Geology, alteration, mineralization and geochemistry of Shekaste Sabz area prospect, North West of Birjand

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Abstract: Shekaste Sabz area is located in eastern Iran, about 96 km north west of Birjand. Preliminary prospecting in the area using ASTER mineral mapping (SAM) detected propylitic, argillic and sericitic alteration which was confirmed by field observation. The area comprises outcrops of Paleocene to Eocene volcanics, which was intruded by intermediate subvolcanic bodies. The main alterations zones are propylitic, argillic and silicified- carbonate. Mineralization is observed as vein (in central and west of area), veinlet and disseminated (in east and west). Veins show North West - South East to North East - South West trend and dip 85 to 90 degrees. Due to the great influence of weathering processes on the hypogene mineralization, secondary sulphide and oxide minerals spread widely and formed malachite, azurite, chalcocite, covellite, goethite and hematite. Relicts of the hypogene minerals such as pyrite, chalcopyrite and magnetite are also seen. Gangue minerals are quartz, calcite and barite. The maximum amount of copper and zinc distribution in stream sediments are located in the areas that vein mineralization and propylitic, argillic- sericitic and silicified alteration zones exist in their upstream. The range of variation for elements in the lithogeochemistry samples are as follows: Cu from 0.6 to 2.4 Percent, Mo from 77 to 2290 ppm, Zn from 23 to 2990 ppm, Pb from 24 to 754 ppm, Ag from 1.4 to 8 ppm. The maximum amount of elements in the lithogeochemistry samples are in places which veinlet and disseminated mineralization are associated with andesite. These are as follows: Cu 450 ppm, Zn 162 ppm, Pb 309 ppm, Mo 77 ppm. According to alteration type, Anomalous Cu, Zn, Ag and Mo and relation of mineralization with fractures system, Shekaste Sabz mineralization can be placed in the category of vein- type epithermal deposits.

Keywords: Lut Block; Vein mineralization; Alteration; Geochemistry; Shekaste Sabz.