Reports

Penson Fork Mine

REPORT ON MARIETTA MINE EXPLOSION,

PINSON FORK, KENTUCKY.

By

L. D. TRACY, COAL MINING ENGINEER.

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Brief Statement:

About 4:30 P.M. on Tuesday February 7th, 1922, an explosion occurred in the Marietta Mine of the Marietta Coal Company in which nine men were killed and one man badly burned.

Location:

The Marietta Mine is situated at Pinson Fork, Ball Township, Pike County, Kentucky, about 10 miles south of Williamson, West Virginia.

Operating Company:

The Marietta Coal Company is one of about fifteen companies which comprise the so-called Deegan's interests with headquarters at Huntington, West Virginia.

Mr. W. E. Deegans is President and General Manager, Mr. J. M. Turner, Assistant General Manager and Mr. O. C. Huffman, General Superintendent, all at Huntington, W. Va.

Mr. J. H. Young is Superintendent at Pinson Fork, Kentucky, and Mr. Walter Wroten, Mine Foreman.

Seam of Coal Mined:

The seam of coal which is being mined at the Marietta Mine is locally known as the Pond Creek Seam. It is also known as the Freeburn, Warfield and Vulcan Seam on the Kentucky side of the Tug

River, while in West Virginia it has been correlated with the No.2 Gas Seam, also called Campbell Creek, Upper War Eagle, Freeburn, Burnwell, Rawl and Warfield seams. From a point a few miles southward from Warfield, Kentucky, the coal has a general southeasterly rise which brings it to the surface near Williamson, West Virginia and the Pond Creek Valley.

This coal is a bright shiny black coal, very hard but with no distinct cleavage.

An analysis of a sample, Laboratory Number 84209, on the attached analysis sheet, shows as follows on an "as received" basis:

Moisture	2.5%
Volatile Matter	34.1
Fixed Carbon	58.3
Ash	5.1
Sulphur	0.6
B.T.U.	14090

This sample was taken in the last breakthrough between No.4 right and its air course. The seam at this point measured

Good Coal	0' - 11"
Bone Coal	0' - 6"
Good Coal	3' - 4"

In sampling, the bone coal was not included. The roof seemed to be good, being composed of hard slate and the floor of a hard smooth slate.

General Conditions:

The Pond Creek Coal Field lies in a narrow valley, through

the center of which runs the creek, from which the field takes its name. Rising in the foothills of the northern watershed of the Pine Mountains it winds its crooked way northward until it reaches the Tug River opposite Williamson, West Virginia. Through the center of the valley, every now and then crossing the creek, the Norfolk and Western Railroad has constructed the Pond Creek Branch. There are a goodly number of coal operations along this Branch, the largest of which is the Pond Creek Coal Company. The coal outcrops in the steep hills bordering the valley, about fifty feet above water level. At Pinson Fork a small creek joins Pond Creek, flowing in from the east and known as Ball Fork.

Marietta Mine is located on this small creek about a quarter of a mile from its junction with Pond Creek. Ball Branch cuts the property of the Marietta Coal Company into two parts.

The coal outcrops thirty or forty feet above the creek, so that there are practically two mines.

The valley is narrow and a bridge spans the creek so that the coal as it comes from that part of the property lying east of Ball Creek is hauled over the bridge to a tramroad over which it is transported about half of a mile to the tipple on the Pond Creek Branch of the Norfolk and Western. The mine on the west side of the creek opens directly on the tramroad.

The operation is just a small one producing about two hundred tons per day and employing about fifty men. On the west side of the creek there are about 22 acres and on the east side about 25½ acres of coal.

Plan of Development:

The explosion occurred in that part of the operations lying on the west side of Ball Branch. This section of the mine is developed by two drift entries driven close to and practically parallel with the western property line. Two pairs of butt entries about four hundred feet apart have been turned at practically right angles to the main entries and have been driven about three hundred and fifty or four hundred feet. The right hand entry of each pair of Butt Entries is used solely as an air course, rooms being turned from the left hand entry. A plan of the mine is attached to this report which will illustrate in detail the mine workings.

The entries are from 12 feet to 14 feet wide driven on 55 foot centers. Rooms are, on an average, 16 feet wide on 55 foot centers.

Haulage:

Animal haulage is the sole method of transportation underground. When the loads are gathered on the outside of the mine they are hauled by a steam locomotive to the tipple, a quarter or a half a mile down the creek.

Ventilation:

The ventilation is furnished by a fan three feet in diameter by eight feet wide running at a speed of 350 revolutions per minute. The fan is driven by a 6 Horse Power Gasoline Motor. The fan and motor are housed in a non-fireproof structure. The fan is used as a blowing fan producing about 10,000 cubic feet of air per minute.

The stoppings were constructed of wood. The ventilation system is shown on the attached plan of the mine.

Methods of Mining:

No machines are used as nearly all the coal seems to be shot from the solid. Black Powder is used for shooting. The miner makes up his cartridges from $1\frac{3}{4}$" to 3" in diameter according to the size of the hole. A charge of $2\frac{1}{2}$ feet to five feet in depth is fired by the ordinary fuse. It appeared as if coal dust had been used as tamping material.

Story of the Accident:

The following details of the explosion were told to the writer of this report by various persons who were in and around the mine at the time of the accident. The men who were working in the mine had all fired their shots with the exception of those who were driving No.1 room and No.2 room on 2nd right entry, and had gone to the foot of 2nd right. It is stated that one of the men who was working in No.2 Room on 2nd Right told the others to watch out that he was going to fire a "windy" shot. Soon after, there was an explosion in which two men were badly burned, later being rescued, and nine men were killed, their bodies being found at the foot of 2nd Right.

Evidence attained by Bureau of Mines:

On February 11th, 1922, the writer made an investigation of this explosion in order to ascertain its probable cause and to learn, if possible, any lessons which might assist in preventing similar disasters in the future. A thorough examination was made of the con-

ditions in the mine, and air and dust samples were taken. Air Sample No.16268 was taken at the face of No.2 Right Entry, No.16269 at the face of No.2 Right Air Course, No.16270 at the face of the Main Air Course and No.16271 at the face of the Main Entry. None of these samples was found to contain methane. During the disarrangement of the ventilation system there was not sufficient air current to measure with an ordinary anemoneter. Analysis sheets showing the chemical composition of these mine air samples are attached to this report.

The first place visited by the writer was the face of the main heading and air course. There was nothing to indicate violence at this point, the empty powder kegs, small boxes and papers in the last break through had never been disturbed.

At the face of the air course the coal had evidently been shot down, but not loaded out. The face showed a clean break. The pile of coal at the face of the air course was about twelve feet wide, two feet deep and extended out from the face ten or twelve feet. Fine coal was scattered over the entry floor for at least twenty-five or thirty feet from the face.

Proceeding from the face of the main entry and air course to No.2 Right Entry and aid course, it was found that all the stoppings between this entry and the air course,except the last three, had been blown down, but none between the main entry and main air course had been disturbed. At the face of No.2 Right were two holes drilled at practically right angles in the face of the coal, one 6 feet from

the left rib and the other 2½' to the left of it. Each hole was clean, but around the outer end of the right hand hole the coal was badly cracked, one large crack extending from the hole to the roof. This same hole had a piece of cartridge paper sticking against the side about six inches from the outer end. In the front part of each hole was a deposit of very fine coal dust. Along the left rib was the impression of half a drill hole. Between this rib and the first hole the face projected about eighteen inches or two feet. This piece of the face was badly cracked and in the recess between it and the left hand rib was a pile of small lumps of coal. For 10 feet or 15 feet from the face very heavy slabs of roof slate had fallen to the floor. A mine car standing about 30 feet from the face was unharmed; the inby end of the car was covered with very fine dust particles, the outby end being almost clean. There were a few particles of coal covered with a fine dry brown dust on the inside of the car.

At the head of the air course the face of the coal was trimmed and squared and there was no ecidence of any drill holes. There was some coal ready to be loaded out, but not all that would be brought down with a complete shot. It would seem that the shot down coal had been partly loaded out.

A mine car was standing on the track just where it turned from the breakthrough into the air course. Lodged on the front end of the car, or towards the face of the air course, was a piece of tamping cartridge, the ends of which appeared to have been partially burned.

The floor of the breakthrough was swept clean of any dust

with the exception of a fine brown dust which had settled on ribs and floor.

The tools of the miners and powder cans had never been disturbed, and there were no signs of violence in the vicinity.

In No. 4 room neck a car was standing uninjured. This room had been driven a distance of about 35 feet from the center of the entry. The coal had been shot down and was strewn over the floor, from the face to the mine car. The mine foreman told the writer that just after the explosion an empty powder jack was found in an upright position on a tie in the track in No. 2 Right Entry between No. 3 and No.4 rooms. There had not apparently been force enough to turn it over. At the face of No. 3 room two holes had been driven, one about 6 feet from the left hand rib and 3½ feet to the right of the first mentioned one. This last hole was 29" deep. The coal was cracked and broken around the outside end of the holes. Along the right hand rib about 5 feet from the face there was a knob of solid coal projecting from the solid. Through this knob was a drill hole about 18 inches long, and along the rib between the above mentioned knob and the fall of the coal, a distance of about 5 feet, a half-section of the drill hole could be seen. From each end of the hole in the knob a piece of fuse projected ten or twelve inches.

No. 2 room, which had been driven in about 75 feet from the entry, appeared to be in a normal condition, there was a drill hole in the face which was comparatively clean, similar to a newly drilled hole. There was some loose coal lying on the floor as if it was the last part of a "shot" to be loaded out. The timbers in this room showed very faint traces of coked dust, hardly enough to be discernible, the

only traces of coke in the mine.

No. 1 room was in about 80 feet and all coal had been well cleaned up. Three holes had been drilled about 5' 6" deep and more were to be drilled as the miners' drill and spoon were still at the face of the room.

Dust samples were taken at the Main haulage road just outby of No. 2 air course, and about six hundred feet from the pit mouth. The analysis of this sample is shown in the attached analysis sheet, Laboratory No.84210. And also across No.2 Right Entry between Nos. 3 and 4 Rooms the analysis of the sample being shown on the attached analysis sheet, Laboratory No. 84211.

The first sample (No.84210) was taken in a strip 6" wide by 16' long, and that part which passed through a 20-mesh sieve and, therefore, as far as fineness is concerned, may be considered explosive, weighs about 12 ounces, or about 1½ pounds of dust to the linear foot of entry. The amount of volatile matter is 24.2% and of combusitble matter (volatile matter plus fixed carbon) is 70.8% their ratio being 34.1.

From data obtained from a long series of tests at the Experimental Mine of the Bureau of Mines, it has been found that to make coal dust, having the above ratio between its volatile and total combustible matter, non-exlosive, it is necessary to so mix this dust with incombustible matter that the resulting mixture will contain about 72% of incombustible material. In this particular case for every pound of road dust there will have to be added one and one-half pounds of incombustible material to render the dust non-explosive. Or at the rate of 1½ lbs. of explosive

dust per linear foot of entry, as now exists in the Main Entry of Marietta, 2¼ lbs. per linear foot of entry of shale dust or some inert dust, would have to be added to make it safe from a dust explosion.

Of course the amount of this dust can be greatly lessened by cleaning up the dust in the entry and then applying the additional rock or shale dust.

Sample No.84211, was taken in one 6" strip across No.2 Right and the material passing through a 20-mesh screen weighs about 8 ounces or at the rate of one pound per foot of entry.

The ratio of volatile matter to total combustible matter as given on the analysis sheet attached hereto is 31.4 which would require a mixed dust of 69% incombustible and 31% combustible to render it non-explosive, or for every pound of road dust should be added 1.6 lbs. of incombustible dust. At the rate of 1 lb. of road dust per linear foot of entry there should be 1.6 lbs. of incombustible dust mixed with the road dust. The amount of this kind of dust can also be much lessened by cleaning up the entry.

At the time that these samples were taken the dry bulb thermometer registered 61 and the wet bulb 58 corresponding to about 84% humidity.

The men who lost their lives has been working the following places:

Kelly Lockard	-	Miner -	No.3 room 2nd right.
Oscar Nunley	-	Miner -	Main Heading.
Paul Nunley	-	Miner -	No.1 room.
Jim Williams (colored)	-	Miner -	No.3 room, 2nd Right.
Paris Adkins	-	Miner -	No.4 room, 2nd Right.
W.M.Fultz	-	Miner -	No.2 room, 2nd Right.

Russell Lutz - Miner - No. 2 room, 2nd right.
Frank Collins - Miner - 2nd Right Heading.
Joe Burchfield- Track Helper -

In addition to the above named, Hobart Burchfield, a track man was badly burned but was rescued. The bodies of the dead men were found all huddled together near the switch from the main entry and No. 2 aircourse. Hobart Burchfield, Trackman, was found close to those who had lost their lives. No signs of great violence were visible and, while the bodies were burned, yet the impression seems to be prevalent that carbon monoxide had been the cause of their death.

It was stated to the writer that Hobart Burchfield, the sole survivor, made the statement that the "fellows who were working in No.2 Room on the 2nd Right Entry told him to look out that they were firing a "windy" shot, and that the hole had a five pound jack of powder and one dummy in it". It was evidently the custom to fire the shots against the air. There was no shooting to be done in the main heading and its aircourse. At the face of No.2 Right Heading the men had been engaged in taking down slate, so that No. 2 Right Aircourse was the first place to be shot, then No.4 room, No. 3 room, No. 2 room and No.1 room, provided that they had been fired in logical order.

CONCLUSIONS:

From the foregoing evidence, the following conclusions have been drawn. The samples of mine air did not contain any explosive gases, as shown by the analyses given on the attached sheets. Moreover, the underground workings were but a comparatively short distance from the drift mouth. It can, therefore, be assumed almost without contradic-

tion, that there could not have been any explosive gas in the mine at the time of the accident.

On the other hand, the evidence clearly shows that the entries were very dusty and the analysis of the dust samples show the dust to be very explosive. In order, however, to create a coal dust explosion, it is absolutely necessary to raise the dust, lying dormant on the floor and the ribs of the entries and rooms, into a cloud, and this cloud must come in contact with intense heat, such as an open flame or an arc or spark from an electric current of high potential. The principal causes of a dust cloud in a mine are a gas explosion, a very heavy fall of roof, the wrecking of a rapidly moving loaded trip or the concussion from a shot from a heavily charged hole.

In the Marietta Mine the first cause can be eliminated because it has been shown that no gas existed. There were no evidences of any heavy roof falls and there is no mechanical haulage system, so that these two possible causes may be eliminated. This leaves the last of these causes as possible, namely, the concussion of a shot from a heavily charged hole.

In the investigation, there were several holes found in different places which had the appearance of typical blown-out shots. Some of these holes were nearly three feet deep, some had pieces of cartridge paper sticking to the sides and in nearly every one the coal was simply cracked around the endges. In one or two cases, fine coal was scattered over the floor twenty feet or more from the face. It would seem that there must have been several very ineffective shots.

Every hole had been drilled at right angles to the face.

As has been clearly stated, in order to cause an explosion the dust must not only be raised in a cloud, but it must be ignited from outside source, such as an arc from an electric wire, an open torch or the flame from a shot. There was no electric current in this mine and the only way in which the dust could be ignited would be by an open light or the flame from a blown-out shot.

As the only way a dust cloud could have been raised was by the concussion of a heavy shot, it stands to reason that no one with an open light would be near the origin of the explosion, so it can be safely assumed that the cloud was both raised and ignited by a blown-out shot.

That there was a dust explosion is evidenced in the blown-out stoppings and the fine brown dust which had settled all over the mine and which is almost invariably formed after coal dust explosions.

As to who fired the shot, it is rather difficult to say. The only direct evidence being that of Hobart Burchfield who stated that the men in No.2 Room had said that they were firing a "windy" shot. This statement seems to be supported by the fact that the shot in this room was the last shot fired, assuming that the shots would be fired in their logical order, as the indications in No.1 Room were to the effect that the hole in this room had not been charged.

The writer believes that there can be no doubt but that the men were killed, probably by the effects of after-damp, by a dust explosion originated by a blown-out shot due to the practice of shooting off the solid. That the holes were improperly tamped, and not

drilled according to the best practice of mining. As to which miner was responsible, there is a reasonable doubt, although the evidence strongly points to W.M.Fultz and Russell Lutz, who worked in No.2 Room.

The writer is also convinced that many of the shots were improperly drilled and insufficiently tamped. This was indicated by the number of holes in which the charge of explosive had been fired with no other effect than to blast off a small amount of coal at the mouth of the bore-hole. In such comparatively easy shooting material as coal, after a well placed, properly loaded and thoroughly tamped shot has been fired, little if any of the original drill-holes should be observable.

RECOMMENDATIONS:

In view of the above conclusions, the writer recommends that the practice of shooting off the solid be abandoned, and that the coal be undercut either by pick or machine. It is understood that shortwall machines are successfully used in the adjacent mine of the Pond Creek Coal Company, and, as the power lines of the Tug River Power Company are but a short distance away, it would seem feasible to bring electric power to the mine. If it is not feasible to do this, and it is considered advisable to continue the practice of shooting from the solid, then some person should be designated to supervise the drilling, loading and shooting the holes and he should be given the proper authority to enforce his directions as to the proper methods to be employed in this work and then should be held directly responsible

for obtaining the proper results.

In the Bureau of Mines Publication, Miners' Circular No. 7, entitled "The Use and Misuse of Explosives in Coal Mining", by J. J. Rutledge, there is given much valuable information as to the proper methods to be used when shooting coal.

One of the greatest hazards present at this time in Marietta Mine, as exemplified by the recent explosion, is the use of black blasting powder. The use of a permissible explosive for all blasting would insure much greater degree of safety. Where black powder is used for blasting, in addition to the precautions mentioned above, relative to the location, charging and tamping the hole, additional safety will be obtained by wetting the floor, roof and ribs for a distance of 50 feet from the shot and thus preventing the ignition of dust by a blown-out shot. Or finely ground shale or rock dust may be substituted and applied by hand to the roof, ribs and floor. After the removal of all coal dust, the shale or rock dust should be applied over the entire mine, and as the faces advance the rock dust should be added and kept within 5 feet of the face.

The dust in the entries should be thoroughly cleaned up and then the entries should be dusted with an abundant supply of fine rock or shale dust, in accordance with methods described in Bureau of Mines Technical Paper 84 entitled "Methods of Preventing and Limiting Explosions in Coal Mines", by G. S. Rice and L. M. Jones.

The writer would call attention to the chances of a fire from the gasoline engine operating the fan, and the fatal effects from the result of the gases from such a fire circulating through the working

thirteen men lost their lives and whi[illegible] a[illegible] caused by the ventilating equipment taking fire either [illegible] or else from the explosion of the gasoline tank, as the fan was driv[illegible] by a belt connected gasoline engine. This set fire to the coal in the ribs of the air course and the fumes from this fire overcame the men. It is true that in this case the fan was situated inside the aircourse some distance from the pit mouth, but there is but little doubt that a similar ignition of the ventilating equipment at Marietta Mine might produce as disastrous results as at the above mentioned mine.

The writer would suggest that serious consideration by the management be given to the substitution of an electrically driven fan for the present installation and the enclosing of the entire equipment in a fire-proof structure.

ACKNOWLEDGMENTS

The writer wishes to acknowledge the assistance rendered to him while making this investigation by Mr. J. H. Young, Superintendent and Mr. Walter Wroten, Mine Foreman.

Respectfully submitted,

L. D. Tracy

L. D. TRACY
Coal Mining Engineer.

Approved
J. W. Paul
J. W. PAUL,
Chief of Coal Mining
Investigations.

Form 6—137

U. S. BUREAU OF MINES

E—DESCRIPTION OF MINE

(1) State Kentucky. (2) County Pike. (3) Town Pinson Fork. (Post office.)

(4) Mine sample of Coal. (Material—for coal give classification.) (5) Coal field Pond Creek. (6) District

(7) Mine Marietta. (a. Name.) Drift. (b. Kind of opening—if shaft give depth.) (c. Height of opening above sea level.)

(d. Distance and direction from town.) (e. Sec., T., and R., if necessary.) N. and W. R. R. Pinson. (f. Railroad connections.)

(g. Shipping point.) (h. State if wagon mine or prospect and give distance from shipping point.)

(8) Coal bed Pond Creek. (a. Name.) ? (b. Geologic system.)

? (c. Formation.) Level. (d. Dip, degrees.) (e. Strike, direction.)

(9) Mining system Room & Pillar. (Long wall, room and pillar, panels, etc.) (10) Undercutting No. (Hand or machine.)

(11) Explosives Black Powder. (a. Used for coal.) (b. Used for roof or floor.)

(12) Operator Marietta Coal Company. (Name and address.)

(13) Sales agent W.E.Deegans Intervesta, Huntington, W. Va. (Name and address.)

(14) Output per day 100 (Average—gross or net tons.) (15) Maximum day's output 100 (During past year.) (16) Last year's output 40,000 tons. (Gross or net tons.)

(17) Output from advance workings, per cent 100 (At present.) (18) Lifetime of mine (Years—estimated.)

(19) Run-of-mine, per cent Yes. (Of output shipped.) (20) Is coal screened? No. (21) Type of screens -

(22) Type of washer - (23) Per cent of coal washed -

(24) Maximum size washed - (25) Sizes produced - (Washed coal.)

(26) Sizes produced - (Of coal not washed.) (27) Is coal picked? No. (State whether on car or belt.)

(28) Per cent of coal coked None. (At mine.) (29) Sizes coked None. (Screenings, crushed, washed, etc.)

(30) Type and number of ovens None. (31) Remarks - (For any additional information indicate after subject by mark X if additional information is given here.)

(32) Can Nos. (5-6-7) one sample. (Give Nos. of all samples forwarded.)

(33) Laboratory Nos. 84209. (Laboratory to fill in immediately below corresponding can number.)

(34) Mine sampled at 1 (Number.) points, by L.D. Tracy. (Collector.) (Office.) on 2/11/22. (Date.), 19

Above information copied from Card A by Edna Jones. on 2/16/22., 19

6—6372

6–213

DEPARTMENT

BUREA

CHEMICAL L.

MINE AI

Received, 2-16-22 (Laboratory ı.

Bottle No. 456

Mine, Marietta Operator, Marietta Coal Co

State, Kentucky County, Pike

Township, Sec. T. R.

Town (Distance and direction from) Pinson Fork

Name of coal bed, Pond Creek ft. in.

Room, Entry,

Location in same, where sample is taken, Main air course at face

Are there gas feeders near where sample is taken? Strong or weak?

Are gas feeders from roof, coal, or floor?

Method of sampling, vacuum

Velocity, Area, Quantity,

Barometer: Inside, Outside,

Corrected to sea level: Inside, Outside,

Bulbs: Wet, Dry, Humidity, %

Collector, L.D.Tracy Mailed,

Remarks (Note whether sample represents average mine air in locality or localized body of gas):

CO_2	.05	H_2	.00
O_2	20.92	H_2S	
CO	.00	C_2H_2	
CH_4	.00		
N	79.03		

Date, 2-27-22 (Signed) G.W.JONES,

6—2110

Asst. *Chemist.*

6–213

DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

CHEMICAL LABORATORY REPORT
MINE AIR SAMPLE

Received, 2-16-22 (Laboratory Record)

Bottle No. 467 Laboratory No. 16268

Mine, Marietta Operator, Marietta Coal Co

State, Kentucky County, Pike

Township, Sec. T. R.

Town (Distance and direction from) Pinson Fork

Name of coal bed, Pond Creek ft. 4 in.

Room, Entry,

Location in same, where sample is taken, Face of No. 2 right entry

Are there gas feeders near where sample is taken? Strong or weak?

Are gas feeders from roof, coal, or floor?

Method of sampling, vacuum

Velocity, Area, Quantity,

Barometer: Inside, Outside,

Corrected to sea level: Inside, Outside,

Bulbs: Wet, Dry, Humidity, %

Collector, L.D.Tracy Mailed,

Remarks (Note whether sample represents average mine air in locality or localized body of gas):

CO_2	.12	H_2	.00
O_2	20.91	H_2S	
CO	.00	C_2H_4	
CH_4	.00		
N	78.97		

Date, 2-27-22 (Signed) G.M.JONES,

Asst. *Chemist.*

6—2410

6—213

DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

CHEMICAL LABORATORY REPORT
MINE AIR SAMPLE

Received, 2-16-22 (Laboratory Record)

Bottle No. 457 Laboratory No. 16271

Mine, Marietta Operator, Marietta Coal Co

State, Kentucky County, Pike

Township, Sec. T. R.

Town (Distance and direction from) Pinson Fork

Name of coal bed, Pond Creek ft. 4 in.

Room, Entry,

Location in same, where sample is taken, M.Entry at face

Are there gas feeders near where sample is taken? Strong or weak?

Are gas feeders from roof, coal, or floor?

Method of sampling, vacuum

Velocity, Area, Quantity,

Barometer: Inside, Outside,

Corrected to sea level: Inside, Outside,

Bulbs: Wet, Dry, Humidity, %

Collector, L.D.Tracy Mailed,

Remarks (Note whether sample represents average mine air in locality or localized body of gas):

CO_2	.06	H_2	.00
O_2	20.89	H_2S	
CO	.00	C_2H_4	
CH_4	.00		
N	79.05		

Date, 2-27-22 (Signed) G.W.JONES,

Asst. Chemist.

6—2410

Form 6—138

U. S. BUREAU OF MINES

F—SAMPLING REPORT

Can No. 5-6-7. Lab. No. 84209.

(1) State Kentucky. (2) County Pike. (3) Town Pinson. (Post office.) (4) Mine Marietta.

(5) Sample of EXXX Coal. (6) Analysis desired Ultimate.

(7) Method of sampling Standard. (Describe if other than standard.)

(8) Location in mine Last Break through between No.4 right and air course. (Distance and direction from opening. Locate with respect to rib, room, pillar, aircourse, entry, etc.)

(9) Date 2/11/22. (Of sampling.), 19

(10) Coal, dry or moist (11) Gross wt., lbs. 20 (Sample cut.) (12) Net wt., lbs. 3 (Sample mailed.)

(13) Sample from fresh or weathered coal Fresh.

(14) Roof Hard slate. (Kind and quality.)

(15) Draw slate or roof coal None. (Description and thickness.)

(16) Floor Hard smooth. (Kind, soft or hard, smooth or rough.)

(17) Vertical depth from surface to point of sampling, feet 200 to 300 ft.

No.	Section of Bed	Ft.	Ins.	No.	Section of Bed	Ft.	Ins.
1	Hard slate roof.			10			
2	Good Coal.	0	11	11			
X	Bone Coal	0	6	12			
4	Clean Coal	3	4	13			
5	Hard, smooth slate.			14			
6				15			
7				16			
8					Total thickness of bed		
9					Thickness in sample		

(18) Excluded from sample, marked X, section Nos. 3.

(19) Send analysis to (20) Collector L.D. Tracy. (21) Office

Above information copied from B card by Edna Jones. on 2/16/22., 19

6—6098

DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

Test No. _____ G—COAL-ANALYSIS REPORT Lab. No. 84209

Sample of Coal. Can No. 5-6-7.

Operator _____ Mine Marietta.

State Kentucky. County Pike. Bed Pond Creek.

Town Pinson.

Location in mine Last break throu between No.4 Rigert and Air course.

Method of sampling Standard. Gross weight, lbs. 20 Net weight, grams 1025.0

Date of sampling 2/11/22. Date of Lab. sampling 2/17/22. Date of Cal. 2/21/22.

B. of M. or U. S. G. S. section M.A. Collector L.D.Tracy.

		Coal (Air dried)	Coal (As received)	Coal (Moisture free)	Coal (Moisture and ash free)
Air-dry Loss 1.5					
Proximate Analysis	Moisture	1.0	2.5		
	Volatile matter	34.6	34.1	34.9	36.8
	Fixed carbon	59.3	58.3	59.9	63.2
	Ash	5.1	5.1	5.2	
		100.0	100.0	100.0	100.0
Ultimate Analysis	Hydrogen	5.2	5.3	5.1	5.4
	Carbon	80.4	79.3	81.2	85.7
	Nitrogen	1.6	1.5	1.6	1.7
	Oxygen	7.1	8.2	6.3	6.5
	Sulphur	.6	.6	.6	.7
	Ash	5.1	5.1	5.2	
		100.0	100.0	100.0	100.0
Calorific value	Calories	7939	7823	8019	8457
	British thermal units	14290	14090	14440	15230

Softening temperature of ash _____ ° C. _____ ° F.

Date February 24, 1922. (Signed) H. M. Cooper.

Chemist.

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DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

DUST-ANALYSIS REPORT

Test No. _____ Lab. No. 84211

Sample of ROAD dust (through 20-mesh screen). Can No. 3 and 4.

Operator Marietta Coal Company. Mine Marietta.

State Kentucky. County Pike. Bed Pond Creek.

Town Pinson Forks.

Location in mine Across No. 4 right entry between 3 & 4 rooms.

Method of sampling Standard. Gross weight, lbs. _____ Net weight, gms. 226.0

Date of sampling 2/11/22. Date of Lab. sampling 2/16/22. Date of analysis _____

For B. of M. section M.A. Collector L.D.Tracy.

	Air-dry Loss 3.1	Coal (Air dried)	Coal (As received)	Coal (Moisture free)	Coal (Moisture and ash free)
Proximate Analysis	Moisture	.6	3.7		
	Volatile matter	25.8	25.0	26.0	31.4 (a)
	Fixed carbon	56.5	54.7	56.8	68.6
	Ash	17.1	16.6	17.2	
		100.0	100.0	100.0	100.0
Ultimate Analysis	Hydrogen				
	Carbon		GRAMS PER CENT.		
	Nitrogen	On 20-mesh.	115.0 33.7 REJECTED.		
	Oxygen	Through 20-mesh.	226.0 66.3 ANALYZED.		
	Sulphur	Total wt. of sample.	341.0	.498 lb = 7.98	
	Ash				
Calorific value determined	Calories		(a) V.M. / (V.M. + F.C.) = .314		
	British thermal units				

	Cumulative per cent.
Screen test, through 20 mesh	100
through 48 mesh	59.1
through 100 mesh	41.4
through 200 mesh	25.9

Area from which sample was taken (sq. ft.) _____

Date, February 23, 1922. (Signed) H. M. Cooper., *Chemist.*

[a] This figure is the ratio of volatile combustible to total combustible.

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DEPARTMENT OF THE INTERIOR
BUREAU OF MINES

DUST-ANALYSIS REPORT

Test No. _____ Lab. No. 84210

Sample of ROAD dust (through 20-mesh screen). Can No. 1 and 2.

Operator Marietta Coal Company. Mine Marietta.

State Kentucky. County Pike. Bed Pond Creek.

Town Pinson Fork.

Location in mine Main haulage road. 600' from pit mouth.

Method of sampling Standard. Gross weight, lbs. _____ Net weight, gms 338.5

Date of sampling 2/11/22. Date of Lab. sampling 2/16/22. Date of analysis _____

For B. of M. section M.A. Collector L.D.Tracy.

	Air-dry Loss 2.4	Coal (Air dried)	Coal (As received)	Coal (Moisture free)	Coal (Moisture and ash free)
Proximate Analysis	Moisture	.7	3.1		
	Volatile matter	24.8	24.2	24.9	34.1 (a)
	Fixed carbon	47.8	46.6	48.2	65.9
	Ash	26.7	26.1	26.9	
		100.0	100.0	100.0	100.0
Ultimate Analysis	Hydrogen		GRAMS PER CENT		
	Carbon	On 20-mesh.	126.0 26.7	REJECTED.	
	Nitrogen	Through 20-mesh.	338.5 73.3	ANALYZED.	
	Oxygen	Total wt. of sample.	464.5		
	Sulphur				
	Ash				
Calorific value determined	Calories		(a) $\frac{\text{V.M.}}{\text{V.M. + F.C.}} = .341$		
	British thermal units				

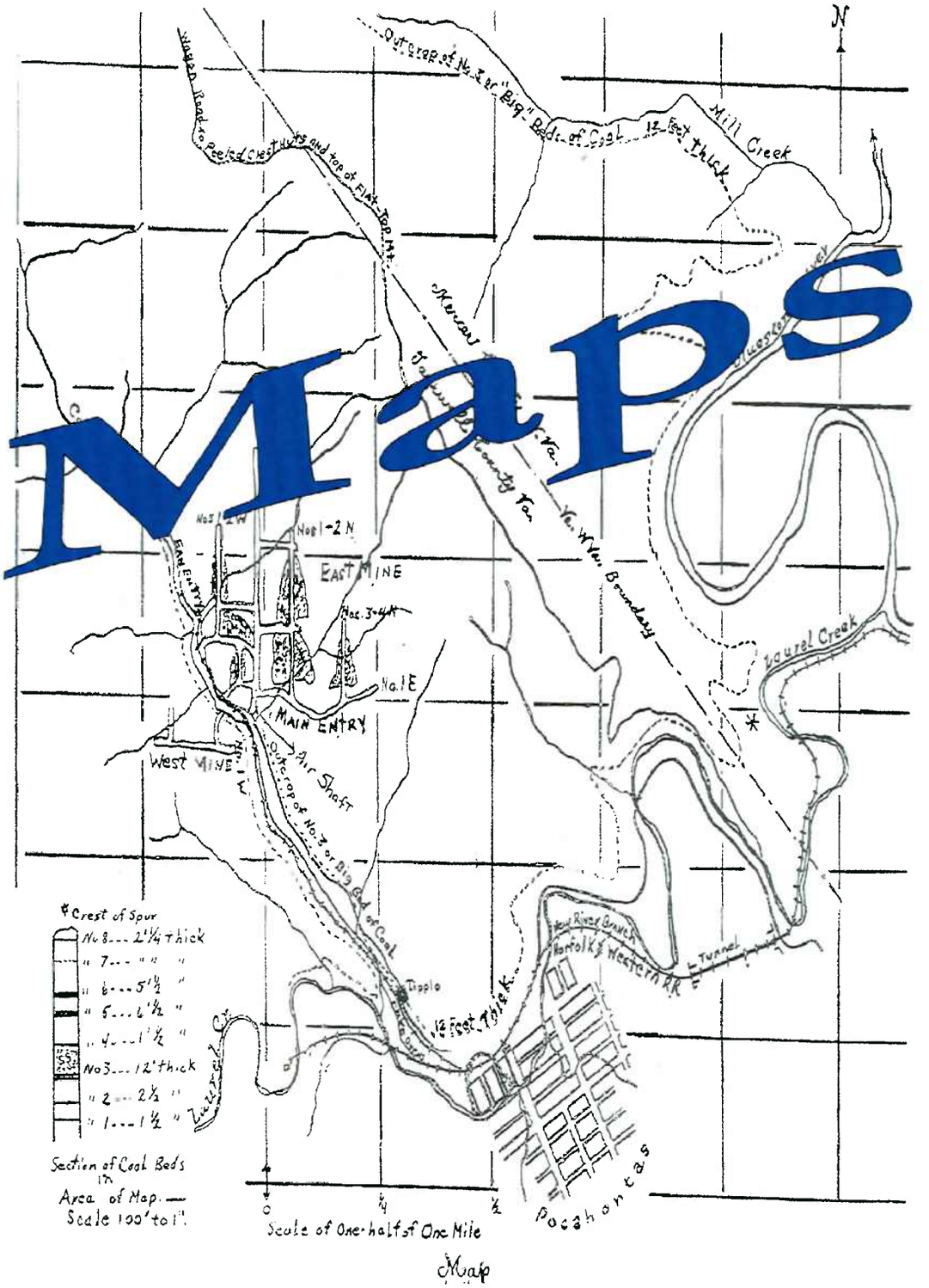
	Cumulative per cent.
Screen test, through 20 mesh	100
through 48 mesh	59.6
through 100 mesh	40.5
through 200 mesh	25.9

Area from which sample was taken (sq. ft.) _____

Date, 2/22/22. (Signed) H. M. Cooper., *Chemist.*

[a] This figure is the ratio of volatile combustible to total combustible.

6—5154


Maps
N
Mill Creek
Laurel Creek
EAST MINE
MAIN ENTRY
West Mine
Air Shaft
Tipple
Pocahontas
Scale of One-half of One Mile
Map

Not Scanned