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Geological Settings and Mineralisation of the Vejnaly Gold Deposit, Lesser Caucasus, East Zangezur, Azerbaijan

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The Vejnaly deposit and contract area is situated in the Zangilan region of the Republic of Azerbaijan, near the village of Vejnaly. In terms of tectonics and metallogenic origin, the area is confined to volcano-plutonic structures of the Qafan zone, Lesser Caucasus metallogenic belt, well known for its ore deposits. The Qafan tectonic block is usually interpreted as a discontinuous Jurassic to Cretaceous subduction-related magmatic belt. The mineralised target area of 30 square kilometres hosts 25 gold- and two gold-copper-bearing zones that have been identified generally with a NE azimuth (10° – 60°) dipping 50° to 85° to the NW. The host rocks of the mineralised zones are Tithonian-Valanginian volcanic rocks of diabase composition and limestones, with Heterivian and Barremian marls. The deposit is associated with felsic intrusive rocks related to the Mehri-Ordubad pluton.

Vejnaly deposit ores are of gold-sulphide-quartz type, hosted within veins that exhibit mineralogy dominated by pyrite with subordinate chalcopyrite. Veins are distinct, with frequent pinch and swell geometry. The variable thickness of the orebodies in pinches ranges from 0.1 to 0.2 m and in swells from 1.0 to 2.5 m, rarely up to 6 m (as zones). The length of the vein zones ranges from 400 to 1,200 m. Near-ore alteration is widespread but does not have extensive thickness. The distribution of gold is nuggety within the vein systems.

Vejnaly ores have been reported to contain bismuth, vanadium, yttrium, and ytterbium. The mineralisation typically includes pyrite, chalcopyrite, and native gold. Other secondary minerals include magnetite, galena, sphalerite, quartz, calcite, ankerite, aragonite, and others.

The Vejnaly contract area of the Azerbaijan International Mining Company (subsidiary of Anglo Asian Mining) has significant prospects for volcanic belt porphyry-, hydrothermal-, and skarn-type mineral deposits.