

Accepted Manuscript

Structural control on overprinting high-sulfidation epithermal on porphyry mineralization in the Chodarchay deposit, northwestern Iran

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PII: S0169-1368(16)30507-8

DOI: <http://dx.doi.org/10.1016/j.oregeorev.2017.01.028>

Reference: OREGEO 2098

To appear in: *Ore Geology Reviews*

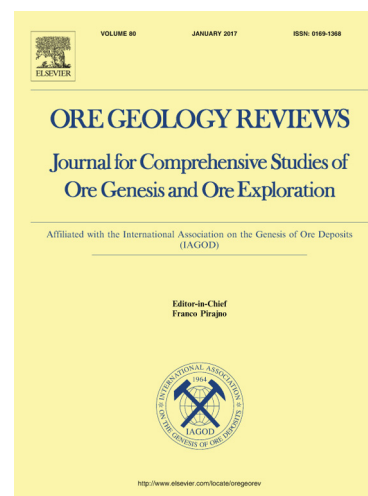
Received Date: 24 August 2016

Revised Date: 20 December 2016

Accepted Date: 30 January 2017

Please cite this article as: N. Yasami, M. Ghaderi, S. Madanipour, B. Taghilou, Structural control on overprinting high-sulfidation epithermal on porphyry mineralization in the Chodarchay deposit, northwestern Iran, *Ore Geology Reviews* (2017), doi: <http://dx.doi.org/10.1016/j.oregeorev.2017.01.028>

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1 **Structural control on overprinting high-sulfidation epithermal on porphyry mineralization**
2 **in the Chodarchay deposit, northwestern Iran**

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13 **ABSTRACT**

14 The Chodarchay high-sulfidation epithermal-porphyry deposit is located in the Taron volcanic-plutonic subzone of Western Alborz structural zone in NW Iran. In addition to Chodarchay, the
15 Taron subzone hosts several other epithermal deposits. Lithologic units in Chodarchay consist
16 of volcanic-pyroclastic rocks and intrusive bodies. Petrographical studies have identified
17 different rocks which host the mineralization. Mineralization has taken place in both volcanic-
18 pyroclastic units and intrusions. Detailed mineralogical and alteration data gathered from drill
19 cores and thin sections provides support for the hypothesis that the high-sulfidation epithermal
20 mineralization is underlain by a porphyry copper system. This deposit is the first reported
21 porphyry-epithermal mineralization in this subzone. The main structure of the Chodarchay area
22 is a fault zone that formed parallel to the general Taron NW-SE direction. Based on remote
23 sensing studies, on a wider scale, lineaments generally show NE-SW trends, but the Chodarchay
24 fault zone has a NW-SE strike and is associated with another W-E trending fault zone. These
25 fault zones are correlated with argillic alteration. There are two sets of reverse fault fractures
26 with a strike-slip component, based on slickenlines in the field and core observations. A normal
27 sense of fault movement remains in the NW part of the structural system. These new data sets
28 indicate two main extensional and compressional mechanisms for the fault. The evolution of the
29 fault system from normal to reverse in the deposit characterizes the present day structural system
30 of the Chodarchay area. Plutonism and porphyry mineralization are related to the extensional
31 stage, whereas the epithermal part of the deposit is associated with the compressional stage of
32 fault activation.

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34 **Keywords:** Remote sensing; structural control; overprinting; Chodarchay deposit; Taron; Iran.

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