

## REPORTS ON THE EXPLOSIONS WHICH OCCURRED AT THE EMPIRE AND OAKDALE MINES

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Dear Sir:

I have the following report to make concerning the causes of the explosion at the Empire Mine, occurring on the morning of March 31st, 1919, which resulted in the death of thirteen persons.

The mine is situated one-half mile west of the town of Aguilar, Las Animas County, Colorado, on the Colorado and Southern Ry., and is operated by The Empire Coal Mining Co., of Denver, Colo. Mr. J. W. Siple of Denver, Colo., is manager and one of the owners of the operating company. The mine is opened by parallel slopes and is dipping from 8 to 19 per cent to the southwest, and intersects the old workings of the old Peerless mine located one mile to the south of the Empire opening. The seam operated is known as the Walsen or Peerless seam and is traversed by numerous faults and lava dikes, the seam up-throwing and downthrowing as much as twenty feet in places, and gas is given off freely in this troubled section, with strong feeders issuing forth into the mine workings from fissures or goves in the roof, and a strong volume of air is necessary at all times to dilute and carry away the gases given off and keep them harmless, and below the point of ignition. The mine is ventilated by a force fan, electrically driven; the ventilation is continuous down as far as the 6th south, where it splits, and about 8,000 cu. ft. per minute passes through the old Peerless workings and about 24,000 cu. ft. passes out through the main haulage slope. The haulage is done by electric hoists and animals, the workings encounter a great amount of water: the drainage is done with electric pumps, the motors being the alternating current, squirrel cage type, all switches being the encased oil type carrying 440 volts. the hoist used in the first dip workings is the same type motor and started by an oil switch, friction drive and using no resistance in starting. The hoists used in the Peerless section have the same type of motors, but start with controllers using resistance of the grid type. The electric feed lines are rubber-covered-insulated copper wire and were well put up on insulators, and having only one knife blade cut out switch, this being on the main intake, cutting the power off the entire working section.

The explosion occurred in the lower section of the mine, known as the 6th south, and the 1st dip, off the 5th, south entries; these entries are very wet, and the force was expended before it reached the 5th south section: there is no evidence of coal dust having any part in explosion. There were three men work-

ing in the 6th south section and 10 men working in the 1st dip section, and from the position of bodies found it is very evident that all were killed instantly. From evidence introduced at the inquest, it seems that the fan stopped some time on the morning of the explosion between 6:30 and 7:30 a. m., due to a bearing burning out on the motor driving the fan; the explosion occurred some time about 8:45 a. m.; seemingly the fan was stopped from one to two hours, which caused the accumulation of gases ignited by some unknown agency. The mine foreman was notified by telephone from the inside of the mine that the ventilation had stopped, about 7:45 a. m., by one of the workmen who had noticed the disarrangement of the ventilation. The mine foreman then went to the fan and tried to start it and found that there was something out of order on the driving motor, and went in search of the electrician, who arrived about 8:00 a. m., and who went immediately to the fan and on examination told the mine foreman that it would take from two to three hours to repair the motor; the mine foreman stated that he would go and have the men withdrawn from the mine but the explosion occurred before he had telephoned for the men to come out of the mine. This occurred about 8:45 a. m., or 45 minutes after the electrician had arrived on the works. I arrived at the mine about 10:45 a. m.; the fan was still out of commission. There being considerable natural ventilation through the old Peerless workings, I went immediately into the mine, and on arriving at the 6th south entries and saw the violence at that point and the close proximity of the location of the working places where the men were at work, I was convinced that there was no chance of any person surviving the effects of the concussion and after-damp given off from the affected district. I notified the helmet crews that were in readiness, that I thought it advisable to restore the ventilation and recover the bodies as soon as the fan was ready for service. This opinion was concurred in by Mr. Robt. McAllister, Inspector for The Colorado Fuel and Iron Co., Mr. Davis of The Royal Fuel Co., and Mr. Parker, Supt. of Berwind Mine. The fan started at 12:30 p. m., and work restoring the ventilation and recovery of the bodies commenced immediately. Eleven bodies were recovered by the shift in my charge and the two remaining bodies were recovered by the rescue party led by Deputy Inspector Laurie of District No. 1, who entered the mine at 6:00 p. m. No direct evidence as to the initial cause of the ignition was found upon investigation, but there is evidence apparent in the 6th south entry that the initial point of the ignition was in the vicinity of an electric pump located about 225 feet from the face of the 6th south entry, the forces having radiated in either direction from this point; there being very little force apparent at this point, the forces gaining violence in either direction from this point and losing its violence before it reached the 5th south workings.

From investigation, and the evidence at hand, I believed that the ignition was caused by the short circuiting of the electric feed wires, near the location of the 6th south pump, probably caused by a fall of rock bringing the wires into contact, breaking the insulation and causing an arc sufficient to ignite the accumulation of gas caused by the disarrangement of the ventilation, due to the stoppage of the fan. I also, further find that considerable gas had been encountered by the rooms at the inby of the 6th south, having intersected some of the old workings off the 3rd, dip off the 5th south, and that the Fire Boss, who also acted as Shot Firer, had refused to fire the shots in these rooms for four days previous to the explosion on account of explosive gases, but men had been allowed to work in those places by the Fire Boss and Mine Foreman; and on the morning of the explosion, the Fire Boss testified that he had instructed the three men working in the 6th south to wait on the 5th south parting until the Mine Foreman had examined their working places, but he, the Fire Boss, did not report the conditions found to the Mine Foreman in person, or tell the Mine Foreman that he had instructed these men to wait on the 5th south parting until the Mine Foreman had removed the dangers found; nor had the Fire Boss placed any danger signal at the entrance of the 6th south entry to keep workmen out of this section until the danger could be removed. I find that the Fire Boss, in not reporting conditions in person to Mine Foreman, and in not placing a danger signal at entrance of places where danger existed to keep persons away and warn them of existing danger, is guilty of neglect and violation of the Coal Mining laws, and contributed directly to the death of the 13 persons losing their lives in the Empire Mine by an explosion on March 31st, 1919. I also find that the Mine Foreman, in not meeting the Fire Boss, on the morning of March 31st, 1919, and ascertaining the conditions of the mine before the men entered for work, and not withdrawing the men from the mine when he found that the ventilating apparatus was out of order, was also negligent in his duties as Mine Foreman.

In conclusion I wish to thank the officials and men of the Royal Fuel Co., The Temple Fuel Co., The Victor-American Fuel Co., and The Colorado Fuel & Iron Co., for the able assistance rendered Deputy Inspector Laurie and myself, and the management and men of The Empire Mine in the recovery of the bodies and temporary restoration of the ventilation in the Empire mine.

Yours truly,

A. E. THOMPSON,  
Deputy State Coal Mine Inspector,  
District Number 2.