

UNITED STATES  
DEPARTMENT OF LABOR  
MINE SAFETY AND HEALTH ADMINISTRATION

COAL MINE SAFETY AND HEALTH

REPORT OF INVESTIGATION

Underground Coal Mine

Fatal Fall of Roof Accident  
August 10, 2005

Shoal Creek Mine  
Drummond Company, Inc.  
Jefferson County, Alabama  
I.D. No. 01-02901

Accident Investigators

Russel A. Weekly  
Mine Safety and Health Inspector

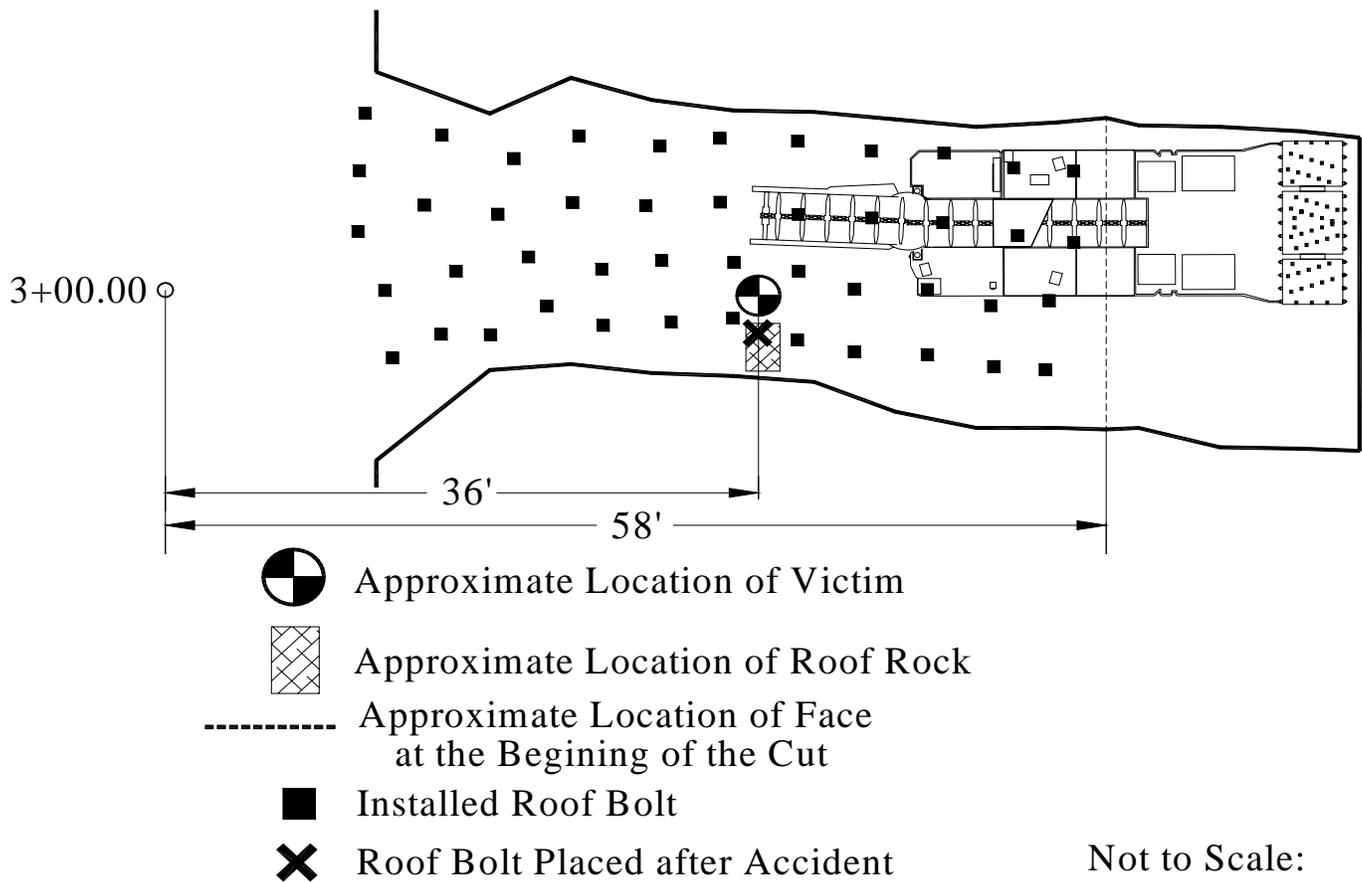
James R. Boyle, Jr.  
Mining Engineer

Originating Office  
Mine Safety and Health Administration  
District 11  
135 Gemini Circle, Suite 213, Birmingham, Alabama 35209  
Richard A. Gates, District Manager

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## OVERVIEW SKETCH



## OVERVIEW

At approximately 8:00 p.m. on Thursday, August 10, a 54-year old continuous miner operator was fatally injured in a roof fall. The victim was struck by a 30-inch x 30-inch x 6-inch piece of roof rock that fell from between the rib and roof bolts. He was operating the continuous mining machine via radio remote control, while standing along the right rib, when the accident occurred. The victim died of his injuries on November 15, 2005. He had 1 year, 13 weeks experience in this occupation. The accident occurred because the mine operator failed to recognize the hazard and did not institute additional measures, such as additional support and/or scaling, to protect persons working or traveling in the area.

## GENERAL INFORMATION

The Shoal Creek Mine, I.D. 01-02901, is owned and operated by Drummond Company, Inc. The mine is located in Jefferson County, Alabama, near the community of Adger.

The mine provides employment for 819 persons and operates 7 days per week, 3 shifts per day with production on all shifts. The mine produces an average of 12,000 clean tons per day. The miners are represented by the United Mine Workers of America (UMWA).

The mine operates in the Blue Creek coal seam, with a mining height that ranges from seven to twelve feet. When the accident occurred, the mine was operating seven mechanized mining units (MMU), six continuous mining machine units and one longwall unit.

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

Richard Painter.....General Manager  
Wesley Shoff.....Director of Safety

A Safety and Health Inspection was completed on June 30, 2005, and another was ongoing at the time of the accident. The Non-Fatal Days Lost (NFDL) injury incidence rate for the mine for the previous quarter was 7.14 compared to the national NFDL rate of 5.55.

## DESCRIPTION OF THE ACCIDENT

On August 10, 2005, the evening shift began at 3:00 p.m. Tommy Humphries, victim/continuous mining machine (continuous miner) operator and the production crew entered the mine and traveled to the N-0 section to begin mining activities. The N-0 section was a continuous miner unit that was developing the three setup entries for the future N-longwall panel (Appendix B). Humphries and his helper, Brad Edwards, proceeded to the #1 entry to take over operation of the continuous miner. They were accompanied by Allen Patton, an experienced continuous miner operator who was assisting in the training of Edwards.

Mining operations proceeded normally. At approximately 7:00 p.m., the continuous miner was moved to the 2-right crosscut (Appendix C). The crosscut was mined during the previous shift and permanent roof support was installed during the current evening shift. Edwards went to eat, while Humphries operated the continuous miner. At approximately 8:00 p.m., Edwards returned to the 2-right crosscut. The continuous miner was on the left side of the entry. Humphries was operating the machine via radio

remote-control, his back to the right rib, positioned between the 5<sup>th</sup> and 6<sup>th</sup> row of roof bolts (see OVERVIEW SKETCH). A piece of roof rock, with an estimated size of 30-inches x 30-inches x 6-inches, separated from the mine roof, struck Humphries against his head and back and knocked him down onto the mine floor.

Edwards and Patton went to Humphries aid and removed the rock. They were joined by the section foreman, William Bonner, who had been informed of the accident. Bonner instructed Edwards to go get first aid equipment, while he and Patton assisted Humphries. Humphries was conscious and talking, and complained of pain in his side. Humphries was placed on a backboard and taken to the section man-trip. They were met at the man-trip by the section coordinator, Robert Hart. Hart, a trained Emergency Medical Technician (EMT), examined Humphries, who complained of breathing difficulty. Hart then administered oxygen. Humphries was taken to the surface, and transported by ambulance to the University of Alabama at Birmingham Trauma Center (UAB).

Humphries condition stabilized and, on November 3, he was transferred from UAB to Montclair Baptist Medical Center Select Specialty Hospital for further rehabilitation. His condition worsened, and he died as a result of his injuries on November 15, 2005.

### **INVESTIGATION OF THE ACCIDENT**

At 1:30 p.m., on November 15, 2005, Wesley Shoff, Director of Safety for Shoal Creek reported Humphries death to MSHA District Manager, Richard Gates. MSHA conducted the investigation with the assistance of state investigators, mine management, and employees. Eight persons were interviewed during the investigation.

## **DISCUSSION OF THE ACCIDENT**

### **Roof Control Plan**

The Roof Control Plan in effect for Shoal Creek at the time of the accident was approved on August 2, 2005. The primary roof support, as specified in the plan, could consist of mechanically anchored tensioned, combination, point anchor, tensioned rebar, or fully grouted roof bolts, with a 36-inch minimum length and a standard 5-inch x 5-inch bearing plate, installed on 5-foot centers.

The primary support used at the accident site was 48-inch point anchor roof bolts with standard bearing plates. The roof bolts were installed on centers that were 5-foot or less.

Plan criteria specified a maximum width of 22-feet for crosscuts. The width at the accident site varied from 19.5 to 20.5-feet. Extended cuts (40-feet) were approved in the plan and were being mined at the time of the accident.

### **Mine Conditions and Geology**

The immediate roof was composed of sandy shale. The section was mining approximately 5 to 6-feet of the Blue Creek coal seam, 1 to 2-feet of rock "middle-man", 1 to 2-feet of the Mary Lee coal seam and an additional 3 to 4-feet of roof rock, for an overall height of 11 to 12-feet. The large amount of roof rock being mined was necessary due to the size of equipment being used on the section and the longwall equipment to be installed.

The rock that separated from the roof and struck the victim was a small, localized, geologic discontinuity, 30-inches x 30-inches x 6-inches and had been exposed during the previous mining cycle (Appendix D). The rock was characterized by smooth contact planes that afforded little adhesion to the immediate roof. This formed an area of natural weakness that could only be corrected by additional support and/or scaling. No sound and/or vibration test had been done in the area prior to the accident.

### **Work History and Training**

Tommy Humphries had a total of 24 years mining experience, the majority at surface operations. He had 1 year, 13 weeks of experience in his job title and 1 year, 14 weeks total experience at the Shoal Creek Mine. A review of Humphries training records indicated that he had received all of his required training.

## 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, a causal factor was identified that, if eliminated, would have either prevented the accident or mitigated its consequences.

*Causal Factor:* A localized geologic discontinuity, exposed during mining, was not recognized and adequate precautions to eliminate the hazard were not taken.

*Corrective Action:* The mine operator installed additional support in the area of the fall. Safety awareness discussions have been conducted on the importance of workplace examinations, emphasizing roof, rib, and floor conditions.

## CONCLUSION

The accident occurred because a localized geologic discontinuity, exposed during mining, was not recognized and adequate precautions to eliminate the hazard were not taken. The victim was struck by a 30-inch x 30-inch x 6-inch piece of roof rock that fell from between the rib and roof bolts.

**Approved by:**

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Richard A. Gates  
District Manager

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Date

## ENFORCEMENT ACTIONS

**§104(a) Citation No. :** Issued to Drummond Company, Inc., Shoal Creek Mine for violation of §75.202(a)

The operator failed to adequately support or otherwise control the roof (N-0 section, 2-right crosscut) to protect persons from hazards related to falls.

On August 10, 2005, while operating a continuous mining machine, a miner received fatal injuries when a piece of roof rock, 30-inches x 30 inches x 6 inches, fell from between the rib and roof bolt, striking the victim on the head and back. The rock was a localized geologic discontinuity, characterized by smooth contact planes that afforded little adhesion to the immediate roof. This formed an area of natural weakness, constituting a fall of roof hazard. Additional measures, such as additional support and/or scaling, were needed to protect persons working or traveling in the area from this hazard.

**APPENDIX A  
Persons Participating in the Investigation**

**DRUMMOND COMPANY, INC.**

<u><b>Name</b></u>	<u><b>Title</b></u>
Richard Painter.....	General Manager
Wesley Shoff.....	Director of Safety

**ALABAMA DEPARTMENT OF INDUSTRIAL RELATIONS  
MINE SAFETY AND INSPECTION**

<u><b>Name</b></u>	<u><b>Title</b></u>
Gary Key.....	State Inspector
Jimmie Rivers.....	State Inspector

**MINE SAFETY AND HEALTH ADMINISTRATION**

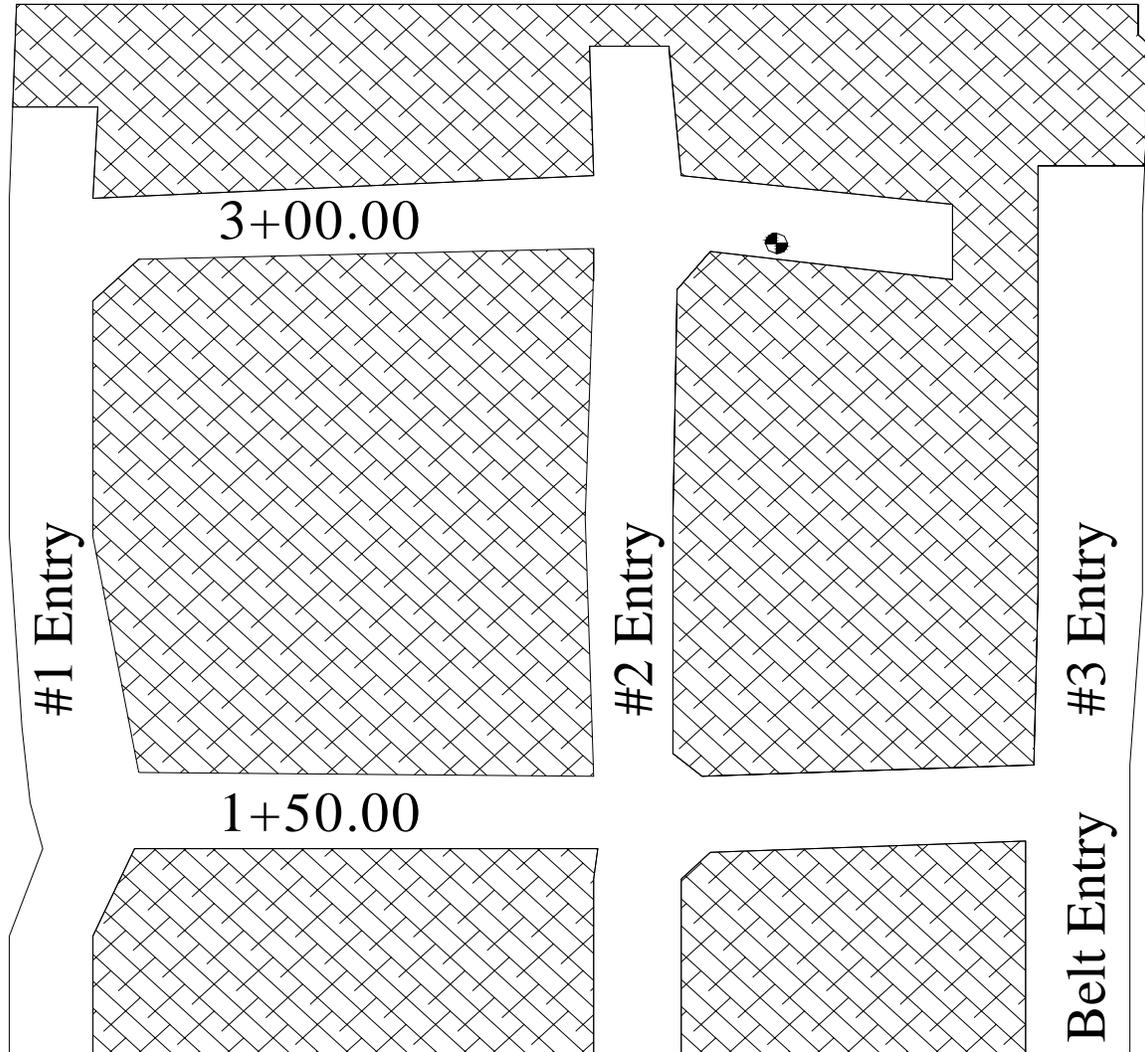
<u><b>Name</b></u>	<u><b>Title</b></u>
James R. Boyle, Jr.....	Supervisory Mine Safety and Health Specialist
Russel A. Weekly.....	Mine Safety and Health Inspector

**UNITED MINE WORKERS OF AMERICA**

Ronnie Griffin.....	Chairman, Mine Safety Committee
Willie Johnson.....	Mine Safety Committee
Randall Greene.....	Mine Safety Committee

# APPENDIX B

## N-0 Setup Entries as of August 10, 2005

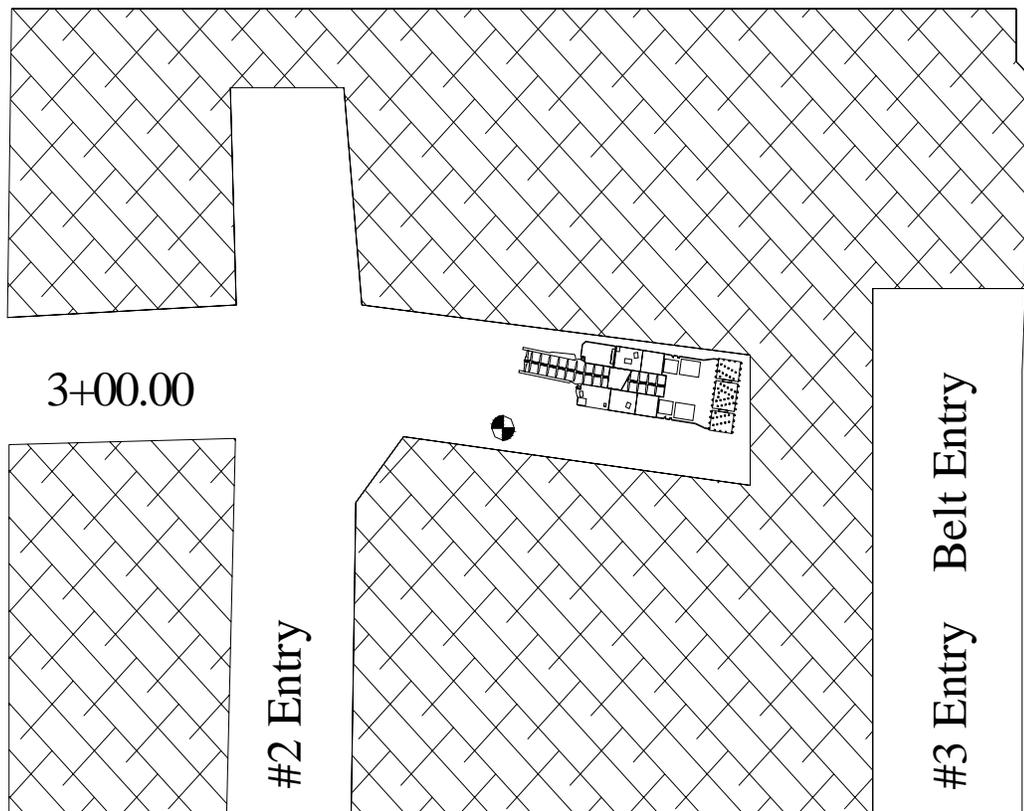


Approximate Location of Victim

Not to Scale:

# APPENDIX C

## Continuous Mining Machine 2 - Right Crosscut (Entry 2 to 3)



Approximate Location of Victim

Not to Scale:

# APPENDIX D

Photograph where fall originated

