

MINERAGRAPHIC AND PETROGRAPHIC DESCRIPTIONS

SAMPLE NO: BRCD – 9 162.93 – 163.01 m

TYPE: Core

LOCATION: Borroloola Drilling 2006

FIELD IDENTIFICATION: Carbonate – filled gash veins and chalcopryite mineralisation associated with jaspery veins have penetrated an altered argillite host. The gash veins react weakly with dilute HCl.

SECTION TYPE: Polished Thin Section

CLASSIFICATION: *Mineralisation (chalcopryite, minor pyrite) is associated with secondary quartz – Fe/Mg chlorite and jaspery (limonite) shears as well carbonate ± quartz gash veins in a moderately to poorly sorted argillite host. The argillite host has been also cut by a series of anastomosing sericitic (fuchsite?) shears.*

DESCRIPTION:

MINERALS PRESENT:

Quartz (clasts)	35%	Opagues (4%):
(matrix/veins)	32%	Chalcopryite - dominant
Plagioclase	2%	Pyrite - minor
Fe to Fe/Mg chlorite	5%	
Sericite (fuchsite?)	6%	
Carbonate - ankerite	10%	
Limonite	6%	
Opagues	4%	

TEXTURE:

The matrix contains fine grained (0.1 to 0.4 mm), moderately to poorly sorted, subangular to subrounded detrital grains and minor plagioclase grains in a fine grained matrix. The detrital clasts are matrix supported. The matrix comprises cloudy clay-dusted microcrystalline quartz and has been cut by a series of anastomosing shears and veins comprising fibrous to scaly green – fuchsitic(?) sericite overprinted by limonite ± quartz ± Fe/Mg chlorite – sulphide (veins) veins. Limonite has locally flooded the matrix and can be postdated by quartz – Fe/Mg chlorite veins, locally associated with sulphides (opaque). Carbonate gash veins can be associated with minor euhedral quartz and represents a later phase.

In reflected light, mesh-like chalcopryite aggregates have accompanied secondary quartz, fibrous Fe/Mg chlorite and limonite as part of the alteration overprint. Chalcopryite and pyrite, associated with quartz and chlorite, has locally penetrated the limonite aggregates. The late carbonate – quartz gash veins can be rimmed by chalcopryite. There is little evidence of metamorphism.

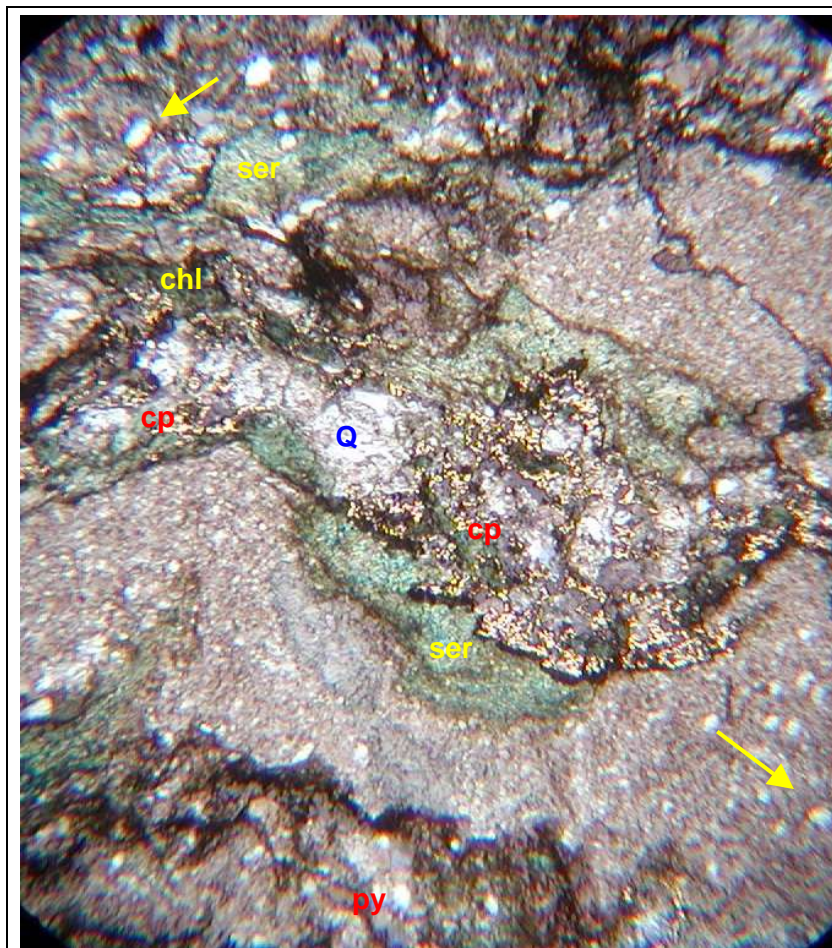
ALTERATION/METAMORPHISM:

The argillite host has been overprinted by sericite (fuchsite?), secondary quartz, Fe to Fe/Mg chlorite and limonite aggregates as penecontemporaneous alteration phases, typically associated with stylolite-like shears and locally associated with mineralisation. Alteration and mineralisation has accompanied deformation of the argillite host. Carbonate gash veining represents the final phase and, along with quartz, can be associated with minor sulphides.

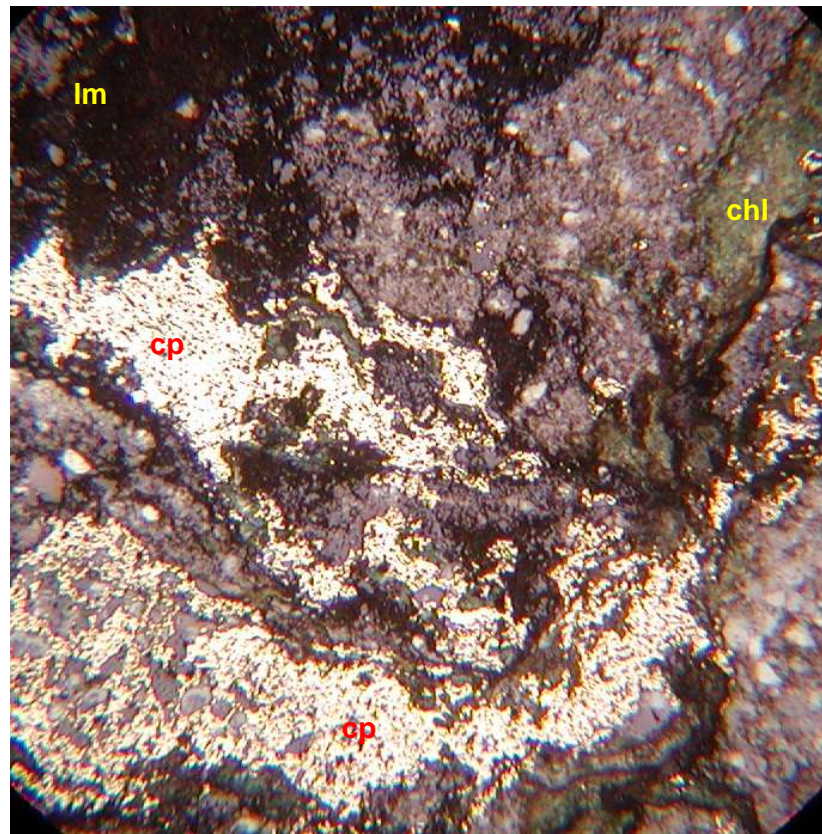
COMMENTS:

The argillite unit has provided a host for a series of penecontemporaneous veins that are associated with mineralisation. Veining and alteration can be regarded as low temperature hydrothermal; fibrous sericite (fuchsite) lenses have been overprinted by limonite/jasper – quartz – Fe/Mg chlorite anastomosing veins & shears, postdated by carbonate (ankerite) ± quartz gash veins associated with (remobilised) chalcopyrite mineralisation.

Photomicrographs



Chalcopyrite (cp) is associated with secondary quartz (Q) and Fe/Mg chlorite (chl) in a series of stylolite – like veins overprinting fibrous green sericite (fuchsite?) in the argillite host. Note the presence of relict detrital grains in the argillite (arrows). Crossed polars under reflected and transmitted light. Field of view – 3 mm.



Mesh-like chalcopyrite aggregates associated with secondary quartz - Fe/Mg chlorite (chl) shears in the argillite host. Limonite (lm - opaque) forms part of the alteration assemblage. Crossed polars under reflected and transmitted light. Field of view – 3 mm