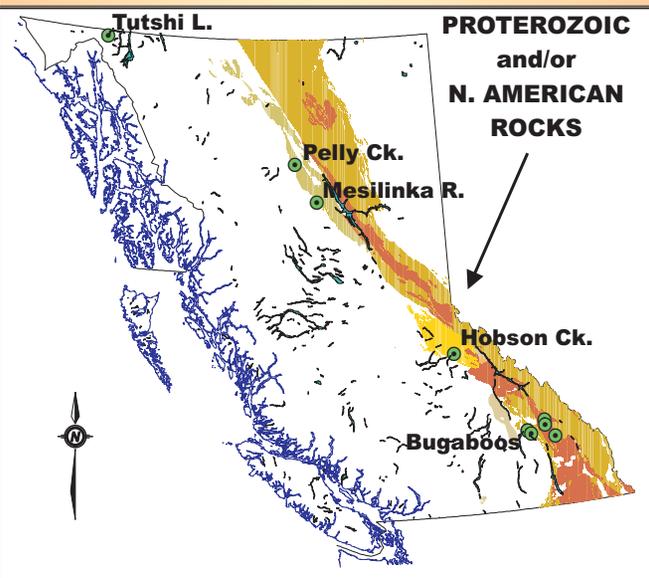
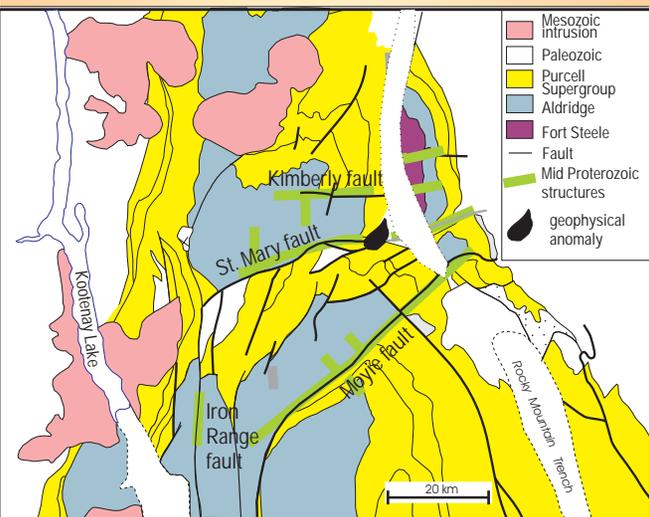


Combining the RGS, MINFILE, gravity, MapPlace geology and aeromagnetics provides an excellent starting place for building your list of IOCG targets in B.C.. Shown below are the results of a preliminary GSB study. The points represent RGS samples that are greater than the 90th percentile for Au, La, Fe and Cu.

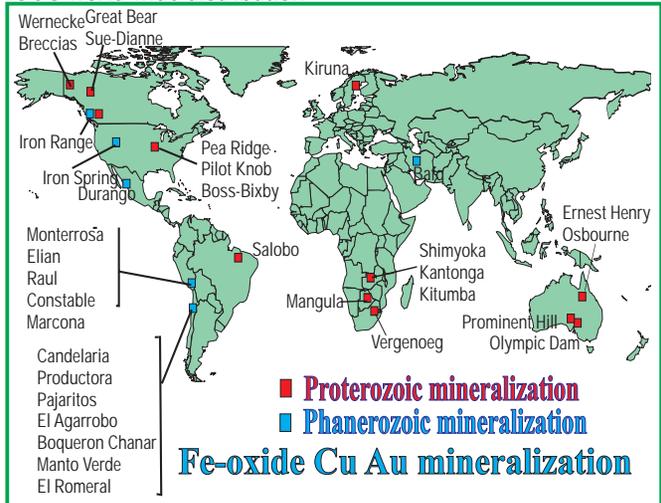


A number of large Proterozoic structures in SE B.C., besides the Iron Range Fault, have associated IOCG-like features such as breccias comprised of albitic fragments in a hematitic matrix. These areas are under-explored for this deposit type. Geology after T. Hoy et al., 2000



IOCG GRADE AND TONNAGES
 Deposits may exceed 1000 Mt grading > 20 % Fe. Reserves for the following deposits are:
 Olympic Dam - 2000 Mt grading 1.6% Cu, 0.04% U₃O₈, 3.5 g/t Ag and 0.6 g/t Au with a measured and indicated resource in a large number of different ore zones of 450 Mt grading 2.5% Cu, 0.08 % U₃O₈, 6 g/t Ag, 0.02% Co and 0.6 g/t Au with ~2000 g/t La and ~3000 g/t Ce (Reeves et al., 1990);
 Ernest Henry - 166 Mt at 1.1 % Cu and 0.5 g/t Au (quoted in Williams, 1999);
 Sue-Dianne - 17.3 Mt averaging 0.72% Cu, 2.7 g/t Ag, up to 150 ppm U and locally significant gold (Gandhi, 1989 & Northern Miner, 2002);
 Kiruna district - > 2000 Mt grading 50-60% Fe and an average apatite content of 0.9 % (quoted in Williams, 1999);
 Candelaria - 366 Mt averaging 1.08 % Cu, 0.26 g/t Au and 4.5 g/t Ag (Ryan et al., 1995).

IOCG world wide distribution



For more Information:
 Internet:
<http://www.em.gov.bc.ca/Mining/Geolsurv/EconomicGeology/metallicminerals/mdp/Profiles/D07.htm>
 IOCG Mineral Deposit Profile Page

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

Marschik, R. and Fontbote, L. (2001): The Candelaria-Punta del Cobre Iron Oxide Cu-Au (-Zn-Ag) Deposits, Chile; *Economic Geology*, Volume 96, Number 8, December 2001, pages 1799-1825.

Telephone Toll Free: **1-800-663-7867**
 Produced by Ian Webster and Gerry Ray, May, 2002

British Columbia's Fe Oxide Cu-Au Deposit Potential New Frontiers



**Ministry of
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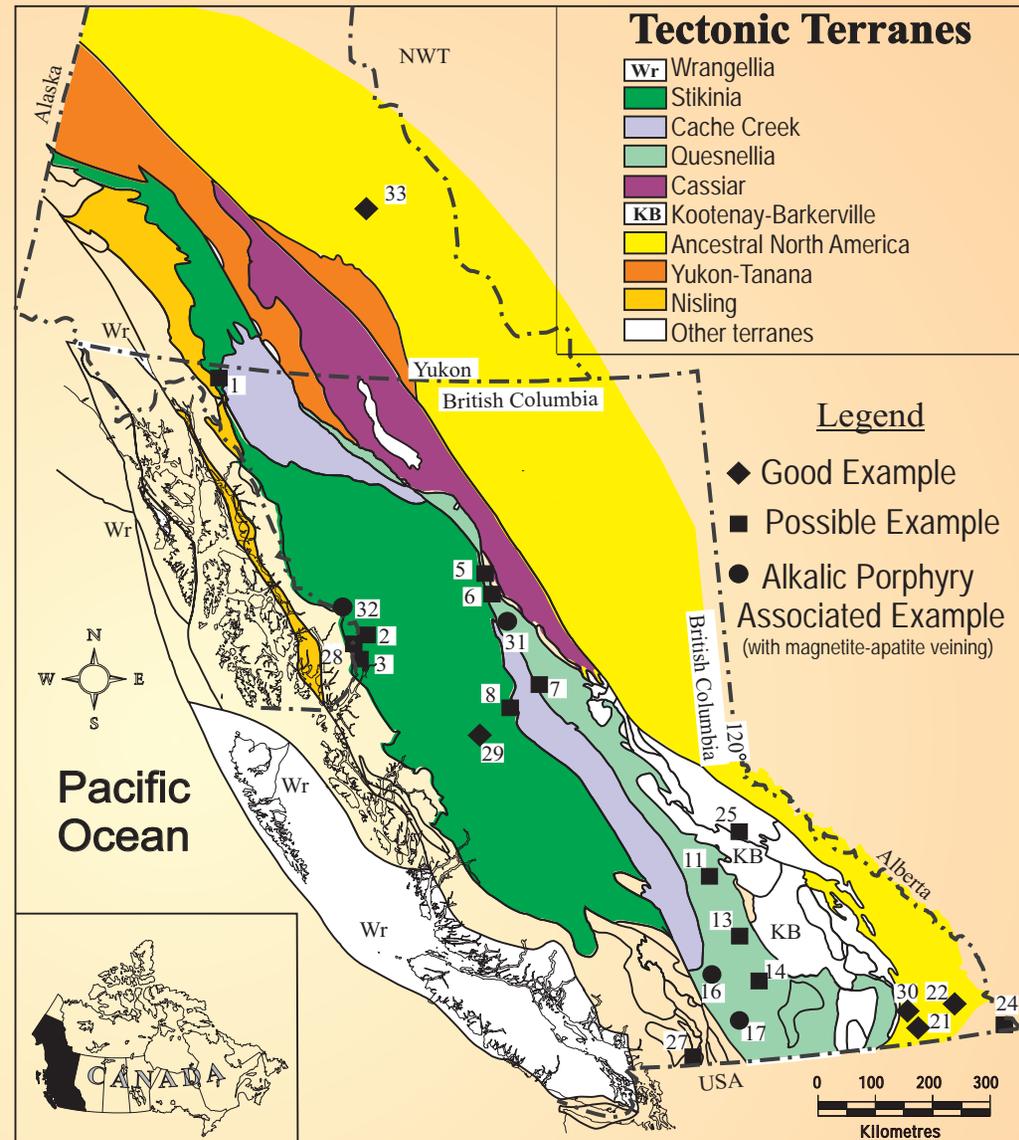
Iron Oxide Cu-Au: Examples, Analogues & Potential

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 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 gangue 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 K-spar (sometimes mineralized) & shallow level silica-sericite-hematite.
- Strong structural controls in most deposits.
- Geochemically 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, fluorite or skarn alteration, (3) gravity and/or IP geophysical anomalies (4) U oxides and/or REE enriched alteration and (5) secondary Cu phosphates.



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 Wernecke Breccia

Possible Examples: 11 Deer Lake-Lakeview skarn: MINFILE 092P 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). 7 Germanson: RGS sample #93N831059 (Au, La, Fe). 8 Tchenlo Lake: RGS sample #93N831838 (Au, La, Fe). 14 Summerland: RGS sample #82E769387 (Au, La & Fe). 24 Howell Creek: magnetite-Cu-Au-REE's. 25 Hobson: RGS sample #93A805512 (Au, La, Fe & Cu). 27 Giant Copper (CanAm): MINFILE # 092HSW001

28 Granduc: MINFILE # 104B 021.

Alkalic Porphyry Associated Examples: 17 Virginia: MINFILE 092HSE242. 31 Lorraine & Bishop: MINFILE #093N 002 & 066. 32 Galore Creek: Saddle & West Fork Glacier MINFILE # 104G 097 & 097. 16 Magnet & Glen Iron: MINFILE 092INE022, 025.