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CHARACTERISTICS OF COAL SEAMS IN VARIOUS BASINS OF THE USSR

USSR COAL SEAMS VARY GREATLY

I. L. Balelos,
Ugol', No 2, 1950

Coal seams dipping at an angle of 55 to 70 degrees predominate in the Prokop'yevsko-Kiselevsk area of the Kuznetsk Coal Basin. The following seams are located in this area: IV "Vnutrenniy" seam, 7.8-9 meters thick, with a roof and floor of sandy argillite and sandstone; III "Vnutrenniy" seam, 5 meters thick, with a roof of argillite and a floor of sandy argillite; "Gorelyy" seam, 8-9 meters thick, with a roof and floor of argillite; "Lutuginskiy" seam, 3-5 meters thick, with a roof and floor of argillite; "Prokop'yevskiy" seam, 3-5 meters thick, with a roof and floor of clayey shale; "Moshchnyy" seam, 13-15 meters thick, with a roof of sandy argillite and a floor of sandy argillite and sandstone; "Bezymyanny" seam, 6-7 meters thick, with a roof of argillite and a floor of argillite and sandstone.

All the mines operated are gassy. The coal dust from these seams represents an explosion hazard and the coal has a tendency to spontaneous combustion, particularly in the IV "Vnutrenniy," "Gorelyy," "Lutuginskiy," and "Moshchnyy" seams.

The coal seams in the Chelyabinsk Coal Basin vary in both thickness and structure because of peculiarities in the formation of the deposits in that area. The basin is characterized by the presence of numerous folds, the axes of which form a number of anticlines. In addition, the seams are broken by steplike faults. The thickness of the seams varies greatly since there are many rocky layers along the dip and strike. The rocky layers also vary in thickness. They often divide the coal seam into a number of thinner seams or stratify it to such an extent that it loses industrial value. The thickness of the seams varies from 0.7 to 60 meters (Mine No 18-bis). Most of them dip at an angle of 8-30 degrees. The coal of all the seams has a tendency to spontaneous combustion.

In the Karaganda Coal Basin the coal seams are made up of alternating layers of coal and shale and, occasionally, sandstone. The roof and floor of the seams usually consist of clayey or, more rarely, sandy, clayey shales or sandstones.

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Seams dipping at an angle of 8-15 degrees and 0.8-8.3 meters thick predominate. The "Verkhnyaya Marianna" seam is 7.8 meters thick and the "Feliks" seam is 4 meters thick.

The Tkibuli coal deposit in the Georgian SSR contains thick coal seams which dip at angles ranging from 18 to 45 degrees. Various sandstones of average firmness make up the walls of the deposit. The coal-bearing bed of the Tkibuli deposit consists of interstratifications of coal and shale seams. Individual seams range in thickness from one to 8 meters. The coal and carbonaceous shale seams are rich in bituminous substances and are subject to spontaneous combustion.

In the Uzbek SSR, the lower part of the Angren Lignite deposit contains a dipping seam, 40-60 meters thick, the coal of which lacks toughness. Hydrogeological conditions are complicated by the proximity of the Angren River, which waters conglomerates located directly in the coal-bearing stratum.

In the Kirgiz SSR, the Sulyukta deposit consists of three blocks. The middle block, 4-4.5 meters thick and made up of pure, lusterless coal, is of particular interest. The coal seam varies in thickness and the angle of dip ranges from 23 to 70 degrees. The roof of the seam contains clayey shales and the floor has thin layers of clay, vitreous rock, and carbonaceous shales.

The Kizil-Kiya deposit, also in the Kirgiz SSR, contains, in its second stratum, one coal seam averaging up to 10 meters thick. The seam ranges from 6.5 to 10.9 meters in thickness within the limits of sections of operating mines. It is divided into two blocks by a streak of clay. Clayey shales and sandstone occur in the roof of the seam. Coals representing a transitional stage between lignite and bituminous coal are to be found in the Tash-Kumyr and Kok-Yangak deposits.

The Shurab I deposit, located in Tadzhik SSR, has one seam which is being worked. This seam has an average thickness of 12 meters but in places reaches a thickness of 19 meters. The seam dips, for the most part, at a slight angle. Clayey shales occur in the roof and floor of the seam.

The "Glavnyy" seam of Cherekhovo Coal Basin contains, in places, as many as 20 blocks of coal up to 8.5 meters thick and divided by layers of rock 12-30 centimeters thick. The seam is horizontal and undulating. The roof of the seam is composed of sandstone and the floor of brecciated conglomerates. The coal has a tendency to spontaneous combustion.

Seam III of the Chernovskiy deposit ranges in thickness from 5 to 8 meters. Its roof and floor consist of sandstone and clayey shales and the seam has an undulating surface, which is difficult to work. It dips at an angle not exceeding 10-12 degrees. The coal has a tendency to spontaneous combustion.

The Moscow Basin coal deposit consists of lenticular coal beds. The thickness of the main seam ranges from one to 4.5 meters. The seam is horizontal, is located at a depth of 25-70 meters, and is surrounded by clays, dry sands, wet sands, and quicksands. The part of the seam worked is characterized by winding contours. The seam itself is frequently broken by Karst holes. In a great part of the area the coal-bearing stratum contains considerable water and thus requires special drying devices during development work; for example, filters must be used in the roof and floor of the deposit. Working a seam more than 3 meters thick appears to be a special problem for the Moscow Basin.

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The South Sakhalin coal deposit contains a number of dipping seams. It is difficult to work seam I, which dips at an angle of 65-70 degrees, at Mine No 4 of the Kholmskugol' Trust. The seam consists of two blocks, each 3-3.5 meters thick and separated by layers of clayey shale. The roof and floor of the seam also consist of clayey shale. Other dipping seams of the South Sakhalin deposit are seam I/A, 5 meters thick (Mine No 14); seam VI, 6.5 meters thick (Mine No 10/13); and seam III, 5 meters thick (Mine No 16-17).

USSR COAL MINING COPEs WITH DIFFERING GEOLOGICAL CONDITIONS

V. K. Buchnev, A. M. Il'shteyn
Ugol', No 5, 1950

A number of coal seams being mined in the Moscow Basin range in thickness from 1.8 to 3.5 meters. They are horizontal and slightly undulating. The immediate roof contains clay, sand, and thin layers of limestone. Sixty percent of these seams have a layer of clay more than 1.5 meters thick in the immediate roof and 40 percent have thin layers of clay alternating with sand. All the roofs lack stability and, when wooden mine props are used, sag as much as 30-40 centimeters at a distance of 4-5 meters from the mine face. The floor of the seams consists of loose clays with a resistance of 12-15 kilograms per square centimeter.

In the Karaganda Basin more than 80 percent of the mining is carried on in coal seams more than 1.5 meters thick. The immediate roof of the seams consists of alternating layers of clayey, sandy-clayey, carbonaceous shales and blocks of coal, and ranges in thickness from 2.5 to 15 meters. The main roof of all seams contains sandstone ranging in thickness from 5 to 38 meters. The floor of the seams consists, for the most part, of soft, clayey shale.

In the Chelyabinsk Basin approximately 70 percent of all coal mining is being carried on in dipping seams more than 1.5 meters thick. The coal seams are of varying thickness, contain a large number of layers, and have weak side walls made up of clay or soft, clayey shale.

In East Siberia's Chermkhovo Basin the chief exploitation work is being carried on in the "Glavnyy" coal seam, which ranges from 5 to 9 meters thick. The seam has a complicated structure, consisting of 35 alternating coal blocks and rocky layers. The latter are made up of clay, carbonaceous-clayey, and carbonaceous shale. The roof of the seam contains hard sandstones and argillites.

In the Kuznetsk Basin, the Leninugol' Trust of the Kemerovugol' Combine is largely exploiting dipping seams of average thickness. The structure of these seams is simple, with the angle of dip varying from 6 to 12 degrees. The immediate roof consists of firm argillites and sandstones. The main roof has a layer of sandstone from 25 to 30 meters thick. The floor of the seam is usually hard or medium hard.

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DONBASS COAL MINES WORK RELATIVELY THIN SEAMS

A. I. Kuklin
Ugol', No 8, 1949

Miners of Mine No 8-10 of the Bokovoantratsit Trust of the Donbassantratsit Combine are cutting the 13th southern drift along the "Nadbokovskiy" seam K₅ which is 0.9 meter thick. Moderately firm clayey shale makes up the roof and floor of the seam. The coal seam itself contains water but is not gassy. It dips at an angle of 5-7 degrees.

The drift being cut is a one-way passage, approximately 8 square meters in area and intended for haulage by electric locomotives. Seven cubic meters of rock and 5 tons of coal are removed per linear meter of the drift.

A brigade in the "Irmine" Mine No 4-2-bis of the Kadiyevugol' Trust, Voroshilovgrad Combine, is cutting a main drift along the "Ataman" seam 6, at level "415." The seam is 0.5-0.55 meter thick in the mine field and the angle of dip is 50-60 degrees. Neither the coal seam nor the rocky walls contain water. Geological dislocations, faults, are to be found in the seam. The floor of the seam is composed of clayey shale, moderately firm. The roof is of limestone. The drift being cut is a one-way passage intended for haulage by electric locomotives. Approximately 5 tons of coal and 8 cubic meters of rock are removed per linear meter of the drift.

MINE IMENI VOROSHILOV OPERATES AT 500-METER LEVEL

S. Ye. Rozenberg
Ugol', No 6, 1950

Mine imeni Voroshilov of the Dzerzhinskiy Trust, Artemugol' Combine, works the "Mazurka" seam 13 at a 500-meter level. This seam is 1.0 meter thick and dips at 52 degrees. There is clayey shale 0.1-0.3 meter thick in the roof (false roof) which is soft and breaks off in pieces. Above that there are 8 meters of firm sandstone. The floor of the seam consists of firm, sandy shale 10 meters thick.

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