

M/NM FATAL

1937 0004

UNITED STATES
DEPARTMENT OF INTERIOR
BUREAU OF MINES
BY C. W. OWINGS

SUBJECT: Explosion in the Mulga mine, Woodward Iron Company,
Mulga, Alabama, October 15, 1937.

An explosion occurred on October 15, 1937, about 10:45 p.m., in the two cross haulage section of the Mulga mine of the Woodward Iron Company at Mulga, Jefferson County, Alabama. There were 229 men underground, 65 of whom were in the two cross haulage section. One hundred and ninety-five men escaped uninjured, one was taken to the surface severely burned and died forty-eight hours later, and thirty-three men were killed by flame and afterdamp.

Afterdamp caused the death of twenty-two persons; flame, eight persons; and flame and afterdamp, four persons.

The explosion originated thirteen feet from the face of the 2nd parallel air course of twelve right off two cross haulage when a shotfirer, after firing a shot at an advancing entry face, attempted to light or relight a flame safety lamp in the presence of an explosive mixture of methane and air. Dust propagated the flame in hand rock-dusted areas and it is probable that the explosion was stopped by the machine-dusted areas in two cross haulage.

The mine is developed in the Pratt coal bed ranging 36 to 74 inches in thickness, reached by two 226-foot shafts and three slopes. Production ranges from 2,000 to 2,500 tons per day with an employment of 604 men, of whom 550 work underground. Coal is blasted with Duebel A explosive stemmed with rock dust and detonated by a 10-shot magneto-type blasting unit. The deceased shotfirer's equipment consisted of detonators, explosives, powder punch, tamping bags, and blasting unit all in a jute bag, an unsafe practice. Electrical equipment is nonpermissible, except one mining machine. Coal is gathered by cable-reel locomotive.

All employees wear electric lamps, foreman used key-locked safety lamps for testing and firebosses used either standard or small key-locked safety lamps for gas testing.

On October 13, 1937, the fan was exhausting about 192,000 cubic feet of air per minute in the No. 1 shaft. At No. 2 shaft a fan was exhausting about 180,000 cubic feet of air per minute. Both seam and electric drives are maintained for emergency purposes. Another fan with a capacity of 160,000 cubic feet of air per minute is located at the No. 3 air slope but had not been used for several years. The mine is liberating nearly a million cubic feet of methane every 24 hours. During the fifteen-day period, October 1

to 15, in which there were three idle days, 32 places were marked off for gas in the section in which the explosion occurred.

The haulage entries and main entries are rock-dusted to the end of the trolley wire by machine. Rooms and advancing places are rock-dusted by hand presumably to within fifteen feet of the face but the one place measured was twenty-six feet from the face. The dust requires 66 to 70 percent inert material to render it nonexplosive.

The only dust sample collected that was unaffected by the explosion showed an inert content of 20 percent less than required and in the explosion zone all samples contained 50 or more percent less than required to prevent propagation of an explosion.

There have been three major explosions in the Myalgia mine. In 1910 an ignition of gas from open light killed 40; in 1914 a similar occurrence killed 17; and in 1937; that is, the present explosion, 34 were killed.

The explosion occurred at 10:45 p.m., but the State Department of Mines was not notified for 1-1/2 hours and the Bureau of Mines for 2-1/2 hours after the occurrence. The explosion originated about 13 feet outby the face of an entry when a shotfirer attempted to light or relight an unbonneted key-lock "Baby" flame safety lamp using a match in the presence of an explosive mixture of methane and air. The methane accumulation resulted from blasting the face and a breakthrough at the face and also from leaving a door open. Blasting liberated additional methane and advanced the face beyond the line curtain. The door, which apparently was latched open, at least partially short-circuited the air. At least a part of a car had been loaded after the blasting, but it is not known whether the shotfirer examined the place after blasting or not. The flame was propagated by coal dust and traveled without much violence; it traveled along the air courses but apparently did not travel on two cross haulage road due to thorough rock-dusting, though it did cross this entry twice. Although the explosion was not violent, 22 stoppings and seven doors were blown out or damaged. It traveled a maximum of 1,580 feet. Thirty-three men were killed and one man was severely burned and although found in breathable air he died after he was taken to the surface. Self-contained oxygen breathing apparatus was used in the exploration prior to restoring temporary ventilation and removal of bodies. Gas masks, carbon monoxide detectors, and flame safety lamps were used in restoring temporary ventilation.

In reporting on the explosion, F. E. Cash states that there was a failure on the part of the company and its officials in not providing sufficient air at the working places, allowing door latches to be used, and not providing and requiring the use of magnetically locked flame safety lamps, and inadequate rock dust from the end of the trolley wires to the workings faces.

A note by D. Harrington stated: This explosion occurred on a night shift in a mine using multiple shifting with mechanization and this is an example of what may be expected from the night and graveyard shifts with their lack of discipline and supervision whenever and wherever multiple shifting in mining is used. It also is a case in which blasting during the shift is responsible for the conditions which provided the set-up which ultimately cost the death of thirty-four persons though blasting will not be placed in the record as having been even remotely responsible. It also again illustrates that the flame safety lamp is anything but safe and it should be placed only in the hands of the most dependable persons and even then only the very safest types should be used.