G E N E R A L R E P O R T

OF EXPLOSION AT BOOMER No. 2 MINE

OPERATED BY

THE BOOMER COAL AND COKE CO.

AT

BOOMER, FAYETTE COUNTY, WEST VA.

NOVEMBER 30, 1915.

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INVESTIGATED BY--

J. W. Paul,	Mining Engineer.
D. J. Parker,	Mining Engineer.
H. D. Mason,	Asst.Mining Engineer.
H. D. Jones,	
G. W. Grove.	

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Pittsburgh, Pa.

November 23, 1916.

Written by

D. J. Parker.

INTRODUCTION

At about 10:30 o'clock on the morning of Friday, November 30, 1915, an explosion occurred in what is known as the First Right Entry (a) off 21st South Haulage of the Scomer No. 2 North Mine. Very little damage was done to the mine and presumably no fatalities are directly traceable to this explosion alone. However, it seems to be a well established fact that two men were partially overcome by the resultant after damp.

Approximately, forty minutes after this explosion (or at 11:10 A.M.) it is alleged a second explosion, evidencing considerably more violence than the first, occurred in the same area affected by the initial explosion and resulted in the death of 23 men.

At the time these explosions are said to have occurred there were approximately 300 men in the mine. There were only four men in the area affected at the time of the first explosion and it seems from all indications that there were 24 men in the area affected by the second explosion.

17 men were killed by burns.
2 " " " " violence.
4 " " " " suffocation.
7 " " injured men fatally by violence.
4 " " " " " " gases.

Note (a). This entry is a continuation of the First Left off 13th South Haulage (see attached map).

Five live men were rescued at 6 A.M. of the day following the explosion. Of these, one died later in the day and two suffered a partial paralysis of an arm and leg, respectively.

Twenty-eight of the 277 survivers erected a barricade to the after damp shortly after the occurrence of the second explosion and later all escaped safely to the surface.

With the exception of the five men who were rescued alive all survivors made their way to the surface without assistance.

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GENERAL INFORMATION

LOCATION:

Boomer No. 2 North mine is located in District No. 5 of the State Mine Inspection Department, approximately one and one-half miles east of the town of Boomer, Fayette County, W.Va., on a branch line which leaves the main line of the Kanawha & Michigan at Boomer. The Postoffice is Boomer.

OWNERSHIP:

Boomer No. 2 North is one of several mines owned by the Hanna interests and operated by the Boomer Coal and Coke Co. with general offices at Cleveland, Ohio.

There is a sister mine of No. 2 South mine which is opened up on the same seam and on the opposite side of the ravine. These, with four other mines operating in this

immediate vicinity, constitute what is known as the Boomer group of mines.

The organization controlling this group of mines seems to possess exceptional ability in the administration of the affairs of the Company.

The personnel of the Company is as follows:

D. R. Hanna	President.
M. A. Hanna	Treasurer.
Michael Gallagher	General Manager.
John Whalen	Asst. General Manager.
T. H. Huddy	General Superintendent.
John Huddy	Mine Foreman.

GEOLOGY:

From 60 to 160 feet under the Powelton Coal and from 115 to 230 feet under the No. 2 Gas Coal there occurs another bed of coal varying in thickness from three to eight feet that has been designated the Eagle Coal bed from a small mining village of that name in Fayette County, four miles southeast of Montgomery on the Chesapeake & Ohio Ry., where this coal was first mined on a commercial scale about the year 1882.

This seam is correlated as belonging to the upper or Kanawha Group of the Pottsville Series, Carboniferous age, and is the next bed of economic importance in the descending order in the Kanawha Group or Series.(W.Va. Geological Survey, 1914)

TOPOGRAPHY & GENERAL CHARACTERISTICS:

The Eagle seam on which No. 2 North mine is operating outcrops on either side of and at a vertical height of 50 feet, approximately, above the bed of Seemer Creek and at an elevation of about 800 feet above sea level. The mountains on either side of the creek rise rather precipitately to a height sufficient to afford seven or eight hundred feet of cover over the Eagle seam.

No. 2 North mine is a drift mine; No. 2 South mine, which is opened up on the same seam but the opposite side of the creek, is also a drift mine.

The entire output from both mines is handled over the same tipple which is of wooden construction.

There is a very slight dip to the seam and easy grades are at all times available, making haulage conditions most favorable. The seam is apparently free from disturbances of any character.

COAL:

The Eagle seam is a soft coal of the 'gas' type, as compared with the splint coals in the upper half of the Kanawha Series, having the columnar structure of typical coking coal without any splinty layers whatever. Its physical character very much resembles the Pottsville coals of New River, and hence we find it making excellent coke as well as good steam coal. It contains less volatile

matter, but more fixed carbon than the Campbells Creek or No. 2 Gas coal above it, with practically the same percentages of ash, sulphur and phosphorous."

Vol. II, P. 587, W.Va. Geological Survey, 1913.

The seam averages about 5-6 in thickness.

ROOF:

The main roof consists of from 700' to 800' of sand stone and slate. When a sufficient number of pillars have been drawn the roof usually falls in huge slabs.

The immediate roof is composed of dark, brittle slate with thin strata of coal running through it. The roof is considered treacherous and requires systematic timbering to insure safety.

FLOOR:

The floor is composed of a rather hard, smooth fire clay, particles of which do not readily become mixed with the coal in mining and loading.

MOISTURE:

The roof, ribs and coal are generally found moist, and the absence of accumulations of coal dust was quite noticeable.

GAS:

The mine is classed as non gaseous, no methane having been detected by safety lamp test at any time either before or after the explosion. However, it was rumored that the miners had been able to light gas in a few places about a year prior to the explosion, but there did not seem to be much evidence to substantiate this statement. Various tests were made with both the flat wick Koehler and round wick Wolfe safety lamps both in and outside the area affected by the explosion but the presence of methane was not revealed.

The mine air was sampled at three different points by the water displacement method and the highest percentage of methanee indicated .04.

The first sample was taken in No. 8 room off 1st Rt. off No. 21 South Haulage; the second on the return air current; main haulage, 600 feet inbye drift mouth, and the third on the main return 300 feet inbye the drift mouth.

The first sample was taken in still air, the second in a volume of 17,909 cubic feet per minute and the third in a volume of 13,750 cubic feet. (See appendix for analyses.)

DESCRIPTION OF MINE AND METHOD OF OPERATION.

DEVELOPMENT AND SYSTEM OF WORKING:

No. 2 North is a drift mine, developed on the panel system. The main openings consist of three entries. The right hand entry is used as the main intake, while the center entry, which is the main haulage road, and the left hand entry are used for the return air ways. The two entry system is used on all face and butt entries.

Panels are usually 2200'in length; entries and air courses are driven approximately 12' in width and on 50' centers; rooms are turned off entries only and driven 25' in width on 50 feet centers and 300 feet deep. Some years past, however, it was the custom to turn rooms off both entries and air courses. Barrier pillars 250' in width are maintained on either side of the main haulage and air ways and one hundred feet planking pillars are provided between the first room on each butt entry and its face entry. Some pillars have been extracted but this work has not been prosecuted on a very extensive scale.

MINING:

All coal previous to being shot is undercut either by hand or by electric chain machines. The mining is put in near the top of the seam in the pick work and the machine mining is put in at the bottom of the seam, nine machines

being used. The machine cuttings are loaded out before shooting takes place. Owing to the general dampness of the majority of the working places very little dust as a result of the operations of the mining machines was in evidence in the immediate vicinity of the face.

EXPLOSIVES:

3 F Black Powder fired by squibs is used exclusively for breaking coal and for brushing top. Fine coal is generally used for tamping but clay is also kept on the partings for this purpose. No shotfirers are employed but each miner drills, charges and shoots his own holes at any time during the working shift. As a rule the point of holes does not extend beyond the face of the mining.

The black blasting powder is conveyed into the mine by the miners themselves in metal canniesters or powder jacks. No miner is allowed to carry into the mine an amount of Black Powder in excess of what may reasonably be expected to be consumed in a single shift, this amount not to exceed five pounds in any one day.

ELECTRIC EQUIPMENT:

Power sufficient for the operation of all machinery connected with the operation of the mine is generated by a local power plant situated near the tipple.

A potential of 250 volts is used in all underground equipment. Transmission lines are carried into the mine along the right hand side of the main haulage road. They are well insulated, supported from the roof by porcelain insulators placed at sufficiently close intervals to prevent sagging, and are placed well away from trolley wires and tracks. Trolley wires are well protected by side boards at points where it is necessary for men to pass under them.

HAULAGE:

The coal is gathered and delivered to the main partings by mules - working singly and in spike teams. From the partings the coal is conveyed to the tipple by electric locomotives. Owing to the absence of any appreciable grades in the mine trips of considerable size can be handled without difficulty. 23 mules are required to gather and deliver the coal to the motor side tracks.

Tramcars are of the flat bottom type, constructed of wood and equipped with hinged end gates. They are well put together, kept in good repair and as a consequence very little fine coal escapes in transit. Cars are usually topped about six inches above the sides.

LIGHTING:

The main haulage road is illuminated by incondescent electric lamps. The mine is worked exclusively with open lights. The carbide lamp is in general use among the miners. A small number of safety lamps are kept on hand for emergency purposes only.

VENTILATION:

The mine is ventilated by a 20-foot steam driven centrifugal fan operating as a pressure fan, normal speed 85 R.P.M. Rock steppings are generally used thruout the mine, those on main haulage-ways being faced with cement. There are four splits in the air current and by reference to the District Mine Inspector's report under date of Nov. 16 and 17, 1915 (the last inspection prior to the explosion, (See appendix), it would seem that the ventilating current was sufficient in volume and properly distributed.

The fan is located at the mouth of the right hand drift; the fan house is of wood construction thruout, but at the time of the explosion preparations were being made to cover the fan house inside and out with sheet iron in order to make it as nearly fire proof as possible.

HUMIDITY:

On account of the general damp condition prevailing almost thruout the mine no method of humidifying the mine is employed except in the immediate vicinity of the pillar workings on the first right off 21st south haulage. It is understood that water is hauled from the 21st south haulage and deposited daily in this section of the mine. Accumulations of water were in evidence near the face of first and second left off 22nd south haulage and first right heading and air course off 24th north.

DRAINAGE:

Drainage is good throughout the mine, very little pumping being required. Pumps are electrically driven, voltage 250.

FIRE PROTECTION:

No facilities are afforded for underground fire protection. With the exception of the machine and blacksmith's shop the surface buildings are of frame construction. As a protection against fire water plugs are placed at convenient points to the surface buildings. Suitable pressure is maintained on the water mains by a tank of considerable capacity placed well up on the mountain-side.

The Boomer Coal & Coke Company does not maintain a crew for rescue or fire fighting service, neither is there a central rescue station maintained in this district. So far as determined there were no men in the employ of this company at the time of the explosion who had received training with rescue apparatus.

STORY OF THE EXPLOSION

LOCAL CONDITIONS:

On the day of the explosion weather conditions were not unusual at that season of the year. So far as known there had been no sudden changes of temperature; the day was reasonably clear and presumably the barometer stood somewhat high. The mine was working to its full capacity and the fan was in operation and running normally. About 300 men had entered the mine at 7:00 A.M. and everything had moved along with customary smoothness. Neither the mine foreman nor his assistant had received notice of any disturbance of the ventilating current or of any unusual condition prevailing in the mine on the morning of and prior to the occurrence of the explosion.

THE EXPLOSIONS:

The phenomenon of two explosions occurring at such a short interval in a mine considered to be free from explosive agencies, such as dust and gas, created no mild sensation on the part of those most familiar with the

conditions prevailing in the mine.

During the recovery work and at the time the investigation was begun considerable skepticism was evidenced on the part of some relative to the occurrence of a second explosion, but as the investigation progressed it became increasingly evident that there had occurred, in fact, two explosions. This fact is born out by the evidence found in the explosion area and was subsequently corroborated by the testimony brought out at the coroner's inquest. The occurrence of the second explosion, therefore, seems to be established beyond a reasonable doubt.

The first explosion is supposed to have originated in Room No. 9 off first right off 21st south haulage. Joseph Washington, a colored driver, it is alleged, was pulling a loaded car out of this room and when he had travelled about a quarter of the length of the room from the face his light was extinguished. He stopped his mule and requested a light from a miner standing nearby. Just as Washington lighted his lamp it flashed and presumably ignited gas, the flame of which rolled back through a cross-cut on the left of the room into the pillar workings and thence back again into Room No. 9. Both Washington and the miner dropped to the bottom and crawled out of the room without lights. These two, together with two slate men working

in No. 1 room off first right off 21st south haulage, were the only ones directly involved in the first explosion. Washington and the miner afterwards escaped safely to the outside. The concussion of the first explosion was heard by only a few men who were working in the immediate vicinity. Mine foreman John Huddy; Assistant foreman Lilly, and John Crouse, were in Room No. 4 5 off the second right entry off 21st south haulage, when they met the Italian trapper boy, Dominique Pedro, who informed them that something was wrong down on first right. The above-named men proceeded at once as quietly as possible to get all men out of the mine. Huddy at once opened the trap door at the mouth of 21st south haulage in order to short-circuit air from the first right off 21st south haulage; he then proceeded to the 13th south haulage and thence to the surface in order to conduct the party of miners to the outside. (At the time of the occurrence of the second explosion Huddy was probably on the outside. No indication of a second explosion was noticed by him.) Both Crouse and Pedro, who lost their lives in the second explosion, rendered valuable assistance in warning men to proceed to the surface.

THE SECOND EXPLOSION:

It seems to be the general reckoning that there was an interval of about forty minutes between the two explosions. The second explosion was by far the most violent and resulted in the loss of 23 lives.

The majority of the men escaped to the surface thru the main haulage of No. 2 north mine while several made their way out thru No. 2 south mine, which connects with No. 2 north mine on the extreme right hand workings of the latter mine.

Upon receiving warning, shortly after the first explosion, the men working in the 21st and 22nd south haulages and in the first and second left off 22nd south haulage proceeded against the air current toward the outside along the first right off 21st south haulage. These men had travelled only a short distance outby on the 1st right entry when they encountered, presumably, a body of smoke and gas resulting from the first explosion. It is the general belief that the open lights worn by these men set off the second explosion. The point at which it is alleged the second explosion occurred was only a few hundred feet from the supposed point of origin of the first explosion.

Electrician M. F. Fielding, an eye-witness of the second explosion, was coming inby on first right from the 13th south

and had reached room No. 9 with three companions when they saw the open lights on first right off 21st haulage and then saw the flash of the explosion, which hurled dust and debris over them and rolled them over and over for probably 30 feet or more.

Lilly made two trips along 21st south haulage and thru part of 1st right off 21st south haulage immediately after the first explosion. Upon his first trip he observed no men down but one mule had been knocked down and was still hitched to trip of cars. When the second trip was made two men, still breathing, were found on the side track just outby first right off 21st south haulage. It developed afterward that these were the two slate men working in No. 1 room off 1st right and it is presumed that they had crawled out on to the 21st south haulage soon after the first explosion. Lilly states that he was preparing to remove these men when a second explosion occurred. One of these men was blown partly under a loaded car and was lying face down. Death came probably to both soon after the occurrence of the second explosion. As soon as possible after the second explosion Lilly, with 27 other men, proceeded to the face off first right off 23 north and erected a barricade of gob 6' thick at the bottom, 3' thick at the top, 20' outby the last open cross-cut and 150' from the face (see map).

As a precautionary measure, in order to short circuit any of the after-damp that might find its way into the first right off 23rd, Lilly and party propped open the trap door at the mouth of this entry. Some of these men were affected by the after-damp before they reached 23rd north, but the air was good on the first right off of this entry. This barricade was discovered about 6 P.M. of the day of the explosion, by a rescue party led by Henry Deem, W. F. Mandt, and composed of representatives from adjacent mines and employees of the Boomer Coal & Coke Co.

In the absence of Superintendent T. H. Huddy, Mr. Mandt, Supertendent of the Sunday Creek Co. at Longacre, W.Va. (some five miles away), who had reached Boomer shortly after the second explosion, took charge of the situation. Mr. Mandt conducted a rescue party into the mine shortly after 2 P.M. of the day of the explosion. This party entered the drift mouth, out of which considerable after-damp was pouring, and proceeded against the air current to 2nd south entry. Here they passed thru a double door into the air course and thence travelling with the air current into the affected zone. No live men were discovered on this exploration. The party consisted of W. F. Mandt, in charge; Supt. Henry Deem, of the Cannelton Coal & Coke Co., of Cannelton, W.Va.; Mine Foreman John Huddy, Boomer No. 2; Mine Foreman Lee Jenkins, from the Sunday Creek Co., of Carbondale, W.Va.; Mine Foreman

William Martin, from the Sunday Creek Co., Longacre, W.Va.; George Evans, Mining Engineer, of the Sunday Creek Co., Longacre, W.Va.; Mine Foreman W. T. Thompson, from the Sunday Creek Co., Longacre, W.Va., and Matt Dixon, from Smithers, W.Va.

Later in the afternoon of the day of the explosion, Mr. Earl A. Henry, Chief, Department of Mines, arrived on the scene and took charge. A rescue party led by Mr. Henry, composed of District Inspectors Absalom, Mason, Cobb and the majority of personnel composing the initial rescue party, proceeded into the mine along the main haulageway against the return air current and, after restoring the ventilation by the erection of canvas stoppings, explored first right off 21st south haulage. The two men previously mentioned were found on the side track just outby the mouth of 1st right and 17 bodies were located along the first right. Four mules were found dead on this side track and one on the first right outby the point where the bodies were located. Six of the 17 bodies were covered by a roof fall averaging about 18 inches in thickness and approximately 125' in length. The fall occurred between the time the rescue party explored this entry in the afternoon and 12 o'clock midnight. This party returned to the surface after exploring the affected area and also part of the territory immediately adjacent. This

party reported that the air was very hot in the zone of the explosion, but no one was overcome and the canary carried by the party failed to show any marked signs of distress. On account of the excitement prevailing among the foreign element it was deemed best by those in charge not to remove any bodies until this state of feeling had somewhat subsided.

Prior to the arrival of the representatives of the State Department of Mines great difficulty was experienced in preventing some of the Italian workmen from entering the mine with open lights.

At about 4 o'clock P.M., on November 30, 1915, a telephone message was received from the dispatcher of the Guyan Valley Division of the Chesapeake & Ohio Railway Co., at Logan, W.Va., by D. J. Parker on Rescue Car No. 8, stationed at Cranoco, W.Va., stating that an explosion had occurred at Boomer, W.Va., and immediate arrangements, if desirable, would be made by the Chesapeake & Ohio Railway for the movement of the car from Cranoco, W.Va., to Charleston, W.Va., where connections could be made with the Kanawha & Michigan Railway on which Boomer is located. The dispatcher was at once notified that the Bureau of Mines would appreciate prompt movement of the car to Charleston. Accordingly, a freight engine, doing local work about ten miles away, was rushed to Cranoco and special movement was given the car to Charleston.

While preparing a message informing the Pittsburgh office of the report relative to the occurrence of the explosion a wire was received from Pittsburgh notifying the writer to proceed with the car at once to Boomer. It was approximately 45 minutes from the time the message was received from the Chesapeake & Ohio dispatcher at Logan until the car was under way. The car was turned over to the Kanawha & Michigan at Charleston and a special engine, given the right of way over all trains, handled the car to Boomer, arriving there at 12:14 A.M., December 1st. Such prompt service on the part of the Chesapeake & Ohio and Kanawha & Michigan deserves the highest commendation.

Cranesco is situated at the extreme end of the Guyan Valley Division of the Chesapeake & Ohio, a distance of 100 miles from Barboursville, the junction point with the double track main line of the Chesapeake & Ohio. The Guyan Valley Division consists of only a single track line and an unusual heavy coal traffic passes over it at all times. Everything possible was done by the C. & O. authorities toward clearing this division but in spite of their efforts considerable time was unavoidably lost.

Upon arrival of the car at Boomer the writer reported at once to Mr. Earl A. Henry, Chief of the Department of Mines, and to Mine Foreman Huddy.

Upon his request Dr. Lyons, the local physician for the Lorain Coal & Dock Co., of Cranece, who was taking training in first aid and mine rescue apparatus at the time the notice was received of the occurrence of the explosion, was permitted to accompany the car to Boomer. He was instructed to report to the local physician at Boomer with a view of rendering any assistance possible.

Shortly after the arrival of the car three rescue parties were made up, consisting of State and company officials and employees and representatives from adjacent mines, and upon request of the State authorities one Bureau representative wearing a rescue apparatus accompanied each party. Those wearing rescue apparatus were--D. J. Parker, H. D. Jones and G. W. Grove. The three rescue parties left the surface in motor trips at 1 A.M. and proceeded 1¾ miles to within about one thousand feet of the explosion area, Not deeming it advisable to run the motor further, the parties proceeded from this point on foot. The entire live workings of the mine inby the 19th south entry were explored with the exception of the faces of the three main parallel entries. Inasmuch as the ventilation had been temporarily restored the afternoon previous the use of rescue apparatus was not required. Two dead men were seen on the motor side track on 21st south haulage just outby the first right entry; 11 of the 17 bodies on the first right were noted. One live mule was located on

the second left off 22nd south haulage, and one on the 23rd north, both of which were later driven to the surface. With the exception of the six bodies under the roof fall on first right all were removed before 6 A.M., December first.

A party led by J.I.Absalom discovered at 6 A.M., Dec. 1st, one dead man and five live men in 6th or last cross-cut inby No. 21 south haulage on main entry. One died later and all were unconscious or in a semi-conscious condition when found. Of the four that survived, one suffered a partial paralysis of the hand and another's feet was similarly affected. These men were carried to the motor side track just outby 21st south haulage on stretchers, loaded into cars and carried to the surface. Upon reaching the motor side track these men were examined by a physician and all were still breathing. These men were in line to receive the full force of the after-damp after the ventilation had been restored by the erection of the canvas stoppings.

While some of the members of the rescue parties were proceeding to the surface shortly before 7 A.M., Dec. 1st, smoke was detected issuing from the 8th stopping on the main haulage outby the 21st south haulage. The writer, accompanied by Messrs. Jones and Grove and several others went at once to Car 8, procured two Pyrene and two acid fire extinguishers and three apparatus, returned to the mine, passed thru the

curtain erected in the 7th cross-cut outby 21st haulage, thence into No. 1 main entry air course to a point opposite the 8th cross-cut outby 21st haulage. At this point a post was discovered on fire standing near the center of the main air course. The fire was promptly extinguished by the use of one Pyrene and one of the acid extinguishers. Other posts just inby the one discovered on fire, bore evidences of having burned for short periods of time.

The six bodies burned on the first right entry were not removed until the night of December 1st. Upon the removal of these bodies the recovery work was completed.

Much credit is due to the representatives of the State Department of Mines, the employees of the Cannelton Coal & Coke Co. and Sunday Creek Co., and officials and employees of the Becmer Coal & Coke Co., et al, for the efficient manner in which the recovery work was prosecuted.

Special attention should be directed to the sacrifice made by Assistant foreman John Crouse, and the Italian trapper boy, Dominique Pedro. Instead of making their way to the surface following the first explosion they stayed in the mine in order to warn the men to proceed to safety. Both were killed in the second explosion.

CORONER'S VERDICT.

(PROLOGUE)

At a coroner's inquest held at Boomer, West Virginia, on the 1st day of December, 1915, before E. C. Sanders, a Justice of the Peace of Falls District, the county of Fayette and State of West Virginia, the following jurors were selected to inquire into and ascertain the cause of the explosion in the #2 North mine of the Boomer Coal & Coke Co. on November 30, 1915: John Kirby, Thomas H. Simms, Cleve Martin, Hy. Buckholt, Ben Davis, H. W. Claypool.

After the jury was impaneled and sworn as provided by law, they viewed the remains of Robert Yancy, John Crouse, Joe Partlow, A. B. Howard, Dominique Vitrella and others, there lying dead, the further taking of testimony was continued until the 6th day of December, 1915. On the 6th day of December the jury was again convened by the said E. C. Sanders, Justice, the members of the jury all being present. The State being represented by Earl A. Henry, Chief of Department of Mines; C. H. Summerfield, Prosecuting attorney of Fayette County, W.Va. and S. B. Montgomery, representing the miners.

VERDICT:

Robert Yancy, et al, came to their death by a gas explosion on first right off 21 South entry.

NOTE:

See appendix for complete list of those killed.

ALLEGED CAUSES.

Theory No. 1:

Originally the cause of the first explosion was thought by all parties concerned to have been a blown-out shot, resulting in a local dust explosion, while the second explosion was attributed to another blown-out shot.

Theory No. 2:

Prior to the establishment of the fact that two explosions had actually occurred some sought to explain the initial concussion or disturbance by the occurrence of an unusually heavy fall in the pillar workings between 1st and 2nd right off 21st South haulage, thereby liberating a body of gas from the roof, the ignition of which resulted in the first and only explosion.

Theory No. 3:

That a heavy fall or falls, which were known to occur at frequent intervals in this section of the pillar workings, took place shortly before the first explosion, thereby liberating a body of gas which was ignited by the driver, Joseph Washington. The second explosion is accounted for by a second fall and the release of an additional body of gas which was ignited by the open lights worn by Jno. Crouse and party while attempting to make their escape to the surface.

The first theory became untenable upon failure to find any evidence whatsoever of a blown-out shot. Likewise it became necessary in the face of the evidence of Joseph Washington, M. F. Huddy and Assistant Foreman Lilly to abandon the second theory so far as it relates to the cause of the first explosion. Assuming that theories 1 and 2 have been eliminated in accordance with the evidence at hand it appears that theory No. 3 will have to be relied upon as a reasonable but not altogether satisfactory explanation of the causes of the two explosions. While it is quite possible that two gas explosions could result from identically the same cause and at approximately the same point at such a short interval in a mine never before known to liberate explosive gas, it does not seem altogether probable, yet the evidence tends strongly to support theory No. 3.

NOTES OF EVIDENCE OBTAINED BY BUREAU OF MINES ENGINEER.

Investigations relative to the probable cause and extent of the disaster were conducted December 2 and 3 by Messrs. Paul, Parker, Mason, Jones and Grove.

At 9:15 A.M., December 2nd, the first investigation was begun. The party consisted of H. B. Mason, D. J. Parker, G. W. Grove, H. D. Jones, Earl A. Henry, District Inspectors Absalom, Mason and Cobb, Assistant General Manager Whalen, Mine Foreman Jno. Huddy, Supt. F. M. Huddy, et al.

The party, after going thru the affected area, returned to the surface at 12:30 P.M. The same party, with the addition of Mr. Paul who had in the meantime arrived from Pittsburgh, again entered the mine at 3 P.M. and returned to the surface at 6:15 P.M.

Messrs. Paul, Parker, Mason, Jones and Grove again entered the mine for the final investigation at 8:30 A.M., December 3rd, returning to the surface at 12 noon.

Car 8 departed from Boomer at 1:30 P.M. of this date, December 3rd.

Air, road dust, coked dust and coal samples were collected. (See appendix).

DETAILS OF EVIDENCE.

What evidence that may have been left as a result of the first explosion was obliterated by the second. But the testimony of those who were in or near the affected area between the two explosions indicates that it was accompanied with only sufficient violence to throw dinner buckets around and probably knocked one mule over; however, it may have been that the mule became entangled in the harness and fell. That the after-damp resulting from the first explosion was of a dangerous character is shown by the fact that the two State men working in No. 1 room off 1st right off 21 S. haulage were probably

unconscious when discovered on the 21st haulage side track just outbye 1st right. These men were traveling with the air current which probably resulted in their being overcome so completely.

So far as known no doors or stoppings were blown down by the first explosion. It is supposed to have orginated in the first room outby the point where the 19th South entry crosses the 1st right.

The origin of the second explosion was presumably very near a point where the 1st right off 21st South haulage intersects the 20th South entry. The force of the explosion traveled both inbye and outbye along the 1st right, i.e., in opposite directions from the point of origin; outbye these two entries along the main air course; both inbye and outbye the 1st right on the 21st South haulage and inbye the 22nd South on the first left entry.

At a point in the first room off 1st right outbye 19th South entry, where Jos. Washington is said to have ignited the gas which caused the first explosion, a coat considerably burned was found hanging on a post. Two caps were found near this point, also a loaded car was standing on the track. A loaded car with two wheels off the track nearest the inbye end of the car was found on the 1st right off 21st S. haulage between rooms 2 and 3 outbye 19th S. entry. A small piece of

slate was found sticking in the inbye face of a post on 1st right entry just outbye 19th South entry. Loose timbers and debris showed evidences of disturbance on the 1st right off 21st South Haulage outbye 19th South entry as far as the point where Electrician Fielding and his three companions were standing (see map).

Coked dust was in evidence on the outbye exposure of posts on first right between 20th and 21st South. The bodies of 17 men and one mule were located in this section of the first right entry. All the bodies indicated the presence of intense heat and also considerable violence, the some of the indications of violence may have been due to the subsequent fall of roof. Several dinner buckets were found along with these bodies.

The trolley wire was knocked down on 21st South Haulage near 1st right; outbye the first right on 21st South haulage two bodies were found, four mules and several dinner buckets, also six empty cars and sixteen loaded cars, none of which were derailed. There was little or no evidence of violence on the 21st South haulage inbye the first right entry, and with the exception of the trap door blown down on the 1st left off 21st South there was no indication of violence.

Considerable force was evidenced by the disturbed condition of the gob and timbers along 19th South outbye 1st right entry off 21st South Haulage. Several charred timbers, the

presence of some coked dust on the ~~the~~ inbye faces of posts, and a burning post indicated the presence of considerable heat along the main air course outbye 19th South entry. No evidence of flame was found in the main air course inbye the 20th south. Very little or no force seems to have been expended thru the robbed area in the direction of the 2nd right off 21st South haulage.

The steppings on the main haulageway are constructed of gob faced with cement. The 10th stepping outbye 21st Haulage was cracked near the inbye rib of the cross-cut; 4th, 6th and 7th steppings outbye 21st Haulage were blown out completely and deposited on the track and against the opposite rib of the main haulageway; the 3rd stepping outbye 21st Haulage had a hole 18" in diameter blown thru near center. No other steppings in the mine were affected. The trap door at the mouth of 21st haulage was blown outbye and was found lying near the left hand rib of the main haulage. The trap door at the mouth of the 1st Left off 21st Haulage was blown inbye about 40' from its customary location.

~~Reapted~~ Repeated tests by safety lamps for the presence of methane were made both during the rescue work and subsequently while making the investigation and at no time was it possible to detect even a trace of inflammable gas.

SUMMARY OF EVIDENCE

It seems a well established fact that two distinct and separate explosions occurred; that inflammable gas was present in the mine at the time the two explosions occurred, the ignition of which was directly responsible for the occurrence of both explosions; that the gas was liberated from the roof on account of heavy roof falls in the pillar workings off 1st right entry of 21st South haulage.

The gas was ignited in both instances by open lights.

CONCLUSIONS AND LESSONS

(CONFIDENTIAL)

It is believed that the second explosion would not have occurred had the fan been operating as an exhaust instead of a force fan, thereby causing the afterdamp to travel outbye instead of inbye in the 1st right entry. The two men overcome as a result of the first explosion and the four suffocated near the face of the main haulage would, it is assumed, have stood a much better chance for their lives if the afterdamp had been traveling outbye instead of inbye along the first right entry off 21st South haulage.

The dangers incident to the recovery work were greatly enhanced by reason of the fact that it was necessary for the

rescue parties to travel against return air current, laden as it was with afterdamp, for a considerable distance.

Adequate fire boss inspection would make for greater safety.

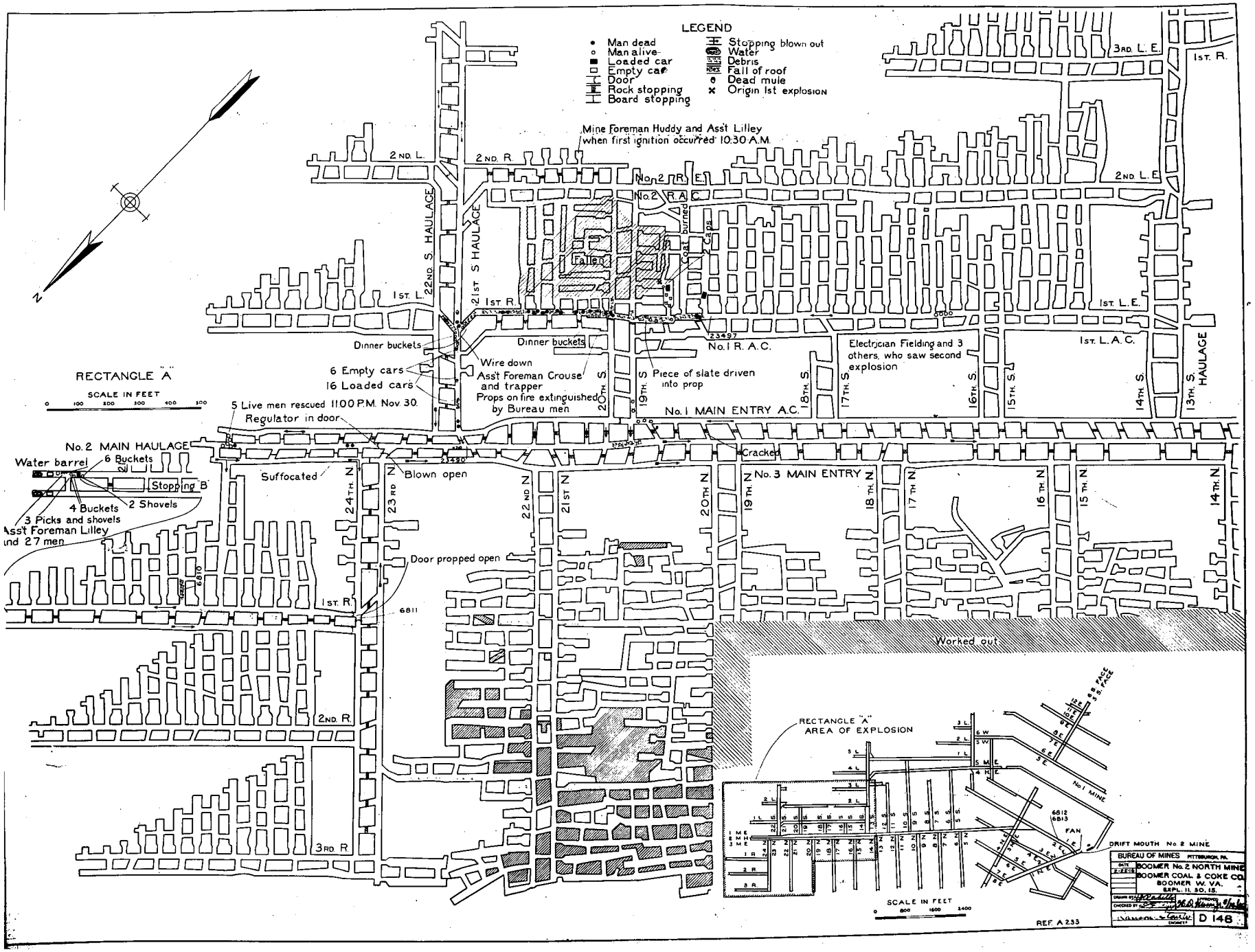
It seems most ~~impress~~ unfortunate that the two slate men who were partially overcome as a result of the first explosion and had crawled out on the 21st South haulage were not removed to a place of safety before the second explosion occurred.

Had a trained crew equipped with rescue apparatus been available immediately after the explosion it is believed that much valuable work might have been accomplished. This is one of many instances that should serve to emphasize the desirability of the operators maintaining adequate rescue stations and a corps of trained men.

One of the most effective means of escaping the effects of the deadly afterdamp resulting from an explosion is to erect a barricade. It was thru Assistant Foreman Lilly's efforts and forethought that 27 men were led to barricade themselves in shortly after the second explosion.

When the fact is appreciated that disasters of this character can and do occur in mines considered to be free from explosive agencies such as dust and methane the conclusion is

unavoidable that closed lights (perferably some type of the approved electric lamp) should replace the open light. While the method of shooting the coal and the explosive used did not in any manner, so far as known, figure as an element in the causes leading up to either of the explosions, still it is felt that the undesirability of using black blasting powder and stemming shots with fine coal should receive proper emphasis.


LEGEND
Man dead
Man alive
Loaded car
Empty car
Door
Rock stopping
Board stopping
Stopping blown out
Water
Debris
Fall of roof
Dead mule
Origin 1st explosion
Mine Foreman Huddy and Asst Lilley when first ignition occurred 10:30 A.M.
3RD. L. E.
1ST. R.
2ND. L.
2ND. R.
No. 2 R. E.
2ND L. E.
No. 2 R. A. C.
22ND. S. HAULAGE
21ST S HAULAGE
Coal burned
2 Cars
Fallen
1ST. L.
1ST. R.
1ST. L. E.
23497
Dinner buckets
Dinner buckets
No. 1 R. A. C.
Electrician Fielding and 3 others, who saw second explosion
1ST. L. A. C.
6 Empty cars
16 Loaded cars
Wire down
Asst Foreman Crouse and trapper
Props on fire extinguished by Bureau men
20TH. S
19TH. S
Piece of slate driven into prop
18TH. S.
17TH. S.
16TH. S.
15TH. S.
14TH. S.
13TH. S. HAULAGE
RECTANGLE "A"
SCALE IN FEET
0 100 200 300 400 500
5 Live men rescued 1100 P.M. Nov. 30.
Regulator in door
No. 1 MAIN ENTRY A.C.
No. 2 MAIN HAULAGE
Water barrel
6 Buckets
Stopping B
4 Buckets
2 Shovels
3 Picks and shovels
Asst Foreman Lilley and 27 men
Suffocated
Blown open
Cracked
No. 3 MAIN ENTRY
24TH. N
23RD N
22ND N
21ST N
20TH N
19TH N
18TH N
17TH N
16TH N
15TH N
14TH N
Door propped open
6810
6811
1ST. R.
2ND. R.
3RD. R.
Worked out
RECTANGLE "A"
AREA OF EXPLOSION
No. 1 MINE
6812
6813
FAN
DRIFT MOUTH No. 2 MINE
SCALE IN FEET
0 800 1600 2400
REF. A 233
BUREAU OF MINES PITTSBURGH, PA.
BOOMER No. 2 NORTH MINE
BOOMER COAL & COKE CO.
BOOMER W. VA.
EXPL. 11. 30. 15.
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