Vein Type and Characteristic of Tiegelongnan in Duolong Ore District, Tibet

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1 Geological Setting

Duo long copper-gold ore district is located at the west of Bangong -Nujiang junction zone,Tibet. The tectonic-magma active of multi-periods in junction zone provided the route for magma emplacement and minerals’ transport (Li et al.,2012). The stratams in ore district are mainly Quse formation of Middle Jurassic, Meiriqiecuo formation of Lower Cretaceous, Kangtuo formation of Neogene and Quaternary. The granodiorites, diabase and basaltic andesite can be seen in the ore district. Typical deposits of ore district are Duobuza and Bolong Porphyry Copper Deposits. Tiegelongnan copper-gold deposit is the first one that had made a significant breakthrough of ore district in 2013, it has the typical mineral assemblage, alteration assemblage and mineralization characteristics of epithermal deposit and it is the first epithermal deposit in Tibet. Its geological setting is similar to Zijinshan copper-gold deposit and it is the second large high sulfidation epithermal copper-gold deposit(Tang et al., 2014).

Tiegelongnan orebody spreads northeast, the length of orebody from north to east is 1400m, the length of orebody from southeast to northwest is 800m, the orebody hadn’t be controlled on strike , on tendency and on the vertical, the size of the deposit to be further identified. The average grade Cu of deposit is bigger than 0.5%, The average grade of associated gold is about 0.1 g/t and the average grade of associated silver is about 2 g/t(Tang et al.,2014).

Ore minerals of mine area are covellite, digenite, enargite, bornite, tetrahedrite, chalcopyrite and so on. The ore is disseminated and partly are scattered disseminated - dense disseminated. Gangue minerals mainly are alunite, dickite, sericite, quartz, anhydrite and so on. Alteration types mainly are hornfeled alteration, silicified alteration, dickited alteration, alunitization, chlorited alteration and so on. Pyrite is developed and it often grows at the central or the verge of quartz veins, clay mineral veins and Alunite veins associated with tetrahedrite, bornite, digenite and other Sulfides.

2 Vein Types and Characteristics of Mine Area

The veins of tiegelongnan mine area are very developed, they are the typical veins in the epithermal deposit. We divided the veins into 6 types.

2.1 Quartz vein

There are 3 types according to the mineral assemblages:
Clay minerals - quartz veins: corrosion holes often developed in the quartz veins and we can see clay minerals in the corrosion holes.
Pyrite- quartz vein: The content of pyrites is about 25%, the pyrites are often veins or sporadic.
Bornite- pyrite- quartz vein: The content of bornite is about 10%, the content of pyrites is about 25% and pyrites are produced in thin veins within quartz veins.

2.2 Pyrite vein

There are 5 types according to the mineral assemblages:
Pyrite vein: the pyrites often develop crystal forms in this veins and the width of pyrites is from 0.2 to 20cm. The content of pyrites is about 85%.
Quartz-pyrite vein: The content of quartz is about 15% and the clay minerals develops in the vein.
Tetrahedrite- digenite- pyrite vein: The content of Tetrahedrite+digenite is about 35% and they are produced in short vein or sporadic at the central or verge of this vein. Bornite- pyrite vein: the bornites are produced in sporadic in pyrite veins and The content of bornite is about 25%.
Molybdenite- pyrite vein: the width of this vein is small, it is about 0.2cm, molybdenites are produced in sporadic in pyrite veins.

2.3 Dickite vein

There are 4 types according to the mineral assemblages:
Tetrahedrite- pyrite- dickite vein: tetrahedrites and pyrites are produced in vein at the central or verge of
dickite vein.

Bornite -tetrahedrite- pyrite- dickite vein: bornite, tetrahedrite and pyrite are produced in short vein.

Pyrite- dickite vein: the width of this vein is about 11 cm, pyrite are produced in short vein or sporadic.

Breccia containing dickite vein: there are breccias in the dickite vein, the breccias produced in triangular-shaped or oval-shaped.

Acknowledgements

We especially thank Zhonglv Mineral Resource Corporation for giving us the opportunity to field practices and thanks to Bin Lin master for giving the comments on the geological record.

References
