A number of large Proterozoic structures in SE B.C., besides the Iron Range Fault, have associated IOCG-like features such as breccias comprised of albatic fragments in a hematitic matrix. These areas are under-explored for this deposit type. Geology after T. Hoy et al., 2000

For more Information:

Internet:
http://www.em.gov.bc.ca/Mining/Geolsurv/EconomicGeology/metalllicminerals/mdp/Profiles/D07.htm

IOCG Mineral Deposit Profile Page

www.em.gov.bc.ca/Mining/Geolsurv
B.C. Geological Survey Branch Page


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Iron Oxide Cu-Au: Examples, Analogues & Potential

**Introduction**

Iron Oxide Copper Gold (IOCG) deposits are an attractive exploration target owing to their potential for high grades and enormous size. B.C. has potential for these deposits because of its favourable geological environments, however there has been no major exploration program for this deposit type in the province. A preliminary study has identified some promising sites, many that are clear of mineral title (see facing map). These include the MINFILE occurrences Gray Creek North & South and Five Metals, north of the Iron Range prospect. B.C. also has numerous alkalic porphyry Cu-Au deposits which share some features with IOCG deposits.

**IOCG Deposit Characteristics**

- Contain large volumes (hundreds of Mt) of hematite and/or low Ti magnetite
- Many are hosted by mid-Proterozoic continental crustal rocks. However, some younger deposits occur along fault zones in Phanerozoic volcanic arcs.
- Fe oxide mineralization varies from sulphide-poor (e.g. Kiirunavaara, El Romeral) to sulphide-rich (e.g. Olympic Dam, Candelaria).
- May be associated with coarse grained actinolite-apatite veins, Fe oxide breccias and large volumes of sediment-hosted, hematite-rich, “ironstone”.
- Principal gange minerals may include albite, K-feldspar, sericite, carbonate, chlorite, quartz, amphibole, pyroxene, massive silica, biotite tourmaline and apatite.
- May exhibit extensive alteration zoning with deep level albite-magnetite, intermediate level Kspar (sometimes mineralized) & shallow level silica-sericite-hematite.
- Strong structural controls in most deposits.
- Geochastically anomalous in Fe, Cu, Au, Ag, Co, P & REE’s. The light REE’s are concentrated in minerals such as allanite, epidote, monazite or apatite.
- Favourable areas include narrow, deep seated structures with: (1) Fe oxides, particularly breccias, (2) zones of albite, K-spar, sericite, apatite, tourmaline, flourite or skarn alteration, (3) gravity and/or IP geophysical anomalies (4) U oxides and/or REE enriched alteration and (5) secondary Cu phosphates.

**Tectonic Terranes**

- **Wrangellia**
- **Stikinia**
- **Cache Creek**
- **Quesnellia**
- **Cassiar**
- **Kootenay-Barkerville**
- **Ancestral North America**
- **Yukon-Tanana**
- **Nisling**
- **Other terranes**

**Legend**

- **Good Example**
- **Possible Example**
- **Alkalic Porphyry Associated Example**

**Example Sites**

Good Examples: 21 Iron Range. 22 Albite-Fe oxide occurrences: Cranbrook-Kimberly area. 29 Finger Lake: MINFILE #093F 023. 30 Gray Creek N & S, Five Metals: MINFILE #082FNE094, 95 & 132. 33 Wenecke Breccia

Possible Examples: 11 Deer Lake-Lakeview skarn: MINFILE #02P 010. 13 Heff skarn: MINFILE #092INE096. 1 Tutshi Lake: RGS sample #104M925348 (Au, La, Fe, Cu, U & F). 2 Clone: MINFILE #103P 251, hematite-magnetite breccia with Cu, Au, Co, As. 3 Anyox: RGS sample #103P785260 (Au, La, Fe).

5 Pelly Creek: RGS sample #94E963402 (Au, La, Fe, Cu, U & F). 6 Mesilinka River: RGS sample #94C971355 (Au, La, Fe, Cu, U & F).


17 Virginia: MINFILE #092HSE242. 31 Lorraine & Bishop: MINFILE #093N 002 & 066.

27 Giant Copper (CanAm): MINFILE #092H5W001

28 Granduc: MINFILE #104B 021.