

Sam Goosly

35km SE Houston

Rep Geochem - ~~Geochem~~
62 Holes "

1972: ~~200~~

1978 Placer

dulling + surf prep

for prod -

Geology

cret rx? - oldest

/ further in Tert volcs

N15E / 45W Homocline

5' to 58 Ma, Gabbro 48 Ma

stratigraphy - covered
by altn - strong
faces changes

Minlyn X cuts

ore - massive
replacement
(of matrix)
Fr filling - S zone

Mainly in "Dust Tuft"

$\rho \pm \rho_{\text{pyrrho}}$
rel constant

Paragen.

↓
qtz - chl
m
arseno
cm - tetrah
sphal - gal
gypsum
carbonate

T ~ 400°C?
Single min ~~epid.~~ event

qtz - ser - tour
andalusite

Gabbro

mex → selen

zone

58 My after product

same as ϕ Monz stock

Therm. met minerals —

same age as Gabbro

⑧

Sam Hoosly Cq Cu Au Sb

2400 m along NNE bk

DIVISIONS

- clastic - cgl chert cgl
- ↓ - pyroclastic
best to ores
- sed/volc ~~str~~
- Volc flows - and ~~acidic~~

Text Andesites + basalts

Qm stock 55.8 Ma
syn-ore?

Gabbro monz - 48 Ma
post-ore?

Schorzalite, demortierite
main zone fq, dissemin
south zone - cq, veins

Toar zone in tW

Big Missouri 60 m .117 Au

EQUITY

John Kowalchuk
Sam Goosly

Main event - post

Goosly volcanics?

Mobilized by syenonites?
gabbro? @ 40 my
48?

country

EQUITY SILVER MINE

Cu Ag Au
Tetrahedrite sp } complex
- sulphosalts
- v. silvers

Waterline zone 2 1/2 mt approx
being stopped

Work force ~ 200

Deposits in tuff + bxt d ≡
Lower Cret ?
includes chert pebbles etc

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

Ages Q Monz 60-61 Ma ^(K/Ar) premineral
Qtz py ± cpy ± Mus ± sphal
scarl / ser altn

Caldero monz - post - ore
local chlonitgn
sil fresh, competent
~ 49 Ma (K/Ar)

a few of py + uncommon cpy

seriate from Qtz - ser altn
55 - 56 Ma

Dykes - all post mineral
Q Latita (OFP) ^{abit} seriated, barren

45-50 Ma Andesite - fairly fresh - P₃ pyrite

R. D. HENALL LTD. APPRO. IN CAN. DUCSBAK WATERPROOF

Trachyand - plug ppy
 long tabular plug phenos
 from gabbro?
 traceable back into gabbro

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

merg'd zone sl east of N/45-NW

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

Dykes remobilize ore at dyke
 contacts but dykes virtually barren

Grossly Sequence Host Rock -
 NW ① Clastic cgl avg 55% } W → E
 ② Pyroclastic tuff + bntd E's } more
 } vlc rx
 ③ SED/VOLC DIVISION - reworked ②
 ④ VOLC FLOW DNIS. DACT And flowst flow bxs
 Gossly lake Volcs - Tert Volcs - not
 merg'd NNW/45-60W

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

STAIL ZONE

DUST TUFFS massive dense brittle
 → BX open space filling cgl merg'd
 ↓ contact gradational

MAIN ZONE

Fine, dissem merg'd - less easily
 cracked CR

* ④ pyritized + tour. alt so is linked
 to 'older' rot package

DEEMN

Ore not folded / cgl ^{pebbles} not
 not stretched
 - no. local filling

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

DISHMAN WATERPROOF

Altn - 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/streaks of \pm py \pm cp \pm mag \pm sphal

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

FRESH DUST TUFF IS DAC. → AND.

• some freibergite

(B) MAIN ZONE

Contact zone

20-30 m \pm Andalusite sillimanite ~~concentrations~~
4410 } pyrrhotite with pyrite megacrysts

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

- Gabbro has remobilized sulphides
at its contact

Gabbro dips 50-70° W

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

Gabbro almost fresh / chilled contact
(hornfels developed)

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

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

Deepest drill hole 1200'

Ascending hot hydrothermal fluids +
meteoric water involved in
menzja

source of sulphides - CR?

- Tourmaline rosettes / gts - four veins / starts ~ at S zone, intensifies NWward - best tourmaline under primary crusher
 Tour + Py, minor tetrahed / cpy

- Scharzhite - 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

- Marcasite - 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 with it
 WOLFRAMITE - in MAIN ZONE in the ore in well defined areas as discrete grains - some in pyrrho + pyrite

Sulfen + And - accompany alum. alk that accom. molyb. 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 + need fluid flow.

Marcasite unstable $> 200^\circ\text{C}$ \Rightarrow Pyrite

Collapsed, LT overprint?

ALUMINOUS MINERALS MAINLY IN THE MAIN ZONE

minor calcite + siderite (last stage of mineralization) late carbonate veins that brecciate the host rock - with STIBNITE

DUSKIN WATERPROOF

Sam Goosky - 48C 1979 MS

Theses - Jack Wetherall - geology ✓
- Paul Wodjak - actn.

- No EPIDOTE VEINING

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

TOURMALINE

Schorzo ~~some~~ / some dravite

S ZONE

mainly very erratic but zone
continuous

crackles 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
lenses
- zone narrows

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

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

• East Dyke ore zone - remob along Hdz
& a bit along FW of big dyke
py arseno cpy tetrah gal
sphal (no ag)

Tetrahedrite - Ag up / Ag down

• gold - within the arsenopyrite lattice
probably
~ 2 1/2 % arseno = 1 gm gold
gold also in cpy & in with silver

R. D. ENHALL
DUNSBACK WATERPROOF

MAIN ZONE

arsens down, gold up +
highest in waterline zone -
small grains, both gangue or in cpy
as inclusions in tetrahedrite

S TAIL

- trend
• N zone - abruptly shifts eastward
sheared + cracked dust buff
py cpy tetrahedrite
40-45° N dip

GOLD RECOVERY now 40-50%

FLOAT CONCENTRATE

Tetrah cpy gal sphal
Fuchs → R. Rupert ^{than} → Japan

TOUR

- ① View point ② MAIN ZONE (muck pile) ③ S Tail zone (dykes)
no milga visible
could look at Gabbro / sand rx (west wall)

may eventually go underground

Per ~ 5 1/2 years left

Prodn 10000 TPD

waste 1/8 35000 TPD

RVR TOUR

stage 2 now started
ultimate bottom 1140 m
(1220 - 1245 now)

Bench 5 m with berm every 15 m

3 photos of mine plans

3 photos from overview of main zone pit



Gabros - patches of hydrothermal breccia
occur locally

STEP 1 - debris - not %

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

Dyke - ser altered, plaq → kaolinite
QFP - pyritic

? Toot hydrothermal systems?

Qtz Pebble cgl - pyritic clasts

Vuggy andesite dyke? uncommon -
vugs partly infilled by pyrite

HG zone cut by bladed to ppy dyke
(derived from the gabbro)

STOP 3 Silic pyroxite cpy pyrite
'porphyroblasts'

STOP 4 Qlat Dyke split by and dyke
coarse calc bit? cgl?

Qlat dyke rel fresh (matrix looks
almost aphytic) - pyrite diss + in fract

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

STOP 5 South Tail zone
backfilling

Qtz latite dykes have been found
cutting the gabbro.

Andesite dykes cut Qlatite
and gabbro - dykes massive to
plaq aphytic.

Plaq plate ppy dykes cut the gabbro

EQUITY

Greener sample

UTM coords

8460E

7675N

→ Dalluck 86/09/15

Toodoggone - Day Forster

Toodoggone \equiv Hazelton?

8-25° W \rightarrow NW dips

Abundant normal block faulting

Hb Plag Andesites

Upper Dacites - fragmental savably welding
sandung qtz phenos

- ash flows have amyg w qtz + fs that
xld from vapours

chem - Island arc volcs?

EQUITY

~~Reserve~~ Ore zone 015 / \approx 80° W

Dykes 48-50 Gabbro-monzonite complex
reset?

Ore - ser dust tuff 48, 58

Tour BX 58

Q Monz 56 60 62

STail zone - Tetrahedrite Tennantite (as)

cpy arseno(+au) py

Sulphides fract. contd

quartz, frags may be rounded

main zone - finer grained, more disseminated

actn - advanced argillic - Aluminous, Boron

Pyrophyllite schorschite Dumortierite tourmaline

- Fluid inclusions
Meteoritic waters
involved

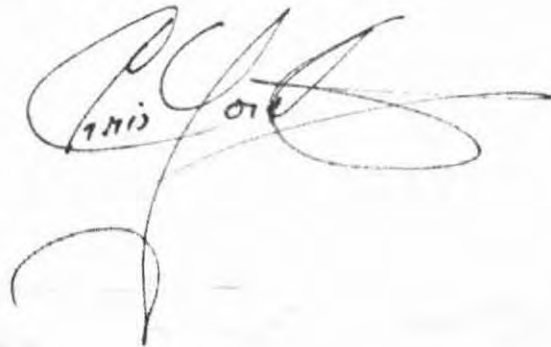
EQUITY

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1. Please take note of the paper cancellations listed on the sheet "Changes and modifications of the technical program" which is in your registration envelope.
2. Please note any additional cancellations announced at the opening session (Welcome and Opening Remarks - University Centre Auditorium, Wednesday, May 11, 0820) or during breakfast briefings preceding each day's sessions (0730 - Commons Dining Room).
3. Please inform your projectionists of any cancellations.
4. All speakers have been asked to load and preview their own slides in designated previewing rooms. Speakers have been instructed to hand the projectionists their loaded carousels at the beginning of each session.
5. Under no circumstances should you alter the scheduled times of presentations with respect to cancellations.
6. You are asked to give each speaker a two minute warning (by passing a note) prior to the allotted time limit.
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8. Each lecture room is provided with:
 - Two, 35 mm projectors.
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 - Student Union Building (SUB) 111
 - University Centre - Rehersal Hall

Adequate numbers of carousels are provided in each previewing room. One assistant will be in each previewing room.

Good luck and thank you.

A large, stylized handwritten signature in black ink, possibly reading 'P. C. A.', with the date '11/11/51' written in smaller numbers within the loops of the signature.