CAI-2004-19

UNITED STATES
DEPARTMENT OF LABOR
MINE SAFETY AND HEALTH ADMINISTRATION

COAL MINE SAFETY AND HEALTH

REPORT OF INVESTIGATION

UNDERGROUND COAL MINE

FATAL POWERED HAULAGE ACCIDENT
September 26, 2004

at

Buchanan Mine #1
Consolidation Coal Company
Mavisdale, Buchanan County, Virginia
ID No. 44-04856

Accident Investigator

Russell A. Dresch
Electrical Engineer

Originating Office
Mine Safety and Health Administration
District 5
P.O. Box 560, Wise County Plaza
Norton, Virginia 24273
Edward R. Morgan, District Manager

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OVERVIEW

At approximately 7:00 p.m., on Sunday, September 26, 2004, Hassel Payne, age 46, a utility worker with 12 years mining experience, was fatally injured at Consolidation Coal Company's Buchanan Mine #1. The victim came in contact with an underground belt conveyor and tailpiece roller while they were in motion.

The victim was attempting to install a belt scraper at the tailpiece. He attached a chain to the scraper and attempted to throw the other end of the chain between the belts. The chain became caught between the top of the bottom belt and the tail roller, which caused the chain, scraper, and victim to be pulled through the tail roller.

The root cause of the accident was management's failure to ensure that all workers followed the specified safety precautions for the job. The primary cause was performing maintenance work with the belt conveyor running.

GENERAL INFORMATION

Consolidation Coal Company's Buchanan Mine #1, I.D. No. 44-04856, is an underground coal mine located two miles south of Route 460, adjacent State Route 632, at Mavisdale, Buchanan County, Virginia. Consol Energy, located in Pittsburgh, Pennsylvania, is the parent company of Consolidation Coal Company. The principal officers for the mine at the time of the accident were:

Kenneth Harvey	Mine Superintendent
Archie Ruble	Supervisor of Safety
Donald Hylton	Shift Mine Foreman
Donald Hager	Section Mine Foreman

The mine has 9 shaft openings into the Pocahontas No. 3 Seam that averages 72 inches in height. Four fans exhausting 2.8 million cubic feet of air per minute provide ventilation. Laboratory analysis of return air samples showed a methane liberation rate of 12.1 million cubic feet per day. The face areas are ventilated using a double split system of ventilation and exhausting line curtains.

Employment is provided for 418 miners. A total of 357 underground and 61 surface miners work on three production shifts per day, seven days per week. No shifts are designated as maintenance shifts. The mine produces an average of 18,000 tons of raw material daily from six continuous mining machine units and one longwall unit. Coal is transported from the faces by shuttle cars and belt conveyors to two bunker surge areas, then out of the mine by way of skip hoist cars. A diesel-powered track haulage system is used to transport both men and materials.

The Mine Safety and Health Administration (MSHA) completed the last regular health and safety inspection of the mine on June 30, 2004; however, a regular safety and health inspection was commenced on July 1, 2004, and was ongoing at the time of the accident. The Non-Fatal Days Lost (NFDL) injury incidence rate for the mine in 2004 was 0.92 compared to a National NFDL rate of 5.48.

DESCRIPTION OF THE ACCIDENT

On September 26, 2004, up to the time of the accident, personnel from Consolidation Coal Company, Buchanan Mine #1 performed normal work functions. Donald Hager, Section Mine Foreman, met with Hassel Payne, Utility Worker, at the start of the shift. Hager assigned Everett Cole and Donald Graham, Utility Workers, to work with Payne. He instructed Payne to change out belt scrapers at several locations. Hager assigned duties to other workers and supervised the distribution of belt structure along 4 North Mains during the shift.

Cole, Graham and Payne rode the man hoist to the bottom of the shaft. They procured a diesel-powered track mantrip and rode to 4 North Mains crosscut No. 89 to acquire tools. They traveled to 4 North Mains No. 4 Belt Tailpiece to install a scraper. The old scraper had been removed prior to this shift. The remote switch located near the tailpiece was used to stop the belt conveyor. They attempted to install a scraper but could not due to an undersized metal rod. They removed the scraper from the belt conveyor and restarted the belt.

They rode the mantrip to search for parts, but were unsuccessful. Around the head of 3 East Mains they encountered Donald Hylton, Shift Mine Foreman. Payne told Hylton they were looking for parts to make a scraper. Hylton told Payne if he could not find the parts that Hager had permission to order them. He also directed Payne to call the bunker and longwall prior to stopping any conveyor belt. Then Hylton continued to travel toward 7 Left Section.

They traveled to the head of 6 Right Longwall. Payne left the mantrip to talk with Glen Wright, Longwall Utility Worker. Wright's duty station was the 6 Right Belt Drive which he monitored and maintained. Payne told Wright his (Payne's) job assignment.

The miners traveled to the 3 East Mains No. 2 Belt Tailpiece. They used the remote switch to stop the belt conveyor and removed the scraper from it. They decided to flip the scraper and install it back on the system. They completed this task and restarted the belt.

Cole, Graham and Payne traveled to the 3 East Mains No. 3 Belt Tailpiece. They saw that this scraper was installed about 4 inches from the ground and had bars on the sides. They decided not to change the scraper due to these impediments.

They left this area by mantrip, met the supply crew, and obtained a new scraper. They returned to the head of 6 Right Longwall where Payne conversed with Wright for the second time. Payne asked if the bunker was full. Wright responded it would be awhile before the bunker was full. When the bunker is nearly full, production on the longwall ceases. Maintenance is performed on the longwall and belt conveyors during this period.

The miners preceded to the 3 East Mains No. 1 Belt Tailpiece in the diesel-powered track mantrip. They prepared to remove the scraper from the belt conveyor. Cole said, "We need to turn the belt off." According to Cole, Payne replied, "No, it will be alright, we'll get it." Graham also stated he told Payne, "Better just shut the belt off." Graham was positioned on the rib side (opposite the track side) of the belt conveyor where the scraper was attached to the tailpiece structure. Cole and Payne were on the track side of the belt conveyor at the attachment point of the scraper (see Sketch page 2). Graham

removed the chain from the scraper and handed it to Payne across the belt. Payne removed the chain attached to the scraper on his side. Graham then removed the cotter pin and washer from the metal rod. Cole pulled the rod out of the attachment points, freeing the scraper. Payne was then able to remove the scraper. The belt was not stopped during this procedure.

Payne attached two chains together with tape to create a chain long enough to reach across the conveyor belt. He attached one end to the new scraper. Graham was on the rib side of the conveyor belt waiting to catch the other end of the chain. Payne was on his knees. His first attempt to throw the chain to Graham failed. Cole turned to retrieve the metal rod. On Payne's second attempt, the chain became caught between the top of the bottom belt and the tail roller, which caused the chain, scraper, and victim to be pulled through the tail roller.

Cole did not see the accident, but heard a loud crash. Cole turned to face the tailpiece, but could not see Payne. He ran about 15 feet to the 3 East Mains No. 2 Belt Switch and turned it off, believing this switch was for the No. 1 Belt. The No. 1 belt stopped due to slippage. Graham ran to Cole and they went about 100 feet inby to the 3 East Mains No. 2 Belt Drive where McConley Byrd, Utility Worker, was working. They informed Byrd of the situation.

They saw an oncoming mantrip and signaled for it to stop. In the mantrip were Danny Damewood and Jerry Molino, Mine Examiners. Once they understood the problem, the two men traveled to the head of 6 Right Longwall to reach a phone.

Damewood made a series of calls on the mine phone. After paging unsuccessfully for a foreman, he called Leroy Stiltner, New Bunker Operator. He instructed Stiltner to deenergize all belts to prompt a foreman to come to a phone. Stiltner complied with the request. Damewood also talked with Russell Ruble, Longwall Systems Operator, who was located at the 6 Right Longwall, and asked for help.

Nelson Horne, Beltman, came from the 7 Right Section to the head of 6 Right Longwall. Damewood asked Horne to lock-out and tag 3 East Mains No. 1 Belt. Horne continued to this location.

On 6 Right Longwall, Ruble had Dennis Ward, Longwall Systems Operator; contact Craig Dickerson, Longwall Section Mine Foreman. Dickerson went to the head of the longwall where he was apprised of the situation. Dickerson drove Ward and Sakshi Ganesh, Longwall Maintenance Foreman, along with the first-aid kit to the accident site.

Hylton, who was en route to the 7 Right Section, stopped to inform Stiltner of his current location. Upon reaching the mine phone, Hylton heard Damewood and Stiltner talking about the accident. He went to the New Bunker to use the yellow phone

(commercial phone line) which enabled him to inform Archie Ruble, Supervisor of Safety, and Laura Nipper, Security, of the accident. Ruble notified MSHA and the Virginia Department of Mines, Minerals, and Energy (DMME) personnel of the accident while Nipper contacted an ambulance service.

Hager was located near the 4 North Mains No. 3 Belt Drive, and was distributing belt structure at the time of the accident. Cleve Curry, Maintenance Foreman, approached this area in a mantrip. When the belts shut down, Curry went to a phone to investigate. Damewood informed Curry of the accident. Upon his return, Curry told Hager of the accident and they rode together toward the site.

Before reaching the accident site, Curry and Hager encountered Horne about seven crosscuts inby the 3 East Mains No. 1 Belt Drive. Curry decided he would lock-out and tag the belt drive and proceeded to do so. Hager and Horne continued to the accident scene.

Once Hager arrived at the accident, he assessed the problem of recovering the victim. Hager instructed Horne to cut the conveyor belt, while he removed the side guard from the tailpiece structure. After cutting the belt, Horne went to the shaft bottom to retrieve a stretcher.

Shortly after Horne departed, Dickerson, Ganesh and Ward arrived with the first-aid kit (which included a stretcher). Byrd, Curry, Dickerson, Ganesh, Hager and Ward recovered the victim and placed him on the stretcher.

Hylton arrived at the accident scene. Byrd, Curry, Dickerson, Graham and Ward placed the victim in Hylton's mantrip, traveled to the shaft bottom, and rode the elevator to the surface. Hager and Hylton stayed at the accident site.

Rescue workers from the Dismal River Volunteer Rescue Squad transported the victim to Buchanan General Hospital. The emergency room physician, Dr. Dala Akoury, pronounced him dead at 9:51 p. m.

INVESTIGATION OF THE ACCIDENT

On September 26, 2004, at about 7:40 p. m., Archie M. Ruble, Supervisor of Safety, called David L. Fowler, Coal Mine Safety and Health Inspector, to inform MSHA of the accident. Information concerning the accident was gathered, and an accident investigation team was assembled. The initial team consisted of Fowler and Larry Worrell, Supervisory Coal Mine Safety and Health Inspector. The team arrived at the mine around 9:00 p. m. A 103(k) Order was issued to ensure the health and safety of persons in the affected areas of the mine until the investigation could be completed.

Officials from Consolidation Coal Company, DMME, and MSHA arranged a joint investigation at the mine. The investigation team collected information, questioned pertinent personnel and made a preliminary examination of the accident scene.

On September 27, 2004, at about 9:30 a.m., the investigation resumed at the mine site. The scene of the accident was inspected, photographed, and videoed. A scale drawing was also developed.

On September 28, 2004, at 9:00 a.m., the investigation resumed at the mine site. Interviews were conducted with eleven people. The interviews were tape recorded and later transcribed. The belt conveyor involved in the accident was examined to determine the memory content of the controller and was put through a series of operational tests to determine if it was functioning properly. Other adjacent belt conveyors were also examined to determine the memory content of the controllers.

Additional interviews were conducted on September 30, October 14 and 15, November 2 and 15, 2004.

A Spot safety and health inspection (CAA) was conducted concurrently with the investigation to address any enforcement issues not related to the accident.

DISCUSSION

Physical Factors

1. Two miners were in close proximity to Payne when the accident occurred.

2. The mine floor in the immediate area was dry and relatively even.

3. The height (mine floor to roof) in the immediate area averaged 102 inches.

4. No belt splices were observed on the 3 East Mains No. 1 belt.

Equipment Involved in the Accident

5. The scraper involved in the accident was manufactured by S and T Welding Company, Inc., model Angled Wiper for 54 inch belt. It is a triangular shaped structure with a 64 inch long schedule 40 pipe and a 70 inch long (1/2 by 2 inch) flat bar as the 2 major vertices. The scraper is attached to the belt conveyor by placing a 1 inch metal rod through the schedule 40 pipe. The rod extends through hangers on the tailpiece structure and is secured by washers and pins. Small lengths of chain

are used to prevent the scraper from moving if the rod fails. Attached to the flat bar is a rubber block. This block contacts the conveyor belt scraping debris from it.

6. A line diagram of the conveyor belt is provided in Appendix B.

7. The 54 inch 3 East Mains No. 1 Belt has one belt drive pulling the conveyor belt at a velocity of 750 feet per minute. The belt drive consists of two 300 horsepower, 575 volt alternating current motors. The drive is controlled by a programmable logic controller (PLC), Pemco Controls Silpac Motor Starter; model Duel-MS-300. The controls were set on automatic.

8. The 3 East Mains No. 1 Belt has a control switch located on the track side about 72 feet from the tailpiece. The switch is a Moeller Rotary Selector Switch, Item No. MM22-WK. This switch was found in the "on" position.

9. The 3 East Mains No. 2 Belt has an identical switch located about 20 feet outby the No. 1 Belt's tailpiece, see Appendix B. This is a typical configuration. This switch was found in the "off" position.

10. The 3 East Mains No. 1 belt has controls to deenergize the conveyor system in the event of belt slippage or an outby belt stoppage (sequence control).

Tests

11. The PLC for the 3 East Mains No. 1 Belt stores a limited number of events in memory. The date stamp for these events is one day forward due to an inaccurate date setting. The stored events were:

9/27/04	5:08:04 p. m.	Remote Head Open
9/27/04	5:08:15 p. m.	Outby Belt Not Running
9/27/04	7:09:29 p. m.	External Fault
9/27/04	7:19:59 p. m.	Outby Belt Not Running

12. The PLC for the 3 East Mains No. 2 Belt stores a limited number of events in memory. The stored events were:

9/26/04	7:08:53 p. m.	Outby Belt Not Running
9/26/04	7:08:53 p. m.	Remote Head Open
9/26/04	10:10:00 p. m.	Take-up Pressure Low

13. The PLC for the 4 North Mains No. 4 Belt and Sizer at the 3 East Mains No. 2 belt head do not store a record of events.

14. After repairing the conveyor belt on the 3 East Mains No. 1 Belt, tests were conducted on the belt controls. All controls operated as expected. The control

switch, located 72 feet from the tailpiece, functioned properly and was labeled correctly.

15. The control switch for the No. 2 Belt, located 20 feet outby the tailpiece of the No. 1 Belt, was also functional and labeled appropriately.

Human Factors

16. Interview statements conflict as to who operated the control switches at each job location.

17. The victim had 12 years experience as an underground coal miner and 5 months experience at this mine. A review of the records and information provided by the mine operator indicated the victim received the required Part 48 experienced miner training when he was first employed at the mine. He also received general belt task training in May and June 2004.

18. Graham had ten years total mining experience and had been employed at this mine for five months. Cole had 38 months total mining experience and had been employed at this mine for one month.

ROOT CAUSE ANALYSIS

An 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 root cause of the accident was management's failure to ensure that all workers followed the specified safety precautions for the job.

The primary cause was performing repair and/or maintenance work with the belt conveyor running.

Corrective Action: An Action Plan was submitted to MSHA by the coal company. The plan states that all employees will be given additional training. Mine management will also conduct weekly job observations on employees that normally have duties that require lock-out and tag procedures. These observations will be recorded on appropriate forms.

CONCLUSION

The victim sustained fatal injuries when he was caught between the conveyor belt and tail roller of an underground belt conveyor. The primary cause was performing maintenance work with the belt conveyor running.

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Approved:

Edward R. Morgan
District Manager

ENFORCEMENT ACTIONS

1. Section 103(k) Order No. 7337449 issued September 26, 2004, to Consolidation Coal Company, Buchanan Mine #1: The mine has experienced a fatal machinery accident located at the tailpiece of the 3 East Mains No. 1 conveyor belt. This Order is issued to insure the safety of any person in the coal mine until an examination or investigation is made to determine that the 3 East Mains No. 1 conveyor belt is safe. Only those persons selected from company officials, state officials, and other persons who are deemed by MSHA to have information relevant to the investigation may enter or remain in the affected area.

2. Section 104(a) Citation No. 7335308 of 30 Code of Federal Regulations (CFR) 75.1725(c) issued January 10, 2005, to Consolidation Coal Company, Buchanan Mine #1: Based on information revealed during an accident investigation, repairs and/or maintenance was being conducted on September 26, 2004, on the 3 East Mains No. 1 Belt Tailpiece without removing power and blocking the machinery against motion. Everett Cole, Don Graham and Hassle Payne, 2nd Shift Utility Workers, removed the belt scraper from the 3 East Mains No. 1 belt conveyor and attempted to install a new scraper while it was operating. As a result, Payne contacted the moving belt conveyor and was fatally injured.

APPENDIX A – Persons Participating In The Investigation

The following people provided information and/or were present during the investigation:

Consolidation Coal Company

John Zachwieja	Vice President, Southern Appalachian Operations
Terry Suder	General Manager, Virginia Operations
Spike Bane	Corporate Safety Inspector
Terry Mason	Human Resources Supervisor
Kenneth Harvey	Mine Superintendent
Craig Chadwell	Assistant Mine Superintendent
Michael Canada	Chief Inspector
Leonard Clarkson	General Mine Foreman
Archie Ruble	Supervisor of Safety
Darrell Johnson	Safety Inspector
Dennis Ward	Longwall Systems Operator
Jerry Molino	Mine Examiner
Arber Click	Belt Examiner
Charles Ritchie	Repairman
Nelson Horne	Belt Man

Virginia Department of Mines, Minerals and Energy

Frank Linkous	Chief, Division of Mines
Opie McKinney	Mine Inspector Supervisor
Carroll Green	Mine Inspector Supervisor
Dwight Miller	Coal Mine Technical Specialist
Joe S. Altizer	Coal Mine Inspector
J. E. Brown, Jr.	Coal Mine Inspector
Donald E. Keen	Coal Mine Inspector
Bill Messick	Coal Mine Inspector
Terry A. Ratliff	Coal Mine Inspector
Danny Altizer	Coal Mine Inspector

Mine Safety and Health Administration

Edward Morgan	District Manager
Norman Page	Assistant District Manager
Chris Weaver	Acting Director, Tri State Initiative
James W. Poynter	Supervisory Coal Mine Safety and Health Inspector
Larry Worrell	Supervisory Coal Mine Safety and Health Inspector
Russell A. Dresch	Electrical Engineer
Arnold D. Carico	Mining Engineer
James R. Baker	Educational Field Services Specialist
Dennis Belcher	Coal Mine Safety and Health Inspector (Electrical)
David L. Fowler	Coal Mine Safety and Health Inspector
Carl Duty	Coal Mine Safety and Health Inspector
Terry Sheffield	Mining Engineer

APPENDIX B – Sketches