

GIBRALTAR

Tue. Nov. 8/84
Sunny +20°

- with Bob Lane

- George Barker, Taseko Mines

+ Tom Milner, Minecroft

→ Pol Xanna pit - 4 yr plan

Total
8 to 12 yr
plan

- no more profit until Dec

T.R. not recovered Oct - Nov

(grates to 0.0179% MoS₂)→ put new column things
in place (cf. old flotation cells)
→ sold to a concentrate
brokerMo - 3/4 tonnes Mo / month
C.P. Dec.- processing supergene (enriched)
chalcocite zone- up to 40% Cu conc. / up to 0.4% Cu
(av. = 28% Cu conc.)

break even ~ 0.90¢/lb Cu

[av. \$130 Cu ~ 40¢/lb profit]

@ 6 M lbs Cu / mo ~ \$30 M / yr

68.5 M lbs Cu /

Lecton + Taseko shafts
at 25M/each Total = 50M+ Mo - + 10 M. = \$40 M / yr
(i.e. 15 yr payback)

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983384

CANADA

Granite Lk. Planner P. 17
1-ster
(20 months) Jan 04
2415 PM 04

120,000 yd-mining (net waste)

up the Hill (98 zone) - oxide
→ may consider mining it
in 12 yrs → then move to
Granite Lk. zone before Connector
zone

Union vote - next week

L10-15% bonus to employees while
Cu price up

CESL - on backburner but good pot.
to reduce costs by 20%/yr

\$130M Cap cost - no dep on
financing

re-visit next yr.
custom concentrate facility?
(e.g. Gibraltar - 16 yrs)

Photo - Look N over 4040 Bench (shale)
- major N-S fault (to left) ~ 225 ft
up throw on E of ore
(Polyanna East fault)

Look SW over Polyanna (East) pit

CIBRACTAR

(3)

Moly can mean 16¢ less per
pound Cu prod! (Tom Milner)
(base @ \$4/lb)

GIBRALTAR

Thurs. Nov. 20/03
 Sunny
 -15°C

(+ Cathro/Lane/Lefebvre/Jepson)

- George Baker

- 3 mos stripping Po/yanna pit
 to production

(Stage 4 pit ~ 3-4 yrs. mine life)

98 Oxide Zone ^{2.5% oxide; 2.5% sulphide} 0.37% total Cu

1200' x 600' ~ 5' m t outlined (in, and joints)
 400' x 300' (incl. 3x the regular Mo ^{Mo₂S₂} and.)
 enriched in chalcocite

Startup in 1972

360 MT

Exp'n → add ~ 100 MT to reserves

∴ Total ~ 460 MT

Gib. North (or West Extension)

→ still a "significant" target
 9. 200 MT @ 0.38% Cu [eq. 6-7 yrs mine life]

GM els. (from Teck) [adj. to Po/yanna pit]

GB - Mine might start up in 2004

~~ULTIMATELY~~
② Gib East pit to hook up with
Polxanna pit to incl. Connector zone
(incl. 16 MT leachable in Connector)
→ SX-EW plant - stage 2

→ 12-yr. Mine Life

- also looking @ using native sulphur
for oxide treatment
(à la Mount Polley)

2003 - drill test deep (700 ft) NE-trad
IP anomalies - eq. 98 oxide Zn
(on GM cl.s.)

[also pit. on Gunn (United Gunn) zone
(- test in 2004) - E extension
of Granite Lk. zone(?)]

~98 holes 65,000' on 98 oxide Zn

- also drilled NE of Gibraltar East
- + Gib W. extension (TK Zone zone
(Road goes thru IP anom.))

Nov 20/03

③

Total 2003 Exp/In Exp ~ ~~\$2.7M~~
Total DOH ~ 110,000 ft. #2.7M

98 Dike Zone - if mine - contoured d.
due west to SX-EW plant

'Gunn' staking to NEU
(Chapman/Karlson 'scraped' Taseko)

~\$2M to keep mine on standby

~\$32 M reclamation bond
(incl. \$15M cash + rest - mine assets)

Land fill in operation

Lac La Hache
12 dth @ 150m/hole

1200' x 600'
area

GIB RALTR

Wed. Aug 6/98

- with Bob Lane off mine lease

Sunny + 38°

George Barker

\$2.3M fluv-thru
[use of mine 1 to 2]

Phase 1 ~ 15,000' (4572m)

1.3 km below

(375+)

Pall Yana Pit

[East side of project]

Oxide zone above

Pall Yana Pit

(as a starter to SE-EW)

→ GM pb.

(80-230 ft)

→ up to 90 ft thick

Connector + other oxide + malachite + cuprite (to 55% Cu)

- need 4-5 MT @ 1.3% Cu

to start up SE-EW plant

(@ 70¢ Cu)

underlain by deep sulfide zone.

- follow-up 2000 IP anomalies

Gib North (Oakmont option) - still

good deep pot, but need better

option deal with Oakmont - pot. for 100 MT.

- "Gibraltar West Extension"

→ precious metals will play a big part in re-opening (esp. Ag)

Phase 2 ~ 12,000 ft. ddh (\$275k+) incl. metallurgical/in-fill ddh

Drilling ~ \$20/ft. [LDS. Drilling]

- refurbished analytical lab
(able to do 'contract work')

→ new project

Photo-base prepared for liner

Garbage dump - start this fall
(at site of old Gibraltar garbage dump)
→ contained (closed) system. 2 trucks +
shovels working on it now

Gib East 'Extension' to NW
(drilling)

Granite Mtn.
later phase + andhemite phase

- asse. with higher $qtz + MoS_2$
(i.e. moly is 3X content of mine feed (.0162%))

To re-open - start @ Stage 4
(Polluxana East pit) - ~ 3 yrs.
mine life; then Granite Mtn. pit?

Hydrometallurgical scenario - on hold

est. ~ \$20M capital cost to restart +
~ 4 months (stripping + mill refurb)

8000 ft. water line / Photo Look W over Stage 4 (Polluxana)
- Granite Lk-pit to test in center
- Connected in center

Oct. 1/96 Sunday
+5°C

① GIBRALTAR

- BP P (13) - BC Mine Tour
11:30 - 4:30 pmGeorge Barker
Gerald Grubis
Murray Rodden
Eph

- Current mining in Gib East pit
- est. 12 yrs. resources left.

ratio of K to Ca important
(reflects increase in sericite)

Connector Zone: - malachite; chrysocolla
12 MT for SX-EW (now)

All zones dip to SW, except
Gib N (dips to SE)

GIB EAST

3700' surface / 2960' - shovel to rd.
of blast hole bench [i.e. ~700' deep]

2555' - ultimate pit depth.

Current cut-off = 0.2% Cu

STOP 1: Look W over Gib East

STOP 2: Look N over Pollyanna

Host facies = chloritic tonalite

② Note: Pit expansion up into
edge of trees to NNE - further
expl'n (Isp) potential to NNE.

~~\$~~ US 0.89 and ~~\$~~ 0.93 total cost

Sold forward Cu for $\sim 1\frac{1}{2}$ yrs.
@ US \$1.05

Oct. 15th - closing date for
Westmin takeover decision

~ 275 employees

GIBRALTAR June 1996 RAY +8°C

George Barker - Chief Geol. Tom Milner (Mine Mgr)

\$ 0.1 M expl'n budget (8000' in 1/4 dth)

Moly circuit running recovery = 40%
(some shut down in Gib East pit)
- Phase III (Final) - early '98

Pollana Phase IV pit

(incl. GM cls. ~ 13 Mt @ 32%)
1.5' SR → 1998 48 Mt tonnes for 3-4 yrs.

- Drilling (exp'n) on Samuil zone
Small 'orebody' + Skarn + 'border' phase

Granite Lk pit - later - higher
Stage 3/4 - 80 Mt tonnes @ 32% SR

Silver recovered from Cu conc.

precious metals increase 3-fold
in Gib North from other

~40 Mt tonnes (300 ft. deep o/p) 3.5 Mt tonnes
• 4% Cu

Drilling waste dump - prod. drill - between pit & East

• 1% acid soluble Cu (.15-1.2 g/t)
cut off zone (concrete core) oxide zone
1.2 Mt @ 3% Cu

→ from 4 'active' dumps

SX-EW = $\frac{1}{3}$ th of prod.

12 yr mine life not incl.

Gib. North or Summit, or
GM

1997 Expl'n - GM ds. + east

- K/Na ratio - whole rock
analyses $\Rightarrow$ expl'n tool!
(see CRM SU 46 paper)

1998 - blitz of drilling on targets

+ 1999 - Summit East

~ 275 persons

8000' in 16 ddh in '96

→ incl. GM/Poll/and + Summit

Murray Reidman - Expl'n Geol. (U of A)

- Work Index - av. 14.5

(as low as 8.5 for Gib North)

Cut-off of milling = 0.2% Cu

①

GIBALTAR

June 10/93

Sunny

+20°C

- Gary Byssouth, Gerry Grebusa, George Barker
- Andre Panteleoyev, Ward Kilby

Gib North + Gib West zones 1/2 mi up
with total resource est. @ 100m tons
(Gib North ~ 40m tons @ .4% Cu)

MINE PHASE: Granite Mtn. Batholith

Granite Mtn. phase: trondhjemite

Mine Phase: tonalite (gabbro)

Border Phase: diorite to QD

Batholith

204-207 Ma

Note: Granite Mtn. phase
underlies Mine Phase
(i.e. shallow contact)

Host Rx. (to north) - mainly alk. (late Jur.)

- black argillite at base of unit
(regional VMS potential? - ex. 400 ft @ .4% Zn)

Sawmill Zone (Faulk) - 800 to 1000 ft. zone

- Quersel Trough bounds to NE

- Cache Cr. host rx. to S

- graphitic phyllite 'marker' band in S near
Sawmill Zone.

Peraluminous rocks - (esp. Handjani Fe)

- "pot. important for regional explan"

- Subalkalic

'NEWPET' software

→ at/near contact between
overriding Cache (K. (to)
+ Quesnel Tertiary (E)
(ie. strong def'n)

Regional plunge @ 10° to NW

Altn: $\text{Na}_2\text{O}/\text{K}_2\text{O}$ ratios used as
an explan. tool (ie. potassium
metasomatism - plag. sericitization)

- low K_2O original; higher Na_2O orig.

- best ex. (chem + megascopic) from Gib North

Garnets - spessartine

- no idea of significance

- assoc. with Zn-rich + chlr-oid
sections (esp. Gib North)

Tank

Gib East - cut-off @ .16% Cu (Fr. .2% in '92)
→ lower recoveries

Plots 1 - leached zone → supergene
(down to 700')

85% chalcocite
15% native Cu
regrit

Sample - crenulated leucocratic phase

80% of mill feed from Gib East

26% " " " " Pollyana

(2) Polyanna Pit 3500 Bench
(2nd loss in Stage 3)

Photos - rx (2 in pit - chl skunk + moss)

Photos (3 composite) - looking W over
Gib east

- new 90-day (short term) beach pads
at SW end (start-end July)

25-35K lbs/day Cu
Thru SW-EN

①

GIBRALTAR

Tues.
Sept. 17/91
Sunny +22°C

- Gary Dysouth (since 1977)
- Bob Lane, Alan Wilcox, self

Bill McCann - Mine Manager
(ex-Equity Silver)

Gib E - 3rd Stage

Granite - 3rd

Pollyana - 3rd

Serry Gagner - Mine Eng.
Gerry Barker
4th to Cone

- possible ore (faulting) between
Pollyana & Gib East

- no staurolite

- min. in shear zones (N-S)

(highly contorted - Compression)

- Min. + alt'n + defin'n are one!

gtz-chl-ser-Fe-carb

Age: To investigate!

~200 Ma - main host rock
- Andre P. - several dates
incl. ~210 Ma

Pyrite Halo (low IP centre)

1972 Res: 326 m tonnes @ .37% Cu
.016% MoS₂

Prod. - 1972

11 = 50 ft

(2)

Gib
1/2

Pollyanna

Gib
East

SEED
plant
mine mill

Gib
West

→

X 100 ft

↕

- ③ chalcocite blanket
(flushed out during drilling)
- also 'dust' in core (need to be careful!)

GEOLOGY: Host - Granite Mtn. Pluton

① Country Rk: Cache Ck. Gp. <sup>Garnet
Mylonite
Nicola
Gp.</sup> 1" = 1000
Scale
map

- [0.2% Cu contour]
- Islands are green volcs. (4/5 + 6x)
 - graphitic phyllite 'marker'
(by IP drilling) - up to 100' thick.
 - local skarn 'units'

② Diorite ~10% gtz (border phase)

- ③ Mine Phase gtz. dio. ~30% gtz.
- highly contorted, folded, foliated
 - host all orebodies
 - metasomatically alt'd

④ Granite Mtn. Phase: ~45% gtz
- Qtz. Dio.

Att'n: ① Cache Ck. Gp. - contact with intr.
- very complex - eq. Sawmill Zone
- small orebodies

- ④ anatexis melting (re-x'len)
(eq. up to 1000 ft. thick)
- in very gradational zones

Structure / Deform.

① NW (340°)

② E-W - regional

- shear zones; foliation; folded crown

Altn: early - Sausurite (propylitic)
(incl. regressive altn of calc. & gp)

- superimposed alt. & deform.

- gte-chl-ser-ep-Fe-carb-(gnt)

Min. in shear zones up to 100 ft.
thick (past mining) - new disc.
up to 400 ft. thick!

- MoS_2 occurs with copper
- chalcocite 'banding' in folded rx.

Sheridan Batholith - Crest - Grand Forks
(i.e. younger than Mine Phase)
→ Gary wants to do age dating!!

⑤ - new disc. based on geology
(need to drill 1000 ft.)
- missed in first 4 holes

- low angle (S dipping) contact
with Cache Ck.

Cuisson Lk. (Trend) - large fault zone

- no Tertiary rx. in vicinity of
pits

'Black Unit' in host rx. - incl. up to
400 ft. of .4% Zn - banded,
massive - $\rightarrow$ Jurassic!

- regional in extent - to Quebec

- regional VMS target?!

MIN. CPY, PY + CC
(minor bn)

- Zoning effect

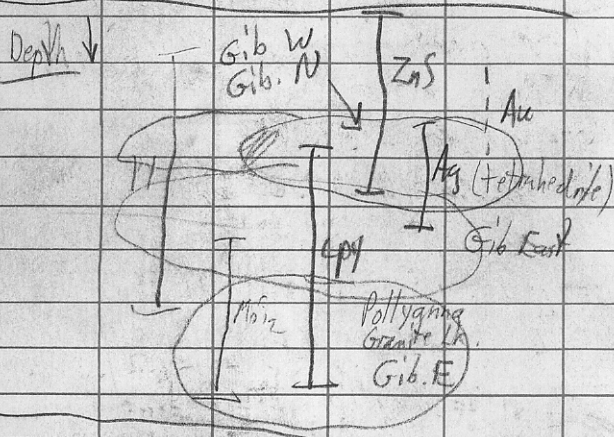
Gib. West + New Disc. - chl. + gnt.

(Gib. North)
(Via Campbell looking at thin sections)

⑥ Mineral Zoning

1) Pyrite (Halo) - 3 miles long x 1 mile wide
 eq. Gib N }
 Gib W } cpy sep. from px

- pyrite 'blanket' - Polly East
 retrospect - should have done total
 sulfur analyses - will do
 in Gib North



Gib N - py - ZnS
 eq. 400 @ .4% Zn

Sawmill Zone: bn-mag. + gypsum
 (low-sulphide - edge of system)
 30-40 tons - in intr. + Cache Ck.
 @ .3% Cu

- ⑦ 'Leucocratic' Phases - small dykes, zones
- late diff. of Granite min. Phase
- could be in cone of shear zones
Saurmill Zone - east end - QP (leucocratic zone)
Gib North - 'lots' of leucocratic rk.
-

MODEL: Mine Phase is an outer
(upper) skin of Granite min. phase
(see photo)
the orebodies confined to outer shell of
Granite min. Pluton
(explains defin + complexity)

SiO₂ plots show zoning + min.
Total Fe + MgO

Pollyanna + Granite Lk. Orebodies

'Porphyry-like' - diffuse Cu

Gib East - bottom - Cu-Mo
- upper - Cu-py.

- 40 to 100 ft. thick shearing (W. trend)
'Sunset' shears

Gib West - diff. structure → one continuous
Shear zone (100' thick) 10 ft. of 25-35% sulphide
Cu-Py + Ag

Gib North - 'gigantic' Gib West (offset?)

(300 to 400 ft. thick)

- shear angle - flat

needs
more
work

- pot. 40 m tons @ 0.4% Cu

[eq. 45 ft. of 3% Cu] → 2000 ft.
long

av. grade at Gibraltar = 0.3% Cu

Exp'n - Cu seems to be more
concentrated

(ie pot. for U/G deposits?)

- Zinc zoning (doesn't go with Cu)

- system is large - open to NW

- est. 2 yrs. to remove 10% for mining

FAULTING: - large N-S (prob. Tertiary)

SUPERGENE: 'textbook'

- native Cu (esp. Gib East)

(self-potential current set-up)

① Photos - Tour by Gerry Gagner

Polyanna Pit

3725' - ^{current} bench

4185' - bench top

3500' - final depth

45 ft. benches (max. 90 ft. face)

Mining - 140 k t/day

Mill - 37 k t/day

~ 360 staff + 60 contractors

Mosaic - looking W over ^{Polyanna} pit
(note - stuff in east wall)

2 Photos - looking E + S over
Granite Lk. pit (flooded)

est. 2 yrs to train out water to
mine Stage 4 (photo) wall

146 Polyanna

186 - Gib East

Cut-offs

Sulphide Cu
(recoverable)

Photo: 240 ton truck being loaded
by a 40 cu yd shovel in
Gib East pit.

Photo: Looking S. over Gib. East pit

Photo: NE face sloping in to pit
with N-S cross failure
(earlier 'warping' close-up)

Gib North Core

> 4% Cu with xls of quartz (red)

Photo - 'pregnant' soln. at toe of dump (#3)
[3 ponds in operation]

- Sulphuric acid used to spray on
to pH ~ 2

SEX-EW - make 1b. of Cu for 36¢
(mine life ~ 8 yrs.)

- pay off investment in 3 yrs.
- \$18 million cap. cost