

UNITED STATES
DEPARTMENT OF LABOR
MINE SAFETY AND HEALTH ADMINISTRATION

COAL MINE SAFETY AND HEALTH

REPORT OF INVESTIGATION

Surface Coal Mine

Fatal Powered Haulage Accident
December 6, 2005

Wadesville – P33
Reading Anthracite Company

Wadesville, Schuylkill County, Pennsylvania
ID No. 36-01977

Accident Investigators

George McIntyre
Coal Mine Safety and Health Inspector/Accident Investigator

Thomas M. Leshko
Coal Mine Safety and Health Inspector/Accident Investigator

Eugene D. Hennen, P.E.
Mechanical Engineer

James Kelly
Civil Engineer

Gerald Pifer
Civil Engineer

Originating Office
Mine Safety and Health Administration
District 1
7 North Wilkes-Barre Blvd.
Wilkes-Barre Pennsylvania, 18702
John A. Kuzar, District Manager

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PHOTOGRAPH OF ACCIDENT SITE



OVERVIEW

At approximately 2:00 P.M. on Tuesday, December 6, 2005, a 64-year old truck driver with 35 years of mining experience was fatally injured at Reading Anthracite Company's Wadesville P-33 Pit. Robert Chattin (victim) lost control of the Euclid R-85 haul-truck while descending a grade into the mine's lower pit. The victim failed to negotiate a hard right turn near the bottom of the haul-road. The truck traveled between a deactivated substation and a wooden utility pole. The truck traveled approximately 330 feet, overturned onto the driver's side, slid 20 feet through an earthen berm, and came to rest on a sloped embankment. The victim was trapped in the truck's cab between the seat and hand-railing. The victim was not wearing his seat belt.

The accident occurred as a result of the Euclid R-85 haul truck not being maintained in a safe operating condition. Also, a seat belt was not being used and controls were not in place to allow a runaway truck to be safely stopped.

GENERAL INFORMATION

The Wadesville P-33 surface strip mine is owned and operated by Reading Anthracite Company. The mine is located approximately 3 miles northwest of Pottsville, New Castle Township, Schuylkill County, Pennsylvania. The United Mine Workers of America represents the 28 miners typically employed at the mine.

The mine has been active since October 14, 1961 and is 300 to 400 feet deep. Approximately 1,130 tons of anthracite coal is mined during a single production shift per day. Overburden is removed using a dragline equipped with a 35-yard bucket, an excavator, high wall drills, and haul trucks. Coal is transported from the pit by tri-axle trucks to a preparation plant, located approximately 20 miles from the pit.

The principal officers for Reading Anthracite Company are:

John W. Rich, Jr.....	President
Brian R. Rich	Vice President
Frank Derrick	General Manager
Stanley Wapinski	Mine Superintendent
Robert Shellhammer	Maintenance Superintendent

Prior to the accident, the Mine Safety and Health Administration (MSHA) completed the last regular safety and health inspection of the mine on September 27, 2005. During the first three quarters of 2005, the Non-Fatal Days Lost (NFDL) injury incidence rate for the mine was 23.64, compared to the National NFDL rate of 4.16 for mines of similar type and classification.

DESCRIPTION OF ACCIDENT

At 7:00 am, on December 6, 2005, Robert Chattin, truck driver and victim, was assigned to operate a front-end loader to transport stemming material, (fine breaker refuse rock), to the blasting area of the Wadesville P-33 Pit. Chattin drove the front-end loader into the pit where he found that the stemming stockpile was empty. He then drove the front-end loader to the blasting area and told the blasting foreman, Josh Derrick, that there was no stemming material at the stockpile area. Derrick asked Chattin to drive a truck hauling stemming material from the preparation plant to the blasting area. Chattin parked the front-end loader at the blasting area and traveled with Derrick to check the conditions of the haul roads. A snowfall of approximately 2.5 inches occurred two days prior to the accident. The haul road was found in a safe condition.

Derrick contacted the maintenance superintendent, Robert Shellhammer, and requested the mechanics to start a haul truck to transport stemming material. Mechanics Ed Mitchell and Jim Freeman started a Euclid R-85 haul truck, Company No. 671, at approximately 7:30 am. This truck was used primarily to haul stemming material but had not been operated for four to six weeks. Both mechanics had a brief conversation with Chattin as he conducted a pre-operational inspection of the truck, during which time he found no deficiencies and no fluids were added to the truck.

Chattin left the truck parking area and traveled toward the stemming stockpile area, a distance of approximately 2.5 miles. After traveling approximately ½ mile, the truck's engine shut off. Two mechanics traveling on the same haul road observed the disabled truck, stopped to provide assistance and determined there was no fuel in the truck. The blasting foreman and a fuel truck arrived, fuel filters were changed, and the fuel tank filled. Chattin helped with the repairs. Chattin then continued driving the truck to the stemming stockpile. He delivered his second load of stemming to the blasting area at approximately 10:30 am. Derrick told him to continue hauling stemming material for the rest of the shift.

A blast was fired at about noon. Derrick then observed the loaded Euclid haul truck parked near a deactivated substation, where Chattin was signaling for Derrick to come to his location. Chattin asked Derrick where he wanted the load of stemming delivered and Derrick told him to dump the load near the Demag 185 hydraulic excavator. After delivering this load of stemming material, Chattin returned to the stemming stockpile. At approximately 1:30 pm, the Euclid R-85 haul truck was loaded with the fifth load of stemming material. Francis Hale, front-end loader operator, told Chattin that this would be the last load of the day because his quitting time was 2:00 pm. Hale did not see any oil leaks or puddles of oil when the truck left the loading area.

Myles Miller, member of the blasting crew, was returning left-over blasting materials to the magazine when he saw Chattin crossing Dark Water highway at approximately 1:40 pm. Approximately five minutes later, William Zak, Caterpillar haul truck driver, was waiting to get loaded with overburden in the southwest corner of the Wadesville Pit when he saw the Euclid R-85 haul truck on the upper portion of the haul road descending into the pit at a slow rate of speed.

At approximately 1:55 pm, John Pennypacker, Caterpillar haul truck driver, arrived at the rock refuse dump and saw the Euclid R-85 haul truck on its side. Pennypacker was concerned the driver may be hurt and yelled to the bulldozer operator at the refuse rock dump, John Wagner, to summon the foreman. Wagner radioed Shellhammer and told him there is a truck over the bank by the substation. Wagner proceeded to the accident site.

Shellhammer traveled to the location where the previous load of stemming was delivered. Upon arrival he did not see the truck. Wagner radioed Shellhammer and told him the accident was at the old truck parking area. Upon arrival at the accident scene Shellhammer ran up the bank to the truck and saw Chattin inside the operator's cab. The truck's engine was still running and the rear tires were spinning. Shellhammer yelled to Chattin and knocked on the windshield. There was no response. The truck started sliding down the embankment and Shellhammer moved to a safe location. Mitchell and Freeman arrived and were told by Shellhammer that the truck's engine was still running.

At 2:05 pm, Shellhammer called the Schuylkill County Communication Center (911). The truck's engine stopped. Shellhammer and Mitchell traveled up the bank to the operator's cab. They tried but could not gain entry into the cab. They received no response from their shouts to the victim and could see that his face was blue. They started gathering material to stabilize the truck and to gain entry into the cab.

At approximately 2:30 pm, fire and rescue crews arrived. Shellhammer and other mine personnel returned with equipment to stabilize the truck. Fire and rescue personnel removed the windshield and paramedics checked the victim. Finding no vital signs, the paramedics summoned Deputy Coroner John Hurley who pronounced the victim dead at 3:20 pm. Fire and rescue crews removed the victim from the truck at 4:10 pm.

INVESTIGATION OF ACCIDENT

The MSHA Shamokin Field Office was notified of the accident at 2:15 pm, on Tuesday, December 6, 2005. An accident investigation team was assembled and dispatched to the mine. A 103(k) order was issued to ensure the safety of all persons at the mine. Photographs and initial interviews were conducted at the accident scene. Investigation interviews were conducted in co-operation with the Pennsylvania Department of Environmental Protection and the United Mine Workers of America. The mine operator and mine employees also assisted in the accident investigation. (Refer to Appendix A for a list of persons that participated in the investigation).

DISCUSSION

Accident Scene

The Wadesville pit was accessed via an unpaved haul road. This haul road was approximately 4000 feet long and ranged in width from 50 to 75 feet. Maximum/minimum grades for this haul road were 17 and 1 percent respectively. The average grade for this haul road is 10.5 percent. The haul road surface was reasonably smooth and clear of snow. Although portions of the haul road were frozen, they were not icy. Left-side tire marks were visible on a rock refuse bank approximately 600 feet from the accident scene. This area of the haul road had a variable grade of 9.6 to 14 percent. After exiting the haul road the victim steered the Euclid R-85 haul truck sharply to the right. The truck traveled between a deactivated substation and a wooden utility pole, hitting a guy wire and snapping off the top of the pole. The truck overturned on the driver's side as it traveled through the earthen berm. The truck came to rest approximately 20 feet down a 60-foot sloped embankment. The truck traveled a distance of approximately 330 feet after it left the haul road to where it stopped on the slope. Stemming material and items from the victim's lunch box were scattered on the ground near the substation. The majority of the stemming material was on the sloped embankment.

The victim found in the cab, positioned between the seat and the hand railing with his back against the handrail. The victim was not wearing the seat belt. When checked, the seat belt fastening mechanism worked properly. The driver's cab door was open and bent toward the dump body. The driver's side walkway and handrail were pushed in toward the cab, striking the victim. The transmission shift lever was in sixth gear and the retarder lever was in the on position.

Equipment Description

The truck involved in the accident was a 1975 Euclid R-85 haul truck. This truck was equipped with a 12-cylinder V12-1710 Cummins engine capable of producing 800 horsepower at 1710 rpm. The transmission was an Allison 6-speed automatic transmission. The truck was owned by Reading Anthracite Company which was also responsible for the maintenance of the truck.

The net vehicle weight (light weight) of the truck was 117,100 pounds. The estimated weight of the load at the time of the accident was 170,000 pounds (85 tons). The gross vehicle weight of the truck was 287,100 pounds.

Brake System

The truck was equipped with drum brakes on all four wheels, none of which were properly maintained. The brake system was air over hydraulic. The check valve in the air system to prevent air going from the dry air tank to the wet air tank was defective. The brake shoe lining, brake drum, and all related brake parts of the left front wheel were contaminated with brake fluid and grease. The brake fluid and grease compromised the

braking ability of the left front brake shoe lining and the brake drum. The main hydraulic line fitting on the right front brake was completely blocked with a piece of rubber from the inner lining of the brake hose. This blockage rendered the right front brake inoperable. Measurements on both rear brake drums were beyond the wear limits recommended by the manufacturer's specifications. The maximum allowable wear of the brake drums was 30.250 inches. Measurements taken on the rear brake drums ranged from 30.403 to 30.525 inches.

This truck was equipped with three brake converters, one for the front brakes and one for each of the rear brakes. The brake converter pressures were within manufacturer's specifications. Tests for the rear brake converters indicated the ratios were sufficient for this truck. The test of the front brake converter indicated a lower ratio. These lower ratios reduced the hydraulic pressure to the wheel cylinders, causing a reduction in the available brake force. The engine mounted air compressor functioned properly.

The park brake was a shoe drum brake mounted on the output shaft of the transmission. The brake was operated by a spring applied-air released actuator and was controlled by a push-pull air valve mounted on the dash. Tests performed on the park brake indicate that it was working properly.

Transmission

The truck was equipped with an Allison Series DP-8961 automatic transmission. The transmission had six speeds forward and one reverse. The transmission gear selector was controlled by an Allison electric shift control inside the operator's cab. The retarder was activated by a hand lever located on the right side of the steering column inside the cab. The transmission was rebuilt on July 16, 1996.

When the truck engine was started, the torque converter pressure was 50 psi, which was well below the normal operating pressure. The 1 ¼ inch diameter hydraulic hose from the transmission filter housing to the top of the transmission was leaking through an abrasion hole where it had rubbed against another hose. Approximately, 4 ¾ gallons of transmission oil was measured remaining in the 28-gallon reservoir. The transmission was filled to capacity with oil, the engine was started and the converter pressure gauge registered 200 psi. The retarder lever was activated and the retarder cylinder worked properly.

A transmission converter test was performed on December 12, 2005. The converter pressure was 210 psi cold, with the engine at idle and the transmission full of oil. A similar test was conducted on January 11, 2006 to determine if the transmission would engage when the clutch pressure was at 50 psi, which was the pressure when the truck engine was started after the accident.

With the engine running at idle (650 rpm) and the transmission draining, the pressure readings/results were as follows:

- Transmission full, 28 gallons, normal pressure observed 150 psi-250 psi.
- 9 gallons drained, the pressure dropped to 215 psi.
- 10 gallons drained, the pressure dropped to 213 psi.
- 12 gallons drained, the pressure dropped to 180 psi.
- 14 gallons drained, the pressure dropped to 60 psi and then rose back to 155 psi.
- 16 gallons drained, the pressure dropped varying between 30 and 50 psi.
- 18 gallons drained resulted in extremely low and erratic psi readings.

Based on this test and the amount of oil found in the transmission, the truck's transmission would not have been engaged at the time of the accident. Most of the oil drained from the transmission through the damage hose while the truck was operating on the day of the accident, which rendered the transmission and retarder inoperable.

The Euclid R-85 haul truck specifications showed that it should be capable of operating on a grade of 10.5 percent. The retarder chart indicated the fully loaded truck could operate at 12 mph on a 17% grade with the transmission in second gear. The retarder control was checked with the truck engine running and the air system fully charged. Movement of the control and linkage indicates the control for the retarder was working properly.

The retarder "on" indicator light, located on the dashboard of the truck, did not work. The brake pressure differential indicator light, located on the dashboard did not work. The brake pressure differential switch was not connected to the brake warning light. The park brake warning light did not work because the wire from the pressure switch to the warning light was not connected.

Experience and Training

The victim worked at the mine site as a truck driver for 35 years. The victim was task trained on the proper operating procedures on steep grades. The victim's experience would have made him knowledgeable of the controls inside the cab. An examination of the victim's training records found no violations of 30 CFR, Part 48, that contributed to the accident.

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, causal factors were identified that, if eliminated, would have either prevented the accident or mitigated its consequences. Listed below are causal factors identified during the analysis and their corresponding corrective actions implemented to prevent a recurrence of the accident:

1. *Causal Factor:* The operator did not have a comprehensive maintenance program in place to ensure that equipment was properly maintained.

Corrective Action: The operator should establish and implement a comprehensive haulage equipment maintenance program, in strict compliance with the manufacturer's recommended maintenance procedures, to ensure that all mechanical/electrical components are routinely checked and maintained.

2. *Causal Factor:* Maintenance personnel were not adequately task trained to recognize and correct mechanical/electrical deficiencies.

Corrective Action: The operator should have a procedure to insure maintenance personnel and supervision are thoroughly trained to recognize and correct mechanical/electrical deficiencies as per manufacturer's recommendations.

3. *Causal Factor:* A proper pre-operational inspection designed to recognize potential mechanical/electrical hazards for haulage equipment was not conducted.

Corrective Action: The operator should implement a program to conduct a pre-operational inspection on mobile equipment as per manufacturer's recommendations. The program should identify who is responsible to conduct the inspection and who is responsible to insure the inspection was done properly before the equipment is put into operation.

4. *Causal Factor:* Controls were not in place to allow a runaway truck to be safely stopped.

Corrective Action: The operator should develop a program to require mine haul roads, grades and turns are designed within the manufacturer's recommendations to insure the mine's equipment is capable of safely traveling on the haul roads. Runaway truck ramps should be at critical locations along the haul roads. Signs should be posted directing equipment into the escape ramps. Mine personnel should be trained in the location, proper procedures and use of these ramps.

5. *Causal Factor:* The victim was not wearing a seat belt at the time of the accident. The operator did not have procedures in place for ensuring the use of seat belts.

Corrective Action: The operator should take the necessary steps to implement and enforce a proactive seat belt program.

CONCLUSION

The accident occurred as a result of the Euclid R-85 haul truck not being maintained in a safe operating condition. The Hydraulic hoses were not examined during scheduled maintenance, and an appropriate pre-operational inspection was not conducted on the truck. The braking capacity was compromised due to defective brake components on the front and rear brakes of the truck's service braking system. These defects resulted in the loss of control of the truck while descending into the Wadesville pit. Also, a seat belt was not being used and controls were not in place to allow a runaway truck to be safely stopped. The root causes of the accident represent lacking or ineffective systems and procedures for maintenance, preoperational checks, training, and supervision.

Approved By:

John A. Kuzar
District Manager

Date

ENFORCEMENT ACTIONS

1. A 103 (k) Order, Number 7007859, was issued to Reading Anthracite Company on December 6, 2005, which stated the following: This mine has experienced a fatal truck haulage accident in the Wadesville P-33 pit involving a Euclid R-85 haul truck Company No 671. This order is issued to insure the safety of any person in the coal mine until an investigation and examination of the truck and the areas of the north east sub-station and old truck parking area. Only those persons selected from company officials, miners representative and other persons who are deemed by MSHA to have information relevant to the investigation may enter or remain in the affected area.
2. A 104(a) Citation, Number 7008313, was issued to Reading Anthracite Company, for a violation of 30 CFR 77.1606 (a), which stated the following: The operator did not perform an adequate pre-operational inspection on the 1975 Euclid haul truck serial #65607 before it was placed in service on 12/6/05. There were no records indicating that deficiencies were found with the truck. Upon inspection of this truck during the accident investigation, the following defects were found: (1) The braking system for this truck was not properly maintained. (2) Wires were disconnected for the park brake indicator light, (located inside the cab), to show when the park brake is applied. (3) The wires were disconnected for the light inside the operators cab to show that the transmission retarder was working. There is no listing on the operators pre-operational check list to test steering or brakes. The last pre-operational inspection was done on 06/10/2005, and the only deficiency reported was an exhaust leak near the left turbo. The mine operator placed this truck back in service on 12/06/2005 without an adequate pre-operational inspection being conducted. Through interviews with mine supervision, no supervisors observed or conducted a complete pre-operational check. Through interviews with mine management it was revealed that no program was in place to assure that pre-operational checks were conducted. All mobile equipment operators are to be trained in making appropriate pre-operational inspections. These are contributing factors to the fatal accident that occurred on December 6, 2005.
3. A 104(d)(1) Citation, Number 7008315, was issued to Reading Anthracite Company for a violation of 30 CFR 77.1605(b), which stated the following: The Euclid R-85 haul truck serial #65607, was not equipped with adequate brakes: (1) The brake on the right front wheel was nonfunctional, due to a piece of rubber from the inside of the hose which blocked a fitting that stopped the flow of brake fluid to the wheel. (2) The left front brake was contaminated with grease and oil. (3) The check valve in the air system to prevent air going from the dry air tank to the wet air tank was defective; therefore air pressure was ineffective to the rear braking of the truck. (4) The inside diameter of the both rear brake drums exceeded the manufacturers maximum recommendations, (inside diameter) by ¼-inch. The current maintenance inspection report, used by maintenance supervision to inform the mechanics of what repairs and inspections need to be done does not include scheduled brake testing/maintenance as required by the truck manufacturer. These defects diminished the braking capacity of

the haul truck and were contributing factors to the fatal accident on December 6, 2005.

4. A 104(d)(1) Order, Number 7008316, was issued to Reading Anthracite Company for a violation of 30 CFR 77.404(a), which stated the following: The Euclid R-85 haul truck serial #65607, was not maintained in a safe operating condition at the Wadesville P-33 pit. (1) The brake system on the truck was not maintained in a safe operating condition due to a piece of rubber blocking a fitting that supplied brake fluid to the right front wheel. (2) The left front brake was contaminated with grease and oil. (3) The inside diameter of both rear drums exceeded the manufacturers maximum recommendations. (4) Hydraulic hoses were not examined during scheduled maintenance and (5) The instrument panel inside the cab of the truck was not checked periodically to assure all warning lights on the panel are working properly. (6) The wires were disconnected for the light inside the operators cab to show that the transmission retarder was working and the wires were disconnected for the park brake light to show the brake is applied. Mechanics need to be trained to identify these problems when maintenance is performed and equipment shall be taken out of service immediately when serious defects arise. These conditions contributed to the fatal accident that occurred on December 6, 2005.
5. A 104(d)(1) Order, Number 7008317, was issued to Reading Anthracite Company, for a violation of 30 CFR 77.1710(i), which stated the following: The seat belt in the Euclid R-85 serial #65607 was not in use by the driver of the truck at the time of the fatal accident. The seat belt operated and buckled properly when it was tested. The operator has no program to ensure that miners are properly using seat belts. There is no records indicating that disciplinary action has been administered for not wearing seat belts. This condition was a major factor to the fatal accident that occurred on December 6, 2005. This order will be terminated when all employees are trained in the necessity and proper use of seat belts.

**Appendix A
Persons Participating in the Investigation**

Reading Anthracite Company – Company Personnel

Brian Rich Vice President
Stanley Wapinski Stripping Superintendent
Robert Shellhammer Maintenance Superintendent
Joshua Derrick Mine Foreman/Blaster
David Imschwiler Maintenance Foreman

Reading Anthracite Company – Employees

John Wagner Bulldozer Operator
Edward Mitchell Mechanic
James Freeman Mechanic
Miles Miller Drill Operator
Francis Hale Loader/Bulldozer Operator
Jon Pennypacker Truck Driver
Robert Zack Truck Driver
Richard Kazmari Demag Operator
Bill Lurwick Fuel Truck Driver/Mechanic
Christy Loftus Dragline Operator
Michael Mihalsky Equipment Operator
Dan Peletsky Mechanic/Fuel Truck Operator

United Mine Workers of America

Timothy Baker Deputy Administrator, Dept. of Occupational Health and Safety
Ron Bowersox International Representative, District 2
Mark Green Safety Committeeman, Local 1686
Dan Bass Grievance Committee

McCarthy Tire Service Company

Robert Novak Tire Technician

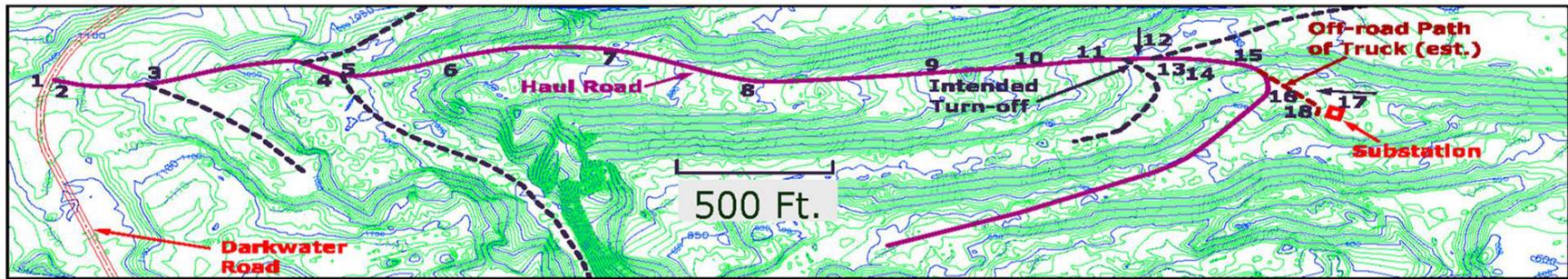
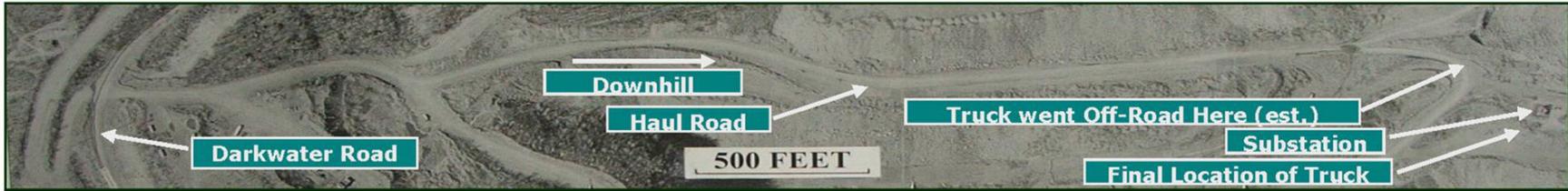
Pennsylvania Department of Environmental Protection

Michael Menghini Compliance Manager
Colleen Stutzman Surface Mine Conservation Inspector Supervisor
Randy Shustack Surface Mine Conservation Inspector Supervisor

Mine Safety and Health Administration

George McIntyre Coal Mine Inspector/Accident Investigator
Thomas M. Leshko Coal Mine Inspector/Accident Investigator
Gregory J. Mehalchick Coal Mine Inspector/Civil Engineer
Eugene D. Hennen, P.E. Mechanical Engineer
James Kelly Civil Engineer
Gerald Pifer Civil Engineer

Appendix B Aerial Photo, Contour Map, and Profile of Haul Road



Note: Numbers on topographic map correspond to haul road photo number.

