

COAL FATAL

1942 0001

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF MINES
BY D. HARRINGTON

SUBJECT: Explosion in the No. 2 mine of Peerless Coal Company at Excelsior, Sebastian County, Arkansas, May 11, 1942.

The explosion which killed six men in the No. 2 mine of the Peerless Coal Company at Excelsior, Sebastian County, Arkansas, on May 11, 1942, was probably set off when a body of methane gas was ignited by men smoking underground or by a spark from an open-type or nonpermissible mining machine, according to a report by the Bureau of Mines which was submitted today to the Secretary of the Interior Harold L. Ickes.

An investigation into the cause of the disaster by Bureau of Mines engineers indicated that the accumulation of gas was due to an interruption in the ventilating currents, caused by the opening of a ventilating door by a trackman who was taking up rails, the report stated.

The explosion, local in character and confined to three entries of the mine which employs 125 men and produces about 500 tons of coal a day, occurred on the second shift at 6:30 p.m. while 20 miners were underground. Four of the five men near the point of origin were killed outright and the other one died of burns two days later. The trackman working at the junction of an adjacent entry and the main slope, also died from the force of the explosion. The other 14 men made their way out of the mine safely.

Questioning of survivors and a thorough examination of the mine after the blast enabled the federal investigator to determine the probable cause and contributing factors in the explosion, which was propagated to a limited extent by coal dust, according to the report.

As reconstructed by the Federal investigator, the explosion originated at the longwall or working face of 4 East entry, where a machine crew had undercut the coal and was engaged in changing the cutting bits on the machine. The control lever of the machine was on the "off" position, it was noted, and other evidence, including a partly-filled pipe found nearby, indicated that one of the men on the machine crew was smoking.

"The gas could have been ignited by either of these two sources," the report stated. "The controller of the mining machine was in the 'off' Position after the explosion and an arc would likely occur when the controller was placed in the 'start' or 'off' position to facilitate the changing of bits. All forces of the explosion radiated from the location of the mining machine at this

point."

As a prelude to describing how the accumulation of methane occurred, the Federal investigation pointed out that the mine is gassy and that analyses of air samples collected after the explosion revealed that the mine was liberating about to make regular pre-shift gas tests prior to the explosion, the operators of machines were not required to examine the working places for gas before starting their equipment, according to the report.

"It is likely that the presence of gas on the 4 East longwall face (where the men were working when the explosion occurred) would have been discovered and the disaster avoided if this machine crew had been equipped with, and used, a flame safety lamp for the detection of gas," the report observed.

The use of single doors to control ventilating current was primarily responsible for the occurrence of the explosive mixture of gas, according to the report. Just before the explosion, the trackman who lost his life in the blast was removing curved rails on the slope just outside of the 3 East entry, which was adjacent to the 4 East entry--the site of the origin. The rail extended to within a few inches of the single wooden door across the entrance, the report, stated, and this door probably was latched or propped open to allow removing of the fishplates from the rail joint near the door. "The opening of this door would short-circuit the air in all working sections of the mine," the Federal man stated.

The possibility of an interruption in the ventilating current was strengthened by an incident that happened shortly before the explosion, it was shown. A fire boss and a mechanic on the main slope at 4 East noted that the air was sluggish and was not traveling down the slope as usual. One of the men telephoned the hoisting engineer on the surface and asked him to check the main ventilating fan. Before the hoisting engineer could reach the fan, the explosion occurred.

In the longwall plan of development in this mine, a single slope is driven on the dip of the coal bed, and single entries are turned on both sides at about 400-foot intervals. The investigation revealed that a portable blower fan with 8-inch tubing was being used for ventilation near the longwall face where the blast originated. While the investigator did not connect it directly with the failure of the ventilating system, he pointed out that the Bureau of Mines regards a portable blower fan as a poor substitute for regular and continuous coursing of air to the working places in a mine.

"Consideration should be given to some plan for developing new longwall workings in this mine so that each longwall face can be put on a separate split of air, and that the entries and slope be driven in pairs to eliminate the necessity of using blower fans at

the slope and roadheads," the report recommended.

In pointing out that coal dust entered into and propagated the explosion to a certain extent, the Federal investigator stated that no water had been used to allay coal dust at the working places in this mine, and there was no evidence of rock dusting to reduce the explosibility of coal dust.

The Federal investigator offered a series of recommendations for correcting a number of hazardous conditions and practices in the mine "in the belief that their adoption will materially lessen the chances of an explosion occurring in this mine in the future." He stressed the importance of using and maintaining electric equipment of the permissible or enclosed type, regular testing for gas by machine crews, and the fallacy of employing single doors to control ventilation.

"That there is a definite hazard in connection with the use of single doors to control ventilation is one of the lessons to be learned from this explosion," the report stated. "The use of doors for controlling ventilation should be eliminated as far as possible by the use of overcasts; but where it is necessary to use doors, they should be built in pairs to form air locks and thus guard against an interruption in the air currents when a door is opened to permit passage of men or equipment or inadvertently left open for any length of time."

Regarding permissible electrical equipment, the Bureau investigator said:

"Mines in which explosive gas is liberated should be worked with permissible equipment, including cutting machines, conveyor motors, and any and all other stationary or mobile electrical equipment placed or operated in any but fresh intake air."

Inasmuch as smoking by workmen was believed to be one of the likely sources of ignition for the explosive gas in this case, the report stated emphatically that a "strict" no-smoking rule should be enforced, with searches of employees for smoking materials at irregular intervals or times. "Any person found trying to evade this regulation should be severely disciplined," the investigator said.

The Bureau's report was signed by James Westfield, Jr., Federal mine inspector, and approved by Dan Harrington, chief of the Health and Safety Service.