CAI-2011-16

UNITED STATES
DEPARTMENT OF LABOR
MINE SAFETY AND HEALTH ADMINISTRATION

COAL MINE SAFETY AND HEALTH

REPORT OF INVESTIGATION

Underground Coal Mine

Fatal Falling Material Accident
October 7, 2011

Owlco Energy LLC
Mine No. 1
Partridge, Letcher County, Kentucky
ID No. 15-18870

Accident Investigators

Kevin Doan
Mining Engineer

Harry Hall
Coal Mine Safety and Health Specialist (Electrical)

Silas Brock
Coal Mine Safety and Health Inspector/Family Liaison

Benjamin W. Gandy
Mining Engineer
Approval and Certification Center, Technical Support

Originating Office
Mine Safety and Health Administration
District 7
Coal Mine Safety and Health
3837 South US Hwy 25E
Barbourville, KY 40906
Irvin T. Hooker, District Manager

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SKETCH OF THE ACCIDENT SITE

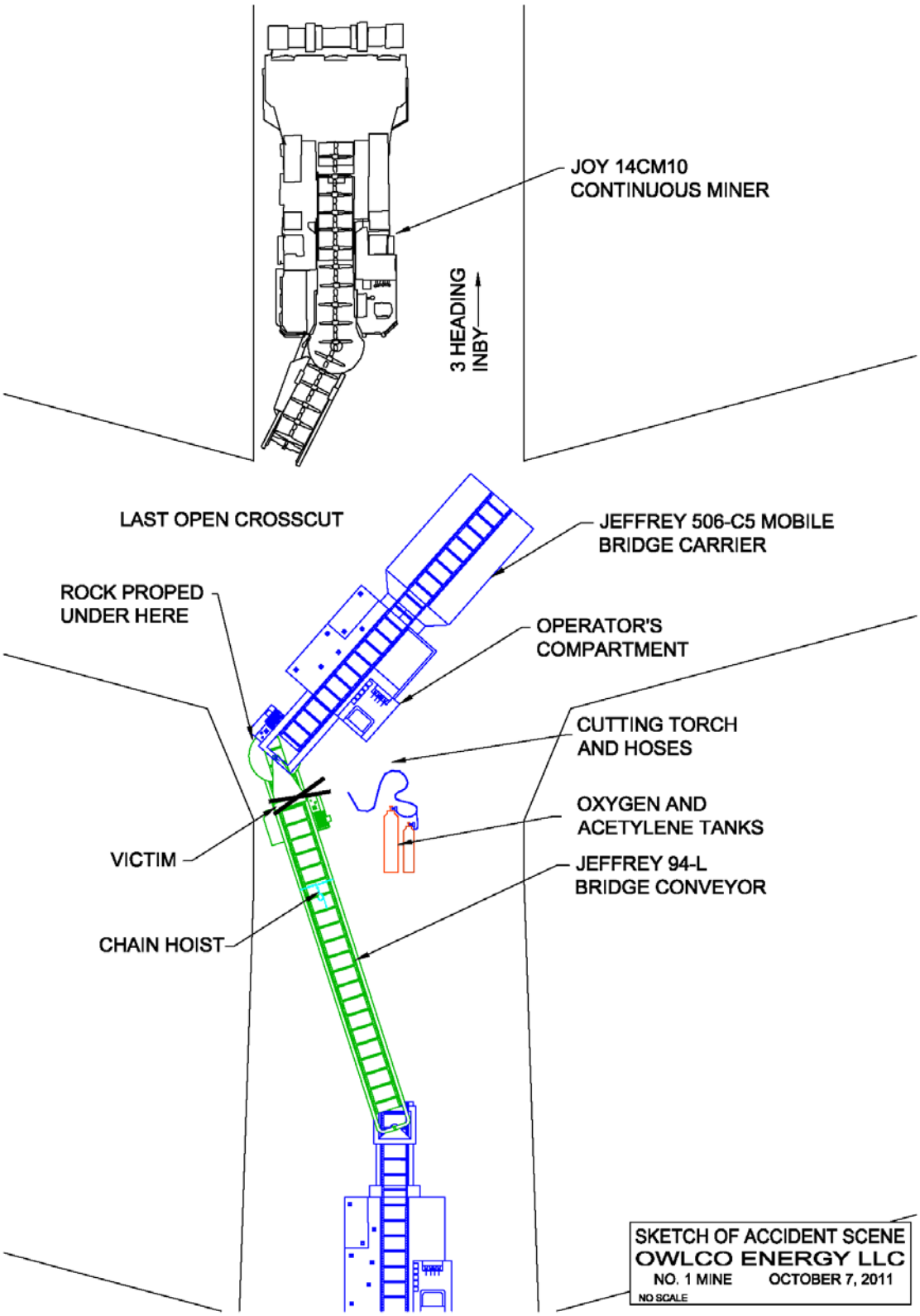


Photo of Accident Site

OVERVIEW

At approximately 2:00 a.m. on Friday, October 7, 2011, a fatal falling material accident occurred at the Owlco Energy LLC, Mine No.1. The accident occurred when a piece of mined roof rock used to support the raised Jeffrey Model 506 mobile bridge conveyor became dislodged, causing the bridge conveyor to fall and strike the victim. As a result, the victim was pinned between the mobile bridge conveyor and the mine floor, causing fatal injuries.

The accident occurred because of mine management's failure to ensure that raised equipment was blocked properly before allowing miners to work beneath it and miners were not trained in proper blocking techniques.

GENERAL INFORMATION

The Owlco Energy LLC Mine No. 1 is an underground coal mine owned and operated by Owlco Energy LLC. The mine is located in southern Letcher County, Kentucky, and is developed in the 36 to 60 inch Owl seam. The mine is accessed by four drift openings and employs 16 miners, with the day shift working from 6:00 a.m. to 2:00 p.m. and the night shift working from 9:00 p.m. to 6:00 a.m. The mine has a single working section with an average production of 300 tons per day. Coal is extracted from the faces by a continuous mining machine and transported by bridge carrier and belt conveyors to the surface. Materials, supplies and miners are transported via rubber-tired battery scoops and rubber-tired mantrips. The principal officers for the mine at the time of the accident were:

Curtis Laws ..... Manager
Teresa Partin ..... Secretary

Prior to the accident, the Mine Safety and Health Administration (MSHA) completed the last regular safety and health inspection (E01) of the No.1 Mine on August 16, 2011. At the time of the accident, an E01 inspection event was ongoing, although an MSHA inspector was not present at the time of the accident. The Non-Fatal Days Lost (NFDL) injury incidence rate for this mine through the second quarter of 2011 was 0.00, compared to a National NFDL rate of 3.21.

DESCRIPTION OF ACCIDENT

The day shift crew produced normally on Thursday, October 6, 2011, until approximately 1:50 p.m., when the conveyor chain on the inby Jeffrey 94L bridge conveyor stuck. The operator of the machine, Jonathon Gray, bumped the conveyor several times with the controls, in an effort to free it.

Arnold Hoskins, Day Shift Foreman, was one crosscut outby and noted the problem. Hoskins made his way up to the machine and asked Gray to turn the mobile bridge carrier to the right and raise the bridge so he could look for the problem. Gray had difficulty raising the bridge, but was able bump/wiggle the front boom, which raised the bridge. Hoskins saw that the conveyor chain was broken on one side and called for the section repairman, Verdie Myers. Hoskins had the area shoveled and rock dust scattered in an effort to dry the area where the repairs would be made. The inspection cover on the inby end of the bridge conveyor was removed to check the conveyor chain. The cover can be removed with the bridge conveyor resting on the mine floor.

During repairs, the hydraulic boom jacks would not maintain the bridge conveyor in the raised position, which was attributed to the hydraulic pressure leaking. Gray had to raise the bridge repeatedly, because it continued to drop back down. Hoskins asked for crib blocks to use as props, but none of those present knew where they were located. Brandon Hatfield, Continuous Mining Machine Operator, picked up a piece of mined roof rock from on top of the bridge and Hoskins stood it up under the inby end of the raised bridge conveyor. The bridge conveyor dropped until it was supported by the rock.

Myers came to the location and determined that the bridge conveyor chain was broken at the sprocket and he would need to cut out the chain and bent conveyor flights. When he hooked up the torches, Myers discovered that the oxygen tank was empty. The day shift was nearly complete and it was decided to leave the repairs for the night shift.

The night shift crew began assembling on the surface around 7:45 p.m. At approximately 8:52 p.m. Mark Sizemore, Foreman, entered the mine to conduct the preshift examination. Sizemore called the preshift results outside, and the night shift crew, consisting of Richard Coots, Repairman, Jeromy Coots, Roof Bolter Operator, Chris Collins, Laborer and James Lively, Roof Bolter Operator, entered the mine at approximately 9:38 p.m. aboard the mantrip. Due to mechanical problems with the mantrip, the crew did not arrive on the section until approximately 11:45 p.m. R. Coots went to the bridge conveyor with the broken chain and began repair work on the machine. J. Coots and Lively went to the roof bolting machine. Sizemore and Collins went to a location approximately 6 crosscuts from the section and began installing a discharge line in preparation for setting a pump.

After bolting the 4 Right crosscut, J. Coots and Lively then attempted to move the roof bolter to the number 5 Heading, but found there was not enough cable to reach. They decided to assist R. Coots with the bridge conveyor repairs until

receiving further instructions from Sizemore. R. Coots had removed several bent conveyor flights and a section of chain. He needed to pull the conveyor chain around to the top of the bridge conveyor in order to continue the repairs. Lively went to the left side of the conveyor to assist R. Coots with the repairs while J. Coots ate lunch. R. Coots passed the chain hoist under the bridge conveyor to Lively. Lively handed the hook end of the chain to R. Coots and then attempted to pull the excess slack chain through the chain hoist. Lively stated that he heard a thump and that the bridge conveyor fell suddenly, trapping R. Coots

J. Coots heard the noise and turned to see what had happened. R. Coots said to J. Coots and Lively, "Get it off of me!" R. Coots passed them a slate bar and said, "Take this bar and get it off of me." The bridge conveyor was too heavy to be lifted in this manner. J. Coots was on the operator's side of the mobile bridge carrier, but had never operated the machine and was unsure how to start it to raise the discharge boom and the attached bridge conveyor. Lively, who had operated this machine previously, leaned across from the left side and gave J. Coots instructions. Lively and J. Coots stated that the hydraulic pump motor would not start initially. After a period of elapsed time, the pump motor was started. However, when attempted, the boom would not lift. Richard Coots (victim) had become unresponsive. J. Coots sent Lively to call outside for an ambulance, obtained a larger chain hoist and attempted to hook it over a roof bolt plate, with the chain around the conveyor. The chain hoist kept slipping off of the roof bolt plate. J. Coots told Lively to continue to try to free the victim, while he went to get Sizemore.

J. Coots signaled Sizemore and Collins with his cap lamp from some distance away and then yelled to them that R. Coots was possibly injured fatally. Upon arriving at the accident scene, Sizemore attempted to pull the victim from beneath the bridge conveyor, but was unsuccessful. Sizemore and Collins then went for the section scoop machine to lift the bridge. While Sizemore and Collins were gone, Lively retried the mobile bridge carrier and was able to joggle and raise the front boom. Collins and J. Coots removed the victim from beneath the bridge conveyor. The victim had no pulse and was not breathing. CPR was started on the victim by J. Coots and Collins and they transported him to the surface aboard the battery-powered mantrip.

Anthony Brown, Outside Man, called Curtis Laws, Mine Manager, and informed him of the situation after receiving the call from Lively. Laws directed Brown to call an ambulance and then to notify the Mine Safety and Health Administration (MSHA) via the hot line and to contact the Kentucky Office of Mine Safety and Licensing (OMSL).

J. Coots and Collins arrived on the surface with the victim at approximately 2:40 a.m. and continued CPR until medical personnel from the Neon (Kentucky) Fire and Rescue Service arrived at 2:53 a.m. While continuing to perform CPR, the ambulance attendants assessed the victim's condition. The ambulance attendants ceased further attempts at resuscitation and called the Letcher County Coroner. The victim was pronounced dead at 4:10 a.m.

INVESTIGATION OF THE ACCIDENT

On Friday October 7, 2011, at approximately 2:13 a.m. the National Call Center notified MSHA of the potentially fatal accident that had occurred at the No.1 mine. Robert Barnes, Acting MSHA Supervisor received the call and contacted William C. Clark, Acting Assistant District Manager, Enforcement Division. Clark assumed charge of the investigation, contacted the mine and issued a 103(j) Order at 2:48 a.m., to ensure the safety of the miners and to preserve the accident scene. Clark contacted Kevin Doan, MSHA Accident Investigator, briefed him on the situation, and dispatched Doan to the mine. Upon his arrival on site, Doan modified the 103(j) Order to a 103(k) Order at 4:12 a.m.

The accident investigation was conducted in cooperation with OMSL, along with assistance from the mine operator and employees. A list of persons participating in or present during the investigation is included in Appendix A.

Representatives of MSHA, OMSL, and the operator traveled underground to the accident site on the morning of October 7, to examine the scene and investigate existing physical conditions. Digital photographs and relevant measurements were taken. Harry Hall, Electrical Specialist, began preliminary examination and testing of the equipment involved and was joined by Benjamin Gandy, Mining Engineer, Approval and Certification Center, Technical Support on October 8, 2011. Interviews were conducted with six persons on October 8, 2011 and two on October 10, 2011 at the MSHA, Harlan, KY, Field Office.

DISCUSSION

The Jeffrey 506-C5 bridge carrier involved in the accident is a crawler-mounted detached system, with an operator's deck on the right side of the machine. The bridge carrier is connected to the Jeffrey 94L bridge conveyor. The conveyor is attached to the boom of the bridge carrier. Coal is discharged from the continuous mining machine into the detached bridge carrier, where it is conveyed by a 21-inch wide chain. The coal is then discharged from the bridge carrier onto the first bridge conveyor, under which the accident occurred. The

bridge conveyor was connected to the inby bridge carrier by a vertical pin connection when it fell on the victim.

Physical Factors

Applicable Dimensions and Measurements:

The bridge conveyor measurements:
27 feet, 8 inches in length, from pivot point, to pivot point;
34 inches wide;
21 inches (outside diameter of conveyor chain); and,
48 inches wide at the receiving hopper.

- The overall entry height at the accident scene was 46 inches.
- Dimensions of the rock used as blocking: approximately 17 inches tall, 24 inches wide and approximately 2-5 inches thick.
- A Harrington 1.5 ton chain hoist (come-along) was used in an attempt to free the victim.
- Clearance under the bridge conveyor, when the boom was up, was approximately 12-14 inches.

Blocking Evaluation

Prior to the accident, a rock was placed under the receiving hopper (referred to as the soup bowl) under the bridge conveyor, which was connected to the bridge carrier boom. This rock was used as blocking while repairs were made to the chain conveyor system. It could not be determined how or why the rock slipped or fell. The rock was placed in a vertical position as shown in Figure 1 below. The rock height of 17 inches and width of 24 inches is depicted.

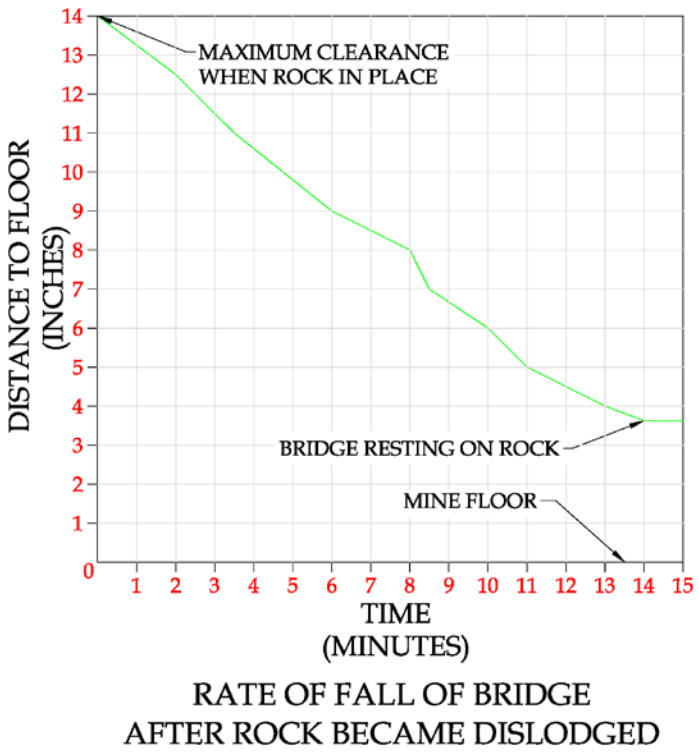
Figure 1- Depicting rock under receiving hopper

Machine Control and Functional Tests

Tests were conducted by the accident investigation team to quantify the rate at which the conveyor system collapsed to the floor. The boom from the bridge carrier was lifted up while connected to the bridge conveyor. The machine had not operated for approximately 12 hours. This left the hydraulic fluid temperature cold, as was the case at the time of the accident. The tests were conducted twice on October 7 and again on October 8. In each of the tests, failure of the boom to lift, as reported when the accident occurred, could not be reproduced. Figure 2 below, illustrates the rate at which the weight of the boom compressed the single action boom jacks. The boom system came to rest on a 2-inch thick rock on the mine floor after 14 minutes.

The curve in Figure 2 shows the rate at which the boom dropped.

Figure 2 – Graph of boom drop rate



The panic bar for the bridge system was found to be operational.

The boom jack was evaluated. It was able to raise and lower the boom while it was attached to the mobile carrier. Leakage around the bushing where the hydraulic hose goes into the boom jack on the operator side (right side) of the mobile bridge was observed when the boom was raised. There was no leakage observed when the boom came to rest on the ground. There was no leakage observed on the left side boom when the boom was raised or lowered to rest. The hydraulic oil level was checked and found to be within the manufacturer's recommended range.

Miscellaneous

The Jeffrey mobile bridge system was purchased from Valley Mine Service located in Speedwell, Tennessee. The unit was put into service at the Owlco Mine No 1 in October 2010. There was also a field modification for the Jeffrey 506-C5 bridge conveyor (Par #98416) submitted by Owlco Energy. The

evaluation was conducted by CMS&H District 7 on August 23, 2010 and reviewed by the MSHA Approval and Certification Center (A&CC) and approved on September 10, 2010. The modification consisted of adding an operator's deck to the bridge carrier, adding a 0.500 kilovolt ampere (kVA) transformer for the control circuit and changing 480 volt coils to 110 volt coils in the pump, bridge, and conveyor forward and reverse.

EXAMINATIONS

The preshift and on-shift examinations required by 30 CFR §§ 75.360 and 75.362 were conducted by agents of the operator, and no hazardous conditions were recorded. The preshift examination for the shift on which the accident occurred was conducted by Sizemore prior to the start of the night shift. The on-shift examination for the night shift had not been conducted at the time of the accident. The on-shift examination for the preceding day shift was conducted by Arnold Hoskins, Section Foreman.

TRAINING and EXPERIENCE

R. Coots was 23-years old. He had approximately five years of mining experience, with six weeks at this mine.

The company's training records were examined by representatives of MSHA's Educational Field Services (EFS). The training that R. Coots had received was up-to-date, although the investigation revealed deficiencies with the training that the victim had received. The accident investigation revealed that mine management failed to ensure equipment was blocked properly against motion before repairs were performed. The investigation determined that this was, in part, attributed to a deficiency with the mine operator's training for the miners. Consequently, the operator was required to develop and implement a written procedure for the proper blocking of equipment to be repaired. The company trained all employees in blocking equipment securely against motion when repairs are to be performed. Results of the training were documented by the mine operator.

The training records for the other miners were examined and deficiencies were found for other company employees. These deficiencies were determined to be non-contributory to the accident and violations were cited separately from the accident investigation.

ROOT CAUSE ANALYSIS

An analysis was conducted to identify the most basic cause of the accident that was correctable through reasonable management controls. During the analysis, a root cause was identified that, if eliminated, would have either prevented the accident or mitigated its consequence. Listed below is the root cause identified during the analysis and the respective corrective action implemented to prevent a recurrence of the accident:

Root Cause: Mine management failed to ensure equipment was properly blocked against motion before repairs are performed.

Corrective Action: The operator has developed and implemented a written procedure for the proper blocking of equipment to be repaired. A minimum of two crib blocks will be placed under any raised equipment before repairs are made. If the height of the equipment requires additional blocking, the courses will be alternated to ensure stability. All blocking will be set on a firm, stable surface. The blocking will be checked for stability before any person begins work by lowering the machine in question until it is not supported by any hydraulic circuit but fully by the blocking material. The operator has trained the miners in this new procedure and results of the training were documented. The training for proper blocking was incorporated into the mine operator's approved training plan.

CONCLUSION

The accident occurred because of mine management's failure to ensure that raised equipment was blocked properly before allowing miners to work beneath the equipment. Additionally, miners were not trained in the techniques for blocking and stabilizing the raised equipment.

Approved By:

Irvin T. Hooker
District Manager, District 7

2/14/12
Date

ENFORCEMENT ACTIONS

A 103(j) Order, No. 8400828, was issued verbally to Owlco Energy LLC on October 7, 2011 and subsequently modified to a 103(k) action when MSHA inspectors arrived at the mine site.

Condition or Practice: "An accident occurred at this operation on October 7, 2011 at approximately 2:00 a.m. This order is being issued under Section 103(j) of the Federal Mine Safety and Health Act of 1977, to prevent the destruction of any evidence which would assist in investigating the cause or causes of the accident. It prohibits all activity underground until MSHA has determined that it is safe to resume normal mining operations in this area. This order was initially issued orally to the mine operator at 2:48 a.m. and has now been reduced to writing."

A 104(d)(1) Citation, No. 8400829, was issued to Owlco Energy, LLC for a violation of 30 CFR § 75.1726 (b).

Condition or Practice: "Work was being performed under the Jeffrey Model 94L mobile bridge conveyor that was raised but was not securely blocked in position. This violation is an unwarrantable failure to comply with a mandatory standard constituting more than ordinary negligence."

A 104(a) Citation, No. 8400835, was issued to Owlco Energy, LLC for a violation of 30 CFR § 48.7(c).

Condition or Practice: "The operator failed to ensure that miners received maintenance/repairman task training. The training required to be conducted by the mine operator includes a course of instruction for routine maintenance and the safety and health aspects of the task. A fatal accident occurred at this mine when miners failed to securely block a 94L bridge conveyor from motion. Mine management had knowledge that the machine was not securely blocked and instructed miners to perform maintenance work. Mine management must ensure miners are task trained to use safe work procedures. This failure by mine management contributed to the fatality that occurred on October 7, 2011."

Appendix A
List of Persons Participating in the Investigation

Mining Company Officials

Curtis Laws ..... Manager
Arnold Hoskins ..... Day Shift Foreman
Verdie Myers ..... Chief Electrician

Kentucky Office of Mine Safety and Licensing

Greg Goins ..... Deputy Chief Accident Investigator
Tim Fugate ..... Accident Investigator
Randy Campbell ..... Electrical Specialist
Boone Bentley ..... Mine Inspector

Mine Safety and Health Administration

Irvin T. Hooker ..... District Manager
Clayton E. Sparks ..... Assistant District Manager
William C. Clark ..... Supervisor
Silas Brock ..... Coal Mine Inspector/Family Liaison
Otis Carroll ..... Coal Mine Inspector (Communication & Tracking)
Harry Hall ..... Electrical Specialist
Alice Blanton ..... EFS Specialist
Christian Barber ..... Attorney, Nashville Office of the Solicitor
Benjamin Gandy ..... Mining Engineer, Approval and Certification Center
Kevin Doan ..... Mining Engineer/Accident Investigator

Appendix B
Victim Information

Accident Investigation Data - Victim Information
Event Number: 4 4 6 8 8 2 2

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. Degree of Injury:
Richard Coots	*M*	*23*	*01 Fatal*

5. Date(MM/DD/YY) and Time(24 Hr.) Of Death: *a. Date: 10/07/2011 b.Time: 4:10*

6. Date and Time Started: *a. Date: 10/06/2011 b.Time: 21:00*

7. Regular Job Title: *004 Repairman*

8. Work Activity when Injured: *039 Machinery repair*

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

10. Experience	Years	Weeks	Days
a. This Work Activity:	0	4	0
b. Regular Job Title:	0	4	0
c: This Mine:	0	4	0
d. Total Mining:	5	0	0

11. What Directly Inflicted Injury or Illness? *035 Mobile Bridge Conveyor*

12. Nature of Injury or Illness: *110 Asphyxiation*

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

14. Company of Employment: (If different from production operator) *Operator*

Independent Contractor ID: (if applicable)

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

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

17. Union Affiliation of Victim: *9999 None (No Union Affiliation)*

Victim Information:

1. Name of Injured/Ill Employee:	2. Sex	3. Victim's Age	4. Degree of Injury:

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

6. Date and Time Started:

7. Regular Job Title:

8. Work Activity when Injured:

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

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

11. What Directly Inflicted Injury or Illness?

12. Nature of Injury or Illness:

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

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

Independent Contractor ID: (if applicable)

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

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

17. Union Affiliation of Victim:

Victim Information:

1. Name of Injured/Ill Employee:	2. Sex	3. Victim's Age	4. Degree of Injury:

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

6. Date and Time Started:

7. Regular Job Title:

8. Work Activity when Injured:

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

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

11. What Directly Inflicted Injury or Illness?

12. Nature of Injury or Illness:

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

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

Independent Contractor ID: (if applicable)

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

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

17. Union Affiliation of Victim: