

SPECIFIC MOMENTS OF HISTORY OF OPENCAST MINE "BELI BREG"

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ABSTRACT

After nationalisation in year 1907 to the end of 50-th years and early 60-th years the mine "Beli breg" (then "Bolshevik") was one of the biggest mines in Bulgaria for coal mining. The most interesting moments of discovery and exploitation of lignite deposit "Beli breg" and "Pedeliste" are treated in the report.

The approach of development method is very interesting – first underground and next – opencast. The production capacity of the mine from the beginning to year 2000 is shown. The low experience in development of this type of deposits, where are faults and ancient landslides, calls three times for change of development direction in the western section of the Mine "Beli breg" in order to prevent the catastrophic landslides. The technological solutions, realised for the first time in Bulgaira, are described. All described in the paper will enter into the history of opencast coal mines of the country.

During development of mine "Beli Breg" are separated three main periods: the first one is the opening, coal prospecting and its exploration up to the nationalisation in 1947; the second one - its exploitation after nationalisation and the third one – after privatisation which just started.

It was established that coals in the mine are typically lignite ones with sufficient hardness and toughness. Its average ash content is about 30% and the moisture – about 50%. The structure is inhomogeneous, because of significant quantity of clay bands and accretions. The average thickness without bands is 17.62 m and with bands – 18.66 m. As it can be seen from the stratigraphic range (fig. 1) in the eastern part the number of band achieved 5-6, the thickness – from 0.2 to 0.6m. In the rest locations their number is 1-2.

FIRST PERIOD OF MINE DEVELOPMENT

In the fateful for Bulgaria year 1885 the energetic villager Alexi Mitonov from the village of Tsatsarovtsi listen that in the field of Velin Bozilov from the village of Jablotina near the river Chakanets (Jablotina "the earth smokes" without burning of straw or wood.

The whole 25 years Alexi Mitonov tenaciously searched contractors and researchers for exploration of this "burning earth". Only in 1910 shortly before the Balkan war he found the lawyer Todor Ahtarov from Sofia and succeeded to persuade him to visit Burela and to see himself Burela's lignite. As a lawyer of experience, before the visit, Ahtarov put in touch with the than Ministry of Trade, Industry and Labour (MTIL) and from there recommended Eng. Bogomil Radoslavov as an expert on coal problems. Together they visited and surveyed the outcropped bed and they assumed that Mitonov have been right and there were excellent conditions for mining of lignite coal. After this visit, in the beginning of 1911, MTIL issued to

lawyer Ahtarov licence to "search" coal and perimeter which spreaded the both sectors – eastern (Tsatsarovtsi) and western (Jablotina). In 1915 lawyer Ahtarov got the second licence, which enlarged the perimeter for coal exploration and it included the section Nedeliste.

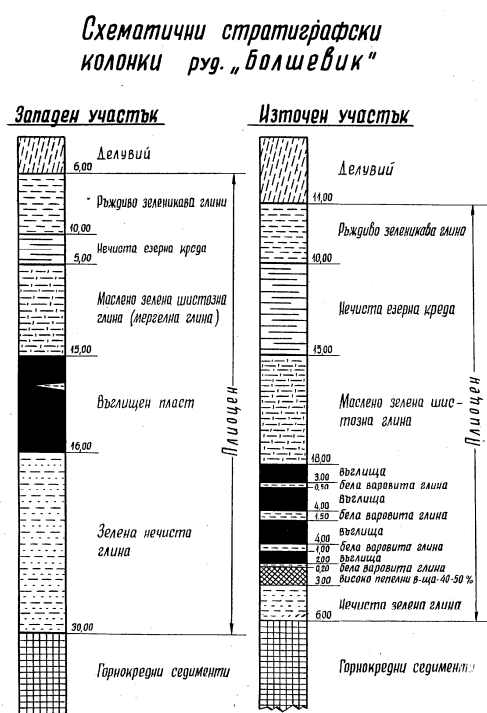


Figure 1. The stratigraphic range of Bolshevik mine

That time Krum Ganchev became their partner. In 1915 started lignite underground mining by using of galleries towards the bed in the locality Mechkaritsa – on the southwest of today's separation. Than the mine was called "Beli breg".

A new period of mine life is driving of trench for opencast mining in 1919 in the locality Mechkaritsa (fig.2) by the Krum Ganchev workgroup, but it is undoubtedly proved, that it was Todor Ahtarov's idea.

The opencast mining is made in this mine for the first time in Bulgaria. As a result fields, meadows and other private areas were liquidated and Ahtarov was forced to ask the Ministry for a new licence. In this year started making of statistics of mined coal quantities (table 1) and was mined and distributed 490 tones coal. From fig. 2 is seen, that the size of coal pieces in the cars was from 120 to 150 mm and more and it was clear coal. Coal was mined by hand, through the niches with length from 4 to 6 m and width from 1.5 to 2.5 m. The niches were worked off from above downwards on layer. The work instrument was ell sharpened pick – with cutting part and a prick. Besides different steel chisels, axes, pricks etc. were used for crushing the obtained plate coal and for separation from the massive. The pick undertake the coal towards the bedding with the thickness about 5 to 8 cm, than were crushed to the size about 150-200 mm and were pushed aside on the vertical slope of the bench. When coal fallen down part of them were crushed. Parallel to the bench, on the distance from the niche in its bottom end was mounted a railway with width 500 mm) for cars used in the underground mine "Beli breg". The distance between the front wall of the niche and the axis of the railway was about 1.5 to 2 m.

On this ground were deposited fallen coals from the upper parts of the niche. The coals were loaded by hand with spades. When the cars were loaded, in the mining part of the niche work was stopped. At last were loaded small-sized coals, which were used for fuel in the power station. When the work surface of the niche became half a meter, the coals were loaded direct in the cars. They worked this way up to the bottom of the horizon. On fig. 2 were shown two mining niches, which were reached the bottom of the horizon – one on the left part of section to the right – where were seen large-sized coals. Loaded with coals cars were pushed to the beginning of the skip trench, were suspended on the pulled rope of the winch and were pulled on the ground and there were unloaded by special wipers in bunkers. Most of them mechanically were feed to the storage for drying. The storage has volume 700 tones. This mean storage provided work of the mine in the whole year, even in the winter. So the dried coals with low ash content reached calorificity of 2200 to 2500 kilocalories of the kilogram flow. After burning there were a little wood ash.

In 1938 the trader Boris Galabov obtained licence mainly for investigation of section Nedelishte, but he explored the both sections of the mine "Beli breg" So the competition appeared. Galabov drove 40 m gallery towards the bed, in the section western of Nedeliste village. He made investigations up to 1947. In 1942 he drove another gallery in the bed section Nedeliste and distributed about 300 t coals. The new created small mine in the section Needieste later was called "Galab". Near to the entrance was constructed sawmill, too. In 1945 the "Galab" mine distributed 665 tones, and in 1946 – 227 t.



Figure 2.

Table 1

Year	Annual production t	Year	Annual production t	Year	Annual production t
1911	*	1941	1,174	1971	1016,246
1912	*	1942	5,886	1972	1043,976
1913	*	1943	6,550	1973	1135,016
1914	*	1944	3,325	1974	963,027
1915	**	1945	4,000	1975	830,056
1916	**	1946	**	1976	697,214
1917	**	1947	**	1977	662,800
1918	**	1948	26,413	1978	459,381
1919	490 ^t	1949	75062	1979	522,384
1920	1360 ^t	1950	122,413	1980	670,288
1921	345 ^t	1951	232,066	1981	724,045
1922	59 ^t	1952	310,068	1982	798,771
1923	68 ^t	1953	475,879	1983	566,559
1924	50 ^t	1954	321,976	1984	616,902
1925	40 ^t	1955	483,521	1985	755,961
1926	376 ^t	1956	611,435	1986	698,189
1927	1,210 ^t	1957	876,984	1987	588,771
1928	3,202 ^t	1958	1324,685	1988	658,687
1929	1,552 ^t	1959	1673,831	1989	626,468
1930	1,652 ^t	1960	2014,144	1990	554,500
1931	1,240 ^t	1961	1744,529	1991	405,972
1932	2,346 ^t	1962	1669,072	1992	570,072
1933	1,696 ^t	1963	1779,652	1993	510,336
1934	2,216 ^t	1964	1941,507	1994	513,403
1935	1,937 ^t	1965	1358,805	1995	461,915
1936	1,597 ^t	1966	1246,113	1996	425,317
1937	1,154 ^t	1967	1245,490	1997	360,349

1938	1,705 ^t	1968	1330,372	1998	417,106
1939	1,650 ^t	1969	1357,556	1999	473,018
1940	1,932	1970	1270,473	2000	443,024

So, in conditions of loyal competition between the concessionaires – Krum Ganchev and Boris Galabov enlarged coal mining - in mine "Beli breg" opencast mining and in "Galab" – underground mining. Year after year the necessary lignite coals were mined from both mines (opencast and underground) and were well distributed on the market and realised good profits.

Form 1919, when was registered the first serious coal mining to the end of 1947 – the year of nationalisation, were mined 48 812 t coals, which is 0.12 from the total quantity mined coals (44100000 t) for the period 1919-2000 (table 1).

THE SECOND PERIOD OF MINE DEVELOPMENT

The second period started after nationalisation, so called period of state management of the mine, which was about 50 years.

For 1946 and 1947 there were no data about mined quantities of coal (Table 1). We could only suppose that the mining was carried out by hand. In 1947 Krum Ganchev and his son Boris Ganchev left the mine. The mine "Galab" in section Nedelishte stopped work, too.

In 1948 coal mining in mine "Beli breg" was mechanised and overburden removal was made by our technology and the technology was applied in the opencast sections of mine "Pernik", the Check electrical excavators "Shkoda" were used, loading steel bunkers and belt conveyors (BC) with wooden construction and width of the belt 800 mm – for coal; for the overburden were used the same excavators and railway transport (tracks spacing 900 mm) and carriages (type Pernik) with small steam locomotives made in GDR. The year productivity in 1948q 1949 and 1950 were respectively 26413 t, 75062 t and 122413 t.

The company was developed according to the general project made by Projecting Institute "Lekgiproshant", Leningrad, USSR. The head of the project was Maria Nikolaevna Demidova. This project concerned only Eastern and Western sections, not the section Nedelishte.

In the beginning of the 50 years the managing and working staff was mine technician and practice workers, in the beginning of the 1958 there were new personnel – mining engineers, who have been completed the Institute of mining and geology. To the end of 60 years all sections were full of mining engineers and mine electromechanics.

The more important moment in 1958 is unification of most of sections in a common Western section, managed by one chef of section. Besides the gravelling of the temporary roads in the overburden levels were made in the Western section. The premium- progressive system of payment was introduced for each worker. This way the section started to fulfil its planes.

Eng. Borislav Zahov, Georgi Petrov etc., together with the Director Koev, carried out this reorganisation.

In the mine was used moment blasting as well as millisecond blasting technologies with shaking crashing of coal beds and good work of the excavators. The blasting works were carried out in the section "Drilling and blasting works".

Organisation of mining of overburden and coal is the following: the front of mine works is divided in two flanks – northern and southern, each with length about 300 m. For example, in the northern flank from the middle of the front, excavator ESH-4/40 mines the overburden on one bench throw it across in the worked area and backfilled the front of the coal layer. When the excavator reached the end of the flank, it moves to the internal dump in return travel to the centre of the front, handled the overburden in the worked area and cleaned the front of the coal layer up to the bottom. This way the excavator opened the necessary coal reserves for mining.

In the mine was realised the system of without transport mining (fig.3) with whole backfilling of the front of layer (scheme 2B on the fig.3) with overburden.

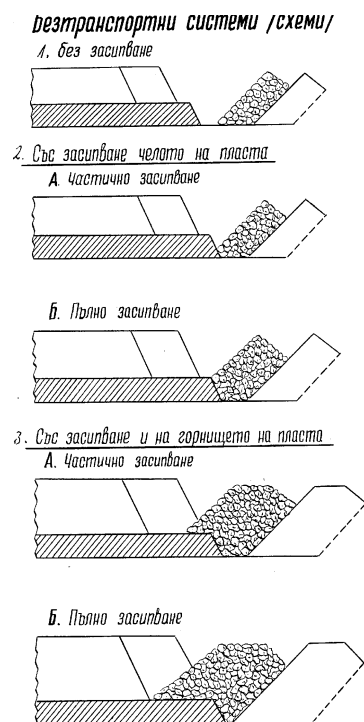


Figure 3. Without transport system of opencast mining

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In 1958 the stope belt conveyors and the main transport in the Western section were replaced with metal construction with belt width 1200 mm. In 1959 entered second mine excavator in the western part. The technology is the same as in the Eastern section. The coal bed is about 20 m and was mined on two benches by both excavators Shkoda E 25. As it could be seen in table 1, in 1959 the yearly coal mining increases to 1637,831 thousand tones, i.e. when work two excavators in the Western section and one in the Eastern. In 1960 the same number of excavators were used, but with better organisation of works in both section, were mined 2014,144 thousand tones coals. This is the maximal quantity of mined coals during the whole history of the mine. It should be mentioned that in the middle of 1960 the new governing body of the mine organises the works in the mine successfully in order to obtain the mentioned above results.

In the same year started the filling of the internal spoil heaps of the Western section. Loading of trains full of overburden was made through the satiation Dispecherna.

In 1962 in the Western section happened the largest landslide in the mine history in the working slope. Slide down about 5 mil. Tones coals and rocks. The opened coal reserves in the large areas were put aside by the overburden to the big fault. The landslide opened all coal reserves and the Western section worked on it two years.

According to the project "Lengriproshaht" the Western section finishes to the bud fault and the coals after the fault could be left of mined opencast.

The governing body of the mine decided to mine these coal reserves and this way it signed its verdict. For opening of the out-of-balance coal reserves (30-40 m deeper occurred) is necessary additional mechanisation and time.

In order to compensate the governing body of the mine began mining of pillar under correction of Checanska River, the road to the village Jalbotina and 5th burrow line. The line was dismantled quickly and the road for village Jablotina was closed.

The Western section looked like a large mined are and in June 1964 the river Checanska passed through the section, and in November the water began to flow in the channel, made in advance, to the river Goljama. On the east of the pillar and on the west of the deep coals, the overburden was transported and filled in the lake by tip-lorries.

For about two years from the pillar were mined 600 thousand tones coals with the best quality. Than the mined pillar of the section was so filled that the river Checanska returned to its previous bed.

The new technological conditions in 1964, the volume of opening works increased 4 times – from 2 mil. m³ to 8-9 mil. m³. The mine finished the year with non-completed planes. To the middle of the 1965 the situation is the same.

In June, on the mine territory was carried out a meeting of the association of the Ministry of Energetic, Bureau of OC of BKP, Bureau of CC of miners, The governing body of the Company of the First in the Industry. On this meeting were

considered the biggest problems of Mine. All was at one with the necessity to help the governing body of the mine. For the following six months the plane was corrected (decreased with 400 thousands t) and was granted funds for the new excavators and tip-lorries.

The new moment in the development of mine started. The new excavators and tip-lorries began to work. Nevertheless the Western section went to his end and it should be thought about new perspectives, i.e. to prepare the mine Nedelishte.

A meeting was made and Minproject started projecting of a mine. Economically a part of bed of Nachevska river was corrected, the people of village Nedelishte, situated on the coal layer, was moved. The belt conveyor from separation to the cutting trench was made. In 1968 the mine Nedelishte started his work.

In underground mining the problems were firedamp and fires, and in opencast – landslides and flooding. In the western (Tsatsaritsa) section occurred the permanent landslides, in eastern - flooding, and in the Nedelishte mine – both of them. A lot of problems caused transport distances for tip-lorries, which transported overburden that consists of wet and sticky clays.

The most of works in mine Nedelishte were made by own automobile transport.

In 1970-1975 the governing body of the main paid attention to the mine Nedeliste, where the coal reserves were bigger. The correction of river Goljama started. It was moved to the north about 3.5 km from its bed together with the road Dragoman-Tran.

Than were mined the coals northern the big fault, in the Western section – about 3.5 mln. tones. The mining in Tsatsaritsa section decreased, when on 12.02.1974 was occurred the landslide. Later, in 1990 the mining in the section Tsatsaritsa was stopped.

The main consumers of energetic coals began to use masout and natural gas. The coals form the mines "Bolshevik", "Katina" and "Stanjantsi" were directed to the TEPS "Maritsa istok 2". In 1973 the mine "Katina" stopped.

In 1978 the in the mine "Trojanovo 2" occurred two landslides of the working slope. This is the appropriate moment instead to stop mining in the mines "Bolshevik and "Stanjantsi" to transport the coals to the TEPS "Maritsa istok". The transportation was made to 1996. This time the coals were used in the TEPS "Bobov dol", too. The expensive coals from Bobov dol were mixed with cheap lignite coals. From 1996 the coal form both mines are used only in TEPS "Bobov dol".

THE THIRD PERIOD OF MINE DEVELOPMENT

On February 2000 is registered the Joint stock company "Beli breg-Burel". In the same year started the privatisation procedure. There were two candidates on the auction – the "Beli breg –Burel" and "Minstroj Holding". The contract was obtained by "Beli breg – Burel".

On April 2002 the Corporate Trade Bank sold the "Beli breg – Burel" to company "LM Impex", represented by Christo Kavachki.

Eng. Asen Goranov- Director and Eng. Gancho Ganchev – head engineer manage the mine now.

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