

**Conference on Recent Research Activities and New
Results about the Regional Geology,
the Geodynamics and the Metallogeny
of the Lesser Caucasus**

A SCOPES meeting



Iv.Javakhishvili Tbilisi State University, Georgia
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GEOLOGY, RESOURCE & FUTURE ORE PERSPECTIVE OF THE GEDABEK GOLD DEPOSIT, AZERBAIJAN

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The Gedabek Mineral Deposit located in the Republic of Azerbaijan. The Deposit is product of a tectonic and magmatic cycle with progressive development from oceanic magmatism in the Jurassic to continental magmatism in the Tertiary. This magmatic episode generated the most important metallogenic belt in the Middle East region called Tethyan and subsequently the development of a range of types of hydrothermal mineral deposits such as the Gedabek Mineral Deposit. The Gedabek Mineral Deposit belongs to a structurally complex zone called Somkhit-Agdam. This zone is constituted by volcanics rocks of the Jurassic and dioritic to granitic intrusives rocks from the Jurassic to Tertiary. The volcanics rocks includes andesitic and dacitic lavas and volcanoclastic tuffs. The sequence of volcanic rocks are cuts by a set of faults that allowed emplacement of intrusives stocks such as the dacitic quartz porphyry of the Oligocene, which hosts the gold, copper and silver mineralisation.

The volcanic rocks, andesitic and dacitic lavas and volcanoclastic tuffs are grey to light-greenish grey colour, principally bedded, locally hornfelsed and propylitised are on top of the dacitic quartz porphyry. The dacitic quartz porphyry of light gray colour contains 5% to 20% quartz phenocrysts, which is variable, altered and fractured with mineralised stockworks. In addition, a quartz diorite-granodiorite intrusive and its contact of a not mineralised skarn of garnet-vesuvianite-wollastonite is also located in the East of the dacitic quartz porphyry. The most important alteration in the Gedabek Mineral Deposits is the silicification located in the upper part of the dacitic quartz porphyry, which consists of a fine grained, vuggy silica, sericite, alunite, pyrite and clay minerals. These extrusive and intrusive igneous rocks and the silicification alteration were drilled, identified and logged during the previous and recent exploration drilling campaigns.

A petrography study from drillhole core and outcrops samples was carried out by SGS Lakefield Research Limited, confirming the mineralogical and textural characteristics of the extrusive and intrusive igneous rocks, which hosts the gold, copper and silver mineralisation. The gold, copper and silver mineralisation has been affected over time by a weathering process and an oxide zone has been identified and located in some upper part of the Gedabek Mineral Deposit. This process transformed and concentrated the mineralogical and textural characteristics of the economic and non-economic mineralisation. During the geological core logging process of the exploration drilling campaigns, these mineralogical and textural characteristics has been also identified, logged, coded and recorded.

The oxide, transition and sulphide mineralisation zones have been identified and mapped during the exploration and the open pit exploitation processes. These mineralisation zones have an important economic impact in the Gedabek Mining and Mineral Processing Operation. Currently, the gold, copper and silver mineralisation located in the oxide zones is being treated by heap leaching process. In the case of the sulphide mineralisation, technical and financial analyses of mineral processing alternatives are being researched. Calculation of ore reserves is based on 0,3 g/t external amount of gold and is limited by the surface topography dated 30 December 2011 within recent optimal quarry project, initial surface topography, as well as open quarry works.

Renewed resources on Gedabek deposit:

Category	Type of ore	Resource, mln. t	Amount of useful components in ore			Resources of useful components				
			Au, g/t	Ag, g/t	Cu, %	Au		Ag		Cu, thousand tons
						ounce	tons	ounce	tons	
C1	Oxide	9,62	1,10	9,78	0,24	340759	10,60	3025875	94,1	23,60
	Sulphide	10,69	1,17	9,15	0,33	403269	12,54	3149656	97,95	35,89
Total:		20,31	1,14	9,46	0,29	744038	23,14	6175531	192,06	59,48
C2	Sulphide	16,80	0,57	4,50	0,13	310344	9,65	2433020	75,67	22,29