DEPARTMENT OF THE INTERIOR,
BUREAU OF MINES,
Pittsburgh, Pa.

A B S T R A C T O F R E P O R T
Of
Explosion
At
Abernant Mine,
Abernant, Ala.,
Aug. 13, 1912.

Report by E. B. Sutton.
Abstract by W. J. Fene.

Mine: Abernant. Operator: The Abernant Coal Co.
Location: Abernant, Tuscaloosa County, Alabama, on the Louisville & Nashville R.R.
Date of Disaster: Aug. 13, 1912, 10:30 A.M.
Investigator: E. B. Sutton.
Date of Investigation: Aug. 15 to 24, 1912.

* * * *

Nu ber killed: 18.
Ignition due to: Open light.
Propagation due to: Gas and coal dust.
Extent of propagation: Confined to 14th and 15th right entries and aircourses, and the slope inby the parting to the 15th right entry.
Primary cause of Explosion: Negligence on part of mine officials, in not having abandoned workings inspected for gas and fenced off.

NATURAL CONDITIONS.

Output: 300 tons per day.
Coal Bed: The Jegger seam, averages 6'6" in thickness. The seam is badly broken by partings, 16% of the seam mined being waste material. The roof and floor is a slate.
Moisture: The coal and roof are naturally moist. Most of the entries are moist and in places water was standing. 15th right entry was very dry for a distance of about 750 feet from the face.
Gas: The mine makes dangerous quantities of gas.
Development and Mining: The mine is opened by a slope, which follows the coal and has a grade of about 25%. Double entry, room and pillar systems of mining is employed. Rooms are driven by the pitch at about 45 deg. with the strike of the seam. The mining is all done by hand in a soft coal lying between two partings.
Explosives: Permissible explosives used. The shots are tamped and fired by shot firers after the men are out of the mine.
Haulage: By mules and slope hoisting engine. Two ton capacity wooden cars are used.
Lighting: All miners, except heading men, use open lights.
Ventilation: By a 7' x 20', force and non-reversible Crawford-McCrimmon fan; delivering 38,850 cu. ft. of air at 44 revolutions per minute.

Humidity: Very little attention was paid to artificially humidifying the mine. Water lines were placed in 14th and 15th right entries, but were seldom used.

Drainage: Drainage is affected by six Cameron pumps. The water is collected in sumps along the slope, when the water from higher levels is caused to drain.

STORY OF THE EXPLOSION.

The explosion occurred at about 10:30 A.M., resulting in the death of 18 men, all negros. Of this number, six were badly burned and eleven showed no signs of burns or violence, and this death was due to suffocation. One other man, after repeated efforts to penetrate the afterdamp, took refuge at the face of the aircourses of the 14th right entry, and at about 1:00 P.M., August 13, succeeded in escaping unassisted.

The explosion was caused by the ignition of a body of gas in room No. 11 on the 15th right entry. This was an abandoned room and had been driven 195 feet and had only one cross cut into room No. 10.

It is the opinion that the laborer who worked in room No. 8, who was found at the mouth of room No. 11 badly burned, had gone into the room and accidentally ignited the gas with his open light.

Rescue and Recovery: Immediately after the explosion, rescue and recovery work was begun. Seventeen bodies had been recovered during the afternoon of August 13, and one man had made his escape. On August 14, an exploring party found a man in the 14th right aircourse, still alive, but in such condition that he never regained consciousness.

PRELIMINARY REPORT

of

Aug. 13, 1912.

EXPLOSION AT ABERNANT MINE

of

THE ABERNANT COAL COMPANY

ABERNANT, TUSCALOOSA COUNTY, ALABAMA.

by

Edgar B. Sutton.

Feby. 7, 1913.

Comments on the Abernant Explosion, August 13, 1912, based on the Report of E. B. Sutton.:

Time of Occurrence: 10:30 a.m., Aug. 13, 1912.

18 dead, one of whom lived until Aug. 17, without recovering consciousness.

1 escaped by his own efforts 2½ hours after the explosion, having taken refuge at the head of the 14th right ~~entry~~ aircourse.

The facts reported by Mr. Sutton would indicate that the explosion originated in room 11 on 15th right entry, which room had been abandoned and was 170 feet ahead of the last breakthru on the return side, but the room had not been fenced off, or the fireboss had not reported gas in the room on the morning of the explosion.

The mine makes a large quantity of water, the coal and roof being naturally moist, with the exception of the 15th right entry for a distance of 750 feet back from the face. In other parts of the mine the dust was damp and packed and much water in places.

The mine was known as a gassy mine. In 1906 a fire occurred within the mine following some shots, which was temporarily closed off, and when opened exploded, killing one man and severely burning another man.

The manway is used as the intake, the main haulage way being the return.

The cars permitted coal to fall off and ~~often~~ through openings.

"Monobel" used to the extent of 1/5 lb. per ton of coal produced. 4½ lbs. the maximum quantity allowed each miner per shift. #6 detonators used, often found in box with Monobel.

Shots are loaded by, and fired, by shotfirers at night.

Open lights used in all parts except headings which are in advance of the ventilation.

Poor distribution of air at working places, owing to leakage of stoppings, and line stoppings poorly installed.

Continuous current ventilation system shows 38,850 ft.

on main return air, and only 1980 cu. ft. on 15th right. Poorly constructed rock stoppings on main slope.

Abandoned rooms are not properly ventilated or fenced off.

Water pipes on 14th and 15th right had not been used for several months prior to explosion, although requested a week before by the state inspector.

The absence of breathing apparatus and trained rescue men probably caused the loss of 9 lives on the 14th right.

Room 8 on 15th right as being the probable point of ~~return~~ origin is well refuted by Mr. Sutton.

The recovery of the mine was done by men using open lights. No effort made to explore to locate any fire.

On the afternoon of day of explosion 17 bodies had been recovered and one live man escaped. Further search was postponed to the following day, when a live man was found on 14 right air course, but who failed to survive. The dislodgement of a solid pillar of coal 2 to 4 feet thick at face of room 11 on 14th right permitted afterdamp to enter 14th right and suffocate 9 men.

The details of the physical condition of 15th right entry and aircourse, and rooms ~~from~~ off 15th right entry are very complete, which fully sustains Mr. Sutton in his conclusions as to the origin of the explosion.

The localization of the explosion seems to have been governed by the wet condition of the mine outside of the immediate vicinity of its origin.

The position of the charred and coked dust as indicated by Mr. Sutton in his report affords opportunity for scientific study of the explosion.

The ventilation of the mine apparently needs complete overhauling, and safety lamps appear to be a necessity for future safe working of the mine.

A synopsis of the report, or a copy of same, might to advantage be furnished the operator and the chief inspector of mines.

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TABLE of CONTENTS.

Introduction.

On August 13, 1912 at about 10:30 a. m. an explosion occured at the mine of the Abernant Coal Company, by which eighteen (18) men, all negros, were killed. Of this number six (6) men were badly burned and death followed soon after the explosion. Eleven (11) men showed no signs of burning or violence and their death was due to suffocation. One man, Henry Duncan, was found by the rescue party at about 8:15 a. m. August 14, 1912 and removed to his home, where he was cared for until Friday morning August 16, 1912, at which time he was removed to the Birmingham General Hospital. He never regained consciousness and died early Saturday morning August 17, 1912. This man was not burned nor did he show any sign of internal injury. One other, William Yancey, after repeated effort to penetrate the afterdamp, took refuge at the face of the air course of the 14th right entry, and at about 1:00 p. m. August 13, 1912 succeeded in rescuing himself.

Location of mine.

The mine is located at Abernant, Tuscaloosa County, Alabama. The mine is reached by the Louisville and Nashville Railroad and is about seven eighths (7/8) of a mile south of Yolande, Alabama, the nearest freight and passenger as well as telegraph station.

Ownership and Operator.

The mine is owned and operated by the Abernant Coal

Company, being owned principally by J. B. McClarey, President, J. E. Dilsworth, Superintendent, and Sam Dilsworth. The mine was first opened in the spring of 1902 and has worked continuously since this date with the exception of the usual summer dullness. An average of three hundred (300) tons output is maintained.

From time to time since the mine has been in operation, men have been burned by gas but none fatally. The Yolande Mine, about one mile distant, exploded on December 16, 1907 killing fifty-six (56) men, and again in November 1910 when five (5) men were killed. The Davis Creek Mine, about one and one half ($1\frac{1}{2}$) miles distant, has never experienced an explosion but has frequently burned men. All these mines are working the same seam.

Mr. J. E. Dilsworth is the superintendent, Mr. J. E. Ross the mine foreman, and Mr. Jake Fletcher the fire boss.

Geology and General Features.

The mine in question is developed on the Jagger Seam, the bottom most seam except one of the Mary Lee Group. The Ream Seam is directly under and the Blue Creek Seam directly over the Jagger Seam. The Jagger Seam is, however, the only seam worked in this district and out crops at water level.

The seam is of a rather uniform thickness varying, however, from five to seven (5 to 7) feet and has an average

thickness of six feet six inches (6' 6"). The coal is, however, badly broken up by partings, there being seven in number varying from one inch to four inches (1" to 4") in thickness. A section of the seam is herewith appended, Fig. 1.

Coal.

The coal is bituminous and fragile, crushing easily from the ribs when weight comes upon them. That portion of the seam marked 10 Fig. 1, is particularly soft and in it the miner does his mining. The coal has no noticeable cleat so that no attention is paid to it in laying out the workings. Sixteen (16) per cent of the mineral mined is waste, this constituting the partings in the seam, An analysis of the coal is herewith appended.

Roof.

The roof is slate and in general is excellent, needing little or no timbering on the entries. In rooms and on entries at partings to rooms, however, the roof falls in layers, being caused undoubtedly by the cutting of gas. Props are kept as close to the face as practicable and so placed as to maintain a roadway of about nine (9) feet. The waste rock is gobed behind the props forming the roadway and in many cases these props are used for carrying line brattice to the face.

Floor.

The floor is also slate underlain with sandstone.

It is smooth and forms a very good bottom from which to load. The floor does not heave.

Moisture.

Both coal and roof are naturally moist. The mine makes considerable water, and as the strata dips about sixteen (16) degrees, there is at all times water flowing down the slope and manway. The air, which travels into the mine thru the manway, absorbs a portion of this water and this in a measure accounts for a fair degree of moisture on ribs and in the gobs thru out the mine. However, entry fifteen (15) right was very dry for a distance of about seven hundred and fifty (750) feet from the face. Other entries were moist enough to cause the road dirt to become well packed, or to form mud, and in places water was standing. Psychrometric readings and calculations are herewith appended.

Gas.

That the mine made gas was not denied, but little effort was made to keep the mine free from gas, other than supplying the mine with ample air from the fan. This topic will be treated more fully under ventilation.

An opportunity was given the writer to approximate the quantity of gas given off by the mine on the evening of August 15, 1912, when he in company with Mr. J. E. Ross, mine foreman, Mr. M. P. Hendrix, and Mr. T. L. Brown, gas bosses

entered the mine for the purpose of moving a body of gas which had accumulated in the 13th right heading. This condition was due to the dislodgement of a board stopping, between air course and entry, a short distance inbye room 13. At room 22 the presence of gas was indicated on the Wolf lamp and it was decided that to go further would result in the extinguishing of all safety lamps. Four samples of air were taken at this point which is approximately five hundred (500) feet from the face. Upon analysis these samples show a range in the per centages of methane of from 4.49 to 7.60 per cent. It is logical to conclude that the greater portion of this volume of gas had accumulated since the time of the explosion, a period of sixty (60) hours; and also that there were even larger per centages in-bye this point as all the rooms are being driven against the dip.

Again on August 23, 1912 the 14th right entry was reported standing with gas for a distance of about five hundred (500) feet from the face. The writer in company with Mr. Frank Hillman, Deputy Inspector for the State of Alabama entered the area to make examination. At the mouth of room 13 the Wolf lamp was extinguished and here two samples of air were taken which show by analysis 9.20 and 10.11 per cent methane. This quantity of gas had accumulated in opposition to the ventilating current, for all stoppings had been temporarially repaired on this entry.

Gas feeders were encountered frequently. In one case a feeder was detected in the roof of room 6 on entry 15, and an-

other was detected, by the sound, behind a gob in the air course of entry 15 right.

The management knew that the mine made dangerous quantities of gas which was evidenced by the fact that line brattice was placed to almost all the face workings.

Development and System of Working.

The mine was opened by a single entry or slope, which follows the coal and has a grade of about twenty-five(25) per cent. The manway, to the left of the slope, is used as the intake airway. Double entries are driven right and left of the slope or with the strike of the coal seam. The system of gaining the coal is the room and pillar method, the rooms being driven at an angle of about forty-five (45) degrees with the strike of the seam. The rooms are driven twenty-five feet wide with a thirty (30) foot pillar standing. Room necks are driven nine to ten (9 to 10) feet wide and at about eighty (80) foot centers, and at about twenty-five (25) from the entry widen out to the room width.

This system gives a level haul on the entries from the rooms to the slope, and in the rooms a grade of about twelve and one half ($12\frac{1}{2}$) per cent in favor of the loads. A sketch of entries 14 and 15 right showing the characteristic method employed is appended (Fig. 3).

Mining.

Fig. 2 is herewith appended to show the method of

mining. The mining is all done by hand in a soft coal lying between two partings (marked 10 Fig. 1). A cut of four and one half to five (4½ to 5) feet is made. That portion of the coal seam above the cutting is blasted down in advance of the portion under the cutting by at least one cut. This system is locally termed bench mining. The miner after mining the middle coal, blasts the upper bench down. He then cleans the coal from the lower bench and loads it into the car. Lifting shots are then placed in the lower bench. Three holes are usually placed in the upper and lower bench as shown in the sketch. The holes are one and one half (1½) inches in diameter and never over six (6) feet in length.

Considerable fine coal and coal dust is evidently made by the blasting,as the large quantity of fine dust on the goaves would indicate. Also the 15th right entry inbye room 8 has much rich coal on the road, which was evidently lost in transit from the cars. A sample of road dust was taken at the mouth of room 12 and the analysis is appended.

Explosives.

A fair average, taken over a period of about thirty (30) days, showed that about one fifth (1/5) of a pound of Monobel was used per each ton of coal mined. The daily consumption of powder, by which an output of about three hundred (300) tons is gained, is from fifty to sixty (50 to 60) pounds. This mine has used permissible powder from the time permissible powders were first introduced, and prior to the manufacture of

Monobel, Carbonite was used.

Each miner is permitted to take into the mine not more that four and one half (4½) pounds of powder daily. The explosives used in the mine must be those approved by the company, which is Monobel. In only one instance did the writer find a violation of this rule, in which case one box contained twelve (12) sticks of Monobel. No. 6 detonators are used and not infrequently was it found that detonators and explosive were stored in the same box in the mine.

The company's supply of explosives is stored in a wooden magazine covered with corragated iron. Explosives and detonators are handled thru the store and the miner carries them into the mine.

Shooting is done thru out the mine at night by a shot firer, who examines the holes and charges them; the miner prepairing the charges and placing them in a convenient place for the shot firer. No one is permitted to shoot during the day shift.

Haulage.

Coal on each entry is delivered to the parting by mules from which point it is taken to the surface by the slope hoisting engine. Four to six (4 to 6) cars make a trip. The empty cars are returned to the mine by gravity carrying with them the rope. The cars are constructed of wood and when empty and new weigh about fifteen hundred (1500) pounds,

having a capacity of two tons. Most of the cars are in such condition as to permit the loss of small coal from them while in transit. The slope is equipped with forty (40) pound rails and the rooms and entries with twenty (20) pound rails. The guage is forty (40) inches. The roadways, except for a distance of about seven hundred and fifty (750) feet from the face of the 15th right entry, were damp, and little coal dust was evident on the road in those portions of the mine traveled by the writer. However, in places, the goaves were coated with a fine coal dust which was fairly dry.

Lighting.

No electric lamps were used in the mine. All miners, except heading men, used open lights; some carbide and others oil. When a pair of entries would become sufficiently advanced ahead of the air to make the use of naked lights dangerous, it was the custom to work these portions of the mine with safety lamps. The bonneted Clanny is in use at the mine.

Ventilation.

The mine is ventilated by a continuous current. The air is taken into the mine thru the manway and at the first entry to the left, it is directed, by stoppings, up the entry, ventilating the room enroute, and returns to the manway thru the aircourse. After the left workings have been ventilated , the air is carried across the slope at the 15th left aircourse and directed, by brattice across the slope, into the aircourse

of the 15th right entry. The air then returns thru the 15th right entry, ventilating the rooms enroute, to the slope, and its direction is regulated, by brattice across the slope, so as to travel each entry to the right of the slope before returning to the surface.

The mine is ventilated by a force and non-reversible Crawford and McCrimmon fan, seven by twenty (7x20) feet and at forty-four revolutions delivers 38,850 cu, ft. of air. This reading was taken in the main intake at a distance of about one hundred (100) feet from the fan. The ventilation in the inner workings was, however, very poor and it is the opinion of the writer that the condition he saw, was not due to a marked degree to the explosion. In the aircourse of the 15th right entry, where the full quantity of air should have been traveling, anamometer readings showed that only 1,980 cu. ft. were traveling. This condition was brought about by neglect upon the part of the officials to keep the stoppings on the slope in proper condition. Not infrequently was it found that large quantities of air was leaking thru the stoppings between manway and slope, these stoppings being in all cases so far distant from the seat of the explosion that the force of the explosion could have damaged them but little.

It is quite obvious, due to the enormous loss of air along the slope, that the face workings were receiving very little air. The supply of air at the face was further reduced by leaky stoppings along the entries, which were built of

rock, being sealed with no material other than dust and dirt. The frequent use of brattice across the entries at regular intervals, placed there to cause the air to travel the rooms, was also evidence of the fact that insufficient air was traveling. Line brattice to the face of rooms was much in use and undue reliance was placed upon this method of ventilation.

All rooms are driven against a pitch of about seven (7) degrees and gas generating would naturally find its way to the face. Descensional ventilation, the system in use, would find it quite difficult to move this gas had there been sufficient air traveling.

It was noticed thru out the mine that rooms that had been abandoned were not in all cases fenced off and in no case was brattice placed so as to cause the air to travel thru them. Brattice placed across the slope and entries to change the direction of the air current were suspended from timber placed against the roof, the sides and bottom of this canvass was loose to give greater convenience to haulage. Most brattice was found torn which was caused by the canvass becoming entangled about the cars in transit. These were not kept in repair and in consequence much air was lost on the slope and on the entries little air was forced into the rooms.

Humidity.

Little or no attention was paid to artificially humidifying the mine, altho there was little need for it in most parts of the mine. Water lines were, however, on entries 14

and 15 right, but it was admitted that they had not been used for a period of several months prior to the explosion. Steam was not introduced into the intake air.

Drainage.

The drainage of this mine is effected by six (6) Cameron pumps. The water is collected in sumps placed at points along the slope into which the water from higher levels is caused to drain. Two No. 6 and two No. 8 Cameron pumps deliver the water from sumps in the inner workings to sumps nearer the surface, from which it is pumped to the surface by a No. 9 and a No. 10 Cameron pump. A four (4) inch steam line is hung along the right rib and near the roof of the slope (return airway) and by radiation and numerous leaks renders the return air uncomfortably warm. Prior to the explosion, the mine was making water in such quantities that the pumping equipment was unable to remove the entire quantity, and the 16th right heading and aircourse, as well as the slope and its aircourse from the face to the mouth of the 16th right aircourse, was filled with water. At the time of this investigation, due to injuries to the pumping equipment caused by the explosion, a considerable quantity of water was flowing down the slope and the water had risen to a point only a few feet inbye the 15th right aircourse. One pump had been entirely covered.

Fire Protection.

Fires were not detected in the mine as a result of the explosion. However, in August 1906 this mine experienced a fire

which resulted in the death of one negro and severely burned one white man. Two other men were slightly burned. This fire, it is claimed, resulted from the ignition of several feeders of gas at the face of the 10th right aircourse at the time of shooting (four o'clock in the afternoon). It was not discovered until three o'clock the next morning at which time the fire boss was making his tour of inspection. The policy of sealing the area was immediately decided upon and at a distance of about sixty (60) feet from the faces, brattices were erected across the entry and aircourse. Later dams of board and clay were erected and the area flooded. The aircourse has an elevation slightly lower than the entry. When the water had reached a height sufficient to fill the aircourse and about three (3) inches was standing in the entry, leaks in the stoppings developed, which permitted the escape of an equal quantity of water to that being forced into the area. After a period of from eight to ten (8 to 10) days, it was decided to again open the sealed area and the stopping across the entry was taken down. Air was conducted into the area by line brattice. It is now accepted that a smoldering fire was present in the last break thru above the level of the water. An explosion occured with the results above mentioned. The mine was idle for a period of three or four days after this explosion during which time concrete stoppings were erected and the area again flooded.

At the time of this investigation there was no apparatus at the mine for fighting fires nor were any of the men trained in the use of breathing apparatus.

Local Coditions.

The office of the Weather Bureau at Birmingham, Alabama reports that the condition of the weather on August 13, 1912 was about normal. The barometer rose from 29.35 inches at 2:00 a. m. to 29. 50 inches at 9:00 a. m. at which time it started to fall.

The mine was working and the fan had not been idle for some time prior to the explosion.

Mr. W. R. Ray, Deputy Inspector of the Fourth District made an inspection of this mine on August 5, 1912. A copy of his report to Mr. C. H. Nesbit Chief Mine Inspector is given herewith.

> "Mine rules posted; clay sent into the mine for tamping; miners supplied with boxes; moisture medium; there is some fine coal and dust on the 15th left and 15th right and 14th right entries. Recommend these to be sprinkled and cleaned up and fine coal to be loaded out; ventilation good and well conducted through working places; have good quantity of timbers on yard but the QUALITY is bad, being too small for the length; recommend that larger timbers be furnished miners; miners are timbering fairly good; stretchers, blankets, etc. are kept at mine; MF and FB have certificates of competency; old works are examined and fenced off; men are required to travel manway; machinery is in very good condition; the temperature of this mine is something fierce; it is too much for men to work in on account of steam lines and pumps; would suggest that compressed air be supplied instead of steam."
>
> Signed R. R. Ray, 4th Dist. Insp.

A note was appended to this report by Mr. C. H. Nesbit as follows:

> "Please read the report carefully. Will you have the recommendations carried out? Please advise particularly with reference to the suggestion that compressed air be supplied instead of steam. I am holding this report in abeyance to hear from you."
>
> Signed C. H. Nesbit, Chief Mine Inspector.

The Explosion.

This explosion was caused by the ignition of a body of gas in room eleven (11) on entry 15 right. This room which was driven one hundred and ninty-five (195) feet had only one cross

into room ten (10) and that was only twenty-five (25) feet from the entrance. It was admitted by the management that this room was not fenced off, and there was no evidence of a fence being at its entrance. The room had been abandoned.

The room, as it is,advanced one hundred and seventy (170) feet with no cross cuts into room 10, ascending against a pitch of seven (7) degrees, and being ventilated by a descensional current, formed an ideal place for the accumulation of gas. It is the opinion of the writer that Kid Clark, who was found at the mouth of this room badly burned, and who was laboring for Ernest Sherrod in room 8, and who had worked in this part of the mine not more than two day, had gone into room 11 for some purpose. At a point about half ($\frac{1}{2}$) the distance from entrance to face of this room an oil lamp was found in the roadway and about one third (1/3) filled with oil. This explosion was propagated by coal dust and coke was found in considerable quantities.

At the time of this explosion there were seventy-eight (78) men at work in the mine. Of this number ninteen (19) men were at work on entries 14 and 15 right and two on the slope inbye the 15th right entry. All the men on the entries were killed except one and the men working on the slope made their escape thru the 15th left entry to the manway. There was one mule on the 15th right entry and two on the 14th right entry. Two mules were killed by the explosion.

Had this mine been equipped with breathing apparatus

and had there been men trained in its use at the mine, there is little doubt but that the nine (9) men killed on the 14th right entry would have been saved. The fan was in no way damaged by the explosion and the passage ways were in no way obstructed, so that an exploring party, equipped with breathing apparatus, could easily have gone from the surface to the men on this entry in half (½) an hour.

Alleged Causes.

At the time of this investigation, the management was attempting to assign room 8 as the point of origin of this explosion. It is maintained that on the morning of August 13, 1912 Ernest Sherrod purchased three (3) sticks of monobel. It is also maintained by shot firer and fire boss that at the time they visited this room, all coal had been loaded out and the face had not been shot the night before. By these facts it is hoped to be able to prove that Sherrod shot in violation of the mine rule and in so doing ignited what gas there may have been in the room, causing this explosion. Upon examination of this room, it was found that the face had been shot, a car had been loaded, and that only one and one fourth (1¼) sticks of monobel could be found.

However, this theory can not be accepted for these reasons: (1) It is contended that Sherrod had no coal. This being true, and had his shot been the cause of this explosion, he could not have loaded the car which stood at the face of his room. (2) Sherrod was found in his room and at a point about half (½) the

distance from the face to the mouth of the room lying face downward in the road way, his head outbye. It is usually the practice of miners, when shooting, to retreat to a point of greater safety, and it would seem that the position of the body would not indicate that this man was retreating from a shot. (3) The fact that the miner had worked long enough to fill a car and used a naked light, seems to be evidence that this room did not contain sufficient gas to cause this explosion. (4) The direction of the explosion,as traced by evidence in the room, was from the entry and into the room. At the entrance of the room and inbye for a distance of about forty-five (45) feet, inbye exposures of props and coal showed plastered coke. Also at the break thru from room to entry, a timber set against the roof, upon which brattice had hung, was heavily coked on inbye side. (5) All evidence on the entry would indicate that the flame had traveled to this room from a point nearer the face of the entry.

Rescue and Recovery Work.

Immediately after the explosion rescue and recovery work was commenced and some of the men at work in those portions of the mine not effected became engaged in this work at once. The ventilation of the mine was not disturbed except on entries 14 and 15 right and at the mouth of 15th right where three brattices between slope and manway were dislodged. As mentioned before, sufficient air was leaking along the slope to supply air to the men in entries above the 14th right and this enabled these men to escape. These conditions made in possible for rescue and recovery work to commence at once.

No precautions were taken to insure the safety of the men engaged in this work. No exploration work was done to detect the presence of fire and as rapidly as temporary brattices could be erected, air was turned into the exploded area. Naked lights were used in the execution of this work.

Breathing apparatus was not used in the recovery of this mine. Mr. H. H. Hamilton of the Du Pont Powder Company had volunteered the use of the bureau's equipment, but the reports from the mine were continually to the effect that it was not needed.

Seventeen bodies had been recovered during the afternoon of August 13, 1912 and one man had made his escape. Further search for the one man still missing was postponed until the next day. This afterwards proved to have been a great mistake, for on August 14, 1912 a party again explored the 14th right entry and found this man in the aircourse, still alive but in such condition that he never regained consciousness and died on August 17, 1912. Even at this time naked lights were used in making this search.

State Mine Inspector's Report.

At this time Mr. C. H. Nesbit has not given his report to the public.

Coroner's Verdict.

It appears that the law of the State of Alabama does not require the holding of a coroner's inquest and the same was not held after this explosion.

Notes obtained for the Bureau of Mines.

Personnel.

The writer represented the Bureau of Mines in making this investigation. On the morning of August 14, 1912, the Knoxville Journal and Tribune published a short account of this explosion. This was the first news the writer had received. He immediately notified Mr. J. W. Paul, E. M. of the bureau and later received instructions to proceed to the mine and make investigation. Leaving Knoxville at 2:00 p. m. August 14, 1912, the writer arrived at Abernant at 9:30 a. m. on the morning of August 15, 1912. A party composed of Messrs C. H. Nesbit, Frank Hillman, and R. W. Ray mine inspectors, Mr. J. E. Dilsworth and Mr. J. E. Ross of the Abernant Coal Company and the writer entered the mine. At about 2:00 p. m. Mr. C. H. Nesbit decided to postpond the investigation until Monday August 19, 1912, thus giving the mine officials an opportunity to remove gas and dead mules from the mine.

On August 19, 1912 the following men entered the mine to make investigation: Messrs. C. H. Nesbit, Frank Hillman, W. R. Ray, David Kelsoe, F. J. Webb, and Roscoe mine inspectors; Messrs. J. E. Dilsworth, J. E. Ross, Sam Dilsworth, and J. B. McClarey of the Abernant Coal Company; Messrs. Erskin Ramsay, Milton Fies, John Maegher, and H. H. Hamilton representing the Alabama Coal Operator's Association; and the writer. This investigation began on August 15, 1912 and continued until August 24, 1912, there being however four (4) days during this time that the in-

vestigating party did not enter the mine. These delays were caused by the presence of gas in such quantities as to make it impossible to continue with the investigation.

The officials of the Abernant Coal Company did everything in their power to assist in this investigation.

Extent of Explosion.

This explosion was confined to the 15th Right entry and aircourse, the 14th Right entry and aircourse, and the slope inbye the parting to the 15th Right entry. Evidences of greatest violence were seen on the slope at the mouth of the 15th Right entry, where two (2) loaded cars had been carried a distance of about fifty (50) feet from their position on the parting side track and deposited on the slope empty and badly damaged; at the mouth of the 15th Right aircourse, where a two and one half ($2\frac{1}{2}$) inch iron steam pipe was sheared off at its union with a sleave connection, this force was also outbye; and at the face of room 11 on the 15th Right entry, where a pillar of coal seperating this room from the 14th Right aircourse and which was from two to four (2 to 4) feet thick was dislodged. The dislodgment of this pillar of coal permitted the passage of after damp formed by the explosion into the 14th Right entry resulting in the death of nine (9) negro miners. Evidence of force was traced to the mouth of both the 14th and 15th Right entries but no evidence of the flame's having reached the slope or the 14th Right entry could be seen.

Details of Evidence.

Fig. 3, herewith appended, is introduced to show, by the graphic representation of some of the more important evidence, the direction of travel of this explosion, and to aid in determining its origin. It will be noted from this sketch and by evidence here set forth that this explosion traveled in three (3) directions, which if traced backward will establish room (11) on the 15th right entry as the point of origin.

Slope: On the slope opposite the 15th right entry three (3) stoppings between slope and manway were dislodged, the direction of this movement being from the slope and toward the manway. Two (2) loaded cars which has stood, prior to the explosion, on the parting sidetrack at the entrance to the 15th right entry, were found on the slope empty and much damaged. At the entrance to the 15th right aircourse, a two and one half ($2\frac{1}{2}$) inch iron steam pipe had hung. This pipe was used to conduct steam to a pump a short distance inbye this point. After the explosion it was found that this pipe had been sheared off at a sleave connection and the pipe was carried by the force toward the left rib of the slope.

15th Left Entry. This entry is turned off the slope at a point opposite the 15th right aircourse. It was noted by evidence present that the force of this explosion had traveled into this entry, in that pieces of canvass and wood were imbedded in outbye crevices of coal and that canvass was found

wrapped about outbye projections of cars and coal.

15th Right Entry. From the mouth to a point where room 1 is turned off, the 15th right entry was wet and water stood in a pool against the left or inbye rib. From room 1 to room 4 the road was moist and there were no signs of heat, but the ribs were spalled, the inbye projections being rounded off by this action. The roof also showed signs of motion outbye in that it was swept clean except at points where dust still remained on the outbye side of projections in the roof rock. All stoppings thus far were built of rock and were in tact. However, between rooms 3 and 4, a board,stopping in what was called the no.1 slant, was blown from aircourse and into entry. At the crosscut from room 4 to entry the first evidence of heat was encountered in that burned coal dust was plastered against the outbye rib of the crosscut. It was also noted that spalling became more pronounced and that inbye projections of coal were rounded off to a more marked degree. Opposite room 5 a gob stopping was blown into the aircourse. Inbye room 5 a dead mule, slightly burned, lay across the entry. Also two loaded cars, which were in no way disturbed, stood at this point, the inbye end of the car nearest the face presented considerable fine coke globules. Henry Wynn, the driver, No. 1, Fig. 3 was found between these cars and the writer was informed that he was not burned. Plastered coke, adherring to inbye exposures of ribs and roof, but in small quantities, became more evident and at

the breakthru into aircourse opposite the mouth of room 7, which is No. 2 slant, plastered coke was found on the outbye rib of the breakthru and in larger quantities. A board stopping in this breakthru had been blown into the aircourse. A post in the mouth of room 7 showed a train of burned dust on its inbye side from top to bottom and one and one half (1½) inches in greatest dimension. It was also noted that coke was plastered on outbye exposures as well as inbye exposures. At the entrance to room 8 and also the crosscut from room 8 to entry it was noted that large quantities of plastered coke adherred to the inbye ribs of room and crosscut. Also inbye room 8, outbye exposures of coal of right rib were covered with plastered coke. Between rooms 8 and 9, a post stands against the right rib on the outbye side of which large quantities of plastered coke was adherring, the inbye side was clean.

Opposite room 9, the inbye rib of breakthru to aircourse was heavily coated with coked coal dust and it was noted that, at this point, a piece of canvass was caught on the inbye projection of a piece of coal, the balance of the canvass being carried outbye. Sweeping of the roof outbye was evident and the road was very dry and rich in fine coal. Outbye exposures of left rib were covered with coked coal dust between rooms 9 and 10 and in the mouth of room 10 a post stands on the inbye face of which a train of dust, burned and containing fine globules of coke, was seen. Inbye from room

10 the road was very dry and rich in fine coal.

At the mouth of room 11 two (2) bodies, Nos. 3 and 4 Fig. 3, were found. Gilbert Lee, a miner, worked in room 12 and Kid Clark, a loborer, worked for Ernest Sherrod in room 8. Both men were found head outbye and burned. At this point it was noticed that considerable debris had been washed out of room 11 by the water that, previous to the explosion, was imprisoned in the 14th right aircourse, and which was liberated by the dislodgment of the pillar of coal at the face of room 11. At this point (entrance to room 11) is was marked that, by evidence present, the direction of travel of this explosion changed from outbye to inbye. The breakthru to aircourse at this point, slant No. 3, had been blown into the aircourse. Inbye room 11 inbye projections of right rib were coated with plastered coke to a depth of an inch. A short distance outbye the crosscut from room 11 to entry, a brattice frame stands, the right leg of which was heavily coked on its inbye side, the outbye face being clean. On the outbye rib of crosscut from room 11 to entry plastered coke was much in evidence. Plastered coke, one and one half inch in thickness,was observed on the outbye rib of crosscut from room 12 to entry. At the entrance to room 12 a sample of road dirt was taken and the analysis is appended.

Between rooms 12 and 13 a number of entry props stand all of which were coated with plastered coke on their inbye faces. Outbye ribs of breakthrus to aircourse and inbye projections of

left rib showed plastered coke. Coke was evident on outbye rib of crosscut from room 13 to entry. Between rooms 13 and 14 inbye projections of ribs contained plastered coke. At room 14, a large prop stands in the room mouth on the inbye face of which a cake of plastered coke one (1) foot long and two and one half ($2\frac{1}{2}$) inches thick was found. This was sent to Pittsburgh and the analysis is appended. Inbye this point, outbye ribs of breakthrus and crosscuts as well as inbye projections of coal were covered with coked coal dust.

At the entrance to room 15 Geo. Gardner, No. 5, Fig. 3, who worked this room, was found. He was badly burned. Opposite this room, the stopping in the fourth (4th) slant into the aircourse had been blown into the aircourse. A box which had been in room 15 prior to the explosion was found inbye this slant and contained four (4) sticks of monobel, which showed signs of intense heat. Well defined globules of coke were also seen on the inside of this box. Between rooms 15 and 16 outbye ribs of breakthrus and crosscuts as well as inbye projections of coal presented much coked coal dust. Room 16 was just necked and Allen Brown, No. 6 Fig. 3, was found at the face. He was badly burned and evidently had been unable to leave his place of work after the explosion. Inbye room 16 the quantity of coke materially decreased until at the face little or none was evident. In the last, but one, breakthru a canvass brattice had been erected, which was in tact at the time of this investigation. Coal at the face of this entry had been shot, which agreed with the statement of the shotfirer.

15th Right Aircourse. Notes were commenced at the third (3rd) slant, which is opposite room 11 on the entry. Oubye this point no evidence was encountered to warrent the belief that this explosion had traveled toward the slope. This portion of the aircourse was traveled to confirm the direction of motion of those stoppings which had been dislodged. Inbye this point, slant No. 3, well defined coke was encountered on outbye ribs of breakthrus as well as inbye projections of rib, roof, and gob. Opposite slant No. 3, it was noted that fragments of board were found on the gob and globules of coke on the gob facing the breakthru. At a point about half the distance from slant No. 3 and slant No. 4 a feeder was detected behind the gob, this the mine foreman stated had given them much trouble at the time it was cut into. At the first breakthru outbye slant No. 4 three men were found, Nos. 7, 8, and 9 Fig. 3. These men were Bert Clements and C. Coleman who drove the aircourse and Caesar Harris who drove the entry. The writer was told that these men were not burned.

The fourth (4th) slant was the last and thru it all coal mined in the aircourse was trammed. In this a canvass brattice had been to give greater convenience to haulage. This stopping was found on the gob in the aircourse. From this point and inbye the quantity of coke decreased and at the face little or none was noted. However what coke there was, was on inbye exposures. The gob at and near the face was moist enough to cause the dust to ball in the hand. Two (2) ammunition boxes, as indicated in Fig. 3 were found to contain, 5 sticks of monobel, 17 No. 6 detonators,

and a coil of fuse; and 12 sticks of monobel, 7 No. 6 detonators, and half a coil of fuse respectively. None of this ammunition showed sign of heat. The face of the aircourse had been shot which agrees with the statement of the shot firer.

Room 8, 15th Right Entry. From mouth to crosscut to entry, inbye exposures of props and gob contained much bright coke. In this crosscut one and one fourth (1¼) sticks of monobel were found which had been subjected to intense heat. At this crosscut a two by four (2 by 4) timber had been placed against the roof, from which canvass had hung. The inbye side of this timber was heavily covered with bright coke. Inbye this point inbye projections of coal and inbye sides of props were well covered with dull as well as bright coke. At the point where room 9 cuts into room 8 the body of Ernest Sherrod was found, No. 2 Fig. 3, face downward and head outbye. The writer was told that this man was badly burned. Opposite last breakthru globules of coke were much in evidence on faces of props facing breakthru. At the face little sign of heat was apparent, a loaded car and a miner's cap directly in front of the car.

Room 9, 15th Right Entry. This room had been abandoned, fenced off, and the fencing material was found in the room. Heavy falls made the examination of the room impossible, but at the entrance it was noted that considerable coal dust under pieces of rock had been coked.

Room 10, 15th Right Entry. This room was also abandoned, fenced off, and the fence was found in the room. For a dis-

and a coil of fuse; and 12 sticks of monobel, 7 No. 6 detonators, and half a coil of fuse respectively. None of this ammunition showed sign of heat. The face of the aircourse had been shot which agrees with the statement of the shot firer.

Room 8, 15th Right Entry. From mouth to crosscut to entry, inbye exposures of props and gob contained much bright coke. In this crosscut one and one fourth ($1\frac{1}{4}$) sticks of monobel were found which had been subjected to intense heat. At this crosscut a two by four (2 by 4) timber had been placed against the roof, from which canvass had hung. The inbye side of this timber was heavily covered with bright coke. Inbye this point inbye projections of coal and inbye sides of props were well covered with dull as well as bright coke. At the point where room 9 cuts into room 8 the body of Ernest Sherrod was found, No. 2 Fig. 3, face downward and head outbye. The writer was told that this man was badly burned. Opposite last breakthru globules of coke were much in evidence on faces of props facing breakthru. At the face little sign of heat was apparent, a loaded car and a miner's cap directly in front of the car.

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Room 10, 15th Right Entry. This room was also abandoned, fenced off, and the fence was found in the room. For a dis-

tance of twenty (20) feet from the entrance, outbye exposures of props and gob presented well defined globules of coke. The road dirt was burned. Outbye and inbye crosscut to entry, carbon filaments hung from the left rib and near the roof. At the face the roof and floor were fairly wet. A feeder was detected at the face in the roof and the roof at this point showed signs of great heat in that much coking ensitue was present. A cap of three eights (3/8) of an inch was obtained on the Wolf lamp.

Room 11, 15th Right Entry. This room had also been abandoned but, as was admitted, had not been fenced off. Props standing in room from entrance to crosscut to entry presented much dull coke on their outbye sides, this coking being confined to the upper fourth of the props. The upper surface of the gob was covered with burned dust. After passing the crosscut to entry it was noted that the charred dust and fine coke was on the inbye sides of props. Inbye the second crosscut to room12 little or no coke was met with, but it was noted that considerable coking ensitue was on the rib and that the roof was whitened. About ten (10) feet outbye the second crosscut to room 12 a miner's lamp, one third (1/3) filled with oil, was found. The face of the room and the 14th right aircourse were seperated by a pillar of coal from two to four (2 to 4) feet thick. On the aircourse side of this pillar a pool of water had been imprisoned and the room had been driven until the pillar became thin enough to permit this water to leak thru. This pillar was dislodged by the force of this explosion. It will be noted that there is only one crosscut from

this room to room 10 and that this is at a distance of about twenty five (25) feet from the entrance. It was found in this crosscut that projections in the roof facing room 11 contained bright coke and a cap of fully an inch an a half was obtained on the Wolf lamp. The entrance to the crosscut on room 11 side was so small that a man could barely crawl into it.

Room 12, 15th Right Entry. This room was working and the shot firer stated that he shot the coal in this room the previous night. At the entrance it was noted that inbye sides of props contained small quantities of coked dust. At the crosscut to entry, props opposite presented bright coke on the sides facing the crosscut and that this coking was more pronounced at the top of the props. Likewise opposite crosscut to room 13 props were coked on the sides facing the crosscut. In this crosscut a cap of half an inch was obtained on the Wolf lamp. At the face evidence of great heat was seen in that the ribs presented much coking ensitue, this was more pronounced on the inbye rib of crosscut to room 11, where the rib was covered from roof to floor with coke ensitue. The roof at the face was very dry and edges of the roof rock were whitened. The Wolf lamp showed a cap of three eights (3/8) of an inch.

Room 13, 15th Right Entry. It is claimed that this room was reported standing with gas on the morning of August 13, 1912, altho the fire boss board, a copy of which is appended, does not show it. Coke on inbye exposures of props and gob as well as inbye projections of rib was much in evidence from the entrance to the last crosscut to room 14. It was marked, however, that this coking

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was more pronounced near the roof, and at crosscuts, props directly opposite had coke on the side facing the crosscut. A well defined cap of fully an inch was observed at the face. No sign of heat at the face and the gob and line brattice was very wet.

Room 14, 15th Right Entry. Inbye exposures of props and gob as well as inbye projections of rib were covered with bright coke. Props opposite crosscut to entry contained coke on side facing crosscut. Near the face the coal presented much coking ensitue. Face had been shot but no work had been done in this room on the morning of the explosion.

Room 15, 15th Right Entry. Coke was seen on inbye exposures of props, but in small quantities. Opposite crosscut to entry a loaded car stood. Coke was noted on top of the wheels and on the side of the car facing the crosscut to entry. It was also noted that coke was present on the coal in the car and more pronounced against the right side of the car. The sides of props facing this crosscut were also covered with bright coke. A miner's cap and lamp lay just inbye this car. The coal at the face had been shot which agrees with the statement of the shot firer.

Room 16, 15th Right Entry. This room had just been necked and ,from the appearance of the place, it looked as tho the miner had just finished drilling his holes.

14th Right Entry. No evidence that the flame reached this entry could been seen. Some of the stoppings, as indicated on Fig. 3, were dislodged. A number of props in the mouth of room 11, which is opposite the fourth (4th) slant, were covered with mud from top to bottom on their sides facing the slant. This por-

tion of the mine was very wet.

Between rooms 12 and 13 five bodies were found, Nos. 11 to 15 inclusive Fig. 3. These men were John Banks who drove the aircourse, A. B. Williams who worked in room eighteen, Dav Williams who worked in the heading, Taylor Sutton who worked in room fourteen, and Ed Green a driver. Between rooms 13 and 14, Dan Hardy, No. 16 a driver and Will Henry, No. 17 who worked in the heading, were found. All these men were suffocated. Harvey Duncan, No. 18 who worked in room fifteen, was found in the aircourse inbye slant No. 4 and Will Yancey,No. 19 who worked in room sixteen took refuge at the face of the aircourse. No evidence of flame was seen in the aircourse to the 14th right entry.

Summary of Evidence.

Outbye room 11 on the 15th right entry it was noted that coked coal dust was found, in most cases, on outbye exposures of posts as well as outbye projections of coal and roof. Spalling of ribs in an outbye direction was additional evidence that this explosion had traveled outbye. This was further evidenced by the clean condition of the roof except in places where dust still remained on outbye projections in the roof. Outbye room 4 there was no evidence to warrent the conclusion that the flame had reached this part of the entry. At this point the entry was wet and the degree of moisture increased as the slope was approached. At the mouth of the entry sufficient force developed to move two loaded cars from their position on the parting sidetrack and deposit them on the slope overturned,

while at a distance of five hundred (500) feet nearer the sourse of the explosion, two simular cars were in no way disturbed.

Inbye room 11, it was noted that coked coal dust was found on the inbye exposures of entry timbers as well as on inbye projections of coal and roof, and that this coke was in larger quantities than that outbye room 11. The roadway was very dry and rich in fine coal and gas was frequently encountered. After the last slant breakthru had been passed, it was noted that the quantity of coke decreased and that at the face there was little or none. In the room except rooms 11 and 12, the evidence present, established the direction of this explosion from the entry and into the rooms.

Conclusions and Lessons.

It was noted that wherever the road dirt and ribs were sufficiently moist or where the road dirt was sufficiently mixed with inert material and moisture to cause it to pack, the explosion failed to propogate and died out. This was particularly noticable on the 15th right entry outbye room 4, where the road dirt was very compact, and again at the face of room 11, where after the dislodgement of a pillar of coal, the water thereby liberated, prevented propogation and the flame did not reach the 14th right entry. It was also noted that the heat developed by the explosion became greater as it approached the faces of the 15th right entries, in that larger quantities of coke and coke that was brighter in appearance were encountered. This,no doubt, was due to the higher percentages of methane in the mine atmosphere as the faces were approached.

This explosion offers an excellant example in proof of the theory that many men, entombed in mines after explosions, would increase their chances of effecting their escape or of being rescued, were they not to attempt their escape at once. Will Yancey and nine others assembled after this explosion to discuss what method of escape to adopt. It was decided to attempt it at once. After proceeding a short distance, Yancey and Duncan returned, the others walked into the afterdamp and, before they could retreat, died. Yancey effected his escape some hours afterward by going to the head of the aircourse and there waiting until such time as the entry had become cleared. It is reasonable to suppose that the others would have also survived had they done likewise. Duncan was also taken from the mine alive.

This explosion also establishes a fact that, so long as any men are missing, search should continue until they have been found and it is ascertained whether or not they are still alive. The search for Duncan was abandoned the afternoon of August 13, 1912 and during the morning of August 14, 1912, he was found still alive but in such condition that he never regained consciousness.

Descensional ventilation in a mine that generates large quantities of methane should be condemned. Also in such a mine a continuous current is a continual menace to the safety of men.

Greater attention should be given to abandoned places in gaseous mines. Altho the fire boss has made sworn statement that he examined all abandoned places the morning of this explosion, he also admitted to Chief Mine Inspector, C. H. Nesbit, that this was

not his practice every morning and that he had not examined these places for a period of six (6) weeks prior to this explosion. It is significant in the extreme that these places should be examined this morning of all mornings when it was not the practice to do so every morning. The fire boss board does not indicate that these abandoned places were inspected.

Undue reliance was placed upon brattice across the entry and line brattice to the faces. Brushing under very difficult conditions was much practiced and the writer had opportunity to see with what unsatisfactory results this was used, when at the time of this investigation at attempt was made to clear room 15 on the 15th right entry. The gas could not be removed and examination of the room was made, using an electric lamp.

Appendix.

Only one standard face section was taken owing to the great amounts of methane at the face workings. This sample was taken in an atmosphere that would not permit the use of a safety lamp.

	air dried	as received	moisture free	percentage referred to coal
moisture	.83	2.62		
volatile matter	24.62	24.18	24.83	27.39
fixed carbon	65.29	64.11	65.84	72.61
ash	9.26	9.09	9.33	
sulphur	.65	.64	.66	.73

Analysis of a sample of coke taken on the 15th right.

moisture	2.37		
volatile matter	17.23	17.65	21.24
fixed carbon	63.91	65.46	78.76
ash	16.49	16.89	
sulphur	.64	.66	.79

Analysis of road dirt taken at mouth of room 12 on 15th right entry.

moisture	1.55	2.44		
vol. matter	24.02	23.80	24.40	28.40
fixed carbon	60.54	60.00	61.50	71.60
ash	13.89	13.76	14.10	
sulphur	.69	.68	.70	.81

Analysis of mine air.

At forty-five feet from mouth of room 22 13th right entry.

	3001	3002
CO_2	5.81	8.28
O_2	13.95	10.50
CO	.00	.00
CH_4	5.07	4.49
N	75.17	76.73

At a distance of about fifteen feet from face of room 23, 13 right.

	3003	3004
CO_2	4.40	1.75
O_2	14.90	17.63
CO	.00	.00
CH_4	6.91	7.60
N	73.79	73.02

Sample taken at entrance of room 15 on the 14th right entry.

	3005	1251
CO_2	.48	.42
O_2	17.49	17.26
CO	.00	.00
CH_4	9.20	10.11
N	72,83	72.21

Psychrometric observations.

Observation at about one hundred feet from fan on main intake
Dry bulb 86, wet bulb, 78, barometer 29.65, humidity 70%
Dimensions of entry 7 x 7½ feet, area 52½ sq, ft. velocity 740,
volume at forty-four (44) revolutions 38,850 cu. ft.

Observation at a distance of about two hundred (200) feet from slope on the 15th right entry.
Dry bulb 75, wet bulb 74, barometer 30.26, humidity 96%
Dimensions of entry 7 x 9½ feet, area 66.5 sq, ft. velocity 30 ft.
volume 1,980 cu. ft.

Observation taken between rooms 22 and 23 on the 15th right entry
Dry bulb 79, wet bulb 78, barometer 30.09, humidity 96%.
there was no ventilation at point of observation.

Fire boss' board. August 13, 1912.

Left side	entry	Right side
	10	O. K.
	11	O. K.
	12	O. K.
	13	Heading-Brush
	14	Heading and Aircourse take safety lamp.
O. K.	15	Heading and Aircourse-Brush
	16	Keep out.

Hon. Emmert O'Neal,
Governor of Alabama,
Montgomery, Ala.

Sir:

I beg leave to report that about 11 a. m. August 13, 1913, I received telephone message from the office of the president of the Abernant Coal Company, Birmingham, Ala. that there had been a local explosion on the fifteenth right entry at the Abernant mine, located at Abernant, Ala. Tuscaloosa County, about thirty miles south-west of Birmingham, where a total of seventy-eight (78) men were working at the time. Abernant mine, which has always been considered highly gaseous, is a slope, pitching fifteen degrees, and the vein is known as the Jagger seam, about seven (7) feet in thickness. The air is conducted on a continuous current by means of a force fan, 7 by 20 feet, Crawford and McCrimmon make. The air measurement of August 14, 1912, the day after the explosion, was 38,850 cubic feet at the intake on 44 revolutions per minute.

The first notice to me conveyed the idea that no one was thought to be seriously hurt.

I immediately undertook to gather additional information by telephone. As there is no direct telephone or telegraph connection with the Abernant mine, it was necessary for me to get connected with the telephone station nearest the mine, which is about one mile distant. The parties communicated with had no better information than I had received in Birmingham. A messenger was then sent from this nearest telephone station to the mine. This messenger on arrival at the mine was unable to secure any satisfactory information because the mine officials were in the mine. I had previously telephoned to the home of inspector W. R. Ray, who covers the district in

which Abernant mine is located, but as he was attending to duty in another direction, he could not be communicated with until that night, and he did not reach Abernant until 9 a. m. August 14, 1912.

I left Birmingham by automobile about 4 p.m. August 13th (date of the explosion) and reached Abernant about 5.30 p. m. On arrival I found that sixty (60) of the seventy-eight (78) miners had been able to safely leave the mine immediately upon realizing that an explosion had occurred. This left eighteen men to be accounted for. The rescue party composed of Abernant mine officials and others from nearby mines,restored the ventilation and had recovered the bodies of sixteen (16) negro miners, but there yet remained two men to be accounted for. These two men were not found until the next morning, August 14th. One of the latter men (Harvey Duncan) had crawled into the aircourse of the fourteenth right entry, which was such an obscure retreat as to render it difficult to recover him earlier. This man was discovered alive and removed to the hospital but died twenty-four hours later from the effect of afterdamp. The last man to be accounted for was Ernest Sherrod and was found in No. 8 room on the fifteenth right entry. I enclose a list of names of the victims.

On August 14th Inspector Ray and I proceeded to make proliminary investigation of the cause of the explosion. On August 15th Inspector Hillman of the fifth district came to Abernant at my request. We continued the investigation. On this date Mr. E. B. Sutton of the United States Rescue Station, Knoxville, Tenn. arrived at Abernant.

Not being able to enter all of the places on the above dates, on account of the presence of gas, we compelled to postpond the investigation the investigation until Monday, August 19th, on which date I carried to Abernant my entire force consisting (in addition to Inspectors Ray and

Hillman) of Inspectors Webb, Roscoe, and Kelso.

Upon careful investigation and study our joint opinion is that a large body of explosive gas in rooms Nos. 9, IO, 11 on the fifteenth right entry had been ignited by an open light, the ignition being in room 11 and was aided by dust. On the fifteenth right entry there were employed one driver and eight miners, five of whom were fatally burned and four died from the effects of afterdamp. From the best obtainable evidence the lamp of Gilbert Lee caused the explosion The rooms just mentioned were abandoned (or worked out) rooms.

Room No. 11 on the fifteenth right entry was driven up very close to the fourteenth right aircourse, the intention being to get same thru for ventilation, but it was not connected at the time owing to a small amount of water standing in the aircourse above referred to. The pillar seperating this room and the aircourse was very thin and weak, consequently it was blown out by the explosion, which also knocked out the brattices directly in front of room 11 between the fourteenth entry and the aircourse, thus short circuiting the air in the fourteenth right entry, and at the same time, temporarially cutting off the means of escape to ten men who were working in the fourteenth right entry. The ten men who were caught in this entry gather at a point near the place where the explosion came thru from room No. 11, and for several minutes excahnged suggestions as to what was best for them to do. Finally they reached a dicision to start thru the afterdamp for the slope, which was the nearest place for fresh air. However, it was soon discovered that they could not proceed as decided upon/ whereupon two of the men advised the other eight to turn back, which advice was not heeded-- consequently the eight men perished from the effects of the afterdamp- but the two remaining men went bach to

the original starting point and remained there some time, making frequent attempts to get to the slope, but these two men were unsuccessful until they made their fifth trial: and then they discovered that the afterdamp was not so strong as at first, having been cooled off sufficiently for them to go thru it. After going some distance Henry Duncan one of the two men decided to go into the aircourse of the entry, as he thought it the best place for means of escape, but in doing so he entered afterdamp that was stronger than on the entry. Will Yancey (the other of the two men) came straight out of the entry to the slope without any assistance. If the ten men of the original party had ALL been guided by the same coolheadedness as directed these men they would have escaped with their lives, because,as indicated, the ventilation had been practically restored.

The explosion did very little damage to the mine; in fact, scarsely any violence or force was noticed beyond the destruction of all but two of the brattices on the fifteenth right entry and three brattices on the fourteenth right, which inpaired ventilation. No other parts of the mine were effected.

The opinion of this department is that this explosion was due to neglect of duty as perscribed in the mining law, and I would particularly mention sections 29, 30, 32 and 41, which deal respectively with the duties of mine foreman, spraying of dusty places, duties of the fire boss, and the prohibition of explosive gas accumulations.

Influenced by the above opinions I have called upon the Solicitor of Tuscaloosa County for advice as to my proceedure in applying whatever penalty the law permits to be imposed for neglect of duty, such as in this case.

I have delayed rendering this report until I could collect all the information possible bearing on the cause of the explosion.

Very Respectfully,

Chief Mine Inspector.

I-141

GSR-RJM

Files

August 14, 1912.

Director:

I enclose, herewith, copy of telegram sent to Mr. E. B. Sutton, following my telephone conversation with Mr. Manning which was later than the telegram sent to your office asking authority to send some one to investigate the Abernant explosion.

Mr. Paul is on a vacation this week and I understand that he is at Port Erie, Ontario, Canada. He went unexpectedly on account of an accident to his daughter and, as I understood it from a note he left, it was necessary to go away for her convalescence.

Mr. Wilson had a call from a Mr. Zerbey of Cleveland, asking that we send a team of men to his Mines at Amsterdam, Ohio to investigate a mine fire. The mine was sealed. On finding that the company would pay the expenses, Mr. Wilson informed him that a team would go and I, therefore, sent Mr. H. I. Smith in charge of a party of five, including himself and a chemist to analyze the gases. They left on Monday and yesterday I received a telegram from Mr. Smith stating that he was conferring with the State Inspector. We also had a call from the Vandergrift mine, not far from Pittsburgh, where breaking into a gas well had set fire to the coal and caused a section of the mine to be sealed off. A preliminary report has already been submitted to you but the Mine Manager desired to have an investigation made inside the stopping. I told him that we did not have sufficient men to undertake this safely and could not do it until the other men returned. Mr. Ryan, who was accompanied by a chemist, was sent to take samples of the gases and determine what the best course would be to pursue. Mr. Ryan will probably be back to-day. This is a very interesting case and I want to follow it up.

Very respectfully,

Chief Mining Engineer.

P.S. Mr. Smith's party returned to-day, they are now drilling a well or drill hole down to the fire area.

Mr Paul

Passageway

The explosion in the Abernant Mine, Jefferson County, which occurred August 13, snuffing out the lives of eighteen miners, was due to neglect of duty as prescribed by the mining law governing the spraying of duty places, and the prohibition of gas accumulations, according to C. H. Nesbit, Chief Mine Inspector of Alabama, who filed a report of his investigation with Governor O'Neal Friday.

The explosion was caused, he reports, from ignition of firedamp in Room No. 11 of the mine, from the lamp of Gilbert Lee, one of the victims. Eighteen negro miners were killed, twelve of whom were married, and several of whom were heads of large families.

The report of the inspector telling of the actions of the imprisoned miners is graphic. Had they been governed by coolness, all might have escaped, but only one of their number did, he says.

"Room No. 11, in which the explosion occurred, was driven close to the fourteenth right air course. The pillars separating the two was weak and thin, and was blown out by the explosion, which also knocked out the brattices directly in front of room No. 11, thus short-circuiting the air in the fourteenth right entry and temporarily cutting off the means of escape of ten men who were working in the fourteenth right.

"The ten men who were caught in this entry gathered at a point nea the place where the explosion cam through the No. 11 room, and for sev eral minutes exchanged suggestion as to what was best for them to do Finally they reached a decision t start through the afterdamp for th slope, which was the nearest plac for fresh air. However, it was soo discovered that they could not pro ceed as decided upon, whereupon tw of the men advised the other eigh men to turn back, which advice wa not heeded. Consequently, the eigh men perished from the effects of th afterdamp.

"But the two remaining men wen back to the starting point, and re mained there some time, making fre quent attempts to get to the slope but unsuccessfully, until their fift trial. Then they discovered that the afterdamp was not so strong as a first, having been cooled off sufficiently for them to go through it. After going some distance, Hannry Duncan, one of the two, decided to go into the air course, thinking it the best place for means of escape, but in so doing he entered afterdamp, which was stronger than on the entry.

"Will Yancey, his companion, came straight out the entry to the slope without any assistance. If the ten men had all been guided by the same cool-headedness as directed Yancey, they would have escaped with their lives, because the ventilation had been practically restored."

have aspi... throughout western New York and are confident of nominating him at Syracuse next week.

NINETEEN MINERS MEET DEATH IN EXPLOSION

Rescue Parties Recover Seventeen Bodies—State Mine Inspector Begins an Investigation of Disaster.

(By the National News Association.)

Abernant, Ala., Aug. 14.—Nineteen negro miners were killed by an explosion in the mine of the Abernant Coal company. Rescue parties, which worked all night, recovered seventeen bodies. The explosion occurred 100 feet from the surface at a time when eigty-three men were at work. Of these, forty-six were whites.

State Mine Inspector Nesbitt arrived on the scene today and began an investigation. He said he believed the explosion was caused by a charge of blasting powder igniting coal dirt.

WILL WED GIRL WHO INJURED HIM

San Francisco, Aug. 14.—If Lieut. F. J. Williams had not received a severe scalp wound while traveling to this port on the U. S. army transport Thomas, he would not have been made the hero of the voyage, and local army circles would not be expecting the announcement of his engagement to one of the prettiest girls on the ship.

The young woman is Miss Flora Bewick of Atlanta, Ga., daughter of Mrs. E. T. Donnelly, wife of Capt. Donnelly. While promenading the deck, Miss Bewick was pitched forward by the tossing of the ship and Lieut. Williams seeing her danger jumped headfirst in front of her. He broke her fall, but was himself seriously injured.

Erie Canal.

Cleared August 14, 1912.

... wheat, Rochester

ABERNANT FOREMEN MAY BE PROSECUTED

Neglect of Duty Caused the Death of 18 Miners

NESBITT FILES REPORT

Mine Inspector Makes Thorough Investigation of Mine Explosion at Abernant—May Take Legal Action Against Foremen

Montgomery, October 11.—(Special.)—Neglect of duty on the part of the foremen at Abernant mine caused the death of 18 men August 13, according to State Mine Inspector C. H. Nesbitt, who filed his report with Governor O'Neal Friday afternoon. The men are subject to prosecution under sections 29, 30, 32 and 41 of the mining law, and the solicitor of Tuscaloosa county has been requested to determine whether or not legal action against the foremen should be taken now.

Inspector Nesbitt stated that he had delayed the report until he could make a thorough investigation. He said that the explosion occurred about 11 o'clock, while 78 men were in the mine. He holds that "a large body of explosive gas in rooms Nos. 9, 10 and 12, on the fifteenth right entry, had been ignited by an open light, the ignition beginning ... [illegible] ... the effect of the same at... [illegible] ... caused great damage to the ... [illegible] ... atmosphere they had to contend with. Fel[illegible] the effect of the same at... goods. [illegible] ... for the change that the ... as one reason ... a large city to its outskirts, stating ... notes recently moved from the center of ... makes highly finished cardboard prod... A manufacturing concern which ... of the public schools had to be dis... missed at 11 o'clock on one of the ... darkest days, while at other schools ... within the smoke belt the children were ... entertained with stories by their teach... ers during the time it was too dark to ... study.

... every large community to rid itself as ... far as possible of this evil.

... In Chicago an estimate by the smoke ... inspector shows that smoke, besides ... being a nuisance, causes a loss to the ... citizens of $21,890,000 annually, or about ... $10 per capita. The laundries, clothing ... merchants, dyers, house renovators, ... painters and operators of vacuum ... cleaning machines are reaping a har... vest. In St. Louis 600 pupils in one