

## Bayan Field. Kazakhstan.

Main mineral deposit:	Wolfram / Tungsten
Supposed reservoir management plan:	Open cast mining
Deposit has been discovered:	in 1936
Recent exploration works have been performed	in 1990
Present works:	Issue of the geological further exploration and revaluation is being worked out
Possible share in world wolfram production:	About 3 %.

## Location

Region – Northern Kazakhstan

Area – North Kazakhstan

Area - Saumalkol

Location – 40 km to the South from the village Saumalkol, 25 km to the East from the village Arykbalyk.

Coordinates:

Degree of latitude - 53 °00' northern latitude

Degree of longitude - 67 °53' eastern longitude

Height above sea level-298-432 m.

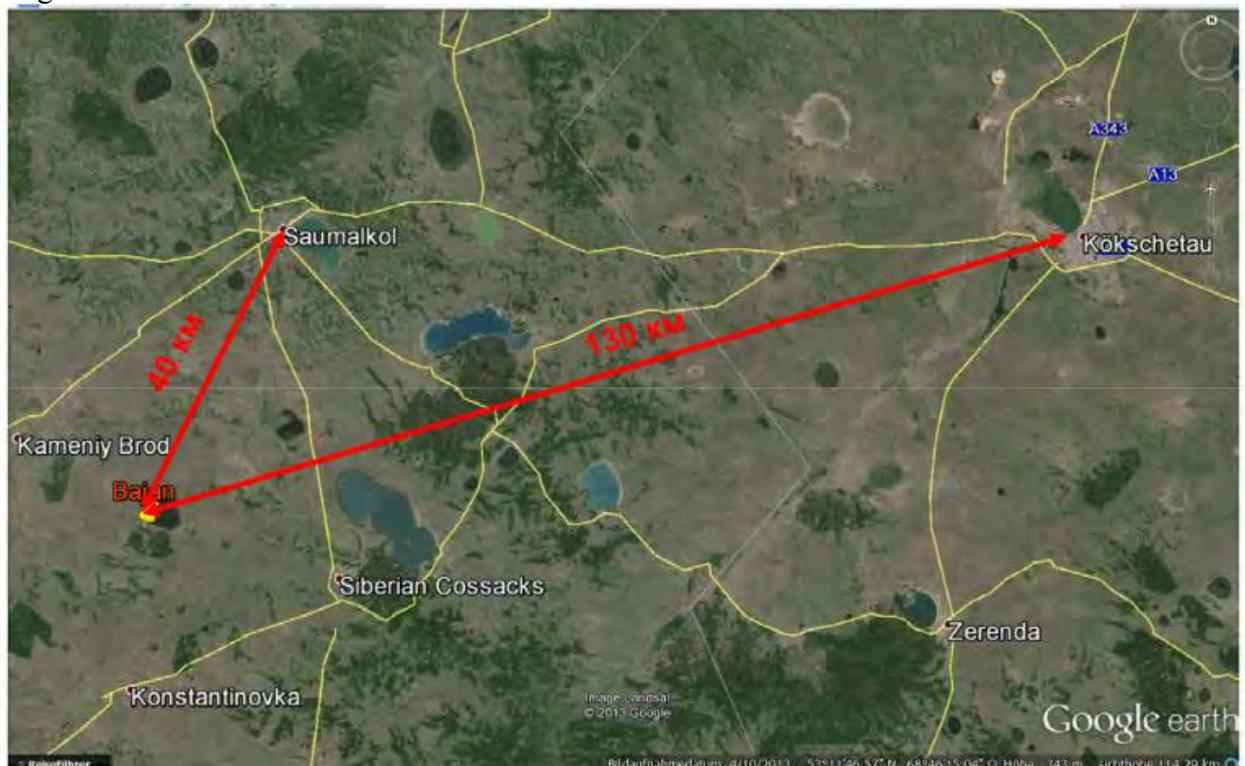


Рисунок 1: Местонахождение месторождения Баян по отношению к г. Кокшетау, с. Саумалколь. Источник: Google Земля, снимок от 4.10.2013 г.

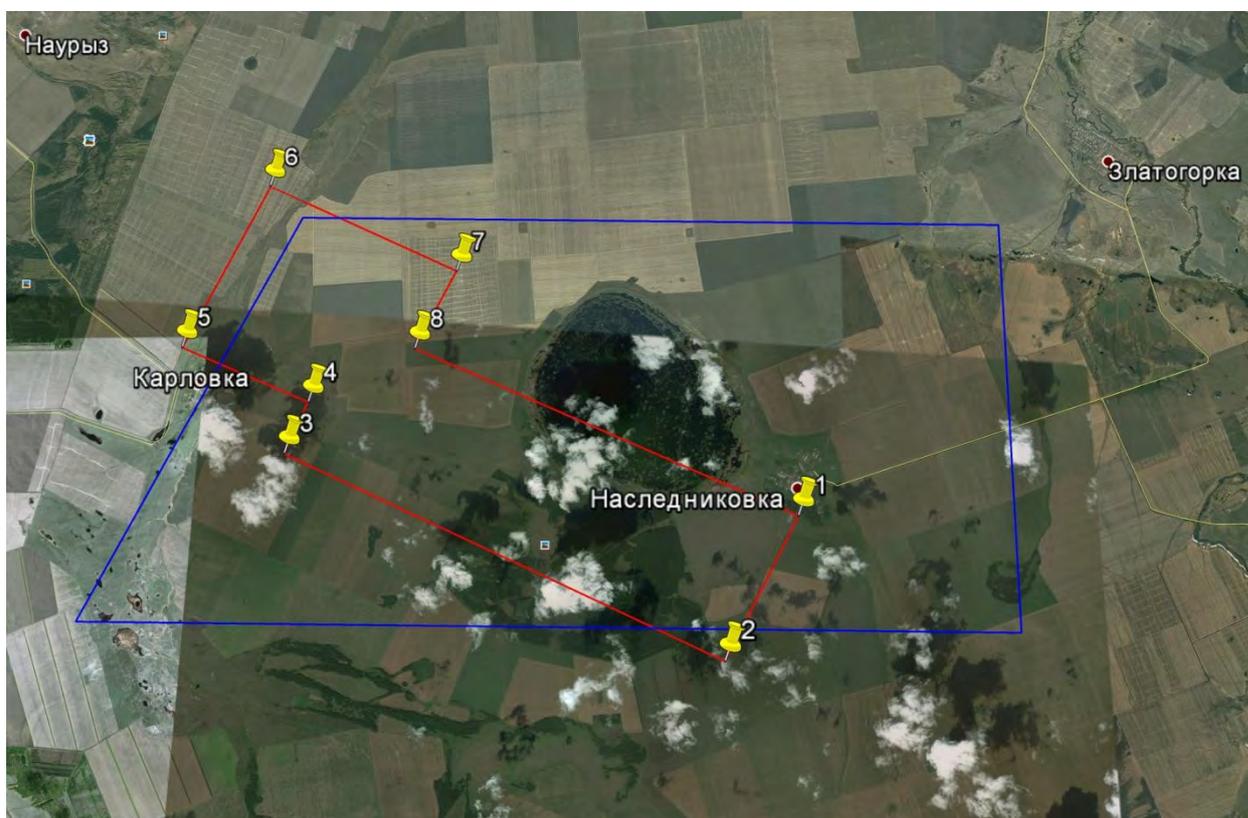
## Field reserves and description

Reserves			Content	Ore tonnage, tons	Note	Associated components
Metal	Category	Quantity, tons				
Wolfram / Tungsten	A+B+C1	56 326	0,354 %	18 000 000	explored	Bi
	C2	7 629				
	P1+P2	3 423	0,3 (0,2) %			

The field reserves have been directly accounted through well drilling with 50x50 meter grid and exploratory trenches above ground. The exploration depth by means of boreholes was posted up to 200 m. There are expected resources of P1 + P2 category along with reserves of A-B-C1-C2 category, which existence is supposed on the basis of the geological probes and results of drilling operations.

In terms of the ore tonnage and its average content in comparison with other fields and projects and on an international scale, the field presents an average field and is located above limit of suitability for commercial development. In addition, it should be pointed out that this field has not been sufficiently explored yet - to both the deep and strike and therefore may contain additional reserves that are subject to the positive assessment.

The increase in dimensions of the field reserves further raises degree of its suitability for commercial development that is undoubtedly possible with further appraisal and revaluation of this field to more deep (up to 300-350 m) and within borders of the received geological allotment to the strike.



- Blue line** – border of the received geological allotment.  
**Red line** – Approximate borders, within which, the geological prospecting works have been performed (on the basis of available geological information).

The characteristic positive feature of this type of the field is proximity and uniformity of the material composition of ores. The peculiarity of the metamorphic rock mass is the geochemical specialization in tungsten, bismuth and chrome with apparent content of lead, zinc and tin. The main useful component of the considered facility is tungsten concentrating in the only tungsten mineral – scheelite by 90-95%. It makes concentration of an ore of this genetic type according to the general process flow scheme. So, extraction of the scheelite on Bayan field is 75-78%.

**Presence of the approval documents:**

23<sup>rd</sup> of May 2014 Minatore LLP has submitted a bid to the JSC “NC “SEC “Soltustik” for consideration of implementation of the joint project in the area of subsoil use on production of tungsten, molybdenum and associated components on the Bayan field with further arrangement of their treatment with bringing to high value-added end products.

On June 12, 2014 the Protocol of Direct Negotiations has been signed between the Ministry of Industry and New Technologies of the Republic of Kazakhstan and JSC “NC “SEC “Soltustik” for Bayan field in the North Kazakhstan area, granting right to conclude the relevant contract for subsoil use – exploration of rare, non-ferrous, precious metals and associated components.

On July 10, 2014 50% of subscription bonus in the rate of 3 million tenge has been paid within the above-mentioned Protocol of Direct Negotiations.

On July 28, 2014 the foundation agreement has been signed between SEC “Soltustik” and Minatore LLP about formation of the joint venture “Bayanskiy RedMet” LLP.

On July 29, 2014 the joint venture – “Bayanskiy RedMet” Limited Liability Partnership has been incorporated for implementation of the investment project. The partnership share of JSC “NC “SEC “Soltustik” is 20%, “Minator” LLP is 80%.

On August 22, 2014 the Committee of Geology and Subsoil Use of the Ministry of Industry and New Technologies of the Republic of Kazakhstan has approved geological allotment, in area of 119.5 sq.km.

On November 31, 2014 the Cooperation Agreement under the Project “Production of Tungsten, Molybdenum and Associated Components on Bayan Field” has been signed between JSC “NC “SEC “Soltustik” and “Minator” limited liability partnership.

## Aksoran Field. Kazakhstan

Field has been discovered – in 1990.

Degree of geological exploration state – reserves of C 2 category

Current works – geological exploration.

Contract for subsoil use for development (exploration) dated 16.07.2013 has been received, the act 4245 SCMs.

Area under the contract – 17.5 sq.km.

### Location

Region – Northern Kazakhstan

Area - Akmolinskaya

District - Sandyktauskiy

Location – 95 km to the southwest from Kokshetau city

Coordinates

Degree of latitude - 52 °44 northern latitude

Longitude degree - 68 °30 eastern longitude

Height above sea level - 500 m.



Рисунок 1: Местонахождение месторождения Аксоран по отношению к г. Кокшетау. Источник: Google Земля, снимок от 4.10.2013 г.

## Field reserves and description

Reserves			Content	Ore tonnage, tons	Note	Associated components
Metal	Category	Quantity, tons				
Wolfram / Tungsten	C2	105 420	0,502 %	21 000 000	Underexplored	Bi (up to 0,4%), Au, Ag
Molybdenum	C2	18 480	0,088%			

The ore zone has been traced by more than 2 km in length and 250-350 m in width. The field has been traced in depth up to 450-500 m. The average depth of the ore zone is 280 m. 11 steep ore deposits, which depth ranges from 0.5 to 26.3 m (average depth is 10.9 m), have been allocated in the ore zone. The ore-bearing factor depending on spatial position of the rock ore ranges from 0.1 to 1.0.

The content of WO<sub>3</sub> varies from 0.2 to 1.4% and averages about 0.5%. Except for tungsten, molybdenum (average – 0.088%) and bismuth (up to 0.4%) are mineable. The Aksoran site is one of the few of facilities, where the commercial deposit has been discovered in the course of the prospecting and evaluation works.

The field which doesn't appear on earth surface was determined physically by means of boreholes. 117 exploratory wells (28 395m) and 718 core drill wells have been drilled (40 500m) on the area of 45 sq.km. Along with that, also geophysical exploration works have been performed (by geomagnetic and electric way). The reserves have been counted on the basis of the cuts along the lines of prospecting cross-sections. Thus, the following requirements on establishment of the suitability for commercial development have been brought:

- limit values in each several sample: 0.1% WO<sub>3</sub>-equivalent;
- calculation coefficient from Mo to W: 0.85;
- minimum thickness of the ore zone: 2.5m;
- maximum thickness of the barren rock and strata, which are not mineable: 2 m;
- minimum mineable content of WO<sub>3</sub>-equivalent: 0.2%.

Except for tungsten and molybdenum ore contains gold (0.2-1.0 g/t – up to 10 g/t rarely) and silver (20-80 g/t).

In comparison with other fields, Aksoran can be estimated by trial as a large-scale deposit. The average equivalent tungsten content in ore will be WO<sub>3</sub> 0.58% and therefore considerably will exceed the experimental limit values for open-cast mining and will possibly make underground mining possible. In geological comparison with other fields and projects all over the world it can be noted that the contents and tonnage of the Aksoran field with higher likelihood is suitable for commercial development.

### Presence of the approval documents:

The decision of the in-person meeting of the Board of Directors of SEC “Yessil” dated October 18, 2011 about formation of the joint venture with SEC “Yessil” – “Yessil-Mining” LLP. The share of SEC – 20%.

The protocol of direct negotiations between competent authority in the area of subsoil use and SEC “Yessil” dated January 18, 2012.

The geological allotment, in the area of 17.5 sq.km., has been received on July 23, 2012.

The non-disclosure agreement No. 2166 for geological information dated October 15, 2012.

Approval of the Contract for Subsoil Use No. 4245 – SCMs, July 16, 2013.

The decision of the regular meeting of the Board of Directors of SEC “Yessil” dated November 18, 2013 – approval of transfer of the right for subsoil use under the Contract No. 4245 – SCMs

dated 16.07.2013 for exploration of molybdenum and tungsten on the Aksoran field from SEC “Yessil” to the joint venture “Yessil-Mining” LLP.

The minutes of the Working Group of the Ministry of Investments and Development of the Republic of Kazakhstan dated October 8, 2015 has been signed – permission for amendments to the working program under the Contract, approval of the exploration dates – 2016-2019.

## Stanislavskoje Field. Kazakhstan

Main mineral deposit:	Wolfram / Tungsten
Supposed reservoir management plan:	Open cast mining
Deposit has been discovered:	in 1991
Present works:	Issue of the geological exploration and evaluation is being worked out

### Location

Region – Northern Kazakhstan  
Area - Akmolinskaya  
Location – 35 km to the south from Kokshetau city

### Field reserves and description

Reserves			Content	Ore tonnage, tons	Note	Associated components
Metal	Category	Quantity, tons				
Wolfram / Tungsten	C2	5 625	0,65 %		Underexplored	Bi, Ge
Molybdenum	C2	28 000	0,15 %			

The prospecting works within lower-proterozoic rock mass (zerendinsky series) have shown that the stratiform mineralization isn't satisfied with fields Bayan and Aksoran, Stanislavskoe field has been discovered in the east continuation of this rock mass. Stanislavskoje field is located within 30 km from Makinsk in the unit of the Precambrian metamorphic rocks provided by gneisses, crystalline schists, amphibolites, and marbles. The adjacent rocks on contact with a massif of granodiorites are skarnified, the depth of the skarn bodies reaches the first tens meters.

The ores are complex, main ore minerals are scheelites and molybdenite. The depth of the zones with scheelite mineralization reaches 4-5 m. The ores contain tungsten trioxide up to 0.65-0.9%. Molybdenite is noted as inclusions and streaks.

Ore-bearing skarns are dissected by later quartz streaks with molybdenite, pyrrhotine, pyrites, chalcopyrite, galenite. The quartz streaks contain about 0.15% of molybdenum. New tungsten occurrence with content of W<sub>2</sub>O<sub>3</sub> up to 0.3% has been discovered 8 km to the southwest of the section. Stanislavskoe field has been studied at the prospecting stage and represents a practical interest.

### Presence of the approval documents:

The protocol of direct negotiations between competent authority in the area of subsoil use and SEC "Yessil" dated December 28, 2013.

On January 10, 2014 the Cooperation Agreement under the Investment Project has been signed between JSC “NC “SEC “Yessil” and “ZhshanaAlem «Prodcorporacia” limited liability partnership.

On January 24, 2014 the foundation agreement has been signed between SEC “Yessil” and “ZhshanaAlem “Prodcorporacia” LLP about formation of the joint venture “Yessil products” LLP.

On, January 27, 2014 the joint venture – “Yessil products” Limited Liability Partnership has been incorporated for implementation of the investment project.

### Joint location of the fields on map



Perspective development of the complex (production-receipt of the concentrate/semi-concentrate of tungsten) is being considered. On the one hand – there is a raw material base, on the other hand, organization of the separation complex / concentrating factory is expected. Shantobe settlement has capacities, which can be considered to arrange the ore beneficiation and concentrate extraction plant.

Currently, the project documentation for exploration of the Aksoran field, Stanislavskoje Field and additional exploration of the Bayan field is under development. The expected time of the geological prospecting works with the specified approval of the reserves is 3-4 years. The exploratory operations are planned to be started in 2<sup>nd</sup> quarter, 2016.