CAI-2012-05

UNITED STATES
DEPARTMENT OF LABOR
MINE SAFETY AND HEALTH ADMINISTRIATION

COAL MINE SAFETY AND HEALTH

REPORT OF INVESTIGATION

Surface Mine

Fatal Machinery Accident
March 17, 2012

Salt Run No. 1 Mine
Ohio American Energy Inc.
Rayland, Jefferson County Ohio
MSHA ID No. 33-04550

Accident Investigators

Thomas Tamasco, P.E.
Civil Engineer

Matthew Taylor
Civil Engineer

Jeffrey Hoblick
EFS Training Specialist

Originating Office
District 3, Mine Safety and Health Administration
604 Cheat Road Morgantown, West Virginia 26508
Bob E. Cornett, District Manager

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PHOTO OF ACCIDENT SCENE

OVERVIEW

On Saturday, March 17, 2012, victim, Walter R. McAfee, Highwall Miner Operations Coordinator, sustained fatal injuries at the launch (staging) area of the No. 1 Pit. The victim was attempting to attach a nylon lanyard to the duck bill plate of a Caterpillar 988 F Series 2, front end loader and the Addcar highwall mining machine transportation dolly. The victim was positioned between the transportation dolly and the front end loader as the front end loader was moving into place. The victim was pinched between the "duck bill" attachment of the front end loader and the frame of the transportation dolly. The victim was pronounced dead at the scene by the Jefferson County, Ohio Assistant Coroner.

GENERAL INFORMATION

The Salt Run No. 1 Mine is owned and operated Ohio American Energy Incorporated. The mine is located in Rayland, Jefferson County, Ohio. The mine is a surface operation, utilizing typical drill and shoot methods to break the overburden. The overburden is removed by a shovel, loaders, excavators, dozers, and off-road rock trucks. Once the overburden is removed, the coal seam is mined using an Addcar highwall mining system and a contract auger. The mine operates two shifts per day, 7 days per week. The mine personnel at this site consist of 6 hourly and 4 management employees. The primary coal bed being mined is the #8 Pittsburgh coal seam, which has an average seam thickness of 60 inches. The daily average production rate is 2,312 tons.

The most recent safety and health inspection (E01) was completed by MSHA on October 24, 2011. The Non-Fatal Days Lost (NFDL) injury incidence rate at the mine for calendar year 2011 was 2.50, compared to the 2011 national NFDL of 1.08 for surface coal mines.

The principal officials of the mine at the time of the accident were:
Ronald Jenkins...……Superintendent
John Marko....…….Dayshift Production Foreman

DESCRIPTION OF ACCIDENT

On Saturday, March 17, 2012, McAfee reported to work around 5:30 A.M., on day shift. John Marko, Dayshift Production Foreman, discussed the work assignments for the men moving the highwall mining machine from the pit area to the staging/loading area. The employees traveled to the pit area to start preparations for the move. Weather the day of the accident was clear and sunny with an occasional cloud.

The highwall mining machine move consisted of placing the highwall mining machine system onto a transportation dolly, which allowed the system to be towed by the Cline truck. The Cline truck, as described by the mine operator, is a tractor trailer type truck that is able to connect into the front of the highwall mining machine system and tow the system from place to place. Once the Cline truck is attached to the highwall mining machine, pneumatic lines are then connected to the transportation dolly in order to control the braking system.

The employees on the prior shift had completed the process of attaching the transportation dolly system and the Cline truck. As explained by the mine operator, the plan was to verify that all components were functional and proceed with moving the highwall mining machine system.

At approximately 6:30 A.M., moving of the highwall mining machine commenced. In the process of moving the highwall mining machine from the pit area, the dolly transportation system lost pneumatic brake pressure. The move was then stopped while the pneumatic braking system was repaired by the day shift mechanics. After repairing the braking system, the move continued towards the staging/loading area.

At a separate location, Dave Merritt, Caterpillar (Cat) 988F Loader Operator, had conducted the pre-operational inspection of his equipment and had completed some auxiliary work. He then traveled to the area where the move was taking place and spoke with McAfee. Merritt stated that McAfee was upset because the 2nd (midnight) shift mechanics were supposed to fix the pneumatic dolly system on the prior shift.

As the highwall mining machine move traveled forward, at approximately 7:30 A.M., public road "Scott Featner" was closed to allow the move to cross. This public road had to be closed because it separated the pit area from the staging/loading area.

Upon arrival at the staging/loading area, the highwall mining machine was set into place, cribs were placed beneath the four hydraulic driven jacks, and the generator power cables were attached. The highwall mining machine was then pressurized and lifted upward in order to gain clearance for the Cline truck and the dolly transportation system. When the Cline truck was removed, pneumatic pressure was disconnected from the dolly system, which allowed the brakes to set and prevent tire movement. Merritt moved the Cat front end loader to the generator side of the highwall mining machine to push the dolly system from beneath the highwall mining machine.

After the dolly was pushed as far as possible, Merritt moved the front end loader around the rear of the highwall mining machine to pull the dolly from the opposite side. Merritt made several unsuccessful attempts to pull the dolly system with the duck bill plate on the loader. McAfee traveled to his pickup truck to retrieve a nylon strap.

The 6-foot nylon strap was placed in a choker fashion around the H-beam of the dolly system. While holding the nylon strap in front of the dolly system, McAfee motioned for Merritt to pull the front end loader forward. The front end loader was equipped with a mobile radio; however, it was not being utilized during this procedure. While pulling forward, Merritt temporarily lost sight of McAfee and saw Derek Wymer, Laborer, waving his hands. Merritt then backed the front end loader away from the dolly system. McAfee was impacted by the front end loader duck bill and was pinched between the pan and the dolly system. The time of the accident was 9:45 A.M.

Marko contacted 911 at 9:48 A.M. Employees Jared Kohler, General Laborer, and Christopher Britt, Electrician, started cardiopulmonary resuscitation (CPR). Marko then directed Michael Grubb, Highwall Miner Operator, to travel to the mine entrance and help escort emergency (EMS) personnel to the accident. At 10:02 A.M., Jefferson County EMS arrived at the accident scene to provide aid. John McGuire, Assistant Coroner, pronounced the victim dead at 10:02 A.M.

INVESTIGATION OF ACCIDENT

MSHA was notified by the National Call Center on Saturday, March 17, 2012, at approximately 9:58 A.M., that a life threatening accident had occurred at the Salt Run No. 1 Mine. Joseph Facello, Saint Clairsville Field Office Supervisor, issued a 103(j) order verbally to ensure the safety and health of miners until an investigation of the accident could be completed. Facello was the first to arrive and secured the accident scene. Thomas Tamasco, Civil Engineer, and Matthew Taylor, Civil Engineer, were assigned by Michael Evanto, Impoundment Supervisor, to investigate the accident. Tamasco and Taylor arrived on site and began the investigation. Because of the time for accident reenactment and initial investigation activity, as well as concern for their deceased co-worker, the mine employees declined interviews on March 17. The interviews were rescheduled for March 19, 2012, at which time the employees participated.

The investigation was conducted in conjunction with the Ohio Division of Mineral Resources Management (ODMRM), with assistance from the mine operator and employees. ODMRM officials were present at the site and began their investigation on March 17, 2012. Digital photographs, relevant measurements, and a sketch of the scene were developed as part of the investigation. The investigation also included a review of training records and examination records.

Interviews were conducted on March 19th and 20th, 2012, with persons who may have had knowledge of the accident. The interviews revealed that there were witnesses to the accident. Those persons who were interviewed, or were present during the investigation, are listed in Appendix C of this report.

A physical examination of the accident site and function tests were performed on the Caterpillar 988F front end loader and transportation dolly. The examination and tests were completed on March 20, 2012.

DISCUSSION

The accident occurred at a launch/staging area where the highwall mining machine had just been moved from a pit to be disassembled. The launch/staging area is adjacent to an asphalt access road and measured approximately 200 feet in length, by approximately 120 feet wide. The site was mostly covered in gravel with some dry, uneven rutted areas. The area was equipped with a generator, service vehicles, fuel storage, and equipment in close proximity. Two field trailers were located adjacent to the staging/loading area.

When the highwall mining machine reaches the launch/staging area, the job converts from transporting the machine, to one of maintenance and preparation for disassembly. Power to the highwall mining machine is established through a generator. Next, the highwall mining machine is raised to allow removal of the transportation dolly. As soon as the transportation dolly is removed from beneath the highwall mining machine, it is lowered, so maintenance and disassembly may continue.

Recently, the mining operation has been conducting an average of one highwall mining machine move per month. The miners working at this mine are familiar with this process and procedure. McAfee, as the Highwall Miner Operations Coordinator, was the person with the most experience associated with the highwall mining machine at this operation. He was directly supervising Merritt, who had positioned the end loader on one side of the highwall mining machine to push the transportation dolly as far as the attachment allowed, then traveled around the other side to pull the dolly out with end loader attachment. When several unsuccessful attempts were made to pull the dolly system, McAfee traveled to his pickup truck to retrieve a 6-foot nylon strap. McAfee attached the strap to the dolly and remained in front of the dolly, while holding the strap in hand. McAfee then directed Merritt to pull forward. As he was pulling forward, Merritt lost sight of McAfee. McAfee was killed as a result of being pinned between the duck bill of the Cat 988F loader and the dolly system.

Wymer was standing 3 feet to the right of McAfee. Marko stood 24 feet to the left of McAfee. Also, behind and to the right of the end loader, Britt was watching from his service truck, which was parked along the access road. The end loader was seen traveling at a slow rate of speed and there was a slight elevation change of approximately 1-foot, between the access road level and launch/staging area.

While McAfee was standing somewhat off to the right, the vision of the end loader operator was obscured partially by the right side front hydraulic jack.

GENERAL MACHINE INFORMATION

The 1999 Addcar highwall mining machine (Serial No. LV23015/23015) is equipped with a transportation dolly system. The dolly system measures approximately 16.5 feet in length by approximately 19.5 feet in width weighing between 37,000 and 38,000 pounds. Components of the dolly include: frame, suspension, pneumatic braking system, and 20 tires. This system is designed to free wheel (roll) when air pressure is applied and to lock-up when air pressure is disengaged.

The 1998 Caterpillar model 988F, series II end loader had a Caterpillar model 3408 diesel engine, rated at approximately 430 horsepower and a Planetary Power Shift transmission, having four forward speeds and three in reverse. The service meter reading was 32,125 hours. This machine, designated as Company Number 616, is equipped with an enclosed cab featuring Roll Over Protective Structure (ROPS). The operating weight of the end loader is estimated to be 100,702 pounds.

The Caterpillar 988F end loader, in post-accident position, had been placed to the right at the end of the launch/staging area. After the accident, the 988F end loader had been moved to allow for the arrival and access to the victim by the ambulance and EMT. During this action, the lights had been left on accidentally, causing the battery to discharge.

After a general inspection of the machine, the investigation team comprised of both MSHA and ODMRM personnel determined that the machine could be started. The machine was subsequently started and operated to conduct various system operational tests. Tests and observations were conducted on the braking system, turning, moving forward and in reverse at different speeds, and operation of the hydraulics for the front attachment. In summary, no defects were found with the 988F front end loader during the field function tests.

The Addcar highwall mining machine transportation dolly in the post-accident position was still located near the highwall mining machine in its position at the time of the accident. The dolly was then picked up by crane and placed to the right of the highwall mining machine for testing.

After a general inspection of the dolly, the investigation team, comprised of MSHA, company, and ODMRM personnel, determined that the machine could be tested.

The 988F front end loader operator demonstrated, by pushing on the transportation dolly, that it was in a locked condition (would not roll). Next, a service truck was used to furnish air to the dolly's pneumatic system, which allowed the dolly to "free wheel." Lastly, a relief valve on the dolly was opened, which released the air pressure. Again, the 988F front end loader demonstrated, by pushing on the transportation dolly that the system was in a locked condition once again.

In summary, no defects were found with the Addcar highwall mining machine transportation dolly during the field function tests.

TRAINING AND EXPERIENCE

McAfee had 4 years and 21 weeks of experience as the Highwall Miner Operations Coordinator. He had 19 ½ years total mining experience.

Merritt had 4 years experience as an equipment operator at this mine, including the Cat 988F front end loader.

On March 21, 2012, Jeffrey Hoblick, Specialist with MSHA Educational Field Services (EFS), traveled to the mine office, located in Brilliant, Ohio, to review and examine the mine training plan and training records of the victim and front end loader operator. Hoblick met with the safety officer for the mine and was provided with the training documentation.

An examination of the training records revealed that McAfee received the required training, in accordance with 30 CFR, Part 48. According to the mine operator records, McAfee had received surface coal mining annual refresher on April 24, 2010; April 16, 2011; and February 25, 2012.

Merritt also received required training in accordance with 30 CFR, Part 48. According to operator records, Merritt received surface coal mining annual refresher on February 23, 2010; January 15, 2011; and January 11, 2012. Merritt also received task training on the Cat 988F front end loader on March 1, 2011.

However, the investigation determined that the mine employees had ineffective task training. The employees were not trained properly on hazard recognition and awareness or best practices for the moving of mobile equipment or machinery, such as red zone hazards, visibility, and pinch point areas.

ROOT CAUSE ANALYSIS

An analysis for root causes of the accident was conducted. Root causes were identified that could have mitigated the severity of the accident or prevented loss of life. Listed below are root causes identified during the analysis and their corresponding corrective actions to prevent a recurrence of this type of accident.

1. *Root Cause*: Mine management failed to assure that the employees followed or incorporated safe work practices that would have prevented miners from being in the red zone area during equipment operation.

   Corrective Action: Mine management has trained its employees to ensure that all employees maintain awareness on the operation and movement of mobile equipment and pinch point areas. A copy of the training records was provided to MSHA.

2. *Root Cause:* Mine management had ineffective task training when removing and installing the highwall miner transportation dolly.

   Corrective Action: Mine management has provided additional task training to employees regarding the hazards of working in the vicinity where the transportation dolly is installed and removed. A copy of the training records was provided to MSHA.

3. *Root Cause:* Mine management failed to assure that employees utilized the available communication devices while working around mobile equipment.

   Corrective Action: Mine management prepared a written program and initiated the program to ensure that employees are better trained to recognize persons in hazardous locations and ensure visibility when operating mobile equipment. All employees were trained in the program requirements.

4. *Root Cause:* Mine management failed to assure that employees utilize the proper equipment when installing or removing the transportation dolly.

   Corrective Action: Mine management provided training to employees concerning the proper use of equipment and specific tools when installing or removing the transportation dolly. A record of the training was provided to MSHA.

CONCLUSION

The accident occurred because mine management failed to assure that employees followed or incorporated safe work practices that would prevent miners from being in a pinch point area during equipment operation. Additionally, mine management failed to assure that employees utilized available communication devices while working around mobile equipment and that mine employees utilize the proper equipment when installing or removing the transportation dolly.

Bob E. Cornett
District Manager

9-17-2012
Date

ENFORCEMENT ACTIONS

1. Order No. 8032499 was issued to Ohio American Energy Incorporated on March 17, 2012, under the provisions of Section 103(j) of the Mine Act:

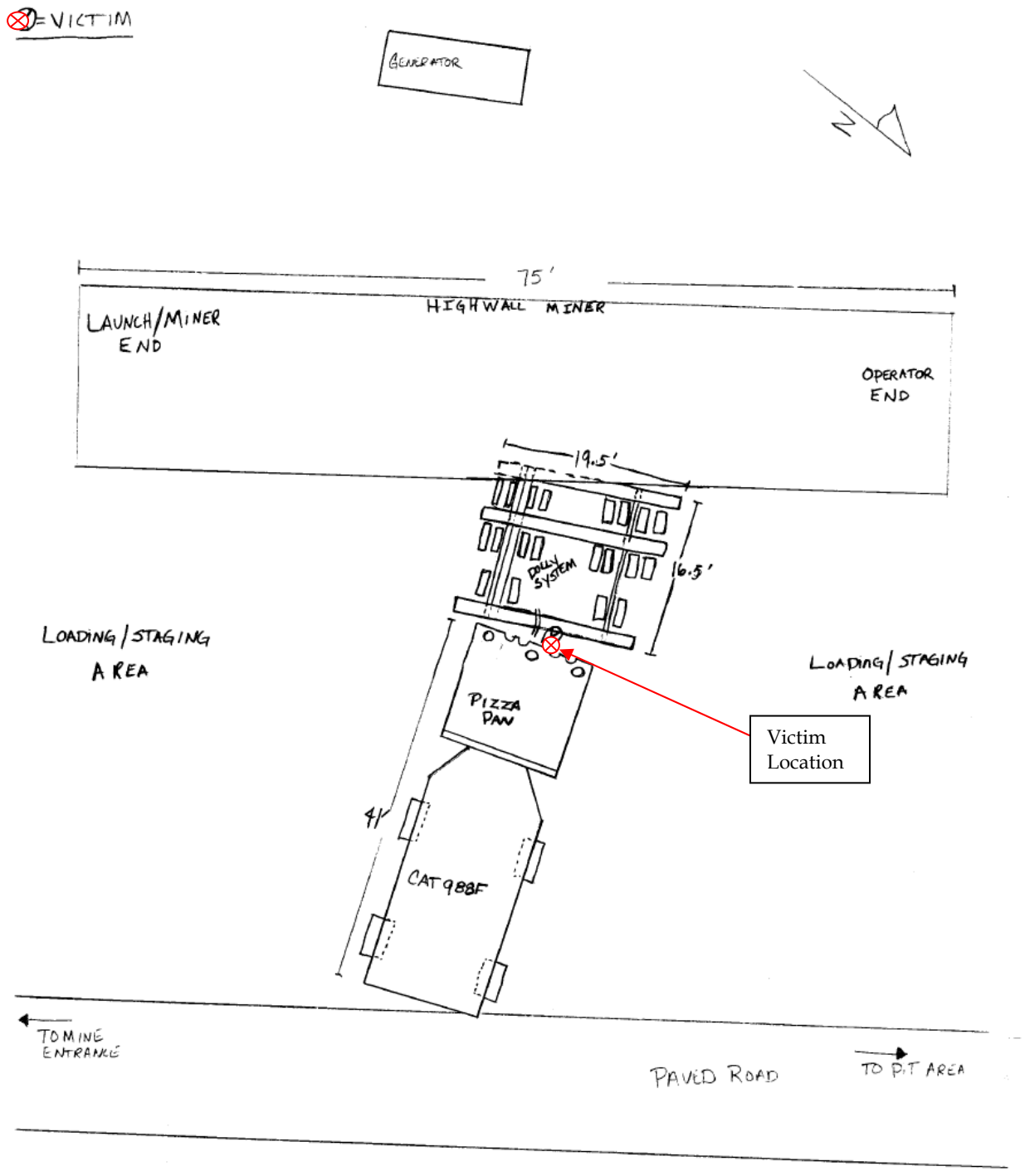
A fatal accident occurred at this operation on March 17, 2012, at approximately 9:45 A.M. As rescue and recovery work is necessary, this order is being issued, to assure the safety of all persons at this operation. This order is also being issued to prevent the destruction of any evidence which would assist in the investigating the cause or causes of the accident. It prohibits all activity at the launch/staging area for Pit #1 until MSHA has determined that it is safe to resume normal mining operations in this area. This order applies to all persons engaged in the rescue and recovery operation and any other person on-site. This order was initially issued orally to the mine operator at 10:23 A.M., and now has been reduced to writing. The initial order is modified to reflect that MSHA is now proceeding under the authority of Section 103(k) of the Federal Mine Safety and Health Act of 1977.

2. Citation No. 7235196 was issued to Ohio American Energy Incorporated for a violation of 30 CFR, § 77.1607(g):

Equipment operators shall be certain, by signal or other means, that all persons are clear before starting or moving equipment. Located at the highwall miner launch/staging area, for Pit #1, the equipment operator failed to be certain that all persons were clear prior to moving the Cat 988F.

This condition occurred while management was directing the equipment operator into position, resulting in a fatal injury, which occurred on 03-17-2012.

APPENDIX A


= VICTIM
GENERATOR
N
75'
HIGHWALL MINER
LAUNCH/MINER END
OPERATOR END
19.5'
16.5'
DRILL SYSTEM
LOADING/STAGING AREA
LOADING/STAGING AREA
PIZZA PAN
Victim Location
CAT 988F
TO MINE ENTRANCE
PAVED ROAD
TO PIT AREA

APPENDIX B

Accident Investigation Data - Victim Information

Event Number: 6 2 6 4 4 1 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. Last Four Digits of SSN:	5. Degree of Injury:
Walter R. McAfee	*M*	*55*	*5073*	*01 Fatal*

6. Date(MM/DD/YY) and Time(24 Hr.) Of Death:	7. Date and Time Started:
a. Date: 03/17/2012 b.Time: 9:45	*a. Date: 03/17/2012 b.Time: 6:00*

8. Regular Job Title:	9. Work Activity when Injured:	10. Was this work activity part of regular job?
149 Highwall Miner Operations Coordinator	*087 Dissassembly of Highwall Miner*	Yes X No

11. Experience	Years	Weeks	Days		Years	Weeks	Days		Years	Weeks	Days		Years	Weeks	Days
a. This Work Activity:	*0*	*28*	*5*	b. Regular Job Title:	*4*	*21*	*0*	c: This Mine:	*6*	*28*	*4*	d. Total Mining:	*19*	*24*	*0*

12. What Directly Inflicted Injury or Illness?	13. Nature of Injury or Illness:
076 Crushed between duck bill and dolly	*170 Crushed internal organs*

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

15. Company of Employment:(If different from production operator)
Operator
Independent Contractor ID: (if applicable)

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

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

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

APPENDIX C

List of persons furnishing information and/or present during the investigation

Ohio American Energy Incorporated

Stan Piasecki	General Manager
Allen McGilton	Assistant Corporate Safety Director
Auvil Parsons	Safety Director
Ron Van Horne	Corporate Safety Manager of Injury Prevention/Compliance
Jason Witt	Assistant General Counsel

Ohio Department of Natural Resources Division of Mineral Resources Management

William Darios	Accident Investigator
Charles Hutton	Accident Investigator

Mine Safety and Health Administration

Bob E. Cornett	District Manager
Greg Fetty	Staff Assistant/Accident Coordinator
Joe Facello	CMS&H Supervisor
Thomas Tamasco	CMS&H Inspector, P.E., Civil Engineer, Accident Investigator
Matthew Taylor	CMS&H Inspector, Civil Engineer, Accident Investigator
Jeffrey Hoblick	EFS Specialist

List of Persons Interviewed

David Merritt	Heavy Equipment Operator
John Marko	Dayshift Production Foreman
Derek Wymer	General Laborer
Ronald Helms	Director of Maintenance
Christopher Britt	Repairman/Electrician
Michael Grubb	Operator/Trainer for the Highwall Miner
Ronald Jenkins	Superintendent