

Coil Mine Disaster Documents

Coil Mine

Coil Coal Company

Madisonville, PA

Accident date: April 21, 1912

Number of items: 3

Material types: preliminary report, report, map

Important persons mentioned: EB Sutton (writer of report)

Historical note: The mine was opened by 2 shafts 290 feet deep, and because it was a new mine the workings were no more than 600 feet from the main shaft.

The mine was gassy and the fan at the bottom of the airshaft was shut down when no one was in the mine. No work was done on that day but about 6:50 pm, 5 men were lowered to load the coal that had been shot the night before. At 7:05 pm the explosion severely damaged the mine and the shafts and killed the men. One was blown out of the mine. The foreman had started the fan but did not wait for the air to clear before starting to inspect the workings with an open light.

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Date	Type	Filed by	Subject	Size
4/21/1912	Preliminary report	Bureau of mines	Preliminary report into the mine explosion	1 page
4/21/1912	Report	E. B. Sutton	Report on the coil mine explosion	9 pages
n/a	Map	NE Stove	Coil Coal Company	1 page

UNITED STATES DEPARTMENT OF THE INTERIOR  
BUREAU OF MINES

MINE EXPLOSION

File No. D-121

Mine Coil Location Madisonville, Hopkins County, Ky  
Company Coil Coal Co. Mailing address do  
Date April 21, 1912 Time of day a.m. 7:05 p.m. Mine working or idle Working  
Total employment 33 Underground \_\_\_\_\_ Shifts worked 2 Daily production (tons) 200  
Number men killed 5 Injured 0 In mine 5  
Number men escaped unassisted 0 Rescued 0 Barricaded 0  
Type (gas or dust) Gas Ignition source Open light Rock-dusted No  
Was breathing apparatus used No Gas masks \_\_\_\_\_ Self-rescuers \_\_\_\_\_  
Time required to reach explosion area Very short  
Classification (gassy or nongassy) Gassy Methane exhausted (24 hours) \_\_\_\_\_  
Number of main fans 6' fan in mine Quantity air per minute 45,500 cfm  
Ventilation (continuous or split) 2 splits Face (line brattice or fans) Line brattice  
Mine openings Shafts - 290' deep Principal Shaft  
Coalbed No. 11 Thickness 74" Volatile ratio \_\_\_\_\_ Roof gray shale Floor hard clay  
Mining system Room & pillar Pillars extracted No  
Room support: Main entries not stated Intermediate \_\_\_\_\_ Section \_\_\_\_\_  
Transportation: Main Cage Intermediate Mules Section Mules  
Electricity (voltage ac or dc) not stated Face None Portable lights Open  
Principal mining machinery (continuous miners, conventional, etc.) Electric cutting machines  
  
Was machinery permissible type No Was it permissible No  
Blasting and explosives: Coal Black powder Grading or special use Black powder  
Cause of explosion mine foreman walked into an accumulation of gas with an open light - fan had only been operating 30 minutes  
Did explosion result in fire or were fires found \_\_\_\_\_  
Point of origin No 1 South hdq off No 1 main west  
Area affected Entire mine  
Was Bureau report made Yes Author(s) E. B. Sutton  
If no Bureau report, what and by whom \_\_\_\_\_  
Remarks One worker blown out shaft and body lodged in head frame

Report on the

COIL MINE EXPLOSION

April 21, 1912.

Madisonville, Kentucky.

Operators,

Coil Coal Company.

by

E. B. Sutton, Foreman Miner.

### Incidents Leading to the Report.

On Sunday, April 21, 1912, at 7:05 p.m., an explosion occurred in the mine of the Coil Coal Company, which is located about three quarters of a mile east of Madisonville, Kentucky, killing five men. Four of the men were colored and one was white. At 2:38 p.m., April 22, 1912 the writer received a telegram from Mr. J. W. Paul, Mining Engineer of the Bureau of Mines, as follows: "Proceed Madisonville, Kentucky, taking as baggage sufficient equipment to enable you with co-operation state officials make investigation."

Leaving Knoxville at 6:45 p.m., April 22, 1912, the writer arrived at Madisonville, Kentucky at 8:30 a.m., April 23, 1912 and proceeded to the mine, arriving there at about 9:30 a.m. Dr. C. J. Horwood, Chief Mine Inspector of Kentucky and his assistant, Thomas Long, were preparing to enter the mine. The party was lowered about 10:00 a.m. and the morning was spent in searching the west side of the mine for bodies of two men not yet recovered. At about 2:00 p.m. attention was turned to the east side of the mine, and No. 2 Main East heading as well as headings No. 1 and No. 2 South off the Main East were explored without finding the bodies. It was then decided that the two missing bodies were in the sump, and the night shift which entered the mine at about 8:00 p.m. began clearing away the wreckage at the bottom of the shaft.

April 24, 1912 - At about 9:00 a.m. the party again entered the mine and the day was spent in the removal of wreckage from the bottom of the shaft. At about 2:30 p.m. the writer with Dr. C. J. Horwood went into the first and second South headings off the Main East heading to collect samples of mine air. The shift was hoisted at about 6:00 p.m.

April 25, 1912 - At about 9:30 a.m. the party entered the mine and spent the day in the removal of the wreckage from the bottom of the shaft. The party was hoisted from the mine at about 6:55 p.m. The night shift was lowered at about 8:00 p.m. and about midnight the bodies of two men were recovered from the south sump.

April 26, 1912. - The morning was spent in covering four mules in the mine with lime and embalming fluid. All work ceased at 1:00 p.m. due to the fact that most men engaged in the recovery of the mine were required to attend the inquest.

April 27, 1912 - Morning was devoted to the removal of four mules from the mine and at noon all men were relieved from duty due to fatigue.

April 28, 1912 - Sunday and no work was done.

April 29, 1912 - It had been promised the writer that it would be made possible for him to enter the mine the first thing and

he was at the mine at 7:00 a. m. Upon arrival he found nobody except the superintendent who had relieved all men and who knew nothing regarding the plans of the company or when it would be possible for the writer to enter the mine. It turned out that no work was done. At 5:30 p.m. the writer interviewed Mr. W. D. Coil, President of the Company and was assured that he would see to it that a crew be secured to go into the mine the following day.

April 30, 1912 - Arrived at the mine to find nobody there except the day engineer who knew nothing of the plans of the officials. At about ten o'clock in the morning Mr. Coil phoned the mine and left word that it was impossible to get men to go into the mine. The writer remained at the mine until 5:00 p.m. and left Madisonville at 10:58 p.m. for Knoxville.

The Coil Mine operated by the Coil Coal Company is located about three quarters of a mile east of Madisonville, Kentucky, county seat of Hopkins County. Mr. W. D. Coil is president of the Company and Moscow Haley, superintendent. The Company owns thirteen hundred and fifty-six (1356) acres, which is known to be underlain with seams numbers nine, eleven and twelve. The present operation is in the number eleven seam. The Headframe over the upcast shaft is located at a distance of about one hundred feet from the tracks of the L. & N. Ry. and all coal mined is shipped over this road as well as all engines of this division are coaled at the mine.

The No. 11 seam which is two hundred and eighty-one (281) feet below the surface, is 6 feet 2 inches in thickness and is clean throughout except for a slate parting, about one inch thick, about fifteen inches from the top; and another parting, two to four inches thick, about twenty-two inches from the bottom. No care is taken to remove the former from the coal for the market but the later parting which contains considerable sulphur is removed in the mine.

The seam dips N 20° E and has a pitch of about 1%. The main headings are driven N 69° E and the butt headings at 90° with the main headings. This makes the South butts advancing against the dip and the North butts advancing with the dip.

The bottom is of a clay nature, the upper three to four inches hardens and makes a very good bottom from which to load coal. The top is a gray slate of from 24 to 30 inches thickness, above which is a soap stone from four to six feet in thickness. Immediately above the soapstone is No. 12 coal seam varying from six to nine feet throughout the district. The roof rock overlying No. 11 seam has, in many places, fallen, exposing the No. 12 seam, which was in no case more than six to eight feet above No. 11 seam.

At the time of the explosion, the mine had an output of (200) two hundred ton daily. This output was handled by a day shift of usually twenty-four men and a night shift of usually nine men. The mine made

only run of mine coal, and all coal hoisted during the night was used in the coaling of engine of the L. & N. Ry. Company, approximately 75 tons.

The mine was known to generate gas as will be shown in a subsequent part of the report. The same seam worked by the same people, although separately incorporated, and at a distance of 5600 feet from the Coil Mine generates large quantity of gas. The State Inspection Department visited the mine on March 6, 1912 and reported the presence of .5 of one per cent gas at that time. The engineer for the company claimed that gas was known to exist in tight places long before the disaster.

The coal which is at a depth of two hundred and eighty-one (281) feet below the surface, is reached by a double compartment shaft 18 X 10 feet. An air shaft, about two hundred feet distant, is 16 X 10 feet and of the same depth. During the course of sinking the hoisting shaft a well constructed partition was built between the compartments for ventilation. This was extended to the bottom of the sump. The coal is six feet and the sump twelve feet deep, making the total depth of the hoisting shaft two hundred and ninety-one feet.

#### DEVELOPMENT.

The main entries which are being driven N 69° E and S 69° W are three in number and have fifty (50) foot pillar between them. The headings are named the Main East and Main West in accordance with the direction they are driving from the hoisting shaft, and are numbered as shown on the map of the mine. No. 2 Main East and Main West headings are fifteen (15) feet wide, while the other headings throughout the mine are twelve (12) feet wide. The butts, double entry, are driven north and south; the south butts being driven from No. 1 Main and the north butts being driven from the No. 3 Main entries. The butts heading are numbered one and two; one being nearer the shaft. With the exception of two rooms, both advanced about one hundred (100) feet and two room necks on No. 2 South off No. 1 Main East all work was narrow. It is the policy of the company to drive all rooms off the No. 2 butt headings.

The mine was ventilated by a fan belted to an electric motor at the bottom of the air shaft. It was six feet in diameter and was a force fan, being situated about thirty (30) feet from the shaft bottom. The air was split by two regulators, one in No. 1 Main East and one in No. 1 Main West headings. The passage of the air is placed upon the map of the mine by means of arrows, and the only point that needs mention, is that the North headings off No. 3 Main West, although advanced one hundred and forty (140) feet, had no break through between them, and were ventilated by means of canvass line brattice. The North headings off No. 3 Main East, although not so far advanced were ventilated in the same way. It was unable to learn the revolutions of the fan per minute or the quantity of air moved.

## METHOD OF WORKING.

### Mining.

The main entries were, as explained before, driven by the three entry system, and the butts double entry. Two Goodman chain and three Pneume-electric cutting machines were used to undercut the coal. The average depth of the undercut was five and one-half feet.

For every five and one-half feet to six feet of advance, five holes were placed in the coal as shown by sketch. Holes No. 1 and No. 2 were bored straight into the coal, placed above the parting, and never exceed in depth the thickness of the coal. The collars of these holes were about twelve inches from the ribs. Holes No. 3 and 4 were placed above the parting which is about fifteen inches from the top, and were so inclined with the horizontal and with the rib so that at a length of not in excess of six feet six inches the end of the hole would be against the rib and also against the top slate. The collars of these holes were usually eight inches from the top and four inches from the rib. A fifth hole was placed above the upper parting and when at its full length, which was never to exceed the thickness of the coal, the end should be in the coal and about one inch from the top slate. The collar of this hole was placed either to the right or left of the center of the entry depending upon the quantity of coal to be broken down. If there was more coal to the right of the center line of the entry, the hole was placed to the left of the center line and vice versa. The holes were fired in the order numbered. In the neighborhood of ten to twelve inches of FF Du Pont black powder, made on a one and one half inch pin, was charged in each hole.

### Ventilation.

Break throughs were supposed to be driven every sixty (60) feet but this was not rigidly adhered to. However, at no place was the ventilation sufficient to sweep the faces free from gas, and from the last break through, ventilation was carried to the face by means of canvass line brattice. These were placed six feet from the rib in the main entries allowing nine feet clearance through which to remove coal, and four feet from the rib in butt entries, which gave eight feet clearance for the removal of coal. In every case the intake air traveled the narrow passage.

### Haulage.

The mine, being in the first stages of development, had little or no permanent track. A small amount of iron was in use but in most cases wood 2 x 4 inches was used for track roads. The coal was collected from the faces as well as delivered at the shaft bottom by four mules. No permanent structure had been erected for the mules and the first break through between No. 2 and 3 Main East heading was used for this purpose. One hundred and twenty-five to one hundred and fifty tons were delivered at the shaft bottom by the day shift.

### Drainage.

As the South heading driven off No. 1 Main West and No. 1 Main

West are advancing against the dip, the water formed in these headings drain into the North headings driven off No. 3 Main East and West Headings. The Main West headings are also advancing against the dip and their water either drains into the North headings or finds its way to the sump. The Main East headings which are advancing with the dip drain to the faces of same. At a distance of about fifty feet from the shaft and in the left rib of No. 2 Main West, a pump stands which pumps water from the sump to the surface. Its capacity is fifty gallons per minute. Water gathering in the North headings is bailed into barrels and sprinkled along the South headings to assure safety.

#### Safety.

As the fan was electric driven and inside the mine, it had been deemed wise not to allow it to operate when nobody was in the mine. Prior to allowing the men to proceed to their working places, it had been the practice for the mine foreman to start the fan and then to return to the bottom of the hoisting shaft. After allowing the ventilating current to pass through the mine for a period of thirty minutes, he proceeded to all working places to make an inspection of same. This examination was always made with naked lights. Finding everything all right he returned to the shaft and the men proceeded to their places. Every day water was sprinkled over the drier headings, this water being obtained from the faces of the North headings. Naked lamps were used in all parts of the mine.

#### Mechanical Equipment.

The mechanical equipment of the mine consisted of one, one hundred and fifty (150) horse power boiler. The hoisting engine was made by the Heilman Machine Company, of Evansville, Indiana, and was first motion, friction brake, and dimension of its steam cylinder is 18 x 30 inches; diameter of drum is six (6) feet; two Goodman, 1906-C type chain cutting machines and three pneumatic coal punching machines were in use. The direct current used to operate the Goodman chain machines was received from the Sun Set Coal Company, 5600 feet distance and this current was carried by 4-0 wire down the air shaft and to the East side of the mine, where only Goodman machines were used. The current to operate the Pneumatic punchers was received from the Madisonville Light Company, which is alternating current and was carried into the mine by 4-0 wire which was taken down the Hoisting shaft and thence to the West side of the mine. A disc fan, made at Madisonville, Kentucky, and installed at the bottom of the air shaft, was belted to a motor which was driven by alternating current. The rolling stock of the mine consisted of thirty mine cars of one and one-half tons capacity.

#### Character of Coal Shipped.

All coal shipped was run of mine although equipment had been installed to make sized coal in the future. Men were paid for loading all coal and little fine coal or dust was left in the mine. The scale of wage was five cents for undercutting, ten cents a ton for loading, and eleven cents a hole for drilling.



### Rescue Work.

Thomas Long, assistant inspector, arrived at the mine about midnight April 21, 1912 and at about 7:00 a.m. April 22, 1912 Hugh Jones, Assistant Inspector arrived, each bringing with him two pieces of Draeger 1910-3 type apparatus. Mr. A. A. Sams of the Bureau of Mines arrived the morning of April 22, 1912.

Upon arrival Thomas Long began to get some means of ventilation in the mine by installing a steam jet in the air shaft. A pony hoist had been left by the contractors who sunk the shaft and this was placed at the hoisting shaft in order to lower the rescue party. At about 9:00 a.m., April 22, 1912, Long and Jones entered the mine wearing apparatus and found that the air at the bottom of the hoisting shaft was such that work could commence at once without the aid of breathing apparatus. Immediate steps were taken to install an exhausting fan over the air shaft and this was placed in operation at about 2:00 a.m., April 23, 1912. On April 30, 1912 the air was measured at the fan and it was found that 31,500 cu. ft. per minute was circulating with a fan speed of 40 r.p.m. During recovery work the fan was operated at a speed of 60 r.p.m. which would circulate about 43,500 cu.ft. per minute.

### Recovery of Bodies.

At about 5:00 a. m., April 22, 1912, the doby of Willie Hughes, colored, and cager at the bottom of the shaft, was found lodged in the head-frame about fifty feet from the collar of the shaft. This body had been blown out of the mine a distance of three hundred and fifty-five feet, and was badly mangled buy in tact, except for the top of the skull which never was found. The body was completely naked and burned quite a good deal. The body of Joe Hollowell, white and night foreman, and Charlie new, Colored were recovered about midnight of April 22, 1912. They were found inbye the last breakthrough, between No. 1 and No. 2 South heading off No. 1 Main West heading. Hollowell lay with face in hands and head outbye, while New lay on his back with his inbye. An accompanying sketch will show relative positions. Hershel Petree and Leslie Clemens, colored were removed from the south sump at the bottom of the hoisting shaft at about midnight of April 26, 1912. The men recovered from the mine were badly burned and the men recovered from the sump were mangled, due to the fall of wreckage upon them.

### Statement of Geo. Kumble, Hoisting Engineer.

At about 4:00 a.m., April 21, 1912 the night shift was hoisted from the mine. It was ordered to shut the fan down upon leaving the mine to insure against heating the bearings and sparking. At about 10:00 a.m., April 21, 1912 twormen were lowered into the mine to inspect same; this being done to detect any fires that may have broken out after shooting the previous shift. These men remained in the mine about an hour during which time the fan was running. At about 6:50 p.m., April 21, 1912 he lowered five men into the mine, it being their duty to load coal that had been shot the night before, about five minutes after lowering the men, re received signal to hoist and hoisted an empty cage

at the same time lowered an empty car. A severe thunder storm was raging and about 7:05 p.m. or fifteen minutes after the men had entered the mine, the lights in the engine room went out and the noise that followed resembled thunder. The engineer noticed that the drum on the engine was moving without steam and that considerable debris was falling outside of the engine house. He left his post and ran to a point of safety. The Nearest circuit breaker is on the board of the Madisonville Light Company, which was thrown at exactly 7:05 p.m.

#### Statement of Thomas Simons, Mine Foreman.

It was the custom and order of the company for Joe Hollowell, night foreman to first go, after being lowered into the mine, to the fan and start same, leaving the remainder of the crew at the bottom of the shaft. He was ordered to then return to the bottom of the shaft and remain there for a period of thirty minutes. Usually taking one of the men with him, Hollowell then proceeded to all working places and finding them all right returned to the shaft bottom and sent the men to their places. A period of thirty minutes was considered sufficient to sweep the mine of bad air.

#### Results of the Explosion.

Considerable damage was done to the mine in general, but the greatest violence was seen in the hoisting and air shafts,. A pillar of coal, shown on the map of the mine and on the north side of the hoisting shaft, approximately six feet at its greatest thickness, was dislodged and blown into the sump. Large quantities of heavy timber was blown into the sump, some being thrown from the West heading where it had been stored, and some coming down the shaft, all buntings and guides as well as lining between the compartments for a distance of 75 to 100 feet from the bottom of the shaft being dislodged. All timbers supporting the landing at the bottom of the shaft were blown out and considerable roof slate allowed to fall. At the air shaft the fan was completely destroyed and considerable timber was dislodged from the shaft which found its way to the bottom. The collar timbers above the air shaft were raised and thrown about fifteen feet from the shaft. At the time of the explosion, the cage in the north compartment of the shaft was at the landing and the cage in the south compartment was at the bottom. After the explosion the north cage was found lodged in the headframe about fifteen feet above the landing, and the south cage was completely destroyed and among the wreckage at the bottom of the shaft. Two cars, one supposedly on the south cage and one in the West heading, were also among the wreckage. The rope attached to the north cage was badly tangled about the shaft of the hoisting engine, while the rope of the south cage was unwound from the drum except for two turns. Both sheave wheels were dislodged from their fastenings and the ropes were torn from the sheaves. Many places in the mine falls of slate occurred due to the supporting timbers being removed by the force of the explosion, and in two instances, one in the Main East and one in the Main West headings, these falls were large enough to prohibit passage.

## Investigation.

On the Main East and West headings little evidence of heat was seen. No coking was evident, but upon the inbye exposures of such posts as were not dislodged by the explosion trains of wet coal dust were present. This was particularly pronounced upon a post at the mouth of the first break through between No. 2 and No. 3 Main West heading where a train of wet dust extended from top to bottom and was about one-fourth of an inch thick at its center. Considerable spalling was seen upon the inbye edges of coal on both ribs of No. 2 Main East and West headings. A mule which had been harnessed was found in No. 2 Main West heading about sixty (60) feet from the shaft and was badly torn open by the force of the explosion. Three mules, found in the stable, showed no evidence of violence. As large quantities of canvass brattice and considerable light brattice timber was found in No. 2 Main West and East headings opposite crosscuts, it seemed evident that the force had traveled from the headings on the right and left of this heading into it. Upon leaving the main headings, the ribs of the partings into the South headings driven off No. 1 Main East and West were covered with fine burned dust, although no coke was seen here. The faces of No. 1 and No. 2 South off No. 1 Main West heading were never reached, due to the large amount of methane present, but a feeder could be heard which resembled a leaky air hose. However, the faces of No. 1 and No. 2 South off No. 1 Main East heading were reached and in tight placed beyond the air much methane was encountered, enough to cause a knock-out upon the Wolf lamp. Samples of this air was taken and mailed to Pittsburgh. In tight places throughout the mine where it was possible to go, evidence of considerable heat was seen, in that considerable ensitue was present upon roof and ribs. In only one place, namely the breakthrough between room No. 1 and room No. 2 on No. 2 South Main East was any coke encountered and in this instance only finely divided globules more pronounced upon the outbye rib of the breakthrough. At this point considerable ensitue was also encountered and by far in excess of the amount of coking. In every case it seemed that the force of the explosion had been from No. 1 and No. 3 Main entry into No. 2 Main entry. At the entrance of room No. 1 and No. 2 on No. 2 South off No. 1 Main East heading the direction of the force was without doubt from the room to the entry which seems conclusive that these rooms were standing with gas at the time of the explosion. In no instance did the roads seem unduly dry and in many places the road dirt would cake in the hand.

## Conclusion.

From the fact that the mine did not receive any ventilation for a period of fifteen hours prior to the disaster except for one hour in the morning of April 21, 1912, and that numerous feeders were discovered after the explosion in headings advancing against the dip, it seems safe to say that this explosion was caused by Joe Hollowell and Charlie New walking into the No. 1 South heading off No. 1 Main West heading with naked lights and igniting the gas in these headings. There is no doubt that had they obeyed orders and waited until a thirty minute period had elapsed after starting the fan and going upon their round of

inspection, the mine would have been entirely freed of dangerous gas. Coal dust seemed to have very little part, if any, in this explosion as practically no coke was found. From the system of ventilation employed before the explosion, it seems possible for the flame originating on the West side of the mine to have been communicated to the East side through the No. 3 Main East and West headings and to have met the gas which was being forced from the workings to the south of the main entry at the last breakthrough into the No. 2 Main East headings where both splits united into a common return.

Respectfully submitted.

(Signed) E. B. Sutton.

# COIL COAL COMPANY

INCORPORATED

MADISONVILLE, KY.

Scale 100'=1" 716 Street C. 6

