Investigation of petrology and tectonic setting of Volcanichost rocks of Abri copper deposit (NW Bardekan)

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(Received: 17/3/2017, in revised form: 13/6/2017)

Abstract: about 50 Km northwest of Bardekan, Eocene volcanic and volcano sedimentary rocks of magmatic belt of north central Iran structural zone are host of Abri copper deposit. Volcanic rocks dominantly have andesitic, basalt and andesitic basalt composition, and manifested such as submarine lava flows, brecciated lavas in the present of water (agglomerate), or ash and fragmented volcanic rocks (tuffites), and they are associated with sedimentary rocks with compositional range of nummolite bearing limestone, marl and shale. Andesitic and andesitic basalts belong to medium to high potassium calc-alkaline magmatic series. Variations pattern of trace elements and rare earth elements, enrichment in LREE compared with HREE with enrichment in LILE and depletion in HSFE indicators of their affiliation to subduction zones and depletion in Nb and in some cases Ti, high concentrations of Pb, Ba, K and Th, are indicators of crustal contamination of magma forming of the studied rocks. Geochemical characteristics indicate that magma forming of the mentined rocks produce by partial melting of metasomatized overlay mantle wedge which affected by fluids originated from dehydration of metamorphosed subducted oceanic slab up to amphibolite facies and slab associated sediments. With respect to regional geochemical features, northward subduction of Sabzevar (Darouneh branch) Neothetys oceanic slab beneath the southern margin of Touran continental plate resulted in the formation of the NW Bardekan continental volcanic arcs.

Keywords: submarine lava flows; continental volcanic arcs; Neothetys; copper deposit; Bardekan; Abri.

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