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Tips and tricks to know about porphyry copper deposits in Kerman copper-bearing belt

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Introduction

Kerman copper-bearing belt in southern part of Urumiyeh-Dokhtar zone is one of the high potential copper-bearing zones in Iran wherein several porphyry copper deposits have been found so far.

Facts and findings

The experts from National Iranian Copper Industries Co (NICICO) and their consultants have spotted and identified three subzones, which respectively are Sarcheshmeh-Sirjan, Abdar-Dehaj and Jebal-Barez based on the order of importance. Porphyry deposits have been found in all of these subzones. Sarcheshmeh, Sar-kuh, Darreh-zar, Chahar-gonbad and Kuhe-panj porphyry copper deposits have been explored in Sarcheshmeh-Sirjan subzone, and Meydook, Ijoo, Gowd-kalvari and Parkam deposits found in Abdar-Dehaj subzone. With regard to common magmatic, alteration and mineralization characteristics between Sarcheshmeh-Sirjan and Abdar-Dehaj these two subzones have been named as Dehaj-Sardouiyeh axis, and therefore the whole Kerman copper-bearing belt is divided into two subzones; Dehaj-Sardouiyeh and Jebal-Barez.

The characteristics of magmatic phases, lithology of the magmatic rocks, hydrothermal alteration, and their comparison indicate that these two subzones are different. The connection between mineral bodies, geochemical factors and tracers, and their compilation in GIS environment have shown that within Kerman belt Dehaj-Sardouiyeh axis features more evidences for porphyry deposits compared to Jebal-Barez zone.

The results from exploration and evaluation studies done by the author on the porphyry deposits throughout Kerman area can be summarized below as a key exploration guide:

- Numerous magmatic phases during Eocene – Quaternary (at least four magmatic phases)
- Concentration of faults and presence of perpendicular faults in some specific areas
- Significant thickness of andesitic and andesitic-basaltic rocks with high copper content in the background
- Copper indications and their high numbers in some specific areas
- Extensive alteration that is detectable in satellite images.

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