

Report of Explosion  
in  
Yukon Mine  
of the  
Yukon Pocahontas Coal Company  
at  
Susanna, West Virginia.  
on  
December 15, 1917.

by

E. B. Sutton.

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Introduction.

On December 15, 1917, between four and four thirty of the afternoon an explosion occurred in the Yukon Mine of the Yukon-Pocahontas Coal Company in which 18 men lost their lives. At the time of the explosion, 22 men were in the mine, but four men, the Superintendent of the mine, foreman and two laborers were on their way out of the mine and had travelled beyond the point where the explosion appeared to stop. Of the 18 men killed, 13 were killed by violence, four were asphyxiated and one, the man who in all probability lit the gas, either died from his burns or was killed by after-damp resulting from the explosion.

It being an idle day, the mine foreman and 20 men entered the mine at seven o'clock in the morning to continue the work of taking up light steel, and replacing it with heavy steel on the main entry. This work had been in progress during the day and night shift of December 14, 1917, and the crew left the mine at 5:30 o'clock the morning of December 15, 1917, and later

returned to work at 7:00 o'clock after taking breakfast. The mine foreman testified that when he left the party a few minutes before the explosion, 14 men were engaged in this work at the entrance to the 9th Left entry, and four men were engaged in loading slate at the face of the main entry.

#### General Information.

Location           The mine is located at Susanna, McDowell County, West Virginia, on the Norfolk and Western Railroad.

Ownership and Operator   The mine is owned and operated by the Yukon Pocahontas Coal Company. Mr. W. F. Harman of Tazewell, Virginia, is president, Mr. H. M. Meyers of Bramwell, W. Va., is general manager, Mr. Wm. Prentice, of Susanna, is superintendent, and Mr. J. M. Pitman of Susanna, is mine foreman.

#### Geology and Character of Coal.

Geology           The mine is developed in the War seam which averages about 5' 0" in thickness. The seam is practically flat altho there are at places rolls that require much shooting of roof or bottom to give suitable grades. The main entry is slightly up grade against the loaded trips.

Coal               The coal is bituminous and fairly hard. It is mined chiefly for domestic and steam purposes and as large a percentage of lump coal as possible is desired. Analysis of five face samples cut by Messrs. E. B. Sutton, and H. I. Smith was made in 1912 by this Bureau and a record of these are appended. (See appendix.)

Roof               The roof is slate and in general is excellent, requiring little or no timbering.

Floor              The floor is hard, smooth sandstone and forms an excellent

surface from which to load.

Moisture The coal bed is naturally dry. The measures give off little moisture with the result that no pumps are needed in the mine. Occasionally water collects in dip workings and must be baled into a box provided for this purpose. This water is usually disposed of along entries where a particular dry condition exists.

Gas Methane is known to be liberated by the coal. Recently this has become such as to require the placing of line brattice from last cut-thrus in entries and rooms to the face.

#### Description of Mine and Method of Working.

Development and System of Working. The mine was opened by a drift following the coal and at tippie height. From main entries, two intakes and two returns were driven and at regular intervals entries were driven off the main entries at 90 degrees. Rooms were turned off the side entries. In recent development and to avoid excessive grades, due to a heavy roll in the seam, diagonal entries were driven off the 9th Left entry at 45 degrees with this entry, and off these entries rooms will be driven. Rooms are driven on 50 foot centers with a 30 ft. pillar between and entries are about 12 ft. wide with a 35 ft. chain pillar.

Mining The coal is undercut by chain machines in a section of the seam at its bottom that is composed of a series of alternate bands of coal and bone coal. Machine cuttings are loaded with the coal of the seam.

Explosives Permissible explosives were used in blasting down the coal. As the coal shoot reasonably easy, it is stated that charges in excess of the permissible limit were not used. Miners carry the explosive to their working places and do their own shooting.

Electrical Equipment Power is purchased from the Appalachian Power Company and is converted at the mine to direct current at 250 volts. The fan is

driven by alternating current where as all other equipment in the mine, including haulage locomotives, and mining machines are operated by direct current. Feed cables are carried thru the main entry from which power lines radiate to the different sections of the mine. There is one electrically driven portable air compressor.

Haulage Live stock is not used in the mine. Empty cars are placed at room necks or as near face of headings as the locomotives could travel, and from these points men pushed them to and from the face. Both steel and wooden cars were used and had end gates suitable for dumping in cross over dump. Rails on the main heading and in haulways between entries were 60 pounds and in side entries 30 pounds. Much attention had been given road ways in this mine, and they were in excellent condition for economic haulage.

Lighting Open lights were used throughout the mine, the carbide lamps being in almost universal use. It is stated that motormen and snappers used oil burning lamps. Fire bosses used flame safety lamps in making examinations. It was learned from trustworthy source that on December 20, 1917, this Company purchased 100 Edison Storage battery miners' cap lamps.

Ventilation The mine was ventilated by a centrifugal fan which was electrically driven and operated as an exhaust. Officials state that under normal conditions it developed 75,000 cu. ft. of air. There were three main splits in the air. The course of the ventilation currents is shown on map appended.

Humidity No means of artificially humidifying the dust of the mine was employed, except in cases where water accumulated in dip workings. This was baled into a water car and the water taken and placed on especially dry portions of entries. There being no boilers, there was no means of exhausting steam into the intake air.

Drainage           The mine made so little water that drainage was not a consideration.

Fire Protection       From observation, and information obtained, fire fighting facilities about and in the mine were inadequate to combat a fire of any consequence.

Story of the Explosion.

Local conditions       A cold wave had swept this section several days previous to the explosion. However, on December 15, 1917, the weather was moderating. A drop in barometric pressure could have had little effect upon this explosion as its origin appears to have been due to the ignition of a body of gas, the accumulation of which was permitted by a short circuit of the air, and not by gas finding its way out of developed workings, due to a reduction in atmospheric pressure. The fan was running.

Fire Boss' Report       An examination of the mine was not made by the regular fire boss on the morning of the explosion, but it is maintained by officials that one of the workmen, who lost his life in the explosion, and who was competent in the use of a safety lamp, had made an examination after the crew reached their work at the entrance to the 9th Left entry, the morning of the explosion. No report of this examination was made. The fire boss reported gas in but two places on December 14, 1917.

Mine Inspector's Last Report       Mr. L. G. Bray, district Mine Inspector, is reported to have made an examination of this mine in September, 1917, and to have reported conditions in good shape. The only recommendation made being that trolley wire be guarded at certain partings where men were compelled to travel.

The Explosion           Testimony presented during the inquest established the fact that W. B. Farney, fire boss was ill the morning of the explosion, and did

not make an examination of the mine. Also that William Prentice, superintendent, instructed the mine foreman to take his crew of men into the mine at 7:00 o'clock of the morning of December 15, 1917, without an examination having been made. The same crew had come out of the mine at 5:30 o'clock, after working all night and were to return to the same work after taking breakfast and a short rest. J. M. Pitman testified that he instructed Lew Sheets, who was regarded competent in the use of a safety lamp to make examination of the mine, and that all the men remained on the main entry at the 9th Left entry until he returned, which was about an hour and fifteen minutes. It is reported that this man (Sheets) pronounced the mine, or that portion adjacent to where the men were going to work, safe, and proceeded with four other men to the face of the main entry where they were assigned the work of loading up slate. J. M. Pitman stated that in laying the heavier rail in the main entry in by the 9th Left entry, it was necessary to leave the door across the main entry and between the 9th Left and 9th Left aircourse open, and that after the rail was laid, the door would not close due to the increased height of track. He (Pitman) stated that before leaving the party at work at the entrance to the 9th Left entry a few minutes before the explosion he gave explicit instructions that no one should leave the party while he was gone to get certain tools and material to continue the work. As he and Mr. William Prentice were on their way out they felt the explosion and state that the recoil felt more severe than the advance wave.

The explosion occurred between four and four thirty o'clock of the afternoon of December 15, 1917, and a few minutes after mine foreman, J. M. Pitman, and superintendent William Prentice had left the party

at work at the entrance to the 9th Left entry. It was known that fourteen men were at work at the entrance to the 9th Left entry and four at the face of the main entry. But seventeen men were accounted for by two o'clock of the morning of December 16, 1917, and it became evident that the eighteenth man was either buried in debris or had wandered into other parts of the mine. On December 19, 1917, at about noon the body of the missing man was found at the face of the 2nd South off the 9th Left and by subsequent investigation, the direction of mechanical forces of the explosion pointed to this point as the origin of the explosion; namely, the ignition of an explosive atmosphere of methane and air, the accumulation of which was unquestionably the result of a short circuit of the air, due to the door on the main entry between the 9th Left and the 9th Left aircourse being left open. No one in authority could suggest any reason for this man's having left the party. It was stated by officials that he had been in the employ of the Company but a few days, and so far as they were informed, he was an unexperienced man. Some suggested that he may have been sent into this part of the mine in search for a tool or had gone off to respond to the call of nature.

In the writer's opinion this explosion was caused by the ignition of gas at the face of the 2nd South entry off the 9th Left entry by the open light of the man whose body was found there.

Ignition of  
Coal Dust.

By the ignition of coal dust this inflammation of gas was undoubtedly extended over a wide area and its force was felt at the fan and from the pit mouth dust is reported to have issued.

Rescue and Recovery  
Work.

Men from adjoining mines responded admirably to the call for assistance, and by two o'clock of the morning of December 16, 1917, ventilation had been re-established to such extent to enable the recovery of

seventeen bodies. The writer reached the mine about six o'clock of the evening of December 16, 1917, and as work had been discontinued until the following day, did not enter the mine until the morning of December 17, 1917. A hasty investigation on the morning of December 17, 1917, of the 1st South off the 9th Left entry by Mr. Holiday of the State's Inspection Force and the writer appeared to present evidence that warranted the opinion that the explosion had travelled into this entry from a point to the left of the 1st South off the 9th Left entry and the work of re-establishing ventilation ~~just~~ in the 9th Left entry and later South entries driven off it was undertaken.

During the work of re-establishing ventilation in the 9th Left entry a serious stampede among the men occurred. This was caused by a temporary shut down of the fan due to the power being cut off and the lack of judgment upon the part of some of the workmen in the manner in which they gave the alarm. Some of the men went immediately outside, while others, as soon as they realized the fan was again in motion, returned, but the moral of the men was weakened and after a conference in which it was apparent that the majority desired to go out, the work was called off for that day.

Ventilation was carried to the face of the 2nd South off the 9th Left entry early of the morning of December 18, 1917, but an examination of the face was not made under instructions from the State Inspectors. About noon of December 19, 1917, a party composed of State Inspectors, Mr. P. P. Kerr and the writer again travelled thru that portion of the mine recently ventilated, and at the face of the 2nd South off the 9th Left entry found the body of the eighteenth man.



Rescue and recovery work was carried on without the assistance of breathing apparatus and none of the men engaged are reported to have suffered undue inconvenience in the work.

State Mine Inspector's Report                So far as the writer knows Mr. Earl Henry, Chief of the Inspection Force of West Virginia, has not made a report of his investigation of the explosion.

Coronor's Verdict        The jury which listened to the evidence presented during the coronor's inquest of December 19, 1917, rendered a verdict, in substance, that eighteen men lost their lives in this mine due to an explosion of gas at the face of the 2nd South off the 9th Left entry. The accumulation of gas was caused by a short circuit in the air due to the door on the main entry at the 9th Left entry being left open and the gas was ignited by an open light. The Company was absolved of all responsibility by the coronor's jury. Transcript of verdict is appended.

Notes Taken During Investigation.

An investigation of this explosion was made by Mr. Earl Henry, Chief Inspector, and Messrs. Holiday, Stockdale, Cobb and Bray, assistant inspectors of West Virginia. The writer conducted an investigation for the Bureau of Mines. In this Mr. J. W. Paul assisted on December 20, 1917. The Company was not represented.

Extent of the Explosion.                It is stated that dust issued from the pit mouth and that the motion of the fan was so disturbed as to injure the motor driving it. A duplicate driving unit was immediately placed in service and the fan again placed in operation in a short time. The superintendent and mine foreman were on their way out of the mine and had reached a point about

midway between the pit mouth and the 9th Left entry. They were not injured and proceeded to the outside. It is apparent from evidence collected after the explosion, that it was confined to the 9th Left entry and South entries, driven off it and the 10th and 11th Left entries and extended out on the main entry to about the 7th Left entry. The right side of the mine was not effected.

Detail of Evidence    The main entry was quite dusty. Samples of this dust  
Main Entry

were taken at points beyond which the explosion appeared to fail to travel. The overcast between the 7th and 8th <sup>left</sup> entries was damaged, the side walls and the rails reinforcing remained in place, but the concrete about the rails was broken and some of the pieces blown outby, while most of it was found under the overcast. A short distance inby the overcast, a side track had been laid that held several trips. Eighteen loaded cars were found on this side track, and these were blown outby about <sup>eight</sup> car lengths. Several of the inby cars were upturned, wrecked and blown outby. Against these was an accumulation of debris in which was ties, tools, props, clothing, and wire. Close by and from 200 to 300 feet outby, the entrance of the 9th Left entry, 12 bodies were found all badly broken up and some so badly dismembered, that identification was impossible. At the entrance to the 9th Left entry, ties under the newly laid track were moved outby until quite a number were placed side by side. In the entry, paralleling the main entry and opposite the 9th Left aircourse, a great quantity of debris was found in which the mangled body of a man was found. Inby the 9th Left entry, the direction of the explosion was traced inby by movement of doors, cars, trolley wire and canvas. Beyond the 11th Left entry evidence pointed to the explosion having died out and about opposite the aircourse to the 11th Left four bodies were found of the four men at work at the face of the main entry. These men had travelled from their

working place to this point and not burned or injured, died from afterdamp.

The regulators at the entrance of the air courses to the 7th and 8th Left entries were blown inby into the respective aircourses. Three stoppings in the 8th Left entry were blown into the aircourse and the stopping across the entrance to the 8th Left entry was blown inby into the entry.

9th Left Entry.

All stoppings were blown into the entry, the pressure being exerted from the aircourse side. There were two open cut-thrus at the face of the entry. Line brattice that was reported to have been at the face of both the entry and aircourse was blown down. In room No.1 a mining machine stood with the cutter bar in the room. The outby end of the machine was blown off the track in an outby direction, and between the head of the machine and the cutter bar a large rock was wedged. It appeared that this rock had been placed in its position by a force travelling outby thru the entry. At several cut-through the remains of stoppings were found in the entry, but trolley wire was found carried into the cut-throughs toward the aircourse. At a number of places it was found that the trolley wire was broken, and that portion inby a hanger was carried outby indicating an outward movement. Coke globules were found in most rooms on the top ends of props or on the floor. Coke insitu was observed clinging to the roff. It is thought that this indicated a lingering flame with possibly some gas in these rooms. In the last cut-through coke globules were noted on the floor and against the rib and appeared to have been coked on the ribs and dropped to the position found.

1st South off  
9th Left Entry

Stoppings in this entry were all blown from the aircourse into the entry. There was no evidence of high pressure in this entry and no evidence of coking. Near the face of the entry, the ribs were

blistered, and charred dust and carbon filaments were noted. Evidence pointed to the explosion having entered this entry thru rooms driven off the 2nd South and to have traveled thru this entry to the main entry and the 10th Left entry.

2nd South off  
9th Left entry.

The last cut-through in this entry was open. Stoppings in the second and third cut-through from the face were blown into the aircourse where as all others were blown into the entry. This entry presented no evidence of high pressure as cars were not disturbed. Coke deposits were lacking, but at places, chiefly near the face, the ribs were blistered. At the face of this entry, two loaded cars were found. The dust on the coal of these was charred. Between the outby car and the right rib, the body of a man was found. His lamp was found under his body, but no cap could be found. The face of the entry was about 40 feet ahead the last cut-thru and the body of the man was found just inby the last cut-through.

3rd South off  
9th Left Entry

All stoppings were blown into the aircourse. No other damage was noted. Flame of the explosion entered this entry as a mantle of soot was noted on all lodgments.

10th Left Entry

At the entrance to this entry, five cars stood and these evidenced no sign of disturbance. The mechanical effect of the explosion was witnessed most plainly at the point where Room 2 off the 1st South off the 9th Left entry cut into the aircourse to the 10th Left entry. At the point a stopping was blown into the entry and considerable rock that had been stored in the cut-through was blown into the entry and the room opposite it. The track opposite this cut-through, and in the 10th Left entry bore evidence of considerable force having been applied in that it was bent in the direction

of the movement of the explosion. Stoppings, except the last two, were blown into the entry, pressures applying from the aircourse side. It was noted that there was considerable fine dust on the floor of both entry and aircourse, but that under this film of dust, the dust that had been there before the explosion was wet, and when pushed aside by the foot exposed a wet floor surface. It was also noted that as the face of the entry was approached, the floor and ribs presented no evidence of the dust thrown up by the explosion had reached this point. It is doubtful if the flame of the explosion reached the 10th Left entry, much less entering it.

11th Left entry. One stopping in this entry was blown out. This was the second from the main entry. Otherwise there was no evidence of the explosion. This entry also marked the inby limits of afterdamp as the four men who were at work at the face of the main entry reached a point on the main opposite this entry before they were overcome by the afterdamp.

Summary of Evidence The evidence gathered thru this investigation was as follows: According to testimony of J. M. Pitman and William Prentice, foreman and superintendent respectively, when they left the mine a few minutes before the explosion fourteen men were at work at the parting of the 9th Left and four were working at the face of the main entry. Thirteen bodies of the fourteen at work at the 9th Left parting were found outby this entry parting on the main where they had been blown by the explosion. The four at the face of the main entry had made their way as far as the 11th Left entry, where they met death due to afterdamp. These men were all at work on the intake air current. The eighteenth body was found at the face of the Second South entry off the 9th Left entry, and this man in all probability ignited the gas.

Mine officials testified that due to the work in hand, it was found necessary to leave the door across the main entry between the 9th Left entry, and its aircourse open a portion, and in all probability the most part of the shift, the reason given being that the new track was so high that the door would not close.

The mine was not examined the morning of the explosion by the regular fire boss, but an inspection by one of the men who lost his life is reported to have been made. No record was made of this inspection, and there is no way of knowing his findings.

At the time of this investigation, there appeared to be a great deal of dust in the mine. Much of this was undoubtedly blown out of rooms and aircourses and some may have been made by the explosion itself. No artificial means of humidification was employed, and the writer is inclined to think that altho the dust may have contained a great deal of incombustible material and may have been slightly moist, the dust was probably dry enough and rich enough in fine and pure coal to be ignited. Upon reaching the 7th Left entry, the explosion appeared to cease to propagate and this is probably due to an increased proportion of incombustible material in the dust on the main entry due to the spillage of sand from locomotives.

#### Conclusions

The explosion had its origin in an ignition of gas at the face of the 2nd South entry off the 9th Left entry. The door across the main inby the 9th Left entry caused a short circuit of the 9th Left, the 1st South, the 2nd South and the 3rd South entries off the 9th Left, but did not necessarily deprive the 10th and 11th Left and the face of the main entry of air.

Due to the short circuit, gas was permitted to accumulate in this section, and when ignited at the face of the 2nd South, fired the coal dust and developed a dust explosion. There is no doubt but that the greater portion of the section effected by the short circuit contained gas in varying proportions and this had its effect of increasing the explosibility of the dust present. The explosion was in all probability confined to its limits by its encountering dust higher in incombustible than that nearer the working faces.

This explosion would not have occurred had not two things occurred; namely, a short circuit being permitted and one of the party igniting the gas with his open light. Although it may be contended that it is most impossible to enforce discipline and prevent a man from wandering off from a party at work, there seems to be no logical reason that can be offered for permitting a short circuit in the air for any appreciable time. When it was found that the door across the main entry could not be closed, a temporary stopping of canvas should have been erected which would have kept the air travelling its usual course.

Men working in this mine should be provided with permissible electric cap lamps. These, the writer is informed, have been purchased.

Some means should be adopted to increase the incombustible material in the dust of this mine. It is felt that if water was properly applied, much would be accomplished along this line. As the mine makes practically no water, it would be necessary to pump the water from without the mine and due to the great amount of pipe needed might prove an especially costly policy. A systematic treatment of working entries with rock dust would be likely, <sup>be</sup> found less costly, and as is known, would be equally as efficacious.

APPROVED:

  
Chief of Coal Mine  
Investigations.



APPENDIX 1.

YUKON-POCAHONTAS. CORONER'S INQUEST.

LIST OF WITNESSES.

H. M. Meyers

William Prentice

I. M. Pittman

P. P. Kerr

W. P. Farney

Dan Dillon

Pat Collier

Jim Granger

M. C. Roberts

Dr. D. D. Hatfield

L. G. Bray

Earl A. Henry

Thos Stockdale

Robert Grigsby

APPENDIX 2.

YUKON-POCAHONTAS CORONER'S INQUEST.

State of West Virginia,     )  
                                  ) To-wit:  
County of McDowell.

An inquisition taken at Susanna, (Yukon) in the County of McDowell, on the 19th day of December, 1917, before H. G. Camper, Coroner of the said County of McDowell, upon the view of the bodies of George Cloud, D. L. Turpin, Leroy Bonds, Ben Johnson, Arthur Spears, Lynn Sheets, Frank Hall, Bill Hoops, J. R. Thompson, Scott Neccessary, Pete Hoster, Tom Chufrane, George Steneck, Ed Johnson, Bob Grigsby, Adolphus Coil, George Coil and Dan Brown, there lying dead.

The jurors sworn to inquire when, how, and by what means the said persons named aforesaid came to their death, upon their oath do say:

"On December 15th, 1917, thru gas explosion caused by door standing open, causing short circuit of air, allowing gas to accumulate and being ignited by an open lamp by an inexperienced miner violating Foreman's instructions.

Therefore we feel, judging from evidence given, that the Yukon Pocahontas Coal Company is exonerated from all blame."

In testimony the said Coroner and jurors hereto set their hands.

E. C. Jessee  
G. G. Wade  
Chris McDarmont  
Wm. Brabban  
Tom R. McDarmont  
J. W. Cooksey  
H. G. Camper, Coroner.

APPENDIX 3.

SUSANNA. YUKON-POCAHONTAS.

Sample: Semibituminous coal; Pocahontas field; Analyses Nos. 14425, 14426, 14427, 14428 and 14429 (p. 118).

Mine: Yukon-Pocahontas, Norfolk and Western district; a drift mine one-fourth mile west of Susanna station (Yukon Post Office) on the Norfolk & Western Railway.

Coal Bed: War Creek. Carboniferous age, Pottsville formation. Average thickness, about 5 feet 3 inches. Dip,  $1\frac{1}{2}$  per cent to the northwest. Roof, shale; floor, bony coal about 15 inches to 30 inches thick, underlain with sandstone.

The coal bed was measured and sampled at five points in the mine by H. I. Smith and E. B. Sutton, June 28, 1912, as described below:

SECTIONS OF COAL BED IN YUKON-POCAHONTAS MINE.

Section.....	A	B	C	D	E
Laboratory No.....	14425	14426	14427	14428	14429
Roof, shale.....	Ft. in.	Ft. in.	Ft. in.	Ft. in.	Ft. in.
Coal and mother coal.....	<sup>a</sup> 0 $1\frac{1}{2}$	-- --	-- --	<sup>a</sup> 0 2	<sup>a</sup> 0 $3\frac{1}{2}$
Coal.....	-- --	0 1	-- --	-- --	-- --
Bone.....	-- --	<sup>a</sup> 0 $1\frac{1}{2}$	-- --	-- --	-- --
Coal.....	0 $11\frac{1}{2}$	0 9	1 1	-- --	2 2
"Sulphur" band.....	Streak.	Streak.	Streak.	-- --	0 $1\frac{1}{2}$
Coal.....	3 4	1 $10\frac{1}{2}$	2 7	4 1	1 9
Bone.....	<sup>a</sup> 1 4	<sup>a</sup> 1 $3\frac{1}{2}$	<sup>a</sup> 1 $8\frac{1}{2}$	<sup>a</sup> 0 10	<sup>a</sup> 1 0
Floor, sandstone.....					
Thickness of bed.....	5 9	4 $1\frac{1}{2}$	5 $4\frac{1}{2}$	5 1	5 3
Thickness of coal sampled....	4 $3\frac{1}{2}$	2 $8\frac{1}{2}$	3 8	4 1	3 $11\frac{1}{2}$

<u>ANALYSES</u>	Composite 14430					
Moisture	2.63	2.04	1.84	2.11	2.53	4.09
Vol. Matter	17.19	16.83	16.89	17.01	16.81	16.84
Fixed Carbon	71.98	73.05	72.87	73.39	72.45	70.08
Ash	8.20	8.08	8.40	7.49	8.21	8.99
Sulphur	.57	.58	.55	.51	.63	.51
Hydrogen	4.44					
Carbon	80.62					
Nitrogen	1.45					
Oxygen	4.72					
Btu.	14,006	14,022				

APPENDIX 4

Sample 14425 was cut from pillar at last break-through, off 3 right cross-cut, off main, 1200 feet northwest of old opening.

Sample 14426 was cut at face of 24 Room, off main aircourse 1700 feet southwest of main opening.

Sample 14427 was cut at face of main entry 1850 feet southwest of main opening.

Sample 14428 was cut at face of 7 Room, off main aircourse 850 feet southwest of main opening.

Sample 14429 was cut at face of 14 Room, off main aircourse, 1100 feet southwest of main opening.

Sample 14430 is a composite of samples 14426, 14427, 14428 and 14429.

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Notes: -- The Yukon-Pocahontas mine is opened by drift entries and the coal mined by the room-and-pillar system. At the time the mine was visited all of the coal was mined by hand. FFF black blasting powder was used for breaking the coal. None of the coal was shipped as run-of-mine. The screening plant was equipped with screens for producing 4-inch, 1 $\frac{1}{2}$ -inch, and 5/8-inch coal. Pickers were employed on the car in loading and also at a traveling belt. The coal lumps were large and had a good appearance. There were four loading tracks with a capacity for 40 empty and 35 loaded cars. The mine had a daily output of 400 tons, practically all of which was from advance workings. The maximum capacity of the mine was about 575 tons per day. There was about 4,000 acres of unmined coal tributary to this mine.

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