

UNITED STATES
DEPARTMENT OF LABOR
MINE SAFETY AND HEALTH ADMINISTRATION

COAL MINE SAFETY AND HEALTH

REPORT OF INVESTIGATION

Underground coal mine

Fatal Machinery Accident
October 04, 2013

McElroy Mine
McElroy Coal Company
Moundsville, Marshall County, WV
I.D. No. 46-01437

Accident Investigators

Jan B. Lyall
Mine Safety and Health Specialist-Roof Control

William McLane
Mine Safety and Health Specialist-Electrical

Origination Office
Mine Safety and Health Administration
District 3
604 Cheat Road Morgantown, West Virginia 26505

Carlos T. Mosley, Acting District Manager

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PHOTOGRAPH OF RACK BAR, SNATCH BLOCK, AND WIRE ROPE



OVERVIEW

On Friday, October 4, 2013 Roger King, a 62-year old, Chief Longwall Maintenance Coordinator, was supervising the installation of conveyor chain on the 8-B longwall set up face. A battery- powered scoop was being used in conjunction with a sheave wheel (snatch block) with a hook and wire rope to pull the face conveyor chain across the longwall face towards the tailgate. As the scoop travelled toward the headgate (batteries first), pulling conveyor chain in the panline along the longwall face, the conveyor the chain became fouled, putting tension on the wire rope. King entered the panline near the tailgate and walked along the face towards the headgate. When the brakes on the scoop were released, the snatch block attachment came loose from its anchoring point. The wire rope and snatch block were propelled approximately 23 feet, striking King behind the head, causing fatal injuries.

GENERAL INFORMATION

The McElroy Mine is located in Marshall County, West Virginia. At the time of the accident, the mine was owned by McElroy Coal Company, a subsidiary of Consol Energy Inc. The mine is now owned by Murray Energy, Inc. The mine accesses the Pittsburg No. 8 coal seam by two slopes and four portals: the Fish Creek Portal located near the supply slope, the Blake's Ridge Portal, the Grapevine Portal, and the Cameron Portal which is the newest and closest to active sections and used by the majority of miners.

Coal is mined from the 78-inch coal seam by six continuous mining machine sections and two longwall sections. The McElroy Mine employs 875 underground employees and 138 surface employees. The average production is approximately 27,400 tons per day. The mine typically operates eight-hour shifts, three shifts a day, and six days a week. Maintenance is conducted as needed. The mine is ventilated with nine main mine fans and two bleeder fans. Coal is transported from the working sections to the surface via conveyor belt. Battery, trolley, and diesel power rail-mounted vehicles are used to transport supplies and mine personnel. The mine liberates 13,614,394 cubic feet of methane every 24 hours.

The principal officials for the McElroy mine were:

Ken Harvey..... General Superintendent and Chief Safety Officer
Jeff Crowe..... Mine Foreman
Justin Griffith..... Safety Supervisor

A regular MSHA Health and Safety Inspection (E01) was completed on September 30, 2013. The Non-Fatal Days Lost (NFDL) incidence rate for the mine during Calendar year 2012 was 1.33, compared to the national average of 3.58 for 2012.

DESCRIPTION OF ACCIDENT

On Friday, October 04, 2013, the day shift started at 8:00 a.m. King had a crew of eleven miners including Paul Clements, Out-by Longwall Foreman, and Jarred Jackson, Foreman Trainee, who was being mentored for the day. The crew's tasks were to finish installing panline structure on the 8-B longwall set up face and then start installing top conveyor chain in the panline, if time allowed. The bottom portions of face conveyor chain were installed in conjunction with the

installation of the panline. King took Kelly Fluharty, Scoop Operator; Zach Morris, General Inside Laborer; Kyle Fluharty, General Inside Laborer, and Jackson to the tailgate end of the longwall face. They finished the installation of the panline faster than anticipated. At approximately 11:00 a.m., the crew travelled back to the head gate side of the panel. They started to install top conveyor chain using a battery-powered scoop with a duckbill bucket attachment. A wire rope connected to a winch on the front of the scoop was attached to the face conveyor chain located in the panline. The scoop, travelling in reverse (batteries first) began pulling the conveyor chain along the face. During the installation of the face conveyor chain, a flight of the chain became fouled in the panline, but was easily freed with a bar. Face conveyor chain was installed to within 100 feet of the tailgate. Due to floor to roof supports, the tailgate entry was not accessible for the scoop. The scoop was turned around in a nearby cross cut with the batteries facing the headgate end of the longwall face. With the scoop travelling in this direction, a snatch block had to be utilized to pull the chain for the last 100 feet of chain installation. The snatch block has a roller to allow a cable or wire rope to move back and forth in either direction and was provided with a hook so it could be attached to a stationary object. Crew member, Kyle Fluharty, attached the hook of the snatch block directly to the rack bar (see Overview photo on Page 1 of rack bar and snatch block) and connected one end of the wire rope to the scoop winch and the other end to the conveyor chain. The connection allowed the scoop to travel toward the headgate, pulling the rope through the snatch block and moving the conveyor chain down the pan. The chain became fouled again, so King entered the panline and began walking up the face towards the headgate end. Kelly Fluharty asked King if the tension on the wire rope needed to be released. King told Fluharty to "wait a minute" and walked past the location where the snatch block was attached to the cable handler. King then told Fluharty to release the tension. Fluharty started the pump motor of the scoop, released the park brake, and then let loose the foot brake. Excessive tension on the rope moved the scoop forward, causing the snatch block and rope to come loose. The snatch block and wire rope were propelled toward the headgate end of the longwall face, striking King in the back of the head. King was twenty-three feet from the attachment point when he was struck. The impact from being struck caused King to land face down in the panline.

Chris Drummond, Emergency Medical Technician (EMT) checked the victim for vital signs, but found none. They performed cardio pulmonary resuscitation (CPR), treated the victim for shock, and then transported him to the surface where he was transferred to Tri State Ambulance Service. King was pronounced dead upon arrival at Reynolds Memorial Hospital in Glean Dale, West Virginia.

INVESTIGATION OF THE ACCIDENT

The mine operator notified the MSHA call center at 1:19 p.m. on October 4, 2013 and reported a serious accident had occurred. MSHA District 3 was notified at 1:27 p.m. of the accident. Greg Fetty, Staff Assistant, issued a verbal 103(j) order at approximately 1:50 p.m., to ensure the safety and health of miners and preserve the accident scene until an investigation could be completed. William B. McLane, Coal Mine Safety and Health Specialist (Electrical) and Jan B. Lyall, Coal Mine Safety and Health Specialist (Roof Control), were assigned to investigate the accident. The 103(j) order was modified to a 103(k) action after MSHA's arrival at the mine.

The accident investigation was conducted in conjunction with the West Virginia Office of Miners Health, Safety and Training (WVHS&T), Consol Energy, and the United Mine Workers of America (UMWA). The underground portion of the investigation was initiated on the day of the accident. Prior to traveling underground, the accident investigation team was briefed of the circumstances of the accident. Preliminary discussions were conducted with miners who had knowledge of the accident. The investigation team travelled to the accident site where observations, measurements, and photographs of the scene were made.

On Monday October 7, 2013, the accident investigation team made a follow up visit to the accident site. The team inspected the scoop, verified mapping, obtained additional photographs, reenacted the accident, and recorded video of the accident reenactment.

On Thursday, October 10, 2013, formal interviews were conducted at Consol Energy's River Complex office located near Moundsville, West Virginia. A representative of the victim's family was present during the interviews.

DISCUSSION

Accident Location

The accident occurred at approximately 12:49 p.m. on the 8-B longwall setup face at pan 234, approximately 63 feet from the tailgate end of the face. Development of this section had been completed and the mine operator was in the process of installing longwall machine components for future mining. This panel, a right hand face, was to mine coal between the 8-B head gate section and the 8-A tailgate section. The panel has a width of 1,400 feet and is the first extended width panel in this area of the mine.

The panline was somewhat bowed out towards the longwall shields, but the bowing was not excessive. A dip in floor elevation was also found near the location of the accident. Both the alignment and change in elevation could have added some resistance in pulling the conveyor chain, but this was not established during the investigation or verified during the reenactment. Burn marks were present near the snatch block attachment location on one of the pans. The cable riding over the pan under tension while pulling the chain caused the burn marks.

Equipment

A battery-powered Bucyrus scoop, Model 650, Serial Number 1055, was used to install the longwall face conveyor chain. The scoop has a "duckbill" bucket to facilitate the installation and removal of longwall components and a power take off (PTO) winch on the front end. A 7/8- inch nylon sling is attached to the winch. The scoop was thoroughly inspected as part of the accident investigation and no electrical or mechanical deficiencies were found.

A McKissick, Model 420 BB 6-inch hook provided with a latch (stock number 8035631) was used in conjunction with a 1-inch diameter wire rope connected between the nylon sling of the scoop and the hook. The manufacturer recommends a maximum wire rope diameter of 3/4 to 7/8 inch. The unit has a working load limit of 12 tons (fatigue rated) and is furnished with dual rated wire line sheaves. The unit was new and unused prior to entering the mine on the day of accident.

The accident investigation revealed the snatch block was being used with a 1-inch diameter wire rope, which exceeded the manufacturers' recommendations. An informational label was on the unit showing the correct rope size to be used. The hook was elongated sideways and stretched open. When compared to a new unit, the opening had increased by 2.44 inches. The latch was also damaged from force being applied while pulling the chain in an odd alignment as the conveyor was fouled.

The wire rope used to pull the chain was a 1-inch diameter steel cable, 80 feet long, with a thimble-to eye-rope on each end and rated at 9.8 tons. The investigation revealed no deficiencies with the cable.

Longwall Components

Longwall Associates, Inc. manufactured the panline. The extended longwall face required 245 sections of panline (5.75 feet each) to cover the length of the face. The panline sections have rack bars with openings measuring 2.7 inches wide and 3.6 inches deep mounted on the inside of the spill board. The rack bar, also known the Eiko track, located on the face side of the panline sections, is used as a track for the gears of the longwall shearer to run back and forth along the face. The hook of the snatch block was connected directly to one of these openings. A possible location where the chain may have been fouled was found at the connection of pans 230-231, where a possible incompatible joint section existed. These sections of pan are noticeably different in color, and the conveyor chain was found to be pulling sideways at this location. This difference could have been attributed to the connection point of the snatch block, since the rigging would not permit the chain to be pulled in a straight line.

The chain was manufactured by Longwall Associates, Inc. There were no deficiencies found with the chain during the investigation.

Attachment of the Snatch Block

Paint marks observed on the rack bar indicated the snatch block was directly attached to the panline structure. The size of the openings and the beveled edges of the rack bar, in conjunction with the large hook of the snatch block, did not permit the components to fit properly and created a system likely to fail. For safety protection, a normally accepted means of attachment is to use a hi-tensile rated chain through the opening of the rack bar and to connect the hook to the chain. There were no chains observed at the accident site.

Experience and Training

The victim had over 42 years of mining experience, with 17 years at the McElroy mine. He received annual retraining on February 22, 2013, electrical retraining on September 13, 2013, and West Virginia mine foreman continuing education on April 16, 2013. The most recent task training for longwall set-up was conducted July 29, 2013. The victim was a foreman and participated in the previous six (6) longwall setups and had completed this particular job task on each of them. He had performed this task in the past and records were examined to show that he instructed members of his crew on how to perform the task.

Fluharty had 3½ years of mining experience, all at the McElroy mine. He last received task training as a scoop operator on April 3, 2013 and annual refresher training on May 8, 2013. Fluharty's task training for scoop operation was not specific for using cables or chains to pull heavy loads and safe distances for performing this activity.

ROOT CAUSE ANALYSIS

An analysis was conducted to identify the most basic cause of the accident that was correctable through management controls. During 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 corrective actions implemented to prevent a reoccurrence of the accident.

Root Cause: The mine operator did not ensure that safe work policies and procedures were in place to assure persons are located at a safe distance away from ropes when tension is applied and to assure that persons are trained in these procedures.

Corrective Action: The mine operator revised its written policies and procedures to require all persons be located away from an object being pulled at least 1.5 times the distance of the working rope, chain, or sling as assurance to remain clear. The miners were trained regarding this requirement.

Root Cause: The mine operator did not ensure that safe work procedures were in place to assure adequate, industry accepted connections were made when using cables or chains to pull heavy loads and to assure that persons are trained in the procedures.

Corrective Action: The mine operator developed a corrective action plan to address the adequacy of connection points. The action plan requires the anchor point to be near the centerline of the “pull” activity taking place and utilize a fully enclosed hook with a clevis. All affected miners were trained in the procedures.

CONCLUSION

The accident was caused by mine management's failure to ensure that all persons are positioned in a safe location when tension is being applied to cables; and that when pulling heavy loads with ropes, all attachments are made in a safe manner.

Carlos Mosley

4/25/14

Carlos T. Mosley
Acting District Manager

Date

ENFORCEMENT ACTIONS

1. A 103(k) order was issued to McElroy Coal Company to ensure the safety of all persons until an investigation was completed and the area deemed safe.
2. A 104(d) order was issued to McElroy Coal Company for violation of 30 CFR § 75.1403: The operator did not ensure that all persons were in a safe location when a wire rope was in use with tension being applied. A fatal accident occurred on October 4, 2013 when the chief longwall maintenance foreman entered an area where a wire rope with a snatch block was connected between a scoop and longwall conveyor chain. The connection of the snatch block came loose, propelling the snatch block and wire rope, striking the victim resulting in fatal injuries.

APPENDIX A – Persons Participating in the Investigation

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

MINE SAFETY AND HEALTH ADMINISTRATION

Jan B. Lyall..... Mine Safety and Health Specialist – Roof Control
William McLane..... Mine Safety and Health Specialist- Electrical

WEST VIRGINIA OFFICE of MINERS HEALTH, SAFETY and TRAINING

Ed Peddicord..... Inspector at Large
John Meadows..... Assistant Inspector at Large
Bill Coen..... District Inspector
Colin D Simmons..... District Inspector
Sam Stavischick..... District Inspector
Barry Fletcher..... District Inspector-Roof Control
Jeff Bennett..... District Inspector-Ventilation

MINING COMPANY OFFICIALS

Ken Harvey..... General Superintendent and Chief Safety Officer
J. Todd Moore..... Director of Safety, Coal Operations
Rick Marlowe..... Director of Safety Awareness
Drew Dally..... Corporate Safety, River Division
Jeff Crowe..... Mine Foreman
Justin Griffith..... Safety Supervisor

UNITED MINE WORKERS of AMERICA

Ron Bowersox..... International Safety Committee
Jim Lamont..... International Safety Committee
Rick Altman..... Local 1638 Union President
Tom McGary..... Union Safety Committeeman Chairman

APPENDIX B - Persons Interviewed

Chris Drummond..... Continuous Miner Rib Bolter (EMT)
Kyle Fluharty..... General Inside Labor
Paul Clements..... Out-by Longwall Foreman
Austin Lesnock..... Operational Probation Trainee and (EMT)
Jarred Jackson..... Operational Probation Trainee
Kelly Fluharty..... General Inside Labor/Scoop Operator
Zachary Morris..... General Inside Labor
Tom Ott Longwall Maintenance Coordinator

APPENDIX C - Victim Information

Accident Investigation Data - Victim Information

U.S. Department of Labor
Mine Safety and Health Administration



Event Number:

6	2	6	3	0	7	3
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Victim Information: 1

1. Name of Injured/Ill Employee: <i>Roger R. King</i>		2. Sex: <i>M</i>	3. Victim's Age: <i>62</i>	4. Degree of Injury: <i>01 Fatal</i>												
5. Date(MWDD/YY) and Time(24 Hr.) Of Death: <i>a. Date: 10/04/2013 b. Time: 13:10</i>				6. Date and Time Started: <i>a. Date: 10/04/2013 b. Time: 8:00</i>												
7. Regular Job Title: <i>049 Longwall Maint. Coordinator</i>			8. Work Activity when Injured: <i>087 Longwall Maint. Coordinator</i>			9. Was this work activity part of regular job? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>										
10. Experience		Years	Weeks	Days	b. Regular	Years	Weeks	Days	c. This	Years	Weeks	Days	d. Total	Years	Weeks	Days
a. This																
Work Activity:		<i>17</i>	<i>0</i>	<i>0</i>	Job Title:	<i>17</i>	<i>0</i>	<i>0</i>	Mine:	<i>17</i>	<i>0</i>	<i>0</i>	Mining:	<i>42</i>	<i>0</i>	<i>0</i>
11. What Directly Inflicted Injury or Illness? <i>079 Wire Rope and Snatch Block</i>				12. Nature of Injury or Illness: <i>220 Fracture</i>												
13. Training Deficiencies:																
Hazard:		New/Newly-Employed Experienced Miner:			Annual:		Task:									
14. Company of Employment: (If different from production operator) <i>Operator</i>																
Independent Contractor ID: (if applicable)																
15. On-site Emergency Medical Treatment:																
Not Applicable:		First-Aid:		CPR: <input checked="" type="checkbox"/>		EMT: <input checked="" type="checkbox"/>		Medical Professional:		None:						
16. Part 50 Document Control Number: (form 7000-1) <i>220132830199</i>				17. Union Affiliation of Victim: <i>2555 United Mine Workers of Amer.</i>												

APPENDIX D - Drawing of the Accident Scene

