

MINERAGRAPHIC AND PETROGRAPHIC DESCRIPTIONS

SAMPLE NO: BRCD – 8 265.92 – 266.0 m

TYPE: Core

LOCATION: Borroloola Drilling 2006

FIELD IDENTIFICATION: Pyrite is disseminated through a jaspery host. Portions of the sample react weakly with dilute HCl.

SECTION TYPE: Polished Thin Section

CLASSIFICATION: *Mineralised (pyrite, chalcopyrite) jasper cap comprising limonite-dusted microcrystalline quartz overprinted by penecontemporaneous alteration phases including microcrystalline quartz, Fe/Mg chlorite and anhedral to euhedral quartz associated with carbonate. An unidentified bladed mineral – possibly gypsum has been replaced by limonite and microcrystalline quartz.*

DESCRIPTION:

MINERALS PRESENT:

Quartz	50%
Fe/Mg chlorite	4%
Carbonate - ankerite	5%
Limonite	38%
Opagues	3%

Opagues (3%):

Pyrite - dominant
Chalcopyrite - subordinate

TEXTURE:

The siliceous matrix includes several phases; the jaspery portion represented by limonite – dusted microcrystalline quartz has been penetrated and locally brecciated by a fine anhedral to microcrystalline quartz mosaic. Vughs can be lined by euhedral quartz and infilled by carbonate – calcite. An additional alteration phase within limonite-dusted quartz comprises fibrous Fe/Mg chlorite aggregates and rosettes that, along with limonite and secondary quartz, has locally replaced interlocking bladed forms – possibly original gypsum(?). Euhedral to anhedral sulphides (opaque) represent an integral part of the siliceous matrix and locally rim coarse bladed forms occurring within an anhedral quartz vein.

In reflected light, anhedral pyrite is closely associated with limonite-dusted microcrystalline quartz and tends to euhedral pyrite within the later quartz – Fe/Mg chlorite phase. Chalcopyrite can occur as fine anhedral grains in the limonite-dusted phase and is associated with carbonate. Both pyrite and chalcopyrite rims enigmatic bladed forms in the later quartz veins.

ALTERATION/METAMORPHISM:

The various siliceous assemblages have a hydrothermal origin and have been introduced as several penecontemporaneous phases. Limonite dusted cryptocrystalline quartz – jasper is associated with secondary anhedral quartz, Fe/Mg chlorite and an unidentified bladed mineral – possibly originally gypsum, plus sulphides. There is no evidence of a metamorphic overprint.

COMMENTS:

The jasper cap is interpreted to represent the high level, low temperature portion of a hydrothermal system. Sulphides (pyrite, chalcopyrite) form an integral part of the alteration assemblage and have been locally remobilised by penecontemporaneous alteration phases. The

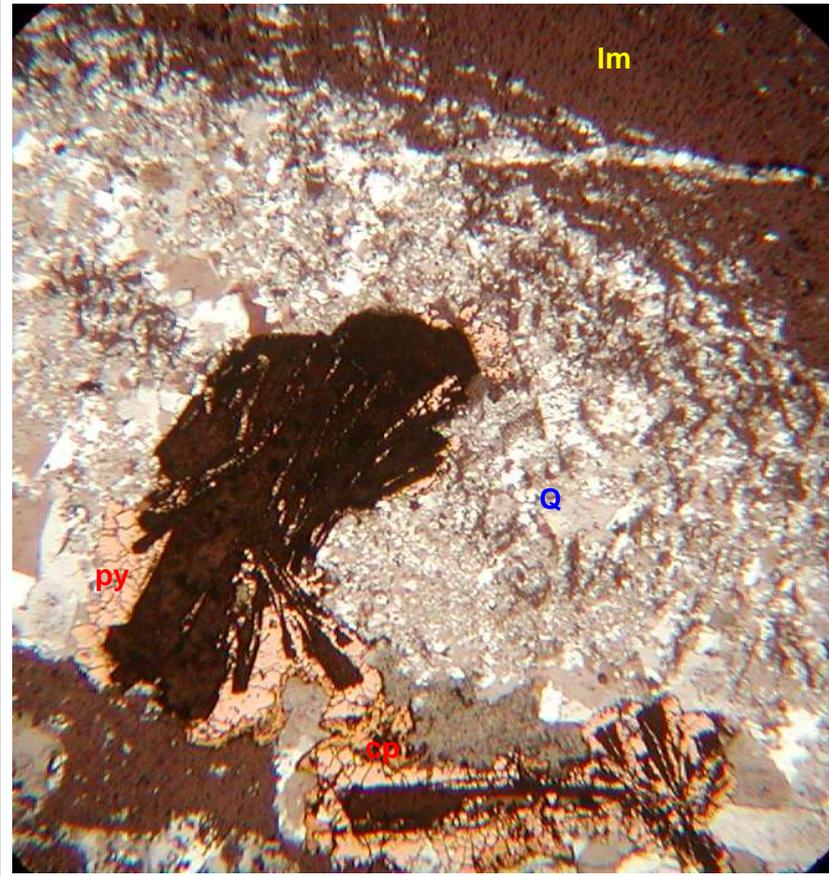
SAMPLE NO: BRC D – 8 265.92 – 266.0 m - CONTINUED

jasper alteration is interpreted to occur peripherally to a larger hydrothermal alteration system. This would appear to be supported by the presence of relict bladed gypsum (?) that has been pseudomorphed by quartz and limonite.

Photomicrographs



Porous anhedral pyrite occurring in the limonite-dusted microcrystalline quartz matrix has been remobilised as euhedral pyrite in the anhedral quartz(Q) – fibrous Fe/Mg chlorite (chl) vein, representing a later alteration phase. Note the presence of pseudomorphed bladed forms, possibly after original gypsum (arrow) Crossed polars under reflected and transmitted light. Field of view – 3 mm.



Relict bladed forms, possibly after gypsum(?) are rimmed by pyrite(py) and chalcopyrite (cp) in the anhedral quartz vein. Crossed polars under reflected and transmitted light. Field of view - 3 mm