



Antimony – gold mineralisation and structural controls in south Nehbandan, East of Iran

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Abstract The study area is a part of flysch - coloured mélangé that located in south of Nehbandan, east of Iran. We recognize sporadic epigenetic antimony-gold mineralisation by vein type structures with general orientation N35W, 80NE, which occurred in paleocen cream conglomerate. Cream conglomerate sit on flysch like type sediments and ophiolitic mélangé rock types. These veins are structurally controlled and spatially related to quartz-carbonate veins in tension fractures. The antimony-gold mineralisation lines are discontinuous zones of brittle-ductile deformation and cut the lithological layering within a shear zone. Due to structural chronology, we distinguish three steps of deformation related to mineralisation. (1) A dextral shear zone has deformed the rock units and produced geometrical open spaces. (2) Hydrothermal fluid rich of Sb and Au has filled the open spaces that occur in step one and has been sheared by brittle and ductile process. (3) The created veins within the progressive shear zone crushed by brittle deformation near the surface and folded by ductile deformation at the depth.

There are three mineralised veins of silica – carbonate, which their length varies between 1000 to 4400 m:

1. Vein 1: Its length is about 4400 m and its width is 50 - 150 cm.
2. Vein 1: Its length is about 1600 m and Its width is 50 - 200 cm.
3. Vein 1: Its length is about 1000 m and Its width is 30 - 150 cm.

The main minerals in these zones are dolomite, chalcedony, opal, ankerite, hematite, goethite, limonite, pyrite, chalcopyrite, and stibnite. Mineralization occurred in Paleocene cream conglomerate in deep seated faults. Analytical data's show high anomalies for Sb, Au and Hg in these zones. The grades for Au vary between 1.2 to 472 ppb, for Sb 14ppm to 32.48% and for Hg 150 ppm to 1.8%. Au, Sb and Hg show a closely correlation to each other.

Key words: Antimony, gold, mineralisation, shear zone, hydrothermal fluid