

## MINERAGRAPHIC AND PETROGRAPHIC DESCRIPTIONS

**SAMPLE NO:** BRCD – 10D 502.85 – 502.91 m

**TYPE:** Core

**LOCATION:** Borroloola Drilling 2006

**FIELD IDENTIFICATION:** A black mineral – possibly bitumen occurs within vuggy quartz veining in a siliceous host containing finely disseminated sulphides (pyrite) as well as pyrite aggregates. The assemblage is thought to have a hydrothermal origin.

**SECTION TYPE:** Polished Thin Section

**CLASSIFICATION:** *Weakly mineralised (pyrite, tr chalcopyrite, bitumen?), superposed microcrystalline, fine grained to fibrous mosaic quartz and coarser grained plumose quartz low temperature – limonite-dusted quartz assemblages interpreted to have a hydrothermal origin.*

### **DESCRIPTION:**

#### **MINERALS PRESENT:**

Quartz	92%	<b>Opagues (5%):</b>
Plagioclase – albite	1%	Pyrite - dominant
Sericite	1%	Chalcopyrite - tr
Fe/Mg chlorite	tr	Bitumen - subordinate (2%)
Limonite	1%	
Opagues	5%	

### **TEXTURE:**

Various low temperature siliceous assemblages are apparent and include microcrystalline quartz, fine anhedral to fibrous quartz mosaics and coarser grained anhedral to plumose quartz veins. The earlier finer grained siliceous phases are typically limonite-dusted and contain fine scaly sericite inclusions. Accessories in the fine grained siliceous host include fibrous Fe/Mg chlorite and possibly limpid plagioclase (?). Fine euhedral sulphides (opaque) are also distributed through the finer grained phases. The coarser grained plumose quartz veins and lenses can also be limonite dusted and can contain anhedral sulphides. A series of thin “spider” veins cut the assemblage.

*In reflected light*, fine euhedral pyrite and trace anhedral chalcopyrite are distributed through the fine grained siliceous matrix. The plumose quartz veins can contain subhedral pyrite aggregates. A black mineral – probably bitumen (not graphite) occurs within a quartz vugh.

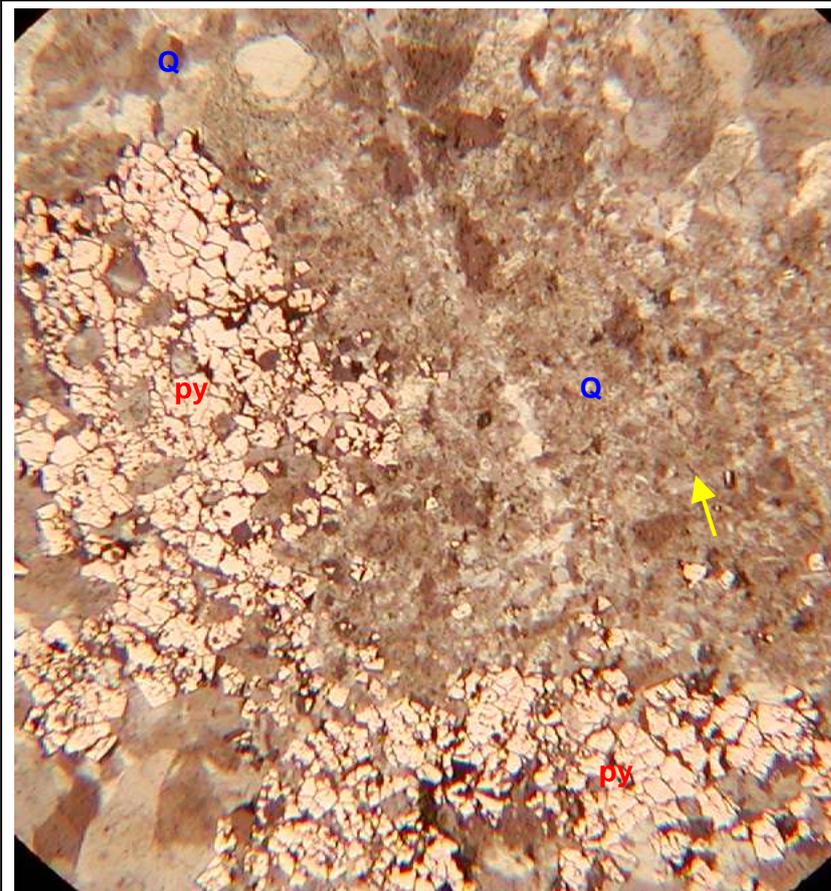
### **ALTERATION/METAMORPHISM:**

The various siliceous assemblages represent superposed low temperature hydrothermal assemblages associated with minor mineralisation. The development of undulose extinction in coarser quartz grains and overprinting by “spider” veins is consistent with weak deformation.

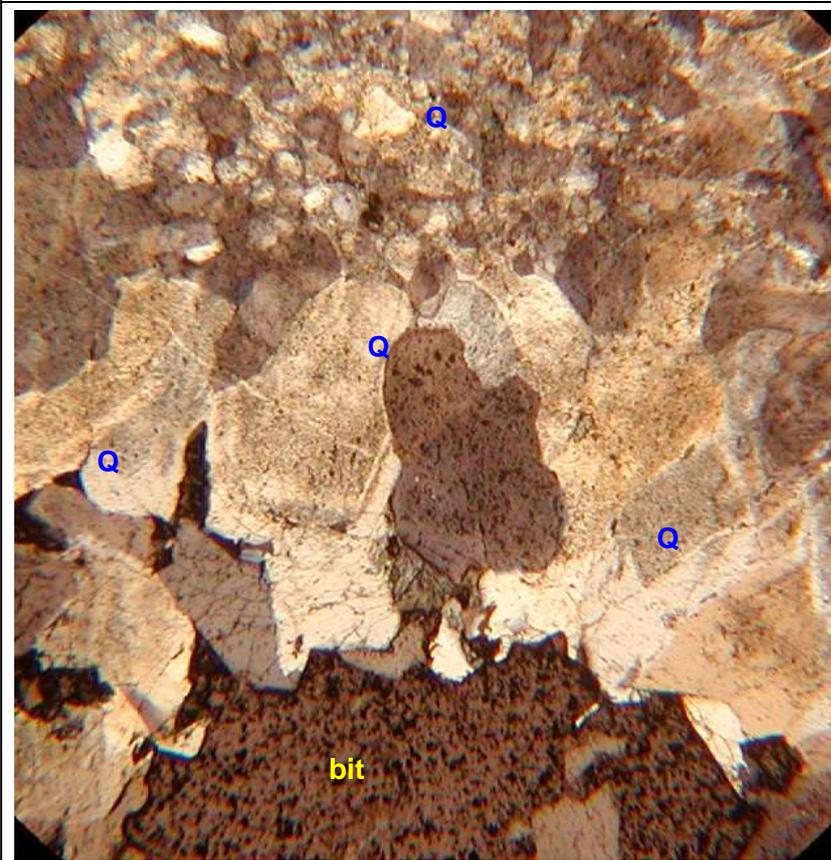
### **COMMENTS:**

The microcrystalline to fine grained to plumose quartz assemblages are all consistent with a low temperature hydrothermal regime. Minor pyrite and trace pyrite mineralisation is closely associated with the siliceous assemblages that also contains a soft black mineral infilling a vugh – probably bitumen.

Photomicrographs



Subhedral pyrite (py) aggregates associated with plumose quartz (Q) that has overprinted the fine grained to fibrous quartz (Q) host (arrowed) in the low temperature hydrothermal assemblage. Crossed polars under reflected and transmitted light. Field of view – 3 mm.



Plumose quartz (Q) rims a vugh, possibly infilled by bitumen (bit) in the fine grained quartz mosaic host – representing a hydrothermal assemblage. Crossed polars under reflected and transmitted light. Field of view – 3 mm