

PROPERTY VISITS

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Gibraltar Mine [MI 93B 007, 010, 012]

On June 10, Andre Panteleyev, Ward Kilby, Paul Schiarizza, and myself visited the Gibraltar porphyry copper mine. Hosts at the mine included Gary Bysouth (Senior Geologist), Gerry Grebusa (Mine Geologist), and George Barker (Exploration Geologist).

The discovery (successful exploration) of the Gib North zone in 1991 and the request to contribute a paper on the Gibraltar deposits for the 'Porphyry Sequel' has resulted in an excellent paper and new geologic model backed by 'new' technical (esp. chemical) information. The Gib North zone contains estimated geological reserves of 40 million tons grading 0.4% Cu. Garry now thinks that the Gib West and Gib North Zones 'hook up' and are (were) the same zone with a combined geological resource estimated at 100 million tons grading 0.3 to 0.4% Cu. Garry and Vin Campbell have (chemically) subdivided the Granite Mountain Batholith into a Boarder Phase (diorite to quartz diorite), a Mine Phase (tonalite) which hosts all ore deposits, and a younger Granite Mountain Phase (trondjemite). The Mine Phase appears to be an outer 'skin' of the Granite Mountain phase (i.e. GM Phase underlines Mine Phase at a shallow angle). Rocks are peraluminous and subalkalic. The Na0/K0 ratio is used as an exploration tool (i.e. potassium metasomatism, as exemplified by sericitization) for copper, and also for regional gold. The drilling of the Gibraltar North Zone over the past 18 months has allowed mine staff to postulate a revised (new) genetic model involving the overridding of Cache Creek rocks from the west easterly over Quesnel Trough rocks. The significance of the spessartine garnets in the Gib North zone is not understood, although they appear to be associated with zinc \pm chlorite rich sections.

Mining is currently being carried out from the Gib East pit (80%) and the Pollyana pit (20%). All the ore from the former is crushed in the in-pit crusher and transported by a conveyor belt to the main mill facility. The cut-off grade in the Gib East pit was recently dropped to 0.16% Cu from 0.2% Cu with corresponding lower recoveries. We examined the western end of the Gib east pit which exhibited the contact between overburden, leached cap, supergene (chalcocite - 85%, native copper/cuprite - 15%) and hypogene ore (see photos). A new 'short term' (90-day) leach pad was currently being built at the south west end of the zone, with start-up planned for late July (see photos). In the Pollyana pit mining was being carried out on the 2nd last bench (3500 level) of Stage 3.

We examined the SX-EW facility (see photos). Between 25,000 and 35,000 pounds of nearly pure copper is produced daily at an estimated cost of \$0.36/lb. Unfortunately, the current cost of producing a pound of copper through flotation is about \$0.93/lb (cf. current market price @ \$0.83/lb). This operation could very soon join others (HVC? Similco) with temporary (holiday) shutdowns pending a more favourable price for copper. This is a rather unique 'porphyry' system with good exploration potential regionally.

- References:
- 1) Schroeter monthly report - Sept. '91
 - 2) Gibraltar Mines Ltd. "Technical Information Brochure, July '92
 - 3) Gibraltar - paper for 'Porphyry Sequel '95'
 - 4) Gibraltar Mines (The First Twenty Years 1972 -1992) Brochure

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Monthly sp.

GIBRALTAR

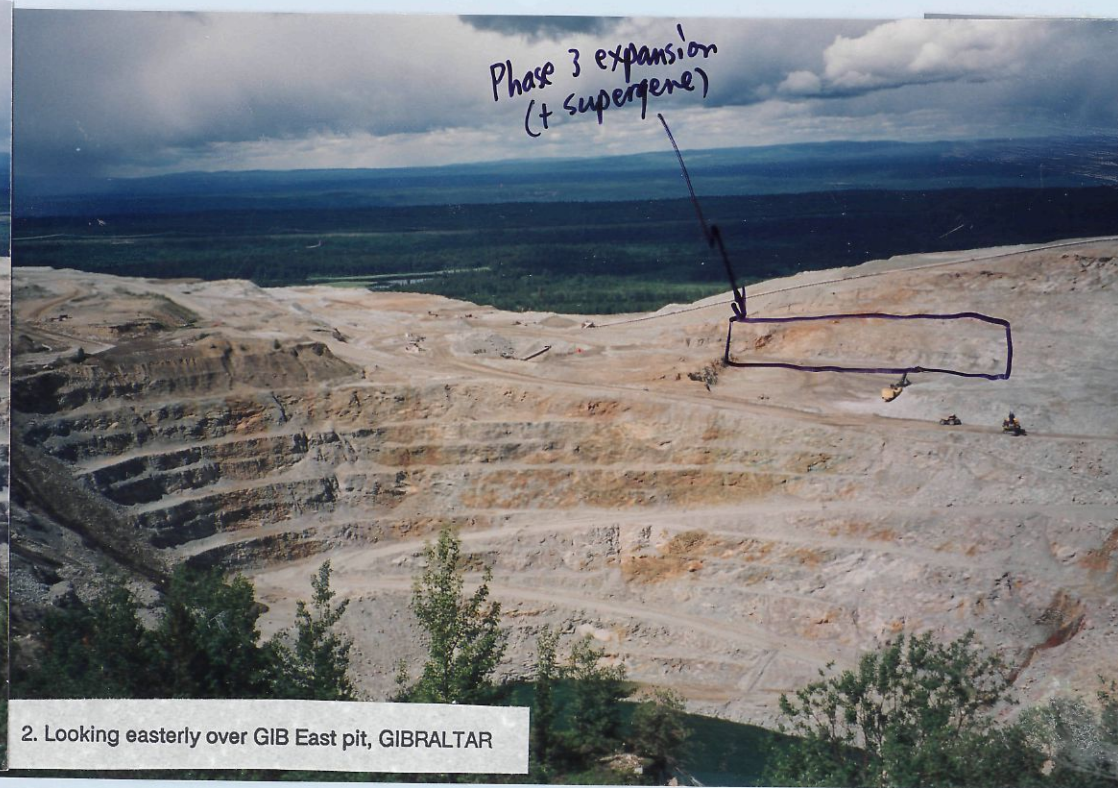
GIB EAST
DUMP



GIB NORTH



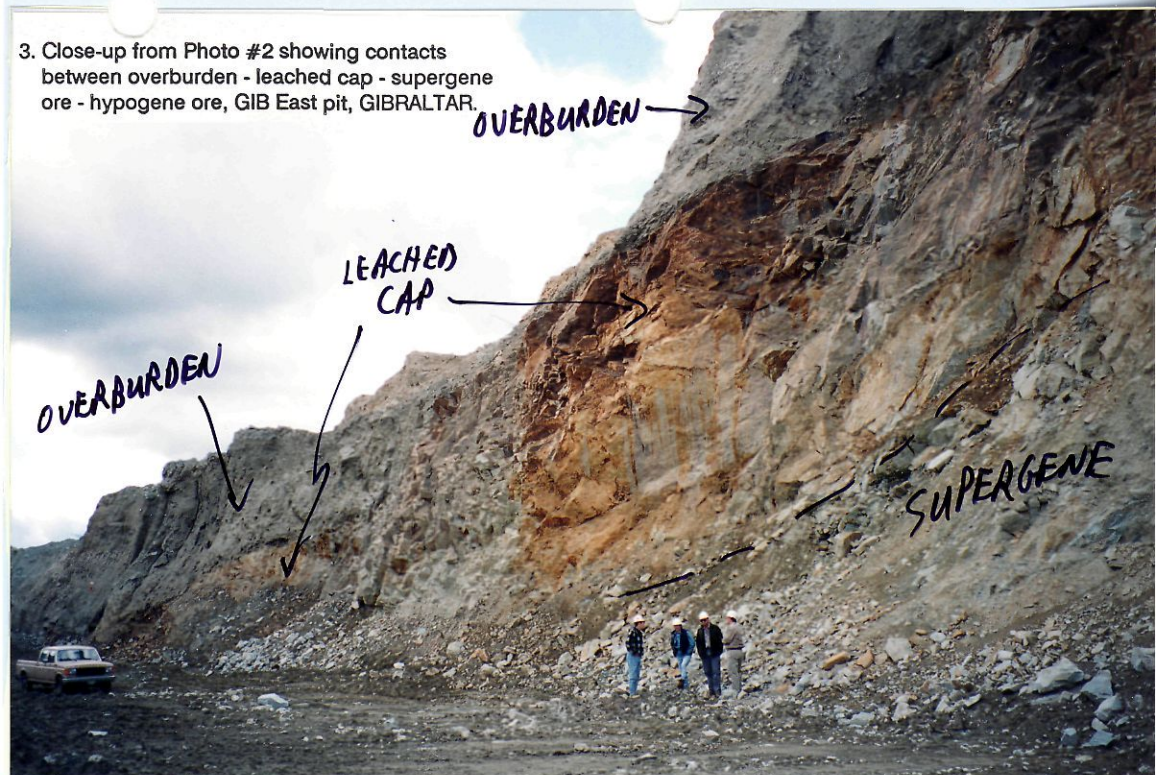
1. Looking SSW over newly discovered GIB North
zone, GIBRALTAR.



2. Looking easterly over GIB East pit, GIBRALTAR



3. Close-up from Photo #2 showing contacts between overburden - leached cap - supergene ore - hypogene ore, GIB East pit, GIBRALTAR.



4. Supergene ore (chalcocite veinlets), GIB East pit, GIBRALTAR



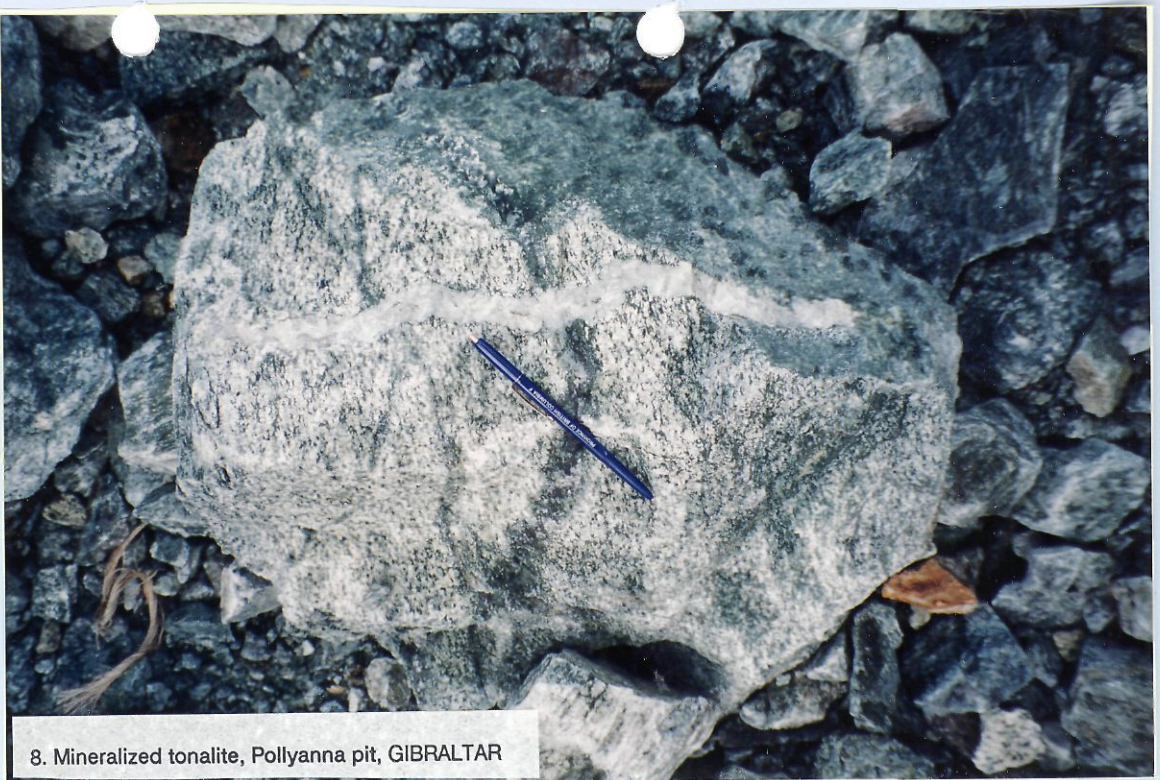
5. Western end phase 3 expansion) of GIB East pit, GIBRALTAR. Note: Intense structural control (foliation, crenulation and isoclinal folding).



6. Intense isoclinal folding in quartz-sericite altered trondhjemite, GIB East pit, GIBRALTAR



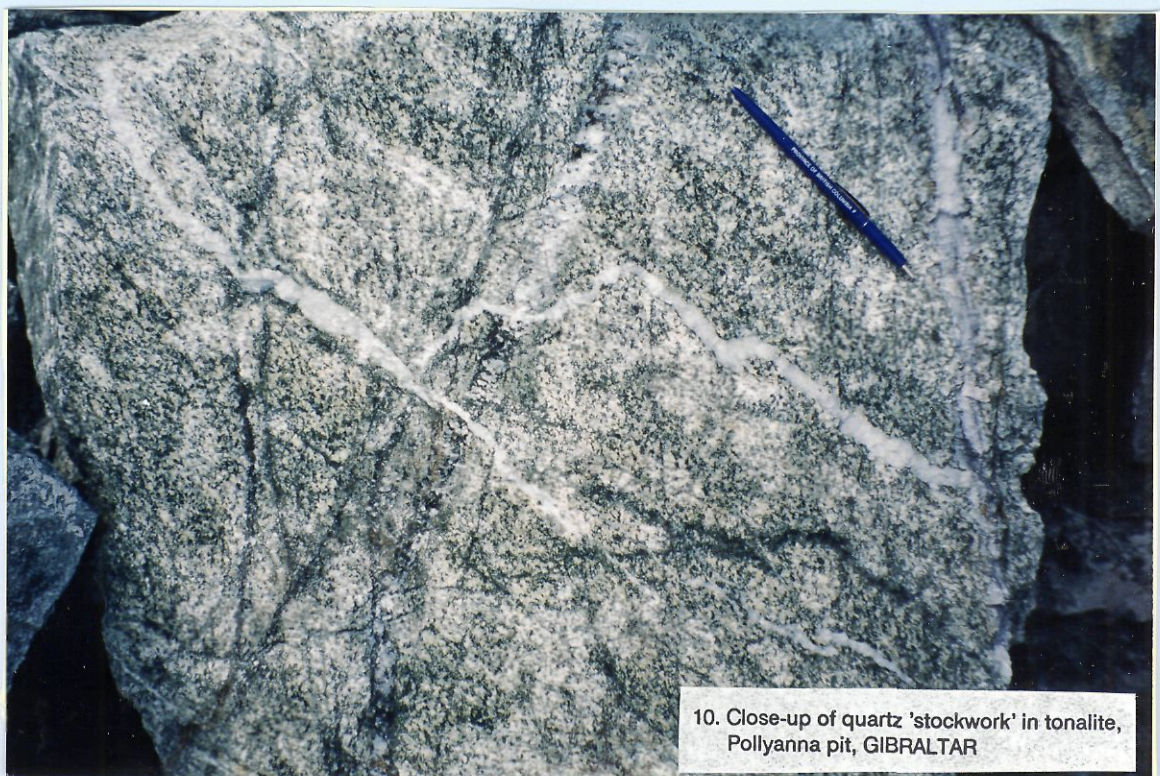
7. Intense folding in quartz-sericite latered trondhjemite, Pollyanna pit, GIBRALTAR



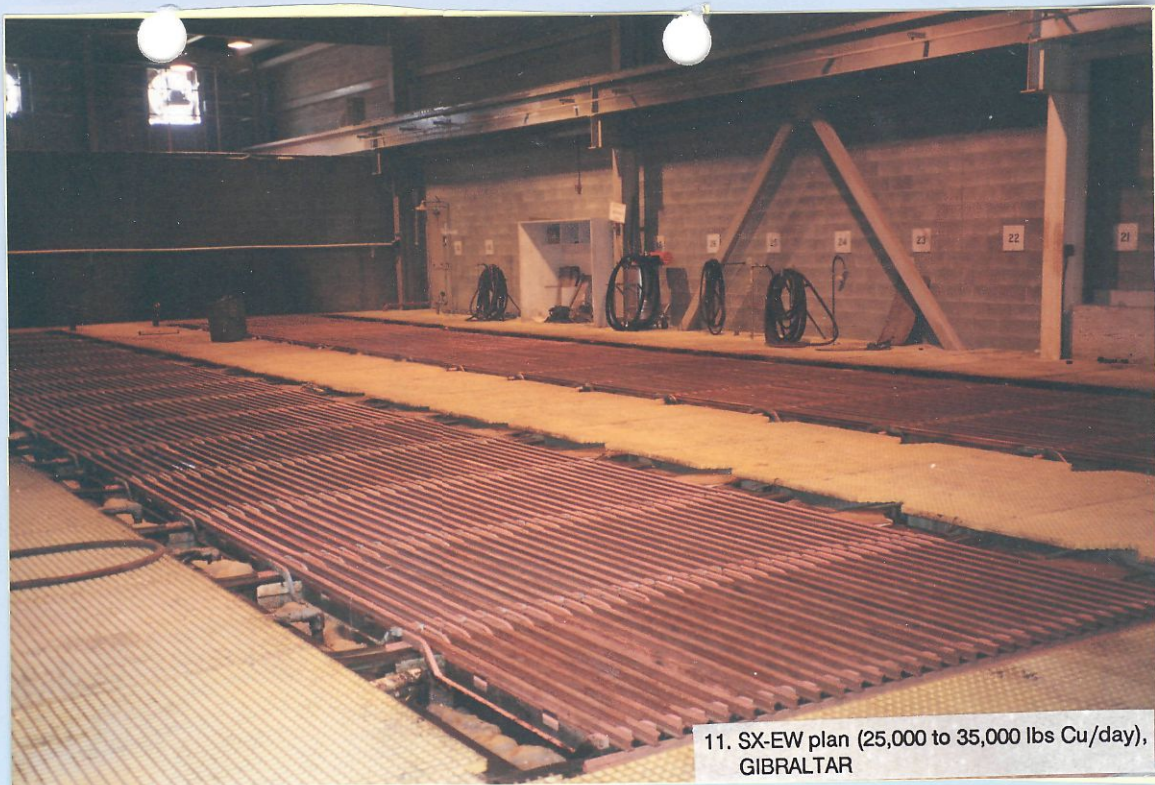
8. Mineralized tonalite, Pollyanna pit, GIBRALTAR



9. Close-up of quartz 'stockwork' in tonalite, Pollyanna pit, GIBRALTAR



10. Close-up of quartz 'stockwork' in tonalite, Pollyanna pit, GIBRALTAR



11. SX-EW plan (25,000 to 35,000 lbs Cu/day), GIBRALTAR



12. Peeling off copper plates (99.9% pure Cu), SX-EW plant, GIBRALTAR



13. Collection/loading of copper plates from SX-EW plant, GIBRALTAR