Mineralogy, type, and metallogenic potential of alteration zones in Barandagh quadrangle, NE Zandjan, Iran.

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Abstract: Barandagh quadrangle is located in northeast of Zandjan, and is a part of polymetallic region of Tarem-Zandjan. Field evidence and microscopic studies show an intimate relationship between geochemical anomalies and alteration zones in this area. Based on the field observations and mineralogical studies, these zones, in light of extent, locality, and constituent mineral assemblage, differ from one another, and are scattered along the main shear zone of the area and the margin of Ghezel-Ozan river. The major alteration zones in this area are affiliated with the shear zone, and can be categorized into two discrete alteration types: 1) hypogene acid-sulfate (e.g., silicified, alunitized, advanced argillic, sericitic, and propylitic zones) and 2) supergene acid-sulfate (characterized by minerals assemblage such as jarosite, alunite, goethite, gypsum, and native sulfur). Alteration zone along the margin of Ghezel-Ozan river consists of neutral-pH types of alterations (consisting mainly of argillic, calc-silicate-bearing, and zeolitic zones). In general, these alteration zones were developed by the function of a vast geothermal system during the late Oligocene to Mid-Miocene time. Date gathered indicate that the discrepancy in reaction rate between the fluids and the enclosing rocks caused the development of these two types of alterations. Note the type of alteration zones and the obtained results from geochemical exploration, show that this area possesses suitable potential for prospecting of Ag-Au epithermal and polymetallic (Cu, Pb, Zn, Au, Ag) deposits.

Keywords: Polymetallic region of Tarem-Zandjan, Barandagh, alteration zones, geothermal system, Au-Ag epithermal.