CAI-2008-1

UNITED STATES
DEPARTMENT OF LABOR
MINE SAFETY AND HEALTH ADMINISTRATION

COAL MINE SAFETY AND HEALTH

REPORT OF INVESTIGATION

Surface Coal Mine

Fatal Powered Haulage Accident
January 8, 2008

Bates Contracting & Construction. (5UF)
Whitesburg, Kentucky

at

Blue Ridge Surface Mine
Cumberland River Coal Company
Ovenfork, Letcher County, Kentucky
MSHA ID No.15-18769

Accident Investigators

Freddie N. Fugate
Coal Mine Safety and Health Inspector

Jeffrey Moninger
Mechanical Engineer
Diesel Power Systems Branch
Mechanical Safety Division

Robert Brazer
Civil Engineer
Mine Waste and Geotechnical Engineering Division

Originating Office
Mine Safety and Health Administration
District 7
3837 South U.S. Hwy. 25 E.
Barbourville, Kentucky 40906
Irvin T. Hooker, District Manager

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Accident Scene

OVERVIEW

At approximately 12:45 a.m., on Tuesday, January 8, 2008, Roy D. Sturgill, a 29-year old contract miner with 3 years of total mining experience and 4 weeks of experience at the mine was fatally injured in a powered haulage accident. The accident occurred as the victim was dumping spoil material on the H Pit Level, of the Joe Day Branch area of the mine site. The victim was operating a Caterpillar 777B rock truck when he backed over the dump point and continued down the slope for approximately 140 feet. The truck broke into two pieces, and came to rest with the cab of the truck facing up the slope and the bed upside down facing down the slope. The victim was ejected from the truck and sustained fatal injuries.

The fatality occurred because the operator failed to provide adequate berms and failed to assure that seat belts were used by equipment operators. The berm was inadequate both in height and in the materials used to construct it. The berm appeared to have been used as a bump stop. When the berm failed, the truck traveled down the slope and the operator was ejected from the truck. When the truck cab was examined the seat belt was not buckled indicating it was not in use at the time of the accident.

GENERAL INFORMATION

The Blue Ridge Surface Mine is a coal mine, owned by Arch Coal, Inc. and operated by Cumberland River Coal Company, Ovenfork, Letcher County, Kentucky. The victim was an employee of Bates Contracting and Construction Company, contractor ID 5UF. Bates Contracting and Construction Company is a temporary employee company who provides coal miners to coal companies.

Coal is mined in G Pit Level and H Pit Level utilizing the contour strip and highwall miner method from the following seams: Harlan, Kellioka, Darby, Owl, Lower Taggart, and Taggart Marker. The mine normally operates two production shifts per day, six days per week. The mine employs 99 persons and produces an average of 3800 tons of coal per day.

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

Gaither Frazier……...General Manager
Rick Johnson……..Operation Manager
George D. Webb……....Mine Manager
Leroy Mullins…….....Safety Manager

Prior to the accident, the Mine Safety and Health Administration (MSHA) completed the last regular safety and health inspection on June 2, 2007. The Non-Fatal Days Lost (NFDL) injury incidence rate for the mine in 2007 was 2.27 compared to a national NFDL rate of 1.47.

DESCRIPTION OF ACCIDENT

On Monday, January 7, 2008, Roy D. Sturgill, a contract miner, started the second (afternoon) shift at approximately 4:30 p.m. The second shift miners gathered in the first aid room for a safety talk. The safety meeting ended at approximately 5:15 p.m. and all miners then drove to the G Pit Level parking lot. The first shift crew drove their equipment from the H Pit Level to the G Pit Level bench parking area to meet the second shift employees.

The second shift employees conducted pre-operational checks of their equipment and filled out the check lists for their equipment. The operators then drove the equipment to the H Pit Level bench and were instructed by the shift foreman, Gene Combs, to work the area to the extreme right of the Highwall Miner (HWM) because the nearest spoil pit was not ready to excavate. Work started at approximately 5:30 p.m. Trucks were loaded by loader operator Jeremy Bates until approximately 12:45 a.m. when truck driver Wendell Sturgill used his radio to contact Bates asking him if he had seen R. Sturgill. All work ceased and W. Sturgill discovered where the truck had gone through the berm. He then contacted foreman Combs on the radio and told him that R. Sturgill had gone through the berm and he could see the truck down the slope.

The loader operator and highwall miner foreman Wendell Middleton, traveled from the H Pit Level to the G Pit Level where they located the victim. The victim was conscious and first aid was administrated. The treatment was continued until the Cumberland River Volunteer Fire and Rescue arrived. The ambulance crew conducted an assessment of the patient, contacted the Emergency Operation Center and requested a life flight. The victim was transported by ambulance to a landing zone on mine property, transferred to a Wings Medical Transport helicopter, and taken to the Whitesburg ARH Hospital where he was examined by attending physician Dr. L. Soto and pronounced dead at 2:10 a.m.

INVESTIGATION OF THE ACCIDENT

The MSHA call center was notified of the accident at approximately 1:10 a.m. on January 8, 2008. The call center telephoned District 6, believing the mine was in that district. District 6 Supervisor Larry Bottoms notified District 7 personnel of the accident by telephone. The MSHA accident investigation team traveled to the mine, conducted a physical examination of the accident scene and equipment involved in the accident, interviewed persons, reviewed conditions and procedures relative to the accident. MSHA conducted the investigation with the assistance of mine management, the Kentucky Office of Mine Safety and Licensing and the miners.

DISCUSSION

The truck was a 1990 Caterpillar Model 777B, rebuilt in 1996 Serial Number 4YC75064, rigid body, rear dump off-highway haul truck. The maximum operating weight was 324,000 pounds. The rated size class of the truck was 85 tons. The truck odometer read 20,771 miles and the hour meter read 54,370. The truck had an electronically controlled, automatic

transmission with seven forward speeds, neutral, and one reverse. A single-lever shift control provided automatic shifting. The truck's transmission lever was found in sixth gear during the equipment evaluation. The transmission's internal rotary selector spool was inspected and found to be in the reverse position. The transmission was equipped with a reverse transmission neutralizer. The reverse neutralizer shifts the transmission into neutral from reverse if the hoist control lever is moved to the raise position. The neutralizer switch was tested for continuity and was found to be functioning properly.

The truck was found with the frame broken into two sections, the cab and the dump bed. The dump bed section was found upside down, wheels in the air, with the front aimed towards the bottom of the dump. There were three window sections on each side of the cab, along with the front and rear window. The left side middle section and rear section, along with the right side rear section were the only sections that remained intact.

Pre-operational checklists were completed at this mine. The pre-operational checklist of the victim for the night of the accident indicated an existing hydraulic leak. The day shift checklist also noted a hydraulic leak but specified it as being steering hydraulics. On January 3rd and 4th, the pre-operational checks indicated the backup lights were dim. There were no maintenance records indicating the backup lights had been changed prior to the accident. Witness interviews indicate the backup lights were cleaned after the lights were listed in the pre-operational checklist as being dim. The truck was equipped with four backup lights. Three backup lights remained after the accident and worked properly when tested. There were no equipment related factors found that caused or contributed to the accident.

PHYSICAL FACTORS

The area being worked at the time of the accident was the H-level of the Joe Day Branch. The area was approximately 600 feet long south to north and 200 feet wide between the highwall and the dump point edge. At the time of the accident the highwall mining machine was located at the north end of the work area and a crew was loading out waste rock and overburden from the southeast corner. Trucks were actively dumping at an area approximately 330 feet from the loading point.

The dump point berm was irregular in size and shape. Heights varied from 2 to 7 feet and the base widths varied directly with heights. The berm height should be a minimum of the mid-axle height of the largest piece of equipment using the dump point. The mid-axle height of the off-highway haul trucks present at the time of the accident was 4 feet. Berm material varied in size from silts to cobbles with mostly sandstone and shale comprising the larger particles. Areas in which the berms were built with the finer material showed evidence that haul trucks had been backing (bumping) into the berms.

The distance between the remaining berms was measured at the point where the truck went over the edge. At ground level it was approximately 17 feet across and along the top of the berms it was approximately 22 feet across. The right side rear tire tracks appeared to have traveled over the dump point berm. Larger rock particles were depressed into the softer berm

material in this area. The adjacent berm was approximately 2 feet in height and contained primarily blocky cobbles and gravel. There was no indication of a slope failure in this location.

The driver side rear tire tracks appeared to have traveled into the berm footprint. A small scarp was observed in the material beneath the berm. The berm adjacent to this location was primarily silty sands with a few cobbles and was approximately 4 feet in height. The adjacent berm also appeared to be partially perched on two boulders within the fill material. A perched berm is not fully founded upon the work surface and can provide an operator with an inaccurate indication of the edge of the dump point.

The weather reported in Wise, Virginia, approximately 18 miles from the site, at the time of the accident was clear conditions, 10 miles visibility, winds approximately 8 to 9 miles per hour and a temperature of 52 degrees. No precipitation or freezing temperatures were reported in the 24 hours prior to the accident.

GROUND STABILITY

The dump point stability was analyzed using both INSLOPE3 and PCSTABL software to determine the safe operating distance of a loaded 777B truck from the dump point edge to the center of the rear axle. These analyses were prepared in an attempt to verify stability of the H-level surface near the dump point edge. By adjusting the INSLOPE3 and PCSTABL input parameters to closely approximate actual operating conditions, it was concluded that the truck approached the edge closer than would have been permitted by an adequate berm. The primary physical or operational factors that contributed to the accident are:

- The berm was constructed in many areas of fine grained materials which did not effectively resist penetration by the backing truck tires
- The berm was inadequate in height and cross section in many areas, including the location where the truck backed over the dump point
- In some areas, boulders protruding out of the out-slope of the fill material allowed the berm to be perched beyond the actual crest of the dump point
- Haul truck tire tracks were observed in adjacent berms indicating some operators were either using the berm as a physical means for determining the edge of the dump point or the drivers were misjudging the stopping distances and impacting the berms.

ROOT CAUSE ANALYSIS

An analysis was conducted to identify the most basic causes of the accident that were correctable through reasonable management controls. Listed below are root causes identified during the analysis and their corresponding corrective actions implemented to prevent a recurrence of the accident:

1. *Root Cause:* The height of the berm and the materials used to construct the berm were inadequate. The operator had no effective procedure in place in assure that berms were of sufficient height and properly constructed.

   Corrective Action: The ground control plan should address the proper materials to be used when constructing berms as well as the appropriate height based on the maximum mid-axle height of the largest truck utilizing the dump point. An agent of the operator should ensure compliance of the Ground Control plan.

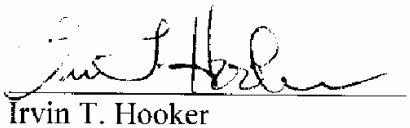
2. *Root Cause:* The seat belt was not buckled when the truck was examined – indicating that the seat belt was not being used at the time of the accident.

   Corrective Action: Implement a plan that requires all operators to wear seat belts while operating their equipment and also add a separate check on their pre-operational check list, to insure that all seat belts are operational as required.

CONCLUSION

The fatality occurred because the operator failed to provide adequate berms and failed to assure that seat belts were used by equipment operators. The berm was inadequate both in height and in the materials used to construct it. The berm appeared to have been used as a bump stop. When the berm failed, the truck traveled down the slope and the operator was ejected from the truck. When the truck cab was examined the seat belt was not buckled indicating it was not in use at the time of the accident.

Approved By:



Irvin T. Hooker
District Manager

04/07/08
Date

ENFORCEMENT ACTIONS

A 103(k) Order, No.7496246 was issued to Cumberland River Coal Company, Blue Ridge Surface Mine to ensure the safety of all persons until an investigation was completed and the area deemed safe.

A 104(d)(1) Citation, S&S, High Negligence, was issued to Cumberland River Coal Company for a violation of 77.1605(l): An investigation of the fatal Powered Haulage Accident which occurred on January 08, 2008, determined that an adequate berm, bumper block, safety hooks or similar means was not provided to prevent over travel and overturning at the H level pit dumping location used by the 777B Haul Truck. The berm at this location was not being maintained at an adequate height, firmness and thickness to prevent over travel. The shift foreman traveled through this area minutes before the accident and stated during the interview that he looked at the dump. No action was taken to assure that an adequate berm was being provided and or maintained at the dump site to prevent over travel and overturning of large equipment being used at the dumping location. The inadequate height of the berm at the dumping site was obvious. A 777B Caterpillar Haul truck mid-axel height was measured and was found to be from 48" up to 52" in height, the berm height at the location where the truck went through was approximately 24 inches and base width varied directly with heights.

A 104(a) Citation, S&S, Moderate Negligence, was issued to Cumberland River Coal Company for a violation of 77.403a (g). An investigation of the Fatal Powered Haulage Accident determined that the seat belt provided for the 777B Caterpillar Haul Truck, Co# 24223 was not being worn as required. When the truck cab was examined, the roll over protection was intact, the lap seat belt was unlatched, when tested the lap seat belt latched and unlatched as required. The victim was ejected from the truck resulting in fatal injuries.

Appendix A
Persons Participating in the Investigation

Mine Operator

Name	Title
Gaither Frazier	General Manager
Rick Johnson	Operations Manager
George D. Webb	Mine Manager
Leroy Mullins	Safety Manager
Charles E Taylor	Heavy Equipment Operator
Frank Adams	Heavy Equipment Operator
William Ferguson, Jr.	Heavy Equipment Operator
Brandon Watts	Heavy Equipment Operator
Travis R Cornett	Heavy Equipment Operator
Johnathan Branham	Heavy Equipment Operator
Johnathan Allen	Heavy Equipment Operator
Timothy W Crawford	Heavy Equipment Operator
Jeremy Bates	Heavy Equipment Operator
Wendall Sturgill	Heavy Equipment Operator
Steven Chapman	Heavy Equipment Operator
David Lee Belcher	Heavy Equipment Operator
Gary J Halcomb	Heavy Equipment Operator
Michael Sargent	Fueler/Greaser
James F Lewis	Maintenance
Daniel Bates	Contractor

Contractor

Name	Title
Daniel Bates	Owner and Operator Bates Contracting

Labor

Name	Title
Eddie Bently	President Scotia Employees Association
Terry Buress	Vice President Scotia Employees Association

State Agency

Name	Title
Neil Honeycutt	Chief Accident Investigator
Greg Goins	Deputy Chief Accident Investigator
Tim Fugate	Mine Inspector

Mine Safety and Health Administration

Name	Title
Freddie Fugate	Accident Investigator
Lester Cox	Supervisor/Accident Investigator
Argus Brock	Surface Coal Mine Inspector
Mark Lowe	Surface Coal Mine Inspector
Debbie Combs	Education Field Specialist
J. Jarrod Durig	Civil Engineer
Robert J. Brazer	Civil Engineer
Jeffrey S. Moninger	Mechanical Engineer

APPENDIX B
Victim Data Form 7000-50b

Accident Investigation Data - Victim Information
Event Number: 4 4 4 2 2 0 0

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

Victim Information: 1

1. Name of Injured/Ill Employee:	2. Sex	3. Victim's Age	4. Last Four Digits of SSN:	5. Degree of Injury:
Roy D. Sturgill	M	29		01 Fatal

6. Date(MM/DD/YY) and Time(24 Hr.) Of Death: a. Date: 01/08/2008 b.Time: 2:10

7. Date and Time Started: a. Date: 01/07/2008 b.Time: 16:30

8. Regular Job Title: 176 Contractor

9. Work Activity when Injured: 055 Operating 777B Haul Truck at spoil pit.

10. Was this work activity part of regular job? Yes X No

11. Experience	Years	Weeks	Days
a. This Work Activity:	0	2	5
b. Regular Job Title:	0	2	5
c: This Mine:	0	3	5
d. Total Mining:	3	3	5

12. What Directly Inflicted Injury or Illness? 002 Ejected from truck cab.

13. Nature of Injury or Illness: 370 Blunt Force Trama

14. Training Deficiencies: Hazard: | New/Newly-Employed Experienced Miner: | Annual: | Task:

15. Company of Employment:(If different from production operator) Bates Contracting & Construction

Independent Contractor ID: (if applicable) 5UF

16. On-site Emergency Medical Treatment: Not Applicable: | First-Aid: X | CPR: X | EMT: | Medical Professional: X | None:

17. Part 50 Document Control Number: (form 7000-1)

18. Union Affiliation of Victim: 9999 None (No Union Affiliation)

Victim Information:

1. Name of Injured/Ill Employee:	2. Sex	3. Victim's Age	4. Last Four Digits of SSN:	5. Degree of Injury:

6. Date(MM/DD/YY) and Time(24 Hr.) Of Death:

7. Date and Time Started:

8. Regular Job Title:

9. Work Activity when Injured:

10. Was this work activity part of regular job? Yes | No

11. Experience:	Years	Weeks	Days
a. This Work Activity:			
b. Regular Job Title:			
c: This Mine:		Week	
d. Total Mining:			

12. What Directly Inflicted Injury or Illness?

13.Nature of Injury or Illness:

14. Training Deficiencies: Hazard: | New/Newly-Employed Experienced Miner: | Annual: | Task:

15. Company of Employment: (If different from production operator)

Independent Contractor ID: (if applicable)

16. On-site Emergency Medical Treatment: Not Applicable: | First-Aid: | CPR: | EMT: | Medical Professional: | None:

17.Part 50 Document Control Number: (form 7000-1)

18. Union Affiliation of Victim:

Victim Information:

1. Name of Injured/Ill Employee:	2. Sex	3. Victim's Age	4. Last Four Digits of SSN:	5. Degree of Injury:

6. Date(MM/DD/YY) and Time(24 Hr.) Of Death:

7. Date and Time Started:

8. Regular Job Title:

9. Work Activity when Injured:

10. Was this work activity part of regular job? Yes | No

11. Experience:	Years	Weeks	Days
a. This Work Activity:			
b. Regular Job Title:			
c: This Mine:		Week	
d. Total Mining:			

12. What Directly Inflicted Injury or Illness?

13. Nature of Injury or Illness:

14. Training Deficiencies: Hazard: | New/Newly-Employed Experienced Miner: | Annual: | Task:

15.Company of Employment:(If different from production operator)

Independent Contractor ID: (if applicable)

16. On-site Emergency Medical Treatment: Not Applicable: | First-Aid: | CPR: | EMT: | Medical Professional: | None:

17. Part 50 Document Control Number: (form 7000-1)

18. Union Affiliation of Victim: