Bayan tungsten deposit

Republic of Kazakhstan

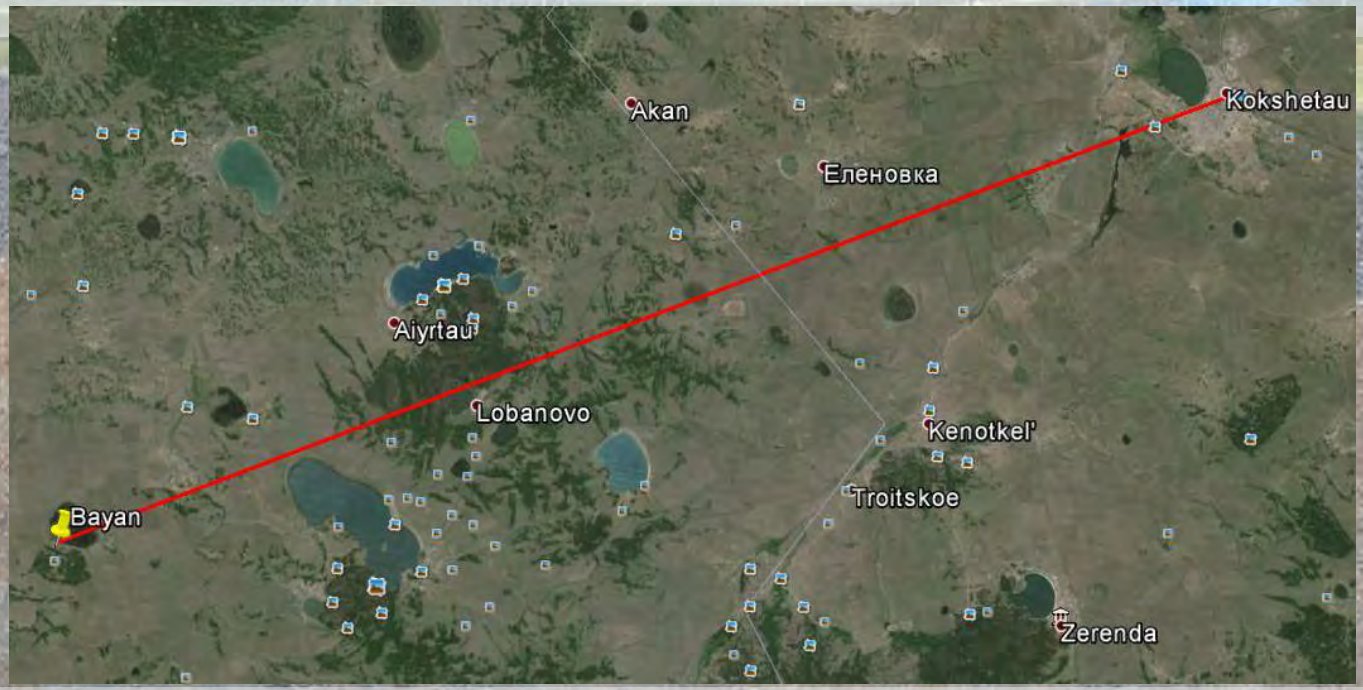
«Minatore» LLP

2016

Contents

Geography

- Bayan deposit is situated in Aiyrtau area of Northern Kazakhstan region. Location - 105 km to the southwest from the city of Kokshetau.



Coordinates:

Degree of latitude - 53°00 northern latitude
Longitude degree - 67°53 eastern longitude

Site area location

The borders of a geological allotment

Жер қойнауын пайдалануға
рұқсатқа №
келісімшартқа 1-қосымша
сынақ, түсті, қымбат бағалы
(пайдалы қазба түрі)
барлау
(жер қойнауын пайдалану түрі)
2014 жылға
тіркеу № КПК

**«ҚАЗАҚСТАН РЕСПУБЛИКАСЫ
ИНДУСТРИЯ ЖӘНЕ ЖАҢА ТЕХНОЛОГИЯЛАР МИНИСТРЛІГІ
ГЕОЛОГИЯ ЖӘНЕ ЖЕР ҚОЙНАУЫН ПАЙДАЛАНУ КОМИТЕТІ»
МЕМЛЕКЕТТІК МЕКЕМЕСІ**

ГЕОЛОГИЯЛЫҚ БӨЛУ

Құзыретті органның 2014 жылғы 12 маусымдағы тікелей келіссөз хаттамасының шешімі негізінде Баян кен орнында жер қойнауын пайдалану бойынша операцияларды жүзеге асыру үшін **«УК «ӘКК «Солтүстік» АҚ-на берілді.**

Геологиялық бөлу **Солтүстік Қазақстан** облысында орналасқан.

Геологиялық бөлудің шегі картограммада көрсетілген: **№ 1-ден №4-ке дейінгі бұрыштық нүктелерімен** белгіленген.

Бұрыштық нүктелер №/№	Бұрыштық нүктелердің координаттары					
	Солтүстік ендік			Шығыс бойлық		
	гр.	мин.	сек.	гр.	мин.	сек.
1	53	02	55	67	49	03
2	53	02	52	68	01	08
3	52	58	38	68	01	04
4	52	58	42	67	45	50

Жалпы геологиялық бөлудің ауданы – 119,5 (жүз он тоғыз бүтін оннан бес) ш.км.

Төраға орынбасары **Б. Сәрсекеев**

Астана қ. 2014 ж.
тамыз.

Contours of the geological allotment

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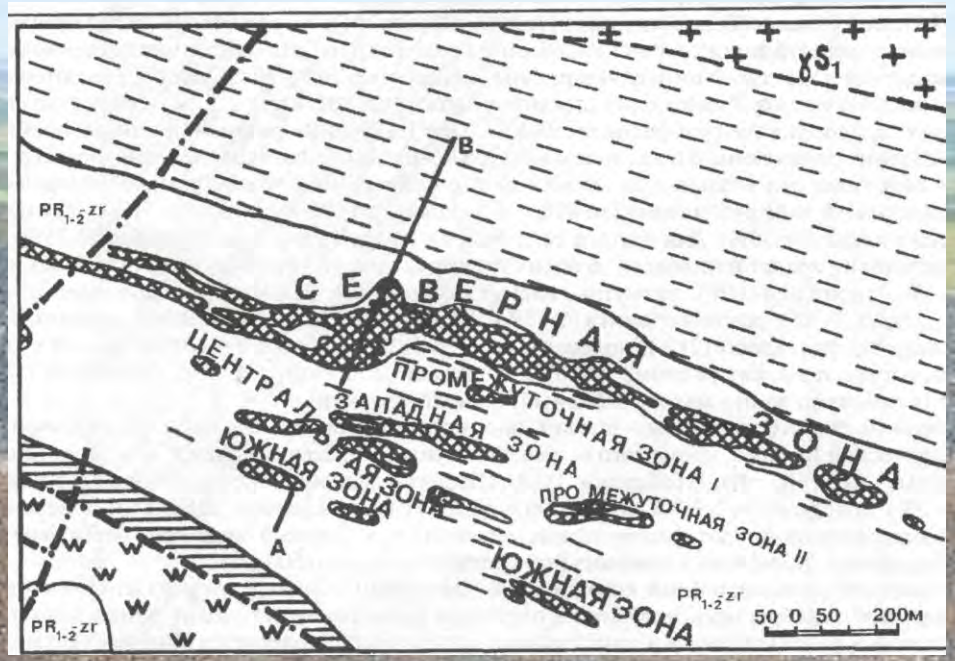
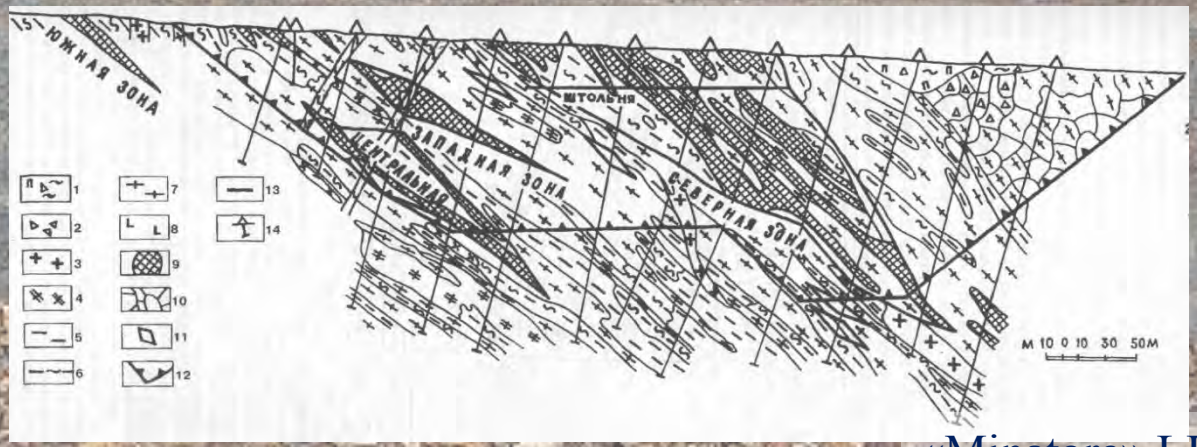
Brief description of geology

- Ore field of the deposit is composed by zerendy range of metamorphic stratum (Archean and lower proterozoic) consist of shales, amphibolites, gneisses and horizontal skarns and skarnites, which forms north (the most efficient) flank of the Bayan anticline.
- Ore bodies are clustered in zones. 14 number of ore zones with 50 degree pitch angle (from 30 to 60 degree) has been traced. Thickness of ore zone achieves dozen of meters (from 2 to 98m in northern part, 1 to 35m in intermediate zone and 1 to 50m in central zone) and the length is 50 to 1500m.

Graphic annex



Geological map of basement



Geological section

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Infrastructure development within the site area

- The nearest paved highway is 18 km away, in the east of the deposit towards Arykbalyk-Sumalkol direction.
- There is a 110 KW electric power transmission line and 110/35/10 KW substation in Arykbalyk settlement, which is located 21 km from the deposit to the south-east.
- The nearest railway station Saumalkol is located in 35km to the north-east of the deposit.

History

- The deposit has been founded in 1935.
- 1976-1982 – the detailed tungsten protecting works.
- 1983 – geological and production study of the ore.
- 1984 – development of Bayan deposit protore enrichment method.
- 1980-1987 – preliminary exploration of Bayan deposit.
- 1989 – finalizing detailed exploration with estimation of resources.

Prospected resources

- Direct estimation of deposit resources was carried out by means of drilling holes with a grid of 50x50m and exploration trenches on the surface.

- Exploration depth of drilled boreholes is 200 m. Along with category A – C2 resources there are also supposed to have an expected resources of category P1 + P2, which is planned to be proved by geological survey and boring results.

Type of ore, content of major and minor components

- There are two kinds of ore that can be distinguished:

- Tubular, lenticular and pocket like bodies made with actinolite, epidote, scheelite metasomatites by skarns;
- Network quarz -field spar- scheelite zones.

- The major commercial ore component is tungsten, the principal satellite element is bismuth and secondary are silver, copper and molybdenum.

- An average content of WO_3 is 0,35 to 0,4%.

- Along with the rare metals contained in the ore field, there are associated components such as bismuth up to 0,04%, molybdenum up to 0,016% and copper from 0,08 up to 0,14%.

Deposit reserves

	A+B+C1 categories reserves			C2 category reserve			Total A-C2		
	Ore, thousand tons	Content of WO3,%	WO3, tons	Ore, thousand tons	Content of WO3,%	WO3, tons	Ore, thousand tons	Content of WO3,%	WO3, tons
Total within the deposit	**15 911**	**0,354**	**56 326**	**2 155**	**0,354**	**7 629**	**18066**	**0,354**	**63 955**

**There is a possibility of the growth of deposit reserves in the event of its further study and re-estimation deeper down (up to 300-350m) and expanding the area of the exploration (once determine cut-off grade limit value)within the battery limits of obtained geological allotment that additionally improves the degree of its usability for commercial production.*

Mining method

- Surface proximity, average content of the valuable component, prospected and expected deposit resources allow to make a positive estimation of the deposit with regards to applicability to commercial mining.

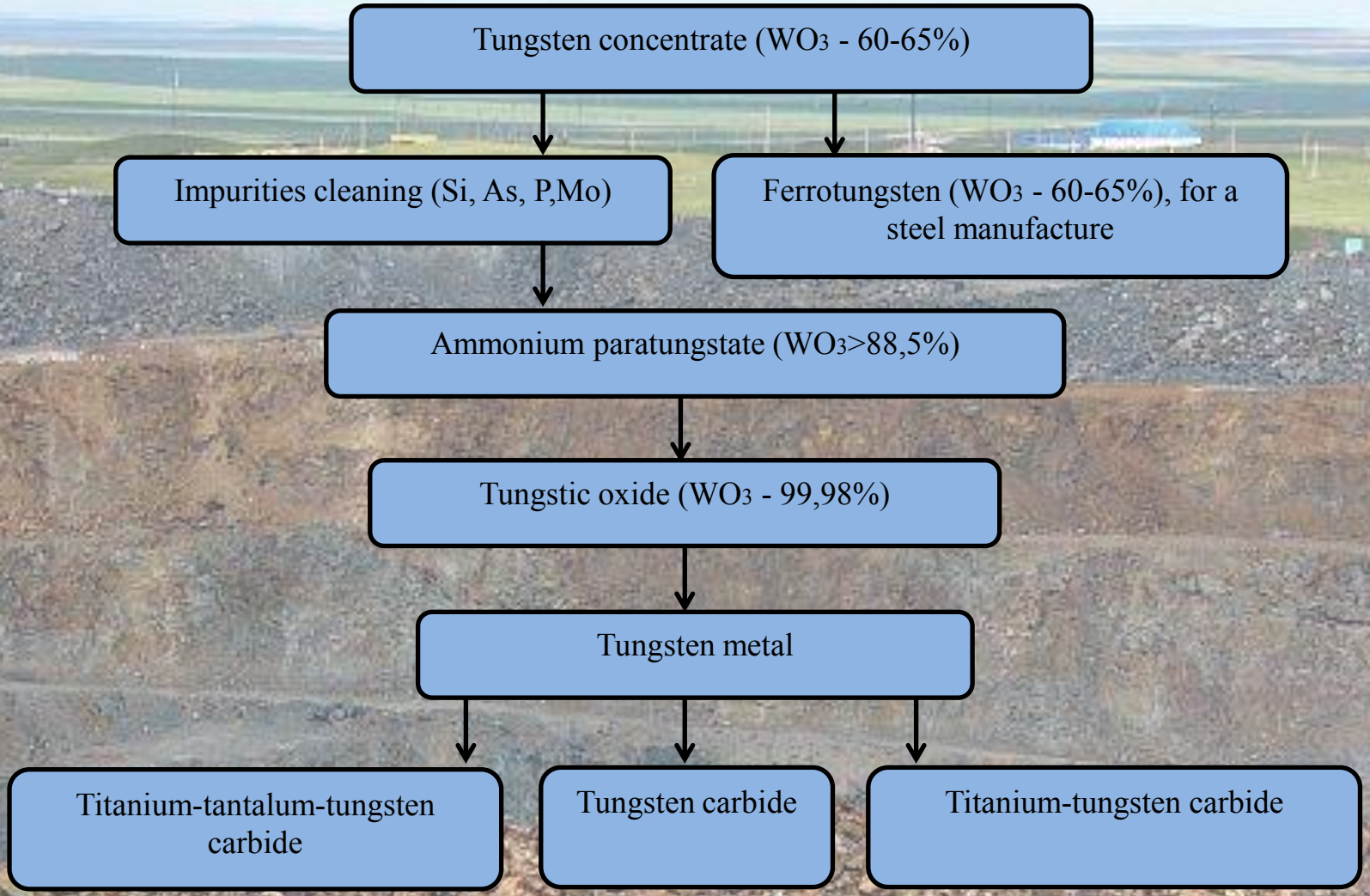
- In comparison with other deposits Bayan field can be estimated as an average grade deposit. Average content of tungsten trioxide in the ore allows to use Bayan deposit for opencast mining.

Ore enrichment

The main factor of the project profitability is production of a high quality tungsten concentrate or other product of higher grade under the condition of high output of the mineral. According to results of done metallurgical studies the Ore can be comparatively easily enriched. Up to present the Ore enrichment process that consists of the following separate phases was experienced: x-ray fluorescence separation, density separation, floatation of bulk concentrate, selective floatation.

	Content min%	Content max%
WO_3	53	
Output	80	86
Bi	0,69	
Output	65	

Type of final product



Documents supporting the entitlement

- On the 23rd of May, 2014 Minatore LLP has submitted a bid to the JSC "NC "SBC "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 "SBC "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 11, 2014 50% of subscription bonus in the rate of 3 million tenge has been paid under the Protocol of Direct Negotiations.

- On July 28, 2014 the foundation agreement has been signed between SBC "Soltustik" and Minatore LLP on 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. Share of JSC "NC "SBC "Soltustik" - 20%, share of "Minatore" LLP - 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 a geological allotment for the area of 119.5 sq.km.

- On October 31, 2014 the Cooperation Agreement under the Project "Production of Tungsten, Molybdenum and Associated Components on Bayan Field" has been signed between JSC "NC "SBC "Soltustik" and "Minatore" LLP.

Current project activities of the company

- On January 19, 2016 «Minatore» LLP issued and application to JSC “NC “SBC “Soltustik” scientific research center with request to declassify an extra geological data, required for the development project design documentation.
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- It is also being negotiated to withdraw a part of land from national natural park Kokshetau for geological allocation in order to use for potential future commercial mining of the deposit.