

Mineralogy, geochemistry and conditions of formation of The Band -e-Ghichy Copper-Celestite deposit Torud area, South of Shahrood

S. Salehinasab, F. Fardoost*, A. Soltani

Faculty of earth Sciences, Shahrood University of Technology, Shahrood, Iran

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Abstract: Band-e-Ghichy copper deposit is located in the northern margin of the Central Iran structural zone, about 120 km south of Shahrood and 70 km south east of Torud. Copper mineralization occurred in the rock units including sandstone, conglomerate and siltstone with the Oligocene age. Mineralization has occurred in the form of stratiform (syngenetic), stratabound (epigenetic) and supergen (the surface processes). The minerals forming the deposit include sulfide (chalcocite, covellite, bornite, chalcopyrite and pyrite) and carbonate (malachite and azurite) minerals. The main mineralization forms in the reduction zone as well as in the red formations and is controlled by permeability, the content of organic materials and sulfides in the host rock. Due to the expansion of Eocene andesitic lavas in the adjacent area of the deposit and the presence of volcanic fragments containing copper-bearing minerals in host conglomerate units, it can be concluded that the source of copper in the region is attributed to volcanic units. Based on geochemical studies, sandstone of the region have a felsic to intermediate source rocks and the copper element in the base metals has the highest production coefficient (4 to 8 weight percent) and shows the highest correlation with silver. According to the basic characteristics of Band-e-Ghichy copper deposit such as host rock, mineralogy, structure and texture, companion elements, depositional environment and important mineralization factors, this deposit can be considered as a copper deposit with a sedimentary host and red bed type.

Keywords: *Copper; Sandstone; Oligocene; Red bed; Band-e-Ghichy; Torud.*

*Corresponding author, Tel: 02332396007, E-mail: faraj_fardoost@yahoo.com