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THE FEATURES OF THE LOCATION OF THE GOLD AND POLYMETALLIC MINES IN YHE PERIOD OF DEVON CARBONATES IN ALMALYK ORE DISTRICT.

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Annotatsiya: The article presents the results of work carried out in some countries to increase the country's mineral resources, but to increase our reserves of unconventional types of gold.

The key words: Gold, limestone, dolomite, marl, polymetallic ores, suite, tier, ore district, mineralogical and radiological phase studies.

The main body: The Almalyk ore district is the most important region of non – ferrous metallurgy in Uzbekistan. There are coppermolybdenum reserves, as well as polymetall, gold ores and other deposits. Expansion of the mineral potential of the Republic of Uzbekistan is an urgent problem, the conceptual solution of this is largely associated with the discovery of new, unconventional types of deposits.

New types of unconventional (lower structural layer) gold ores for Uzbekistan are characterized by hard diagnosing scattered gold ores in terrigenous – carbonate deposits known in the Western United States, Russia and other regions of the world.

It is known that such ores (Nevada , USA) have been mined in recent decades with the help of modern technologies, with a gold content of 0.8 – 1.0 g/t, and the cost of that is much lower than the

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world average. The geological and economic attractiveness of these types of deposits is due to the fact that their industrial development is significantly cheaper, easy to grind, suitable for open pit mining, from which 65-68% if gold is mined.

Today a number of representatives of gold in terrigenous – carbonate deposits in Almalyk ore district ,as well as the extraction of gold- bearing fluxes for metallurgical production of the Almalyk Mining and Metallurgical Combine, provide a very convenient opportunity to search for such deposits. This once agains confirms the relevance of this work, which is dedicated to separation of a new unconventional type of gold mineralization not only for the Almalyk ore region ,but also for the entire Republic of Uzbekistan.

For this purpose , the East Uzbekistan Geological Exploration Expedition conducted a study of the gilding and mineralization of the middle Paleozoic terrigenous – carbonate (D3 – C1) strata in the Almalyk ore district through a series of drilling , mining and laboratory analyzes.

Almalyk ore district is located at the northern foot of the Qurama ridge. In the scheme of tectonic zones of Central Asia developed by D. Nalivkin and V. I. Popov. The Qurama Mountains belong to the Qurama sub- zone of the Tien – Shan middle zone, which is characterized by an extremely complex geological structure.

Almalyk ore district is limited to an area of 800 square kilometers , where sedimentary, volcanic and intrusive formations are developed. Intrusive formations are most common. The sedimentary and volcanic rocks that make up the Almalyk region are divided into three constituent layers. In each of them there are structural tiers with intermittent breaks.

In the Almalyk mining area , carbonate sedimentary rocks are mainly distributed from the middle Devonian age to the Lower Carboniferous (D2 – C3) and are located in the middle structural layer. These structural floor rocks are widely developed in the central part of the Almalyk cultural area and are divided into lower and upper structural tier. The lower structural tier D2 – C1 was represented by sand carbonate deposits in the form of massive residues on the washed surface of the lower Devonian effusions. Devonian deposits are divided into jivet, fran and famen tiers. The jivet layer (D2gv) consists of an arkozo – conglomerate and a sandy conglomerate. The fran layer D3fr is represented by limestone – marl , massive dolomites , and ribbon dolomites horizons. The famenna tier is divided into Qoratog'ota (lower – upper devon) and kulota (upper devon) rhythmic suites.tje lower ritmosvita (D3fm1 kr1) is composed of re – layered sometimes, pelitic dolomites, sandstone and anhydrite layered argillites. High ritmosvita (D3fm1 kr2) consists of fine – grained , thin layered, hydrogen sulfide odor dolomites. This horizon is characterized

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by high amounts of gold, lead and zinc. The thickness of Qoratog`ota suite is 850 meters.

The clot rhytmmosvita (D3fm2 kl) is divided into lower and upper ritmosvitas. The lower ritmosvite (D3fm2 kl1) cosists of light gray , greenish gray dolomite. Thickness up to 40 meters. The upper ritmosvite (D3fm2 kl2) is composed of odd gray dolomites. The thickness of the Kulota suite is 552 meters.

According to the lithological features of the Lower Carboniferous (C1) , the Lower Carboniferous deposits on fauna and microfauna are divided into two tiers tourniquet and visage. The lower layer of the Tourniquet tier (C1 t) is composed of gray and light gray massive limestone with crinoids residues, while the upper layer is consists of siliceous jelly – like layers and fine – grained limestones. Thickness 250 meters. The Visage stratum (C1 c) consists of dark gray massive limestone with siliceous jelly , the thickness of which does not exceed 130 meters.

the material compositions of the ore – bearing strata and gold apocarbonate ores is based on factual material collected from work in areas with separate ore deposits (Karasay, Kulemes, Yalpis and Sera Skala) of the Qorato'ota ore district, where organic carbonate rocks are abundant, as well as conclusions from previous studies. Modern analysis methods (X – ray structural phase , local X- ray spectrum , microsonde , neutron active, spectral , including ICP spectrometry) were used to study the material composition of the surrounding rocks and ores. The following is a description of the main mineral and vascular minerals, paragenetic mineral compounds (PMBs) , and some insights into the mineralogical reconsctruction of the ore formation process.

The Qoratog'ota ore district is composed of sedimentary and igneous rocks. Among the first dolomites, filled with limestone, sandstone , and gravel were common. The letter is characterized by quartz porphyry and granodiorite porphyries , as well as diabasse porphyries (lamporphores) dyke.

Dolomites are the most common rocks in this region. They can be included by Qoratog'ota ritmosvitas. According to the observations of shlifs, they are manifested by various grains of dolomite (70 – 75%) , calcite (2 – 20%) and quartz children , feldspar and etc (0 – 30%), and clay minerals (up to 10%). Calcite forms veins , nests, and less individual grains in dolomite. Minerals (quartz , feldspar, mica) and rocks (quartz porphyry and siliceous rocks) are unevenly distributed.

Postmagnatic changes in dolomites are poorly expressed. Partial crystallization , the formation of anchorite veins, the development of hydromica (in direct contact with metasomatic quartz bodies), as well as the development of thin veins of quartz are presumed to be related to the mineralization of gold ores. Subsequent processes led to the development of dolomites in gnezda, coarse – grained barite,

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sometimes galenite and chalcopyrite, as well as white calcite veins. According to mass spectral analysis of dolomite , the geochemical properties of dolomites are characterized by low amounts of many mineral elements in table 1, (silver 0.48 – 1.7 g/t , copper 26 – 400 , lead 170 – 670, zinc 89 – 310, gold 0. 026 – 0.056 g/t).

Contains large amounts of barium and strontium. As a result of dolomite conversion, an increase in silver , lead, bismuth , tin, molybdenum, and gold was noted with the simultaneous removal of barium and strontium. The complex of input elements shows the polymetallic properties of hydrothermal solutions. However , due to the weak accumulation of elements , it can be assumed that, dolomites are unfavorable environment for them to sink.

The results of mass spectral analysis of rocks (Table 1). The results of analysis are in g/t. The comma (,) separates a thousand , ten thousand , a hundred thousand g/t. The semicolon (.) separates one , ten, a hundred g/t.

O/n	Sample number	The name of the rock	Cu	Pb	Zn	Sb	As	W	Bi	Mo
1	1030	Crushed limestones	63.00	480.0	62.00	26.00	22.00	1.40	0.36	11.00
	1049	Limestones	100.0	570.0	66.00	73.00	33.00	1.20	1.20	30.00
3	1050	Sandy limestones	130.0	2,100	79.00	74.00	47.00	1.90	0.80	51.00
4	1051		130.0	920.0	65.00	100.0	60.00	2.40	0.62	33.00
5	1052		79.00	590.0	63.00	67.00	44.00	2.50	0.97	20.00

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6	1130	Limestones	49.00	310.0	36.00	40.00	51.00	1.30	1.00	11.00
7	1115	Crushed altered limestones	21.00	630.0	17.00	6.20	16.00	0.39	0.11	2.50
8	1116		28.00	170.0	28.00	11.00	18.00	0.74	0.18	4.90
9	3164	Strong limon dolomites	91.00	470.0	200.0	65.00	18.00	3.50	22.00	5.40
10	3168	Quartz limestones	68.00	170.0	310.0	81.00	27.00	3.30	7.90	9.40
11	4089	Strong limonit dolomites	26.00	670.0	170.0	96.00	21.00	0.65	1.20	4.90
12	4167	Metasomatic altered rocks	56.00	210.0	140.0	56.00	20.00	1.10	1.10	6.90
13	4280	Strong limonite	82.00	380.0	240.0	43.00	13.00	0.63	0.72	3.80

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14	4281	quartz veined limestones	72.00	460.0	100.0	50.00	18.00	1.9	0.23	6.10
15	4621	Strong limonite crushed dolomites	140.0	460.0	130.0	230.0	32.00	2.50	0.26	12.00
16	4622		100.0	380.0	89.00	190.0	16.00	0.50	0.17	9.80
17	4825	Ironized dolomites	210.0	540.0	160.0	360.0	20.00	0.20	0.21	6.00
18	4826		400.0	260.0	111.0	690.0	29.00	0.16	0.26	5.70

As a result of mineralogical research, deep boreholes (wells 125, 110, 126, 113, etc.) were drilled in the Qoratog'ota ore field the organization kernels , brecciated , cemented micronucleic cholcedones, opal, and partially quartz , calcite , dolomite , sericite, chlorite , sulfide and hydrogetite minerals were detected, most;y in contact with carbonate rocks and quartz porphyries. From 1 to 2 % by mass of sulfide in the mass. Sulfides are mainly found in pyrite , rarely chalcopyrite , sphalerite ,galena, and finite ores. In the plan the length of these layered deposits (in contact with rolites and carbonate rocks) varies up to 10 km, and the thickness of the layers variesfrom 1m to 5m. according to the result of mineralogical and radiological phase studies , these rocks are jespiroids enriched with Cu, Au, Ag, Zn, Pb, As and other elements (Table 2).

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Distribution of elements (g/t) in fragments and cements of quartz eruptive breccias in contact of carbonate rocks (D2 – D3) and quartz porphyries D1 – 2 .

TABLE 2

The sample numbers	Cu	Mo	Au	Ag	Zn	Pb	As	Sb	Ti
71	700	50	5	30	1000	1100	50	50	200
72	7000	50	10	30	1000	1100	50	70	500
73	200	15	2	1.5	200	700	15	5	200
74	15	2	3	0.5	6	50	2	2	20

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As a result of the organization of terrigenous – carbonate rocks in Almalyk ore district, the following conclusions were reached:

Almalyk ore district is characterized by an increase in the amount of gold in the upper Devonian period and lower carbon terrigenous – carbonate strata. The gold consentration belongs to the stable facies zones enriched with organic matter. A characteristic feature of the primary distribution and mineralization of gold in terrigenous – carbonate rocks is very diffuse organometallic properties. Organic matter is the sedimentary part of the gold and other elements. During the tectonic – magnatic activation and the circulation of hydrothermal solutions, it was epigentically modified and accumulated in the above structures.

Gold has " microscopic gold" or invisible finely dispersed properties. Polymetallic mineralization is located near or in the zone of contact of the lower Devonian effusive rocks with limestones, marl dolomites , sandy limestones and dolomites of the Kulota, Qoratog'ota and Almalyk formations, mainly in quartzation, serpentinization, brecciation and fracture zones.

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