo)



Some Qtz dol veins have black
pods + fringes (graphite? chl?)

Some massive py zones are
at high & to schistosity also

⑦ crosscut - green, orange w/rog
tuff (?) that we saw near
the portal
(KEY MAP UNIT)
cut off by a flat fault

⑧ Slope - cy replacement
ore - finer grain = better
grade
cut by late gtz

ore - py spindly dol gtz

- next X cut - mg white '1st'
layer outlines crumple folds

Vens at high & to lower / folia
cut ore but some (calc)
are cleaved

- can follow 1st layer into
replacement ore

Conclude - most veins are post
pre- or syn- ~~vein~~
clearance formation

- some of the quartz veins have selvages
+ pockets of sericite

2 Level / 2G slope

⑨ gtz py gal sphal - arseno
in vein core
some arseno in CR as
stringers

CR has lots of pyrite also
sulphides as blebs + stringers

• Veins pinch + swell rapidly

⑩ Large gtz vein - sulphides have
fracture contl + also occur as
blebs - margins often sheared
sulphides mainly pyrite here
black chlo-rite along edge locally

(photo)

- (11) photo: stamper ore -
cut by gtz vein -
'getting close'
Flooded by flat flt
then white let layers
some vfg good ore
lenses (sample)
Dol at edges

Veins raggy & locally get cavities
in the replacement ore

- (12) Ore vein - folded & fractured
runs ~ 0.5oz over 8ft

Then to siltstone
marker unit - folded
but folds fold & cleavage
early
and bedding

(13) photo of folded siltstone
(looks like red chert
or quartzite)

(14) Down the drift the siltstone

is 'underlain' by mineralized
auriferous (339?) list

Red fuchsite above ore
in ~~the~~ above Auriferous list

(15) Rainbow quartz T blade

Old graphitic partings, quartz

pyrite porphyroblasts

qtz - swarms, folded

NOTE Hwy 9c - conglomerate with
clasts of qtz detrital chromite
(→ fuchsite) sst arg. - clasts
stretched, pervasive Fe dolomite
altm - should be mineralized at ppt
level in Au - explain target!

Similar to rx at Kerr address and
in Motherlode district

EQUITY SILVER MINE

Cu Ag Au

Tetrahedrite C_{17}

- sulphosalts

- v. key silvers

} complex

Waterline zone $2\frac{1}{2}$ MT approx

being stopped

Work force ~ 200

86/08/30

21

Deposits in tuff & bxt'd \equiv
Lower Cret ?

includes chert pebble cgl

Banded on W by Q Monz; on
east by gabbromonz complex

Ages Q Monz 60-61 Ma ^(K/Ar) pre-mineral
Qtz py \pm cpy \pm Mus, \pm sphal
caol / ser cgl

Gabbromonz - post - ore
local chloritiz
rel fresh, competent
~49 Ma (K/Ar)

a bit of py & uncommon cpy

seriate from Qtz - ser cgl
55 - 56 Ma

Dykes - all post mineral
Q Latite (QFP) ^{abit} / seriated, barren

45-50
Ma

Andesite - fairly fresh - P₃ pyrite

Trachyand - plagiopy
post-ore long tabular plagiophenos
from gabbro?
tracable back into gabbro

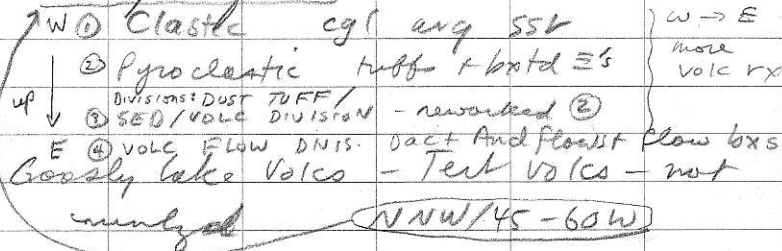
Dom. dyke trend N / 35-70°W
main zone N → NW / 80 → 65°W

metzld zone sl east of N / 45-75°W

but Waterline 75°W → 90 → 80°W
- rests against tongue of gabbro

Dykes remobilize ore at dyke
contacts but dykes virtually barren

Coarsely Sequence Host Rock -



S-N facies change - get coarser - dust →
ash + lap. tuff

STAIL ZONE

DUST TUFFS massive dense brittle

→ BX open space filling cgl matrix

↓ contact, gradational

MAIN ZONE

Fine, dissem matrix - less easily
cracked CR

* ④ pyritized + tour. alt so is linked
to 'older' ~~not~~ package

DEFMN ore not folded / cgl ^{pebbles} ~~not~~

not stretched

- prob. local filling

S Tail zone - fract unfld - subparallel
to trend of bedding in sed units

Altera - Aluminous

(A) S.TAIL ZONE

(1) QTZ SGR AND ZONE

change from dk gray gra → buff tan brown

(2) FW knife sharp → CHLORITE
MAGNETITE - ANDALUSITE

dk green

veinlets/stages/chl ± py ± cpy ± mag ± sphal

(3) HW Pyrite zone 60-70 m wide
tan color returned by veinlets
bx zones and py ± gtz

FRESH DUST TUFF IS DAC. → AND.

• some freibergite

(B) MAIN ZONE

Contact zone

20-90m } Andalusite sillimanite ~~corundum~~
HALO } pyrrhotite with pyrite megacrysts

- Corundum in main zone outside met.
(and leaching) halo

- Gabbro has remobilized sulphides
at its contact

Gabbro dips $50-70^\circ W$

Sulphide menzja mainly in matrix
of lap tuffs - disseminated but
veinlets invade frags + rim frags -
local dessem in fragments

Gabbro almost fresh / ^{has} chilled contact
Horafils developed

① Many may be source of menzja -
+ everything dips toward it

No. ^{age} of determinations of alpha minerals
2013

Deepest drill hole 1200'

Ascending hot hydrothermal fluids +
meteorite water involved in
menzja

source of sulphides - CR?

- Tour rosettes / gts - tour veins /
starts in art s zone, intensifies
NWward - best tour bx under
primary crusher
Tour + py, ~~main~~ tetrahed / cpy

- Scharzite - Bright Blue - most in ^{main zone} HW of deposit
much less in ore + FW

- Dumortierite - Lilac blue

- Coarsening of volcs to N may signal
a volc centre there

- marcassite - in upper levels over
the main + waterline zones

- sporadic, erratic

- more silvery / almost fibrous / softer
3 1/2 - 4

- local silicification in the main zone
usually with HG zones

tetrah + cpy occur in stumps in the ore

WOLFRAMITE - in MAIN ZONE in the ore

in well defined areas as dissemin grains
- some in pyrrho + pyrite

Sulfen + and - accompany alum. alt
that accom. min. Zn
is relatively high T

- argenite - grains
 - pyrrhotite
- rel. young

ORE ZONE FRACTURE CONTROLLED

INCLUSIONS OF ORE - BRA VOLC ARE
IN THE GABBRO -
not pyrrhotite!

→ TO CONVERT - need heat & remove
sulphur is need fluid flow.

Marcosite unstable $\geq 183^{\circ}\text{C}$ \Rightarrow Pyrite

Collapsed, LT overprint?

ALUMINOUS MINERALS MAINLY IN THE
MAIN ZONE

minor calcite & siderite (last stage of mineralizing event)

IN MAIN ZONE late carbonate veins that brecciate the host rock - with STIBNITE

Sam Woosly - UBC 1979 MSc

Theses - Jack Wetherall - geology ✓

- Paul Wodjak - altn.

- NO EPIDOTE VEINING

NOW DRILLING TO TEST N & S - some
odd things happen to the rock -
facies changes? NOT SURE OF THIS

TOURMALINE

Schorzoite / some dravite

S ZONE

mostly very erratic but zone
continuous

crackle zones → more intense → bx →
massive sulphides

4 SUB-ZONES - Hg zone 30° N plunge 350°

• South crackle or bx zone
pyrite cpy tetrah. arseno
abundance → ± 85

- Qtz 100% → 0%; mainly in matrix of bx

- Dips 50° W

Down dip - cpy > tetrahedrite, ag
 lower
 - zone narrows

- main south tail zone - up to 100m wide
 Tetrahed cpy py minor
 arseno, sphal
 45-50° W dip

NOTE Dtz Lateral meanders but strikes N
 + ~~is~~ cuts the ore (which goes NNE)

- East Dyke ore zone - remnant along H₂
 x a bit along F₂ of big dyke
 py arseno cpy tetrah gal
 sphal (no ag)

Tetrahedrite - ag up / ag down

- gold - within the arsenopyrite lattice
 probably
 $\sim 2\frac{1}{2}\% \text{ arseno} = 1 \text{ gm gold}$
 gold also in cpy + in with silver

MAIN ZONE

arseno down, gold up +
highest in Waterline zone -
small grains, with fengue or in cpy
as inclusions in tetrahedrite

S TAIL

- N zone - ^{found} abruptly shifts eastward
sheared + cracked dust fuff
py cpy tetrahedrite
40 - 45° N dip

GOLD RECOVERY now 40 - 50%

FLOAT CONCENTRATE

Tetrah cpy gal sphal

Fuchs → P. Rupert ^{than} → Japan

TOUR

- ① View point
- ② MAIN ZONE (muck pile)
- ③ S Tail zone (dykes)
↑
no muck visible

could look at Gabbro / sed rx
(West wall)

may eventually go underground

Per ~5½ years left

Prodn 10000 TPD

Waste 1/8 35000 TPD

Per Tour

stage 2 now started

ultimate bottom 1140 m

(1220 - 1245 now)

Benches 5 m with berm every 15 m

3 photos of mine plans

3 photos from overview of main zone pit



Gabbro - pockets of hydrothermal bristle
occur locally

STOP 1 - debris - not OK

STOP 2 - Dust → lap full mixed with
py / cpy ~ 100 or ag

Dyke - ser altered, plaz → kaolenite
QFP - pyritic

? Toot hydrothermal systems?

Qtr Pebble cgl - pyritic clasts

Vuggy andesite dyke? uncommon -
vugs partly infilled by pyrite

HG zone cut by blades of ppy dyke
(derived from the gabbro)

STOP 3 Selic pyroxite cpy pyrite
'porphyroblasts'

R. D. HALL
DUKESAK WATERPROOF
MADE IN

STOP 4 Q Lat Dyke split by and dyke

course w/c bx? egl?

Q Lat Dyke rel fresh (matrix looks almost aphytic) - pyrite diss + in fract

- Bladed ^{PPY} plaq dyke cut by carbonate -
specularite vein...

STOP 5 South Tail zone
back filling

Qtz late dykes have been found
cutting the gabbro.

Cardate dykes cut Q Latite
and gabbro - dykes massive to
plag pyritic.

Plag plate py dykes cut the gabbro

EQUITY

Galena sample

UTM coords

8460E

7675N

→ D Alluck 86/09/15