

# SEG 2023 Conference: Resourcing the Green Transition

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## **Lithological-Structural Setting Mineralisation Styles of the Gilar Epithermal Deposit in the Lök-Qarabağ Volcanic Arc, the Lesser Caucasus, Azerbaijan**

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The Gilar deposit belongs to the Gədəbəy ore district of the Shamkir uplift, which is part of the Lök-Qarabağ volcanic arc—one of the main structural formations of the Lesser Caucasus. The deposit is located over the East flank of the Böyük-Qalaça local deep fault. Gilar was discovered during geological exploration work of the northeast flank of the Gedabek gold-copper mine by the Gedabek Exploration Group (GEG) of Azerbaijan International Mining Company in 2019. Gilar will be the 4<sup>th</sup> deposit discovered that will be constructed to a mine. The Gilar deposit is located between two systems: the Maarif porphyry and the Ərtəpə mineral occurrences. The rocks are Upper Bathonian extrusive, represented by mostly felsic and intermediate composition rhyolite-dacites, andesite-porphyry, andesites and their tuffs distributed from the surface to depth. Ore minerals are hosted in the metasomatic rhyolite-porphyry of the Upper Bajocian age, at depths ranging from about 130 to more than 400 m from the surface. Preliminary field mapping and outcrop sampling identified a continuous epithermal quartz vein, hosted in a rhyolite volcanic in the northern Gilar area. To the south of the vein system, significant massive mineralisation has been discovered. Mineral content is visual; however, further petrographic studies by polished thin section were carried out on samples taken from outcrop and drill core. The majority of core samples from Gilar contain high-grade gold, copper, and zinc. According to these observations and studies, pyrite is the main mineral which is observed in all drill core, and nearby outcrop samples exhibit crystal structures: massive, disseminated, euhedral, anhedral, etc. with associated chalcopyrite, sphalerite, and other sulfide minerals. Jasper, magnetite, barite, and limonite are non-sulfide minerals present. The mineral composition, textures, relationships, and chemical composition suggest a high-sulphidation type of epithermal system for the Gilar deposit.