Mineralogical, geochemical and petrogenesis studies of Zaroo skarn (North West of Yazd Province)

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(Received: 12/7/2009, in revised form: 11/1/2010)

Abstract: The Zaroo Cu-skarn is located NW of Yazd province, within the Cenozoic magmatic belt of Central Iran. The widespread rocks in the region are Eocene age volcanic with granitoids intrusives. The Cretaceous limestones in western parts of West Zaroo are hosted by skarn – marble mineralization. The skarns are distal type and are characterized by assemblage: Clinopyroxene, garnet, ilvaite, vezovianite, termolite, epidote, chalcopyrite, magnetite, calcite and quartz. The paragenetic relationships of these minerals have revealed a polygenetic nature of skarn assemblage reveal a polygenetic nature. Black crystals and masses of ilvaite have a close association with hedenbergite clinopyroxene and andradite garnet zone, likely as replacement bodieds. The formation of ilvaite is related to following reactions:

Andradite + Fe(OH)2 + CO2 = ilvaite + magnetite + quartz + calcite + H2
Hedenbergite + magnetite + Fe(OH)2 = ilvaite

The early skarn minerals are formed at 550 °C and the decomposition of early minerals to formation of final hydrous assemblages started below 470 °C in fO2.

Keywords: Skarn, Zaroo, Central Iran, pyroxene, garnet, ilvaite, magnetite

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