

Genesis of the Jalal Abad Iron Ore Deposit

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Abstract: The Jalal Abad iron ore deposit is one of the seven most important iron ore deposits in the central Iran, with a probable ore reserve of 200.4 million tons of iron ore in which the average grades are estimated as 44.28% Fe, 0.83% S and 0.07%P. In the Jalal Abad deposit two types of orebodies are identified: the orebodies which are concordant with respect to the sedimentary host rocks (Jalal Abad I), and the orebodies which are discordant with respect to their carbonate host, rocks (Jalal Abad II). In this deposit the primary ore minerals are magnetite and hematite. Hematite is also formed from the oxidation of magnetite. It is proposed that the deposit was formed in two stages as described below.

- 1) The principal orebodies were formed contemporaneous with the sedimentation, from the exhalites and precipitates associated with volcanic activity within an intracontinental sources. This part of the deposit is named Jalal Abad 1.
- 2) After formation of the Jalal Abad I orebodies, due to emplacement of the igneous rocks within the ore zone, the meteoric and/or connate water contained in the Jalal Abad I: then iron was redeposited from the upwelling iron bearing solution as replacement orebodies within the carbonate rocks. In this manner Jalal Abad II orebodies were formed.