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SUMMARY OF McLYMONT CAMP VISIT

by

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Introduction:

During August 1990, a four day visit was made to the McLymont property which contains two styles of mineralization that are probably related. One of these, the "Camp zone", lies east of the northerly trending McLymont fault, which is believed to be easterly dipping and downthrown to the east. This zone comprises auriferous quartz-pyrite-chalcopyrite veins hosted in a quartz-rich granite.

By contrast, the "Northwest zone"lies just west of the McLymont fault. It is underlain by a Mississippian to Jurassic package of crinoidal marbles and altered tuffs and well graded tuffaceous siltstones. The pyrite-magnetite-chalcopyrite-gold mineralization, which may represent a skarn-related chimney and manto deposit, has been traced for over 300 metres in a NNE direction. Controls of mineralization are uncertain although the ore may be partly controlled within steep fractures and as a replacement of favourable, gently dipping calcareous units. The ore appears to lie several hundred metres above an intrusive contact between a granite-granodiorite and the overlying sedimentary-tuff package. The current exploration by Gulf International is concentrated on the Northwest Zone. During this summers visit six drillholes were logged and sampled by the author.

Surface geology in Northwest zone drill area

At the top of the (visited) sequence are fresh green, massive andesitic ash tuffs with minor lapilli. Lower down, where the drilling is taking place, is a sequence of bedded tuffs, thin bedded tuffaceous siltstones, and occasional units of massive ash and crystal tuffs. The lowest part of the sequence (seen in drilling) appears to be coarser lapilli tuffs with ash tuffs and minor tuffaceous siltstones. Within the drilled sequence are thin units of white to grey colored marble. A few poorly exposed bedding measurements observed in the drilling area suggest the sequence dips north to northwest at between 35 and 65 degrees; graded beds in the siltstones (in drill core) indicate the sequence is upright.

Mineralization in the Northwest zone.

Mineralization occurs in either steep, generally narrow (?fracture controlled) zones or in gently dipping, thicker carbonate-rich horizons It is mostly developed in the coarse, (crinoidal bearing) marbles although lesser amounts are found in the siltstones and andesitic tuffs. Mineralization consists of pyrite, magnetite, chalcopyrite and sporadic gold in a carbonate-quartz-chlorite gangue. The magnetite is irregularly distributed; it comprises two habits: a rounded to nodular form which replaces carbonate, and an acicular form which appears to replace an early pale green mineral (? tremolite-actinolite). The acicular magnetite forms long needles, up to 2 cm in length, often growing in carbonate.

The pyrite also occurs as two habits. The commonest forms coarse, rounded crystals up to 1 cm in diameter. Some of these appear to replace large carbonate crystals, remnant ossicles and possible garnet. The other form of pyrite is very fine grained and massive. It forms veins and masses that post-date the coarse pyrite. Locally, this fine pyrite carries high gold grades.

Chlorite is sporadically distributed but tends to show a spatial correlation to the magnetite-sulphide zones. It forms black irregular masses that reportedly carries visible gold. The quartz forms irregular white, thin veins that have vugs lined with elongate, euhedral crystals. In addition, small, single euhedral quartz crystals up to 2 cm long are seen within the carbonate. The mineralized zones are also characterized by abundant white to cream to pale brown coloured carbonate that occurs both as a groundmass to the magnetite-sulphides, and as late, cross-cutting veins. Some of the late carbonate veins contain stringers of chalcopyrite, and small masses of white barite

Visible gold is occassionally seen in chlorite. Preliminary polished section studies on auriferous samples suggest the gold is usually very fine (< 10 microns). Minute grains of gold have been identified within chlorite and coarse pyrite. Other minerals in the mineralized zones include veinlets of specular hematite, some graphite (particularly along fault zones) and rare galena and sphalerite. The hematite veinlets cut both the magnetite and the coarse and fine pyrite.

Occasionally the mineralized zones contain small amounts of red, podiform jasper. Some jasper appears to replace a euhedral mineral that could be either garnet, pyrite or quartz (A.D.Ettlinger and V.Jaramillo have now found remnant garnet within some jasper nodules). These isolated jasper nodules occur within the coarse, white marble. The jasper appears to be partially replaced by pyrite and some jaspers are rimmed with magnetite and possibly chlorite.

The mineralized zones are haloed and spatially associated with extensive zones of early silicification and later ferro-carbonate alteration. Silicification varies from grey to very pale green to pale brown. Silicification can selectively replace certain beds in the tuffaceous silltstone units, but it can also completely overprint large area to produce a chert-like rock. Silicification was followed by brown coloured ferro-carbonate alteration that occurs either as diffuse, massive overprinting or as fracture-related ferro-carbonate veins and breccias. Some of the carbonate veins contain small euhedral quartz crystals, stringers of chalcopyrite, and clots of white barite.

Paragenesis of the Northwest zone mineralization

From a visual inspection of ore the following sequences have been noted:

(a) 1; chlorite 2; magnetite 3; coarse pyrite 4; fine grained pyrite 5;quartz veining

(b) 1; jasper 2; magnetite

(c) 1; jasper 2; chlorite

(d) 1; silicification 2; ferro-carbonate alteration 3; carbonate veins and chalcopyrite

(e) 1; tremolite-actinolite? 2; magnetite

(f) 1; jasper 2; pyrite

(g) 1; magnetite 2; pyrite 3; specular hematite.

The chlorite appears to be early. This was followed by magnetite which replaces carbonate and ?tremolite-actinolite. This was followed in turn by pyrite (coarse and fine), quartz veining, silicification, pervasive ferro-carbonate alteration and carbonate veining with chalcopyrite. The age of the gold is unknown - although visible gold is reported in the chlorite , and good assays come out of the fine pyrite. It is uncertain whether the late chalcopyrite carries gold although the poor Cu:Au correlations in the assays suggest the chalcopyrite is barren.

Trenching over the Northwest zone

The trench is approximately 15 m long and at an elevation of 3830 ft.. In the upper part, chert occurs with a thin marble bed. Fractures and beds strike 40 degrees and dips 32 NW. Lower in the trench there is abundant massive fine grained pyrite which is crosscut by irregular quartz veins containing euhedral quartz crystals. There are also pods of deformed black chlorite and carbonate and some very coarse pyrite.

The trench reveals an early fault set trending 360/68 E. These are cut by a younger E-W set. Slickensides plunges 10 degrees in a 110 dgreee direction indicating subhorizontal dextral movement. The early set is sub-parallel to the McLymont fault. Slickensides on this set plunge 65 degrees in a 95 degree direction. There is also another fault set exposed in the trench that trends 50/62 NE with vertical slickensides. This fault has a narrow (10 cm) rotted faulted gouge.

Report of Field Visit - McLymont Creek Property
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The following is a summary of observations made during a one day field visit to Gulf International Minerals' McLymont Creek Property. The author was assisted during his visit by Victor A. Jaramillo, Project Geologist for Gulf International. The visit included a surface tour and inspection of two diamond drill holes from the Northwest zone. Fourteen samples were collected for further petrographic study, while one galena-bearing sample was collected for Pb-isotope analysis.

Alteration and accompanying mineralization in the Northwest zone can be interpreted as an intensely retrogade altered skarn deposit. A core of garnet + pyroxene skarn formed in the area known as the "mushroom zone", which is an area of thickest sulphide accumulation and high gold grades. Remnant garnet is observed in drill hole 89-36, located just south of this zone, adjacent to a granitic pluton. Garnet also occurs with pyroxene in drill hole 89-9 (43.3 m) which pierces the mushroom zone. The garnet occurs as dark brown, fine grained, glassy fragments surrounded by retrograde jasper and carbonate. Coarser, euhedral garnets were compositionally zoned and are observed as alternating rings of pure jasper and impure carbonate. Remnant pyroxene is very fine grained and most commonly occurs in hornfelsic lenses with quartz and possible K-feldspar. The majority of pyroxene was probably first altered to amphibole, and then subsequently to chlorite + calcite + magnetite. Garnet and pyroxene were most likely andraditic and diopsidic in composition, respectively.

To the north, and outward of the mushroom zone, sphalerite + galena are present in drill hole 88-20 (49.4 m). This base metal mineralization is associated with dark green chlorite alteration and replaces marble. Garnet and/or pyroxene do not occur in this drill hole.

Silicification is common and most intense below and beyond the garnet + pyroxene retrograde skarn, where it forms massive, chert-like beds. Both the volcaniclastic rocks, and the marbles are silicified.

Rocks exposed on the surface of the Northwest zone are weakly altered. Bedded volcaniclastic rocks, varying in grain size from tuffs to agglomerates, are commonly chloritically altered, or weakly hornfelsed. Interbedded limestones are recrystallized to medium grained, relatively pure marbles. Pyrite occurs as minor disseminations marked by limonitic zones in the volcanic rocks, and as a massive, fine grained lens in a recently excavated trench.

The Northwest zone on the McLymont Creek property has been previously interpreted as a replacement deposit in marble. While replacement mineralization certainly occurs in this deposit, the observed alteration assemblages, gold, and base metal mineralization is best described using a skarn model. Early calc-silicate skarn formed above the main fluid conduit, in the vicinity of the mushroom zone. Garnet and/or pyroxene formation continued outward from this feeder zone, until the hydrothermal fluids became depleted in cations, and cooled sufficiently to begin silicification. Beyond this silicification, hornfelsing of volcanic/pelitic sediments, and recrystallization of limestone to marble may be observed.

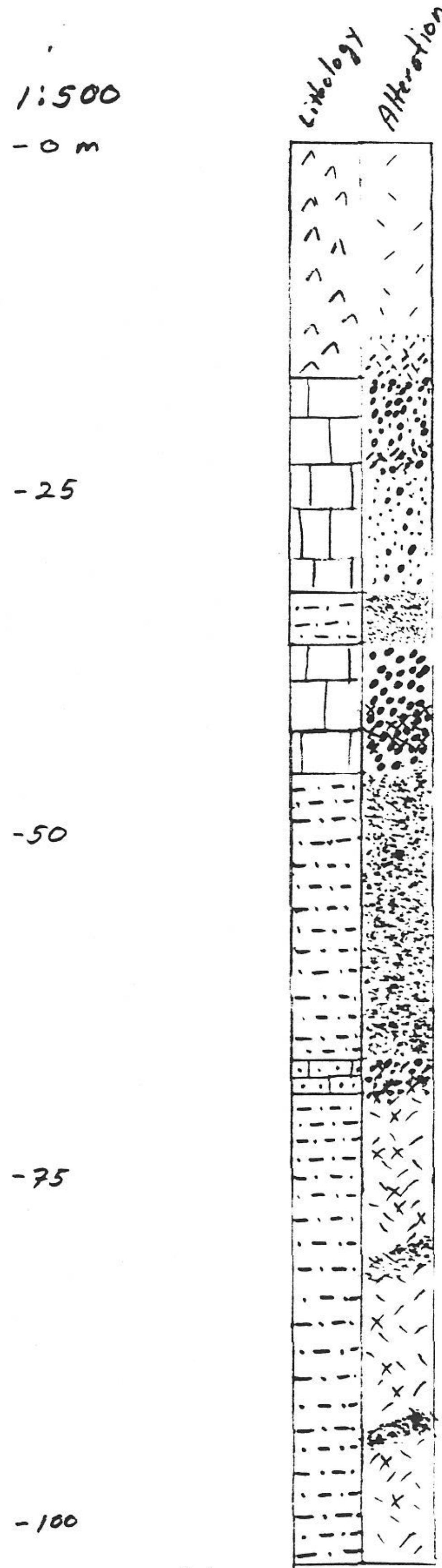
After extended cooling, the hydrothermal system collapsed, at which time mixing of relatively cool, dilute meteoric water with the hotter, more saline hydrothermal fluids probably occurred. This resulted in intense retrograde alteration of garnet + pyroxene, and triggered gold + sulphide deposition. In an oxidized environment near the magnetite-hematite buffer, the assemblages: jasper + carbonate, and chlorite + calcite +/- magnetite, which forms the bulk of alteration in the Northwest zone, are not uncommon retrogarde products of andraditic garnet and diopsidic pyroxene, respectively. When the retrograde fluids encountered marbles beyond the limit of calc-silicate skarn, magnetite-sulphide replacement bodies formed. Sphalerite + galena veins, often the most distal expression of a skarn system, are found in hole 89-20, near the northern limit of mineralization, away from observed garnet + pyroxene skarn.

DDH - 89-9

McLymont Creek - Summary of Observations, Drill Hole 89-9

A. Ettlinger - 9/90

1:500



tuff - weakly laminated, pervase weak chlorite alteration, patchy silicification, dolomite stockwork. Chlorite increases near tuff-marble contact

py w/ dolo + qtz

chl increases @ lower contact, cubic py in dolo stockwk

probable limestone host. Magnetite > pyrite at upper + lower contact. Py > mag near center of unit.

massive chlorite

accicular magnetite replacing amphibole or hematite

hard, siliceous hornfels in silty interbed, trace remnant pyroxene?

Intensely altered skarn. Minor remnant brown glassy garnet. Abundant carbonate, quartz, jasper replace garnet. Mag > py.

Altered hornfels - Aphanitic swirls of cream and green-grey silica + K-feldspar? and pyroxene hornfels. Cream colored hornfels partially altered to clay, while pyroxene hornfels altered to chlorite.

Weak banding may represent slight compositional variations in protolith siltstone.

semi-massive, coarse pyrite, with remnant laminated pyroxene skarn altered to chlorite

Retrograde pyroxene skarn - abundant chlorite, dark green amphibole?, scattered remnant pyroxene, intermixed with pale siliceous hornfels. Cross-cut by widely scattered dolomite/ankerite veinlets. Minor, disseminated, euhedral pyrite. Increased limonite staining and fracturing toward bottom of hole.

Lithology

- volcaniclastic - tuff, agglom.
- limestone - recryst to marble, often replaced by skarn
- siltstone, probably tuffaceous

Alteration

- chlorite
- pyrite
- magnetite
- skarn - remnant gar or pyx.
- hornfels - abundant quartz, pyroxene, K-feldspar?

McLymont Creek - Summary of observati[illegible]s, Drill hole 88-20

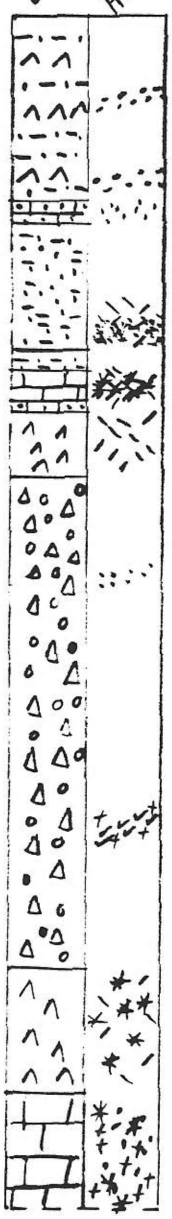
A. Ettlinger 9/90

DDH- 8[illegible]20

1:1000

Lithology Alteration

-0m



dark grey laminated siltstone and tuff. siltstone. Sporadic xx cm gritty lenses -> often pyritic + calcareous.

pyrite limited to coarser laminae.

calcareous siltstone / silty limestone, 2-3% py

gritstone - green, chlorite increases near lower contact. Possible weak pyroxene hornfels developed widely spaced dolomite veinlets.

siltstone? - pale green / buff

marble - strong dk green chlorite alt. 3-4% sulph. - sl>>gl, minor chalcopyrite

tuff - dark green, chlorite altered, dolomite stockwork decreases with depth

-50

Volcanic agglomerate - angular and subrounded, dark green andesitic? fragments, jasper + lithic fragments, in chloritic matrix. Increase in dolomite stockwork. Limited py - calcite alt. and a general increase in calcite veining with depth

-100

K-feldspar? vein with feldspar + hematite replacement of agglom. fragments in vein halo.

silicified tuff? - brecciated, abundant pink quartz?, weak-mod. chlorite alteration, tr wollastonite?? approx 1% diss cp

limestone proto? - possible chl-qtz-dolo retrograde of pyx skarn. Abundant diss. coarse py, cp, and coarse specular + bladed hematite

-150

Not Completed

Lithology

- laminated siltstone - often dark grey, tuffaceous
- calcareous siltstone or silty ~~limestone~~,
  pyritic
- gritstone - chloritic
- tuff - dark green, chloritic
- Volc. agglom - ang-subrounded frag. dominantly of andesite? Minor jasper + lithics
- Limestone? - intense chl-qtz-dolo retrograde alteration. Pyrite, cp, hm

Alteration

- pyrite
- chlorite
- hornfels
- base metals sl>>gl>cp, cp
- hematite - specular, bladed.
- K-feldspar?