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REPORT ON

MINE EXPLOSION

AT

MINE Nº 2.

Mc CURTAIN, OKLAHOMA,

MARCH 20, 1912.

BY

J. J. RUTLEDGE

C. S. STEVENSON

W. T. BURGESS

R. Y. WILLIAMS.

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INTRODUCTION.

The explosion occurred at Mine #2, McCurtain, Okla., March 20, 1912, 9:05 A.M., fatalities 73,:

Death due to suffocation	6
Death due to violence	67
Total	73
Injuries, bad burns	1
exposure	3
Total	4

-:-

Rescued: By their own efforts	8
Carried out by rescue party	8
Walked out when found by rescue party	8
Total	24

-: GENERAL INFORMATION :-

LOCATION: Oklahoma, Haskell County, Chant-McCurtain

(commonly written simply "McCurtain") one mile south of McCurtain on the Fort Smith and Western Railroad.

OWNERSHIP: Mine #2 opened 1902, and from that date to the present time has experienced 7 explosions. The mine has been a union mine since the start and has experienced many labor troubles. The tipple burned completely in 1908.

OWNERS: San Bois Coal Company.

W. E. Crane	General Manager	St. Louis, Mo.
H. H. Kelley	President	Cleveland, Ohio.
A. C. Dustin	Treasurer	Cleveland, Ohio.
J. D. Phelps	Ass't Treasurer	Ft.Smith, Ark.
H. S. Haselton	Secretary	Cleveland, Ohio.

General Office, McCurtain, Oklahoma.

Receivers, appointed after the explosion.

W. E. Beaty, McAlester, Okla.
W. E. Crane, St. Louis, Mo.

ADJACENT MINES: Mine No. 1, one mile west of Mine No.2.

Mine No. 3, one mile north of Mine No.2

Mines Nos. 1, 2, and 3 under same management.

ORGANIZATION:

A. H. Brown,	Superintendent.
William Farrimond	Mine Foreman (Deceased)
William Crook,	Fire boss. (Deceased)
John Kokoska	Fire boss.

GEOLOGY AND CHARACTER OF COAL.

GEOLOGY: Topography, slightly rolling with terrace formation flanking a rolling plain. Age, probably Pennsylvanian. Thickness varies from 5 feet to 9 feet. The seam is cut by faults and the dip is quite variable. The line of strike is variable. The coal is difficultly worked on account of irregular dip.

COAL: The coal is somewhat similar to that of the semi-anthracite coal in Arkansas. There is some question as to whether or not it is identical with the Arkansas coal, but the correlation has not been worked out and no definite statement can therefore be made. See Appendix for coal samples and ratio.

ROOF: The roof is a dark gray lime shale, and is traversed in many places by slips which render it treacherous. Considerable timbering is therefore required; crossbars are used on the main slope and, to a large extent, in the cross entries; props are used in the rooms, and are thickly set.

FLOOR: The floor is a hard, non-weathering, gray shale.

MOISTURE: The coal is naturally dry, as is also the roof and floor. The coal dust on ribs and timber and floor is exceptionally dry and fine, and free from shale or rock dust.

GAS: Gas is found in all advance workings. The investigations seem to point to the fact that this gas comes from the coal, from the floor, and from the 2 to 5-foot dirt band that occurs near the center of the bed as mined. For information as to the quantity of gas made in this mine, see analyses of mine air samples in appendix.

DESCRIPTION OF MINE AND METHOD OF OPERATION.

DEVELOPMENT AND SYSTEM OF WORKING: This mine is opened by a slope that follows the dip of the coal from the outcrop. This slope has right and left aircourses. Work entries are driven in pairs from this slope to the right and to

the left at distances of 300 feet apart. The method of working is room and pillar, the rooms being driven on 35-ft. centers, leaving 15-ft. pillars. These rooms are turned from both entries and average from 150 to 200 feet long. These dimensions and the general layout are irregular, due largely to the variation in the dip of the bed. This variation is shown in the main slope which follows the dip of the coal 3,400 feet on approximately a westerly course, and at this point the slope changes its direction to approximately due south, all on account of the change in the dip of the coal.

MINING: The bed is mined in two lifts; that part of the coal lying under the dirt band being mined first, then the dirt band removed, and the upper 3 feet of coal then blasted. The system of mining in the entries and in room turning is the modified form of "following the crack". This means that breast augers having bits about 2-inches in diameter and varying in length from 10 to 14 feet are used for boring the holes; these holes are freed by a cutting or shearing 6 to 8 feet in depth, made entirely through the height of the lower portion of the strata and with a width of from 12 to 18 inches. The holes, as fired, are about 10 to 12 feet deep and contain 10 to 12 sticks of dynamite of 40 per cent strength. These holes are destined to yield a "crack" which the miner follows with his cutting; the depth of the hole on the "solid" is from 6 to 8 feet. The cutting follows the preceding drill hole. The remainder of the width of the entry or room neck is blasted from

the solid with an occasional undercutting. These back shots all have good chances and would be accepted as safe shots in all mines where coal is shot off the solid. The long holes are, of course, very dangerous and would not be accepted in any other mining region. If these holes were fired with black powder, the danger would, of course, be greatly increased. The parting "rash" is then taken down with pick or wedge; it varies from 18 inches to 5 feet in thickness; it is loaded out in the room-necks and entries, and is used as railroad ballast or gobbed in the rooms.

The mining in rooms, after the neck is widened, is done altogether by shooting off the solid. The advance work is done in the lower bench, and the roof coal is blasted down after the "rash" has been removed

COALDUST: This mine in all places has an extraordinary amount of very fine and very dry coal dust. This dust is caused in a large measure by the soft, friable nature of the coal, by the system of blasting the coal, by the high "topping" required in loading the cars, and by the dry Oklahoma atmosphere. The main slope, on the floor between the rails, has considerable running water at all times.

EXPLOSIVES: Monobel No. 1, a permissible explosive, is used exclusively in the rooms. This explosive is, however, not used in a permissible manner. The average charge used in room-charges is 4 to 6 sticks (1/2 pound per stick). These holes are fired with No. 6 detonator and fuse; the tamping is

done with clay sent in the mine, by the company, in sacks. All shots are fired by shotfirers after the men are out of the mine. There are two of these shotfirers, and they receive in ordinary conditions $19.50 per shift each. They require six hours for firing the shots in 47 active working places; three shots are allowed per place. The price paid for shotfiring after some of the disasters has been as high as $30.00 per man per shift. The explosive used in the entries, room-necks and crosscuts is 40 per cent dynamite manufactured by the Independent Powder Co. of Joplin, Mo. The explosive used in widened rooms is Monobel No. 1. All explosives are sent into the mine in sacks containing 8 to 10 sticks each immediately after the men are lowered; the driver delivers the explosives to the working faces before 10:00 A.M. There are as many sacks as there are working faces, and previous to the explosion there were 47 working places. Some attempt is made at storage by providing wooden boxes for each working place. The detonator is placed in the outbye stick in the hole to be fired and the fuse is laced through the stick; metal (iron) tampers are used, averaging 7 feet in length. The iron scrapers average from 8 to 10 feet in length. A comparison of the length of auger and the length of scraper shows that considerable drill dust must be left in the hole when it is charged. Sometimes 2 or 3 sticks of explosive in the point of the hole remain unexploded after blasting. For further details of blasting methods, see under the heading "mining" above.

ELECTRIC EQUIPMENT: The only electric equipment is a storage battery signal wire arrangement for use in operating the

rope trips on the slopes.

HAULAGE: The mule haulage in the working entries delivers the coal to the partings at the mouths of the cross entries. The coal from the lowest working entries is then hauled by the "little rope" which is operated by an engine on the surface and which operates the rope through a bore hole. This "little rope" delivers the coal to the parting at the foot of the main slope. From this point the coal is delivered 3,400 feet to the tipple by the "big rope" which is operated by a haulage engine in the tipple. This engine is a direct motion, steam operated, double Litchfield (Ill.) engine.

Wooden cars with flaring sides are used, having a capacity of 3500 pounds. These cars are required to be loaded with a "topping" of 18 inches. Because of this topping much coal dust is made in the entries.

LIGHTING: Both oil burning and carbide open lights are used. The oil is supposed to be lard oil, but a large amount of kerosene is used. At one time, after a previous explosion, unbonneted Clanny lamps were used and 70 were placed in service. Shortly thereafter the use of safety lamps was discontinued; and at the time of the present explosion, very few safety lamps were on hand. The firebosses carry an open lamp and a fireboss-type of a Davy lamp.

VENTILATION: The ventilation is maintained by a W. C. Clifford-Capell exhausting fan, 8-feet in diameter and 4-feet wide. This fan is belt connected with an Erie City

steam engine. The engine runs at 278 r.p.m., according to the report of the fireboss, and delivered at the inlet 45,750 cu.ft., and at the outlet 54,000 cu.ft. of air with 1-inch water gauge. According to this same report, the 6th south entry showed 8,640 cu. ft.; the 11th south entry 8,415 cu.ft.; the 12th south entry 4,050 cu.ft.; the 13th south entry 3,622 cu.ft.; the 12th north entry 5,060 cu. ft.; and the 13th north entry 3,995 cu.ft. There were two splits in this ventilation, one split ventilates the south entries up to and including the 11th south entry, the second split airing the 12th and 13th south and the north entries. (See mine map in appendix)

HUMIDITY: ~~The humidification is performed by means of~~ The coal dust was wet by the dust is hose and nozzle. It is claimed that twice each week, each entry and the rooms on are wet down. Two men are employed about 4-1/2 hours in actual sprinkling each day. The size of the hose is 1-1/2 inch, and the water was obtained from sumps and delivered by the mine pump. 2,700 gallons per day was applied. This system, however, was not efficient, as not enough water was applied so that the mine always showed large quantities of coal dust as a continual source of danger.

DRAINAGE: When the mine was working, all places except the main slopes yielded so little water that the places could be kept dry by loading with the coal the little water that formed in the dip workings. The water that continuously ran down the main slope was caught in a sump near the foot of that slope and pumped to the surface by a No. 7 Cameron pump, operated

by compressed air. A second smaller pump collected the water that formed in the faces of the slope and the slope-aircourses, and delivered it to the main sump. This smaller pump was a Scranton duplex boiler feed pump, using 3/4 inch air line and delivering through an 1-1/4 inch discharge. The discharge of the large pump was through a bore hole to the surface.

FIRE PROTECTION: No fire protection on the surface, and none underground except the piping system mentioned above for use in sprinkling the mine. No trained corps for use in emergency.

STORY OF THE EXPLOSION.

LOCAL CONDITIONS: The morning of the explosion was sultry, with a temperature about 80 degrees F. Low hanging heavy clouds. During the day from 6:00 A.M. to 5:00 P.M. there was a change to colder weather with a 30-degree temperature drop. By midnight of the day of the explosion, the weather was freezing cold.

The mine had been idle for 10 days, up to and including March 17. On March 18, all places except the 11th south entry were worked. This place was idle that day because of a squeeze and the necessity for timbering. It was known also that there was considerable gas in the rooms and at the head of that entry. The fan had been in continuous operation during the entire shut-down.

REPORT OF FIREBOSS: (See under ventilation for air

readings). Gas in the following places:

12th south entry, top side room No. 19
11th south entry, top side rooms Nos. 20 and 25 and stub entry.
12th north entry, top side, face.
13th north entry, top side, face and room No. 5.

THE EXPLOSION: The explosion occurred at 9:05 A.M., March 20, 1912, when there were 97 men in the mine. The men had entered at 7:30 A.M. in order to begin operations promptly at 8:00 o'clock. The first evidence of the explosion on the surface was noted by the engineer running the "little rope" haulage. The slacking on the rope led him to believe that the rope had broken; and he at once notified the superintendent. The superintendent then went to the entrance to the main slope and noticed that some coal dust was issuing from the mine opening. A few minutes later 6 men came from the mine via the escapeway (see mine map) and reported that there had been an explosion and that the mine was filled with damps. A few minutes after this two men walked out the main slope with a similar story of a disaster having occurred in the mine.

ALLEGED CAUSES: The current belief of miners at McCurtain is, as follows; and we, the signers of this report, endorse this statement as to the cuase of the explosion:

According to the previously noted report, there was standing gas at the face of rooms Nos. 20 and 25 and at the face of the stub entry on the 11th south entry, upper side. This information was posted on the bulletin board at the mine entrance before the men entered the mine. The mine foreman and

the fireboss held a conference before the men entered and it is supposed that they discussed methods of moving this gas. Evidently the decision was to permit the men to enter, despite the fact that the men would be on the return of any ventilation that might be used to move this gas. This was contrary to the State mining law. It was further evident that when the foreman and the fireboss entered, the foreman remained at the entrance to the 11th south entry to prevent the miners from going home and to hold them in the mine while the gas in their places was being removed. In the meantime the fireboss went ahead to the body of gas and was at work moving this gas with air when the explosion occurred. We believe that this gas was moved into the vicinity of an open light and thus was the cause of the disaster.

RESCUE AND RECOVERY WORK: As soon as possible, the superintendent organized a rescue party and entered with open lights via the main slope. This party proceeded to the 8th south entry where they found 2 men who had been overcome by gas. These men were carried out of the mine and revived. At this point, the party closed the door to the 8th south, which they had found open, and proceeded to the foot of the main slope. From this point, the superintendent proceeded to the sheave wheel of the "little rope" which he found broken. He then returned to the rescue party and all returned to the surface.

Succeeding rescue parties were able, with difficulty, to carry the ventilation up to the 11th south entry just beyond

which they placed a curtain brattice to throw all the air into the 11th south entry. Before entering, however, they heard a groan behind them and on looking found the "little rope" rider lying in a right hand crosscut between the 10th and the 11th south entries on this slope. This man was at once carried to the surface and revived. Other rescue parties were formed and entered the 11th south, building curtain brattices up to the 22nd room. In this manner 9 bodies were located. At this time, W. T. Burgess, with breathing apparatus, from the Bureau of Mines Safety Station at McAlester reached the illfated mine. Mr. Burgess brought with him one partly trained helmet man and, en route, wired for two other trained men to come at once to the scene of the disaster. An additional untrained man Henry Fields was obtained at McCurtain to assist in helmet work. Burgess with the two helmet men entered the 11th south and succeeded in locating 4 more bodies which made a total of 13 found on that entry. The entrance of this helmet party was at about 4:00 P.M. the day of the explosion.

After the 11th south had been explored, as mentioned above, it was decided that while there should be more bodies on that entry, there could be no live men found, and it was decided to investigate the lower working places. The curtain that had been placed across the slope was taken down about midnight. A party then took the air with them and proceeded down the slope exploring as far as and including the slope parting on the 12th south. At this point, a helmet party was called

upon and proceeded as far as the big pump between the 12th and 13th south entries. On the main slope dead men were found about 100 feet above the pump. At the pump one dead man was found with his face directly in the exhaust of the pump, showing that he had tried to save his life by breathing the exhaust air from this compressor pump.

In the meantime, while the bodies already located were being taken out of the mine, and while farther exploration was being carried on in the 12th south and the 12th north entries, 14 men who had been working in the 13th north entry and the lower heading of the 13th south entry at the time of the explosion, were keeping themselves alive by breathing the exhaust from the little compressed-air pump which was in the lower heading of the 13th north, about 30 feet from the main slope aircourse. (See map for location and sketch).

These men had bratticed themselves into an emergency shelter by closing the "creep hole" or sliding door in the stopping above the pump and by erecting a curtain stopping on the other side of the pump. This space as shown on the sketch, offered a place 27 feet long, 7 feet wide and 7-1/2 feet high, in which was a Scranton duplex boiler pump ~~xxxing~~ occupying a space 18 inches x 4 feet about 3 feet from the upper side of the enclosure. A 1-1/4 inch air line was connected with this pump. The men broke an elbow in the feed line pipe because of the fact that the valve wheel had been lost for some time and the valve stem was round on account of previous use of wrenches and thus secured the air direct from the air line. The air pressure

in the compressor room was 60 pounds. This served to keep the men in good condition for a time but 5 hours after the explosion one man died because the steam had been allowed to drop in pressure at the boiler plant on the surface, and the compressor was, therefore, not furnishing the normal quantity of air. This man, however, had been carried into the enclosure in a semi-conscious condition due to the after-damp which he had breathed. The drop in the steam certainly had something to do with his death, because all the men in the enclosure, with only one exception, went "to sleep" or became unconscious about this time.

A little later, however, when at midnight the curtain that had been placed across the main slope at the 11th south was taken down, the men began to revive. Shortly after this, the men thought they heard the rescue party walking on the main slope; but they refrained from bursting out on them for fear of startling them. They thought it would be better to remain in the enclosure until they were found. The sound of the rescue party soon ceased. At about 4:00 o'clock on the morning of March 21, these men thought they heard the rescue party again, and one of the men left the enclosure via the "creep hole" to investigate. He found, however, that it was not a rescue party he had heard working, but a live mule that had been stamping about on the upper side of the 13th north entry. The fact that this mule was alive encouraged the men very much; and they also recognized that the rescue party was at work because they noted that the ventilation was partially restored. Finally, at about

7:00 A.M., the leader of the entombed men decided that it would be safe to walk up the slope to meet the rescue party, and he did so without any mishap. The rescue party at once went to the relief of the other entombed men, and all the latter were able to walk up the little slope to the main slope parting with the exception of five men who had become very weak. Four of the five weak men were carried out on stretchers and were revived. The fifth man, who was unconscious, was picked up by one of the rescuers and carried on the shoulder of the rescuer as far as the main slope parting, where the shock due to the sudden exposure to the fresh air killed him.

It is interesting, in connection with the behavior of these miners, to note (1) that no men on the 13th north or the 13th south lost their lives due to the force or the flame of the explosion. (2) that the six men from these entries who did lose their lives did so because they tried to rush through the afterdamp up the slope immediately after the explosion. Five of these men ran to a point midway between the 13th and 12th entries on the main slope, and the sixth man, who worked in No. 3 room on the 13th entry, upper side, got as far as the big pump on the slope, where he was found with his face in the exhaust as previously noted.

According to the testimony of Mr. Jenkins, who worked in the face of the 13th entry, lower side, he was standing at the face, loading coal into a car at the instant of the explosion. His "buddy", Kokoski, was standing along side the car picking out the rock at the same time. The concussion of the explosion was

sufficient to throw both men to the ground but neither of their carbide lights was extinguished. Jenkins further states that this force threw small pieces of coal violently against his face but not with sufficient force to penetrate the skin. After getting up, Jenkins advised Kokoski not to run; and after securing the dinner pails and coats they proceeded slowly to the slope. In doing so they heard the two upper side entry men running. These men were 2 of the 5 men found dead on the slope about 100 feet above the big pump. On reaching the slope, Jenkins and Kokoski met all of the men who had been working in the 13th north entry. Jenkins was then made emergency leader of the party, and his decision was that all in the party barricade themselves in the pump-room where they would wait for the fresh air to reach them. In the meantime, they would live on the exhaust air of the pump. To this proposition all agreed but four, and one of the four immediately started up the slope. In a very short time three others started up the slope, and these three were found in the group of 5 dead bodies on the slope above the big pump. In a short time, the man who had first left the party returned and stated that the gases were too heavy to penetrate. At this time, Ralph Kinney, rodman for the mining engineer Roper, was found near the mouth of the upper side of the 13th south, and in a semi-conscious condition. He was carried into the barricade and died 5 hours later as previously noted. The final recovery of these men who walled themselves in has been described above.

Such were the conditions as noted by the men who were saved after the explosion who, at the time of the explosion, were

inbye the point of origin.

The following is the story of the men who were saved after the explosion who, at the time of the explosion, were outbye of the point of origin. There were 11 men saved outbye the origin, 6 of these worked in rooms on the 6th and 7th south entries off the main slope, 2 in the 7th south and 4 in the 6th south. The first evidence of the explosion as noted by this party of 6 men was detected by the man working in room No. 6 on the 7th south entry. He noticed an odor of smoke and notified the other man working in room No. 4 on this entry (marked "fallen in" on the map). These 2 men proceeded through the manway to the 6th south following the ventilation through the lower heading of the 6th south and crossing through the last breakthrough of the 6th south where they notified the men working in rooms Nos. 9, 10, 11 and 12 on the 6th south. These 4 men on this entry had not detected the afterdamp. The party of 6 then proceeded by way of the manway to the escape way, arriving on top a little over an hour after the explosion. The other 5 men were found or rescued at various places on the slopes, as follows:-

(1) The story of the "little rope" rider, whose rescue from the crosscut between the 10th and the 11th south entries has already been noted, is, as follows: "I was riding on a coupling between the first and second cars. I had taken this point because of the heavy curtain on the slope at the 12th ~~entries~~ entry. I was pulling this trip from the 13th entry. The curtain at the 12th entry is so heavy that you must get between the cars or it will

brush you off the trip. I am sure that I was between the 11th and 12th entries when the explosion went off. I am sure that the explosion came out the 11th south and passed over me down the slope. The next instant the explosion seemed to come back and beyond taking my glove in my teeth, I don't remember anything more."

(Nos. 2 & 3). These two men, one the 8th south driver and the other a company man who was talking to the driver, were standing inside the door on the 8th south parting. The force of the explosion blew them through the door, which was blown open (in the direction the door usually swings) and both were stunned. When they were found 1/2 hour later, partially recovered from their stunned condition and both were carried from the mine, sick from the afterdamp.

(No. 4) This man worked in room No. 19 of the 11th south and had been at his working place; but due to feeling ill, possibley drunk, he was leaving the mine for the day when the explosion occurred. He was then on the main slope at the 7th south entry. He states that the force of the explosion struck him in the back and threw him forward on his hands, and that he relighted his lamp which had been extinguished and he ran to the top of the slope.

(No. 5) This man was but a short distance inside the mouth of the main slope and was greasing rollers. He was between the 4th and 5th entries. He felt practically no effects from the force of the explosion, and walked to the surface unassisted.

The recovery of the bodies continued actively until the

70th body was obtained from room No. 19 on the 12th north at 7:30 P.M. March 25. This left three bodies still in the mine and all believed to be under heavy rock falls. One of these was recovered from the face of room No. 12 on the 12th north entry top side at 10:30 A.M., April 1. The two remaining bodies were not located at the time of making this report April 3. The delay in the recovery of these bodies was occasioned by continuous heavy falls of rock in the vicinity. The bodies were found at the points indicated on the mine map.

It should be mentioned that the work of recovery was rendered extremely hazardous by the frequent heavy falls of roof and by the presence of large quantities of explosive gas. With the exception of the work accomplished before the arrival of the Bureau of Mines crews, the entire work was performed with the aid of closed lamps (mostly the Wolf lamp being used).

The rescue apparatus brought to the scence of the disaster from the McAlester Station consisted of 6 sets of Westphalia helmets; Car No. 4, in charge of C. S. Stevenson, which had been rushed to the scene from Ottumwa, Iowa, brought Westphalia apparatus; and from this time on the mouth-breathing type of Westphalia was used exclusively. Mr. Stevenson assumed active charge of the rescue work, and it is to his credit that there was no accident of any kind either to the men engaged in the recovery work or to the apparatus worn by them. The longest trip taken by a helmet party, which consisted of 5 men, was on the 11th south entry where the trip from start to finish was 3,000 feet. The inside 600 feet of

this entry was filled with an explosive mixture of marsh gas and air. The apparatus was used in the discovery and the carrying out of 10 bodies from places filled with marsh gas. A party of 5 men carried one body on a stretcher a distance of 1500 feet without a single stop despite the fact that the body had to be carried over a half dozen rock falls.

STATE MINE INSPECTOR'S REPORT: (See Appendix)

CORONER'S VERDICT: A coroner's jury was not impaneled, as this is not required in Oklahoma when the cause of the death is known without dispute.

NOTES OF EVIDENCE OBTAINED BY BUREAU ENGINEERS.

PERSONNEL:

J. J. Rutledge,	Mining Engineer.
R. Y. Williams,	Mining Engineer.
C. O. Stevenson,	Foreman Miner.
W. T. Burgess,	Foreman Miner.
Jesse Henson,	Foreman Miner.
G. W. Salisbury,	First-Aid Miner.

The investigation really started when the work of recovery was started and continued until the evening of April 3, or a total of 14 days. The length of this investigation was occasioned by the open hostility existing between the company officials and the State mine inspection force. During our stay at McCurtain the superintendent was forbidden by injunction from entering his property, and while the Chief state mine inspector and the district inspector were in town, they did not enter the mine. The bureau officials were allowed in the mine only at such times as no other persons were on the inside, which meant that they could pursue their investigations only between the hours of 2 and 4 P.M. each day. Furthermore, their work was entirely unassisted, not even a guide being

furnished for their assistance in exploring the mine.

DETAILS OF EVIDENCE.

11TH SOUTH ENTRY: This entry contained 25 rooms on the upper side, the first 16 were worked out and all were abandoned except room No. 12 which was used as a manway through to the 10th south. This left 9 working rooms and the face of the entry and aircourse. There were no rooms working on the lower aircourse of the 11th south. On the day of the explosion, there were 8 men in the rooms, two in the entry (top side), 2 drivers, the mine foreman and two timbermen in this 11th south entry. This totals 15 men, and all lost their lives due to bad burns and suffocation. Apparently, the flame traversed the entire length of the entry, although some dynamite and Monobel #1 was found unexploded in the slope aircourse near the entrance to the entry. Three mules were killed on this entry, one lying on the entry opposite room No. 14, one lying on the entry between rooms Nos. 18 and 19, and the other about 20 feet inside the neck of room No. 21.

The door at the entrance to the 11th south opened outbye into the slope, and this door was blown open by the force of the explosion and left open, although the door was not damaged. Mine foreman, John Ferrimond was found just inside the door. Two bags of dynamite and Monobel, each bag containing 8 to 10 sticks, were found unexploded in the slope aircourse 10 feet off the 11th south. Lying along side the explosives was a coil of wire wound rubber hose used in sprinkling. 5 loaded cars were on the parting just inside slope aircourse on 11th south. Cars were covered with dust, unburned. Very small evidence of heat on ribs beside loaded

cars. This entry from room No..1 to No. 3 was covered with fine rich dust on the floor, and on the crossbars and in the hitchings. Sample of this dust was obtained over interval of 150 feet and shipped to Pittsburgh in can #21073, R.Y.W. 152 (g) (Lab. No. 13695. Between rooms No. 3 and No. 4 there was a door leading to the bottom entry this door was not blown out, although it opened into the upper entry. It is believed that this is the only door or stopping between the upper and lower side of the 11th south that was not demolished by the force of the explosion. All other stoppings were built of plank, and were blown into the lower entry. Beginning with room No. 4, a fall of rock extends almost continuously to room No. 20. This is evidently the continuation of a squeeze which began on the 5th south entry in 1909 and which at that time spread over the 5th, 6th, 7th and 8th south entries, and which was temporarily checked in the 8th south entries, by dynamiting the pillars.

The following observations were made by helmetmen at the time of the recovery of the bodies; these observations are the opinions of the bureau engineers from their memory of the conditions that they saw at that time; but it was impossible to verify or augment the observations at the time of the investigations because heavy falls had completely blocked entrance into the faces of this entry. All rooms are caved from No. 1 to No.11 inclusive, except that at the face of room Nos. 8 to 11, entrance may be made through the last crosscut in room No. 12, which as above noted serves as a manway to the 10th south. In room No. 12,

two timbermen were found about 50 feet from the entry. These men were badly burned, but had evidently lived some time after the explosion, as both were found face downwards with hands over the face in an effort to protect their faces from the flame. These men were covered with fine uncoked dust; but other than that they were burned, there seemed to be no further evidence of heat.

ROOM NO. 17: Car at face partly loaded, not moved; dust over the gob; no coke; Cleve Fields, miner, body found at face and badly burned.

ROOM NO. 16-1/2 OFF ROOM NO. 17: This room is caved at the neck, but has the upper crosscut opened into room No. 17; line-curtain from room No. 17 carried through the crosscut over the fall in room No. 16-1/2 and lodged in room No. 16; the body of Samuel Hicks found just inside the crosscut in room No. 16-1/2 was badly burned. He worked in room No. 19, and was at stool at the instant of the explosion.

ROOM NO. 17-1/2: This room had been driven from room No. 17 with neck off room No. 17. It had one crosscut at face connecting with room No. 17 and one crosscut connecting with room No. 18. No coke found in this room No. 17-1/2; dust on gob, etc.; car stood 1/4 loaded with slack about 10 feet from face. One miner found at face dead. His shovel was found in loading position in pile of slack on floor. All these rooms are on a pitch of about 10 degrees.

ROOM NO. 18: Body of Dick Wimberley, driver, found about 45 feet from entry. He was badly burned and lying on his

back. He had evidently just taken an empty car to the face, and his mule had preceded him to the entry. This driver was overlooked for several days, and not found until March 24.

ROOM NO. 21: Exposed edges of coal coked; line curtain still standing in position, but burned up to within 18 inches of the top. All curtains from this room to face were completely burned. (See Stevenson for further information as to location of bodies. Room No. 21 to face full of marsh gas.

11th NORTH ENTRY: The door at the entrance to this entry, which opened outbye into the slope, was blown inbye and wrecked. At one time during the recovery work it was thought that two men had possibly been in this entry at the time of the explosion pulling rails from the entry. A ~~hi~~ helmet party, therefore, made an exploration as far as room No. 16 on the lower side and room No. 8 on the upper side; but failed to find any evidence to lead to the belief that the man had entered this entry the day of the disaster. All stoppings in this entry as far as observed were blown from the upper entry into the lower entry. There are evidences of great heat and great force in both these 11th north entries. Heat is especially evident in room No. 4 on the upper side where at the face of the room there was coke 2 inches thick on the floor, and heavy deposits of coke on the inbye side of the timbers. This coke extended back 50 feet from the face, tailing out about 50 feet from the room neck. A sample of this coke was obtained by gathering three (3) pieces, carrying them in a mine cap to the surface and breaking the pieces and placing them in can No. 20850 R.Y.M. 152 (i) (Lab. No. 13694). This region showed prac-

tically the only place where coke was made in any quantity at the time of the explosion. This entry had been abandoned in September, 1911, was standing full of marsh gas at the time of the disaster, was on the last of the air, and had not been examined by the fireboss that day. Along the top entry, from the mouth inbye the force of the explosion had blown the dust into drifts, some of which were 6 inches deep and practically uncoked. The form of the drifts showed that either the greatest force or the last force had been inbye.

12TH SOUTH ENTRY: Edges of shale in roof were whitened by the heat. Small evidence of fusing of the coal faces near the roof. Coke splash on inbye side of projecting face of coal, 20 feet inside of slope. Two loaded cars pushed 40 feet inbye on parting. Outbye ends of cars battered in and heavily coated with uncoked dust. Mining Engineer Roper's body found at outbye end of these cars; he was somewhat burned and mutilated. Mule found 50 feet inside of entry dead. Fused edges on rib coal on outby rib of inby end of pillar between loaded and empty tracks. Man found in dip switch just beyond inby end of passing track. He had died from suffocation. Floor of entry from mouth to room No. 7 was very dry and dusty; pile of timbers in room neck No. 7 undisturbed. Fine uncoked dust splashed on inby rib of room neck No. 8. Roll of fuse, No. 6 caps, found at room neck No. 9. These were unburned. Bag of clay tamping in room neck No. 9. Line curtain from crosscut in room No. 9 to the face undisturbed. Car almost loaded at face; drill hole 5 feet deep in face of this room

which was the point of a previous shot. This was entirely on the solid. Two augers at the face were respectively 8 feet 6 inches and 7 feet 4 inches long. Between rooms No. 9 and No. 10 the curtain hanging across the entry was undisturbed.

ROOM NO. 10: Loaded car at neck; auger 8 feet 6 inches long; point of previous shot 5 feet deep left in solid face. Bag of clay found at neck. Dry and dusty.

ROOM NO. 11: Caved from 20 feet inside of neck to face. Unburned fuse at room neck shows that room possibly had caved after the explosion. Dry and dusty. Two undamaged cars on entry between rooms No. 11 and No. 12. Pail, unburned fuse, coat, and clay dummies on entry 20 feet beyond room No. 11.

ROOM NO. 12: Coat hanging on prop 20 inside room. Two augers, 6 feet 3 inches and 8 feet 10 inches. Car at face partly loaded. No dust noted on the coal in this car. Curtain across entry between room No. 12 and No. 13 was undamaged.

ROOM NO. 13: Marked legally with a dead-line as follows: "X 20 X". No gas found in this room at the time of the investigation. The curtain across entry between rooms No. 13 and No. 14 was undisturbed. Mule found alive attached to car opposite room No. 14 in the entry standing with head in crosscut between the top and bottom entries.

ROOM NO. 14: Caved from 20 feet inside of neck to face. Dry pure coal dust was found on the entry between rooms No. 14 and No. 15.

ROOM NO. 15: Paper, caps, fuse, unburned were found on

left rib near neck. Auger 9 feet 0 inches long was found. Curtain on entry between rooms No. 15 and No. 16 was undisturbed.

ROOM NO. 16: Caps and unburned fuse at neck. Line curtain was undisturbed.

ROOM NO. 17: Just necked. Point of shot 3 feet on solid on left rib.

ROOM NO. 18: Unburned fuse found on left rib near neck. Dry pure dust on gob. Curtain on entry between rooms No. 18 and No. 19 was undisturbed.

ROOM NO. 19: Car partly loaded at face. Line curtain undisturbed.

ROOM NO. 20: Car partly loaded at face. Pails, fuse, caps, coats, 60 feet inside of room. This is the last working room on this entry.

FACE OF ENTRY: Car partly loaded contained check No. 30 at face. Auger 12 feet 2 inches long found here. Gas humming from parting rock.

LOWER SIDE OF 12TH ENTRY: Gas humming from coal at face of entry. Auger 11 feet 8 inches found here. Pail, fuse, pipe, tobacco, matches and caps 60 feet back of face.

ROOM NO. 6: (Lower entry) Water. Heavy, dry, pure, uncoked dust was found between rooms No. 5 and No. 6.

ROOM NO. 5: Water. Four men found on the entry between rooms No. 4 and No. 5 evidently suffocated. On the lower rib there was found for a distance of 10 feet along the entry deposit of coke which, in places, was 3 inches thick. It was covered with dust,

and as there was information to the effect that there had been previously a fire at this point in the mine, it is very probable that this coke was formed previous to the time of the recent mine explosion.

ROOM NO. 4: No track; water. Fine dust was found on rib and floor between rooms No. 4 and 3.

ROOM NO. 3: Water on floor. Dust 200-mesh on outby side of timbers between rooms No. 3 and No. 2.

ROOM NO. 2: No track; water on floor.

ROOM NO. 1: Three inches of dust, very fine and pure on the floor.

SLOPE AIRCOURSE: Door between the slope and slope aircourse at outby end of 12th south aircourse had been blown into the slope aircourse and completely demolished on the opposite rib. On the 12th south entry, upper side, a sample of road dust was obtained over an interval of 150 feet beginning 200 feet from the face of the entry and going outby. This sample was shipped to Pittsburgh in can No. 21074 R.Y.W. 152(d) (Lab. No. 13696). Bottle sample of rib dust taken opposite room No. 16 on 12th south entry.

12TH NORTH ENTRY: Dry rich dust on right rib of upper heading at the junction with the slope aircourse. Small evidence of coking between slope aircourse and room No. 1 on inby side of all bars, and heavy dust on inby projections of coal.

ROOM NO. 1: Very dry rich dust on floor. Caved 20 feet inside neck. Shale roof spalled on edges by heat. Dust on inby

edge of timbers and edges of slate whitened by heat between rooms No. 1 and No. 2.

ROOM NO. 2: Much fine dust on floor. Edges of slate roof spalled by heat. Coke noted on right rib 20 feet beyond frog. This room was abandoned. Great quantity of rich dry dust on floor between rooms No. 2 and No. 3.

ROOM NO. 3: Outby and inby sides of neck coked. Coke on ribs as far as 60 feet from frog. Dry dust on ribs and floor between rooms No. 3 and No. 4. Small evidence of coking on inby edges of coal projections on ribs.

ROOM NO. 4: Large quantities of dry rich dust on floor. Small evidence of heat on inby side of room neck. This room was abandoned and has a large fall of rock at face. Coking on inby exposures between rooms No. 4 and No. 5. It was noted that this coke was covered with dust.

ROOM NO. 5: Coking was noted on outby exposures of right rib. This coke was covered with dust.

ROOM NO. 6: This room was abandoned and much coal dust on the floor. No evidence of heat in this room. Evidence of coking on right rib inby projections of right rib between rooms No. 6 and No. 7.

ROOM NO. 7: Dry and dusty. Wood charred on outby side of timbers. This room was abandoned. Coking noted on inby exposures on left rib between room No. 7 and No. 8. Two empty cars were completely demolished between these rooms. A dead mule was lying just out by room neck No. 8. The force of the explosion stripped this mule of harness and they were found at room neck No.10.

ROOM NO. 8: Carbon filaments were found on ribs in this room. Very dry coal dust on the floor. Abandoned working. Some coke on each rib between rooms No..8 and No. 9 was found. Ribs covered with carbon filaments. Dry dust on floor and ribs.

ROOM NO. 9: Carbon filaments on ribs but no evidence of coking. Abandoned. Edges of shale on roof whitened by heat near left rib between rooms No. 9 and No. 10. Harness for mule was found here as above noted.

ROOM NO. 10: Some coke on outby side of room neck. Carbon filaments hanging from all ribs. Heavy coke on left rib between rooms No. 10 and No. 11. Heading very dry and dusty.

ROOM NO. 11: This was the first working room on the 12th North. Coke at mouth of right rib. This room had a heavy fall in it and the two men yet missing in the mine on this date, April 5th, are supposed to be under this fall of rock. Edges of coal projections rounded by heat between rooms No. 11 and No. 12.

ROOM NO. 12: Evidence of heat on right rib of room neck. The roof of this room fell from neck to face a distance of 80 feet at the time of the explosion, and the man working in the room was recovered from the rock fall at 10:30 A.M., April 1. He was lying by the side of a car about 10 feet from the face of the room. This roof fall extended about 35 feet above the floor and at the time of making this report it was still falling at intervals. Some coke was found on both inby and outby projections between rooms No. 12 and No. 13. At one place of left rib this coke was 1/2 inch thick. The heading here was very dry and dusty. The heat seems to have increased greatly between rooms No. 12 and No. 13.

ROOM NO. 13: Heavy coke on right rib at first cross cut. Timber charred. Heavy coke on inby side of collars. Ribs full of carbon filament. Heavy coke inbye edges of coal projections between rooms No. 13 and No. 14. Fall of rock 4 feet thick, 20 feet long. Very dry coal dust on floor.

ROOM NO. 14: Heavy dust on floor. Carbon filaments hanging from ribs. Evidence of coking on both ribs. Caved at face. Coke on inby projections between rooms No. 14 and No. 15. Carbon filaments hanging on both ribs. Great evidence of heat.

ROOM NO. 15: Position of timbers show that the force was going towards the face of this room. Coke on right rib inby projections. Coke on inby edges between rooms No. 15 and No. 16.

ROOM NO. 16: Great evidence of flame. Carbon filaments hanging from all ribs. Heavy coke in hitchings.

ROOM NO. 17: At the time of the inspection this room could not be accurately examined, due to danger from great masses of hanging rock. From evidence of the helmet party this room showed the greatest violence of the 12th north heading. All timbers were knocked down and empty cars demolished; ribs showed heavy coking and large amounts of carbon filament. A heavy fall occurred between rooms No. 17 and No. 18.

ROOM NO. 18: One man badly burned was recovered from the face of this room, six days after the explosion. He was standing under the top coal loading a car at the instant of the explosion. All parts of the room with the exception of the parts

covered by coal fell at the time of the explosion. There was much evidence of great violence and heat in this room. A heavy fall completely blocked the heading between rooms No. 18 and No. 19 as well as blocking the entrance into room No. 19. All stoppings on this heading were blown from the heading into the aircourse and, at the time of making the investigation, temporary curtain brattices served to maintain the ventilation.

12TH NORTH AIRCOURSE: (Note: Room No. 1 as here numbered was the first room inside of the first dip switch.)

The inby end of the dip switch shows a small amount of coke on both ribs. This coke was on inby exposures.

ROOM NO. 1: Dead mule found at neck with harness hooked to trip of two empty cars. These cars were badly wrecked. Gas rushing from water at face of this room. Evidence of flame at face. Dry dust on floor and ribs between rooms No. 1 and No. 2. Heavy dust over everything but no coking.

ROOM NO. 2: Dry dust on floor and on ribs. No fire at face. Water at face. Gas bubbling from water. Small evidence of coking on both ribs between rooms No. 2 and No. 3. Dinner pail found at this point, the lid of which was found two rooms outby.

ROOM NO. 3: Water at face. Gas bubbling with water. Heavy dust at neck. Roof fall 30 feet from frog. Coal dust on floor between rooms No. 3 and No. 4. Some coke on right rib.

ROOM NO. 4: Extraordinary amounts of very fine dust at neck. Coke one inch thick on outby edges of timbers. Evidence of great heat in this room. Coked gobules on floor. Water at face. Large amounts of gas bubbling from water. Fine coal dust on the floor between rooms No. 4 and No. 5.

ROOM NO. 5: Closed at neck by fall. Roll of scorched paper on right rib of neck. Two bodies were found between rooms No. 5 and No. 6. Scraper bent double by the force of the explosion. Small amount of coke covered with dust at right rib.

ROOM NO. 6: Closed by fall. Large amounts of coke inby edges of projections between rooms No. 6 and No. 7. Carbon filaments on both ribs.

ROOM NO. 7: Loaded car 20 feet inside. Coke on both sides of props. Heavier on the inby side. Coke only on outby side of face; heavy coke on floor. Coke on side of car opposite breakthrough on left. Heavy coking on both ribs between rooms No. 7 and No. 8.

ROOM NO. 8: Just necked; coke on right rib of neck. Carbon filaments and heavy coke from room No. 8 to face. Car, partially loaded, 10 feet from face. Man found by car. Gas bubbling from water at face of entry. Dust and soot over everything. Auger in last breakthrough 11 feet long.

13TH SOUTH ENTRY: An inspection of the stoppings on this heading shows that none were injured by the force of the explosion. All men on this heading lived after the explosion.

But those working on the top heading attempted to reach fresh air by going up the slope immediately following the explosion and lost their lives by suffocation. Four cars inside mouth loaded. Body of Mining engineer Roper found outby end of these cars. No evidence of heat in neighborhood of mouth. Fine coal dust on floor from mouth to room No. 1.

ROOM NO. 1: Just necked. No evidence of the explosion. Two coils of unburned fuse were found on left rib between rooms No. 1 and No. 2.

ROOM NO. 2: Partially loaded car 10 feet from face. Room just being widened. Sack of clay tamping at neck of room.

ROOM NO. 3: Small fall of rock in room. This room was legally dead-lined thus "X 20 X".

ROOM NO. 4: Room No. 4 is the last working room on this heading. (A sketch of the method of undercutting in this room is to be placed in final report from sketch in Stevenson's note book.) Car at room No. 4 off track. Coil fuse unburned at crosscut opposite room No. 4. Line curtain from last cross cut to face of heading in good condition. Empty car 15 feet from face of heading.

13TH SOUTH AIRCOURSE: Line brattice at face in good condition. Car at face one-half loaded. Auger 14 feet 7 inches long found at face. Two boxes with rolls of paper and fuse unburned at neck of room No. 1.

13TH NORTH ENTRY: None of the men working on this entry lost their lives. Slight evidence of the explosion from

mouth to room No. 1. A few timbers lying on the floor at this point.

ROOM NO. 1: Line curtain in room No. 1 undisturbed. Car at neck of room No. 1 almost loaded. No dust on coal. Dry coal dust 3 inches thick on floor between rooms No. 1 and No. 2.

ROOM NO. 2: Auger 10 feet long found in this room; also tamping bar 6 feet long. Two rolls of unburned fuse were found in cross cuts between rooms No. 2 and 3 and opposite room No. 3.

ROOM NO. 3: Loaded car with 18 inches topping in this room. According to the statement of miners, 18 inches was the usual topping used on loaded cars.

ROOM NO. 4: Can of spikes on heading opposite neck of room No. 4. Not upset by force of explosion. Partially loaded car in room with check No. 47. Line brattice was undisturbed from room No. 4 to the face. Dinner pail 50 feet from face with caps in pail. Investigation proves that this was the usual method of carrying caps in the mine. Two augers, 11 feet 7 inches and 13 feet 2 inches long respectively were found at the face. One tamping bar, 7 feet long, was also found at the face. Picks leaning against face not thrown over by force of explosion. Two holes in top coal each 7 feet in depth.

13TH NORTH AIR COURSE: At the time of making the investigation, the aircourse was partially filled with water and

the evidence could not be obtained. However, witnesses state that there was practically no violence and absolutely no heat in the air course at the time of the explosion.

MAIN SLOPE: Main slope extends from the tipple on a westerly course for a distance of 3400 feet and only one man lost his life on this slope. This being the big rope rider who was blown from his trip at the parting at the foot of the slope and drowned in a small sump of water at this point. Those who escaped from this portion of the mine claim that there was no flame but that a force sufficient to blow a man to the floor came from the inby end of the slope.

LITTLE SLOPE: The sheave at the drill hole at the upper end of this slope was broken by the force of the explosion. From the upper end of the little slope to the 11th heading there was no evidence of heat. However, on this portion of the slope many of the timbers were blown outby and the little slope trip was found with six loaded cars between the 10th and 11th headings. One hundred and fifty feet of slack rope was found on this trip which corroborates the statement of Moody, the little rope rider, that he was between the 11th and 12th headings when the explosion came out of the 11th south and struck him in the face. It was evidently a back lash of the explosion from the 12th north that carried this trip up the slope 150 feet and led the hoisting engineer to believe that the little slope rope had broken. At the point on the map marked "Jump Down Fault", a shovel was blown sidewise into an oak cross bar a distance of 2 inches. This

shows that there was considerable violence at this point but evidently the running water on the slope (the only part of the mine sufficiently wet to deaden the explosion) quickly deadened the flame passing up the slope from 11th south and prevented the explosion extending to the upper workings. Several stoppings were blown out on this section of the slope.

There is but slight evidence of heat on the slope from the 11th to the 12th entry. All stoppings both right and left were blown out by the force of the explosion. The greatest force on this section of the slope was outby. All timbers were blown down by the explosion. Stoppings on the right rib were blown into the slope. Those on the left rib were blown into the left slope air course.

All of the stoppings on the right rib of the slope from the 12th to the 13th entry were blown into the slope. Only one stopping on the left rib was injured. This stood in the dip switch just about the junction of the air course of the 12th south entry. This stopping was blown into the left aircourse and demolished on the left rib. Twenty feet inby the lower end of this dip switch was a number 7 Cameron pump, operated by compressed air at 60 pounds pressure. This pump continued to operate after the explosion and one man was found with his face in the exhaust, having attempted to save his life in this manner. On the outby end of this dip switch on the slope, 5 men were found in one group. All of these had worked in the 13th south heading and had lost their lives by suffocation. From the 12th to the 13th

headings the floor is thickly covered with timbers, spray pipes, rock and coal, all of which were thickly covered with uncoked dust. At various places along this slope there was a slight evidence of fusing of the coal on the ribs.

This portion of the slope from the 13th to the face was but slightly damaged. The face of the slope was about 170 feet beyond the aircourse of the 11th south and was filled with water at the face. Gas bubbled from this water in such an amount that it was mistaken for a time by the investigating party for the discharge of the compressed air line.

Note: A sketch of the little pump room in which 13 men barricaded themselves and saved their lives is to be given in the final report from sketches in Stevenson's note book.

CONCLUSION: It is the opinion of the signers of this report that the explosion originated in the 11th south entry, when the fire boss brushed a body of gas out upon the open lights of the miners who were waiting on the entry for their working places to be cleared of gas. The gas explosion which resulted was augumented by the coal dust on this entry.

The force and flame passed out the 11th south to the main slope and across the slope to the 11th north. Progress up the slope was impeded by the running water on the floor of the slope. The part that crossed the slope was again propagated by coal dust near the entrance of the 11th north entry; this fuel was sufficient to carry the flame into a body of gas farther in on this entry which exploded with great force. The force passed

through the 12th north seeking the oxygen in the entry and blowing out all the stoppings, and then passed out of the 12th north and up the main slope overtaking the morning inside trip and wrecking it. The wet floor of the main slope and the several feet of water at the parting caused the explosion to cease at this point. The mine workings, especially the 11th south, inby the parting, were filled with afterdamp after the explosion.

ED BOYLE'S MINE REPORT.

State Mine Inspector on McCurtain Mine Disaster.

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OFFICIAL REPORT OF CHIEF INSPECTOR ED. BOYLE OF THE McCURTAIN DISASTER WHICH HAPPENED MARCH 20th, 1912.

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McAlester, Okla., May 6. ---

On Wednesday, March 20th, at about 9 a.m. an explosion occurred at Mine No. 2 of the Sans-Bois Coal Co., located at McCurtain, in Haskell County, Oklahoma, which was the most destructive to human life, when we consider the small damage done to property.

While the explosion snuffed out the lives of seventy-three men, the bodies have been recovered. The damage to the property was hardly noticable. The state law of Oklahoma makes it the duty of the management of all mines generating gas, or commonly known as fire-damp, to employ fire bosses to examine the mines carefully before the miners enter the mine, (See Sec. 1, Art. 6, Senate Bill No. 26).

In No. 2 Mine, which is operated as a slope mine, the coal dips at about an average of ten degrees. The slope is driven down this dip for a distance of about 3000 feet, when the dip of the coal takes a turn almost right angles to the main slope and another slope is driven on this dip for the distance of about 1000 feet.

The rope on the small slope is operated through a drill hole to the surface where an engine pulls up the coal cars at the parting which is

located at a point between the ninth and tenth lift. The mine is ventilated by an eight foot fan, Capell make, which was throwing about 46,000 cubic feet of air into the mine which was sufficient to ventilate the mine, if it was properly distributed.

The mine has been in operation about nine years and has been known as a dangerous mine, as it has exploded before this, which makes about the seventh explosion that has occurred since this mine has been in operation, causing the loss of life each time. Accordingly, the mine which is described above, consists of two sides, the north side and the south side.

The company employed two fire bosses, John Kokoske on the north side and Frank Crooks on the south side to examine the mines.

On the date of the accident the fire bosses' report book shows that Frank Crook discovered gas in the eleventh south top entry and in room twenty five of the eleventh south entry, room twenty-five being close to the face of the entry, and in room nineteen, twelfth south top entry, and in the eleventh south stub entry.

In this mine, as in other mines, where the ventilation is carried to the face of the entries from the last cross-cuts by brattice cloth, this cloth is usually torn down when the shots are fired at night and consequently the ventilation is disarranged. It is the duty of the mine management to restore the ventilation before the men go into the mine in the morning.

On the date of the explosion it was evident that the fire-boss Frank Crook did not have time to do this before the time for the men to enter the mine at 7:30 a.m. and he took a chance to restore the ventilation after the men were in the mine as their bodies were found on the eleventh south entry

with their coats and dinner pails in their hands,mute evidence, that they were told by the fire-boss to stay out of the entry until he would drive out a little gas that was standing at the face of the entry. He either lit it himself, or drove it out with the mine air to room twenty-one where some men were loading a car and probably lit it. In fear of losing his job, or under-estimating the amount of gas in the places and allowed those poor men, who placed implicit confidence in his judgment, to enter the mine, when he should have put a dead-line on the south of the slope and proceed to make the mine safe, as the law directs.

There is no doubt but what the initial point of the explosion was on the eleventh south entry, as the canvas used for brattices was charred to a crisp and the bodies were badly burned. The fire came out through the room cross-cuts, crossed the slope and entered the eleventh north entry, abandoned, which was connected with the twelfth north entry by rooms which had been driven up. There was evidence of great force at the twelfth north where the explosion came back on the slope throwing a trip of loaded cars which were standing on the twelfth north parting out on the slope. From indication the force of the explosion came up the slope towards the big parting, where it evidently died out. According to eye witnesses there was only a little puff of dust came out the slope entrance and the fan was not stopped.

On the morning of the twentieth, from the information we could glean from the survivors and others, there were ninety-seven men entered the mine. Of those men, six came out the man-way, three came out the main slope alive, and thirteen men were found alive the next morning in the thirteenth

north entry where they had the good judgment to take refuge in the pump-room and broke the air connection and was revived by the air.

The men on the thirteenth south rushed out and tried to get up the slope but were suffocated from the after-damp, and died on the slope. There was no evidence of explosion on the thirteenth north, or the twelfth south.

There was evidence found where this company was disobeying the state law in regard to mining, (See Sec. 1, Art. 5, Senate Bill No. 26.), which says cross-cuts for ventilation in gassy mines must be made thirty feet apart, and the inspector insisted on this rule at this mine, but as soon as he was gone, it seems that this company would make cross-cuts forty feet apart and in some instances, such as the twelfth south, the face of the working places was sixty feet in advance of ventilation, and the thirteenth south entry was also found to be sixty feet in advance of ventilation, and room nineteen was more than seventy feet in advance of cross-cuts.

As it is my desire to make known to the general public the causes leading up to this disaster, I desire to call their attention to the following which is a part of the Mining Law found in Sec. 6, Art. 1, of Senate Bill 26, which reads as follows: "It shall be the duties of the District Inspectors to examine all the mines in their respective districts as often as necessary and not less than once in every three months; provided that the mine committee shall have authority to call the Mine Inspector at any time in cases of emergency to see that the requirements and provisions of this act are strictly observed and carried out".

The public can readily see that it is impossible for the Inspector to be at the different mines in his district on each working day, as there are about sixty mines in each district, it keeping him very busy to make the inspections as provided by law every quarter, and as all mines that generate gas, can change from a safe to an un-safe condition in a few hours; therefore the law requires qualified men for superintendents, mine-foremen and fire-bosses, and the law plainly defines the duties of each, and the men under their charge trusts their lives in their hands, and with proper care and diligence on the part of each, such accidents as occurred at McCurtain and in other coal mining fields would be almost unknown, but the mining laws are like all other laws, will never be rigidly enforced, until such time as the state, or county officials, have the hearty co-operation of the citizenship of every community.

Nothing but moral and practical men should hold the positions as superintendent, mine foreman and fire-bosses in this, or any other state.

The fire-bosses should be protected by law, and any mine-foreman, or superintendent, found obstructing him in the performance of his duties should be subject to a heavy fine and imprisonment, and have his certificate revoked, as I feel sure that many fire-bosses are taking long chances, and endangering the lives of men and property under the threat of being discharged should he stand, at all times, for strict enforcement of the law, and performing the duties envolved upon him.

ED BOYLE

Chief Mine Inspector of Oklahoma.