

GALORE CREEK

Location: 90 km S. Telegraph Ck. - Headwaters of Galore Ck.
History: Disc. - 1958 (H.B. Expl. & Dev) - Then Kenneco ^{75,000 m} ~~1.350 ddb~~
Age: 174 - 198 my ^{807 m tunnel}

Geology: assoc. with subvolcanic syenitic intr.
 - 10 Cu deposits occur in alt'd Upper Trias. volcs. & pipe-like
 Host Rx. - volc. bx., bedded & xl tufts, trachyte & pseudokucite phonolite
 Intr. Rx. - syenite pr. dykes & plugs - at least 10 phases
 - Cu deposits are tabular to mantle-shaped & strike N to NE
 - numerous bx.
 - high potash content (rare in geol. record).
 - Structure - eroded volcano - syenite sheets are subvolc.
 intr. - extr. equiv. may be orth. xl tufts & pseudoleucite rims

Mineralization: py, cpy, mag, bn
 Central zone - roughly tabular & composed of several en echelon Cu
 zones 1950 metres (N-NE) x 213 to 578 m wide, Max.
 thickness approx. 335 m. Centred on elongate, steeply dip bx pipe
 North Id. zone - higher grade Cu 370 m long x 50 to 150 m wide
 - bulk of Cu dissem. in meta volcs. & bx. Also frags. & sthkt
 - py most ab. eq. 5-10% in Central zone.
 - some PbS, ZnS
 - magnetite - common - as dissem. & veinlet - Also hem.
 - no typical zoning patterns

Alteration: - pervasive Kspar + bio in all deposits
 - garnet ab. in Central zone
 - anhy. & gypsum ab. in & around most deposits

Reserves: - 125 m. tonnes @ 1.06% Cu + Au ^{0.014} Ag ^{0.28}

Environment of Ore Deposition: - rel. shallow environment!
 1. pseudoleucite
 2. biotite comp.
 3. potassic nature
 4. bx. pipes & dyke complex
 5. presence of syenite frags & coarse orth. xls. in volcs.

Synthesis:

- min. in Central Zone - derived from source beneath bx.
- flat-lying syenite dykes deflected upward mig. fluids so that they diffused thru surrounding permeable volc. rx. ∴ vague zoning
- Cu min. occurred late in sequence controlled by porosity & perm. within volc. pile & alt'n mins.

Features Diff. from other Alkalic Porphyries

- 1) ab. garnet, diopside, epidote, & mag. but no 1st!
- 2) carbonatite affiliation? i.e. potassic alt'n = fenitization + alkalic cone sheets.
- 3) ab. of anhydrite in meta volc. rx. (10% or more) in Central Zone sim. to Kuroko & Andean pr Cu, i.e. close affil. with enclosing vics, & near surface ore dep.

MEG NOTES

WED. JAN. 8/92
Lane/Schroeter

GALORE CREEK

Talk given by Jack Maar (Kennecott Corp. Canada Inc.)

1955 - initial discovery (Hudson Bay Mining Co.)

1957 - Kennecott became involved

property dormant between 1967-'72 & '76-'89

1990 - 1,907 m ddh in 18 holes

1991 - 13,800 m ddh in 49 holes + mapping + IP survey

- 10 significant mineralized zones (~30 occurrences)
- mineralization related to a complex series of Syenite intrusives; specifically early "grey syenite porphyry" & "dark syenite porphyry".
- Stuhini Cp. volcanics host the deposit - Res for Central Zone (176 million tons @ 0.93% Cu & 0.01 opt Au)
- correlation of Cu (>1%) with Au (>4g/t)
esp. bornite & Au.

Central Zone: ≈ 2000 m long NNE trending structurally controlled zone; tabular & W dipping

- occurs at margin between Stuhini volcanics to the E and syenite to the W
- host lithology is pseudoleucite volcanic (flows & tuffs) porphyry (GC-120)
- Hanging wall is int. argillically altered pseudoleucite porphyry; Footwall = mafic volcanics
- good correlation between biot. and Kspar (lower part), upper portion is Kspar-rich + abt. sericite (int. argill. alt. zone)
- stage of argill. alt. thought to have moved some of the metal up & out of the system → gone

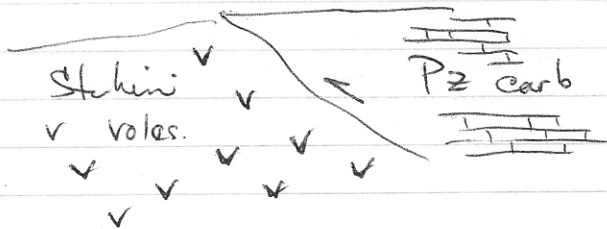
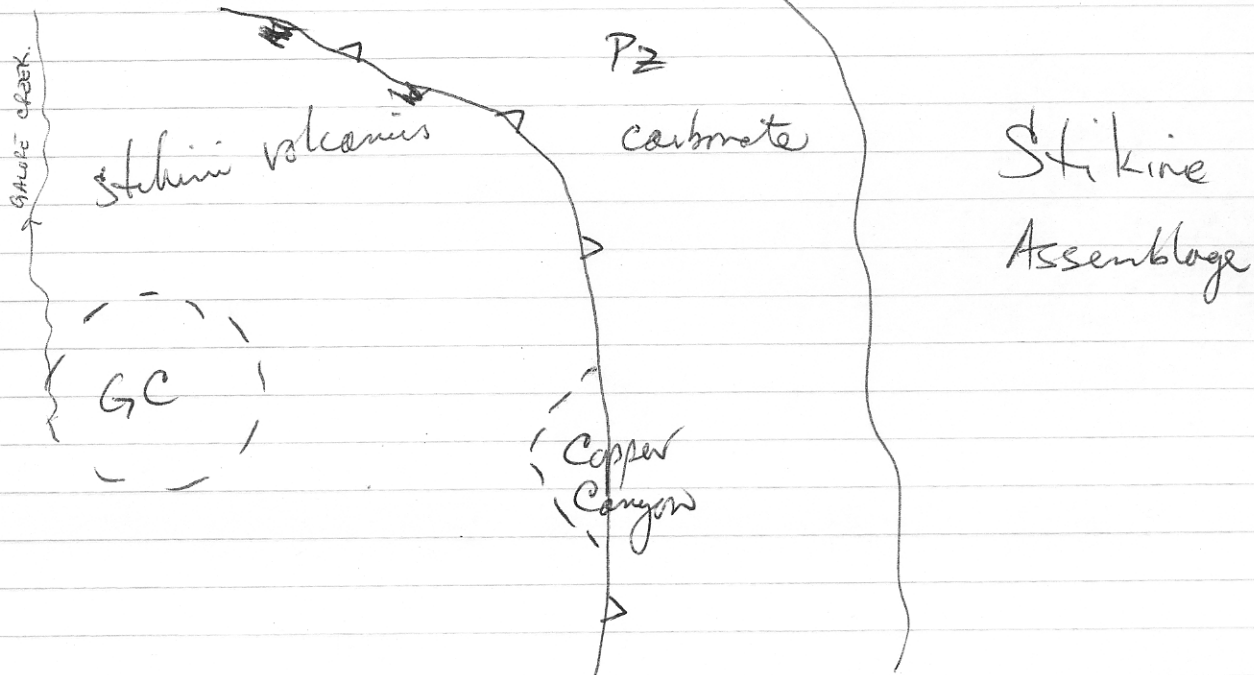
- deeper drilling in the Central Zone (below a 2nd & lower x-cutting syenite dyke) gave good Cu + Au values (eg. 105 m interval of $> 1\%$ Cu & $.4\text{g}/\text{t Au}$)
- 2070' Adit in Central Zone \rightarrow re-assaying of samples resulted in marked increase of gold content for that area.

SW Zone

- 500 m long (E-W) by 50 to 200 m wide "lens" or lozenge-shaped deposit, tabular with strong structural control
- occurs at contact between a syenite megaporphyry & a diatreme breccia
- typical δ ddh = 130 m of 0.85% Cu & $1.65\text{g}/\text{t Au}$ (GC-383)

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- pseudoleucite phenocrysts (zoned & highly corroded) are characteristic of early phases
 - early syenite porphyries are either strongly Kspar or biotite altered
 - a garnet & anhydrite-bearing calc-silicate alt. stage is late in the mineralization scheme
 - three pulses of mineralization are associated with:
 - A) Hydrothermal breccia
 - B) Diatreme breccia
 - C) Orthomagmatic breccia (magnetite)
 - magnetite present in most of the syenite phase
 - apatite present? \rightarrow not sure
 - MDRU to assist with petrography, etc.

C. ALOPE CREEK



GALORE CK.

June 7/00

- chat with Don Mustard
→ Kennecott still trying to sell.

Previous study:

Tunnel for trucks = 6% IRR

Conveyor tunnel = 11% IRR

→ closer, but still not econ.