

PROCEEDS REPORT OF MINE FIRE  
PURSGLOVE NO. 15 MINE, PURSGLOVE COAL MINING COMPANY  
PURSGLOVE, MONONGALIA COUNTY, WEST VIRGINIA  
JANUARY 8, 1943

Safety Division Files

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**CONTENTS**

	<u>Page</u>
Introduction . . . . .	1
General information. . . . .	2
Location and ownership. . . . .	2
Operating officials . . . . .	2
Employees and production. . . . .	2
Type of mine. . . . .	2
Coal bed. . . . .	2
Substation. . . . .	3
Underground mining methods, conditions, and equipment. . . . .	3
Method of mining. . . . .	3
Roof and floor. . . . .	3
Timbering . . . . .	4
Ventilation and gas . . . . .	4
Drainage. . . . .	4
Lighting. . . . .	4
Dust. . . . .	4
Coal cutting. . . . .	5
Coal loading. . . . .	5
Haulage . . . . .	5
Explosives. . . . .	5
Story of disaster and sealing operations . . . . .	5
Procedure followed in sealing the mine. . . . .	10
Previous fires and explosions in this or nearby mines . . . . .	12
Mine conditions immediately prior to this fire. . . . .	12
Summary. . . . .	12
Lessons to be learned from the conditions as they relate to this mine fire. . . . .	12
Recommendations. . . . .	13
Acknowledgment . . . . .	14
Appendix A	
Appendix B	
Appendix C	
Appendix D	
Appendix E	
Appendix F	

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INTRODUCTION

This report is a progress report on the mine disaster which occurred in the No. 15 mine of the Pursglove Coal Mining Company, Monongalia County, West Virginia. The report deals with the recovery of the bodies of the victims and the first attempts to seal the mine fire as the mine fire was still in progress at the time of this report. Subsequent reports will discuss the procedure used in its final extinguishment.

A mine fire occurred in the mine, in which 13 men died. The fire started at approximately 2:55 a.m. January 8, 1943, when a main-line locomotive hauling a train of 23 loaded cars toward the entrance of the mine stopped between No. 2 and 3 north headings on 1 west haulage road. The brakeman, who was riding the rear of the trip, walked outby along the mine cars and saw electric arcing and flashing and a fire burning in the vicinity of the locomotive.

There were 78 men underground at the time the fire started: 65, some of whom were affected by carbon monoxide, escaped from the mine; twelve men died from smoke and carbon monoxide gas; and one man died, probably from burns, smoke, and carbon monoxide gas.

So far as is known, the men did not attempt to protect themselves with barricades.

Unsuccessful attempts were made to fight the fire direct with rock dust and water, then it was decided to seal the fire area underground. Some work had been done on preparations for sealing the fire when it was discovered that the fire had traveled about 3,000 feet from its origin. About midnight January 11, a decision was made to seal the fire by sealing all the surface openings. The last seal was completed at 10:15 a.m. on January 14.

The first notification of the disaster received by the Bureau of Mines was a telephone message from the United Press, about 8:30 a.m. January 8, reporting that an explosion had occurred in the No. 15 mine of the Pursglove Coal Mining Company, Pursglove, West Virginia. A telephone call by Mr. G. W. Grove to one of the company officials at Pursglove, West Virginia, revealed that the trouble was a mine fire and that several workmen were unaccounted for. Mr. Grove instructed Messrs. W. D. Walker, Jr. and T. J. McDonald at Fairmont, West Virginia, Mr. A. K. Bloom at Morgantown, West Virginia, and Messrs. Griffith and Quenon from the Pittsburgh office to proceed to the mine. Messrs. Walker and McDonald arrived at the mine at 11 a.m., Mr. Bloom at 10 a.m., and Messrs. Griffith and Quenon at 12:25 p.m.

Mr. Grove also instructed Messrs. Haira, Hull, E.H. Maize, Smith, and Lyons to report to the mine and assist with the recovery operations. Messrs. Haira and Hull arrived at the mine about 1:30 a.m., Mr. Lyons arrived at 2:10 a.m., and Messrs. Maize and Smith about 4 a.m. January 9.

Mr. McNary of the Mineral Production Security Division of the Bureau of Mines received word of the disaster while working in the vicinity of Morgantown, West Virginia, and arrived at the mine shortly before noon January 8.

#### GENERAL INFORMATION

##### Location and Ownership

The mine is owned and operated by the Puraglove Coal Mining Company and is at Puraglove, Monongalia County, West Virginia. The mine is served by the Monongahela Railway.

##### Operating Officials

The names and addresses of the operating officials are:

Joseph Puraglove, Sr.	President	Cleveland, Ohio
David Puraglove	Vice Pres. and Gen. Supt.	Morgantown, West Virginia
Wm. Earle Reives	Superintendent	Puraglove, West Virginia
Edward M. Knoski	Mine Foreman	Morgantown, West Virginia
Albert Hood	Chief Engineer	Puraglove, West Virginia
John Sirockman	Safety Engineer	Puraglove, West Virginia

##### Employees and Production

Approximately 335 men are employed at the mine. The average daily production is 2,500 tons for three-shifts-per-day operation.

##### Type of Mine

The mine is opened by four shafts, three drifts, and two slopes. Seven of these openings were used for intake air and two shaft openings were used as return airways. One slope opening has a coal conveying belt and the other slope was used as a manway and for repair material. Two drift openings were used for the haulage of refuse, supplies, and man-trips; the third drift opening was abandoned.

##### Coal Bed

The mine is opened in the Pittsburgh coal bed which averages 84 inches in thickness, is undulating, and has a gradual dip to the northwest. The coal is bituminous, has a well-defined cleavage, and has a ratio of volatile matter to total combustible matter of about 0.39. The ratio is an index of its relative ignitibility.

No face samples of the coal were taken; however, an analysis of the coal from an adjoining mine is as follows:

	<u>Percent</u>
Moisture	3.0
Volatile matter	34.5
Fixed carbon	53.1
Ash	9.4
Sulfur	2.7
B.t.u.	13,390

### Substation

Seven motor-generator sets are installed in a fireproof building and convert the purchased 2,200 volts alternating current to 550 and 250 volts direct current. Four of these machines generate 550 volts and have a combined capacity of 1,100 kilowatts; three generate 250 volts and have a combined capacity of 700 kilowatts.

Alternating current, at 440 volts, was transmitted underground for the operation of several electric motors that drive water pumps.

The motor-generator sets, switchboards, and switching gear are well installed and grounded. Insulating mats are provided around live equipment.

Carbon-tetrachloride fire extinguishers are available in the substation for fire fighting, and an automatic fire door is installed for fire control.

The building is illuminated by reflector-type incandescent lights, and wiring is enclosed in conduit. A 4-foot disc fan is used to ventilate the substation.

The generating equipment in the substation provides direct-current electricity for both the No. 2 mine, operated in the Sewickley coal bed, and the No. 15 mine.

The 550-volt transmission cables are connected to both the No. 2 and No. 15 mines, and in one case, the circuit breaker controls the current to both mines. Should a short circuit develop, it is difficult for the substation attendant to determine the mine in which the fault occurs.

## UNDERGROUND MINING METHODS, CONDITIONS, AND EQUIPMENT

### Method of Mining

The mine is laid out with reference to the butt and face cleats of the coal. Main entries are in sets of four and are driven from south to north at intervals of 2,000 feet. Cross entries and butt entries are in sets of four. All entries are 12 to 14 feet wide. Rooms are 14 feet wide on 94-foot centers.

An open-end cut-sequence method is used in the extraction of pillars. The coal is undercut from 6-1/2 to 8 feet. Electric post-mounted drills and hand-held electric drills are used to drill boreholes.

### Roof and Floor

The immediate roof in the mine ranges from bad to good and consists of about 12 inches of "head" coal. The floor is fire clay.



### Timbering

A Federal inspection report made by the United States Bureau of Mines in June 1942, states that crossbars are set at 2-1/2-foot intervals and are kept up to within 3 feet of the working face.

### Ventilation and Gas

The mine ventilation was accomplished by two fans operated exhausting, wooden doors installed to form air locks, masonry stoppings, overcasts, wooden stoppings, and line brattices.

One of the fans is an electrically driven 8-foot multiblade propeller type that was stated to be circulating about 137,000 cubic feet of air per minute. The second fan is a centrifugal type and was stated to be circulating 100,000 cubic feet of air per minute.

The air entered the mine through two shaft, two slope, and three drift openings. A split system of ventilation was used. No air samples were collected during the period of recovering the bodies and fighting the fire. Samples collected after all surface openings had been sealed indicate that the mine liberated appreciable amounts of methane.

The mine is rated as gassy by the West Virginia Department of Mines. A Federal inspection report by the United States Bureau of Mines in June 1942, shows that the mine was liberating 1,393,186 cubic feet of methane in 24 hours.

### Drainage

There is much natural seepage of water into the mine; water is also drained from some abandoned contiguous mine workings. The company's No. 2 mine, opened in the Sewickley coal bed about 90 feet above the Pittsburgh coal bed, drains water through boreholes into this mine.

Four large-capacity centrifugal pumps discharge, through boreholes to the surface, an estimated 1,500,000 gallons of water in 24 hours.

### Lighting

Permissible electric cap lamps and permissible flame safety lamps are used. Permissible trip lamps were used.

### Dust

Much coal dust was observed around and in the vicinity of the crossover dump at the bottom of the belt conveyor slope. Some finely divided coal dust was also observed along the main haulageways.

No water was used to allay coal dust during any of the face operations; however, it is reported that the tops of loaded mine cars were sprinkled with water while in transit on the A side (affected area) of the mine.

Rock-dusting was done in the mine by one high-pressure and one low-pressure rock-dusting machines. No samples of the dust in the rock-dusted

areas were collected for inc combustibility analysis because the mine was sealed at the surface before an inspection or survey of the underground workings could be made.

#### Coal Cutting

Nonpermissible types of shortwall mining machines were used to undercut the coal.

#### Coal Loading

All coal was loaded mechanically with permissible-type loading machines.

#### Haulage

Trolley and trolley-cable-reel locomotives were used for hauling coal.

#### Explosives

Permissible explosives and Cardox blasting devices were used to break the coal. No. 6 electric detonators and nonpermissible blasting units were used.

### STORY OF DISASTER AND SEALING OPERATIONS

Because it was necessary to seal the mine at the surface, the property damage and time required before the resumption of operations cannot, at this time, be determined.

The total production of coal at the mine has been lost since the inception of the fire. This will approximate 2,500 tons of coal each working day until the mine is recovered.

Information and facts obtained from observation and interviews concerning the period from the inception of the fire to the time of sealing the mine at the surface are as follows:

A mine locomotive, en route to the slope bottom with a train of 23 loaded coal cars, stopped on 1 west haulage entry near the intersection of 3 north. The brakeman, who was riding on the rear of the trip, walked outby along the mine cars and saw electric arcing and flashing and a fire burning in the vicinity of the locomotive. (See sketch S-130 in Appendix A). Being unable to proceed farther because of the lack of clearance between the cars and rib, he retreated inby over the 3 north entry to a telephone at 8 west intersection and called the dispatcher at the slope bottom. He informed the dispatcher that the locomotive was on fire, and instructed him to pull the trolley-wire switch at the junction of 1 west and 2 north. The brakeman then started back toward the locomotive and cars and encountered dense smoke at about the intersection of 3 west. He became confused at this point and went into a breakthrough where the air was clear and waited a short time. He then retreated inby over 3 north haulage road and reported the fire to the night foreman, who was in the 16 west working section.

The foreman, accompanied by three men, obtained a fire extinguisher and proceeded, on a trolley locomotive, toward the fire. A short distance inby 12 west, the locomotive ran through an insulated trolley-wire block that separated the 250 volts and 550 volts direct current. The 550-volt circuit had been opened at 2:55 a.m. by an automatic circuit breaker on the surface. The four men proceeded on foot and when they encountered dense smoke the foreman sent one man back with instructions to get help and notify the men in the three working sections and to proceed through the 17 right entry to fresh air and escape through the No. 1 mine to the surface. The messenger returned to the locomotive at 12 west where he met two other employees; the three men pushed the locomotive a short distance to a point where contact could be made with the 250-volt trolley wire and they returned to 15 west intersection.

All the employees in 16 west and 17 right sections were notified and escaped. The employees in 15 west section were not notified because the man who had been instructed to notify these men stated that because of previous exposure to the smoke he felt that he was not physically fit to make this long trip. Further, that he had written a note with chalk on a door across the haulage road located in 15 west, a short distance inby the 3 north haulage road, to the effect that the employees in this section should escape to the surface through 17 right and the No. 1 mine. (The company designation of No. 15 mine is a combination of two mines formerly designated as Nos. 1 and 5 mines).

The foreman accompanied by the other two men proceeded by foot to the 8 right intersection on 3 north. They could not advance farther on the 3 north haulage road because of dense smoke and proceeded to the fire area through 8 right and 2 north entries to the 1 west haulage way. At the junction of 2 north and 1 west, they were joined by three other workmen. After obtaining fire extinguishers and charged Carbox blasting devices, they proceeded toward the fire in 1 west using self-rescuers. The smoke became so dense that travel was difficult and they returned to the 2 north haulage road.

The foreman proceeded alone from the 1 west intersection to find out whether or not the men in the working sections had escaped. This trip was made partly by locomotive through the No. 1 mine and on foot to the 17 right section. On arrival at 17 right, about 5 a.m., he was informed that the men in the 15 west section had not been notified. Accompanied by two employees, the foreman started toward the 15 west section on a locomotive to find the missing men. The locomotive was derailed outby 3 north entries on 17 right, and the remainder of the journey was made on foot. The foreman instructed the two men to go into the 15 west section and locate the men, stating that he would go to 14 west off 3 north and open doors in that entry, thus short-circuit the ventilation.

The 15 west section was explored but the workmen had already left. The two men who had been sent into 15 west to notify the employees on that section returned to 3 north entry on a locomotive that was in the 15 west section. Arriving at the intersection, they encountered dense smoke and proceeded by foot several hundred feet inby on the 3 north entry to where they found the foreman in a state of collapse. The two men assisted the foreman until he could no longer help himself. The foreman instructed the men to abandon him,



go to fresh air, and secure help. Later three men from 17 right attempted to rescue the foreman but were unable to do so because of smoke. The body of the foreman was rescued later and taken to fresh air, where unsuccessful resuscitation was administered for 4-1/2 hours.

The last of the employees who escaped from the affected area of the mine arrived on the surface about 7 a.m. January 8.

The general mine foreman accompanied by four other employees descended the intake airshaft at about 6 a.m. They erected one canvas stopping, and with canvas closed small openings in three masonry stoppings on 3 north outby 1 west entry. The air was bypassed to the No. 4 entry of 3 north to keep the air from the fire area. This party proceeded to 1 west and 2 north junction through a section of the mine on the outby side of the fire. The party met the State mine inspector and others at the junction of 1 west and 2 north. They were informed that the men in 15 west section were missing.

A rescue party was organized, consisting of State mine inspectors, company officials, two rescue teams, and several other workmen, to explore the affected area.

The rescue party entered the inby end of the 3 north working section through the No. 1 side of the mine, and conducted fresh air to 3 north entries. A Bureau of Mines representative arrived in the 3 north section and met the rescue party, at 15 west, who were on their way to the surface. The State mine inspector reported that all the working sections had been explored to and including 15 west, that the ventilation had been established to the 14 west entry, and that none of the missing men had been located.

When the trip is made through the No. 1 side of the mine, 14 west is about 5 miles from the slope bottom. The transportation facilities for men and supplies were by mine cars for about 3-1/2 miles, the remaining distance had to be traveled on foot. Supplies and other material were carried a distance of 1-1/2 miles. A part of the distance that had to be traveled on foot was through an abandoned section of the mine. Many delays were caused by conditions that prevailed during the recovery operations, such as the distance that was necessary to travel, lack of men and materials, and the nearest telephone communication being about 2 miles from where attempts were being made to locate the missing employees.

A second rescue party arrived at 14 west about 5 p.m. and rescue operations were resumed. The ventilation was established to 15 west entries, on 3 north. At this point, it was almost impossible to proceed farther with the fresh air. It was decided to close off a part of the ventilation from the intake airshaft outby the fire area, with the hope of decreasing the amount of smoke that was being carried with the ventilation from the fire area. The fresh air was retarding the air from the Guston Run intake airshaft that had passed the fire area carrying smoke and carbon monoxide to where rescue operations were being conducted. Nothing was done at this time about closing off a part of the ventilation.

While exploring in the vicinity of 14 west, three bodies were located on the No. 4 parallel return air course at the third breakthrough outby 14

west on 3 north. (See sketch S-131 in Appendix B). The three victims were within 100 feet of fresh air, and it was evident that attempts had been made by these men to reach an overcast nearby which was a part of the return from a section of the No. 1 side of the mine. The three bodies were brought to the surface about 3 p.m., Saturday January 9, and operations in the vicinity of 14 west and 3 north were temporarily suspended.

A third rescue party continued the recovery operations from a point about 250 feet outby the 13 west entries on 3 north. Stoppings were erected and some were taken out by a rescue team wearing self-contained oxygen breathing apparatus. The ventilation was finally established to the 12 west entries off 3 north. In all these operations, numerous delays were experienced. The rescue party explored the 3 north headings to the intersection of 9 west. These men were protected by breathing apparatus and gas masks during the exploration. Three additional bodies were located on the haulage road of 3 north headings near 9 west. (See sketch S-132 in Appendix C). This same party recovered one of the bodies, loading one on the stretcher, and left the third victim. This rescue party returned to the surface with one body sometime in the afternoon, Saturday January 9. Operations had to be discontinued by this party because of the lack of recharging supplies for the oxygen breathing apparatus.

The fourth rescue crew arrived at the 12 west and 3 north headings about 5 p.m., Saturday January 9, and tried unsuccessfully to establish ventilation outby 12 west to recover the bodies that had been previously located. The apparatus crews used up the oxygen in the breathing apparatus about 8:30 p.m. and returned to the surface without recovering the two bodies.

The Chief of the West Virginia Department of Mines arrived at 12 west at 11 p.m. and was informed of the futile attempt to advance farther with existing ventilating conditions. At this time, a part of the intake airshaft on the 3 north headings, outby the fire area, was closed off thus reducing the volume of gases and smoke along the 3 north headings where the rescue operations were being conducted.

It was later decided to explore the 3 north entries through 8 right. The rescue party left 12 west on 3 north shortly after midnight and proceeded to the intersection of 8 right and 3 north by 2 north. Five additional bodies (see sketch S-132 in Appendix C) were located at the junction of the 8 right sidetrack on the 3 north haulage entry. These bodies were recovered and brought to the surface along with the two bodies that had been located by the previous rescue party. All persons were out of the mine at 6 a.m., January 10, except the body of the motorman in 1 west entry.

While recovery operations were being conducted on 3 north entries, attempts were being made by company officials and laborers to reach the fire area in 1 west and recover the body of the missing motorman.

A line brattice was erected from the right rib, just outby the fourth breakthrough on 1 west haulage road about 700 feet outby the suspected fire area, and was extended toward the fire. The curtain was erected about 6 feet from the left rib and the intake air furnished sufficient velocity to clear the smoke. Five All-Service Burrell gas masks were used by crew members in the erection of the line brattice. This brattice was erected to within about

70 feet of the fire area, and at this point the smoke was so dense that the work was temporarily discontinued until a block stopping was knocked out in the entry paralleling the 1 west haulage road. After removing this stopping, the smoke cleared up and the line brattice was extended to within 40 feet of the fire. Preparations were made to fight the fire direct with rock dust at about 11:30 p.m., January 8. Rock dust was carried to the end of the line brattice from a mine car about 600 feet outby the fire area on the 1 west haulage road. A call was made to the surface for a high-pressure rock-dusting machine, additional help, and materials.

An inspection was made of the outby end of the fire and it was observed that the roof coal had fallen on the haulage locomotive and had completely covered it, with the exception of the outby bumper. A recent cave of roof coal covered the locomotive to within 14 inches of the roof on the inby end, and all of the material beneath this layer was a mass of red coals. The locomotive was lined up with the haulage road and appeared to be on the rails. There were no indications that the locomotive had run into a cave; however, a fall of shale and timber cribbing was found about 25 feet outby the locomotive. This material pulled the trolley wire from the hangers. The smoke was so dense inby the locomotive that further observations could not be made. The remaining roof coal above the locomotive and fire was so hot that coal tar was dripping from the roof.

After making these observations, the fire was attacked directly with rock dust. The rock dust was spread over the top and front end of the locomotive. It was difficult to completely cover the locomotive with rock dust because of caved roof coal near the inby end of the locomotive. Attempts were made to reach the deck of the locomotive and locate the body of the motorman. The fire became so hot that it was necessary to withdraw the men from the fire area. The roof coal fell on the blazing fire and attempts to extinguish the fire with rock dust were temporarily discontinued.

Two rescue teams arrived at 1 west about 1:20 a.m. Further attempts to fight the fire directly with hand methods of applying rock dust were futile; the heat was so intense that the main roof was caving.

The company officials decided to fight the fire with water, and a pump was installed on 1 west haulage road. At about 5:30 a.m., January 9, after applying water to the fire for a short time, the men were driven out of the section by steam and carbon monoxide that had worked its way back through the parallel entries along the left side of 1 west haulage road. Several persons who were near the fire area were in a state of collapse before they could reach fresh air. Carbon monoxide was detected about 300 feet outby the fire. No further attempts to fight the fire directly at this time were made, pending a decision by the management whether they should continue fighting the fire directly or seal the fire area. A decision was made Sunday afternoon, January 10, to continue fighting the fire directly.

State inspectors recommended that the 1 west section outby the fire area be thoroughly rock-dusted before further attempts were made to fight the fire. Carbon monoxide and smoke backing up on the intake air in 1 west entries prevented workmen from rock-dusting this area. A later decision by company officials was made to seal the fire area inside the mine. Preparations for the

sealing of the area were under way at the time an exploration trip was made through the Guston Run intake airshaft to find suitable locations for seals and ascertain the extent of the fire on the 3 north entries. It was found that the fire had traveled about 1,500 feet from its origin, which made it decidedly dangerous to seal the fire underground. All the men were withdrawn from the mine at 10 p.m., January 11.

#### Procedure Followed in Sealing the Mine

The decision to seal the mine at the surface was made about midnight January 11, and plans were made to begin the task immediately. A total of 16 seals were erected to seal 14 surface openings. Double seals were placed in the No. 5 slope and in the No. 1 haulageway; these seals were equipped with steel doors. The sealing operations were impeded by adverse weather conditions and the shortage of workmen. Several boreholes, used for pumping water and power lines, were also sealed.

It was decided to keep the ventilation circulating as near normal as possible while the sealing operations were being accomplished. The ventilation was kept in its original course as a precaution against the forming of an explosive mixture of air and methane.

All the seals, with the exception of the one at the Guston Run intake airshaft which was constructed of concrete reinforced with steel rails, were built of cement blocks laid in cement mortar and plastered with cement and later replastered with wood fibre. The seals were completed at 10:30 a.m., January 14.

The seals were visited frequently from January 14 to January 22, to collect samples, obtain pressure differential readings, and to check on the tightness of the seals. The samples of air collected from the sealed area were analyzed by means of a portable Orsat apparatus and by the Bureau of Mines laboratories at Pittsburgh, Pennsylvania. The analyses of these samples indicated that the mine was not effectively sealed. This is shown by the fact that the oxygen in the samples varied from 14 to 19.55 percent for a period of 6 days after sealing. The mine was below atmospheric pressure for most of this period and it appeared to be taking air through 13 of the seals. The pressure at the No. 15 fan shaft seal was greater than atmospheric pressure for about 5 days of the 6-day period and most of the samples were collected at this point.

Samples were collected from seven sealing points. The only samples collected showing favorable reduction in oxygen were those from a drill hole intersecting the coal bed near the 3 north entries, at a point several hundred feet in by the fire.

Table 1 gives the analyses of the samples collected from the sealed area and analyzed in the laboratories of the Bureau of Mines.

After the mine had been sealed for 7 days and the oxygen had not been consistently reduced in value, the management decided to flood the mine. Water was let into the mine by gravity flow from the surface, through four 8-inch drill-hole casings. It had been decided that these flooding operations



Table 1. Analyses of samples from the fire seals  
Pursglove No. 15 mine  
Pursglove Coal Mining Company  
Pursglove, Monongalia County, West Virginia

Date	Time	Sampling Point	Pressure on Seal	Percent			
				Carbon Dioxide	Oxygen	Carbon Monoxide	Methane
1943							
*1-14	5:15 p.m.	No. 15 fan No. 1 seal	Pos.	0.26	19.71	0.01	3.95
*1-15	5:30 p.m.	No. 1 fan No. 5 seal	Pos.	0.50	16.80	0.04	13.30
*1-15	7:45 p.m.	Drift No. 4 seal	Neut.	0.25	19.49	0.01	0.03
*1-15	8:15 p.m.	No. 1 fan No. 5 seal	Neut.	0.55	18.34	0.00	0.69
*1-15	9:15 p.m.	Drift No. 6 seal	Neut.	1.35	11.79	0.00	0.08
*1-15	9:45 p.m.	Slope No. 5 seal	Neut.	0.29	19.74	0.01	0.20
*1-15	10:30 p.m.	Intake shaft No. 2 seal	Neg.	5.20	9.89	0.85	1.69
*1-16	4:15 p.m.	No. 15 fan No. 1 seal	Pos.	0.80	15.40	0.06	16.10
*1-17	10:30 a.m.	No. 15 fan No. 1 seal	Pos.	1.00	14.30	0.07	18.40
*1-17	2:30 p.m.	No. 15 fan No. 1 seal	Pos.	1.00	13.80	0.07	18.70
*1-18	11:45 a.m.	No. 15 fan No. 1 seal	Pos.	0.80	15.60	0.08	11.30
*1-20	9:30 a.m.	No. 15 fan No. 1 seal	Pos.	0.24	19.33	0.01	5.32
*1-20	11:30 a.m.	No. 15 fan No. 1 seal	Pos.	0.50	17.10	0.03	12.10
*1-20	12:01 p.m.	Drill hole No. 7 sampling point	Pos.	3.70	7.50	0.21	7.70
*1-20	2:30 p.m.	No. 5 fan No. 2 seal	Pos.	3.21	10.66	0.52	1.43
*1-20	2:30 p.m.	No. 1 fan No. 5 seal	Pos.	1.29	12.34	0.01	1.96
*1-21	9:30 a.m.	No. 15 fan No. 1 seal	Pos.	1.10	12.20	0.09	20.60
*1-21	9:28 a.m.	Drill hole No. 7 sampling point	Pos.	3.70	6.20	0.24	8.50

\*Sample collected by Mr. A. K. Bloom

\*\*Sample collected by Mr. E. E. Quenon



should continue until the water level in the Guston Run airshaft reaches a height of 16 feet, at which time desulfuring operations will begin.

#### Previous Fires and Explosions in this or Nearby Mines

Three men were killed in a gas explosion in this mine in 1935, and three members of a mine rescue team were killed in a fire-seal air-locking operation in 1927.

A mine fire occurred in this mine in 1942; it was sealed and the area was recovered without loss of life.

A mine explosion occurred in a contiguous mine in 1942 and 56 men were killed.

#### Mine Conditions Immediately Prior to this Fire

The third or midnight shift was working, the two fans were operating, and the ventilation in the mine was normal.

#### SUMMARY

It is definitely known that the fire originated on the 1 west haulage road about 350 feet outby the 3 north entries. From other evidence, it has been fairly definitely determined that the ignition of the fire resulted from an electric short circuit of the 550-volt direct-current trolley-wire transmission system. Moreover, from statements made by employees and other evidence, it appears obvious that much delayed action, confusion, and disorganization followed the outbreak of the fire. This is borne out by statements made by the brakeman riding the rear of the trip of cars to the effect that because of inadequate clearance around or over the trip of cars, he was unable to reach the fire in its incipient stage. The general mine foreman corroborated the statement that the night mine foreman did not take immediate steps to notify and endeavor to get the man in the affected area to a place of safety. Further, that from the location and position of the bodies of the men from 15 west section, it is evident that they were badly disorganized and confused.

The body of the locomotive operator was abandoned when it became too dangerous to expose the lives of workmen fighting the fire and carrying on the recovery work. It should be noted here that a letter prepared by an attorney for the coal company and signed by one of the authors of this report states the futility and hazard of a continued effort to recover the body that is now sealed in the mine. A copy of this letter is included in Appendix D. There is also included in Appendix E a copy of the inquisition held at Morgantown, West Virginia, on February 4, 1943.

#### LESSONS TO BE LEARNED FROM THE CONDITIONS AS THEY RELATE TO THIS MINE FIRE

1. That when an emergency procedure similar to fire drills has not been established and perfected by practice drills, the confusion during an emergency may have very serious results, although many avenues of escape may be available.
2. That a fire-fighting organization and periodic training in the technique are necessary to safe handling and the extinguishment of mine fires.

3. That fire-fighting equipment and facilities must be readily available and accessible if incipient fires are to be extinguished promptly or the danger of their spreading is to be minimized.

4. That a ventilation map should be provided indicating the coursing of the air, the location of overcasts, stoppings, doors, and regulators. These should be kept up to date and available for the guidance of outside persons or representatives of organizations who offer their services in rescue and recovery work at the time of a fire, explosion, or other disaster.

5. This disaster again indicates the necessity for keeping men, who carry self-rescuers, familiar with their use and care and the need for frequently testing the canister for leaks. Further, that self-rescuers be kept in good condition so that if they are used they may enable trapped men to reach a place of safety.

6. When self-rescuers are carried by the men or are placed in the mine for emergency use, the men should be periodically instructed in their care and use.

#### RECOMMENDATIONS

1. That when any accident occurs that could involve the safety of any or all underground employees, all the employees should be immediately notified of the danger and brought to the surface as quickly as possible.

2. All officials and employees should be thoroughly trained in barricading procedures. Each foreman should submit a plan indicating where he would erect a barricade or other action he would take if he and his crew were left alive after an explosion or in case of a mine fire. This plan should be submitted monthly to the company safety engineer, with a copy to the State mine inspector.

3. Potential higher than 250 volts should not be used on the trolley-wire electric circuit because of the increase in fire and shock hazards.

4. An adequate fire-fighting organization should be trained and maintained.

5. Suitable unit fire-fighting equipment should be provided and supplemented by large-capacity truck-mounted equipment kept readily available and maintained for immediate use.

6. Ample material and men for fighting fires should be available at all times.

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