

Lithological-structural setting and mineralisation styles of Reza high sulfidation epithermal gold deposit of Ugur exploration area, Gedabek ore district, Lesser Caucasus, Azerbaijan; a newly discovered orebody in western Asia

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Ugur ore perspective exploration area is located in the Gedabek ore district of Shamkir uplift of the Lok-Karabakh island arc volcanic structural-formation zone in the Lesser Caucasus Mega-anticlinorium, Azerbaijan, Western Asia. The Reza gold deposit, SHAH Yatag, Gyzydjadag, Dashbulag and Yukhari Narzan mineralisation areas are all located within the Gedabek-Bittibulag regional deep fault system of the Ugur exploration area. The Reza high sulfidation epithermal gold deposit was discovered during geological exploration work of the northwest flank of the Gedabek gold-copper mine by Gedabek Exploration Group (GEG) Azerbaijan in 2016. This Exploration Group discovered 2 gold (Gadir and Reza) deposit in last 4 years. The gold mineralisation in the Reza deposit developed mainly during the Upper Bajocian tectonic-magmatic cycle. During Upper Bajocian times, the central tectonic zone formed a right-lateral strike-slip fault represented by a number of sub-parallel-trending faults (055° - 085°) with a combined length of 1.0 to 1.5 kilometers. The Reza gold deposit was emplaced at the intersection of NW-, NE-, NS- and EW-trending structural systems regionally controlled by a first order NW transcurrent structure that dips between 70° to 80° to the north-west. The faults of the central zone control the hydrothermal metasomatic alteration, gold mineralization, Upper Bajocian Atabek-Slavyanka plagiogranite massive intrusion, and in some cases are the borders of the elevated tectonic blocks formed by Lower Bajocian volcanic rocks. In cross-section, the geological sequence is dominated by secondary quartzites (strongly altered rhyolite) which were formed under the influence of the Atabek-Slavyanka plagiogranite intrusions with some exposures observed to the north of the gold mineralisation area. The mineralisation zone thickness in the area varies between 80 to 120 meters. Gold mineralisation at the deposit is interpreted as being of shallow high sulfidation epithermal system. The mineralisation occurs in two different styles; 1) well-confined hydrothermal breccias and 2) underlying pyrite stock-workworks. Rocks in the alteration zone area strongly brecciated, and exhibit argillic alteration, with strong limonite and hematite alteration. Hematite is also observed in gossan zones. Near surface intense barite and barite-hematite vein and veinlets are present. Main mineralisation in the Reza gold deposit consists of hematite-barite-quartz-kaolin veins-veinlets and breccia, pyrite stock-workworks and quartz-sulfide veins. The central surface expression of the mineralisation exhibit accumulations of hydrous ferric oxides cementing breccias of quartz and secondary quartzites overlaying secondary quartzites with vein-veinlets barite-hematite mineralization. In areas of erosion, gossans are represented by "reddish mass" of oxidation products of stockwork limonite-hematite ores is observed. Within trenching and shallow pits, mineralised zones vary in thickness from about 5-10 meters and contain gold with a grade of 0.3-3.5 g/t and silver with a grade of 1.0-45.0 g/t. Subsequent drilling has defined the depth of oxide zone mineralisation up to 100 meters, with an average depth of 60 meters.