



## ***Biye-Bessoba ore-bearing area (polymetals)***

### **Location**

Biye-Bessoba ore-bearing area is located in the Southern Kazakhstan near Balkhash Lake. 30 km from the facility, there is a railway station. Astana-Almaty highway runs along the border of the area, 4 km to the east. Also along the highway, there is power line as well.

### **Components of value**

Within the ore field, there are several deposits and ore occurrences. Components of value: copper, silver, lead, zinc, tin.

### **Subsoil Use Contract**

Current Subsoil Use Contract for Geological Prospecting is concluded for 6 years. The Signature Bonus has been paid. The Work Program is being executed in full within 2 years. Area of geological allotment is 1 374 km<sup>2</sup>.

### **Purpose of investment**

Search for a potential joint venture partner to develop a project on Biye-Bessoba Ore-Bearing Area.

### **Biye-Bessoba Area Review**

The identification of a large number of mineralization features and mineralization points at the previously closed Sary-Shagan military testing ground, the reassessment of materials from previous years and the conduct of prospecting and appraisal work by Two Key LLP made it possible to identify 9 potentially ore-bearing zones: Maloshakshagailinskoye (Sn, Pb, Zn, Bi, Cu, W, Mo), Ortazhartas (Cu), Balateniz (Cu), Ayakzhartas (Sn, Pb, Zn), Biye (Sn), Korgasandy (Sn, Pb, Zn, Bi, Cu), Ussembayskoe, Pb, Bi, W), Karaungur (Fe), Shakshagaily (Fe).

At the same time, Ortazhartas and Balateniz areas are prospective for the discovery of a large copper-porphyry structure.



For the development of the mining industry, the proximity of the field to the railway, the Almaty-Astana highway, electric power lines, flat terrain, the presence of a large lake - Balkhash.

Geographic and geological features of individual sections of the Biye-Bessoba area are so diverse and attractive that it can serve as a place for the development of geological tourism.

## **Deposits and ore occurrences of minerals Rare-metal group.**

**Biye deposit.** There is a tin deposit on the Biye area site with C<sub>1</sub>-C<sub>2</sub> reserves of up to 15,000, which are confirmed by modelling in 3D environment with modern means. It is expected that control drilling will increase the reserves of up to 25% since the previous drilling was carried out by a shot method with all the ensuing consequences from selective abrasion, to low core yield. On the same site, a geochemical zinc anomaly with a content of up to 15% in individual samples was singled out in works of 2017. The size of the anomaly is estimated at 200 \* 200 meters and requires verification work.

**Ayakzhartas deposit** is located in the north-eastern exocontact of the Kaib granite massif among conglomerates with interbeds of siltstones and sandstones of the Kashkanteniz Formation. The rocks have a northwest strike and fall to the southwest at an angle of 50-75 °. Here, a series of crests of granites of the Kyzylrai complex can be traced. They are parallel to each other, the width of their outlets is 0,5-30 m, the length is from 50 m to 4 km; with them is spatially related tin mineralization.

The ore-bearing zone measuring 1.5x2.5 km contains a series of quartz-sulphide and quartz-carbonate veins of the northeast (up to the near-latitudinal) strike. A total of 29 tin-bearing veins with a length varying from 60 to 930 m are allocated on the site with variable capacity and uneven ore mineralization.

The Karaungur deposit is a representative of the tin-polymetallic skarn type. In terms of tin, skams were studied only from the surface in the western band of the ore field for 500 m between the granite dikes.

### **Copper ore features.**

**Ortazhartas area** has, by indirect indications, promising to discover a large buried copper-porphyry structure. Prerequisites for its detection:

- Presence of ancient mine workings
- Geochemical zoning
- The presence of secondary quartzites.

**Balateniz area** is prospective for the discovery of a large copper-porphyry structure. Prerequisites for its detection:

- Presence of ancient mine workings
- Geochemical zoning
- Extensive yields of copper mineralization with copper content from 0.8 to 19%, silver to 56 g/ton, molybdenum. The composition of the ore-forming components resembles the Kounrad deposit located 150 km to the east.

**Zhilnoye Mednorudnoye occurrence:** Lenses of rich interspersed copper mineralization with a size of 10-40x1-3 m are confined to the areas of intensive epidotization with rare



garnet phenocrysts. Copper contents of 0.1-1.26%, lead 0.1-0.3%, molybdenum up to 0.038 %, silver up to 5 g / t.

**Nizhnesolonchakovskoye occurrence:** two north-western quartz-carbonate veins were encountered, one was developed by the large quarry, in the dumps there are rich pieces of malachite, chalcopyrite and bornite. To the north, quartz-barite veins with galena are noted. Copper contents 0.3-2%, lead and zinc up to 0.2%, gold 0.1-0.3 g / t. In general, the size of the copper section is 1.5x1 km.



## Resources and reserves

Overview table of resources and reserves:

	Cu, thsn tons	Sn, thsn tons	Zn, thsn tons	Bi, thsn tons	Pb, thsn tons	W, thsn tons	Mo, thsn tons	Fluorite, t
A+B+C <sub>1</sub>		0,13						
C <sub>2</sub>		16,57	42,3		7,2			
P <sub>1</sub>	175	44,84	72,7	2,65	12,8	0,39		5,25
P <sub>2</sub>	25	62,6		14		9,4	8,5	
P <sub>3</sub>	1 600	2,4						
<b>Total:</b>	<b>2 025</b>	<b>126,54</b>	<b>115</b>	<b>16,65</b>	<b>20</b>	<b>9,79</b>	<b>8,5</b>	<b>5,25</b>

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