

UNITED STATES
DEPARTMENT OF LABOR
MINE SAFETY AND HEALTH ADMINISTRATION

COAL MINE SAFETY AND HEALTH

REPORT OF INVESTIGATION

Underground Coal Mine

Fatal Powered Haulage Accident
January 22, 2004

Pinnacle Mine
Andalex Resources, Inc.
Price, Carbon County, Utah
ID No. 42-01474

Accident Investigators

Lester Coleman
Coal Mine Safety and Health Inspector

Cord D.Cristando
Coal Mine Safety and Health Inspector

Kent Norton
Training Specialist

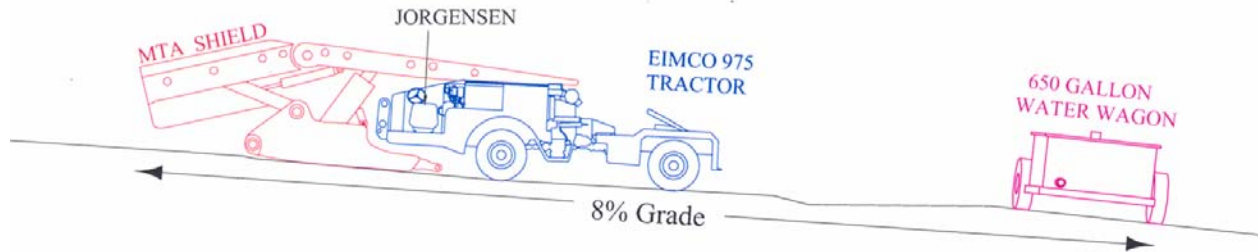
Richard Skrabak
Mechanical Engineer

Originating Office
Mine Safety and Health Administration
District 9
P.O. Box 25367
Denver, Colorado 80225-0367
Allyn C. Davis, District Manager

TABLE OF CONTENTS

	<u>Page</u>
Sketch and Picture of Accident Scene	1
Overview.....	2
General Information.....	3
Description of the Accident.....	4
Investigation of the Accident.....	5
Discussion.....	6
Root Cause Analysis.....	8
Conclusion.....	9
Enforcement Actions.....	9
Appendices:	
A. List of Persons Participating in the Investigation.....	10
B. List of Persons Interviewed.....	11
C. Plan View of Accident Scene.....	12

FATAL POWERED HAULAGE ACCIDENT
PINNACLE MINE, ID NO. 42-01474
ANDALEX RESOURCES, INC.
PRICE, CARBON COUNTY, UTAH
JANUARY 22, 2004



SIDE VIEW OF ACCIDENT SCENE SHOWING
TRACTOR UNDER SHIELD CANOPY



RE-ENACTMENT SHOWING TRACTOR AT DROP OFF POINT FOR WATER WAGON
AND FRONT OF TRACTOR FACING UPGRADE TOWARD SHIELD

OVERVIEW

On Thursday, January 22, 2004, at approximately 11:00 p.m., a fatal powered haulage accident occurred at the upper material storage yard on the surface of the Pinnacle Mine, an underground coal mine. The victim, who worked at the adjacent Aberdeen Mine (I.D. No. 42-02028), an underground coal mine operated by the same company, had been assigned to water roadways in the mine. He traveled to the storage yard, which was used by both mines, in an Eimco Model 975 utility tractor and attached a 650 gallon water trailer to the tractor. He later discovered that the water in the trailer was frozen and traveled to the lamp house where he talked to his supervisor who told him the location of a larger water trailer underground in the mine. He then returned to the storage yard and dropped off the trailer. As he pulled away from the trailer, the tractor traveled under the canopy of a MTA/(DBT) longwall shield that was stored in the yard. The victim, who was seated in the operator's compartment, received crushing head injuries as the tractor traveled underneath the canopy. The tractor came to a stop against the shield beneath the canopy.

The accident occurred because the shield was stored in an unsafe manner that allowed the tractor to drive under the canopy tip creating a pinch point with the top of the tractor. The absence of a protective structure for the operator's compartment on the tractor contributed to the accident. The operator's apparent lack of awareness that he was moving toward the shield after dropping off the trailer also contributed to the accident.

GENERAL INFORMATION

The Pinnacle Mine is an underground bituminous coal mine located approximately 10 miles (via Airport Road) northeast of Price, Carbon County, Utah. The mine, which is operated by Andalex Resources, Inc. (Andalex), was opened in October 1980. In 2003, the mine produced 583,711 tons of coal with 26 underground and 8 surface employees. The mine worked two 9-hour shifts per day, producing coal 5 days per week and approximately 2150 tons per day.

The Pinnacle mine has one operating continuous mining machine section. Coal is mined in the Gilson seam with a mining height of 84 inches. The coal is transported by truck to the company's Wildcat Loadout facility (I.D. No. 42-01864) located west of Price, Utah, where it is loaded into rail cars and transported to the Intermountain Power Association power plant in Delta, Utah.

Andalex also operates the Aberdeen Mine (I.D. No. 42-02028), an underground bituminous coal mine, located in the Aberdeen seam, approximately 250 feet below the Gilson seam. Jacob Jorgensen, victim, worked at the Aberdeen Mine. The accident occurred at the Pinnacle Mine's upper material storage yard, which is also shared by the Aberdeen Mine. The Aberdeen Mine employed 114 miners (108 of which worked underground) and produced coal from two continuous mining machine sections. At the time of the accident, a longwall mining section was being installed at the mine. The average mining height was approximately 96 inches.

The Mine Safety and Health Administration (MSHA) completed the last regular safety and health inspection at the Pinnacle Mine on December 15, 2003. The Non-Fatal Days Lost (NFDL) injury incidence rate, excluding office and contract workers, for the mine for 2003 was 0.00 compared to a National NFDL rate of 6.57. The last regular safety and health inspection at the Aberdeen Mine was completed on December 22, 2003. The NFDL incidence rate for the Aberdeen Mine for 2003 was 1.82

The principal officials at the mine were:

Samuel C. Quigley	Vice-President of Operations
Laine Adair	Mine Manager
Garth Nielsen	General Mine Superintendent
Randy Perri	General Mine Foreman
Val Udovich	Shift Foreman
Thomas R. May	Safety Manager

DESCRIPTION OF THE ACCIDENT

On Thursday, January 22, 2004, Jacob G. Jorgensen, a 29-year old laborer (victim), began his twelve-hour night shift at 9:00 p.m. at the lamp house. This was his second shift of a four day work cycle. Jorgensen's crew worked a four-days-on and four-days-off schedule. He had also worked the last two days of his four days off, making this his fourth day of work. Val Udovich, Shift Foreman, assigned Jorgensen to water the underground roadways at the Aberdeen Mine.

Jorgensen left the lamp house and went to the shop/warehouse to check on the availability of an Eimco 975 utility tractor to use for watering the roads. Shortly after that, Levi Hayes came out of the Aberdeen Mine with an Eimco 975 utility tractor pulling an empty low-boy trailer. Jorgensen took the tractor and trailer from Hayes and proceeded to the upper material storage yard. There he parked the low-boy trailer and hooked a 650-gallon water trailer to the tractor. He then returned to the lamp house and asked Udovich if he could use the larger water trailer because the water in the smaller 650-gallon trailer was frozen. Udovich told him where the larger trailer was parked in the mine. Udovich understood that Jorgensen intended to return the smaller trailer to the upper material storage yard and go underground to get the larger water trailer.

Jorgensen left the lamp house and drove back to the upper material storage yard where he unhooked the trailer and parked it in the same location where he had picked it up. He blocked the lower wheel and put a solid concrete block under the tongue of the trailer. As he drove away from the trailer, the tractor traveled into the longwall shield canopy where Jorgensen was struck by the tip of the canopy, causing fatal head injuries.

Denny Erickson, Step-up Foreman, arrived for work at approximately 10:30 p.m. He met with Udovich and received his work assignment to take panline sections to the longwall, which was being setup in the Aberdeen Mine. At approximately 10:50 p.m., Erickson received the pre-shift report, which was called out from underground, and he entered the results in the book at the lamp house. He then left the lamp house, accompanied by Frankie Hadden and Arlynn Williams, laborers, to look for an Eimco 975 tractor to begin their work assignment.

Erickson, Hadden, and Williams drove to the shop in a pickup truck to locate an Eimco tractor. When they got to the shop, they noticed machine lights in the upper material storage yard. They thought the lights were from an Eimco 975 tractor, so they went to see if they could use it. When they arrived at the machine, they found it sitting under a shield canopy in a "weird position." They could not see anyone in the machine, but decided to check it out. Once they exited the truck, they found

Jorgensen in the operator's compartment crushed between the tractor and the shield canopy. Erickson sent Hadden to notify Udovich of the accident.

The Carbon County Sheriff's Office was notified of the accident at 11:09 p.m. Sergeant Tory Christiansen responded to the scene, arriving at 11:24 p.m. Thomas Stefanoff, Investigator for the Office of the Medical Examiner, also arrived at the mine. These officials immediately determined that the victim was deceased. Once the scene had been investigated, mine personnel used a Caterpillar 988 front-end loader to move the longwall shield away from the Eimco tractor and remove the victim. The Office of the Medical Examiner's Report of Investigation stated the time of death as 11:10 p.m.

INVESTIGATION OF THE ACCIDENT

Following the accident, John Sisneros, laborer, called 911 to request emergency assistance for Jorgensen. Laine Adair, Mine Manager, was also notified. Adair called Ted Farmer, MSHA Price, Utah, Field Office Supervisor, to report the accident. Coal Mine Safety and Health Inspectors Randy Gunderson, Jerry O.D. Lemon, and Dennis P. Boyack were dispatched to the accident scene. A Section 103(k) order, No.7616316, was issued to protect persons at the accident site and a preliminary accident investigation was conducted.

Lester Coleman and Cord Cristando, Coal Mine Safety and Health Inspectors from the Castle Dale, Utah office; Kent Norton, Training Specialist from Price, Utah; and Richard Skrabak, Mechanical Engineer from Technical Support in Triadelphia, West Virginia, were assigned to conduct the accident investigation for MSHA. Coleman was assigned as the Lead Investigator.

On January 23, 2004, the MSHA accident investigation team arrived at the mine. The team conducted a physical examination of the accident site, interviewed persons, and reviewed training records, work procedures, and other records and documents relevant to the accident. The Section 103(k) order was modified to allow the Eimco tractor to be moved to a shop area so that a detailed investigation could be conducted. This was allowed only after a thorough pre-operational inspection was conducted on the machine.

Additional interviews were conducted on January 24, 2004. On January 25, 2004, a detailed examination of the tractor was conducted by Skrabak in conjunction with company and Eimco representatives. No safety defects were found with the tractor. On January 26, 2004, a closeout meeting was conducted. Since the investigation results indicated that the Eimco tractor was safe to operate, the Section 103(k) order was terminated.

MSHA conducted the investigation with the assistance of mine management, miners, representatives of Eimco Jarvis Clark Mining Machinery, and the Carbon County Sheriff's Office.

DISCUSSION

- 1) The vehicle involved in the accident was an Eimco Jarvis Clark (Eimco) non-permissible 975 diesel-powered utility tractor, Serial Number 975-0261. The utility tractor was not equipped with a protective cab or canopy nor was a seat belt provided. The tractor was used as a towing vehicle at the mine to perform many duties, such as delivery of materials and equipment, and to water roadways. The tractor was assigned company unit number 941. This tractor was found after the accident with the automatic transmission selector in 3rd gear. At the time of the accident, the vehicle was traveling up an approximate grade of 8 percent. A thorough examination of the tractor indicated that there were no defects that would have contributed to the cause of the accident.
- 2) The Eimco tractor was powered by a Deutz Model BF4M1013C diesel engine, rated at 150 horsepower. The MSHA engine approval number was 7E-B008-0. Originally, the vehicle was manufactured with a Deutz Model 1012 engine, which was rated at 100 horsepower. It should be noted that these ratings would be decreased due to the higher elevation (approximately 7100 feet above sea level) at the mine site.
- 3) The steering system on the Eimco tractor was tested by turning from stop to stop with the vehicle running but not tramming. The stop to stop turning time was approximately 3 seconds. According to the Eimco representatives, this timeframe was within design parameters. Additionally, the vehicle was driven around the surface area of the mine and no steering defects were noted.
- 4) A service brake foot pedal was provided in the operator's compartment of the Eimco tractor. It moved freely and no obstructions were found that interfered with pedal movement.

Service braking at all four wheels was provided by two MICO spring applied/hydraulic release brake actuators on each of the two drive axles. The brakes were inside the axle housing and were liquid cooled, multiple disc (four self-adjusting discs per wheel). A pull through tram test was conducted. In third gear, full throttle, the service brake held the utility tractor stationary. Stopping tests were conducted. The utility tractor stopped quickly in each test and no defects were noted.

No tests were performed on the parking brake other than it was capable of holding the machine on the 8% grade where the accident occurred.

Eimco representatives agreed that the service brakes on the vehicle functioned as designed.

- 5) Two headlights were provided for the forward direction as well as two for the rear direction on the Eimco tractor. The vehicle was moving forward at the time of the accident and reportedly the forward lights were on. Pictures taken by the Carbon County Sheriff's Office shortly after the accident indicated that both the front and rear lights were on. Both forward lights functioned when tested. The lights were Mining Controls Inc. Model T50 non-permissible headlight assemblies (Part Number 7030-34235-1). They were equipped with 12 volt 50 Watt bulbs.
- 6) The longwall shield involved in the accident was a MTA transitional type G738-13.72/33.52 and weighed 21.4 tons. It was located at the left-hand edge of the access way through the storage yard. There was approximately 30 feet of road available to the right of the shield. After leaving the water trailer, the tractor traveled approximately 26 feet when it contacted the tip of the shield. During a re-enactment of the accident, the time taken to travel this distance was approximately 6 seconds. The distance from the ground to the tip of the shield canopy was approximately 57 inches. The maximum height of the Eimco tractor was 60 inches, but the front, which contained the operator's compartment, angled up and was less than 57 inches high.
- 7) Illumination at the upper material storage yard was provided by a 1000 watt light suspended about 70 feet above the ground and about 215 linear feet from the shield where the accident occurred. The area was adequately illuminated when checked at night. The weather at the time of the accident was cold and clear.
- 8) The upper material storage yard was small and congested with many pieces of equipment stored there. This yard was originally designed and used as a truck loadout loop for the Apex Mine, which was operated by Andalex. This mine was sealed and the loadout loop was converted to a storage yard. The shield involved in the accident was located adjacent to the access way through the yard. The tip of the shield faced the direction of travel when equipment approached from the lower end of the yard. In this position, vehicles could accidentally travel under the front end of the canopy. See Appendix C for the location of the shield in the storage yard.

- 9) Training records were examined during the investigation. Jorgensen had received annual refresher training on January 17, 2004, as required by 30 CFR Part 48.
- 10) Jorgensen, age 29, had 7 years, 3 three weeks of mining experience. He had worked at various Andalex mines for two years, 48 weeks, and at the Aberdeen Mine for the last 38 weeks. He was certified by the State of Utah as a Fire Boss and Mine Foreman. He was qualified by MSHA as a surface and underground mine electrician. Jorgensen was qualified to maintain, repair, examine, and test diesel equipment according to 30 CFR 75.1915 requirements. Information indicated that he was experienced in the operation of scoops, shield haulers, and tractors.
- 11) Jorgensen placed an 8x16-inch solid concrete block under the tongue of the water trailer when he dropped it off at the storage yard. He also placed a wooden block under the right (downhill side) wheel of the trailer. Other blocking materials were not found near the accident area for use on the left wheel. The concrete block was found to have turned on its side and was lying on the ground elevating the end of the tongue only a few inches off the ground. The hitch on the tractor was approximately 18 inches off the ground. It appeared that while dropping off the trailer, the tongue dropped onto the concrete block causing it to turn over and fall to the ground. This allowed the tongue to fall to within a few inches of the ground. It is possible that Jorgensen was distracted by the trailer falling off the concrete block and was looking backwards as he pulled away from the trailer. Because of this, he would not have been aware that the tractor was traveling toward the shield. It should be noted that the distance between the water trailer and the tip of the shield was only 26 feet.
- 12) A re-enactment of the accident was conducted during the accident investigation. This re-enactment indicated that there was adequate room in the operator's compartment for Jorgensen to have lowered his head and avoided the pinch point with the shield, had he been aware of the oncoming hazard.

ROOT CAUSE ANALYSIS

A root cause analysis was conducted. The following causal factors were identified that could have averted the accident entirely or mitigated the severity of the accident:

Causal Factor: The shield involved in the accident was stored in a manner that the canopy tip faced toward the access way through the storage yard such that vehicles could travel under the shield canopy.

Corrective Action: Management should evaluate and assure the safe storage of equipment at the upper material storage yard. Equipment should be stored and located so as not to present a hazard to vehicle operators traveling through the storage yard.

Causal Factor: The Eimco 975 tractor was not equipped with a protective cab, canopy, or other type structure to protect the operator.

Corrective Action: Although this is not a mandatory requirement for this type of equipment, management should consider installing a protective structure for operator compartments.

Causal Factor: The operator was not aware of the hazard presented by the shield, either because he did not look ahead while moving forward or did not check the surroundings before moving the tractor.

Corrective Action: Management should routinely observe work habits of miners to ensure that safe work practices and procedures are being followed. Persons operating equipment should be aware of their surroundings for any potential hazards and should always look in the direction of movement.

CONCLUSION

The accident occurred because the shield was stored in an unsafe manner that allowed the tractor to drive under the canopy tip creating a pinch point with the top of the tractor. The absence of a protective structure for the operator's compartment on the tractor contributed to the accident. The operator's apparent lack of awareness that he was moving toward the shield after dropping off the trailer also contributed to the accident.

ENFORCEMENT ACTIONS

Section 103(k) Order No. 7616316 was issued on January 22, 2004, to ensure the safety of persons at the mine until an investigation of the accident could be completed and the mine deemed safe.

The investigation determined that no violations occurred which contributed to the cause of the accident.

Approved by:

Allyn C. Davis
District Manager

Date

APPENDIX A

Persons interviewed, furnished information and/or present during the investigation were:

ANDALEX RESOURCES, INC. OFFICIALS

Samuel C. Quigley	Vice-President of Operations
Laine Adair	General Manager of Operations
Garth Nielsen	General Superintendent
Val Udovich	Section Foreman
John Lewis	Mine Engineer
Louis Biondich	Graveyard Foreman
Denny G. Erickson	Step-up Foreman
Rick Poulson	Maintenance Foreman
Ron Giacoletto	Shift Foreman
DeVere Smith	Safety Manager

ANDALEX RESOURCES, INC. EMPLOYEES

Mark Callahan	Eimco 975 Operator
Arlllyn Williams	Laborer
Levi A. Hayes	Laborer
Frankie Hadden	Laborer
C. Scott Berggren	Diesel Mechanic
David Tad Fausett	Graveyard Mechanic
Tom Sandoval	Graveyard Mechanic
Alan Dick	Graveyard Maintenance Foreman

EIMCO JARVIS CLARK REPRESENTATIVES

Martin Erin	Technician
Bruce Jorgenson	Technician

CARBON COUNTY SHERIFF'S OFFICE

Tory Christiansen	Sergeant
-------------------	----------

MINE SAFETY AND HEALTH ADMINISTRATION

Allyn C. Davis	District Manager
Bob Cornett	Assistant District Manager
Lester Coleman	Coal Mine Safety & Health Inspector
Cord Cristando	Coal mine safety & Health Inspector
Kent Norton	Training Specialist, Educational Field Services
Richard Skrabak	Mechanical Engineer, Technical Support

APPENDIX B

Persons interviewed during the investigation were:

ANDLAEX RESOURCES, INC. OFFICIALS

Samuel C. Quigley	Vice President of Operations
Val Udovich	Section Foreman
Denny G. Erickson	Step-up Boss

ANDALEX RESOURCES, INC. EMPLOYEES

Mark Callahan	Eimco 975 Operator
Arlllyn Williams	Laborer
Levi A. Hayes	Laborer
Frankie Hadden	Laborer
C. Scott Berggren	Diesel Mechanic
David Tad Fausett	Graveyard Mechanic
Tom Sandoval	Graveyard Mechanic
Alan Dick	Graveyard Maintenance Foreman

PLAN VIEW OF ACCIDENT SCENE
SHOWING THE LEFT FRONT OF THE
TRACTOR UNDER THE SHIELD CANOPY

