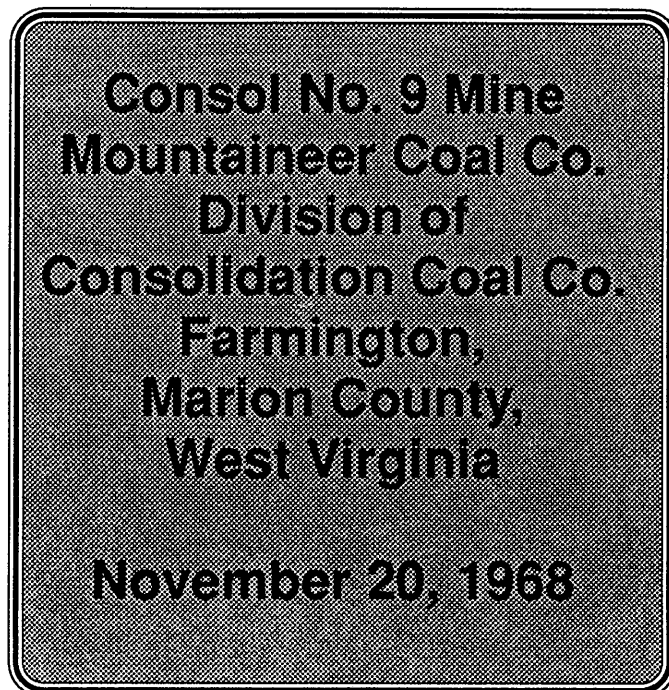


Informational Report of Investigation



Underground Coal Mine Explosion and Fire

U.S. Department of Labor
Mine Safety and Health Administration
1989



INFORMATIONAL REPORT OF INVESTIGATION
UNDERGROUND COAL MINE EXPLOSION AND FIRE

Consol No. 9 Mine
Mountaineer Coal Company
Division of Consolidation Coal Company
Farmington, Marion County, West Virginia

November 20, 1968

by

Division of Safety
Coal Mine Safety and Health
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Originating Office - Mine Safety and Health Administration
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ABSTRACT

This report is based on an investigation made pursuant to the Federal Coal Mine Health and Safety Act of 1969 (83 Stat. 742, as amended by 91 Stat. 1290).¹ This report is issued as a factual account of events and occurrences before and after the original explosion, and includes a narrative of recovery operation.

At approximately 5:30 a.m. on Wednesday, November 20, 1968, an explosion occurred in the Consol No. 9 Mine, Mountaineer Coal Company, Division of Consolidation Coal Company, Farmington, Marion County, West Virginia. There were 99 miners in the mine when the explosion occurred, 78 of whom died as a result of the explosion. The other 21 miners survived the explosion and escaped to the surface; seven miners working in A Face Section, four miners working near the slope bottom, and two miners working near the Athas Shaft (areas not affected by the explosion) escaped unassisted to the surface. Eight miners working near the newly constructed Mahan Shaft when the explosion occurred were rescued via the shaft by a mobile crane equipped with a steel cable and a bucket large enough to accommodate three miners. All of the eight miners were on the surface by 10:40 a.m. of the same day. The names of the victims, their ages, occupations, and mining experience are listed in Appendix A.

The forces of the explosion extended throughout the west side of the mine inby Plum Run overcast which included nine active working sections. Generally, the ventilating controls, such as stoppings, overcasts, and regulators inby the Plum Run overcast, were damaged or completely destroyed. The Nos. 3 and 4 fans (Mods Run and Llewellyn) ventilating the west side of the mine, the hoisting equipment in and above the Llewellyn Shaft, and part of the combination lamp house, bathhouse, and supply house located near the Llewellyn Shaft on the surface were also destroyed. (See Appendix E, Photo No. 1).

Mine fires along with several additional major and minor underground explosions interfered with and eventually prevented rescue and recovery efforts. The mine was sealed at its surface openings on November 30, 1968.

¹The US Bureau of Mines (USBM), Department of the Interior, was the enforcement agency at the time of the explosion on November 20, 1968. In May 1973, the enforcement agency was removed from the Bureau of Mines and became the Mining Enforcement and Safety Administration (MESA), Department of the Interior. The Federal Mine Safety and Health Amendments Act of 1977, effective March 9, 1978, redesignated the enforcement agency as the Mine Safety and Health Administration (MSHA) and placed the agency under the Department of Labor.

In September 1969, the mine was reopened and operations to recover the remains of the 78 miners were begun and continued until April 1978. Damage to the mine in the explosion area was extensive, requiring loading of rock falls, replacement of ventilation and transportation facilities, and in some cases new mine entries to bypass extensively caved areas. Investigative activities were continued, in cooperation with the Company, State, and United Mine Workers of America (UMWA) organizations, as mine areas were recovered. Between 1969 and 1978, the bodies of 59 victims were recovered and brought to the surface.

Recovery operations ceased and all entrances to the mine were permanently sealed in November 1978, leaving 19 victims buried in the mine and leaving some areas of the mine unexplored. The recovery and investigation lasted 10 years during which time organizational changes occurred in the four organizations involved in the recovery. Continuity of knowledge was therefore difficult, especially when considering the scope of the recovery. Lessons learned during early evaluation of this disaster were incorporated into the Federal Coal Mine Safety and Health Act of 1969 (P.L. 91-173). However, the investigation was not completed and the actual cause of the explosion could not be determined. Specific recommendations have therefore not been made in this report.

Despite the fact that the investigation could not be completed due to the extent of the damage to the mine, MSHA has received a number of requests for a report on the accident. This report is issued to accommodate those requests, and to make information available which may be of help in preventing future mining accidents.

EXPLOSIONS, MINE FIRES, AND SEALING OPERATIONS

General Information

The Consol No. 9 Mine, Mountaineer Coal Company, Farmington, Marion County, WV, was opened by eight shafts, ranging from 334 to 578 feet in depth, and a 16-degree slope, 1,468 feet in length, into the high-volatile Pittsburgh coalbed, averaging 96 inches in thickness in the areas being mined. At the time of the explosion, corporate and supervisory officials were as follows:

Consolidation Coal Company

John Corcoran	President
Charles R. Nailler	Vice-President, Operations
William N. Poundstone	Executive Vice-President
C. William Parisi	Chief Inspector

Mountaineer Coal Company

D.H. Davis	President
K.K. Kincell	Manager of Mines
Lawrence H. Riggs	General Superintendent
Foster Turner	Superintendent
Fay Casseday	Mine Foreman
Jesse G. Bowers	Safety Director
Eugene S. Lieving	Safety Inspector

The Consol No. 9 Mine was opened in 1910 by the Jamison Coal and Coke Company and was acquired by the Consolidation Coal Company, Division of Pittsburgh Consolidation Coal Company, in October 1954. On May 1, 1958, the Company name was changed to the Mountaineer Coal Company. The mine was purchased September 15, 1966, by the Continental Oil Company of New York City, New York; however, the names of the mine and Company remained the same. The Company name was changed to Consolidation Coal Company, Fairmont Operations, in February 1976; the mine name remained the same.

Mine Conditions Prior to the Explosion

Mine Development

The Main West headings were developed approximately 21,000 feet inby Plum Run overcast and had approached close to the projected boundary line. The Nos. 3, 4, 5, 6, 7, and 8 North entries were developed off the Main West headings approximately 2,250 feet apart and had been driven to the projected distance of approximately 3,800 feet. Retreat mining had been completed in the Nos. 3, 4, 5, and 6 North entries, except that additional airways were being driven in the barrier pillar between 5 and 6 North entries. Retreat mining was about one-half completed in the 7 North

entries and about one-third completed in the 8 North entries. The pillared area between 3 North and 8 North averaged approximately 8,000 feet in length and 2,500 feet in width. The 9 North entries were turned approximately 2,900 feet in by 8 North and had been developed approximately 2,700 feet. The 7 South entries were turned opposite 7 North entries and had been developed 10,000 feet and had intersected the newly constructed Mahan shaft in October 1968. Approximately 1,750 feet in by the junction of 7 South and Main West, the 7 South Parallel entries were turned off the west side of the 7 South entries and were developed approximately 2,400 feet. Three panels of entries which were developed west off the 7 South Parallels had intersected the bleeder entries that were connected to the Main West return airways. Retreat mining had been completed in two of these panels and had recently started in the third panel. Also, 6 Right panel driven west off of 7 South had been developed approximately 2,000 feet. The area south of the Main West entries between 1 South and 7 South was not developed and bordered a solid coal rib of virgin coal approximately 10,500 feet in length, part of which was on intake air that was used to ventilate active areas of the mine. Also, the south side of the Main West headings between 7 South and the Main West faces, except for four bleeder entries, a distance of approximately 8,700 feet in length, and the east side of the 7 South entries, a distance of approximately 10,000 feet in length, were solid coal ribs of virgin coal. However, these coal ribs were on return air which was directed to the fan. (See Appendix I, Figure 1).

Ventilation

Even though blocks of coal were left along the perimeter of the mined out area in the north side of the Main West heading, as well as in the 7 South Parallel area to serve as bleeder entries, such bleeder entries were not travelable due to roof falls and/or water. According to testimony of Fay Casseday, mine foreman, given at the official hearing, the bleeder entries were not travelable, and only the edge of pillar lines was being ventilated. He also stated that he thought the gob areas contained a lot of gas.²

² At the time of the explosion, November 20, 1968, the Federal Coal Mine Safety Act (66 Stat. 692; 30 U.S.C., Sections 451-483), as amended by Public Law 89-376 (80 Stat. 84) March 26, 1966, was in force. Section 209(d)(11) of the Mine Safety Provisions of this Act stated, "In a gassy mine, all workings which are abandoned after the effective date of this section or the date such mine became a gassy mine, whichever is later, shall be sealed or ventilated."

According to the inspection report of the last Federal inspection of the mine completed August 30, 1968, 80 days before the explosion, the Nos. 3 and 4 fans (Mods Run and Llewellyn), which ventilated the west side of the mine that was affected by the explosion, were exhausting a total of 669,000 cubic feet of air per minute (cfm of air). Analysis of air samples collected at the main returns at the bottom of these shafts during this inspection showed the west side of the mine was liberating a total of 7,527,000 cubic feet of methane in a 24-hour period. Records taken from Federal inspection reports showed that the total mine methane liberation in a 24-hour period was 6,671,000 cubic feet in April 1967, 6,147,000 cubic feet in April 1968, and 7,918,000 cubic feet in August 1968.

A review of the last 10 Federal inspection reports of this mine showed that face ventilation was adequate in each active working section at the close of each inspection and that methane in the amount of 1 percent or more was not detected at any time during these inspections. Auxiliary exhaust fans with tubing were used in all but one of the developing sections to provide face ventilation. Also, these inspection reports contained no record of observed violations pertaining to mine ventilation.

According to his testimony given at the official hearing, George Wilson, section foreman, 4 p.m. to midnight shift, 7 South section, detected methane accumulations on the right split of air near the face where the continuous mining machine was operating on November 19, 1968. He stated that power was removed from the section and production stopped for about 2-1/2 hours while ventilation was improved by installing and/or repairing several stoppings and the methane accumulations were removed.

Zack Springer, loading machine operator, 4 p.m. to midnight shift, Main West section, stated at the official hearing that he had to shut down twice during the shift of November 19, 1968, to remove methane build-up in the working place. He stated that it was not unusual for methane to build up in the faces while advancing the Nos. 1 and 8 outside entries. Air quantities and methane content of each split of air in developing sections are listed in the Federal Coal Mine Inspection Report in Appendix D.

Rock Dust and Coal Dust

During each of the last 10 complete Federal inspections made at the mine before the explosion, inadequate rock dusting was observed and/or indicated by analysis of dust samples at several locations. During these 10 inspections of the mine, a total of 1,983 dust samples were collected. The incombustible content of 96 percent of these dust samples ranged from 65 percent to 100 percent. During five of these inspections, dangerous accumulations of loose coal and coal dust were observed along

track haulage roads, shuttle car roadways, and belt conveyor lines. Spot dust samples were not collected during any of these 10 inspections.³ According to the last 10 inspection reports, dangerous accumulations of loose coal and coal dust were not apparent underground, and rock dust applications throughout the mine appeared adequate at the close of each of the 10 inspections. (See Appendix D for a copy of the last Federal Coal Mine Inspection Report dated August 1968).

According to testimony given at the official hearing, Lewis L. Lake, mining machine operator, 4 p.m. to midnight shift, 7 South, stated at the hearing that too much of the float coal dust that was picked up in the face areas during mining operations by the auxiliary exhaust fans was deposited in return airways. He stated that the "trickle-duster," which was designed to operate in conjunction with the auxiliary fan and distribute rock dust in the air current during mining operations, had not operated properly since he had worked in the 7 South section. Lake stated that the water pressure in the 7 South section at the time of the explosion was too low to control the coal dust at the face during mining operations and the coal dust was picked up by the auxiliary fan and deposited in the return airways. He also stated that, for the last two to three weeks before the explosion, he had to change filters in his respirator two or three times a shift, whereas normally one filter would last a whole shift.

Walter Slovekosky, motorman, stated at the official hearing that he had complained to the Safety Committee that the open crosscuts and parallel entries along the main haulage road at many locations looked black and needed additional rock dust. George K. Glover, fire boss, stated at the official hearing that the rock dust in back entries was "in fair shape except for a little float dust." Uncle Morris, mechanic, testified that he had complained to the Safety Committee about loose coal and coal dust accumulations along the belt conveyor line in the 6 Right 7 South section.

Stanley Plachta, mechanic and safety committeeman, testified that he had received complaints from several miners regarding float coal dust in return airways and accumulations of loose coal and coal dust along belt conveyor lines.

Jess G. Bowers, safety director, Mountaineer Coal Company, stated at the official hearing that float coal dust was a problem on

³USBM's policy required Federal Coal Mine Inspectors to make a rock dust survey in each developing section of a mine during each inspection and spot dust samples were required to be collected in other areas of the mine where the rock dust applications appeared to be inadequate.

belt conveyors and in return airways. He stated that if the proper amount of water to control the dust was not maintained, the return airways outby the working section would become black with fine float coal dust for a distance of 200 to 300 feet.

Weather Conditions

The weather on November 20, 1968, was cloudy with occasional snow showers, and the temperature at 5:56 a.m. was 34 Fahrenheit. The temperature and barometric pressures for November 13-20, 1968, recorded at the U.S. Department of Commerce, FAA station, Morgantown, WV, which is about 17 air miles from the Consol No. 9 Mine, were as follows:

<u>Date 1968</u>	<u>Time</u>	<u>Temperature(F)</u>	<u>Barometric Pressure</u>
November 13	11:57a.m.	36	28.72
November 14	11:57a.m.	40	28.86
November 15	11:58a.m.	61	28.63
November 16	11:55a.m.	54	28.49
November 17	11:57a.m.	57	28.63
November 18	8:57a.m.	58	28.27
November 19	12:57a.m.	34	28.37
November 20	12:56a.m.	35	28.41
November 20	5:56a.m.	34	28.38

During recovery operations in November and December 1971, and January 1972, the barometric pressure, as recorded at the Consol No. 9 Mine, ranged from 29.6 to 30.80 inches.

The Explosion and Recovery Operations

The explosion occurred at approximately 5:30 a.m., Wednesday, November 20, 1968. According to Company records, there were 99 miners in the mine when the explosion occurred. Production crews, consisting of six to eight miners each, were working in the following sections of the mine: 1 Right off 6 North, 3 Right off 7 North, 4 Right off 8 North, Main West, 3 Right off 7 South Parallels and 7 South, 6 Right off 7 South, and a crew of nine miners was recovering a continuous mining machine from under a roof fall in the 5 Right 8 North section. Also, several mechanics were repairing two continuous mining machines in the 9 North section.

These nine sections in the west side of the mine were all affected by the explosion. Also, a production crew of seven miners was working in the A Face section which was not affected by the explosion. This crew continued to mine coal after the explosion occurred until they were contacted from the surface by telephone and ordered to leave the mine immediately and return to the surface via the slope. Seventy-eight of the 99 miners who were in the mine when the explosion occurred were killed by or

