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Considerations and analyzes on the technologies of iron ore mining in Tebinbulak mine

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Abstract. In the article, mining enterprises based on local mineral and raw material resources of the Republic of Karakalpakstan are considered as an example of TebinBulak metals iron ore enterprises. Today, one of the main directions of the innovative development of the economy and the deepening of market reforms is the improvement of the branch structure of the industry, that is, the diversification of the regional industry is gaining major importance. The territories of the Republic of Uzbekistan are considered to have great natural, land, mineral and labor potential. The implementation of these tasks allows to ensure economic balance in the republic's territories, eliminate socio-economic and environmental problems, and create conditions for raising the standard of living of the population. Despite the fact that iron ore extraction plants using flotation and magnetic separators at the TebinBulak metals mine of the Republic of Karakalpakstan have a large mining capacity, they purchase raw materials from other regions, therefore, the task of minimizing waste is the prospect of strengthening their raw material base. The technology for improving the quality of titanium-magnetite concentrate, the main composition of iron ores, was proposed, which consists in separating the ore into two technological grades - rich and poor, and then separately grinding and concentrating the grades in separate sections. Thanks to this technological scheme, the ore is divided into easily concentrated and hard concentrated varieties at the concentration stage.

Key words: Titanium-magnetite ores, iron ores, open pit mining, mining scheme, mine design, TebinBulak metals iron mining.

Introduction

One of the main priority directions of geological reform in the directive documents in the field of geology of the Republic of Uzbekistan is to increase their objectivity and reliability based on a deep analysis of geological information, as well as their wide use. modern technologies, advanced methods of forecasting geological reserves of minerals, taking into account the requirements for effective use of underground resources and mineral raw materials for production. After our republic gained independence and achieved independent development, providing the republic's metallurgical plants with unique mineral raw materials, especially important products such as iron ore, which are the basis of the metallurgical industry of any developed country, is an important economic factor. development. and developing countries.

Until now, the Uzbek industry has focused on raw materials and semi-finished products imported from other regions of the Commonwealth. Currently, this approach is ineffective and very expensive. Therefore, the task of searching and finding local raw materials was set. In this regard, the Geological Service faces an urgent issue such as identifying and evaluating local iron ore reserves suitable for use in the metallurgical production of the republic, as well as determining the possibilities of their wide use in industry. Thus, as a result of such studies, Southern, Western, Eastern, Ugaq, Lyalakhona and Surenata and other promising objects were identified, where Surenata and other iron ores are mineralized. , where it is possible to discover new objects at different depths, as well as evaluate and re-evaluate the reserves and quality of iron ores already found. In order to reduce financial and technological risks, the development project of the Tebinbulok titanium-magnetite ore mine in Karakalpakstan will be implemented in stages, said the representative of the Uzbekistan Metallurgical Combine. The Tebinbulok mine was opened in 1937 and belongs to the Kachkanar type (South Urals). Its predicted resources (P1+P2 class) are 3.5 billion tons of ore. Due to high investment costs, the mine has not yet been developed. This method yields 47% of the vanadium originally in the concentrate, and alloying steels with ferrovandium lowers this figure to 40%. Several economic and technological factors make organizing large-scale metallurgical operations (including blast-furnace smelting) at the site of the deposit a less-than-optimal course of action. A metallurgical technology that does not involve the use of coke appears more promising for the given situation. New schemes for improving the quality of concentrates are characterized primarily by separate mining in open pits and separate processing of natural types of ores at the processing plant. Such a technology is possible under the conditions of the Tebin Bulak mining and processing plant, where mainly high-vanadium and low-titanium ores and mainly low-vanadium and high-titanium ores are mined in separate flows, which are separately transported to the processing plant. In the processing plant, these flows are processed in separate sections. Geological features of the structure: Quaternary deposits (Q), Beshmazor suite (D1): sandstones, siltstones, marbles; Jamansoi layer (D1): effusives, shales, marbles; peridotites; pyroxenites; branched branches; gabbro; gabbro-syenites; albite syenite veins; quartz-carbonate veins. Magmatism of the ore deposit: ultrabasic and alkaline rocks of the Tebinbulok (C1-2) and Djamansoy (C2-3) complexes. Tectonic structure of the area: tools located in the Urusai deep fault zone. Ore deposit structure: Dislocated Paleozoic basement and platform Meso-Cenozoic overburden. Morphology of the ore body: scattered ores (accounting for 97%), as well as densely distributed and massive. Role of intrusive rocks in sedimentary mineralization: Pyroxenites are composed of gabbro and peridotite subordinate hornblende. The main minerals of the deposit are titanomagnetite, magnetite with thin layers of ilmenite. Also, hematite. pyrite-chalcopyrite mineralization. Native gold and platinum, as well as gold tellurides, platinum sulfides and arsenides, have been identified. Industrial type of mineralization: Titanium-magnetite. The Temirkon deposit is monoclinal and is located within a horst uplift bounded by faults from the south and north. The iron ore bodies are located in the deposits of the Chimkurgan suite of the Middle Devonian period, and were drilled to a depth of 850 m without opening the contact with the underlying rocks. The genesis of mineralization of the described type is defined as volcanic-sedimentary. The source of iron is the thermal melts of underwater volcanoes, which pass through cracks to the bottom of the basin with complex relief. The transfer of iron was carried out in the form of iron. Interaction with seawater contributed to oxidation and the formation of a difficult soluble suspension of iron hydroxides accumulated at lower depths. The newly deposited colloidal iron precipitate was transformed into hematite in early diagenesis. In marine basin areas, magnetite and iron sulfides were deposited in a reducing environment due to leakage of hydrogen sulfide exhalation. Later, the primary sediment underwent significant mineral changes as a result of the processes of diagenesis, metasomatism and metamorphism. The bulk of the ore material was accumulated during inactive periods of active volcanism, during which sedimentary rocks were formed. Sedimentary iron ores (goethite-hydrogoethite-hydrohematite (brown ironstone) GST in sedimentary rocks of Mesozoic sedimentary coastal-marine genetic group) were observed as potential objects of industrial development in the Mesozoic-Cenozoic layers along the island. , Southern Uzbekistan and Central Kyzylkum may be formed in the coming years. The need to involve them in production is due to the acute shortage of iron ore raw materials suitable for mining small mines - very favorable infrastructure conditions for placement, cheap methods of mining and ore enrichment. In this regard, the best option is sedimentary iron ores in the central

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part of the Kuldjuktau mountain range, which covers the area of the southern foothills, where deposits of the Cretaceous period have been widely developed. As a result of research conducted by the Institute of Mineral Resources (L.M. Krikunova, Yu.F. Baskakov, V.N. Kharin, etc.) in the framing of the mountains between Aktosta and Kattasoysoy (Uchkuduq, Ayakguzumdi, Tashkuduq, Shuruk). In Kuldjuktau, especially in its eastern part, two primary isolated outcrops of brown iron ore have been identified. In the lower part of the cross-section, large concentric-zonal, shell-like macroconcretions and their accumulation were found in thin-layered clays that make up 10-25% of the volume of the fertile horizon on the surface of the earth. . iron trioxide averages 42.03-48.5% in districts. Above the hypsometrically higher, ferruginous cement is another ore horizon in the form of lenticular beds of sandstone and gravel, probably in contact with the Upper Aptian and Albian deposits. The average amount of iron trioxide is 18-20%. It should be noted that in the Shuruk-1 section lenses of significant manganese (psilomelane) cemented gravel-sand with a manganese content of 6-13.5% were exposed in this horizon. Expected reserves of iron in the considered areas exceed 6 million tons. (the average amount of Fe_2O_3 in rock mass is 25%, in ores is 40-50%) and can supply the surrounding cement plants for decades. Thus, in the part of the magnetite belt from east to west, Surenata, Minbulok, Temirkon, Chimkurgan, Uchkuduq, Tuzkon, Koljuktau, Sultanuizdog and other iron ore deposits and deposits have already been found in the territory of Uzbekistan. In the future, a detailed study of the magnetic anomalies of the belt will expand the area of iron ore discovery and significantly replenish the mineral and raw material base of Uzbekistan. Thus, iron ores have the highest magnetic parameters and, accordingly, they should be distinguished by a local excess in the structure of the magnetic field. The joint activity of geologists, miners, metallurgists should lead to iron ore objects in the magnetite zone becoming a useful component of the economy of the Republic of Uzbekistan. Environmental issues should always be at the forefront of exploration and production organizations. According to the authors, the main priorities of environmental protection problems in these geographical conditions are:

☐ Environmental protection as a result of geological prospecting - soil and groundwater contaminated by used drilling fluids around the wells as a result of unsatisfactory clogging of caves in wells and consequent unfitness for drinking water of the local population.

☐ consequences of drilling and blasting - changes in the structure of the soil that can lead to ecological damage, in particular, the direction of the flow of underground water is disturbed, and as a result, wells, springs and sources of drinking water dry up. up. , the salinity of the surface layer increases and is used as agricultural land:

Conclusion

The Tebinbulak metals iron mining open pit development project was revived in order to create its own raw material base of Ozmetkombinat, which produces more than 80 percent of ferrous metallurgical products in the republic. The mine can ensure the operation of the enterprise for decades. The decision to divide the project into stages increases its investment attractiveness and distributes the financial burden on the loans involved. In the first stage, in 2015-2021, it is planned to create production capacities of up to 500,000 tons of steel products per year on the basis of the mine. According to preliminary estimates, the cost of the first stage is 600 million dollars, half of which will be contributed by foreign loans. By the end of 2015, it is planned to prepare the technical and economic basis of the project based on the technology of extraction and processing of the selected ore. At the moment, Russia's "First Institute of Mining and Metallurgy" LLC and Finland's Outotek company are developing proposals for project technology. At the beginning of 2017, "Uzmetkombinat" may announce a tender for the development of the mine.

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REFERENCES

1. Abdiramanova, Z., et al. "ACTIVITY OF TEBINBULAK IRON ORE MINING ENTERPRISES IN THE REPUBLIC OF KARAKALPAKSTAN." Scienceweb academic papers collection.–2023 (2023).
2. Джаксымуратов, К. М., et al. "ИСПОЛЬЗОВАНИЕ ПРЕСНЫХ ПОДЗЕМНЫХ ВОД МЕСТОРОЖДЕНИЯ КЕГЕЙЛИ." Экономика и социум 12-1 (91) (2021): 975-980.
3. Karamatdin, Djaksymuratov, and Dzhumanazarova AltynguKurbaniyazova Baxitgul. "Changes in the regime and use of fresh groundwater in the Southern Aral Sea region." Solid State Technology 63.6 (2020): 15884-15887.
4. Aman, Matjanov. "Traditional Transport among the Peoples of the Aral Region (1800-1873)." Res Militaris 13.1 (2023): 2985-2988.
5. Yeshmuratova, A., et al. "MINE BLASTING PROCESSES OPTIMIZATION STAGES OF DIGITAL TECHNOLOGY OF DETONATORS." Scienceweb academic papers collection.–2023 (2023).
6. Jumabayeva, G., B. Allanazarov, and A. Joldasbayeva. "STAGES OF OPEN PIT MINING. MINING METHODS AND THEIR PROCESSES." Science and innovation 2.A1 (2023): 236-240.
7. Allanazarov, Bayrambay. "GEODETIC DIMENSIONING STUDIES AND POINT-DIMENSION LOCATION COORDINATE SCHEME CREATION PROCESSES." Евразийский журнал академических исследований 3.4 Part 2 (2023): 21-25.
8. Yeshmuratova, A., and N. Amanbaev. "Ensuring Computer Data and Management System Security." International Bulletin of Applied Science and Technology 3.4 (2023): 282-287.
9. Yeshmuratova, Amangul. "TECHNOLOGICAL METHODS OF ENSURING INFORMATION SECURITY IN TECHNICAL SYSTEMS." Евразийский журнал академических исследований 3.4 (2023): 188-192.
10. Djaksimuratov, K., et al. "GROUNDWATER CONTROL IN MINES." Scienceweb academic papers collection.–2023 (2023).
11. Jumabayeva, Guljahon. "PLANNING AND MINE DESIGN IN OPEN-PIT MINING PROCESSES AT MINING ENTERPRISES." Евразийский журнал академических исследований 3.3 Part 2 (2023): 135-143.
12. Niyetbaev, Arislanbek, Guljaxan Jumabaeva, and Alisher Karamov. "BARABANNI AYLANMA HARAKAT QILUVCHI SHARLI TEGIRMONDA ILGARLANMA-QAYTMA HARAKAT QILUVCHI MEXANIZMNI QO 'LLAB UNUMDORLIGINI OSHIRISH." Interpretation and researches 2.24 (2024).
13. Jumabayeva, Guljahon. "PROCESSES IN THE STAGES OF CREATING A COORDINATE SCHEME OF THE PLACEMENT OF AN OPEN MINE." Международная конференция академических наук. Vol. 2. No. 6. 2023.
14. Mustapaevich, Djaksimuratov Karamatdin, and Batirova Uldayxan Sarsenbayevna. "GATHERING COORDINATES OF THE GEOLOGICAL AND GEOTECHNICAL LOCATION OF THE MINE." British Journal of Global Ecology and Sustainable Development 12 (2023): 58-66.
15. Mustapaevich, Djaksimuratov Karamatdin, et al. "STEPS FOR DETERMINING THE SLOPE ANGLE OF AN OPEN MINE." American Journal of Interdisciplinary Research and Development 12 (2023): 132-141.