

UNITED STATES  
DEPARTMENT OF LABOR  
MINE SAFETY AND HEALTH ADMINISTRATION

COAL MINE SAFETY AND HEALTH

REPORT OF INVESTIGATION

Underground Coal Mine

Fatal Roof Fall Accident  
March 31, 2005

at

Tiny Creek No. 2 Mine  
Coal River Mining, L.L.C.  
Alum Creek, Lincoln County, West Virginia  
I.D. No. 46-08835

Accident Investigator

Roger D. Richmond  
Coal Mine Safety and Health Inspector

Charles W. Cline  
Coal Mine Safety and Health Inspector Roof Control

Originating Office:  
Mine Safety and Health Administration  
District 4  
100 Bluestone Road  
Mt. Hope, West Virginia 25880  
Jesse P. Cole, District Manager

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## **OVERVIEW**

At approximately 5:45 p.m. on Thursday, March 31, 2005, a forty-nine year-old continuous mining machine operator, with twenty-eight years of mining experience, was fatally injured at Coal River Mining, LLC's Tiny Creek No. 2 Mine. The victim started mining in the crosscut between the No.'s 5 and 6 entries and continued mining to the number 7 entry intersection, a cut distance of approximately 68 feet. Upon completion of the cut, the victim was positioned between the first and second row of permanent roof support in the number 6 entry. The unsupported roof in the intersection of the number 6 right crosscut fell, overriding the first row of roof bolts, catching the victim near the edge of the fall and causing fatal injuries.

The accident occurred because a cut depth in excess of the maximum allowed in the approved plan was taken and the victim was positioned in a hazardous location in by the next-to-last row of permanent roof support.

## **GENERAL INFORMATION**

The Tiny Creek No. 2 Mine is located at Alum Creek, in Lincoln County, West Virginia. It is a single section mine, operated in the 5-Block seam of coal, utilizing two continuous mining

machines and shuttle car haulage. The coal is belted to the surface of the mine and hauled from the mine in haulage trucks.

The principal officers for Coal River Mining, LLC at the time of the accident were:

Jim Bunn, II, Vice President  
Joe Shawhan, Manager

Prior to the accident the Mine Safety and Health Administration (MSHA) completed the last regular safety and health inspection on March 30, 2005. The Non-Fatal Days Lost (NFDL) injury incident rate for the mine in 2004 was 6.48 compared to the national NFDL rate of 5.45 in 2004 for underground coal mines.

### **DESCRIPTION OF THE ACCIDENT**

On Thursday, March 31, 2005, at approximately 3:30 p.m., the 3<sup>rd</sup> North West Mains section evening shift crew entered the mine via the track entry, accompanied by the Section Foreman, Douglas Perkins. Perkins and the crew traveled approximately 9,100 feet to the working section. They arrived on the section at approximately 4:00 p.m., where the crew began to relieve the day shift crew. At the section power center, Richard Hughes, continuous mining machine operator, was instructed by Perkins to move the continuous mining machine from the number 1 left crosscut to the number 5 right crosscut; to cut the number 5 right crosscut through; and then to move the continuous mining machine back to get a short cut out of the number 5 heading. Keith Pack, day shift foreman, was present when Perkins gave Hughes the instructions. Perkins instructed Frank Spence and Henry Trent, right side roof bolting machine operators to hang the miner cable. Spence and Trent also stated that they heard Perkins give Hughes instructions where to mine.

Prior to moving the continuous mining machine from the number 1 intersection, Billy McClanahan and Patrick Rankin, shuttle car operators, assisted Hughes in getting the continuous mining machine serviced and moved to the number 5 right crosscut through the last line of open crosscuts. Servicing included changing bits, flushing out the scrubber system, and cleaning the water sprays. The amount of time that was taken to service the continuous mining machine could not be recalled during interviews.

Perkins conducted an on-shift examination from the right side of the section to the left side of the section, prior to the commencement of coal production. After completing the examination, Perkins walked to the right side roof bolting machine which was located in the number 4 entry. At this time, Perkins could see lights on the left side of the section, but he did not detect any work activity. He traveled to the number 1 right crosscut where he encountered Harold May and Marvin Bench, left side roof bolting machine operators. May and Bench were kneeling down in the crosscut between the number 1 and the number 2 entries, observing the mine roof. The mine roof was intermittently working (cracking) and/or dripping (falling pieces) in the intersection at the mouth of the number 1 left crosscut.

Perkins, May, and Bench watched and listened to the mine roof for approximately thirty-five minutes. Perkins cautioned May and Bench to continue watching the mine roof and install eight foot long roof bolts where needed. After giving the instructions, Perkins left the location. Perkins stated that he was not sure where he was when the accident occurred, but he may have been at the section power center. According to May, the accident occurred 8 minutes after Perkins departed the roof bolting machine.

Hughes operated the continuous mining machine and began mining in the number 5 right crosscut. Interviewees did not know the time coal production was started. Almost immediately the continuous mining machine cut into the number 6 entry. Shuttle car operator Patrick Rankin received the first load of coal from the mining in the number 5 right crosscut. A second shuttle car was also being loaded which was operated by McClanahan. A third shuttle car was added to the haul when scoop operator, Earl Perry, completed loading supplies on the scoop. Perry was instructed by Perkins to run the shuttle car after supplies were loaded onto the scoop.

Mining continued and at approximately 5:30 p.m. Spence looked at his watch and walked over to the number 6 entry where Hughes was sitting on an oil can. Hughes was positioned under the 3<sup>rd</sup> row of roof bolts outby the unsupported mine roof. Spence observed that Hughes had mined the number 5 right crosscut through into the number 6 entry (approximately ten feet wide across the number 6 heading), and had mined the number 6 right crosscut through into the number 7 entry. Spence asked Hughes what he was doing and Hughes replied, "Mining coal, buddy". Spence talked with Hughes for approximately five minutes. Hughes had completed the cut in the number 6 right crosscut and was cleaning up loose coal from the cut when Spence left the number 6 entry.

At this time, Dwane Eversole, section electrician; John Vandal, left side continuous mining machine operator; and James Fowler, red hat trainee, were located in the crosscut between the No. 3 and the No. 2 entries working on the Eimco continuous mining machine.

Several minutes after Spence left Hughes, the mine roof fell, trapping Hughes beneath the fallen mine roof. The shuttle car operated by Perry was waiting to be loaded in the number 5 right crosscut at the time of the roof fall. As Perry was waiting to receive the last shuttle car in the cut, Rankin walked to the back of the shuttle car when he heard the rock fall and Perry call out. Rankin ran up the number 6 entry and observed reflective material under the rock. Hughes (victim) was completely covered by the roof fall.

Based on interview statements, shuttle car operators, McClanahan, Rankin and Perry, were unaware that they were traveling under unsupported roof while mining was being conducted.

Perkins heard the roof fall and proceeded to the accident site through the number 5 right crosscut, but he was unable to proceed through the crosscut due to the fallen rock. He then traveled down the number 5 entry, through the crosscut, and up the number 6 entry to the accident site.

After viewing the accident site, Perkins traveled outby to the mine telephone and attempted unsuccessfully to contact Jerry Cisco, second shift mine foreman. Perkins went to the end of the

track where he met Albert Cline, outby motorman and told him to get Cisco. Cline located Cisco at the number 3 belt drive and told him that something had happened. Cisco traveled to the end of the track, and was informed by Spence that Hughes was gone. Cisco traveled to the accident site, and then returned to the mine telephone to notify Steve Dolin, outside man/security guard, to call Larry Blackburn, Mine Superintendent. Dolin was instructed to call Blackburn, who had left the mine site, and tell him to return to the mine.

Perkins told Cisco that he was unable to remain on the section. Perkins traveled to the surface of the mine and Cisco began to supervise the recovery efforts. Recovery efforts continued for approximately four hours. The victim was retrieved from beneath the mine roof rock and transported to the end of the track in a scoop bucket. The victim was taken to the surface of the mine in a rail mounted mantrip. Regina Reynolds, investigator from the Office of the Chief Medical Examiner, pronounced the victim dead at 10:20 p.m.

## **INVESTIGATION OF THE ACCIDENT**

MSHA was notified at 7:15 p.m. on March 31, 2005, that a serious accident had occurred. MSHA accident investigators were dispatched to the mine. A 103(k) order was issued to insure the safety of all persons at the mine. The investigation was conducted in cooperation with the West Virginia Office of Miners' Health, Safety, and Training (WVOMHST), with the assistance of the mine operator and employees.

An investigation of the physical conditions at the accident site was conducted. Photographs and relevant measurements were taken and a sketch of the accident scene was made. The underground portion of the investigation was completed on April 11, 2005.

On April 2, 2005 and April 7, 2005, interviews were conducted at the Coal River Mining, LLC conference room in Alum Creek, West Virginia with fifteen persons who had knowledge of the accident. A list of those persons who participated, were interviewed, and/or were present during the investigation can be found in Appendix A of this report.

## **DISCUSSION**

### **Location of the Accident**

The fatality occurred on the 3<sup>rd</sup> North West Mains Section in the number 6 entry approximately 90 feet inby survey station number 1559.

### **Accident Scene**

The entries on the 3<sup>rd</sup> North West Mains section are being developed sixty (60) feet apart, with crosscuts connecting the entries every one-hundred (100) feet of entry length. Entries are normally 20 feet in width, but were being maintained at approximately 19 feet wide at the time of the accident. The mining height is seventy-two (72) inches in the number 5 right crosscut and the number 6 entry at the accident site.

The cut taken by the continuous mining machine started in the number 5 right crosscut and extended through the number 6 right crosscut. The cut depth was approximately 68 feet long and 19 feet wide.

The Joy 14CM15 remote controlled continuous mining machine was positioned under intact roof, against the inby rib of the right crosscut off of the number 6 entry, with the cutter head near the rib line of the number 7 entry.

The victim was positioned in the number 6 entry between the last and next to last rows of permanent roof support near the center of the entry.

The roof fall was roughly centered in the number 6 entry intersection extending inby the crosscut rib line, 9 ft. into the left crosscut and along the outby rib of the right crosscut to the number 7 entry. Total length of the failure was approximately 68 feet. The fall cavity spanned the intersection and narrowed to about 5 feet in width in the right crosscut. Maximum height of the fall was estimated to be 7 feet in the number 6 entry.

### **Unsafe Travel and Positioning**

An extended cut was mined from the number 5 right crosscut, across the number 6 entry, through the number 6 right crosscut and into the number 7 entry. Due to the excessive cut distance, three shuttle car operators were exposed to unsupported mine roof. The actions of the shuttle car operators facilitated the development of the 68 feet deep cut.

The victim, Hughes, was standing in a hazardous location at the time of the roof fall. The approved roof control plan requires persons to stand behind two full rows of permanent roof support.

### **Medical Analysis and Findings**

A post mortem examination was performed by the State of West Virginia Office of the Chief Medical Examiner. The Toxicology Laboratory Report indicates that the narcotic analgesic hydrocodone and the pain reliever acetaminophen were present in the victim. The Report of Death Investigation Findings and Post Mortem Examination Findings also disclose that the victim had pink pills, identified as "Watson 502" and a cigarette package in his pockets during the examination. Watson 502 contains 7.5 mg of hydrocodone bitartrate and 650 mg of acetaminophen, in pink capsule form, bisected on one side and debossed with WATSON 502, on the other side. Hydrocodone bitartrate and acetaminophen tablets are classified as a Schedule III controlled substance.

The mental and/or physical abilities of the continuous mining machine operator may have been influenced by the presence of the narcotic analgesic, hydrocodone. Narcotic analgesics may impair the mental and/or physical abilities required for the performance of potentially hazardous tasks such as operating machinery. Miners should be cautioned accordingly before attempting work tasks or operating machinery.

## **Recovery Efforts**

Prior to the recovery attempt, additional roof support was installed to ensure stability of the mine roof. The additional roof support used was two rows of 8' roof bolts and 4 Heinzman jacks. The bolts and jacks were installed in the number 6 entry immediately outby the accident site.

Efforts to raise the mine roof rock using lifting jacks failed due to the weight of the material. A scoop was used to raise the rock by placing crib blocks under the bucket of the scoop to increase leverage. The roof rock was blocked in a raised position by two crib blocks, which were placed on each side of the victim.

## **Roof Control Plan**

The approved roof control plan requires openings that create an intersection to be permanently supported or a minimum of two rows of temporary supports be installed on not more than four foot centers across the opening before any other work or travel in the intersection. The maximum cut depth listed on page 9, item 10, is limited to 40 feet from the last full row of bolts. In addition, page 9, item 9, stipulates that no person shall advance inby the next to last full row of permanent supports except to install temporary and/or permanent supports.

## **ROOT CAUSE ANALYSIS**

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

Listed below are causal factors identified during the analysis and their corresponding corrective actions implemented to prevent a recurrence of the accident.

Causal Factor: The approved roof control plan was not being complied with on the 3 Northwest Mains section. An extended cut was mined from the number 5 right crosscut at survey station number 1574 through the number 6 entry and continued through the number 6 right crosscut to the number 7 entry, a distance of approximately sixty-eight (68) feet. The continuous mining machine operator was positioned inby the 2<sup>nd</sup> full row of roof bolts while mining a deep cut in the number 6 right crosscut. The depth of the cut from the number 5 right crosscut to the number 7 entry was not reduced where loose, broken roof was present and not cut down. Reflective devices were not installed on the second full row of roof bolts outby the face. During an accident investigation, reflectors were observed on the 5<sup>th</sup> row of bolts outby the faces of the number 5 right crosscut and the No. 6 entry.

Corrective Action: All underground miners received extensive roof control re-training on April 14, 2005. The approved roof control plan was revised to require the section foreman to authorize any cuts that exceed 20 ft.

Causal Factor: The number 6 right crosscut was started from an area that was not supported, in violation of the approved roof control plan. The crosscut was mined from the adjacent number 5 right crosscut and the number 6 entry face was not fully roof bolted.

Corrective Action: All underground miners received extensive roof control re-training on April 14, 2005.

### **CONCLUSION**

The accident occurred because the approved roof control plan was not being followed when an extended cut was mined from the number 5 right crosscut, across the number 6 entry, through the number 6 right crosscut and into the number 7 entry. The victim was positioned in violation of the approved roof control plan between the last and next-to-last row of permanent roof support.

Approved by:

ORIGINAL SIGNED BY

Jesse P. Cole  
District Manager

OCTOBER 11, 2005

Date

## ENFORCEMENT ACTIONS

1. A 103(k) Order No. 3999871 was issued to ensure the safety of all persons in the mine until the investigation was completed.
2. A 104(a) Citation No. 7202080 was issued to Coal River Mining, LLC for a violation of 75.220(a)(1).

Condition or Practice: The approved roof control plan was not being complied with on the 3<sup>rd</sup> North West Mains section, 003 MMU, on March 31, 2005 during the evening shift in that an extended cut was mined from the number 5 crosscut right at survey station number 1574 through the number 6 entry and continued through the number 6 right crosscut to the number 7 entry, a distance of approximately sixty-eight (68) feet. Drawing Number 2, Page 9 of the approved roof control plan limits deep cuts to forty (40) feet in depth.

The continuous mining machine operator was positioned inby the 2<sup>nd</sup> full row of roof bolts while mining a deep cut in the number 6 right crosscut. Drawing number 2, statement number 9, Page 9 of the approved roof control plan prohibits persons from advancing inby the next to the last full row of permanent supports except to install temporary or permanent supports.

The depth of the cut from the number 5 right crosscut to the number 7 entry was not reduced where loose, broken roof was present and not cut down. Statement number 11, Page 5 of the approved roof control plan requires that where loose, drummy, or broken roof is encountered and not cut down, the depth of the cut will be reduced to effectively control the mine roof.

Reflective devices were not installed on the second full row of roof bolts outby the face. During an accident investigation, reflectors were observed on the 5<sup>th</sup> row of bolts outby the faces of the number 5 crosscut and the number 6 entry.

Action to Terminate: All underground miners received extensive roof control re-training on April 14, 2005. The approved roof control plan was revised to require the section foreman to authorize any cuts that exceed 20 feet.

3. A 104(a) Citation No. 7234308 was issued to Coal River Mining, LLC for a violation of 75.203(c).

Condition or Practice: The number 6 right crosscut was started from an area that was not supported according to the approved roof control plan. The crosscut was mined from the adjacent number 5 crosscut right and the number 6 entry face was not fully roof bolted. This condition was a contributing factor to a fatal accident that occurred on March 31, 2005.

Action to Terminate: On April 14, 2005, all underground employees were extensively retrained on the approved roof control plan.

4. A 104(a) Citation No. 7234307 was issued to Coal River Mining, LLC for a violation of 75.202(b).

Condition or Practice: Evidence indicates that three shuttle car operators were working and traveling under unsupported roof of the 3<sup>rd</sup> North West Mains section, 003 MMU, on March 31, 2005 on the second shift. A cut was mined from the number 5 right crosscut through to the number 7 entry, a distance of approximately sixty-eight feet. The actions of the shuttle car operators facilitated the development of the 68 foot cut. This was a contributing factor to a fatal roof fall accident which occurred to the continuous miner operator on March 31, 2005.

Action to Terminate: On April 14, 2005, all underground employees were extensively retrained on the approved roof control plan.

**APPENDIX A**

Listed below are the persons furnishing information and/or present during the investigation:

**Coal River Mining, LLC**

Jim Bunn ..... Vice President/ Manager  
Gary Tincher ..... Safety Director  
Larry Blackburn ..... Superintendent  
Scott A. Brown ..... Mine Foreman  
Jerry D. Cisco Second ..... Shift Mine Foreman  
Keith Pack ..... Day Shift Section Foreman  
Douglas Perkins ..... Evening Shift Section Foreman  
Patrick Johnson Rankin ..... Shuttle Car Operator  
Billy McClanahan ..... Shuttle Car Operator  
Earl Perry ..... Scoop/Shuttle Car Operator  
Dwane Eversole ..... Electrician  
Marvin Shaun Binch ..... Roof Bolt Machine Operator  
Frank E. Spence ..... Roof Bolt Machine Operator  
Henry Trent ..... Roof Bolt Machine Operator  
Harold May ..... Roof Bolt Machine Operator  
John Vandal ..... Continuous Mining Machine Operator  
Steve A Dolin ..... Security Guard

**P&A Engineers and Consultants**

Tim Tackett ..... Surveyor

**West Virginia Officer of Miners’ Health, Safety, and Training**

C.A. Phillips ..... Deputy Director  
Terry Farley ..... Administrator  
Eugene White ..... Contractor Inspector  
Harry Linville ..... Inspector at Large  
Larry McKnight ..... Roof Control Inspector  
Kerry Herron ..... District Inspector  
Willie Barker ..... Safety Inspector

**Mine Safety and Health Administration**

Jesse P. Cole ..... District Manager  
Terry Price ..... Madison Field Officer Supervisor  
Roger D. Richmond ..... Lead Accident Investigator/ Inspector  
Charlie Cline ..... Roof Control Specialist  
Bobby Moreland ..... Accident Investigator/Inspector  
Don Winston ..... Roof Control Specialist  
Brian Morris ..... Roof Control

Paul Tyrna .....MSHA Technical Support Roof Control Group  
Joe Zelanka .....MSHA Technical Support Roof Control Group

APPENDIX B

