

UNITED STATES  
DEPARTMENT OF LABOR  
MINE SAFETY AND HEALTH ADMINISTRATION

COAL MINE SAFETY AND HEALTH

REPORT OF INVESTIGATION

Surface Coal Mine

Fatal Machinery Accident  
July 20, 2006

CAM Mining LLC  
Slate Branch  
Freeburn, Pike County, Kentucky  
I.D. No. 15-18915

Accident Investigators

Robert H. Bellamy  
Mining Engineer

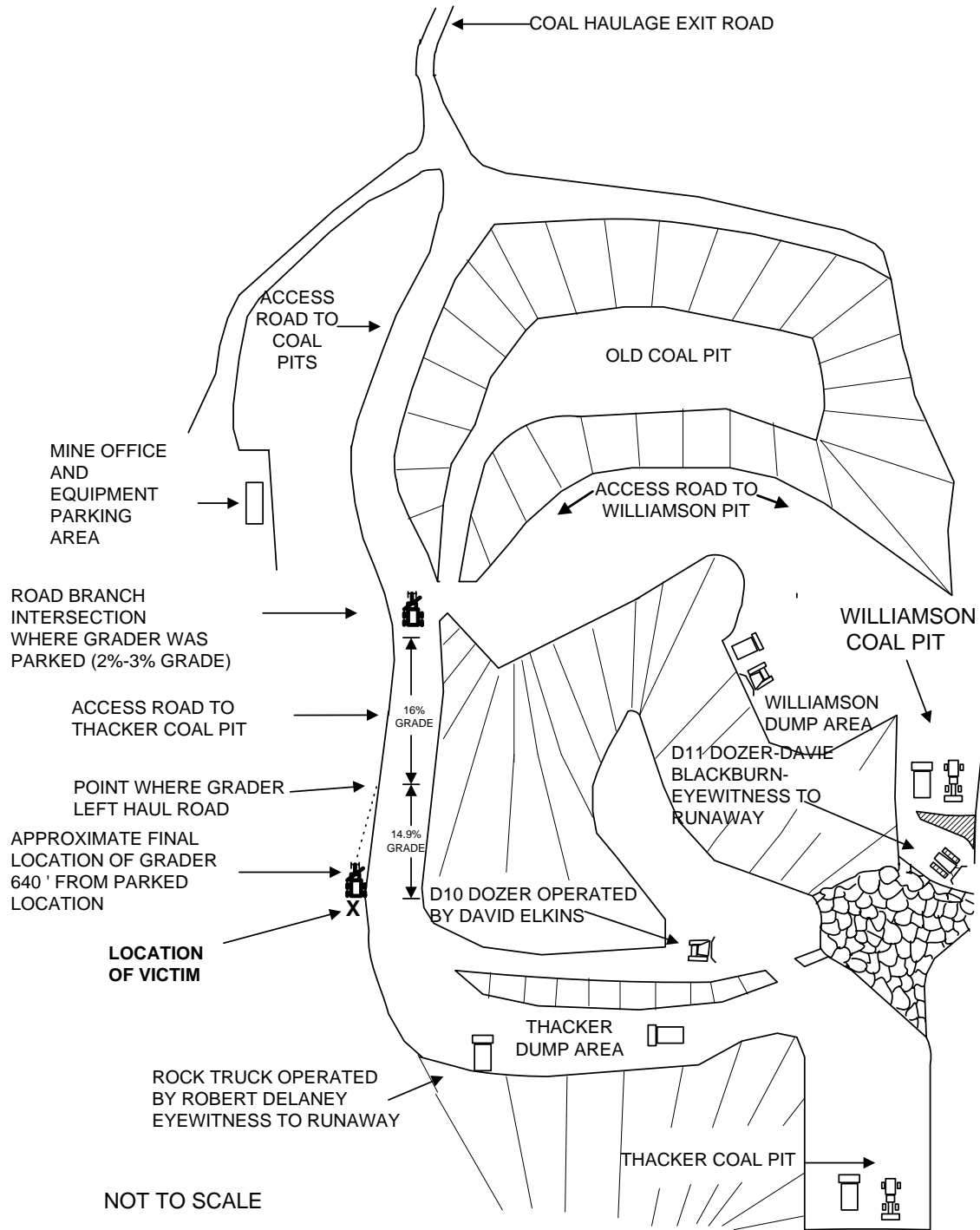
Richard A. Skrabak  
Mechanical Engineer

Originating Office  
Mine Safety and Health Administration  
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Kenneth A. Murray, District Manager

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Note: The victim's name was removed at the family's request.



Sketch of Mine Site  
 Fatal Machinery Accident  
 CAI 2006-36  
 CAM Mining, LLC  
 Slate Branch  
 MSHA I.D. No. 15-18915



Photo of Accident Scene

### **OVERVIEW**

At approximately 7:30 p.m. on July 20, 2006, a 39-year old grader operator/utility man with 20 years mining experience, five years as a grader operator and 12 weeks at this mine, received fatal injuries when the Caterpillar 16H road grader ran away down the haul road of the Slate Branch surface mine. He had stopped the grader on a slight grade facing up hill and had exited the cab. His exact location could not be determined but he was probably positioned on the left side of the grader somewhere between the cab and the ripper mechanism (photo page 11) when the grader began rolling backwards down the haul road. The grader traveled approximately 540 feet down the haul road beginning slowly and increasing to a high rate of speed before leaving the roadway and impacting the road ditch and hillside. The victim was found on the ground at the rear end of the grader.

The accident occurred because proper parking procedures for the Caterpillar 16H road grader were not followed. The company did not have written procedures for safely parking equipment. The grader was parked on a slight grade and the brakes were not set. Additional measures to prevent movement of the grader were not employed.

## **GENERAL INFORMATION**

CAM Mining, LLC, Slate Branch, is a multi-seam surface coal mine located 1.5 miles off State Route 194 East, near Freeburn in Pike County, Kentucky. The principal officer is James Slater, President. The mine has two active pits that are mined utilizing two loader spreads of equipment. The mine operates two ten-hour shifts, seven days per week and employs 52 persons. The mine produces approximately 2,500 tons of coal per day. The coal is transported by truck to the CAM Mining LLC, Jamboree Loadout facility, where it is loaded onto trains. This facility is located approximately seven miles from the mine.

The last regular safety and health inspection of the mine prior to the accident was completed on April 19, 2006.

## **DESCRIPTION OF ACCIDENT**

On Thursday, July 20, 2006, the evening shift began at 5:00 p.m. Assignments were given to the employees by Cleaties Rowland, shift foreman, in the parking lot area. The victim, a mobile equipment operator, was assigned to use the water truck to water the roads in the work areas and then grade the roads. After watering the work areas, the victim returned to the parking lot area where he got the Caterpillar 16H road grader and graded the road from the Thacker pit to the dump area. There, he briefly talked to David Elkins, dozer operator, before proceeding up the haul road to the upper level of the mine. There were no eye witness accounts of the victim's activity after proceeding up the haul road.

At approximately 7:30 p.m., Davie Blackburn, dozer operator, was working in the Williamson pit on the opposite side of the valley from the haul road, when he observed the road grader traveling in the reverse direction down the haul road at a high rate of speed. This was also observed by Robert Delaney, rock truck driver, who was at the dump area for the Thacker pit which was intersected by the haul road. Blackburn attempted to contact the victim on the CB radio but got no response. He then alerted the other employees to go check on him. Delaney, seeing the grader contact the hillside and come to rest in the road ditch, exited the truck and ran to the accident scene where he was joined shortly thereafter by

Elkins. Delaney observed the cab unoccupied, the left side cab door open, the transmission in neutral, and the engine running. Elkins found the victim on the ground at the rear end of the grader, beneath the ripper mechanism, with no vital signs. Attempts to resuscitate by company and arriving medical personnel were unsuccessful. He was pronounced dead at 8:50 p.m. by Ernest Casebolt, Pike County Deputy Coroner.

## **INVESTIGATION OF ACCIDENT**

After coordinating initial rescue efforts, Cleaties Rowland drove to the mine office to place a phone call to the District MSHA office to report the accident. He obtained an alternate phone number from the answering machine and then notified Robert Hardman, District 6 Acting District Manager, of the accident at approximately 8:10 p.m. A 103(k) Order was issued to secure the accident scene while an investigation was conducted to ensure the safety of any persons at the mine. District accident investigators and a mechanical engineer with the MSHA Approval and Certification Center conducted a detailed investigation including a mechanical evaluation of the Caterpillar 16H road grader. The investigation was conducted in cooperation with State officials. Interviews with nine employees were conducted at the Kentucky Office of Mine Safety and Licensing office in Pikeville, Kentucky on July 22, 2006.

## **DISCUSSION**

### **Mine Access/Haul Road**

The mine access/haul road to the various work areas extended from the mine office and equipment parking area located on top of the mountain to the Thacker coal seam pit near elevation 1325. A branch of the road turned off to the Williamson pit, close to the halfway point, near elevation 1425. It is assumed that the victim parked his grader at this intersection. The area of the road at the branch intersection appeared to be relatively flat compared to the rest of the haul road, but surveyed measurements provided by CAM Mining, LLC indicated the grade to be 2-3%. The overall grade of the road below the branch intersection to the Thacker dump was 16%.

The section of the haul road traveled by the grader during the accident began at the branch intersection and continued approximately 540' downgrade to the point where the grader left the roadway and crossed the rock filled ditch before contacting the hillside. The grader traveled an additional distance of approximately 100 feet through the ditch and hillside area before coming to rest in the ditch.

The road base was constructed from rock spoil with the cap being fine shot rock. The surface had been graded smooth and was dry the day of the accident. The width averaged 42 feet. There were no skid marks or any other indication on the road surface to indicate that the victim attempted to apply the brakes. In addition, there were no scrape markings on the roadway indicating that the cutting blade or rippers had been lowered.

### **Evaluation of the Mechanical Condition of the Caterpillar 16H road grader**

An evaluation of the mechanical condition of the road grader was conducted by the Approval and Certification Center to determine if any equipment related factors contributed to the accident. The victim was operating a 2004 Caterpillar Motor Grader, Model 16H, Serial Number ATS500311, which was powered by a Caterpillar Model 3196 DITA diesel engine. The transmission was a direct drive power shift transmission with 8 speeds forward and 8 speeds reverse. The operating weight of the grader was approximately 65,000 pounds.

The parking brake was a multiple oil-disc unit mounted on the transmission output shaft inside the transmission housing. The parking brake was spring engaged (applied) and required air pressure to release the brake. When tested, the parking brake engaged when the transmission control lever was placed in PARK.

The transmission control lever was located on the right side of the operator in the operator compartment. In order to engage the parking brake, a sleeve below the control knob of this lever had to be raised upward while pushing the knob forward. The sleeve had to be released while holding the knob forward to positively engage the parking brake and lock the transmission into the PARK position. In order to release the parking brake, the sleeve had to be raised and the knob moved backwards. When the lever was placed in the PARK position, an indicator light alerted the operator that the parking brake had been engaged.

The service brakes were air-actuated oil-disc brakes located in each of the four rear wheel spindle housings. Independent air circuits were provided for the right and left side of the machine. The service and parking brakes were tested according to the Caterpillar Operation and Maintenance Manual and found to perform within the specifications. Damage to the grader resulting from the accident included flattening of the two right rear tires, repairable damage to the tandem housing, final drive, and left articulation cylinder and other assorted minor damage. No defects or deficiencies that would have contributed to the accident were found on the Caterpillar 16H Motor Grader.

## **Weather**

It had been hot and dry the day of the accident. The high temperature was approximately 93 to 96 degrees.

## **Proper Parking**

The manufacturer's Operation and Maintenance Manual suggests that the following steps be taken to park the grader:

Park the machine on a level surface. If you must park on a grade, chock the machine's wheels.

Apply the service brake in order to stop the machine. Move the transmission control (lever) to the NEUTRAL position. Move the throttle control to the LOW IDLE position.

Engage the parking brake.

Lower all equipment to the ground. Activate any control locks.

Stop the engine.

Turn the engine start switch to the OFF position and remove the engine start switch key.

The post-accident examination of the grader revealed that the parking brake was not set, the engine was running with the transmission in neutral, and the equipment attachments had not been lowered to the ground.

## **ROOT CAUSE ANALYSIS**

An analysis was conducted to determine the most basic causes of the accident. Listed below is the root causes identified during the analysis and the corresponding corrective action implemented to prevent a recurrence of the accident.

*Root Cause:* The standards, policies and procedures used by the mine operator did not ensure that safe job procedures were followed at all times. The mine operator did not have written procedures for safely parking unattended mobile equipment.



Corrective actions: The mine operator has developed a plan to prevent a similar occurrence of this accident. The plan outlines procedures to be followed before equipment operators can leave the driver's seat of equipment. Employees were trained in the procedures to be followed.

### CONCLUSION

The accident occurred because safe work procedure for leaving the grader unattended was not followed. The parking brake was not set, the engine was running with the transmission in neutral, and neither the cutting blade nor the rippers were lowered to the ground. The grader was parked on the haul road where a slight grade was present and the wheels were not turned toward a berm or bank and were not blocked.

Approved by:

\_\_\_\_\_  
Kenneth A. Murray  
District Manager

\_\_\_\_\_  
Date

## ENFORCEMENT ACTIONS

1. A 103(k) Order No. 7430829, was issued on July 20, 2006, to CAM Mining, LLC.

Condition or Practice: A fatal accident has occurred at this mine at 7:30 PM on July 20, 2006. A Grader Operator was fatally injured while operating the grader on the mine road. This order is issued to ensure the safety of all persons at this operation. It prohibits all activity at the mine until MSHA has determined that it is safe to resume normal operation in the area. The mine operator shall obtain prior approval from an authorized representative for all actions to recover and/or restore operations in the affected area.

2. A 104(a) Citation No. 7426851 was issued to CAM Mining, LLC for a violation of 77.1607(n).

Condition or Practice: "On July 20, 2006, a grader operator received fatal injuries as a result of a runaway of the road grader he had been operating. The Caterpillar 16H road grader, Serial No. ATS500311 was left unattended without the brakes being set. The grader was parked on a grade and the wheels were not turned into a bank or berm or were not blocked."

## **List of Persons Participating in the Investigation**

### **CAM Mining, LLC**

Roger Cantrell	Safety Director
Ken Short	Superintendent
Robert Foley	Maintenance Chief
Cleaties Rowland	Foreman
David Carter	Day shift grader operator
Davie Blackburn	Dozer operator
Robert Delaney	Rock truck driver
John David Elkins	Dozer operator
William Bogar	Mechanic
Larry Elkins	Loader operator
Mark Heath	Attorney

### **Kentucky Office of Mine Safety and Licensing**

Greg Goins	Accident Investigator
Tracy Stumbo	Chief Accident Investigator
Ronald Hughes	Director of Accident Investigations
Mike Elswick	District Supervisor
Randy Newsome	Safety Analyst

### **Caterpillar Inc.**

Mike Carlson	Senior Service Engineer
Chuck LeMons	Motor Grader Service Engineer

### **Whayne Supply Company**

David "Huggy" Crawford	Assistant Service Manager/Technical Communicator
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## **Mine Safety and Health Administration**

Richard Skrabak

Ralph D. Fannin

Benny Freeman

Robert Hardman

Timothy Watkins

Robert Bellamy

Craig Plumley

Gary L. Gibson

Joe Lockett

Mechanical Engineer, Approval and  
Certification Center

Coal Mine Inspector

Supervisory Mine Inspector

Assistant District Manager-Enforcement

Assistant District Manager-Technical

Mining Engineer

Mining Engineer

Roof Control Specialist (Training record  
review)

Attorney



Photo showing area where the grader had been stopped at intersection of haul road to Williamson pit.



Photo showing left side of grader viewed from the rear. Grader was relocated to Wayne Supply shop for evaluation.