

UNITED STATES  
DEPARTMENT OF LABOR  
MINE SAFETY AND HEALTH ADMINISTRATION

COAL MINE SAFETY AND HEALTH

REPORT OF INVESTIGATION

Underground Coal Mine

Fatal Fall of Rib Accident  
June 25, 2012

McCoy Elkhorn Coal Corp.  
Mine #23  
Pike County, Pikeville, KY  
I.D. No. 15-18721

Accident Investigator

Saul Akers  
Roof Control Specialist

Originating Office  
Mine Safety and Health Administration  
District 6  
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Norman G. Page, District Manager

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Photo of Accident Scene

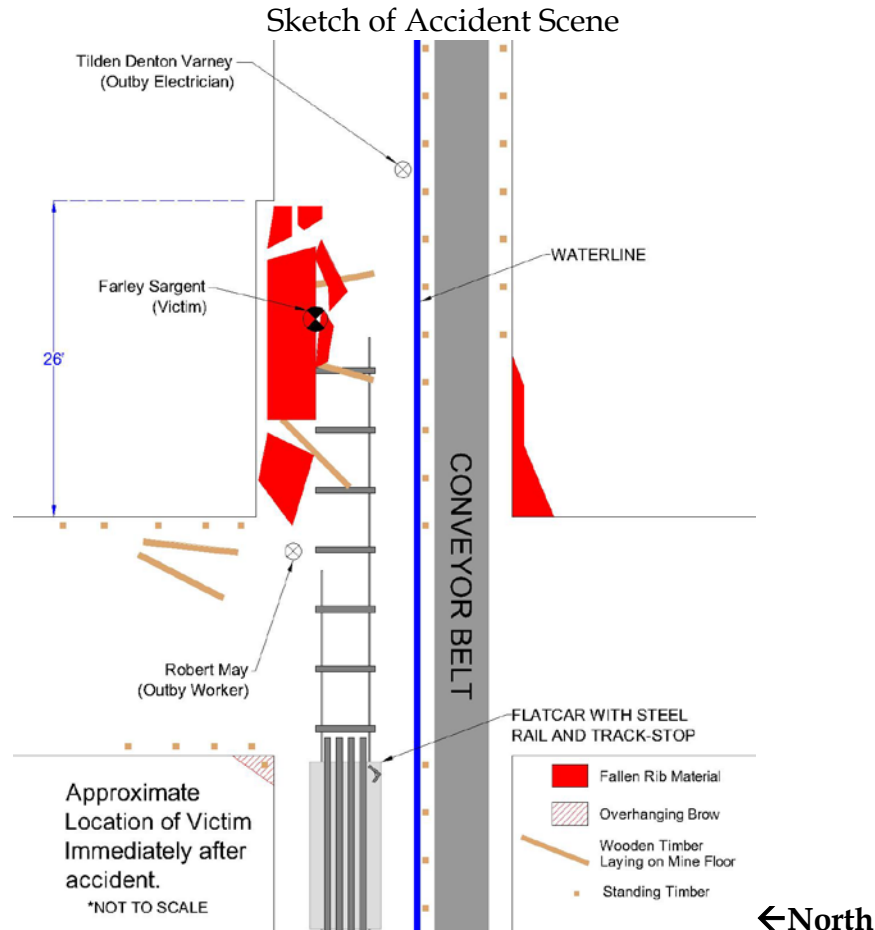
## OVERVIEW

At approximately 11:30 A.M. on Monday, June 25, 2012, a fatal accident occurred at the McCoy Elkhorn Coal Corporation, Mine #23. Farley Sargent, a 33-year-old outby foreman for McCoy Elkhorn Coal Company received fatal, crushing injuries when a section of the mine wall (rib) fell on top of the victim. The section of fallen rib measured approximately 26.5 feet long, 52.5 inches wide, and 17 inches thick. Farley was in the process of laying track, approximately 63 feet outby survey station No. 6080 in the No. 5 track/belt entry, and was installing a timber for rib support when the accident occurred (See Sketch of Accident Scene, Page 2).

## GENERAL INFORMATION

McCoy Elkhorn Coal Corporation, Mine #23, is an underground bituminous coal mine located at Harmon's Branch, Pike County, Kentucky. The parent company is James River Coal Company. The principal officers of McCoy Elkhorn Coal Corp. are Randall K. Taylor Director, President and Chief Operating Officer, and Kenny P. Runyon, Superintendent. The mine operates two continuous mining machine super sections. There are two production shifts and one maintenance shift each day for five days per week. The mine employs 114 employees. The mine produces approximately 7,000 tons of mined material per day.

The last regular safety and health inspection (E01) of the mine prior to the accident was completed on March 29, 2012, and another was on-going at the time of the accident. The Non-Fatal Days Lost (NFDL) injury incidence rate at this mine in 2011 was 1.44 compared to a national NFDL rate of 3.36.



## DESCRIPTION OF ACCIDENT

On Monday, June 25, 2012, the day shift began at 6:00 a.m. Farley Sargent, Foreman (Victim) and Denton Varney, Outby Electrician, entered the mine at approximately 7:00 a.m. by way of a rail mounted personnel carrier. They traveled the track entry to the section and arrived at approximately 7:10 a.m. to lay track. Sargent and Varney hooked the rail car to the mantrip to advance the rail as needed. Robert "Robbie" May, Outby General Labor had entered the mine at 6:00 a.m. to get an impact wrench and a scoop before joining Sargent and Varney at the end of the track to begin installation of the track rail.

The crew had installed approximately 135 feet of rail when they ran out of rail connectors. Sargent and May discussed the rib conditions along the left rib near the end of the track and decided to install timbers. May carried timbers from the left crosscut outby the pillar block to be supported. At approximately 11:30 a.m. Sargent was using an axe to install (wedging) the third timber along the left rib when the rib dislodged, struck, and pinned him against the mine floor. May stated he saw the rib roll off while on his way to get a track stop that was on the flat car. May said the rib appeared to be in one piece when it fell. Denton Varney was standing next to the belt structure when he heard the rib strike the mine floor and break apart. May and Varney rushed to the scene and found Sargent pinned to the mine floor by the fallen rib rock material. They removed rock from his upper body, but were unable to remove the material from his lower body.

Denton Varney went to the section to get help, while May stayed with Sargent. Denton Varney arrived at the power center on the section and alerted Nicky Boyd, Ventilation Man, Fred Varney, Electrician, and Terry Harris, Section Foreman of the accident.

Denton Varney returned to the scene along with Fred Varney and Perry May, Shuttle Car Operator. They used two lifting jacks to remove the remaining material off Sargent.

Mine Emergency Technicians (METs) Rick Wallen, Jeffrey Wallen, Scoop Operator, Perry May, and Terry Harris accessed Sargent and began treatment.

Sargent was placed on a backboard, loaded onto a personnel carrier and taken to the surface of the mine where he was turned over to Questcare Ambulance Personnel. He was transported to the Pikeville Medical Center where Russell Roberts (Pike County Coroner) pronounced him dead at 1:30 p.m.

## INVESTIGATION OF ACCIDENT

The MSHA Call Center was notified of a serious accident at 11:42 a.m. James Reynolds, MSHA Inspector, was present on the surface of the mine inspecting coal trucks at the time of the accident. Reynolds issued a 103(k) order. MSHA personnel from the Pikeville district and field offices traveled to the mine. The investigation was conducted in cooperation with the Kentucky Office of Mine Safety and Licensing (KYOMSL).

Photographs and relevant measurements were taken at the accident scene. A review of the training records was conducted. Interviews were conducted with 13 employees of McCoy Elkhorn Coal Corp. The interviews were conducted at the MSHA district office in Pikeville, KY on June 26, 2012. One additional interview and one follow up interview were conducted on July 26, 2012.

## DISCUSSION

### Accident Scene

Mine No. 23 was mining in the No. 3 Elkhorn coal seam under approximately 600 feet of cover. The coal seam averages approximately 48 inches in thickness. The total mining height including rock taken above the coal seam is 60 to 66 inches.

Abandoned mine workings exist below the accident location in the No. 2 Elkhorn coal seam (See Appendix A). As the section advanced over a remnant barrier (unmined solid coal) the stress created from the barrier was greater than previously encountered or anticipated due to its narrow width. Sloughage of the ribs began to occur and progressed as mining advanced. This condition exists in entries and crosscuts 1 thru 9 beginning approximately 100 feet outby survey station 6057 in the No. 1 entry and extends inby diagonally to the No. 9 entry, approximately 12 feet inby survey station 6108, a distance of approximately 562 feet. This area is consistent with a remnant barrier from undermining. The lower mine appears to have mined on forty feet by fifty feet centers which may have caused the weight to re-distribute toward the barrier block.

Approximately 45 feet of interburden is present between the active mine and the nearest underlying mine workings. The operator increased the center sizes to address the under mining and barriers that were present in the No. 2 Elkhorn coal seam. The center sizes were increased from the required 70 feet by 70 feet centers to 70 feet entry centers and 90 feet crosscut centers on the 001-0/002-0 MMU. The 001-0/002-0 MMU is a super section with nine advancing entries located approximately 3,400 feet from the mine portal. The roof was supported with 48 inch fully grouted resin bolts; four, eight foot cable bolts in the intersections and two, eight foot cable bolts every third row of primary support.

The area of the accident scene measured approximately 8.5 feet in height and 22 feet in width. The operator increased the mining height in the area of the accident in order to raise the height of the conveyor belt to allow mining equipment to travel under the belt to gain access to and from the primary escapeway. Forty-eight to 52 inches of shale roof was mined up to the sandstone beginning approximately 50 feet outby the accident scene. The strata (rib) measurements at the scene of the accident from the bottom of the coal seam upwards were approximately: 11.5 inches of coal, 7.5 inches of gray shale rock, 28 inches of coal, and 52.5 inches of brown laminated shale. The No. 5 belt/track entry was mined 22 feet wide to allow for the belt and track to be installed in the same entry. The entry had two rows of timbers, one row between the conveyor belt and the track, and one row located along the right rib (facing inby).

An examination of the rib conditions in the mine (compare Appendix A and Appendix B) indicates that the rib sloughage resulted from stress created by a narrow remnant barrier and small centers of the underlying mine. The 7.5 inches of gray shale rock parting, approximately 11.5 inches from the bottom of the coal seam, is soft and deteriorates first. This causes the coal above to deteriorate and roll, or slough off, creating an overhang in the laminated shale above the coal seam. The more the coal deteriorates, the larger the overhang. The weight of the increased rock overlying the coal seam along with stress exerted from underlying works created unstable rib conditions.

The mine roof was in a transition zone beginning in the crosscut outby the accident scene. The shale roof changed to laminated sandstone approximately four feet above the coal seam. The operator mined the shale up to the sandstone to increase the mining height because the shale would try to separate and fall from the sandstone when a thin layer of shale was left intact. The area near the accident was damp and muddy.

This mine does not have a roof bolting machine capable of installing roof bolts into the rib. Mining has been conducted in several other areas of the mine with remnant barriers in the underlying Elkhorn No. 2 seam with little to no influence. Timbers had been installed successfully in these areas. In anticipation of rib sloughage over projections in areas of remnant barriers, the operator increased the centers from the required 70 feet by 70 feet entry and crosscut centers to 70 feet by 90 feet entry and crosscut centers. Two additional eight foot cable bolts were installed every third row of permanent support in addition to the required four, eight foot cable bolts required in the intersections.

### **Roof Control Plan**

The approved roof control plan, dated August 12, 2011, specified that a minimum of a four foot long, fully grouted resin roof bolt to be installed on four foot centers for primary roof support.

Supplemental roof support of four, eight foot cable bolts installed in the intersections was required for areas to be second mined (pillared). The 5<sup>th</sup> Southeast Mains being developed off 2<sup>nd</sup> Northeast mains were developed by the operator with the intention to be pillared.

The approved roof control plan on page 12 contained safety precautions for rib control. The first precaution is that, "Adverse ribs will be either taken down or supported." It further states, "When adverse ribs are to be supported, supplemental supports will be installed to adequately support the ribs." Also, the roof control plan states these supports will include but are not limited to Angle Brackets, Timbers, Cribs, Steel Supports (jacks, etc.), Mesh, Wire ropes, Screen, Rib Bolts, any combination of these materials. When timbers/jacks are used as rib supports and the ribs are exerting pressure against these supports, such rib supports will be secured against falling.

Since the adverse ribs that continued to develop were not taken down or properly supported, 30 CFR 75.220(a)(1) was violated because this standard requires compliance with the provisions of the approved roof control plan.

The roof control plan was effective for roof and rib support in previously mined areas where remnant barriers were located in the underlying Elkhorn No. 2 coal seam.

### **Examinations**

The preshift examinations conducted on and before June 25, 2012, in the Belt/Track and travelways outby the 001-0/002-0 MMU in entries 4 thru 9, for a distance of approximately 380 feet, were inadequate. During these examinations, examiners did not identify any specific hazardous rib or roof conditions. Persons work or travel in this area beginning approximately 60 feet inby survey station 6055, and extending to approximately 10 feet outby survey station 6108. No corrective actions for rib and roof conditions were recorded. The operator initially complied with the Roof Control Plan, but failed to install additional supports or take the ribs down when the rib sloughage increased.

Because of the sloughage of the ribs that was present in the areas shown in Appendix B, the operator installed timbers for rib support when the condition became apparent from approximately May 30, 2012, to June 25, 2012, when the accident occurred. The timbers were sufficient at the time of installation and subsequently, the ribs deteriorated to the point where the timbers installed would not adequately support the ribs. This condition was not recognized by the examiner.

### **Training**

A representative of MSHA's Educational Field Services (EFS) reviewed company training records on June 26, 2012. Records were provided by the company for the victim and all required training had been conducted, and therefore, no violations were



observed. The victim received the following training: new miner training on February 17, 2005; underground mine foreman certification on June 8, 2010; annual refresher training on January 2, 2012. He also received annual refresher training on January 4, 2012.

## ROOT CAUSE ANALYSIS

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

Root Cause: The operator failed to comply with the approved roof control plan and install adequate rib support in areas where mining crossed remnant barriers in the underlying seam. The rib support (timbers) installed at the accident location were inadequate to support the weight of falling rib, or otherwise control or protect persons from the hazards of falling material. The ribs had deteriorated from stress over a period of time to a point that timbers were ineffective for rib support. Other means of additional rib support were not utilized by the operator to secure the ribs to prevent falling.

Corrective Action: The operator installed rib supports that adequately control the ribs and protect persons from the hazards of falling material in the accident and adjacent areas. In addition the roof control plan was revised to require specific measures to be taken when mining within 150 feet before, during, and 150 feet after crossing barriers. The new plan requires: 80 feet entry centers, 90 feet crosscut centers, 18 feet entry and crosscut widths, 20 feet maximum cut depth, separate track and belt entries, and the installation of rib angle brackets four feet apart with a bracket to install lashing (nylon strap rated at 22,000 lbs. breaking strength) on every other support. Support brackets will extend 4 feet down the block. Belt and track will be installed in the middle of the entries. Six inch by six inch timbers will be installed within 24 hours of the belt being moved up, two (2) feet off each rib between the angle supports. The operator installed the aforementioned support in the affected areas.

Root Cause: An inadequate pre-shift examination was conducted by the examiner in the No. 5 Belt/Track entry. Adverse rib conditions existed where persons are required to work or travel. The ribs had deteriorated to a point that timbers were not sufficient to support the ribs. This condition should have been recognized by the examiner.

Corrective Actions: The operator has trained their supervisory personnel on recognizing rib hazards, conducting and recording a proper pre-shift examination.

## CONCLUSION

This fatal accident occurred because the operator failed to follow the approved roof control plan and adequately support or control the ribs to protect the miners from adverse rib conditions where persons work or travel. Additionally, the operator failed to conduct an adequate pre-shift examination by failing to recognizing that timbers were not adequate to safely control the ribs after the ribs had deteriorated.

Approved by:



Norman G. Page  
District Manager

3-1-2013  
Date

## ENFORCEMENT ACTIONS

1. A 103(k) Order No. 8274228 was issued to McCoy Elkhorn Coal Corp.; Mine #23 on June 25, 2012. A fatal accident has occurred at this operation a section of rib fell on a miner while he was working on the mine track. This fatality happened in the number 5 entry/track entry 20 to 60 feet out by survey station number 6080. This order is issued to assure the safety of all persons at this operation. It prohibits all activity at this mine until MSHA has determined that it is safe to resume normal mining operations. The mine operator shall obtain prior approval from an authorized representative for all actions to restore operations.
2. A 104(d)(1) Citation, No. 8268404 was issued for a violation of 30 CFR 75.202(a). The ribs of areas where persons work or travel are not supported adequately or otherwise controlled to protect persons from hazards related to falls of the ribs on the 001-0/002-0 MMU. Sloughing, loose coal ribs and overhanging brows are present in an area which is above a remnant barrier from the underlying mine. Timbers had been installed at various locations but were not adequate due to the size of the loose ribs. This condition exists in entries and crosscuts 1 thru 9 beginning approximately 100' outby survey station 6057 in the No. 1 entry and extends inby diagonally to the No. 9 entry approximately 12' inby survey station 6108, a distance of approximately 562'. The area is consistent with a remnant barrier from undermining. This condition contributed to a fatal rib roll accident on June 25, 2012.

While installing timbers to support a loose rib, Farley Sargent received fatal crushing injuries when the support he was installing failed and he was struck by falling rib material.

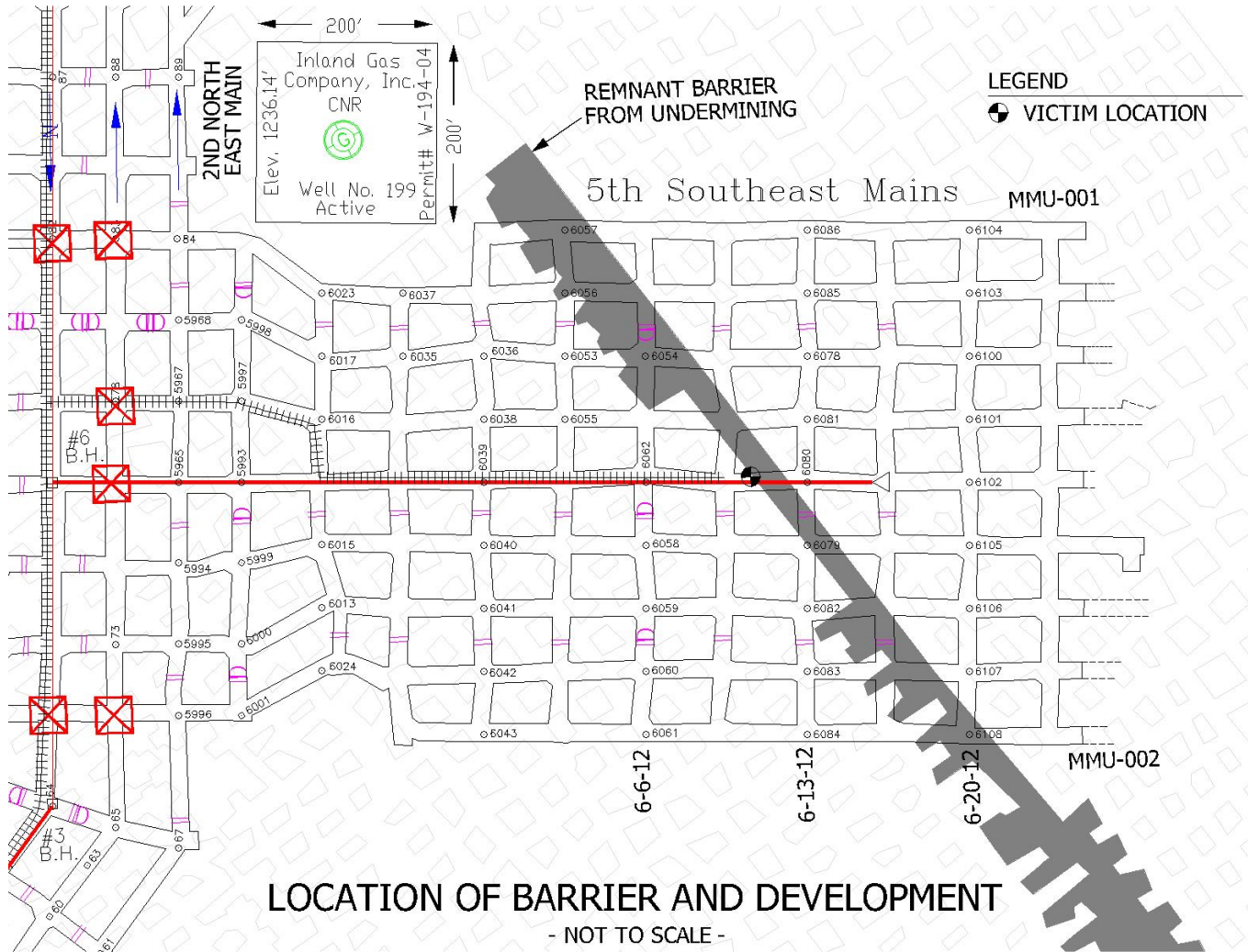
This is also a violation of 30 CFR 75.220(a)(1) because this condition or practice did not comply with provisions of the approved roof control plan.

This violation is an unwarrantable failure to comply with a mandatory standard. Standard 75.202(a) was cited 21 times in two years at mine 15-18721 (21 to the operator, 0 to a contractor).

3. A 104(d)(1) Order, No. 8268405 was issued for a violation of 30 CFR 75.360(b)(1). An inadequate pre-shift examination has been conducted in entries 4 thru 9 outby the 001-0/002-0 MMU where persons work or travel during the oncoming shift. Timbers were installed initially in the affected area for rib support. However, at some point the ribs deteriorated to a point that the timbers were not sufficient to support the ribs. The examiner did not recognize this condition. Sloughing, hazardous loose ribs and overhanging brows were present beginning approximately

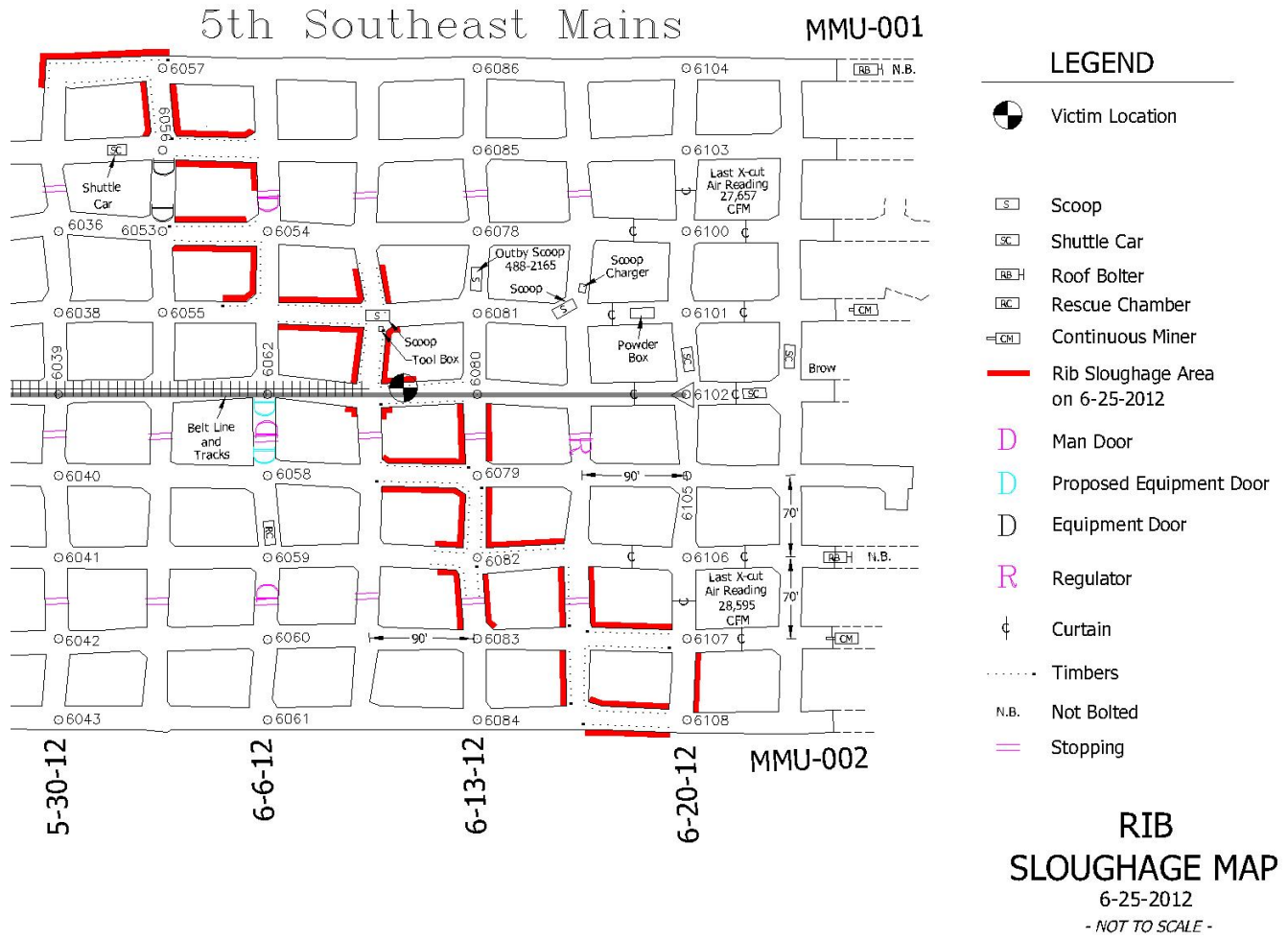
60' inby survey station 6055 in the No.4 entry and extending in entries and crosscuts to approximately 10' outby survey station 6108 in the No. 9 entry, a distance of approximately 380'. Miners had been directed to work and travel in these areas without the hazardous conditions being noted in the examination record, corrected or posted with a conspicuous danger sign where anyone entering the areas would pass.

# Appendix A



LOCATION OF BARRIER AND DEVELOPMENT  
- NOT TO SCALE -

# Appendix B



## Appendix C

### List of Persons Interviewed

#### McCoy Elkhorn Coal Corp.

Kenny Runyon	Superintendent
Terry Brian Harris	Section Foreman
Reaford Coleman	Outby Mine Foreman
John Miller	Belt Foreman/3 <sup>rd</sup> Shift Outby Pre-Shifter
Clifton Preece	Safety Director
Robert (Robbie) May	Outby Gen. Labor (Witness)
Tilden Denton Varney	Outby Electrician (Witness)
Rick Wallen	Tracking System Technician (EMT)
Jeff Wallen	Scoop Operator (EMT)
Perry May	Shuttle Car Operator (EMT)
Fred Varney	Electrician
Nicki Boyd	Ventilation Man
Chris Stotridge	3 <sup>rd</sup> Shift Section Foreman/Pre-Shifter



## **Appendix D**

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

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

Tracy Stumbo	Chief Accident Investigator
Tim Fugate	Accident Investigator
Greg Goings	Accident Investigator
James Tackett	Roof Control Inspector

#### **Mine Safety and Health Administration**

James Poynter	Assistant District Manager/Technical
Robert Bellamy	Roof Control Supervisor
Silas Adkins	Field Office Supervisor
Saul Akers	Roof Control Specialist / Lead Accident Investigator
Darrell Hurley	Roof Control Specialist / Accident Investigator
Steve Caudill	Staff Assistant/Accident Investigation Coordinator
Allen Howell	Supervisory Special Investigations
LaDonna Miller	Training Specialist
Greg Hall	Civil Engineer
Chad Damron	Mining Engineer/Trainee

# Appendix E

## Victim Information

### Accident Investigation Data - Victim Information

**U.S. Department of Labor**

Event Number: 4 1 9 5 6 0 0

Mine Safety and Health Administration



<b>Victim Information: 1</b>																			
1. Name of Injured/Ill Employee: <i>Farley Sargent</i>					2. Sex: <i>M</i>		3. Victim's Age: <i>33</i>			4. Degree of Injury: <i>01 Fatal</i>									
5. Date(MM/DD/YY) and Time(24 Hr.) Of Death: <i>a. Date: 06/25/2012 b. Time: 13:30</i>										6. Date and Time Started: <i>a. Date: 06/25/2012 b. Time: 6:00</i>									
7. Regular Job Title: <i>049 Foreman</i>					8. Work Activity when Injured: <i>089 Installing Timber</i>					9. Was this work activity part of regular job? <table border="1"><tr><td>Yes</td><td>X</td><td>No</td></tr></table>							Yes	X	No
Yes	X	No																	
10. Experience a. This			Years	Weeks	Days	b. Regular Job Title:			Years	Weeks	Days	c. This Mining:			Years	Weeks	Days	d. Total Mining:	
Work Activity:			<i>1</i>	<i>20</i>	<i>0</i>	<i>1</i>			<i>20</i>	<i>0</i>	<i>6</i>			<i>45</i>	<i>2</i>	<i>7</i>		<i>7</i>	<i>2</i>
11. What Directly Inflicted Injury or Illness? <i>122 Rib</i>										12. Nature of Injury or Illness: <i>170 Crushing</i>									
13. Training Deficiencies: Hazard: <i>New/Newly-Employed Experienced Miner:</i> 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: <input checked="" type="checkbox"/> CPR: <input checked="" type="checkbox"/> EMT: Medical Professional: None:																			
16. Part 50 Document Control Number: (form 7000-1)										17. Union Affiliation of Victim: <i>9999 None (No Union Affiliation)</i>									