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POSSIBILITY OF Pb-Zn ORE EXPLORATION IN THE DISTRICT "CRNAC-EAST" OF THE MINE "CRNAC"[**]

Abstract

The aim of this work is to present what are the possibilities for providing Pb-Zn ore from the surrounding districts for exploitation the "CRNAC" mine. The amount of excavated ore, as well as a well-known fact that the ore reserves are not inexhaustible, generated the need for continuation od geological exploration. Enlargement of raw material base should be expected on the indicated locations close to the active deposits of Crnac. One of the identified sites in the Crnac ore zone and the eastern part of active deposit is also the so-called district of "CRNAC-EAST".This paper presents the results of geologically explored operations obtained by interpolation of data from exploratory wells and exploratory mining operations in the district of "CRNAC-EAST".

Keywords: *lead, zink, Crnac-East, exploratory operations, ore structures, exploration, geology of deposits*

1 INTRODUCTION

The deposit "CRNAC" was opened after ten years of intensive research by drilling from surface and mining exploration works in the period from 1957 to 1968 by the Geological Service of the Mine and Lead and Zinc Smelter "Trepca" in Zvečan. The opening of the mine "CRNAC" has contributed to the increase in raw material base of lead and zinc as the basic raw materials for metallurgical plants and newly constructed processing capacities of the combine of "Trepca" based on these metals. The opening of the mine "CRNAC" with a relatively high content of lead and zinc metal is a major incentive for the development of an underdeveloped area such as is the territory of Leposavic.

From the outset, respectively since 1968 the mine "CRNAC" is part of the OC Mines and Flotation "Kopaonik" - Leposavic. The current unfavorable situation of raw material base of the OC "Kopaonik", as well as Combine "Trepca" in general, and the increasing need to meet the processing capacities require further intensification of research work both in the deposit, including its wider area. At the same time with the introduction of exploration works are investing considerable material and financial funds in opening the new mines in order to increase production, income and standard of workers.

Geographical area of Rogozna is contoured with the flows of the rivers Ibar and Raska almost entirely limited to the west, east and south sides, and then close the northern mouth of the Raska-Ibar triangles that cover the hydrographic network of left tributaries of Ibar and right river Raska, almost entirely determined the area of the mountain massif Rogozna where in the central part of ore is the deposit "CRNAC".

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The traffic network of roads on Rogozna provides approach to most parts of the mine. In addition to the macadam road Banjska-Novi Pazar, are all recently built roads for exploitation the forests for rugged off-road vehicles for most of the year. Asphalt roads valleys of Ibar and Raska and partially paved with Josanicka and Banjska river provided approach to the peripheral and central parts of Rogozna. With the valley of Josanicka or the Crnacke River in the upper reaches, the mine "CRNAC" is associated with the facilities for processing ore in Leposavic with the asphalted road 15 km long. Till the Gnježdanski undermine a path is of 5 m wide, and the other 6 km is width of 3 m. Among major facilities in this way is a reinforced concrete bridge over the Ibar River, then the overpass over the railway line and connected to the main road of Raska-Kosovska Mitrovica.

In terms of relief, tertiary volcanoes most often make sharp points, while other creations make something milder forms, with an altitude above 600m. The area of deposit "CRNAC" - "Plakaonica" is hilly and crisscrossed by streams and deep ravines.

The mine "CRNAC" is at a relatively low altitude of about 600 to 900 m. It is located in the valley of the Crnacka River, left tributary of Ibar. It has a mild mountain climate. Heavy rainfall in the winter months does not cause major problems for ore transport.

Lead and zinc mine "CRNAC", more than two decades, did not conduct the geological exploration neither drilling of exploratory drill holes nor mining of exploratory works. During this time the exploitation was conducted in the scope of 50,000 t to 150,000 t ore annually. For these reasons, there was a reduction in the available ore reserves to a level that allows exploitation of ore for the next few years.

Looking at the current situation of ore reserves and the need to maintain continuity in the production of ore, it suggests to research in the shortest time the potential mineral structures.

The potential areas that could be caught exploratory mining operations and exploration of drill holes involves the "CRNAC-ISTOK".

Results from an earlier exploratory period which were obtained by exploration drilling from surface, as well as by drilling of exploration drill holes from the pit, indicate that, in this area may prove more ore wires, which in terms of quality and quantity of the metal content correspond to the existing mineral veins in the central part of the deposit "CRNAC".

Insufficient exploration of mineral veins in the central part of the deposit "CRNAC" which is now exploited ore is planned to drill veins by direction and laying.

2 DESCRIPTION OF DEPOSITS

“CRNAC” and “PLAKAONICA” represent a system of fault zones and veins, genetically and temporally identical, so that they have great similarity by the mineralization type. The ore is mostly deposited in amphibolites, while now in a serpentine quantitative and qualitative ore are of subordinated importance. The ore veins have lens thickening and wedge out per stretching and by the fall. Often, thin veins are met in some thicker veins, in order to diverge and wedge out. Individually thin and mineralized veins can be grouped into the ore zones, giving the ore bodies with thickness up to 10 m, with metal content within the limits of viability of exploitation. Smaller veins and tiny veins, as well as impregnation sometimes build a network and give mineralization of the stock work type [2].

The system of mineral veins is connected to the fault zones and cracks, striking NE - SW while the slopes are different, the ore veins sometimes divergently diverge at deeper levels, because one declines on the NW, and the other on the SE.

The ore zones connected to contact of amphibolites of serpentine or diabase – floral series, which has the fault zones and dacite dikes, they decline to the SE. There

are ore strings (e.g., subsoil veins 3 and 4) with decline on the opposite side, or declining towards NW. A higher number of mineral ore veins as well as the ore veins in the Plakaonica district decline towards NW. The decline angles of ore veins are variable and range within the limits of between 60° and 90°.

In the ore association of the ore deposit "CRNAC", the following essential minerals are identified: galena, sphalerite and pyrite, and subordinated chalcopyrite, arsenopyrite and pyrrhothine [1]. From the gangue minerals, mainly were found quartz and calcite, and rarely rhodochrosite. In subsequent tests of microelements were indicated the presence of iridium (2 – 114 g/t) and selenium (4.7 g/t) in individual sulphide minerals of lead and zinc. Scantily realized research of the mineral paragenesis in the deposit points out the absence of ore and non-ore minerals characteristic for the contact-metasomatic or transitional contact metasomatic-hydrothermal processes that preceded the main stage of hydrothermal processes in the formation of deposit. The absence of such phenomena and processes that preceded them show the conditions of formation the typical hydrothermal deposit of the mezothermal phase in which multi-stage was absent with characteristic successions that characterize the transition contact metasomatic-hydrothermal lead-zinc deposits of the Kopaonik ore region. Explanations, associated with different colored sphalerites as the evidence of presence the epithermal processes in the deposit are not sufficient and should be substantiated by more complete and versatile tests. Until now, the presence of two succession of hydrothermal area of deposition is macroscopically observed in deposit. First, processes of depositing huge silicate and less silicon-carbonate formations, formed mainly at the expense of serpentine in contact with their gabbro amphibolites and volcanic cover the cradle and Rogozna, correspond to the pre-ore stage. This association of rocks is mostly formed of opal-chalcedonian mass and amorphous silicon with higher or lower concentrations of pyrite, which in general can be considered sterile from an economic standpoint. The second main phase of depositing is represented by described ore minerals of mezothermal stage with economic mineralization of lead and zinc, whose concentration in the appropriate structures of silicon masses is manifested as the ore bodies with the economic content of useful metals [2].

Considering the established successions and mineral paragenesis, the positional relationship of deposit and ore bodies with volcanic breakthroughs of the tertiary age and clear hydrothermal processes, that approach to the conditions and deposits of the ore field Koporić – Jelakce, the deposit is classified as a type of hydrothermal deposits predominantly of mezothernal succession, geneticaly related to the process of tertiary [3].

3 OPENING THE CRNAC DEPOSIT

Opening the deposit CRNAC was carried out in two phases. The first phase was in the period from 1957 - 1968 and included level above 862 m and the second phase of opening from 1968 – 1980 from level 600 m – the Gnježdanski mine [3].

The ore deposit CRNAC above 862 m was opened by the system of undermine, which at the same time represent the levels of the mine horizons as follows [3]:

- 0 - horizon at level 1.062 m
- I - horizon at level 996.2 m
- II - horizon at level 944.7 m
- III - horizon at level 902 m
- IV - horizon at level 862 m

The first, second and fourth horizon were opened by undermines from the surface (given elevations related to the elevations of the entrance into undermines), while the third horizon was opened from the IV horizon by the system of raises as sub-level [3].

Next to the entrance of mine No. 4 (elevation 862), economically significant veins are labeled with ordinal numbers 1 - 17. As already mentioned, they have very sharply

decline towards SE with decline angle of about 80°. They have the same morphological features as the other ore veins and remaining as the most important their ability to retain relatively good continuity, both by strike and by decline [3].

The fourth (IV) horizon has long been the main horizon, because the entire ore transport was done along ore, the ore haulage to the surface was done over this mine. In addition, the entire delivery of materials required for the work was performed from the IV horizon; the main power grid is now at the horizon (compressed air, technical water and electrical energy) [3].

Opening of deposit below the level of 862 m was done by a system of mining operations of capital importance for the whole mine with the aim of undertaking a deep part of the deposit. For this purpose, the mine Gnježdane, length 3,781 m, was made. The blind service shaft was made at the level of 600 m to the level of 862 m level which six filling stations were made, as follows [3]:

- IV - horizon (K. 867.00 m)
- V - horizon (K. 818.00 m)
- VI - horizon (K. 768.00 m)
- VII - horizon (K. 718.00 m)
- VIII - horizon (K. 668.00 m)
- IX - horizon (K. 609.89 m) pit bank at the level of adit

The haulage machine of the system "KEPE" is in the hall, which is located directly above the tower, and at 23.5 m above the filling station of the IV horizon [3].

The central ore rod – use for the ore lowering from the pit to the level of the IX horizon - to the level of the mine "Gnježdane" [3].

4 EXPLORATION DEGREE OF THE "CRNAC-EAST" DISTRICT

4.1 District "CRNAC-EAST"

Exploration the "CRNAC" ore structure to the east, started in 1979 with exploratory drill holes from surface in the structures of Mladjev do to Metalica. These operations involved the exploration of these structures of drill holes from the surface structure and were found the presence of more lead - zinc ore veins with the economic metal content of lead, zinc and silver in the gabbro-amphibolites and roof shale [4].

Drill holes B-33, B-30, B-34, B-35 and B-36 in the two profiles at distance of 200 m drilled several veins with a significant content of lead and zinc. Carried out volume of research works in the area of Metalica - Mladjev do does not meet the criteria for assessment the reserves of the C1 category. Therefore, it is necessary to do the re-categorization in order to perform the additional exploration works from the pit in the extension of corridor N°410 on the fourth horizon [4].

4.2 Description of carried out exploratory operations in the "CRNAC-EAST" district

With the performed drilings B-33and B-34 the structures of Metalica are directed to the zone of shales, serpentinite and gabbroamphibolites with the quartz latite breakthroughs.

- Drill holes B33 and B34 gave identical geological profiles, fully confirmed assumptions about the structure of deposit and extending the presence of lead-zinc mineralization in this part of the field. Both drill holes determined series contact with the inserts of serpentine shale with lenses and quartz latite breakthrough in the roof below the horizon IV [4].
- With the drill hole B33, five intervals of lead-zinc mineralization were drilled. The most powerful mineralization was deposited in gabbroamphibolites slightly in shale (gneiss and cornets), a higher number of very thin lead-zinc wire was registered without economic value. Below the level of horizon IV was drilled in hydrothermal alterations of gabbroamphibolites several intervals with weaker and stronger mineralization of lead and zinc, whose position coincides with direction of ore

veins 6, 7 and 8, open on the horizon 862 m (IV horizon). The rich lead-zinc ore is located at 30 m below the level of the horizon thickness ranging from 3.5 m with a lead content of 9.7%, 7.57% zinc, 0.39% copper, 0.005% bismuth, cadmium 0.05% of silver 89 g/t [4].

- With the drill hole B34, several intervals of lead-zinc mineralization were also drilled in roof shale and gabbro-amphibolites in their basement. The metal content in the ore drilled wires ranging from trace amounts to 9% of metals such as lead and zinc. Richer lead-zinc ore veins drilled at the contact of gabbroamphibolites and slate and 5m thickness at the level of horizon VI. Positional mineralization is located along the direction of the vein no. 8. The metal content in the sample from the drill hole is 12% lead and 1.82% zinc. [4].
- Drill holes B35 and B-36 are located northeast of the profile drill holes B-33 and B-34, in order to check the possible presence mineralization of lead and zinc ore at levels which correspond to the open structures of the ore in the deposit "CRNAC" [4].
- With the B35 drilling from the surface until below the level of the fourth horizon 30 m were drilled shale (gneisses and cornet) with breakthrough of quartz latite, diabase and serpentine at the level of the first to the third horizon. The data obtained from boreholes indicate that at this level a complex tectonic zone was drilled, which is clearly expressed on the surface with breakthrough of quartz latite as tectonic contact of gabbroamphibolites and serpentine. Below the level of the second horizon at height of 935 m at the contact shale and serpentine, a lead-zinc vein was drilled, thickness of 0.40 m with a very high content: 13.24% lead and 13.6% zinc, 0.38% copper and 105 g/t silver. Between the third and fourth horizon at height of 892 m, the mineralized zone of an apparent thickness ranging from 5 m was drilled, with a very small percentage of the extracted core, and therefore could not be sampled [4].
- Drill hole B-36 was placed in the same profile line with the drill hole B-5. Geological profiles of these two wells are almost identical. Besides being absent breakthroughs of serpentines and quartz latite in shale and level of determined tectonic zone. The shale is drilled over an interval of hydrothermal changes in lower lead-zinc mineralization. The exception is lead-zinc ore vein at height of 935 m below the level of a second horizon, whose apparent mightiness is 0.5 m with content of 5.74% lead, 13.85% zinc, 011% copper and 52 g/t silver. It is confirmed that mineralization in gabbro-amphibolites occurs in two ore veinsc that in positional lie in tectonic zone with serpentine and quartz latite of Dajka at 20-40 m below the horizon IV. The lead content in the samples taken are as follows: 3.30% lead, 4.02% zinc and 24 g/t silver. This positional subsoil structure is located on the axis of ore veins 2 and 3, already partially explored on the horizon IV [4].

Results from these exploration wells B-33, B-34, B-35 and B-36 confirm that in these structures are present the lead-zinc mineralization which are identical with an open ore bodies of the „CRNAC“ deposit in terms of modes of appearance and content of lead, zinc, silver, etc. [4].

From this ore structure Mladjev do - Metalica according to the previously specified data, based on data from boreholes B-33, B-34, B-35 and B-36 and B-43 (Table 19), can be safely concluded the presence of 140,000 t of ore of the C2 cate-gory with the average rate of 8.79% lead, 3.56% zinc and 97.5 g/t silver [5].

Table 1 *Tabular overview the C2 reserves of the "CRNAC –EAST"*

Category	Drill hole	Ore (t)	Mean metal content			Amount of metal		
			Pb(%)	Zn(%)	Ag(%)	Pb(t)	Zn(t)	Ag(t)
	B-33	30,000	9.70	7.59	89	2,910	2,227	2,670
	B-34	40,000	12.20	1.82	161	4,880	728	6,440
	B-36	10,000	3.13	4.02	21	313	402	210
	B-35	10,000	13.24	13.60	105	1,324	1,360	1,050
	B-43	50,000	5.79	0.44	66	2,895	220	3,300
Total C2		**140,000**	**8.79**	**3.56**	**97.5**	**12,322**	**4,937**	**13,670**

In order to further exploration and converting of these reserves in a higher category, it is necessary from the hall N°410 to construct the research hallway covering the length of 230 m toward the site of Mladjev do. At the end of the corridor to make a chamber of 16 m^2 of which are projected six drill holes or 2 fans by three drill hole, one fan is directed to the north, the other to the south, perpendicular to the direction of the ore wire.

After the undertaken drilling, the further elaboration would be planned of this locality related to the mining operations.

5 CONCEPTION OF FURTHER EXPLORATION OF THE "CRNAC - EAST" DISTRICT

The "CRNAC-EAST" district includes exploration the mineral structures in the east direction of the capital facilities of the pit CRNAC, respectively, from the service shaft and central ore bars. Studies of these areas were performed only with exploration drill holes from the surface. Exploratory drill holes are located in the two profiles at distance of 200 m profile from the profile, including the wells B-33; B-34; B-35 and B-36, which were drilled by the profiles 33 - 34 and 35-36. [5].

The conducted scope of work on the study of this area clearly indicates the presence of more lead-zinc ore veins, with the economic content of metals of lead, zinc and silver. Also, it is concluded that the scope of works conducted from exploration drill holes from the surface indicates the promising reserves of the C2 category. Based on these data, the reserves can be evaluated that will serve as a roadmap for further geological exploration, to convert the reserves into more categories. Taking into account the current level of exploration areas of „CRNAC - EAST" and the results of these studies, it's imposed as a priority, to carry out further research system development of mining operations and development of exploration wells. For this approach of research we committed on the basis of so far experience in the exploration of the other areas.

In accordance with the position of mining facilities of the active part of the pit, as well as the position of the results obtained with drill holes B-33; B-34; B-35 and B-36, the following solution is imposed for additional exploration of the "CRNAC-EAST" district.

At the end of the hall to predict a chamber 4 x 4 m and 3 m in height, from which are projected 6 exploration drill holes, respectively, in two (2) fans of 3 (three) drill holes.

With this scope of works, a re-categorization of mineral resources can be done from C2 to C1 category.

5.1 Exploratory corridor H-410

Exploratory corridor was made towards the stretching direction of ore vein no. 6 on the fourth horizon. Bearing in mind a rather modest metal content in the ore in the last 40 meters, the hall ceased to be built up. The exploratory corridor was made in the

middle of that promised continuation of mineralization ore economically viable. However, in the meantime, considerably improved ore veins are found in the other areas and ore with a higher metal content and terminated with further work on corridor development.

The current position of corridor seems at the same time and the position of beginning of making the corridor H -410 to the east. The starting coordinates of this corridor would be:

x = 4.771 264
y = 7474 910
azimuth = 52°

Building up a new corridor with a length of 230 m with the given elements, there would be up to the position with the exploration drill holes to check data from the drill holes B-33; B-34; B-35 and B-36 in the depth prospecting. In addition to these data, it is possible to check the method of providing the ore blocks in this area.

Building up the exploratory corridors, without prior drilling and getting dense network data would not be rational.

5.2 Drilling of exploratory drill holes from the corridor410

Considering the great distance of geological profiles one of the other (about 200 m) on the district of "CRNAC-EAST", designed drill holes from the horizontal IV, or from the chamber hall SIH410, a denser network of geological data was obtained. Table 2 shows the elements of drill holes SIH410 from the corridor, in the direction of district "CRNAC-EAST".

Table 2 *Tabular overview of exploratory drill holes for the "CRNAC- EAST" district*

Drill hole name	Coordinates x y		Azimuth (v°)	Slope (±)	Length (m)	Height (z)
JB-1/2013	4 771 313	7 474 985	172	O	220	862
JB-2/2013	4 771 313	7474 985	140	-35	250	862
JB-3/2013	4771 313	7474 985	105	O	300	862
JB-4/2013	4 771 390	7475 090	340	O	300	862
JB-5/2013	4 771 390	7475 090	310	-30	200	862
JB-6/2013	4 771 390	7475 090	275	O	200	862

The pit drill hole 1/2013 with the given elements is designed and directed so to cut all mining structures from the drill hole B-43 at the level IV of the horizon profile (I-II).

The pit drill hole 2/2013 with the given elements is designed between the profiled lines (I-II) and (II-III) with the aim of proving the mineral structure of the wells B-33, B-34 and B-43 below the level of horizon IV, or the spreading of these structure in depth at the site Metalica.

The pit drill holes 3/2013 is designed to define the ore structures from the profile (III-IIII) respectively from the drill holes B-33 and B-34 and their spreading towards the east.

By making all three of pit drill holes 1, 2 and 3/2013 that range from chamber no. 1, get a clearer picture of the mineral structures of Metalica can be obtained as per stretching also and by the fall.

The pit drill holes B-4/2013.5/2013 and 6/2013will give for these drill holed from chamber no. 2 a clearer picture of the mineral structures of Mladjev do by stretching, strengthening and depth of laying.

After drilling of six drill holes with a total length of 1470 and proving of economically significant mineralization, a further elaboration of this locality would be planned for mining exploration works.

The ore reserves shown in Table 1, including elaboration of researched works in this district "CRNAC - EAST" as per width of the deposit and at depth, as well as the interpolation data can be transferred into a higher category B + C1 categories, shown in Table 3.

Table 3 *Reserves of B + C1 categories of the "CRNAC- EAST" district*

Category	Ore (t)	Content of metal		
		PB (%)	Zn (%)	Ag (g/t)
B + C1	399,000	8.25	2.33	93.5

CONCLUSION

For this conceptual presentation the exploration of the "CRNAC-EAST", the following reasonsare taken into consideration: development and opening the mine Crnac, as well as the district of Plakaonica 1 created the preconditions for the continuation of exploration towards the new areas in this case the "CRNAC-EAST". Stretching and falls of individual ore veins and their parallelism and location of pane and the central ore bars in the slopes of the ore deposits imposed for this district making the main mining facilities that will interconnect all future mining veins while connecting the districts of "CRNAC-EAST" with the central mining areas of "CRNAC". So, in later stage of processing and exploitation of ore from this area the exploratory facilities before all corridors and excavations to turn into development facilities, transportation, transient and ventilation pathways. According to the geology of the "CRNAC-EAST" deposit was made the most favorable site selection of the exploratory hallway N 410 of which will be confirmed the results of drill holes B-33, B-34, B-35, B-36 and B-40 by exploratory geological drill holes. Based on the existing data and the expected data there has been made the connection of results from exploration wells and more insight is obtained into the parallel structures of the ore that will be confirmed by the mining exploratory works. So far, in the "CRNAC-EAST" district, three ore structures were identified at depths below 862 meters at some distance from the existing active works of the Crnac mine about 300 meters. The direction of these mineral structures and spreading of depth, primarily will be studied by exploratory drill holes and then by mining exploratory works. The length of development the mining exploratory works define data from drill holes and they are on the limit of spreading to the footwall deposits with what have to be taken into account in the organic connection of the "CRNAC-EAST" district and the central district of the Crnac mine.

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MOGUĆNOSTI ISTRAŽIVANJA Pb-Zn RUDE NA REVIRU „CRNAC-ISTOK“ RUDNIKA „CRNAC“[**]

Izvod

Cilj rada je da predstavi koje su mogućnosti za obezbeđivanje rude Pb-Zn sa okolnih revira za eksploataciju u rudniku „CRNAC“. Količina otkopane rude, kao i opšte poznata činjenica, da rudne rezerve nisu neiscrpne, uslovile su potrebu za nastavkom geoloških istraživanja. Proširenje sirovinske baze, trebalo bi očekivati na indiciranim lokalitetima u blizini aktivnog ležišta Crnac. Jedan od identifikovanih lokaliteta u crnačkoj rudnoj zoni je i istocni deo od aktivnog ležišta tzv. revir „CRNAC-ISTOK“.

U ovom radu se prikazani rezultati geoloških istražnih radova dobijenih interpolacijom podataka sa istražnih bušotina i istražnih rudarskih radova na reviru „CRNAC-ISTOK“.

Ključne reči: *olovo, cink, crnac-istok, istražni radovi, rudne strukture, istraživanje, geologija ležišta*

1. UVOD

Ležište “CRNAC" otvoreno je nakon intenzivnog desetogodišnjeg istraživanja bušenjem sa površine i rudarskim istražnim radovima u periodu od 1957. do 1968. godine, od strane geološke službe rudnika i topionice olova i cinka “Trepča”-Zvečan. Otvaranje rudnika “CRNAC” doprinelo je povećanju sirovinske baze olova i cinka kao osnovnih sirovina za potrebe metalurških postrojenja i novoizgrađenih prerađivačkih kapaciteta Kombinata “Trepča” na bazi ovih metala. Otvaranjem rudnika “CRNAC” sa relativno visokim sadržajem metala olova i cinka veliki je podsticaj razvoju jednog nerazvijenog područja kao što je teritorija opštine Leposavić.

Od početka rada, odnosno od 1968. godine rudnik “CRNAC” nalazi se u sastavu OC Rudnici i flotacija “Kopaonik” - Leposavić. Sadašnje nepovoljno stanje sirovinske baze OC “Kopaonik” kao i kombinata “Trepča” u celini i sve veće potrebe za zadovoljavanje prerađivačkih kapaciteta zahtevaju dalje intenziviranje istražnih radova kako u samom ležištu, tako i njegovom širem području. Istovremeno se uvođenjem istražnih radova ulažu znatna materijalna i finansijska sredstva u otvaranju novih rudnika u cilju povećanja proizvodnje, dohotka i standarda radnika.

Geografski područje Rogozne okontureno je tokovima reke Ibar i Raške koje skoro u celini ograničavaju sa zapadne, istočne i južne strane, a potom severne zatvaraju ušćem u Rašku-Ibar, trouglom kojim pokrivaju hidrografske mreže levih pritoka Ibra i desnih reke Raške, skoro u potpunosti određeno je područje planinskog masiva Rogozne u čijem se centralnom delu nalazi rudno ležište “CRNAC”.

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Saobraćajna mreža puteva na Rogozni obezbeđuje pristup većem delu područja rudnika. Osim makadamskog puta Banjska - Novi Pazar, sve su to u novije vreme izgrađeni putevi za eksploataciju šuma prohodnih za terenska vozila tokom većeg dela godine. Asfaltnim putevima dolinama Ibra i Raške i delimično asfaltiranim uz Jošaničku i Banjsku reku, obezbeđen je pristup u obodne i centralne delove Rogozne. Dolinom Jošaničke, odnosno Crnačke reke u gornjem toku, rudnik "CRNAC" povezan je sa objektima za preradu rude u Leposaviću asfaltnim putem dugim 15 km. Do Gnježdanskog potkopa put je širine 5 m, a ostalih 6 km je širine 3 m. Od većih objekata na ovom putu se nalazi armirano-betonski most na Ibru, zatim nadvožnjak preko železničke pruge i priključen na magistralni put Raška - Kosovska Mitrovica.

U pogledu reljefa, tercijarni vulkaniti najčešće grade oštre vrhove, dok ostale tvorevine čine nešto blaže oblike, sa nadmorskom visinom iznad 600 m. Područje ležišta „CRNAC" – „PLAKAONICA" je brdovito i ispresecano dubokim potocima i jarugama.

Rudnik „CRNAC" je na relativno maloj nadmorskoj visini od oko 600 do 900 m. Nalazi se u dolini Crnačke reke, leve pritoke Ibra. Ima blagu planinsku klimu. Obilne padavine, u zimskim mesecima ne pričinjavaju veće teškoće prilikom transporta rude.

Rudnik olova i cinka „CRNAC", više od dve decenije nije vršio geološka istraživanja, ni bušenjem istražnih bušotina ni rudarskim istražnim radovima. Za to vreme je vršena eksploatacija rude u obimu od 50.000 t do 150.000 t rude godišnje. Iz ovih razloga došlo je do smanjenja raspoloživih rudnih rezervi na nivo koji omogućuje eksploataciju rude za nekoliko narednih godina.

Sagledavajući postojeće stanje rudnih rezervi kao i potrebu za održavanjem kontinuiteta u proizvodnji rude, predlaže se istraživanje u najkraćem vremenskom roku potencijalnih rudnih struktura.

U potencijalne prostore koji bi se obuhvatili istražnim rudarskim radovima i istražnim bušotinama spada, "CRNAC-ISTOK".

Rezultati iz ranijih perioda istraživanja koji su dobijeni istražnim bušenjem sa površine, kao i bušenjem istražnim bušotinama iz jame, upućuju na to, da se, u tom prostoru mogu dokazati više rudnih žica, koje po kvalitetu sadržaja metala i količini odgovaraju postojećim rudnim žicama u centralnom delu ležišta „CRNAC".

Nedovoljna istraženost rudnih žica u centralnom delu ležišta „CRNAC" gde se sada vrši eksploatacija rude predviđeno je bušenje istražnih bušotina dužine do 100 m. Ovim bušotinama će se razrešiti pitanje kontinuiteta rudnih žica po pravcu pružanja i zaleganja.

2. OPIS LEŽIŠTA

„CRNAC" i „PLAKAONICA" predstavljaju sistem rasednih zona i žica, genetski i vremenski istovetnih, tako da i po vrsti mineralizacije imaju veliku sličnost. Većim delom ruda je odložena u amfibolitima, dok je za sada u serpentinu kvantitativni i kvalitativno ruda podređenog značaja. Rudne žice imaju sočivasta zadebljanja i isklinjavaju kako po pružanju tako i po padu. Često se tanje žice sastaju u nešto deblje žice, da bi se opet razilazile i isklinjavale. Pojedinačno tanke i rudom bogate žice mogu se grupisati u rudne zone, dajući rudna tela moćnosti i do 10 m, sa sadržajem metala u granicama rentabilnosti eksploatacije. Sitnije žice i žičice kao i impregnacije kad kad grade mrežu i daju mineralizaciju štokverhnog tipa [2].

Sistem rudnih žica vezan je za rasedne zone i pukotine, pružanja SI-JZ dok su padovi različiti, rudne žice se nekad divergentno razilaze u dubljim nivoima, jer jedne padaju na SZ, a druge na JI.

Rudna zona vezana za kontakt amfibolita serpentinita ili dijabazrožne serije, gde ima i rasednih zona, kao i dacitskih dajkova, imaju pad ka JI. Postoje i rudne žice **(primer, rudna žica 3 i 4)** koje imaju pad

na suprotnu stranu, odnosno padaju prema SZ. Veći broj rudnih žica kao i rudne žice u plakaoničkom reviru imaju pad prema JI. Padni uglovi rudnih žica su promenljivi i kreću se u granicama između 60° i 90°.

U rudnoj asocijaciji ležišta „CRNAC" identifikovani su kao bitni minerali galenit, sferelit i pirit, a podređeno halkopirit, arsenopirit i pirhotin [1]. Od minerala jalovine konstatovane su pretežno kvarc i kalcit, ređe rodohrozit. Pri naknadnim ispitivanjima mikroelemenata indicirano je prisustvo iridijuma (2-114 g/t), selena (4,7 g/t) u pojedinačnim sulfidnim mineralima olova i cinka. Oskudno vršena ispitivanja mineralne parageneze u ležištu pokazuju na osudstvo rudnih i nerudnih minerala karakterističnih za kontaktno-metasomatske ili prelazne kontaktno-metasomatsko-hidrotermalne procese koji su predhodili glavnoj fazi hidrotermalnih procesa u formiranju ležišta. Odsustvo takvih fenomena i procesa koji bi im predhodili pokazuje na uslove stvaranja tipskog hidrotermalnog ležišta mezotermalne faze u kome je odsustvovala višefaznost sa karakterističnim sukcesijama koje karakterišu prelazno konztaktno-metasomatsko hidrotermalna olovo-cinkova ležišta kopaoničkog rudnog reona. Objašnjenja koja se vezuju za raznobojne sfalerite kao dokaz prisutnosti epitermalnih procesa u ležištu nisu dovoljna i trebalo bi ih potkrepiti potpunijim i svestranijim ispitivanjima. Do sada je u ležištu makroskopski sigirno uočeno prisustvo dve sukcesije hidrotermalnog područja deponovanja. Prvo, prerudnoj, odgovaraju procesi deponovanja ogromnih silicitskih i manje silicijsko - karbonatnih tvorevina formiranih mahom na račun serpentinita u njihovom kontaktu sa gabroamfibolitima i vulkanskim pokrovom u ležištu i na Rogozni. Ovu asocijaciju stena izrađuju pretežno opalsko-kalcedonske mase i amorfije silicije sa većim ili manjim koncentracijama pirita, koja se u celini može smatrati sterilnom sa ekonomskog stanovišta. Drugu glavnu fazu deponovanja reprezentuju opisani rudni minerali mezotermalne faze sa ekonomskim oruđenjima olova i cinka čija se koncentracija u pogodnim strukturama silicijskih masa manifestuju kao rudna tela sa ekonomskim sadržajima korisnih metala.

Obzirom na utvrđene sukcesije i mineralnu paragenezu, pozicionu vezu ležišta i rudnih tela sa vulkanskim probojima tercijarne starosti i jasne hidrotermalne procese koji se približavaju uslovima i ležištima rudnog polja Koporić - Jelakce ležište je svrstano u tip hidrotermalnih ležišta dominantno mezotermalne sukcesije genetski vezano za proces tercijarne metalogenije [3].

3. OTVARANJE LEŽIŠTA CRNAC

Otvaranje ležišta CRNAC je vršeno u dve faze. Prva faza u period od 1957 - 1968. god. i obuhvata nivo iznad 862 m i druga feaza otvaranja od 1968 - 1980. god. od nivoa 600 m - Gnježdanskog potkopa [3].

Rudno ležište "CRNAC" iznad nivoa 862 m otvoreno je sistemom potkopa, koji u isto vreme predstavljaju i nivoe horizonata rudnika i to [3]:

- 0 - horizont na koti 1.062 m
- I - horizont na koti 996,2 m
- II - horizont na koti 944,7 m
- III - horizont na koti 902 m
- IV - horizont na koti 862 m

Prvi, drugi i četvrti horizont otvoreni su potkopima sa površine (date kote se odnose na kote ulaza u potkope), a dok je treći horizont otvoren sa IV horizonta sistemom uskopa kao međuhorizont [3].

Idući od ulaza potkopa br. 4 (kota 862) ekonomski značajnije žice su označene rednim brojevima od 1 - 17. Kao što je već rečeno, imaju pad ka JI vrlo strmo sa radnim uglom oko 80°. One imaju iste morfološke karakteristike kao i ostale rudne žice i ostaje kao najvažnije njihova osobina da relativno dobro zadržavaju kontinuitet, kako po pružanju tako i po padu [3].

Četvrti (IV) horizont je dugo vremena bio osnovni horizont, jer se po njemu obavljao celokupni transport rude, izvoz rude na površinu vršio se preko ovog potkopa. Pored toga, sa IV horizonta vršila se

skoro celokupna dostava materijala potrebnog za rad, osnovna energetska mreža je i sada na ovom horizontu (komprimirani vazduh, tehnička voda i elektro energija) [3].

Otvaranje ležišta ispod nivoa 862 m urađeno je sistemom rudarskih radova kapitalnog značaja za ceo rudnik a u cilju poduhvatanja dubinskog dela ležišta. U tu svrhu urađen je potkop Gnježdane dužine 3.781 m. Slepo servis okno sa nivoa 600 m do nivoa 862 m iz kojeg su urađena šest navozišta i to [3] :

- IV - horizont (K. 867,00 m)
- V - horizont (K. 818,00 m)
- VI - horizont (K. 768,00 m)
- VII - horizont (K. 718,00 m)
- VIII - horizont (K. 668,00 m)
- IX - horizont (K. 609,89 m) odvozište na nivou potkopa

Izvozna mašina sistema "KEPE" nalazi se u hali koja se nalazi neposredno iznad tornja, a na 23,5 m iznad navozišta na IV horizontu [3].

Centralna rudna sipka - kojom se celokupna ruda iz jame spušta na nivo IX horizonta - na nivo potkopa "GNJEŽDANE".

4. STEPEN ISTRAŽENOSTI REVIRA „CRNAC-ISTOK"

4.1. Revir „CRNAC-ISTOK"

Istraživanje rudne strukture "CRNAC" u pravcu istoka, započet je 1979. godine istražnim bušotinama sa površine u strukturama Mlađev do i Metalica. Ovim radovima izvršeno je istraživanje ovih struktura bušotinama sa površine i utvrđeno prisustvo više olovo-cinkovih rudnih žica sa ekonomskim sadržajem metala olova, cinka i srebra u gabro - anfibolitima i povlatnim škriljcima [4].

Bušotina B-33, B-30, B-34,B-35 i B-36 u dva profila na rastojanju 200 m nabušeno je nekoliko žica sa značajnim sadržajem olova i cinka. Izvedeni obim istražnih radova na reviru Metalica - Mlađev do ne zadovoljava kriterijume za procenu rezervi C1 kategorije. Zbog toga je potrebno u cilju prekategorizacije obaviti dopunske istražne radove iz jame u produžetku hodnika N°410 na četvrtom horizontu [4].

4.2. Opis izvedenih istražnih radova u reviru "CRNAC-ISTOK"

Urađenim bušotinom B-33 i B-34 struktura Metalica usmerene na zonu kontakta škriljaca, serpentinita i gabroamfibolita sa kvarclatitskim probojima.

- Bušotine B-33 i B-34 dale su identične geološke profile, u potpunosti potvrdile predpostavke o produženju strukture ležišta i prisustvo olovo-cinkove mineralizacije u ovom delu terena. Obema bušotinama utvrđen je kontakt serije škriljaca sa umecima serpentinskih sočiva i proboja kvarclatita u povlati ispod nivoa IV horizonta [4].
- Bušotinom B-33 nabušeno je pet intervala olovo-cinkovih orudnjenja. Najmoćnije orudnjenje deponovano je u gabroanfibolitima, neznatno u škriljcima (gnajsevima i kornitima), gde je registrovan veći broj veoma tankih olovo-cinkovih žica, bez ekonomske vrednosti. Ispod nivoa IV horizonta nabušeno je u hidrotermalno promenjenim gabroanfibolitima više intervala sa slabijim i jačim orudnjenjima olova i cinka, čija se pozicija poklapa sa pravcem pružanja žice 6, 7 i 8, otvorenih na horizontu 862 m (IV horizont). Bogata olovo-cinkova ruda locirana je na 30 m ispod nivoa ovog horizonta moćnosti 3,5 m sa sadržajem olova od 9,7%, cinka 7,57%, bakra 0,39%, bizmuta 0,005%, kadmijuma 0,05%, srebra od 89 g/t [4].
- Bušotinom B-34 takođe je nabušeno više intervala olovo-cinkovih orudnjenja u povlatinim škriljcima i gabroanfibolitima u njihovoj podini. Sadržaj metala u nabušenim rudnim žicama kreće se od tragova do 9% metala olova i cinka. Bogatija olovo-cinkova rudna žica nabušena je na kontaktu gabroanfibolita i škriljaca

debljine oko 5 m na nivou VI horizonta. Poziciono orudnjenje se nalazi na pravcu žice br. 8. Sadržaj metala u uzorku iz bušotine je 12% olova i 1,82% cinka [4].

- Bušotinom B-35 i B-36 locirane su severoistočno od profila bušotina B-33 i B-34, sa ciljem da proveri moguće postojanje orudnjenja olova i cinka u nivoima koji odgovaraju otvorenim rudnim strukturama u ležištu "CRNAC" [4].
- Bušotinom B-35 od površine do ispod nivoa četvrtog horizonta 30 m nabušeni su škriljci (gnajsevi i kornit) sa probojima kvarclatita, dijabaza i serpentinita u nivou prvog do trećeg horizonta. Dobijeni podaci iz bušotina ukazuju da je u ovom nivou nabušena složena tektonska zona, koja je na površini jasno izražena kvarclatitskim probojem kao i tektonskim kontaktom gabroanfibolita i serpentinita. Ispod nivoa drugog horizonta na koti 935 m na kontaktu škriljaca i serpentinita nabušena je olovo-cinkova žica debljine 0,40 m sa veoma visokom sadržajem: 13,24% olova, 13,6% cinka, 0,38% bakra i 105 g/t srebra. Između trećeg i četvrtog horizonta na koti 892 m nabušeno je orudnjena zona prividne moćnosti od 5 m, sa vrlo malim procentom izvađenog jezgra, pa samim tim nije mogla biti oprobavana [4].
- Bušotina B-36 postavljena je u istoj profilskoj liniji sa bušotinom B-5. Geološki profili ove dve bušotine gotovo su indentični. Osim što izostaju proboji serpentinita i kvarclatita u škriljcima i nivou utvrđene tektonske zone. U škriljcima je nabušeno više intervala sa hidrotermalnim promenama slabijom olovo-cinkovom mineralizacijom. Izuzetak čini olovo-cinkova rudna žica na koti 935 m ispod nivoa drugog horizonta, čija prividna moćnost iznosi 0,5 m sa sadržajem 5,74% olova, 13,85% cinka, 011% bakra i 52 g/t srebra. Konstatovana orudnjenja u gabroanfibolitima javljaju se dve rudne žice koje poziciono leže u tektonskoj zoni sa serpentinitom i kvarclatitskim dajkom na 20-40 m ispod IV horizonta. Sadržaj olova u uzetim probama iznose: 3,30% olovo, 4,02% cink i 24 g/t srebro. Poziciono ova rudna struktura nalazi se na pravcu rudne žice 2 i 3, već delimično istraženih na IV horizontu [4].

Rezultati iz ovih istražnih bušotina B-33, B-34, B-35 i B-36 potvrđuju da su u ovim strukturama prisutna olovo-cinkova orudnjenja koja su identična sa otvorenim rudnim telima ležišta „CRNAC" u pogledu načina pojavljivanja i sadržaja olova, cinka, srebra i dr. [4].

Iz ove rudne strukture Mlađev do-Metalica prema dosad utvrđenim podacima, a na osnovu podataka iz bušotina B-33, B-34, B-35, B-36 i B-43 (Tabela 1.) sa sigurnošću se može konstatovati 140.000 t rude C2 kategorije sa srednjim sadržajem 8,79% olova, 3,56% cinka i 97,5 g/t srebra [5].

Tabela 1. *Tabelarni prikaz C2 rezerve „CRNAC –ISTOK".*

Kategorija	Bušotina	Ruda (t)	Srednji sadržaj metala			Količina metala		
			Pb(%)	Zn(%)	Ag(%)	Pb(t)	Zn(t)	Ag(t)
	B-33	30,000	9,70	7,59	89	2910	2227	2670
	B-34	40,000	12,20	1,82	161	4880	728	6440
	B-36	10,000	3,13	4,02	21	313	402	210
	B-35	10,000	13,24	13,60	105	1324	1360	1050
	B-43	50,000	5,79	0,44	66	2895	220	3300
Ukupno C2		**140000**	**8,79**	**3,56**	**97,5**	**12322**	**4937**	**13670**

U cilju daljih istraživanja i prevođenja ovih rezervi u višu kategoriju neophodnoje iz hodnika N°410 uraditi 230 m istražnog hodnika prema lokalitetu Mlađev do. Na kraju hodnika uraditi komoru 16 m^2 iz koje su projektovane 6 bušotina odnosno 2 lepeze po tri bušotine, jedna lepeza usmerena na sever, druga na jug, upravno na pravac pružanja rudnih žica.

Posle izvedenog bušenja, planirala bi se dalja razrada ovog lokaliteta rudarskim radovima.

5. KONCEPCIJA DALJIH ISTRAŽIVANJA REVIRA "CRNAC - ISTOK"

Reviru „CRNAC-ISTOK" pripadaju istraživanja rudnih struktura u pravcu istočno od kapitalnih objekata jame CRNAC, odnosno, od servisnog okna i centralne rudne šipke. Istraživanja ovog revira su vršena samo sa istražnim bušotinama sa površine. Istražne bušotine su locirane u dva profila na rastojanju od 200 m profil od profila, i to sa bušotinama B-33; B-34; B-35 i B-36 koje su bušene po profilima 33-34 35-36 [5].

Izvedeni obim radova na istraživanju ovog revira, nesumnjivo ukazuje na prisustvo više olovo - cinkovih rudnih žica, sa ekonomskim sadržajem metala olova, cinka i srebra. Takođe, se zaključuje da izvedeni obim radova sa istražnim bušotinama sa površine ukazuje na perspektivne rezerve C2 kategorije. Na osnovu ovih podataka mogu se procenjivati rezerve koje će služiti kao putokaz za dalja geološka istraživanja, radi prevođenja rezervi u više kategorije. Imajući u vidu dosadašnji stepen istraženosti revira "CRNAC - ISTOK" kao i rezultate tih istraživanja, nameće se kao prioritetno, da se izvrši dodatno istraživanje sistemom izrade rudarskih radova i izradom istražnih bušotina. Za ovakav pristup istraživanju opredelili smo se na osnovu iskustva pri istraživanju ostalih revira.

Saglasno položaju rudarskih prostorija aktivnog dela jame, kao i položaju dobijenih rezultata sa bušotinama B-33; B-34; B-35 i B-36 nameće se sledeće rešenje za doistraživanje revira „CRNAC - ISTOK".

Na kraju hodnika predvideti komoru 4 x 4 m i i visine 3 m, iz koje su projektovane istražne bušotine iji količini od 6 bušotina, odnosno, u 2 (dve) lepeze po 3 (tri) bušotine.

Sa ovim obimom radova mogli bi smo izvršiti prekategorizaciju mineralnih sirovina iz C2 u C1 kategoriju.

5.1. Istražni hodnik H-410

Istražni hodnik je rađen po pravcu pružanja rudne žice br. 6 na IV horizontu. Imajući u vidu dosta skroman sadržaj metala u rudi na zadnjih 40 m, hodnik je prestao da se izrađuje. Istražni hodnik je rađen u sredini koja je obećavala nastavak orudnjenja ekonomski isplativim. Međutim, u međuvremenu došlo se do znatno boljih rudnih žica na drugim revirima kao i rude sa većim sadržajem metala i prestalo se sa daljim radovima na izradi hodnika.

Sadašnja pozicija kraja hodnika čini u isto vreme i poziciju početka izrade hodnika H -410 prema istoku. Polazne koordinate ovog hodnika bi bile:

x = 4.771 264
y = 7474 910
azimut = 52°

Izradom ovog hodnika u dužini od 230 m sa zadatim elementima, došlo bi se do pozicije da istražnim bušotinama proverimo podatke sa bušotina B-33; B-34; B-35 i B-36 po dubini ležišta. Osim ovih podataka moguće je i proveriti način pružanja rudnih blokova u ovom reviru.

Izrada istražnih hodnika, bez predhodnih bušenja i dobijanja gušće mreže podataka ne bi bilo racionalno.

5.2. Bušenje istražnih bušotina iz hodnika 410

Imajući u vidu veliku udaljenost geoloških profila jednog od drugog (oko 200 m) na reviru „CRNAC ISTOK", projekto-

vanim bušotinama sa IV horizontal, odnosno iz komore hodnika SIH410 dobili bi smo gušću mrežu geoloških podataka. U tabeli 2dati su elementi bušotena iz hodnika SIH410, u pravcu revira „CRNAC - ISTOK“.

Tabela 2. *Tabelarni prikaz istražnih bušotina za revir Crnac- istok*

Naz. bus.	Kordinate x y		Azimut (v°)	Nagib (±)	Dužina (m)	Kota (z)
JB-1/2013	4 771 313	7 474 985	172	O	220	862
JB-2/2013	4 771 313	7474 985	140	-35	250	862
JB-3/2013	4771 313	7474 985	105	O	300	862
JB-4/2013	4 771 390	7475 090	340	O	300	862
JB-5/2013	4 771 390	7475 090	310	-30	200	862
JB-6/2013	4 771 390	7475 090	275	O	200	862

Jamska bušotina 1/2013 sa zadatim elementima projektovana je i usmerena tako da preseče sve rudne strukture iz bušotine B-43 na nivou IV horizonta u profilu (I-II).

Jamska bušotina 2/2013 sa zadatim elementima projektovana je između profilskih linija (I-II) i (II-III) sa ciljem dokazivanja rudnih struktura iz bušotina B-33, B-34 i B-43 ispod nivoa IV horizonta, odnosno prostiranje ovih struktura po dubini na lokalitetu Metalica.

Jamska bušotina 3/2013 projektovana je tako da definiše rudne struktura iz profila (III-IIII) odnosno bušotina B-33 i B-34 i njihovo prostiranje prema istoku.

Izradom sve tri jamske bušotine 1, 2 i 3/2013 odnosno lepeze iz komore br. 1 dobićemo jasniju sliku o rudnim strukturama Metalice kako po pružanju tako i po padu.

Jamsklm bušotinama B-4/2013.5/2013 i 6/2013. izradom ove lepeze bušotina iz komore br. 2 dobićemo jasniju sliku o rudnim strukturama Mlađev do po pružanju, moćnosti i dubini zaleganja.

Posle izvedenog bušenja svih šest bušotina ukupne dužine od 1470 m i dokazivanja ekonomski značajnijih orudnjenja, planirala bi se dalja razrada ovog lokaliteta rudarskim istraznim radovima radovima.

Rudne rezerve prikazane u Tabeli 1, izradom istražnih radova u reviru „CRNAC – ISTOK“ kako po širini ležista tako i po dubini, kao i interpolacijom podataka mogu se prevesti u višu kategoriju B + C1 kategorije prikazane u Tabeli 3.

Tabela 3. *Rezerve B + C1 kategorije revira „CRNAC- ISTOK“*

Kategorija	Ruda (t)	Sadržaj metala		
		Pb (%)	Zn (%)	Ag (g/t)
B + C1	399,000	8,25	2,33	93,5

6. ZAKLJUČAK

Za ovakav koncepcijski prikaz istraživanja revira „CRNAC-ISTROK“ opredelili smo se iz sledećih razloga: razrada i otvaranja rudnika crnac kao i revira Plakaonica 1 stvorene su predpostavke za nastavak istraživanja u pravcu novih revira u ovom slućaju revira „CRNAC-ISTOK“. Pružanje i padovi pojedinih runih žica kao i njihova paralelnoist, te lokacija okna i centralne rudne sipke u podine rudnog ležišta nameću

i za ovaj revir izradu magistralnih rudarskih prostorija koji će međusobno povezati sve buduće rudne žice uz istovremeno spajanje revira „CRNAC-ISTOK“ sa centralnim rudarskim prostorijama „CRNAC“. Da se u kasnijoj fazi pri razradi i ekspoataciji rude sa ovog revira istražne prostorije pre svih hodnici i uskopi pretvoriti u objekte razrade, transporta, prolazne i ventilacione puteve. Saglasno geologiji ležista revira „CRNAC-ISTOK“ izvršen je najpovoljni izbor lokacije istržanog hodnika N 410 iz kojeg će se potvrditi rezultati bušotina B-33, B-34, B-35, B-36 i B-40 istražnim geološkim bušotinama. Na osnovu postojećih podataka i podataka koji se očekuju izvršeno je spajanje rezultata sa istražnih bušotina i time smo stekli uvid u više paralenih struktura rude koju treba potvrditi rudarskim istražnim radovima. Za sada su na reviru „CRNAC-ISTOK“ identifikovane tri rudne strukture na dubini ispod 862 metra koje su udaljene od postojećih aktivnih radova rudnika Crnac oko 300 metara. Pravac pružanja ovih rudnih struktura kao i zaleganje po dubini istražiće se prvo istražnim bušotinama a onda rudarskim istražnim radovima. Dužinu izrade rudarskih istražnih radova određuju podaci sa bušotina i oni su na granici prostiranja prema podini ležišta s tim što se ovde mora voditi računa o organskoj vezi revira „CNAC-ISTOK“ i centralnog revira rudnuka Crnac.

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