

UNITED STATES  
DEPARTMENT OF LABOR  
MINE SAFETY AND HEALTH ADMINISTRATION

REPORT OF INVESTIGATION

Underground Coal Mine

Fatal Fall of Rib Accident  
May 22, 2019

CVB No. 1  
Rex Coal Company, Inc.  
Cumberland, Harlan County, Kentucky  
I.D. No. 15-18869

Accident Investigator

Ricky L. Suffridge  
Roof Control Specialist

Originating Office  
Mine Safety and Health Administration  
District 7  
3837 S U.S. Hwy 25E, Barbourville, Kentucky 40906  
Samuel R. Creasy, District Manager

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## PHOTOGRAPH OF ACCIDENT SCENE

### OVERVIEW

On Wednesday, May 22, 2019, at approximately 6:10 p.m., Felix Matthew (Matt) North, a 48-year-old continuous mining machine operator with 12 years of mining experience, was seriously injured when a portion of a coal/rock rib fell and pinned him to the mine floor. The victim was moving the machine cable when a piece of coal/rock rib weighing approximately 2,000 pounds and measuring 48-to-54 inches long, 24 inches wide, and 28 inches thick fell and pinned him. North was taken from the mine and transported by helicopter to a hospital. On Thursday, May 30, 2019, North passed away due to complications from injuries received during the accident.

The accident occurred because the mine operator did not effectively control the ribs on the 002 Mechanized Mining Unit (MMU).

## GENERAL INFORMATION

The CVB No. 1 mine, owned and operated by Rex Coal Company, Inc., is an underground coal mine developed in the Harlan coal seam. It is located approximately 2.5 miles from Cumberland, Harlan County, Kentucky. The CVB No. 1 mine has two MMUs and utilizes room and pillar mining methods. Coal is mined with continuous mining machines, transported by shuttle cars to a feeder, and transported to the surface via a belt conveyor system. Mining heights range from six to ten feet. The mine operates three nine-hour shifts per day, five to six days per week, employs 94 underground miners, and produces an average of 2,600 tons of raw coal per day.

The principal officers for the company at the time of the accident were:

Joseph T. Bennett ..... President  
Thomas Loving ..... Human Resources  
Allen Turner ..... Superintendent

The Mine Safety and Health Administration (MSHA) completed the last regular (E01) safety and health inspection on March 22, 2019. At the time of the accident, an E01 inspection was ongoing and an MSHA inspector was on another section (001 MMU) when the accident occurred. Prior to May 22, 2019, the last day an MSHA inspector was on the 002 MMU was May 13, 2019. The non-fatal days lost (NFDL) incidence rate for the mine in 2018 was 2.53, compared to a national NFDL rate of 3.13 for mines of this type.

## DESCRIPTION OF THE ACCIDENT

On Wednesday, May 22, 2019, at approximately 2:00 p.m., the second shift coal production crew traveled to the 002 MMU to begin work, arriving at approximately 2:50 p.m. Along with North, the crew consisted of a foreman, an electrician, two shuttle car operators, four roof bolters and a scoop operator.

Following pre-operational checks, the crew began production in the No. 3 left crosscut at approximately 3:40 p.m. (see Appendix A). North began to tram the mining machine uphill in wet and muddy conditions, in which it became stuck from approximately 4:40 p.m. to 5:40 p.m. At approximately 5:40 p.m., after completing the initial left hand lift cut, crew members prepared to reposition the mining machine for a right hand lift cut. Shuttle car operator Jonathan Dean moved his shuttle car out of the way and North backed up the continuous mining machine.

At approximately 6:10 p.m., North was moving the continuous mining machine's power cable near the corner of the pillar when a portion of the coal/rock rib fell on him, pinning him to the mine floor. Dean, who witnessed the accident, rushed to North and called out for help. Other crew members ran to the scene. Scoop operator Jonathan Holbrook stabilized North's head while shuttle car operators Carl Collett and Jonathan Dean and roof bolters Austin Vannatter and Charles England worked to free him from under the rock. North was responsive and communicated that his leg and hip hurt.

Once North was freed, section foreman Howard P. Huskey directed Dean to go to the section power center to call outside and get first aid supplies. At the power center, Dean called David Eldridge, Security Officer, to alert him of the accident and request an ambulance. Eldridge contacted Thomas Loving of Human Resources and Loving called 911, the Department of Labor National Contact Center (DOL Contact Center), and the Kentucky Division of Mine Safety (KDMS).

Dean also called mine foreman Tommy Vannatter who was on the 001 MMU at the time of the accident. T. Vannatter immediately went to help transport North to the surface.

When Dean returned to the accident scene, he moved his shuttle car to clear the way for Huskey to pull in with the personnel carrier. The crew placed North on the backboard and into the carrier and transported him to the surface. North never lost consciousness during this time.

After arriving on the surface at 7:08 p.m., North was transferred to medical personnel with LifeGuard Ambulance Service, who transported him about two miles to a designated landing zone. At 7:30 p.m., he was flown by AirMedCare to the Johnson City Medical Center in Johnson City, Tennessee. North underwent several surgical procedures at the Medical Center, and died of complications from his injuries on May 30, 2019.

#### INVESTIGATION OF THE ACCIDENT

On May 22, 2019, at 7:30 p.m., Loving notified the DOL Contact Center of a life threatening injury accident. The DOL Contact Center notified Marvin Hoskins, MSHA Hazard, KY Field Office Supervisor (FOS), who in turn notified Craig Plumley, Assistant District Manager for Enforcement. Plumley directed William C. Clark, MSHA Barbourville, KY FOS, to travel to the mine and assist with the accident investigation.

At the time of the accident, Jack Harris, MSHA Inspector, was conducting inspection activities on the 001 MMU. As noted earlier, T. Vannatter went to help transport North to the surface as soon as he heard about the accident. When T. Vannatter returned to the 001 MMU, he found Harris, and informed him of the accident. Harris and T. Vannatter then traveled to the accident scene. At 8 p.m., Harris issued a 103(k) order, conducted an imminent danger run, and took photos and preliminary measurements of the accident scene. Clark arrived at the mine to assist Harris at approximately 9:00 p.m.

On May 23, 2019, Dennis Cotton, Assistant District Manager for Technical, Kevin Doan, Roof Control Specialist, and Ricky L. Suffridge, Roof Control Specialist/Accident Investigator traveled to the mine to continue the investigation. Cotton and Doan traveled to the accident site with KDMS investigators Billy Allen, Ernest Hawkins, Dustin Clem, and Brandon Morgan, Safety Director for Rex Coal Company, to evaluate the roof and rib conditions. Meanwhile, Suffridge traveled to the 001 MMU with Allen Turner, Mine Superintendent, to evaluate roof and rib conditions at that location to see if hazardous conditions extended to the 001 MMU. Later that afternoon, Timothy L. Fugate, Chief Accident Investigator at KDMS, and Clark from MSHA arrived at the mine to join the investigation.

Investigators conducted preliminary interviews with most of the miners who had worked with North as they arrived for the start of the second shift. After completing the interviews, investigators Suffridge, Clark, Fugate, Hawkins, Turner, and Morgan traveled underground to the 002 MMU and took additional photographs and measurements.

On May 30, 2019, MSHA was notified that North had passed away at the Johnson City Medical Center. Interviews were conducted on Tuesday, June 4, 2019 at the MSHA Harlan Field Office (see Appendix B).

On May 31, 2019 and June 1, 2019, Deborah B. Combs, Training Specialist with MSHA Educational Field and Small Mine Services, reviewed training records at the mine.

## DISCUSSION

### Accident Scene

The accident occurred at the intersection of the No. 3 heading and the No. 3 left crosscut (see Appendix A). During the shift before the accident, the No. 3 heading was mined and the No. 3 left crosscut was mined approximately 20 feet. These mined areas were roof bolted but no rib bolts were installed.

### Geologic Conditions

The CVB No. 1 mine extracts coal from the Harlan coal seam and is overlain by abandoned workings in the Creech and High Splint coalbeds. The interburden between the Harlan and Creech coal seams averages 370 feet. The interburden between the Harlan and the High Splint seams averages 1,450 feet.

The rock strata at the accident scene consisted of coal, cannel coal, and sandy shale (see Appendix C). The rock that fell onto the victim came from the upper layer of sandy shale, which was 24 inches in width at the scene of the accident. At the scene of the accident, the coal seam was starting to rise in elevation. The elevation in the coal seam at the scene of the accident caused instability, in that the inby crosscut pillar corner leaned toward the continuous mining machine operator's location.

### Roof Control Plan

The approved roof control plan required rib bolting in areas with specific geological characteristics. For example, rib bolting was required where the overburden was 1,000 feet. The overburden on the 002 MMU at the time of the accident was 900 feet so it did not meet the criteria requiring rib bolting.

### Examinations

Investigators reviewed preshift and onshift examination records for two months before the fatal accident. Rib hazards were frequently documented in these records. The records, and conditions in the mine, showed that the mine operator scaled loose rock and installed rib bolts as conditions were observed. The rib bolts installed were 6-foot fully grouted bolts spaced on 8 foot centers (horizontally). Despite these efforts by the mine operator, rib hazards continued to develop.

On May 22, 2019, the day of the accident, preshift examination records for the 002 MMU showed two notations regarding ribs: “Loose Rib” under the heading of “Hazardous Condition(s)”, and “Pulled” under the heading, “Action Taken.” The on-shift examination record for that day listed one remark concerning the ribs, “Pulled loose ribs & drawrock.” In preshift and on-shift examination records for the 7 days prior to the accident, there were notations of loose ribs. All of these rib hazards were noted as being pulled down to remove the hazard. The preshift and on-shift examination records were signed and countersigned as required.

Post-accident interviews of the 002 MMU miners and supervisor indicated that the rib that caused the accident did not appear hazardous prior to falling.

#### Roof Bolting Machines on the 002 MMU

Two types of roof bolting machines were utilized on the 002 MMU. One machine only installed roof bolts. The other bolting machine was a mast-head drill primarily used to install rib bolts. On occasion, if the roof bolting was lagging, the operator would use the mast-head drill to roof bolt and rib bolt.

The mine operator was installing rib bolts in the area of the accident. However, rib bolts provide the best protection when they are installed at the same time as roof bolts and in a consistent pattern. Rib bolts on the 002 MMU were not being installed at the same time as the roof bolts.

#### Training

Combs reviewed training records and determined that North’s training was up-to-date. He had received continuous mining machine task training on December 28, 2018, annual refresher training on October 13, 2018, and experienced miner training on November 11, 2018. Combs determined all 29 second shift employees’ training records were up-to-date and found no training deficiencies.

## ROOT CAUSE ANALYSIS

MSHA conducted an analysis to identify the most basic cause or causes of the accident that were correctable through reasonable management controls. A root cause was identified that, if eliminated, would have either prevented the accident or mitigated its consequences.

Listed below is the root cause identified during the analysis and the corresponding corrective actions which were implemented to prevent a recurrence.

1. Root Cause: The mine operator did not effectively control the ribs and pillar corners on the 002 MMU in areas where the miners were working and traveling to protect them from hazards related to falls of the ribs. A portion of a coal/rock rib weighing about 2,000 pounds and measuring 48-to-54 inches long, 24 inches wide, and 28 inches thick fell on the 002 MMU. The rib struck a miner and pinned him to the mine floor. The miner passed away from injuries due to the rib fall.

Corrective Action: On May 24, 2019, the mine operator submitted, and MSHA approved, a revision to the roof control plan. The new provisions of the plan require that all ribs be bolted at the same time roof bolts are installed in all areas of the mine and in a consistent pattern. Furthermore, in accordance to the new plan provisions, each pillar corner must be supported with a combination of rib bolts and straps (or equivalent material).

On May 24, 2019, all miners were trained by the mine operator on the provisions of the revised roof control plan. Documentation of miners receiving the training was provided.



## CONCLUSION

On Wednesday, May 22, 2019, at approximately 6:10 p.m., Felix Matthew (Matt) North, a 48-year-old continuous mining machine operator with 12 years of mining experience, was seriously injured when a portion of a coal/rock rib fell and pinned him to the mine floor. The victim was moving the machine cable when a piece of coal/rock rib weighing approximately 2,000 pounds and measuring 48-to-54 inches long, 24 inches wide, and 28 inches thick fell and pinned him. North was taken from the mine and transported by helicopter to a hospital. On Thursday, May 30, 2019, North passed away due to complications from injuries received during the accident.

The accident occurred because the mine operator did not effectively control the ribs on the 002 MMU.

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Samuel R. Creasy  
District Manager

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Date

## ENFORCEMENT ACTIONS

1. 103(k) Order No. 9131476 was issued to Rex Coal Company Inc., on May 22, 2019.

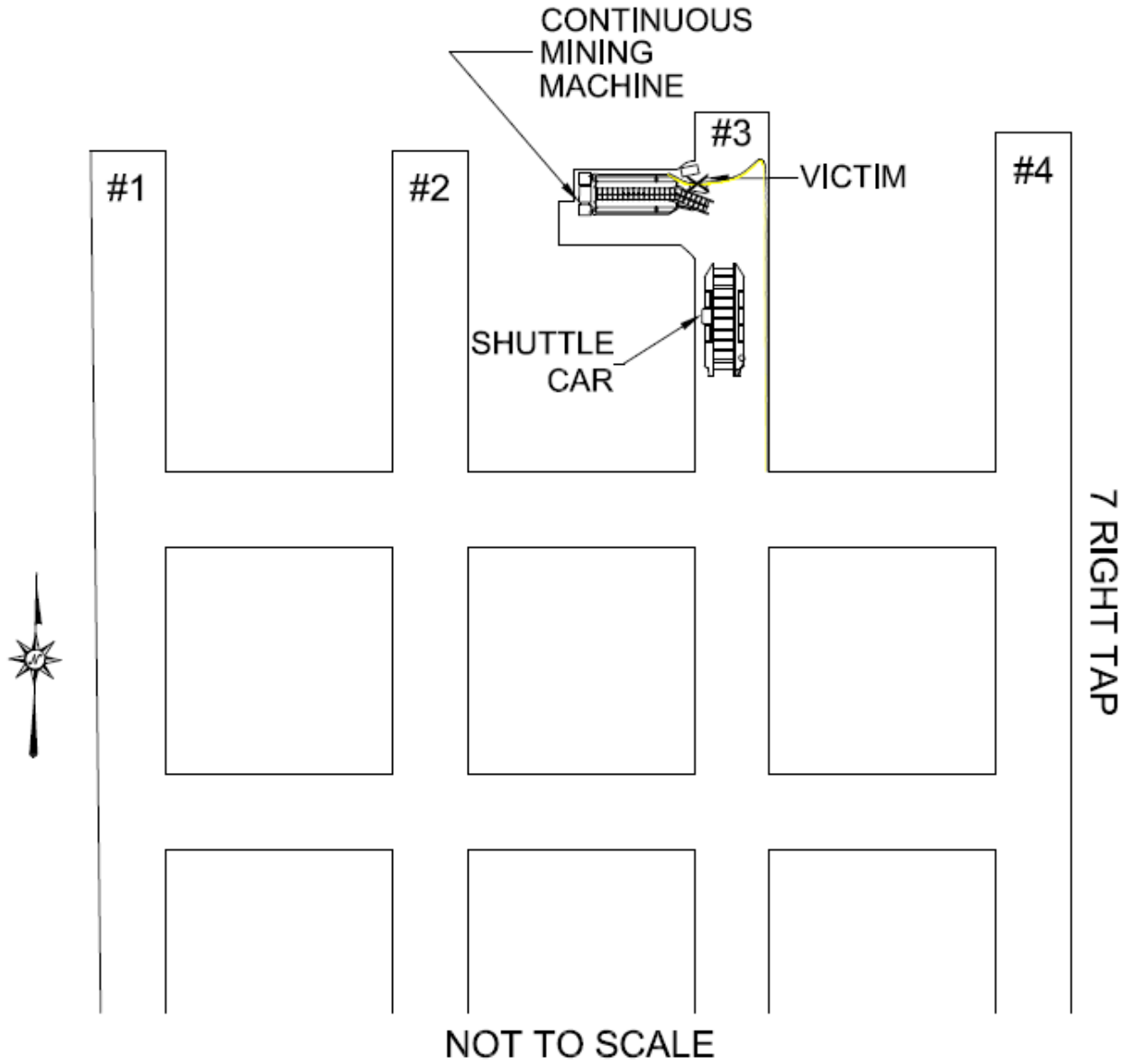
This mine has experienced an injury accident that occurred in the 3 left crosscut on the 002 working section. A miner operator received crushing injuries when a rib rolled off striking him while moving miner cable. This order is issued to ensure the safety of all persons on the 001 and 002 MMU's until an examination or investigation can be conducted. Only company officials, miners' representative, state officials, MSHA officials, and other persons deemed necessary by MSHA may enter or remain in the affected area.

After investigation of the worked areas on the 001 and 002 MMU's. This order is hereby modified to allow the operator to do only required exams and correct hazards observed on the 002 MMU and on the 001 MMU the operator can do any work deemed necessary except for the production of coal.

2. 104(a) Citation No. 8314608 was issued to Rex Coal Company Inc., for a violation of 30 CFR § 75.202(a).

The operator is not fully supporting or otherwise controlling the coal/rock ribs on the 002 MMU where miners work or travel. On Wednesday, May 22, 2019, at approximately 6:10 p.m., the continuous mining machine operator was seriously injured when a portion of the coal/rock rib fell and pinned him to the mine floor. The coal/rock rib that fell was approximately 48-to-54 inches long, 24 inches wide and 28 inches thick, weighing approximately 2,000 pounds. The accident occurred as the continuous mining machine operator was attempting to reposition the power cable adjacent to the unsupported mine rib. The continuous mining machine operator was hospitalized, and died on May 30, 2019.

APPENDIX A  
Location of Accident



APPENDIX B  
Persons Participating in the Investigation  
(Persons interviewed are indicated by a \* beside of their name)

Rex Coal Company Inc. CVB No. 1 Mine Officials and Employees

Thomas Loving .....Human Resources  
\* Howard P. Huskey ..... Section Foreman  
\*Tommy Vannatter..... Mine Foreman  
\*Ricky Barrett .....Electrician  
\*Carl Collett..... Shuttle Car Operator  
\*Jonathan Dean ..... Shuttle Car Operator  
\*Austin Vannatter.....Roof Bolter  
\*Charles England .....Roof Bolter  
\*Michael Day .....Roof Bolter  
\*Kenneth Day .....Roof Bolter  
\*Jonathan Holbrook.....Scoop Operator  
Brandon Morgan ..... Safety Director  
Allen Turner.....Mine Superintendent

Kentucky Division of Mine Safety

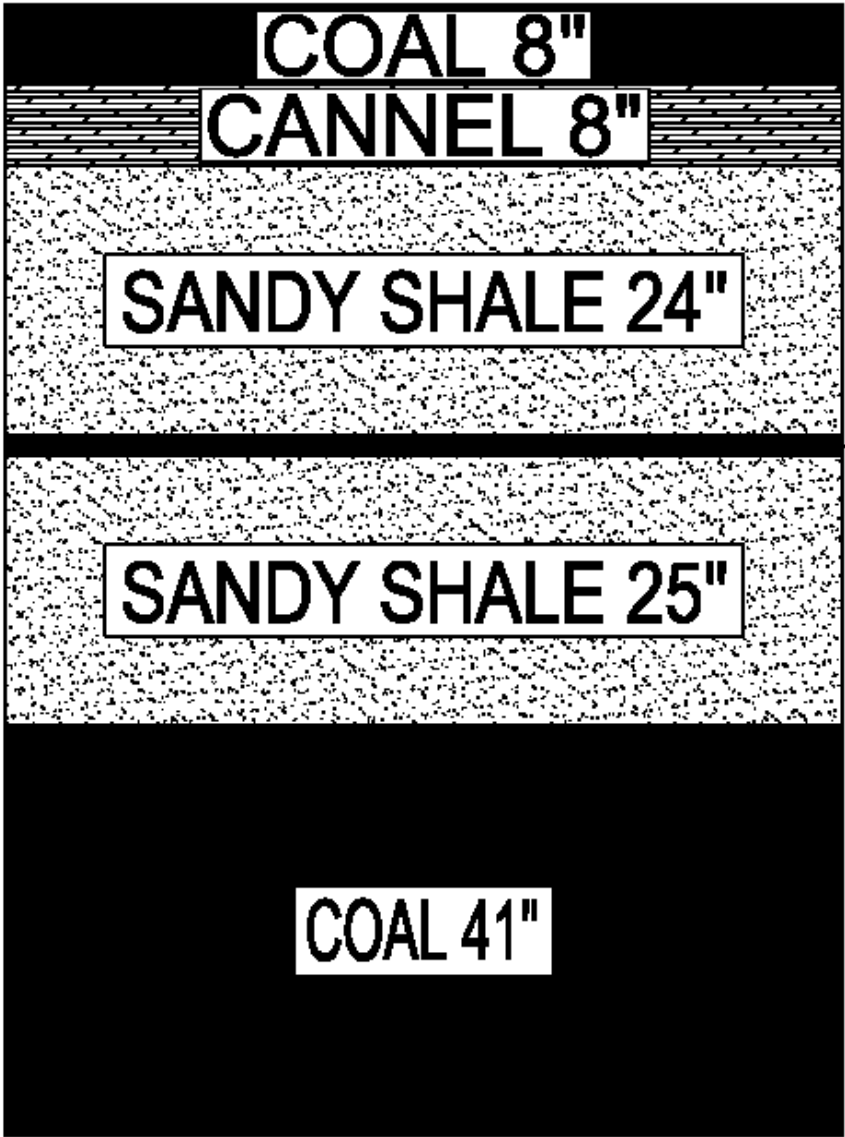
Timothy L. Fugate ..... Chief Accident Investigator  
Ernest Hawkins ..... Mine Safety Specialist/Electrical  
Billy Allen ..... Mine Safety Specialist/Roof Control  
Dustin Clem ..... Mine Safety Specialist/Inspector

Mine Safety and Health Administration

Dennis J. Cotton ..... Assistant District Manager/Technical  
Craig D. Plumley ..... Assistant District Manager/Enforcement  
Steven L. Sorke ..... Accident Investigation Coordinator/Staff Assistant  
Ricky L. Suffridge .....Roof Control Specialist/Accident Investigator  
Argus Brock .....Roof Control Supervisor  
William C. Clark ..... Supervisory Mine Inspector  
Deborah B. Combs ..... Training Specialist  
Kevin L. Doan.....Roof Control Specialist

APPENDIX C  
Rock Strata at the Accident Site

9 FEET OVERALL HEIGHT



COAL 2"