



# Reports

**Mine #16**

**03/18/1911**

GAS EXPLOSIONS  
AT THE  
M. K. & T. MINE NO. 16  
ON  
MARCH 16, 1911  
AT  
MINERAL, KANSAS  
BY  
H. I. SMITH.

*J. W. Paul*

*12/23/12 JMS*

TABLE OF CONTENTS

	<u>Page No.</u>
Introduction and General Information . . . . .	1
Geology and Character of Coal . . . . .	1
Description and Method of Operation . . . . .	3
Mining . . . . .	3
Explosives . . . . .	3
Haulage . . . . .	4
Lighting . . . . .	4
Ventilation . . . . .	4
Humidity . . . . .	4
Drainage . . . . .	4
Story of the Explosion . . . . .	6
Local Conditions . . . . .	6
Alleged Causes . . . . .	6
The explosion . . . . .	7
Rescue Work . . . . .	8
Assistance Rendered by the Bureau of Mines . . . . .	12
Search Continued . . . . .	12
Opening the Body of Gas . . . . .	14
Details of Violence . . . . .	15
Summary of Evidence . . . . .	16
Lessons . . . . .	17
Gas Samples . . . . .	18
Appendix . . . . .	19

FOUR GAS EXPLOSIONS AT M. K. & T. MINE NO. 16.

Report by. . . . . H. I. Smith.

Saturday evening, March 18, 1911, between 5:30 and 6:45, four gas explosions occurred in the M. K. & T. Mine No. 16, one from a blast of powder and three from open lights, resulting in the death of five men by burning and violence, and injuring other men. Three of the dead and all of the injured belonged to the rescue party. There were only three men in the mine at the time of the explosion, one of whom escaped. No rescue apparatus was used.

Location: The M. K. & T. Mine No. 16 is one mile east and one mile south from Mineral, Cherokee County, Kansas. The mine office is near the station at this place, while the telegraph office and town proper are at West Mineral, both on the M.K.&T.Ry.

Ownership: The mine is owned and operated by the M.K.&T.Ry. Coal Department, which company also operates several other mines in this district, including the No. 7 mine, which had been worked out and the shaft sealed in 1907. The No. 16 mine was working to the north in order to connect the two mines underground. At the time of the explosion John J. Jopling was the superintendent and Francis Ryan the foreman.

Geology: The surrounding country is rolling, with no high hills. The coal lies 68 feet from the surface, and averages about three feet thick. It belongs to the Carboniferous period, and lies in the Western Interior Province. About 91% of the coal mined in Cherokee County comes from the Cherokee bed, or locally termed the lower seam.

Coal: The coal has a northwest dip of about 14 feet to a mile. The

coal has no distinct cleat and is rather soft; it ranges in thickness from 3 feet 0 inches to 3 feet 6 inches. Intrusion <sup>clay veins</sup> faults bearing from north-east to southwest are encountered very frequently.

The following is a typical analysis of Cherokee coal:

Moisture - - - - -	27.51
Volatile matter - - - - -	25.09
Fixed carbon - - - - -	42.67
Ash - - - - -	<u>4.73</u>
	100.00

Sulphur 0.57  
Calorific value 8248 B.t.u.

Roof: The immediate roof consists of a draw slate, which sometimes comes down with the coal. Between the draw slate and a gray slate there is 8 inches of a poor quality of roof coal. The roof is smooth and fairly good, except for the horsebacks, which are very numerous.

Floor: The floor consists of a dark, hard, rough fireclay. It does not mix with the coal. Rolls are very numerous.

Moisture: The coal is naturally very moist. The mine in general was very wet throughout; water was standing on the haulage ways in many different places.

Gas: The writer was unable to find any place in the No. 16 mine where gas was being generated. In the dead end of a room, at ~~an~~ <sup>an intrusion clay vein</sup> ~~an~~ in the south workings, a gas could be heard bubbling through the water near the floor, but no methane could be detected with a Wolf safety lamp even though most of the ventilation had been shut off from this part of the mine for several days previous. Normally there is no gas in the Pittsburgh, Kansas, field owing to the shallow cover over the coal and its shattered condition. On the other hand the gas well district has been creeping down that way, but the analysis, of the mine air does not show the presence of methane.

DESCRIPTION AND METHOD OF OPERATING.

The mine is entered by a shaft 68 feet deep equipped for a capacity of 1500 tons per day. The coal is mined by the room and pillar method. The Panel system is not followed. The mine is developed by two main pairs of entries, one to the north and the other to the south. From these main headings cross entries are turned to the east and west from which other entries are driven to the north or south. It is from these last pairs of entries that the rooms are turned. The entries are driven in pairs, each six feet wide on an 18-foot center. The rooms are driven 24-feet wide, and on 32-foot center. Near the bottom of the shaft there is a mule stable and a place to store hay and grain for feed.

Mining: The coal is <sup>chiefly</sup> mined by blasting from the solid. The <sup>face of the</sup> coal is sheared on one side, and a hole with a maximum diameter of 2-3/4 inches drilled where it is believed to break down the most coal. The miners drill and load the hole. The charge consists of an unrestricted amount of FF blacking blasting powder put in paper cartridges and charged into the bottom of the hole with a fuse attached; the tamping consists of any fine material that is close by, which usually means the finest coal dust obtainable. An iron bar is used for tamping. After the miners have prepared the shots and gone out of the mine, three shot firers enter the mine and light the fuses as hurriedly as possible, in one case firing the fuse in 17 rooms before the first shot went off.

Explosives: Two kinds of explosives are used in the mine: FF black blasting powder is used for the coal and giant powder for brushing the roof or floor. The powder is carried into the mine in 12-1/2 pound kegs by the miner and is kept in wooden boxes. About 1250 pounds of powder

are used daily for blasting the coal, and 180 sticks of giant powder for brushing the floor and roof; about two pounds of powder are used for every ton of coal mined.

Haulage: The coal is hauled to the main north heading with mules and on the main north entry the cars are hauled by an endless rope; one rope is on the floor and the other overhead.

Lighting: The mine is lighted exclusively by open lights. Some use carbide lights and others burn lard oil in torches. There are no electric lights in the mine, and there were no safety lamps about the mine or mine office. There has seldom been an occasion to use a safety lamp in Cherokee County.

Ventilation: The mine was ventilated by a reversible fan; no water gauge readings were ever taken. One split of the air passed from the shaft through some old workings to the first main north back heading off the fourth east; it went to the face through this entry and the breakthroughs between the rooms off this entry and returned on the first main north along the entry and through the breakthroughs between rooms to the fourth east which it followed to the main north, thence along the main north to the shaft, which was used as an upcast. There were three other splits of air ventilating other portions of the mine.

Humidity: The mine was very wet and muddy in all sections. The coal dust was well mixed with foreign material. There were no humidity readings taken.

Drainage: The coal bed is very flat and much water is given off. For this reason natural drainage is not always possible and it is then necessary to make many local sumps. These are usually placed in the pillar.

The coal is mined for a distance of about ten feet and then the bottom is taken up to a depth as desired. When the rooms are driven from the north and south entries the rooms to the east are usually very wet, and if not frequently cleared are soon full of water. Local dips in the tracks are also common and are often filled with water above the rails. A pump at the bottom of the shaft handles about 4000 gallons per hour.

### STORY OF THE EXPLOSION.

Local conditions: Prior to the explosion, the mine foreman and superintendent knew that the workings were approaching the old No. 7 mine which had been abandoned and the old shaft sealed up four years previously. On the night of the explosion they expected to break through to the old mine at the face of the back heading of the first north off fourth east as the coal at the face was fractured and very easy to drill. No holes were drilled in advance of the shot holes. Firedamp kept coming through the face of the coal nearly all the time the men were at work on the shift previous to shooting the last round, and every time the men left the face for a short time they lit the gas on returning before going back to work. For this reason two shotfirers were put here to fire what only one man usually fires. A third man fired the south workings. The two went to face of first north (see sketch) and John Burgen fired the back entry against the air and Thomas Cheek fired the main entry with the air. There are 17 rooms on both entries. Burgen finished shooting and had come out to the fourth east while Cheek fired down to the sixth room on the main first north. The supposition is and the intentions were that Cheek and Burgen would light the shot at the face of the back entry and then both make for the east before the shots in the face of the back entry went off.

Alleged causes: The initial cause of the explosion is conceded by all to be the liberation of a quantity of gas sealed in an old mine and ignited by a shot of black blasting powder.

The cause of the large body of gas continuing to escape from the old mine with pressure may be well likened to an inverted syphon where

one end is sealed and water poured in at the other. The water in the No. 7 mine was creating a very similar pressure on the gas, forcing it into mine No. 16.

Others claim that while the above was possible, it may be that the No. 7 shaft was not sealed tight enough to prevent a natural ventilation, the air going down through the old shaft or possible caves and returning through the No. 16 mine.

The explosion: March 18, 1911, at about 5:30 p.m. Mr. Jeffries a shotfirer in the No. 16 mine had finished his shift and was coming out, but when he got close to the bottom of the shaft he detected smoke and fearing that something was wrong he went to the surface to see if his two co-workers, Mr. Burgen and Mr. Cheek had come up. These two men were working on the north side from which the smoke appeared to come. On learning that they had not returned he went back into the mine to look for them. He carried only an open light, and when he got to the first north back entry he is said to have noticed his light acting in a strange manner, and he either dropped it or threw it down. This lit the gas, but he saved himself by jumping into a sump. He was not burned. He returned to the surface at 6 o'clock and gave the first alarm that there had been an explosion. The fire whistle was then blown as the signal of disaster. The Superintendent, Mr. John Jopling, heard the whistle and arrived a few minutes later. Jeffries told them not to go down as there was gas in the mine and that he had lit the gas. According to the story of the state mine inspector Jopling and three other men, Sam Watson, Angelo Patesse and another man went into the mine, all carrying open lights. Mr. Jopling carried a lantern. He left the latter man at the bottom of the shaft to tell the others, who might come later, where he had gone. Jopling went in the mine about 1500 feet with the other two men, (Sam Watson and

Angelo Patasse) where at about 6:30 he ignited the gas for the third explosion, killing Mr. Jopling, Watson and Patasse. Six other men who followed the fresh air under the leadership of Joseph Ryan, a deputy mine inspector and brother of the mine foreman were on the air course with open lights; they either preceded or followed Mr. Jopling down the shaft and did not know Mr. Jopling and party were in the mine until a short time before the third explosion. They were struck by the force and blown into the water and mud along the track, but the flame did not burn them. As quickly as possible Ryan rushed up to Jopling and succeeded in getting him back about 100 feet. Ryan became very weak and dropped Jopling. Another man came to Ryan's aid and succeeded in getting him out about 100 feet when they both fell. The other men came to the rescue and succeeded in getting them all back to the surface.

Inspector Ryan was not seriously affected by the flame, but was affected by the gas. He stayed at the mine for about 24 hours more, and then went to the hospital where for some time he was considered to be in a serious condition. Fifteen minutes later the mine foreman, with a party of men, carrying open lights, lit the gas the fourth time, but fortunately they were blown into a sump where they were possibly completely covered with water and mud while the flame played about them, as none of them were burned.

Before Jopling died he is said to have told Ryan the conditions under ground and what should be done.

Rescue work: The fan was reversed at 10 p.m. making the hoisting shaft the intake and in this way the men could follow the good air along the man haulage way. Jopling's body had been found and two men were pushing a car in to bring it out. All were wearing open lights in their caps when Mr. Lacey, a former eastern coal miner, with a fire boss's certificate for Pennsylvania

and West Virginia, arrived with a Wolf safety lamp, which I presume was the first safety lamp used in the mine. He rushed into the mine putting out the open lights as fast as possible and sending the men to the top. He caught up with the car and stopped the men, putting out their lights as before, and made a test. The lamp gave a cap from the top to the bottom of the entry where the men were and a few feet further in the gas was near the point of an explosive mixture.

Jopling's body was recovered at 12 o'clock, midnight; he was badly burned, but the doctors claimed the burns alone were not necessarily fatal. Watson's and Patasse's bodies were found near Jopling's, about 15 feet in the first east off fourth east. Their bodies were taken out shortly after Jopling's. The rescuers put up brattice cloth as they advanced to keep what air they could with them.

The chief mine inspector, Frank Gilday, and two deputy mine inspectors, P. J. Keegan and John Gilday arrived at the mine at 1:30 a.m. by special car from Pittsburg, Kansas. He immediately assumed charge and ordered that no one should go into the mine without his personal permission. To carry out these orders he placed a deputy mine inspector at each opening. John Gilday was stationed at the fan and P. J. Keegan at the shaft. The chief inspector entered the shaft at about 2 a.m. without any light. He obtained a Davy safety lamp from someone on the main north and sticking it into his pocket went up the main north and out the fourth east a distance of about 1500 feet from the main shaft. Here he said he put out several open lights. He put the lamp under the lower corner of the brattice cloth at the mouth of the first north and got a cap. Burgan's body was found at 3 o'clock a.m. and taken out at about four o'clock. His body was burned at the abdomen until his intestines showed, and his head was burned and

crushed, exposing his brains.

Judging the source of the gas the inspector ordered the fan reversed so that it would have a shorter route to the fan and so that the bottom of the hoisting shaft would be cleared of explosive gas and in this way the men would always be working with intake air. A large canvas was then placed across the main south entry a short distance from the shaft to direct as much air as possible to the north workings. The fan was also ordered to be speeded up to its safe limit, which in this case was about twice the normal revolutions. In the north workings brattice cloth was hurriedly put up to control the ventilation and replace the blown out stoppings and doors.

According to the State Mine Inspector, when he reached the face 18 hours after the explosion to investigate the source of the gas, he found explosive gas coming from a hole 8 inches by 18 inches which had been broken through between the two mines. On Monday morning, 40 hours after the explosion 6 men went into stop up the hole. The current was coming out so strong that as Gilday was trying to stop this hole with hay, the hay was blown into his face. The hole was finally stopped by working in the dark with hay, canvas and fine coal on Monday, March 20, after 3 hours work. Flakes of baled hay was first forced into the hole then close woven white duck canvas was put over the hay and a large pile of coal was thrown in front of this to hold it in place. A breakthrough about 20 feet from the face permitted the men to work for a short time, although 900 feet south in the return air the gas would give a 1-1/2 inch cap in the Wolf lamp at the bottom of the brattice cloth. After the hole was closed they tried for

18 hours to move this body of gas, but could not diminish it, so the brattices were taken down one at a time, starting at the mouth of the pair of entries, and as soon as the gas was cleared out of that portion of the entry and the rooms on the back heading the brattice cloth was put up and the next one taken down, thus moving the explosive gas out a portion at a time until the entry was cleared out to the face. The stopping was not gas tight, but it answered the purpose very satisfactorily. The search for Cheek's body was then renewed and continued until it was found, 5-1/2 days after the explosion.

Up to the time the lamps were brought to the mine by the Bureau of Mines engineers there was but one Wolf safety lamp and very few other makes available. There were more Davy lamps than any other kind. Some reputable portable electric lamp was very badly needed. A flash light would have been very serviceable to the early rescuers.

There was no rescue apparatus of an approved type available. Someone did bring a helmet of a pioneer type, possibly a Vagen, made by Johann Mayer. It was made from sheep skin with the wool on the inside. There was a window in front to look out and a small cylinder on the back with a small hand air pump attached. The method of operating was to pull the helmet over the head; it then became nearly airtight. The compressed air in the tank on the back exhausted into the head piece near the mouth. This apparatus was not used but created considerable interest; especially was this so when the rescue apparatus of the bureau was taken to the mine and the operators and miners compared their mechanism.

ASSISTANCE RENDERED BY THE BUREAU OF MINES.

*The writer (H. I. Smith) arrived at the mine on Tuesday morning March 21 and the same morning*

After consulting with the mine officials and inspectors on ~~Tuesday~~ morning, March 21, the writer (H. I. Smith) <sup>he</sup> sent for A. G. Hamilton, foreman of the McAlester Rescue station at McAlester, Okla. to bring the Draeger 1910 model rescue apparatus and Hubble electric lamps. Hamilton received word early in the afternoon and reached the mine that evening. The apparatus was not brought to the mine to be used under the conditions then existing, but as a safety precaution against conditions that might develop.

The mine at this time had been cleared from any large body of after-damp or methane, but it was not known when the body of gas in old No. 7 mine might again break through; again, as soon as the bodies were recovered they might need the helmets to reopen the stoppings between the two mines. There were very few safety lamps at the mine and these would be useless should the mine again be filled with methane; for this reason the Hubble electric lamps were badly needed. Mr. Lacy the first man to arrive with a safety lamp proved to be a very valuable man in the search of the mine for Check's body, as he also was in the earlier work. He rendered assistance whenever possible, and headed parties, and always acted in a careful manner for the safety of himself and party.

Search continued: The entire mine was searched, including the worked out areas and old rooms. On several occasions the men worked under great difficulty due to the low roof and large amount of water in the dip rooms. The sumps were all examined and the portion of the mine affected by the explosion was searched many times. Professor Young of the University of Kansas, the Mine Inspector, Mr. Hamilton and the writer investigated the shots in the rooms along the first north entry where they had the last trace of Check, all the rooms had been fired

out to room No. 8 which was not working on account of bad roof; No. 7 and No. 6 had been fired, Cheek's lamp and cap was found in room No. 6; rooms No. 1, 2, 4 and 5 were tamped but the fuse had not been split; room No. 3 was not working. In room No. 8 about four feet of the roof of the room fell. The roof did not break up but remained in one piece, which was about 100 feet long and from 20 to 25 feet wide, the outbye side dropping down and the other side gradually working its way down the rib and crushing the gob along the rib. Before a search had been made of the other portions of the mine one of the men crawled through under this rock and out a breakthrough; the rock was too low to carry a lamp, so his only hope was to feel if the man should be there. Later another man made a search under the rock while a Hubble lamp was held at the mouth of the room and at a breakthrough so he could see. Neither of the men were able to find the body which convinced the rescuers that he was not there, but after the mine had been thoroughly searched for a second time their efforts were again turned to room No. 8 where at 4.30 a.m. March 23, one of the rescue party detected a slight stench in this room, which was thought to be from Cheek's body, and work was started to cut a breakthrough from room No. 9 about midway between the breakthrough and the entry. The workmen were not accustomed to using a closed lamp and prevailed, through the foreman, to be allowed to use open lights, but up to the evening of March 23, the State Inspector did not allow any open lights in the mine, but at the urgent request of the mine foreman he consented to using open lights in this one room, provided a competent fireboss was stationed on the entry near the mouth of the room between the source of gas and the men in this particular instant was on the return air of the room. However, before this request was granted open lights were concealed and carried into the mine by an underground

mine official. After working all day and night up to 1 a.m., March 24, the rescue party lost the stench they previously encountered. They rested for ten minutes and after taking but a few shovels full of dirt they saw the shotfirer's head, but did not get the rock off from him until several hours later. The doctor took some training with the rescue apparatus along with a large number of other people at the mine and when the body was recovered he wore one of the apparatus into the mine to keep the odor from him while dressing the body. At 9:15 a.m. they had the body at the shaft ready to be sent to the undertaker.

Opening the body of gas: After the body was recovered four men were sent to the face of the north entry to cut a breakthrough between the main north and back north entry, a distance of about six feet so that fresh air would reach the face. They were working from both sides, one man on a side at a time, the other man holding a safety lamp. In the back entry a Wolf safety lamp was used and on the main entry a Clanny lamp was used. When the breakthrough was completed the state mine inspector sent the four men out of the mine leaving himself, his aid, Mr. Hamilton and the writer to tear down the stopping.

After allowing them sufficient time for the four men to get out of the mine the inspector tore out the stoppings between the back north entry of Mine No. 16 and Mine No. 7. The writer held a Hubble electric lamp so the inspector could see and Mr. Hamilton stayed back with a Wolf lamp to test the gas while the fourth man was stationed in the fresh air of the main north entry. After opening the stopping the air was coming out at about 150 feet per minute, but the search light and one Hubble lamp became exhausted and one Wolf lamp exploded and went out and could not be relighted, so no

reading was taken with the anemometer. Originally it was intended to use reserve apparatus to open up stopping, but after at a consultation it was decided best to not use them. It was known that the gas was not deadly for the men had worked in it for a long time to stop up the hole and using the apparatus in the low seam would be disadvantageous. Fresh air was also coming through the breakthrough close to the face.

After remaining there for a few minutes to take gas samples and test the gas with a safety lamp, the gas backed up the main entry about 400 feet. This is accounted for by there not being much current on the main entry as most of the air went through the breakthroughs from room to room. Within about 30 minutes the Wolf lamp would exp while on the floor of the first back north entry 900 feet from the face. The back entry was now the return air course.

Shortly before two o'clock we returned to the surface, and the crowd being satisfied that the hole was open and that the party was safe began to go home. Inspector Gilday ordered the fan to be kept running at full speed for 3 days during which time no one should do any work in the mine.

Details of violence: In the main north there was no indication of an explosion until we come to the fourth east. On the fourth east there were several falls none of which were very large. The stoppings on the fourth east on the north side were blown into the entry and the door at the mouth of the fourth east was blown down. There was considerable soot on the roof and walls. Dust was most prominent on the inbye faces in the first north off fourth east. There was no coke on this entry outbye room No. 6 which was the last room fired. In the entry near the face some of the props had as much as 1/4 inch on the inbye faces; in the rooms some of the props had as much as one inch of coke on the inbye side, indicating much heat and an ignition of dust in the rooms.

There were five men killed as follows: Burgan, a shotfirer was burned almost to a crisp; his body was found 10 hours after the explosion. Cheek, his co-worker, was found under a fall of rock in room No. 3, first main north off fourth east, 5-1/2 days after the explosion. He was not burned. He was in room No. 6 when the explosion occurred and succeeded in getting back to room 3 where no shots were to be fired; while here he tried to escape possibly from the danger of fall of roof. He succeeded in getting about half way down the room where his foot was caught between the fall of roof and the rail, nearly severing it. His body was not badly crushed. The other three men who were killed while doing rescue work were Jopling, the Superintendent, Pataase and Watson, two miners who were with Jopling. They were found about 15 feet in on the first main north.

For analyses of mine air samples taken at various times during the rescue work see appendix.

#### SUMMARY OF EVIDENCE.

The initial explosion was started in the north workings from a blast or blown out shot of black powder, resulting in the death of two shotfirers. This may have been a coal dust explosion assisted by the presence of gas which was liberated from the old mine and allowed to diffuse in mine air to be later ignited by other men. The third shotfirer, smelling the smoke went to their rescue with an open lamp and is said to have ignited the gas and escaped by jumping into a sump. He possibly was carrying his light on his head and lit the gas which was trailing along the roof and went out in a short distance; he then went to the surface and spread the alarm. The Superintendent carrying a lantern, with two other men carrying open lights ignited the gas, causing a third explosion, resulting in the death of those three men, and injuring two

of another party near by, who were also carrying open lights. This later explosion being more severe may have been due to it being ignited farther in when the gas was low enough to reach the flame of the lantern at the Superintendent's side. Not being satisfied at this, the foreman still convinced that there was no gas in Kansas, went into the mine with more open lights and ignited the gas. He and party were blown into a sump and escaped fatal injuries.

The explosion did the most damage on the first north off fourth east and on the fourth east entry, quickly dying out in the other portions of the mine affected.

#### LESSONS.

(1) The need of fire bosses or a foreman well acquainted with fire damp at every coal mine whether gas was ever encountered in the field or not, is emphasized in this disaster.

(2) Safety lamps should be kept at all mines, although the mine may be considered as non-gaseous. They are absolutely necessary in case of a gas or dust explosion.

(3) When near old workings, test holes should be run in advance of blasting to prevent an inrush of deadly gas, or possibly a flood of water. Some states make the use of test holes compulsory.

The No. 7 mine was broken into a short distance from where No. 16 connected with it but a few days before, black damp was encountered but no firedamp reported. There may have been some methane in the gas but could have been made inexplosive by the presence of  $\text{CO}_2$  or  $\text{N}_2$ . This emphasizes that workings close together may vary to a serious extent.

The maps of the No. 7 mine were destroyed by fire. There certainly should have been another available map in other of the mine offices or in

possession of the mine inspector.

These five men were not killed as a result of a demand for tonnage but due to ignorance on the part of the underground managers who did not know enough mining to profit by the fatal experience at many other mines, and the lax mining laws of the state of Kansas. They took precautions which they seemed to think were necessary.

*Howard J. Smith*

Assistant Mining Engineer.

## GAS SAMPLES.

Samples of mine air and gas were taken at the following places in the M. K. & T. Mine No. 16.

Laboratory No. 1463, taken March 24, 1911 at the face first north back entry off fourth east close to face and roof. The gas was coming from Mine No. 7 through a stopping in the face at this point.

Laboratory Nos. 1461 and 1458, taken from pocket in the roof in the first north back heading off fourth east opposite the second crosscut from the face, on March 24, 1911.

Laboratory Nos. 1459 and 1460, taken March 24, at the top of the upcast shaft three hours after the stopping between the two mines had been opened up. There was 34,560 cubic feet of air per minute coming out of the shaft.

Laboratory No. 1456 and 1457, samples taken March 24, from small cavity in roof 30 feet from face of first north back entry. There was 5000 cubic feet of air passing here per minute; sample gave  $3/4$  inch cap in Wolf safety lamp. Difference in analyses probably due to the gas being disturbed while taking the sample.

Laboratory No. 1459, sample taken at face of first north back entry. The gas was slowly escaping through the stopping from mine No. 7 to mine

No. 16. Mailed March 23.

Laboratory Nos. 1437 and 1438, sample air from north split, 17, 000 cubic feet of air passing per minute. Taken at 3 p.m., March 30.

GAS SAMPLES FROM MINERAL MINE NO. 16.

Lab. No.	CO <sub>2</sub>	O <sub>2</sub>	CH <sub>4</sub>	H.
1463	0.48	18.72	6.26	74.54
1461 )	( 1.41	15.81	17.86	64.90 )
1458 )	( 0.60	19.60	4.00	75.80 ) Duplicate
1459 )	( 0.09	20.54	0.03	79.34 )
1460 )	( 0.16	20.39	0.04	79.41 ) Duplicate
1456 )	( 0.40	18.92	4.64	76.04 )
1457 )	( 1.01	17.80	7.65	73.54 ) Duplicate
1439	0.93	19.22	12.95	66.90
1437 )	0.10	20.66	0.14	79.10 )
1438 )	0.11	20.68	0.14	79.07 ) Duplicate

Barometric readings at Kansas City, Mo. Elevation 963 feet.

March 16, 1911.	Actual pressure		Sea level pressure.	
	Local time		Local time.	
	7 a.m.	7 p.m.	7 a.m.	7 p.m.
16	29.31	28.98	30.39	30.04
17	28.78	29.01	29.82	30.07
18	29.21	29.01	30.28	30.07
19	29.00	29.00	30.06	30.05
20	29.06	28.95	30.10	29.98
21	28.88	28.71	29.90	29.74
22	29.00	29.26	30.04	30.32
23	29.43	29.32	30.50	30.39
24	29.28	29.08	30.34	30.14
25	28.98	28.75	30.03	29.79
26	28.60	28.60	29.64	29.64
27	29.08	29.00	30.14	30.06
28	28.68	28.67	29.72	29.72

The following is a typical analysis of Cherokee Coal:

Moisture	27.51
Volatile matter	25.09
Fixed carbon	42.67
Ash	<u>4.73</u>
Total	100.0
Sulphur	0.57
Calorific value	8248 B.t.u.

APPENDIX

GAS IN KANSAS.

According to the State Mine inspector this is the first gas explosion in Kansas and also the first large body of gas found in any of the mines.

Previous to this explosion two men who were close to a pocket of gas when it was ignited were killed, but the mine was not damaged.

DEPARTMENT OF THE INTERIOR

UNITED STATES BUREAU OF MINES

-----o-----

MINERAL MINE, NO. 16

March 21, 1911.

-at-

MINERAL, CHEROKEE CO., KANSAS

MISSOURI, KANSAS & TEXAS RAILROAD CO.,

COAL DEPARTMENT

Report of Attendance Submitted by,

/ A. G. HAMILTON

Foreman McAlester  
Rescue Station.

5/2/11 gma

S. S. Smith, Mining Engineer, wired me on the 21st of March that there had been an explosion at No. 16 mine, located at Mineral, Cherokee County, Kansas. This mine is operated by the M. K. & T. Railroad Company, Coal Department, and is located on the M. K. & T. Railway, one and three-fourth miles southeast of Mineral. The general manager is Mr. J. H. Hibben, Parsons, Kas.; Superintendent, Mr. J. J. Jopling, who was killed in the explosion and mine foreman Francis Ryan, both of Mineral. There were no fire bosses.

I got this message at 2.30 p. m., leaving here on the Katy Flyer at 3.05, which gave me only thirty-five minutes to get my outfit ready, get a dray, get to the depot and have the outfit checked and get my ticket. I got to Mineral at 9.15 the night of the 21st. Mr. Smith met me at the station and accompanied me to the mine in a Company wagon which was waiting at the depot for me.

There were three shot-firers in the mine at the time of the explosion; two on the north side of the shaft, and one on the south side. There were four explosions; the first was caused by a cutting shot in the face of the first north back entry, off the Fourth East, blowing through from Mine No. 16 into old Mine No. 7. This entry is 835 feet in, this being about 1735 feet from the shaft. There were no test-holes drilled ahead of these shots, yet at any time they expected to break into old No. 7 workings.

Thomas Cheek was one of the shot-firers on the north side. He was firing the shots on the first north straight entry, back against the air. There are seventeen rooms in this entry. The rooms were fired back against the air, including No. 6 room. All of these rooms had shots in them except room No. 8. Mr. Cheek's lamp and cap were found in No. 6 room, and his body, when found, was

under a heavy fall of rock in No. 8 room-- two rooms inside of where he had fired to. We had made a diligent search of the whole mine for Mr. Cheek, and could not find him anywhere. On Wednesday morning, we had a miner crawl under this rock, which was 75 to 100 feet long and about twenty feet in width, held up by a gob on each side of it, the space under the rock being about twenty inches high. We held a Hubbell light at each end of the rock and he crawled under the rock and stated that there was no man under there. This was about seventy-two hours after the explosion. We went ahead then and made a thorough search of the mine in general, both north and south sides, dragging all the sumps and abandoned rooms. There were two men who were not satisfied with the search made in the rooms on the first north, back entry, which were in the dip and had lots of water in them, so on Thursday night, Mr. Frank Gilday, state mine inspector, myself, and these two men made a thorough search of these rooms; found nothing, and decided to return to No. 8 room, again, on the first north, straight entry, and make another investigation. We left the room at half past 1.00 o'clock, Friday morning, deciding that Mr. Cheek was not in there. About 4.00 o'clock, the three men that had been putting in some brattice in the first north, straight entry, went up to the last break-through between rooms 8 and 9, and later stated they thought they could smell the body.

Mr. Gilday and myself, accompanied by other miners, then made another investigation and were still undecided as to whether he was under the rock or not. We started a number of men to breaking this rock from the mouth of the room up the roadway, and when they had got within three feet of the body, the majority of them were in doubt of it being there. We got the body out at 11.00 o'clock a. m., March 24.

Mr. John Burgin was the other shot-firer on the north side of the

shaft who was firing shots in the first north back entry, with the air. He was found close to the mouth of the entry. The body was burned at the abdomen until the intestines showed; and the head was burned and crushed until his brains were oozing out.

The shot-firer on the south side, Mr. Jeffries, had got through with his work and was coming out, but when he got close to the bottom of the shaft detected that there was something wrong, smoke being around the bottom of the shaft. He went on top to see if the other two shot-firers were out; and seeing they were not out, went back with an open light to look for them. When he got in the mouth of the first north back entry, he lit the gas, saving his own life by getting into the sump. He then returned to the top, where he met Mr. Jopling, Superintendent, Sam Watson and Angelo Betase, and told them not to go into the mine; that there was gas in there and he had lit it. Mr. Jopling and the other two men went down in the mine, Mr. Jopling carrying a lantern and the other two men with open lights, when they lit the gas, causing the third explosion and the death of all three men at the first north entry.

Mine foreman Francis Ryan made the assertion that there was no gas in the mine, and went down with an open light and lit the gas at the entrance to the first north back entry, which was the return of the air. He saved his life by getting into the sump, and got out without being burned. Shortly after this, mine inspector Frank Gilday, taking with him a Davy lamp, lighted, in his pocket, proceeded through the main north down to the entrance of the first north back entry and raising the curtain got a cap in the Davy lamp right on the bottom; and looking back found eight men following him with open lights.

Mr. Gilday and Mr. Hughey Reid, acting superintendent, insisted very

strongly that I stay and help them open the hole which had been blown into the old mine and which was stopped up with hay. At 12.30, March 24, Mr. Gilday, Mr. Smith, two miners and myself went into the face of the first north back entry and opened up this hole, first opening a small hole about the size of a man's arm. Inside of three minutes I could catch a cap back fifty feet. We then tore the hole out to about nine inches wide up and down the height of the coal and in twenty minutes the first north back entry, being the return of the air, was filled to the bottom for a distance of eight hundred feet.

On the first north straight entry, the intake of the air, the gas had backed up two hundred feet against the air. Too much credit cannot be given Mr. Gilday for the way he handled this mine, without any assistance whatever, before Mr. Smith and I got there. The Hubbell lamps, and particularly the searchlight, were of great service. It would have been almost impossible to have gotten the body out were it not for the searchlight, as the company did not have a safety lamp on the job at the time of the explosion. We did not use the helmets in the mine, as the ventilation was pretty well restored. The entries in particular in this mine were very wet, and if it had not been for this, in my opinion this mine would have been a total wreck. In the rooms of the first north straight entry there was heavy coke, mostly on the north and west sides of the timbers, which showed that there had been considerable fire there. We found in some places dust coked in the rooms on timbers an inch thick. Mr. Gilday, the mine inspector, gave the company orders to put on competent fire bosses, and told them not to think of opening that shaft until all gas and damp was drained out of the old workings.

We trained a great many men on top in the use of the apparatus; and when Mr. Smith or myself were on top, we had men in training all the time. Mr.

J. H. Hibben stated that he was going to buy two sets of apparatus for Kansas and one set for the mines in Oklahoma. I used the apparatus for three-quarters of an hour on Mr. Hibben, and he was greatly pleased with it.

In my opinion, if there had been the least bit of precaution taken, today there might have been five happy homes instead of so many widows with a number of orphan children.

Yours very respectfully,

(s) A. G. HAMILTON

Foreman, Mine Rescue Station.

## DEPARTMENT OF THE INTERIOR

## BUREAU OF MINES

25 N<sub>2</sub>  
 Preliminary report continuing from report of March 23  
 of M K 2 Mine #16 Gas Explosion 191

After working all day and all night up to 1 AM March 24 the rescue party lost the stretch they previously encountered. They worked until 1:30 AM and <sup>then</sup> after taking out a few shovels full of dirt they saw the wholfer's head but did not get the rock off of him until several hours later and at 9:00 they had the man at the shaft ready to send to the undertaker.

Up until the evening of March 23 the State Mine inspector did not allow any open lights in the mine, but at the request of the mine foreman he consented to using <sup>one</sup> open light in this one room providing they would station a competent fire boss at on the entry near the mouth of the room.

After the body was recovered four men were sent to the face of north entry to cut a track

## DEPARTMENT OF THE INTERIOR

## BUREAU OF MINES

through to the main north and back north entry a distance of about six feet. They were working from both sides one man on a side at a time. In the back entry a Wolf safety lamp was used and on the main entry a Clammy lamp was used. When the break thru was completed the State mine inspector sent all of the men out of the mine except his aid, Mr. <sup>Det.</sup> Hunter of the McAlister Rescue Sta and the writer.

After allowing them sufficient time to get out a <sup>the mine</sup> ~~the mine~~ inspector ~~took~~ <sup>took</sup> out the stopping <sup>to the north entry of mine 16 and 1000 mine # 7.</sup> while the writer showed him a light from a hubble electric lamp. The foreman of McAlister Rescue Sta. stayed back with a Wolf lamp to test the gas while the fourth man was stationed in the fresh air of main north entry. After opening the stopping the air was coming out at about 150 ft per minute but the search light and one hubble lamp became exhausted and one Wolf lamp

## DEPARTMENT OF THE INTERIOR

## BUREAU OF MINES

191

exploded and went out <sup>and could not be relighted</sup> so no reading was taken with anemometer.

Originally it was intended to use <sup>Rescue</sup> apparatus to open up stoppings but after consulting with Mr Hamilton and Det. mine inspector it was decided to not use them. It was known that the gas was not deadly for the man had worked in it for a long time to stop up the hole, and to use the apparatus in the low seam would be a disadvantage. ~~Against fresh air~~ was coming through the breakthrough close to the face.

After remaining there for a few minutes to determine the amount of gas present it began to back up in the main entry to a distance of 400 feet. There was not much current on the main entry as most of the air went through the break throughs from room to room.

Within about 30 minutes the Wolf lamp would cap ~~on the~~ <sup>floor of the</sup> back with entry 900 ft from the face. The back entry was the return air course.

MY POST-OFFICE ADDRESS IS .....

MY TELEGRAPH ADDRESS IS .....

MY EXPRESS ADDRESS IS .....

(Keep the Chief Clerk informed of addresses by means of special card.)

6-2295

*A*

DEPARTMENT OF THE INTERIOR

BUREAU OF MINES

191

~~a short time~~ before two o'clock we returned to the surface and the crowd greeted us as tho they were glad to see us alive and then <sup>they</sup> began to go home one at a time

We then had dinner and consulted with the officials of the company and State Mine Inspector and in the evening packed up the apparatus and Mr. Hamilton went back to me a later and the water to Kansas City Mo

Respectfully

W. J. Smith

Jr. Mr. Engr.

PRELIMINARY REPORT ON EXPLOSION AT M. K. & T. No. 16 MINE

MINERAL, KANSAS.

----- oOo -----

Mr. Geo. S. Rice,

Pittsburg, Pa.

Dear Mr. Rice:

The following letter is a preliminary report on the gas explosion in the No. 16 Mine of the M. K. & T. Ry. Coal Department, about two miles south and east of Mineral, Kansas.

When I got off of the train at Waverly, Mo., I got a Kansas City paper and about two hours later, about 7 P. M. March 19, I read a short account of a gas explosion and wired Pittsburg.

Knowing I could not get away from Waverly before the next night, as there is only one passenger train each way a day, I went through a mine at Waverly in the morning, and caught the first train to Kansas City, leaving the former place at 4:45 P. M., arriving at Kansas City 7:45 P. M. At 11:45 P. M. I caught the Frisco train to Pittsburg, arriving at 5:05 A. M., and from there I took the street car to Mineral and arrived at the mine a little before 9 A. M., March 21.

E X P L O S I O N :

On March 18 at about 5:30 o'clock a shotfirer came out of the Missouri, Kansas & Texas Railroad Coal Department's Mine No. 16, located one mile east and one mile south of Mineral, Kansas, and finding that his two co-workers were not out, he went back into the mine to look for them, and

seeing the open lamp he was carrying acting as it will in firedamp dropped the light and ran for the shaft, and shortly afterwards the gas reached the lamp and a second explosion is reported to have happened. At 6 o'clock P. M. he came up again and then gave the first alarm and the fire whistle was blown as a sign of disaster. The Superintendent, Mr. John Joplin, arrived a few minutes later and with three other men went into the mine with open lights. He left one man at the bottom of the shaft and went on in the mine about 1500 feet with the other two men, where he ignited the gas for the third explosion, killing Mr. Joplin and his two aids. Six other men on the air course with open lights, who either preceded or followed Mr. Joplin down the shaft and did not know of Mr. Joplin and party being in the mine, were hit by the force of the air in front of the flame and all blown into a deep sump beside the track, and only one of them burned and he not seriously burned. Mr. Ryan, a deputy mine inspector, who is a brother of the foreman, who was with the party of six was not burned by the flame but was affected by the gases. He stayed at the mine for about 24 hours more and then went to the hospital where he is considered to be in a serious condition. Fifteen minutes after the third explosion the Mine Foreman, with a party of men with open lights ignited the gas for the fourth time but fortunately none of them were badly burned. A little later Mr. Lacey, a former eastern coal miner with a fire bosses certificate for Pennsylvania and West Virginia arrived with a Wolf Safety Lamp and rushed into the mine putting out the open lights as fast as possible and sending the men on top. Just a few minutes later the Chief Mine Inspector, Frank Gilday, arrived with two deputy mine inspectors by special car from Pittsburg, Kansas. He did not

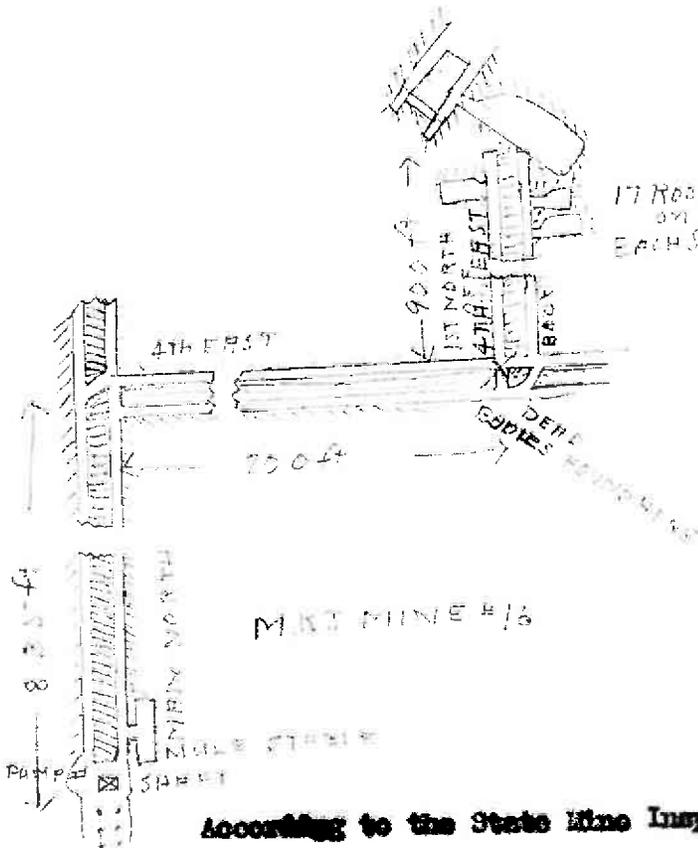
have a safety lamp, but realizing this exceptional condition, stationed his two deputies at the air shaft and hoisting shaft over the companies guards and went into the mine without any light and ordered the men out, also putting out their lights as soon as he could get to them. Mr. Gilday was unacquainted with the mine but managed to find his way north 835 feet east 700 feet and north again 900 feet to the face where he put out several open lights that a few minutes later proved to be within two feet of an explosive mixture.

There were three shotfirers in the mine at the time of the explosion; one escaped alive, another was burned beyond recognition and a third has not yet been found at 5 P. M. March 23, five days after the explosion, although all the old and new workings have supposed to have been thoroughly searched, also the various sumps throughout the mine.

Leading up to the explosion the Mine Foreman and Superintendent knew they were approaching the old No. 7 Mine through the first north off fourth east. On the night of the explosion they expected to break through to the old mine as the coal was very soft to drill. No holes were drilled in advance of the shot holes.

Firedamp kept coming through the face of the coal nearly all the time the men were at work on the shaft previous to shooting the last round, and every time the men left the face for a short time they lit the gas on returning before going back to work; for this reason two shotfirers were put here to fire what only one man usually fires. They went to face of first north and one man fired the back entry against the air; the other fired the main entry with the air. There are 17 rooms on both entries. The man on

OLD #7 MINE



the back entry finished shooting, and the other man's cap was found in the sixth room of first main north. As the miners load the holes, the supposition is and the intention was for the two shot firers to each light their 17 rooms and make the fourth east before the shot in the face of back entry went off.

According to the State Mine Inspector, when he reached the face 18 hours after the explosion to investigate, he found a hole 8" x 18" through a two foot pillar to the old mine. The current coming out was so strong that as he was trying to stop this hole with hay, the hay was blown into his face. The hole was finally stopped with hay, canvas and fine coal. A break through at this point allowed the men to work with a safety lamp on the floor, although 900 feet south the gas would give an inch and one-half cap in the Wolf lamp under the brattice cloth, or in other words, on the floor of the entry on the opposite side of the brattice cloth from the body of gas when the cloth was raised a few inches.

This body of gas was quickly cleaned out after the hole was stopped up at face of entry and when I arrived at face on the 21st there was but a small pocket, but one could hear the gas escaping from the old mine through the temporary stopping.

In the rooms near the face, some of the props had as much as 1/4 inch of coke on the inbye side of room. On the main north there was no

indication of an explosion. On the fourth east the entry had .  
but not badly, but some gob stoppings were blown out and considerable s. .  
was on the roof and walls. On the first north off fourth east the dust  
was more prominent and there was no oakm outbye of room 6, which was the  
last room to be fired. The mine is very wet.

On March 21, after consulting with the mine officials, it was  
decided best to send for the Rescue Apparatus at McAlester, Okla., for  
in that the mine was free from noxious gases, they did not know when the  
body of gas in old No. 7 Mine might again break through, and as soon as  
the bodies would be found they wanted to use the helmets to open up this  
gas. They were also in need of safe working lamps and the bubble lamps  
have been used to advantage.

The cause of the large body of gas continuing to escape from the  
old mine with pressure, may be likened to an inverted syphon where one end  
is sealed and water poured in at the other. The water in the No. 7 Mine  
was creating a very similar pressure on the gas, forcing it into Mine No.  
16.

This morning at 4:30, March 23, some of the rescue party detected  
a slight stench in rooms off straight north two rooms from where the shot-  
firer's lamp and cap was found. They have been working all day cleaning  
up a very bad fall in this room and a late report says the stench is  
stronger and they hope to find him at this point. If they do find him the  
Rescue Apparatus will be used to reopen the gas.

Yours respectfully,

(Signed) H. I. Smith.

After working all day and all night up to 1 A. M., March 24, the rescue party lost the stench they previously encountered. They rested until 1:10 A. M., and then after taking but a few shovels full of dirt they saw the shotfirer's head, but did not get the rock off him until several hours later, and at 9:15 they had the man at the shaft ready to send to the undertaker.

Up until the evening of March 23 the State Mine Inspector did not allow any open lights in the mine, but at the request of the mine foreman he consented to using one open light in this one room, providing they would station a competent fire boss on the entry near the mouth of the room.

After the body was recovered, four men were sent to the face of north entry to cut a breakthrough between the main north and back north entry, a distance of about 6 feet. They were working from both sides one man on a side at a time. In the back entry a Wolf safety lamp was used and on the main entry a Olansy lamp was used. When the breakthrough was completed the State Mine Inspector sent all of the men out of the mine except his aid, Mr. Hamilton of the McAlester Rescue Station and the writer.

After allowing them sufficient time to get out, the Mine Inspector tore out the stopping between face back north entry of Mine No. 16 and old mine No. 7, while the writer showed him a light from a bubble electric lamp. The Foreman of McAlester Rescue Station stayed back with a Wolf lamp to test the gas, while the fourth man was stationed in the fresh air of main north entry. After opening the stopping the air was coming out at about 150 feet per minute but the search light and one bubble lamp became exhausted and

one Wolf lamp exploded and went out and could not be relighted, so no reading was taken with anemometer.

Originally it was intended to use Rescue Apparatus to open up stopping, but after consulting with Mr. Hamilton and State Mine Inspector, it was decided to not use them. It was known that the gas was not deadly for the men had worked in it for a long time to stop up the hole, and to use the apparatus in the low seam would be to a disadvantage since fresh air was coming through the breakthrough close to the face.

After remaining there for a few minutes to determine the amount of gas present it began to back up in the main entry to a distance of 400 feet. There was not much current on the main north entry, as most of the air went through the breakthroughs from room to room.

Within about thirty minutes the Wolf lamp would cap one inch long on the floor of the back north entry 900 feet from the face. The back entry was the return air course. A short time before two o'clock we returned to the surface and the crowd greeted us as though they were glad to see us alive and then they began to go home, one at a time.

We then had dinner and consulted with the officials of the Company and State Mine Inspector, and in the evening packed up the apparatus and Mr. Hamilton went back to McAlester and the writer to Kansas City, Mo.

Respectfully,

(Signed) H. I. Smith,

Jr. Mining Engineer.

Explosion at Mine No. 16, Mineral, Kansas.

8-70

On March 21, 1911 there was an explosion at Mine No. 16, ~~which is~~ at Mineral, Cherokee County, Kansas, in which five men were killed.

The mine is operated by the Missouri, Kansas & Texas Railroad Company, Coal Department, and is on the line of the M. K. & T. Railroad 1-3/4 miles southeast of Mineral. The Cherokee coal bed varies from 3 to 10 feet thick and dips slightly to the northwest. The average thickness in the principal mines is 40 to 42 inches, and 91 per cent of the coal from this county is from this bed. The roof and floor are excellent. The following is a typical analysis of Cherokee coal:

Moisture	27.51
Volatile matter	25.09
Fixed carbon	42.67
Ash	<u>4.73</u>
	100.00
Sulphur	0.57
Calorific value	8248 B.t.u.

There were four explosions; the first was caused by a cutting shot in the face of the first north back entry, off the fourth east, blowing through from Mine No. 16 into old Mine No. 7. This north entry is 835 feet long, making the total distance about 1735 feet from the shaft. There were no test holes drilled ahead of these shots, yet they expected to break into the old No. 7 workings at any time. The other three explosions occurred while searching the mine, and were brought about by gas being ignited by lamps. Shot firers were employed, but there were no fire bosses.

Thomas Cheek was one of the shot firers, and he was firing shot on the first north straight entry against the air. There are 17 rooms in the entry. The rooms were fired against the air also. All of the rooms had

shots in them except No. 8. When Mr. Cheek's body was found it was under a heavy fall of rock in room No. 8, two rooms inside of where he had fired, while his cap and lamp were in No. 6. Room No. 6 had been fired. The body was recovered at 11.00 a.m. March 24. John Burgin, the other shot firer on the north side, who was firing shots in the first north back entry, with the air, was found close to the mouth of the entry. The body was burned at the abdomen until the intestines showed; and the head was burned and crushed until his brains were oozing out.

The shot firer on the south side, Mr. Jefferies, had completed his work and was coming out, but when he got close to the bottom of the shaft detected that there was something wrong, smoke being around the bottom of the shaft. He went on top to see if the other two shot-firers were out; and seeing they were <sup>not</sup> out, went back with an open light to look for them. When he got in the mouth of the first north back entry, he lit the gas, and only succeeded in saving his own life by getting into the sump. He then returned to the top, where he met Mr. Jopling, superintendent, Sam Watson and Angelo Betase, and told them not to go into the mine; that there was gas in there and he had lit it. Mr. Jopling and the other two men went ~~down~~ in the mine, Mr. Jopling carrying a lantern and the other two men with open lights. These lights ignited the gas, causing the third explosion and the death of all three men at the first north entry.

Mine foreman Francis Ryan considered that there was no gas in the mine, and went down with an open light. The gas ignited at the entrance to the first north back entry, which was the return of the air. He saved his life by getting into the sump, and got out without being burned. Shortly after this, The State mine inspector, Frank Gilday, taking with him a Davy lamp, lighted, in his pocket, proceeded through the Main north down to the

entrance of the first north back entry, and, raising the curtain, got a cap in the Davy lamp right at the bottom of the entry. Eight men were following him with open lights.

At 12.30 p.m. March 24, Mr. Gilday, Mr. Smith, two miners and the writer went into the face of the first north back entry and opened the hole which had been blown through into the old No. 7 mine, which had been stopped with hay. The first opening was about the size of a man's arm. Inside of three minutes the lamps showed a cap back ~~at~~ 50 feet from the face. We then enlarged the hole to about nine inches wide, the height of the coal, and in twenty minutes the first north back entry, being the return of the air, was filled <sup>with gas</sup> to the bottom for a distance of 800 feet. On the first north straight entry, the intake, the gas backed up 200 feet.

The entries, in particular, were very wet, and this possibly saved the mines from being a total wreck.

In the rooms of the first north straight entry there was heavy coke, mostly on the north and west sides of the timbers, which showed that there had been considerable fire there. We found dust coked in the rooms an inch thick on some of the timbers.

#### Lessons.

- (1) The need of fire bosses is emphasized in this disaster.
- (2) When near old workings, test holes should be run in advance of blasting to prevent an inrush of deadly gas, or possibly a flood of water.
- (3) Safety lamps should be kept at all mines, although the mine may be considered as non-gaseous. They are absolutely necessary in case of a gas or dust explosion.



# Correspondence

March 24, 1911.

Mr. Geo. S. Rice,

Pittsburg, Pa.

Dear Mr. Rice

Possibly I was too quick in leaving Mineral. I have taken two samples of gas in the Return Air Course, one before opening up the breakthrough and one after opening the breakthrough. I also have samples of gas taken in the old workings and three samples taken near the face as the gas worked through the stopping. The State Mine Inspector ordered the mine shut down for three days with the fan going full speed.

I did not take any coal samples for all available safety lamps were in use and the air was bratticed off all the mine except where the men were working.

The thermometer for psychrometer has not come, so I could not take humidity readings. I will be back to Mineral within a few weeks to finish the Mineral investigation and to investigate another mine which is reported to give off considerable firedamp and blackdamp.

Although the helmets were not used in the mine but little, it was a very good place to demonstrate them. The three deputy mine inspectors, the State Mine Inspector and about 100 mine operators and workers had the apparatus on from five minutes to an hour. The doctor were one in dressing the corpse underground. The electric lamps were very useful, especially the search light which was used for searching for the missing men.

I enclose preliminary report continuing from the report on March 23.

Yours respectfully,

(Signed) H. I. Smith

MY POST-OFFICE ADDRESS IS .....

MY TELEGRAPH ADDRESS IS .....

MY EXPRESS ADDRESS IS .....

(Keep the Chief Clerk informed of addresses by means of special card.)

6-2295

Mineral Mine (Kansas) Explosion  
DEPARTMENT OF THE INTERIOR

BUREAU OF MINES

Mineral Kansas 191  
March 23 1911

Mr. Geo S Rice  
Pittsburg Pa

Dear Mr. Rice,-

In reply to your letter of March 21st, I left Newark at 4.40<sup>PM</sup> March 20th arriving at Kansas City 7.45<sup>PM</sup> and took the next train possible 11.45<sup>PM</sup> to Pittsburg and then took street car to Mineral arriving at mine before 9<sup>oc</sup> A.M. March 21st  
The telegram was sent 8.07 PM instead of A.M.

I received the telegram in regard to gas sample and took two samples of gas one in return air and one at the break through when the gas leaked through the temporary stopping between the old and new mine or between the workings of old No 7 mine and the new mine or #16.

So far as I have been able to find out there are no gas wells near the old mine

Yours truly  
H. J. Smith

DEPARTMENT OF THE INTERIOR  
BUREAU OF MINES

McAlester, Okla., March 28, 1911.

Mr. J. W. Paul,  
Bureau of Mines,  
Pittsburg, Pa.

Dear Sir:-

Mr. Smith wired me on the 21st of March that there had been an explosion at No. 16 mine, located at Mineral, Kansas, Cherokee county. This mine is operated by the MK&T Railroad Company, Coal Department, and is located on the MK&T Ry., one and three-fourth miles southeast of Mineral. The General Manager is Mr. J. H. Hibben, Parsons, Kas.; Superintendent Mr. J. J. Jopling, who was killed in the explosion, and Mine Foreman Francis Ryan, both of Mineral. There were no fire bosses.

I got this message at 2:30 p.m., leaving here on the Katy Flyer at 3:05 which gave me only thirty-five minutes to get my outfit ready, get a dray, get to the depot and have the outfit checked, and get my ticket. I got to Mineral at 9:15 the night of the 21st. Mr. Smith met me at the station and accompanied me to the mine in a Company wagon which was waiting at the depot for me.

There were three shot-firers in the mine at the time of the explosion, two on the north side of the shaft, and one on the south side. There were four explosions; the first

was caused by a cutting shot in the face of the first north back entry, off the Fourth East, blowing through from Mine No 16 into old Mine No.7. This entry is 835 feet in, this being about 1735 feet from the shaft. There were no test-holes drilled ahead of these shots, yet at any time they expected to break into old No. 7 workings. Thomas Cheek was one of the shot-fizers on the north-side. He was firing the shots on the first north straight entry, back against the air. There are seventeen rooms in this entry. The rooms were fired back against the air, including No.6 room. All of these rooms had shots in them except room No.9. Mr. Cheek's lamp and cap, was found in No.6 room, and <sup>he</sup> when found was under a heavy fall of rock in No. 8 room, two rooms inside of where he had fired to. We made a diligent search of the whole mine for Mr. Cheek and could not find him anywhere. On Wednesday morning we had a miner crawl under this rock, which was 75 to 100 feet long and about twenty feet in width, held up by a gob on each side of it, the space under the rock being about twenty inches high. We held a Hubble light at each end of the rock and he crawled under the rock and stated that there was no man under there. This was about seventy-two hours after the explosion. We went ahead then and made a thorough search of the mine in general, both north and south sides, dragging all the surps and abandoned rooms. There were two men who were not satisfied with the search made in the rooms on the first north, back entry, which were in the dip and had lots of water in them, so on Thursday night Mr. Frank Gilday, State Mine Inspector, myself and these two men made a thorough search of these rooms, found nothing, and decided to return to No.8 room

again, on the first north, straight entry, and make another investigation. We left the room at half-past one o'clock, Friday morning, deciding that Mr. Cheeck was not in there. About four o'clock the three men that had been putting in some brattice in the first north straight entry, went up to the last break-through between rooms 8 and 9, and later stated they thought they could smell the body. Then Mr. Gilday and myself, accompanied by other miners made another investigation and were still undecided as to whether he was under the rock or not. We started a number of men to breaking this rock from the mouth of the room up the road-way, and when they had got within three feet of the man, the majority of them were in doubt of his being there. We got the body out at eleven o'clock a.m., March 24th.

Mr. John Burgin was the other shotfirer on the north side of the shaft, who was firing shots in the first north back entry, with the air. He was found close to the mouth of the entry; he was burned on his abdomen until the intestines showed and his head was burned and crushed until his brains were oozing out. The shot-firer on the south side, Mr. Jeffries, had got through with his work and was coming out, but when he got close to the bottom of the shaft detected that there was something wrong, some smoke around the bottom of the shaft. He went on top to see if the other two shot-firers were out, and seeing they were not out went back with an open light to look for them. When he got in the mouth of the first north back entry he lit the gas, saving his own life by getting into the sump. He then returned to the top where he met Mr. Jopling, Superintendent, Sam Watson, and

Angele Betase and told them not to go into the mine, that there was gas in there and he had lit it. Mr. Jopling and the other two men went down in the mine, Mr. Jopling carrying a lantern and the other two men with open lights, when they lit the gas causing the third explosion and the death of all three men at the first north entry.

Mine foreman Francis Ryan made the assertion that there was no gas in the mine and went down with an open light and lit the gas at the entrance to the first north back entry, which was the return of the air. He saved his life by getting into the gump and got out without being burned. Shortly after this Mine Inspector Frank Gilday taking with him a Davy lamp lighted, in his pocket, proceeded through the main north down to the entrance of the first north ~~entry~~ back entry, and raising the curtain got a cap in the Davy lamp right on the bottom, and looking back found eight men following him with open lights.

Mr. Gilday and Mr. Hugh Reid, acting superintendent, insisted very strongly upon me staying and helping them open the hole which had been blown into the old mine and which was stopped up with hay. At 12:30 March 24th, Mr. Gilday, Mr. Smith, two miners and myself, went into the face of the first north back entry and creened up this hole, first opening a small hole about the size of a man's arm. Inside of three minutes I could catch a cap back fifty feet. We then tore the hold out to about nine inches wide up and down the height of the coal and in twenty minutes the first north back entry, being the return of the air, was filled to the bottom for a distance of eight hundred feet.

On the first north straight entry, the intake of the air, the gas had backed up two hundred feet against the air. Too much credit cannot be given Mr. Gilday for the way he handled this mine, without any assistance whatever, before Mr. Smith and I got there. The Hubble lamps and particularly the search light were of great service. It would have been almost impossible to have got the body out were it not for the search light, as the Company did not have a safety lamp on the job at the time of the explosion. We did not use the helmets in the mine, as the ventilation was pretty well restored. The entries in particular, in this mine were very wet and if it had not been for this, in my opinion, this mine would have been a total wreck. In the rooms of the first north straight entry there was heavy coke, mostly on the north and west sides of the timbers, which showed that there had been considerable fire there. We found in some places just coked in the rooms on timbers an inch thick. Mr. Gilday, the mine inspector, gave the Company orders to put on competent fire-bosses, and told them not to think of opening that shaft until all gas and damp was drained out of the old workings.

We trained a great many men on top in the use of the apparatus, and when Mr. Smith or I were on top we had men in training all the time. Mr. J. H. Hibben stated that he was going to buy two sets of apparatus for Kansas, and one set for the mines in Oklahoma. I used the apparatus for three-quarters of an hour on Mr. Hibben, and he was greatly pleased with it.

In my opinion if there had been the least bit of precaution taken, today there might have been five happy homes instead of so many widows with a number of orphan children.

-6 JWP-

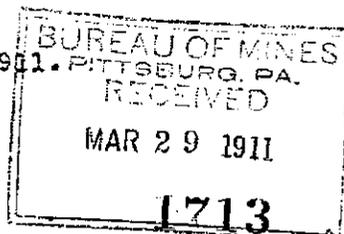
Very  
Yours very respectfully,

*W. G. Hamilton*

Foreman, Mine Rescue Station.

DEPARTMENT OF THE INTERIOR  
BUREAU OF MINES

March 28, 1911.



Engineer in Charge,  
Bureau of Mines,  
Pittsburg, Pa.

My dear Mr. Wilson:

I am inclosing you herewith clipping from the  
New York SUN of March 20, in regard to an explosion in  
Mine No. 16 of the Missouri, Kansas & Texas R. R., at West  
Mineral, Kansas, in which six men were killed.

This is the first information this office has re-  
ceived in regard to this disaster.

Very truly yours,

*Van H. Manning*

Chief Clerk  
*W*

March 29, 1911.

Mr. H. I. Smith,  
Savoy Hotel,  
Kansas City, Mo.

My dear Mr. Smith:

In reply to your preliminary report of the Mineral, Kansas, mine explosion, dated March 23, with supplemental report of March 24, I was intensely interested in your account of the explosion. It is shocking how little judgment was displayed by the first rescue parties; also the absence of a supply of safety lamps.

I think it was not at all judicious for the State Inspector to have pulled down the curtain between the two mines without using helmets and with extra electric lights since the gas was at once thrown upon the party, and there was no telling what new condition might be met.

Did you make any barometric observations? If not, I suggest that you obtain a record by writing to the Weather Bureau representative at Pittsburg, Kansas, if there is one there, or if not, to the nearest Weather Bureau station.

I note your comment about the use of the psychrometer. I do not think the humidity is of importance at the time of an explosion, but it is always advisable to get barometric readings, particularly when you are taking gas samples.

Referring again to opening into the abandoned No. 7 mine, was the fan in the No. 16 mine an exhaust fan only? Otherwise, I should have thought they would have reversed it and forced the ventilating current through the

opening into the abandoned No. 7 mine as I presume there must have been a shaft or opening to the surface in order to get the current of air you speak of. If this had been done, the opening into the abandoned No. 7 mine could have been made with perfect safety.

I desire to commend your behavior and that of Mr. Hamilton in assisting the State Inspector during such a critical, and I may say dangerous, occasion. At the same time, in future I do not think that you ought to allow yourself to be placed in an unnecessarily dangerous position; that is where you can adopt a safer method of procedure. To assist in a bad method gives the impression that we approved the method. In this case, however, I have no doubt that the circumstances were carefully considered before adopting the plan that was used for reopening into the abandoned No. 7 mine.

Yours very truly,



Geo. H. H. H.  
Mining Engineer.

c.c. to Director  
Engineer in Charge

EM/X

March 30, 1911.

1713

SUBJECT: Explosion-Mine No.16, Mineral, Kan.

Chief Clerk:

Replying to your letter March 28, with clipping concerning fire in mine at Mineral, Kansas, at which six men were killed;

Failure to notify you was doubtless due to my oversight, though I had assumed copies of telegrams, etc., of this nature have always gone to you. I noticed the item in a Pittsburgh paper the morning after the fire and received a wire from H. I. Smith from Waverly, Kansas, the same morning. I immediately wired Smith to investigate, which he did the following day in company with Hamilton, helmetman from the McAllester station.

As soon as preliminary report is received copy or abstract will be sent your office.

Very truly yours,



Engineer in Charge.



MR. RICE

*ad-Ex*

March 30, 1911.

The Director:

Thru Engineer in Charge

I enclose herewith copy of Mr. H. I. Smith's preliminary report on the Mineral, Kansas, mine explosion.

He certainly showed courage and ability in reopening the No. 16 mine. The earlier rescue work was shockingly handled. I judge that Mr. Smith has gained the friendship of the State Inspector of Kansas.

There should be some requirement that supplies of safety lamps be kept on hand at all coal mines, even if classed as non-gaseous, as this was.

Yours very truly,

*W. J. Hill*  
Mining Engineer.

Encl.

*W*

HIS-RJM

April 25, 1912.

General Superintendent,  
M. K. & T. Railroad Co.,  
Coal Mining Department,  
Parsons, Kansas.

Dear Sir: (Through Chief Mining Engineer).

Referring to the explosion in the M. K. & T. mine No. 16 at Mineral Kansas on March 18, 1911, I would greatly appreciate having for the Bureau of Mines a map of No. 16 mine and its relative position to the old No. 7 mine. The first map made after the explosion would be preferred.

The map or any information you may furnish will be dealt with confidentially by the Bureau of Mines and myself.

Very truly yours,

*H. J. S.*

Assistant Mining Engineer.

*OK. W. J. R.  
4/25*

*file*

12/20/12

H. I. Smith

Corrections to be made in M. K. & T. No. 16 mine explosion report:

Page 2, Instead of intrusion dikes, correct to "Intrusion clay veins"

Page 3, Cut out extra "N" in panel

Insert in beginning of second paragraph the word Chiefly so that it will read MINING The coal is chiefly mined by blasting from the solid. The face of the coal is sheared on one side.

Page 12. The writer, H. I. Smith, arrived at the mine on Tuesday morning, March 21.

12/20/12  
OK  
G.S.R.  
H. I. Smith

December 21, 1912.

REPORT ON EXPLOSION,  
M.K. & T. MINE #16, March 18, 1911.

Director:-

I enclose herewith final report by H. I. Smith on the series of gas explosions in the M. K. & T. No. 16 mine, Mineral, Kansas, on March 18, 1911.

Quite a complete preliminary report was submitted to you on March 30, 1911. The present report was delayed by reason of making up mine maps, which were returned several times before they were considered satisfactory. Also on account of certain other details that needed revision.

This series of explosions, as was commented upon at the time of submitting the preliminary report, showed a most shocking state of affairs in trying to recover the bodies of the victims of the first explosion. Mr. Smith as then commented, showed courage and ability in the matter of controlling the firedamp while reopening the mine.



Chief Mining Engineer.



# Newspaper Accounts

CLIPPING FROM  
N. Y. SUN

Date ..... MAR 20 1911 .....

***FIVE DIE TRYING TO SAVE ONE.***

**Black Damp From Unused Mine Floods  
Workings of Kansas Coal Pit.**

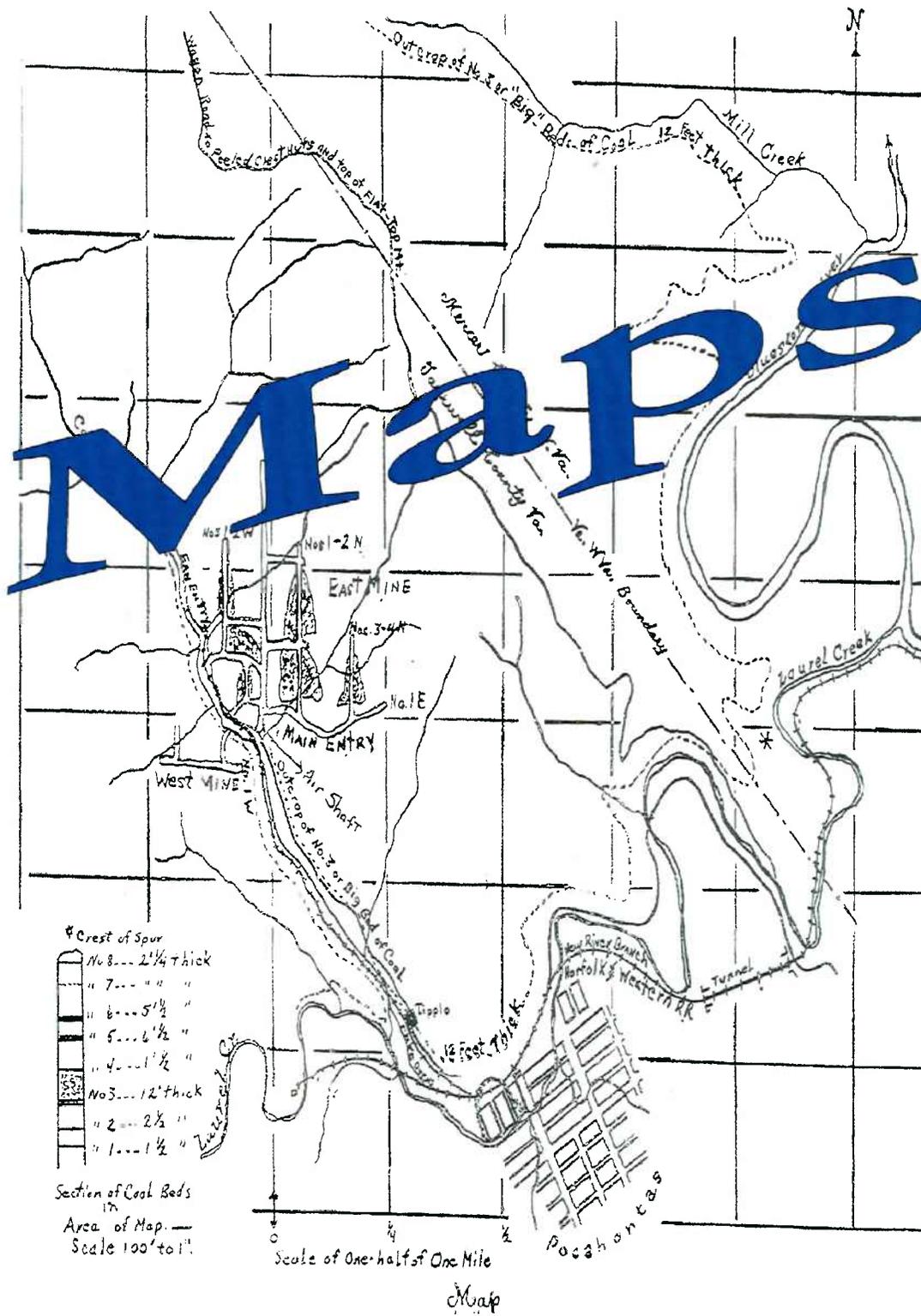
COLUMBUS, Kan., March 19.—One man was killed by an explosion in mine No. 16, owned by the Missouri Kansas and Texas Railroad, at West Mineral, Kan., and five men who went down to rescue him were killed by black damp gas last night.

John Joplin, superintendent of the mine, led the rescue party and was among the killed. The names of the other victims are not known.

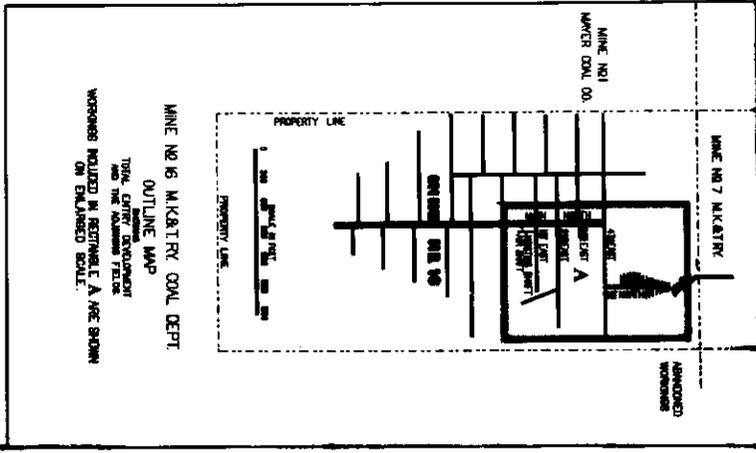
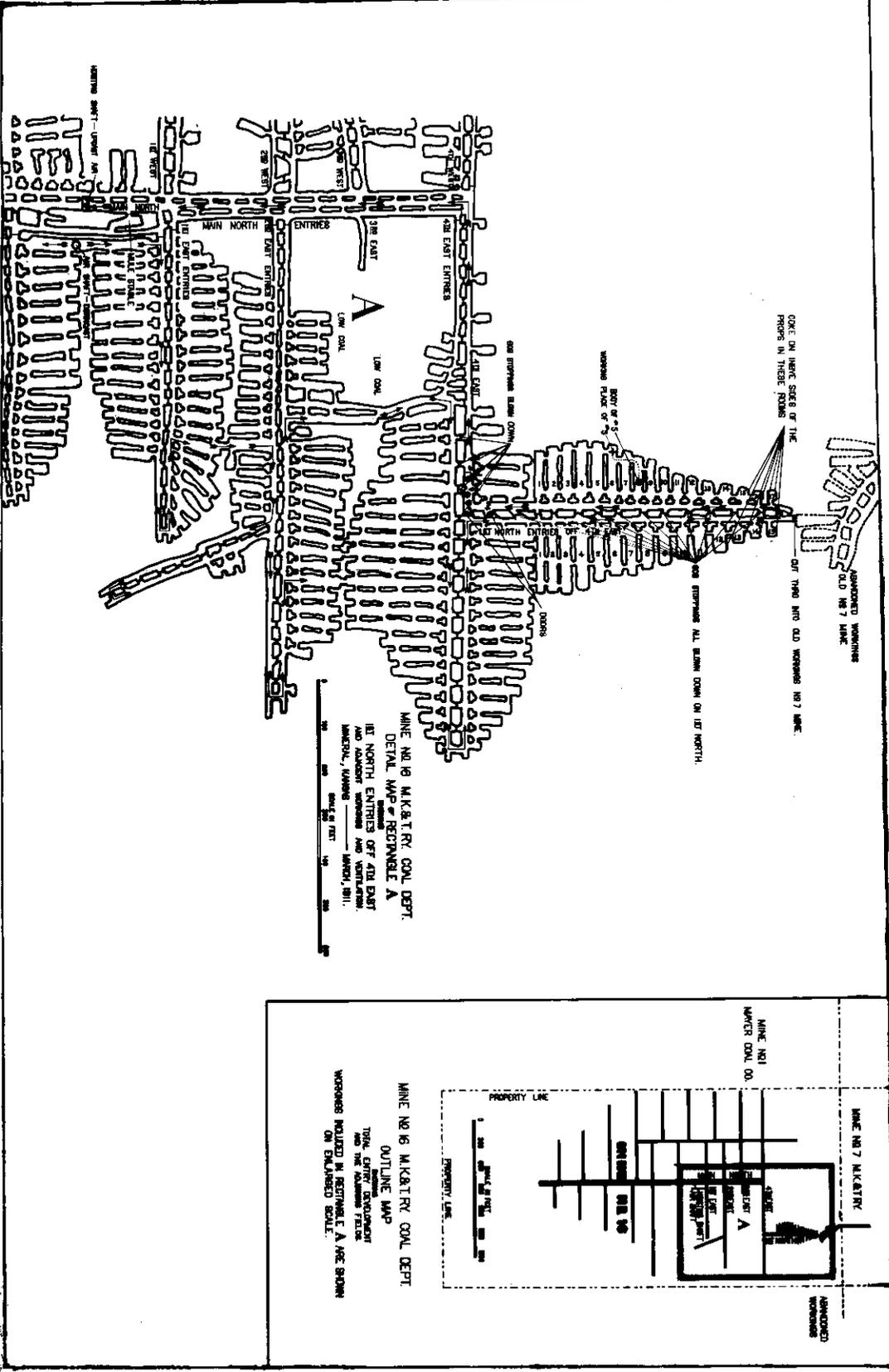
About 5 o'clock two Italian shot firers went down into the mine. The shot which they fired tore the walls between mine No. 16 and mine No. 7, a disused mine adjoining it.

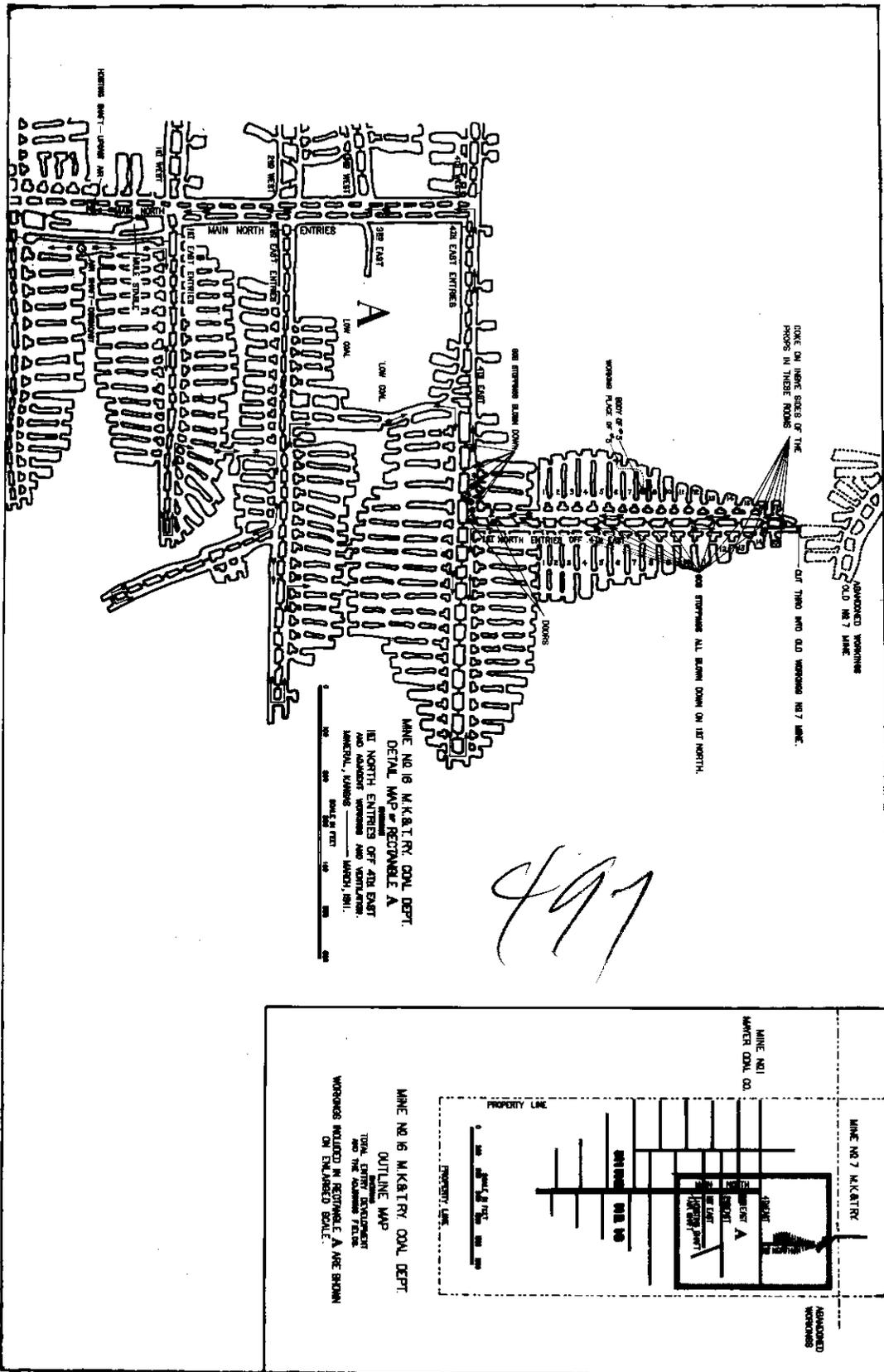
Black damp gas in the old mine flooded the one which was in use. One of the shot firers escaped and the rescue party of five men led by the superintendent went down the shaft in the hope of rescuing the other shot firer. All were killed.

The mine is still filled with gas, making it impossible to remove the bodies.



*Handwritten:* Kanabo





LOOK ON INSET SIDES OF THE  
PROPS IN THESE ROOMS

CUT THIRD AND OLD WORKING NO. 7 W.C.

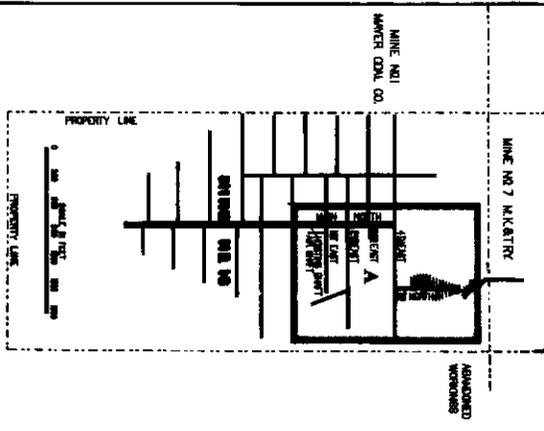
NEW STOPPING ALL BLOCK DOWN ON 1ST NORTH.

ADVANCED WORKING  
NO. 7 W.C.

MAINE NO. 16 M.K. KATRY COAL DEPT.  
DETAIL MAP OF RECOVERABLE A  
1ST NORTH ENTRIES OFF 4TH EAST  
AND ADJACENT WORKINGS AND VENTILATION  
MINERAL, LIBRARS - MARCH, 1911.



497

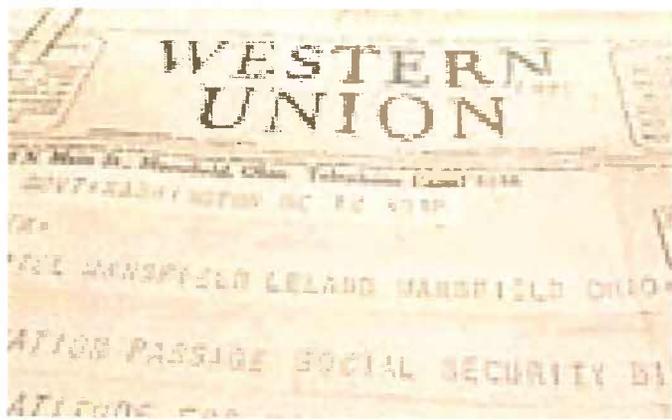


MAINE NO. 16 M.K. KATRY COAL DEPT.  
OUTLINE MAP  
TOWN, ENTRY DEVELOPMENT  
AND THE ADJACENT TOWN  
WORKINGS INCLUDED IN RECOVERABLE A ARE SHOWN  
ON ENLARGED SCALE.

MAINE NO. 16  
M.K. KATRY COAL DEPT.

MAINE NO. 7 M.K. KATRY

ADVANCED  
WORKINGS



# Telegraph

8-70

WESTERN UNION TELEGRAPH COMPANY.

26 Pd GR

*All*

Mar. 19, 1911

Waverly, Mo.

Bureau of Mines,  
Pittsburg, Pa.

Six men dead in mine at West Mineral Kansas shall I leave here  
at once for the mine, cause gas explosion

Smith

*note to...*

A Rice

~~...~~

...

*...*

*...*

WESTERN UNION TELEGRAPH

H. M. Wilson

Engineer in Charge

Pittsburgh, Pa. March 20, 1911.

Smith,  
Government Engineer,  
Waverly, Mo.

Proceed for investigation West Mineral Kansas wiring  
Hamilton for helmets if necessary after arrival.

Wilson.

To Manager of Telegraph Co.:

G-55

OFFICIAL TELEGRAM

This message should be sent "Paid Gov't" Rate and forwarded with your monthly report as voucher for your credit.

Charge: .....

DEPARTMENT OF THE INTERIOR  
BUREAU OF MINES

10.51

The ..... Company  
**WESTERN UNION**

WILL SEND THE FOLLOWING MESSAGE SUBJECT TO THE RATES FIXED BY THE POSTMASTER-GENERAL

**Geo. S. Rice** [Sender's name in full.]

**Mining Engineers**

Time filed.

Receiver's No.

words, **PAID.** Government Rates, at ..... rate.  
(Day or night.)

....., 191  
**Pittsburgh, Pa., March 20, 1911.**

To **Howard I. Smith, Government Mining Engineer, care Missouri, Kansas and** 2305

**Texas Coal Company, Mineral, Kansas.**

Give special attention sampling mine air and gas wells  
if any. Obtain rubber cork bottles if regular suply insufficient.

**R I C E**

# THE WESTERN UNION TELEGRAPH COMPANY.

INCORPORATED  
23,000 OFFICES IN AMERICA. CABLE SERVICE TO ALL THE WORLD.

This Company TRANSMITS and DELIVERS messages only on conditions limiting its liability, which have been assented to by the sender of the following message. Errors can be guarded against only by repeating a message back to the sending station for comparison, and the Company will not hold itself liable for errors or delays in transmission or delivery of Unrepeated Messages, beyond the amount of tolls paid thereon, nor in any case where the claim is not presented in writing within sixty days after the message is filed with the Company for transmission.

This is an UNREPEATED MESSAGE, and is delivered by request of the sender, under the conditions named above.  
ROBERT C. CLOWRY, President and General Manager.

3 35  
Pm

RECEIVED at

*2/27/11*

*W 27 GP*

*Mineral Kas Mas 22 - 11*

*Bureau of Mines, Pgh Pa  
Hamilton arrived nine o'clock  
tuesday evening one man still  
in mine not necessary  
helmets but may use  
later  
Smith*

BUREAU OF MINES  
PITTSBURG, PA.  
RECEIVED  
MAR 22 1911  
*to use them*

*3/22/11*

# THE WESTERN UNION TELEGRAPH COMPANY.

INCORPORATED

23,000 OFFICES IN AMERICA. CABLE SERVICE TO ALL THE WORLD.

This Company TRANSMITS and DELIVERS messages only on conditions limiting its liability, which have been assented to by the sender of the following message. Errors can be guarded against only by repeating a message back to the sending station for comparison, and the Company will not hold itself liable for errors or delays in transmission or delivery of Unrepeated Messages, beyond the amount of tolls paid thereon, nor in any case where the claim is not presented in writing within sixty days after the message is filed with the Company for transmission.

This is an UNREPEATED MESSAGE, and is delivered by request of the sender, under the conditions named above.

ROBERT C. CLOWRY, President and General Manager.

335  
Pm

RECEIVED at

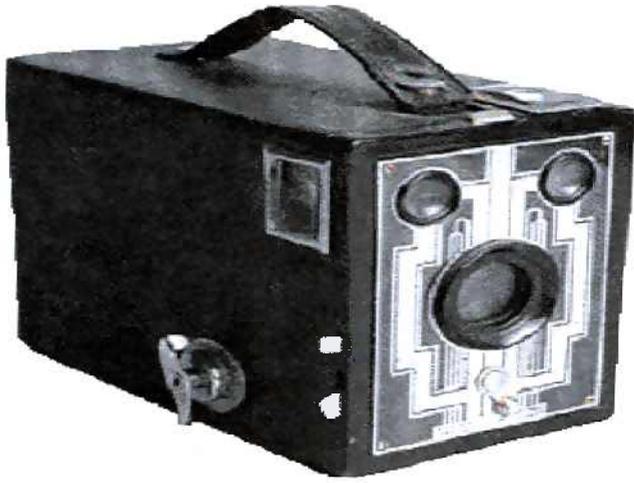
W 27 GP

Direct

~~Mineral~~ Kas Mas 22 - 11  
Bureau of Mines, Pgh Pa  
Hamilton arrived nine o'clock  
Tuesday evening one man still  
in mine not necessary to use  
helmets but may use them  
later  
Smith

BUREAU OF MINES  
PITTSBURG, PA.  
RECEIVED  
MAR 22 1911

3/22/11 10:45 AM



# Photographs



1.



2.

MINE INSPECTORS AND COMPANY OFFICIALS  
 AT THE M. K. & T. MINE NO. 16 EXPLOSION  
 MINERAL, KANSAS.

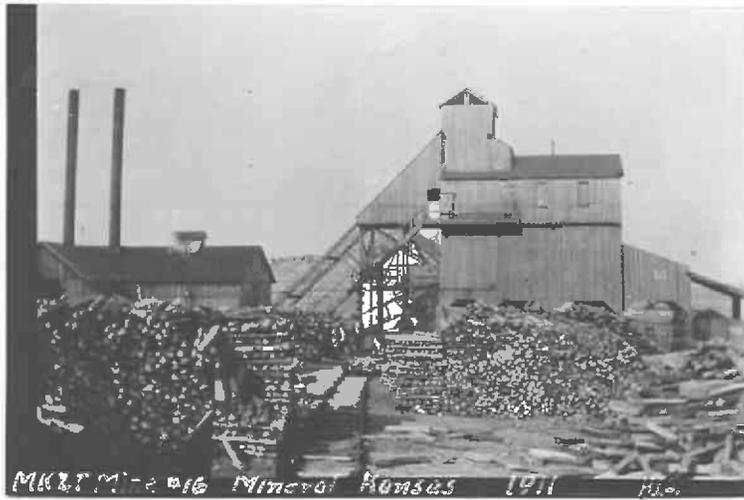


3.



4.

TWO VIEWS OF THE SURFACE PLANT OF THE  
M. K. & T. MINE NO. 16, MINERAL, KANSAS.



TWO VIEWS OF THE SURFACE PLANT OF THE  
M. K. & T. MINE NO. 16, MINERAL, KANSAS.



MKT Mine #16 Mineral Kansas  
Apparatus Packed ready for shipping

5.

RESCUE APPARATUS PACKED READY TO SHIP  
FROM THE M. K. & T. MINE BACK TO THE MCALESTER STATION.