Mineralogy of Haj–Elyas iron deposit, northwest of Nehbandan, East of Iran

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Abstract: Based on field observation, magnetic data results and chemical analysis of the samples in the Haj - Elyas area northwest of Nehbandan, an iron ore body within the Lower Cretaceous dolomitic limestone, was identified. The intrusion of a Fe-bearing porphyritic diorite into the dolomitic limestone caused the occurrence of iron mineralization in the area. Studies of 750 meters of diamond drill Core logs, indicated that the mineralization occurred at the contact of porphyritic diorite and dolomitic limestone. The ore minerals in this zone are magnetite, hematite and limonite. Gangue minerals are plagioclase, quartz, calcite, dolomite, garnet, clinopyroxene, hornblende, tourmaline, hercynite, serpentine, epidote, pyrite, sphalerite and chalcopyrite. Garnet is more andradite in composition. Magnetite is altered to hematite and limonite in fractures. The average iron grade within mineralized zone is about 70 percent. Copper and zinc show very low grade. Based on mineralogical data, the mineralization at Haj - Elyas is associated with calcic – magnesian skarn type.

Keywords: calcic-magnesium skarn; Iron; Haj Elyas; east of Iran.

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