

**UNITED STATES
DEPARTMENT OF LABOR
MINE SAFETY AND HEALTH ADMINISTRATION
Metal and Nonmetal Mine Safety and Health**

REPORT OF INVESTIGATION

**Underground Metal Mine
(Gold)**

Fatal Powered Haulage Accident

August 24, 2004

**Barrick Goldstrike Mines, Inc.
Meikle Mine
Carlin, Elko County, Nevada
Mine ID No. 26-02246**

Investigators

**Rodney D. Gust
Supervisory Mine Safety and Health Inspector**

**Kevin G. Hirsch
Mine Safety and Health Inspector**

**Richard A. Skrabak
Mechanical Engineer**

**Joseph N. Rhoads
Mine Safety and Health Specialist**

**Originating Office
Mine Safety and Health Administration
Western District
2060 Peabody Road, Suite 610
Vacaville, California 95687
Lee D. Ratliff, District Manager**

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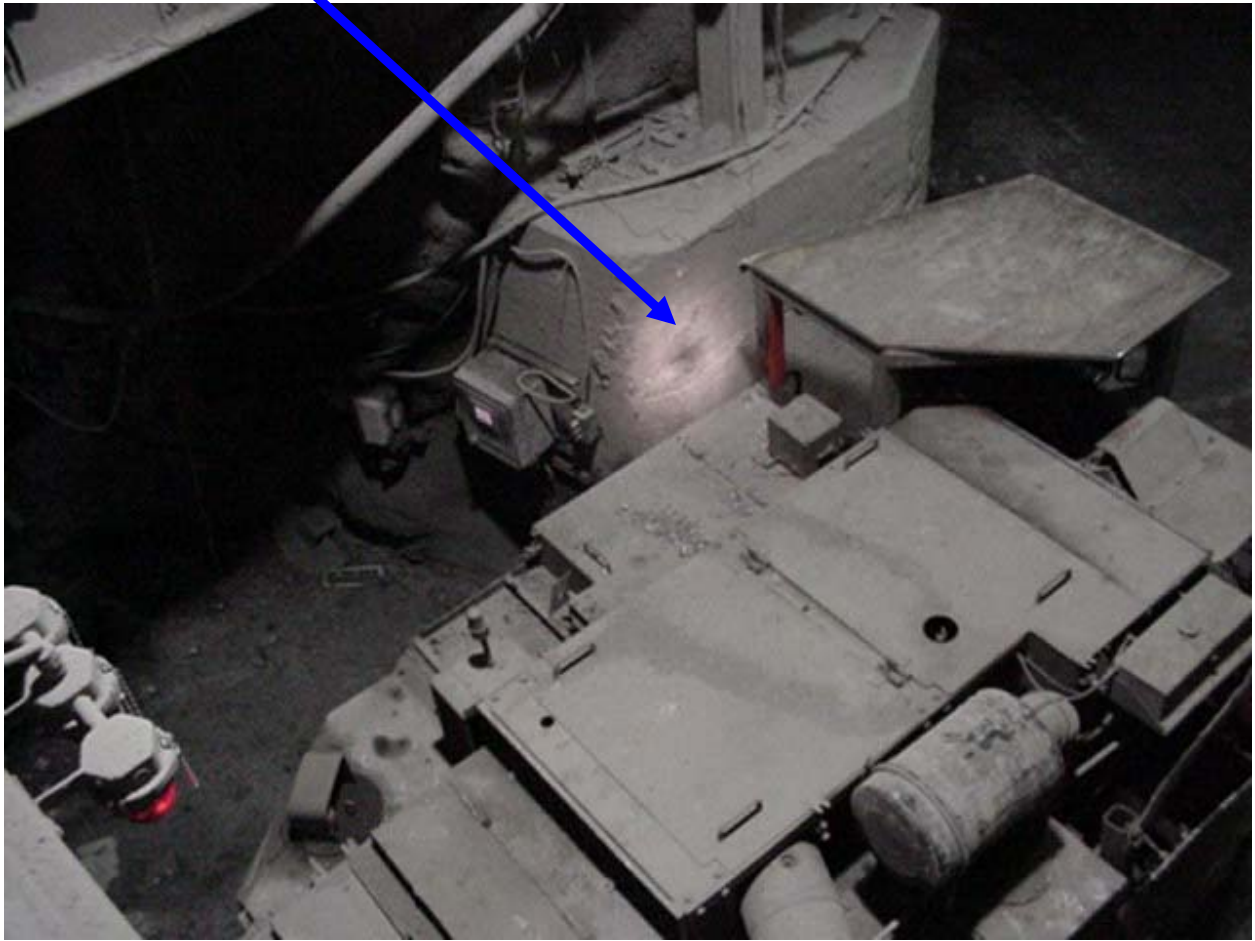
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The victim was pinned between the concrete pillar and the haul truck



OVERVIEW

On August 24, 2004, Raymond T. Grof, lead miner, age 39, was fatally injured while attempting to load his haulage unit. He had backed his vehicle under a load-out chute and exited the cab to operate the chute controls. Apparently the haulage unit drifted forward and pinned him against the concreted rib.

Management policies and controls were inadequate and failed to ensure that the victim had received training in the health and safety aspects and safe operating procedures regarding the DUX, Model TD-26, haulage unit and the batch plant conveyor load out. Failure to repair the defective park brake switch along with the failure to either chock the wheels or turn them into the rib was contributory.

GENERAL INFORMATION

The Meikle mine, a multi-level underground gold mine, owned and operated by Barrick Goldstrike Mines, Inc., was located 27 miles north of Carlin, Elko County, Nevada. Principal operating officials were Michael Feehan, vice president; Alan Michaels, director of safety and health; Dave L. McClure, mine manager; and Victor L. Christensen, mine superintendent. The mine operated two, 12-hour shifts a day, seven days a week. A total of 525 persons were employed, with 462 persons working underground.

Gold bearing ore was drilled and blasted in open stopes. Broken material was transported from the stopes on haulage trucks to ore chutes, then subsequently crushed and hoisted to the surface. Depending on grade, the ore was either milled or hauled to a cyanide leach pad for processing. The milled or leached product was sent to the plant refinery for removal of impurities and poured into dore` bars. These bars were transported to refineries off site for final processing prior to sale to customers.

The last regular inspection of this operation was completed on July 13, 2004.

DESCRIPTION OF THE ACCIDENT

On the day of the accident, Raymond T. Grof (victim), reported to work about 6:00 a.m., his scheduled starting time. At 6:30 a.m., Chad K. Marchand, Rodeo development shift supervisor, briefed Grof and William G. Grasmick, lead miner.

At 8:10 a.m., Grof and Grasmick briefed the mine crew at the surface staging area. The crew went underground at 8:40 a.m. Grof started checking on the crews in their assigned work areas about 9:00 a.m.

At 12:50 p.m., Grof met with Marchand for lunch. They discussed the areas where Grof had conducted supervisory checks and areas that needed cleaned for a VIP tour that was scheduled the next day. At 1:45 p.m., Marchand showed Grof what areas needed cleaned and where the road maintenance was necessary.

Marchand left Grof at the 4150 North footwall main drift. Grof operated a 3 ½-yard load haul dump (LHD) for the clean up and road work. He parked the LHD at the 4150 batch plant run around. Grof then operated a DUX model TD-26 haulage unit that was located in the South footwall drift. Grof planned to load his truck with aggregate from the batch plant and use it for road repairs. He backed the truck around the North East pillar into the load out area and parked it in an angled position. Although there were no witnesses, Grof apparently climbed off his truck to manually activate the conveyor to load the aggregate.

Juan J. Torres, truck driver, drove past the 4150 load out crosscut to get his second load of aggregate and noticed Grof sitting in the driver's seat of the haul truck. It would have been necessary for Grof to pull his truck forward once to load the middle and one more time to load the rear of the bed. The aggregate would have been loading into the truck when Grof climbed off to push the stop button. The investigators concluded that Grof's

truck started to drift forward as he exited or entered the cab. He was pinned between the side of the truck and a concrete pillar.

At 3:15 p.m., Torres realized that it was taking Grof too long to load, so he walked around the pillar to check on him. Torres found Grof pinned between the truck and the rib. Torres went across the drift to get help from Jake Rowe, truck driver. Rowe immediately phoned for assistance as Torres shut off the feed conveyor. Torres signaled David Ringgold, electrician, for assistance.

Torres, Rowe, and Ringgold freed Grof; however, they were unable to detect any vital signs. The victim was transported to the surface where he was pronounced dead by the Eureka County deputy sheriff at 7:05 p.m. Death was attributed to blunt force trauma.

INVESTIGATION OF ACCIDENT

MSHA was notified of the accident at 3:55 p.m., on August 24, 2004, by a telephone call from Daniel H. Stevenson, safety director, to David Thome, supervisory mine safety and health inspector. An investigation was started that day. An order was issued pursuant to Section 103(k) of the Mine Act to ensure the safety of the miners.

MSHA's accident investigation team traveled to the mine, conducted a physical inspection of the accident scene, interviewed employees, and reviewed documents and work procedures relevant to the accident. MSHA conducted the investigation with the assistance of mine management, employees, and the Eureka County Sheriff's Department.

DISCUSSION

Location of the accident The accident occurred underground at the 4150 batch plant in the aggregate and batch load out area. The batch plant floor had a two and a half percent grade where the haul truck had been parked to be filled with aggregate. The actual fill rate of the aggregate at the batch plant was 440 tons per hour.

Equipment The haul truck was a DUX Machinery Corporation articulated four-wheel drive, diesel powered, teledumper, Model TD-26. The machine was manufactured in 2000 and had a telescopic dump box capable of hauling a 26 ton payload. The truck's cab was open and the steel support beams and roof were not constructed to FOPS (Falling Object Protective Structure) or ROPS (Rollover Protective Structure) specifications. The operator's seat, located on the left forward side of the truck, was provided with a seat belt and faced toward the center of the truck. The haul truck was powered by a Detroit Diesel engine, rated at 400 horsepower.

Transmission The truck had a 5420 Series Clark Hurth four speed transmission (both forward and reverse), with an 8000 Series torque converter. The gear selector control was to the left side of the operator and near the cab opening. The forward gears were on the right hand side and the reverse gears were on the left hand side as the operator faced the controls. A steel plate was welded across the gear selector control to prohibit the selector lever from going into the third and fourth gears for both forward and reverse.

Brakes The braking system was designed with a service and an emergency/parking brake. The service brake and emergency brake both acted on the same brake system components. Each wheel was equipped with multiple disc, liquid cooled, totally enclosed brakes that were spring applied/hydraulically released. The brakes were provided with wear pins that indicated the brakes wear was within specifications.

Tram through tests in second gear verified the brakes were holding adequately when the emergency/park brake switch was on or when the service brakes were applied. When the engine was turned off, the parking brake would automatically apply.

A service brake foot pedal was provided in the operator's compartment. It moved freely and no obstructions were found that interfered with pedal movement.

The emergency/parking brake switch was found to be faulty. This type of switch was a mushroom head, turn to release, push button. When the switch button was pushed, it applied the brakes and allowed the truck to be started. The switch was supposed to remain applied until the mushroom head was turned clockwise, releasing the switch and subsequently the brakes. However, the switch would not remain applied when pushed. In order to start the haul truck, the switch had to be manually pushed and held. When the switch was disassembled, it was discovered that the two small tabs that were to keep the switch detented were worn. One tab was actually stuck in the position that would allow the button to remain released.

The control panel also contained a brake "ON" signal light that was supposed to illuminate when the emergency/parking brake was applied. When the emergency/parking brake switch was pushed and held, this light would not come on. When the instrument panel cover was removed, it was found that no light bulb was installed in the socket for this safety feature. The bulb had not fallen out because no bulb was found in the enclosed panel.

Radio The radio in the haul truck was not working. The reset button inside the radio had to be pushed whenever the master switch for the haul truck had been turned off. Equipment operators were unaware of this condition.

Back up lights and alarm The backup lights and alarm came on at the same time, depending on the location of the gear selector control lever. As the lever neared the reverse position (but prior to transmission actually being in reverse), the alarms and lights were activated. The backup lights and alarm functioned as designed.

Operator's cab/Instrument panel The operator's cab was generally clean and the controls and gauges were operative (with the exception of the bulb and emergency/parking brake switch described above). However, several of the gauges and controls did not clearly identify their function (labels missing or illegible). These included the pressure gauges for the brake system and transmission. The actual locations of the brake system and transmission gauges varied from the location shown in the operator's manual. The locations of these gauges also varied on the other DUX trucks at the mine.

Accident Reenactment After the deficiencies on the truck were repaired, it was placed at the accident scene to reconstruct the accident. The engine was running, the transmission was in neutral, and the brakes were not applied. As the truck was filled, it moved forward. The combination of the two and a half percent grade and the force of the aggregate entering the dump box caused the forward movement.

Training and Experience Grof had a total of 17 years mining experience and had worked at this mine for 6 years, 38 weeks. Grof had received training in accordance with 30 CFR, Part 48; however, he had not received all of the required Part 48.7 new task training.

ROOT CAUSE ANALYSIS

A root cause analysis was conducted and the following causal factors were identified:

Causal Factor: Management policies and controls were inadequate and failed to ensure that the victim had received training in the health and safety aspects and safe operating procedures regarding the DUX, Model TD-26, haulage unit and the batch plant conveyor load out.

Corrective Action: Employees should be thoroughly trained regarding the safe operating procedures of mobile equipment and conveyor systems before performing any tasks with this equipment.

Causal Factor: Management standards and administrative controls were deficient and did not ensure that pre-operational inspections were conducted to identify safety defects on the DUX, Model TD-26, haulage unit. Repairs were not made to the defective park brake switch and the truck was not taken out of service and tagged to prohibit further use.

Corrective Action: Procedures should be established to ensure that all mobile equipment is inspected for defects prior to being placed into operation. Defects that affect safety should be corrected prior to using the equipment.

Causal Factor: The wheels of the DUX, Model TD-26 haulage unit were not chocked or turned into the rib when the vehicle was parked at the 4150 batch plant.

Corrective Action: Train all equipment operators regarding the proper procedures to be used when parking mobile equipment.

CONCLUSION

Management policies and controls were inadequate and failed to ensure that the victim had received training in the health and safety aspects and safe operating procedures regarding the DUX, Model TD-26, haulage unit and the batch plant conveyor load out. Failure to repair the truck's defective park brake switch along with the failure to either chock the wheels or turn them into the rib was contributory.

ENFORCEMENT ACTIONS

Order No. 6365654 was issued on August 25, 2004, under the provisions of Section 103(k) of the Mine Act:

A fatal accident occurred at this operation on August 24, 2004, when a miner was pinned between a DUX TD-26 haul truck (26-ton) and a cement pillar at the 4150 batch plant. This order is issued to assure the safety of all persons at this operation. It prohibits all activity from 15 feet before the 4150 sump access throughout the whole batch plant area until MSHA has determined that it is safe to resume normal mining operations in the area. The mine operator shall obtain prior approval from an Authorized Representative for all actions to recover and/or restore operations to the affected area.

This order was terminated on September 3, 2004. The conditions that contributed to the accident no longer exist and normal mining operations can resume.

Order No. 6286241 was issued on August 25, 2004, under the provisions of Section 104(d)(1) of the Mine Act for violation of 30 CFR 48.7:

A fatal accident occurred at this mine on August 24, 2004, when a lead man was pinned between the haul truck he was operating and the rib. The haul truck had been parked on a two and a half percent grade under the load out at the 4150 batch plant and drifted after the operator exited the operator's cab. The victim had been assigned to operate a haul truck and spread crushed rock on the mine roadways. The mine operator did not assure that the victim had been task trained on the DUX haul truck (26 ton slide bed) or on the 4150 batch plant that he was operating at the time of the accident. Failure to ensure the victim had been instructed on the safe operating procedures regarding this haul truck and the safety and health aspects and safe procedures to operate the conveyor load out on the batch plant constitutes more than ordinary negligence. This violation is an unwarrantable failure to comply with a mandatory standard.

This order was terminated on October 4, 2004, after the mine operator implemented steps to ensure task training was completed prior to assigning miners to operate mobile equipment or operate the 4150 batch plant.

Citation No. 6286242 was issued on August 25, 2004, under the provisions of Section 104(a) of the Mine Act for violation of 30 CFR 57.14100(a):

A fatal accident occurred at this mine on August 24, 2004, when a lead man was pinned between the haul truck he was operating and the rib. The haul truck had been parked on a two and a half percent grade under the load out at the 4150 batch plant and drifted after the operator exited the operator's cab. A pre-operational inspection to identify defects effecting the safe operation of this haul truck had not been conducted prior to operating the truck. The parking brake indicator light was missing and the button to manually engage the parking brakes when the transmission was placed in neutral was inoperable on this truck. These defects made continuous operation of the truck

hazardous and the truck had not been removed from service or tagged out to prohibit further use.

This citation was terminated on October 4, 2004, after the mine operator reinstructed the employees regarding the importance of conducting pre-operational checks on mobile equipment. Management is following up on the pre-operational checks to ensure that miners are conducting the checks and that any safety defects reported are being corrected.

Citation No. 6286243 was issued on August 25, 2004, under the provisions of Section 104(a) of the Mine Act for violation of 30 CFR 57.14101(a)(3):

A fatal accident occurred at this mine on August 24, 2004, when a lead man was pinned between the DUX haul truck he was operating and the rib. The haul truck had been parked on a two and a half percent grade under the load out at the 4150 batch plant and drifted after the operator exited the operator's cab. All breaking systems on the truck were not maintained in functional condition in that the manually operated parking brakes would not stay applied while the engine was running. When the engine was off, the parking brakes would apply.

This citation was terminated on October, 4, 2004, after the defective park brake switch had been replaced and a new light bulb was installed in the brake light indicator.

Citation No. 6286244 was issued on August 25, 2004, under the provisions of Section 104(a) of the Mine Act for violation of 30 CFR 57.14207:

A fatal accident occurred at this mine on August 24, 2004, when a lead man was pinned between the haul truck he was operating and the rib. The haul truck had been parked on a two and a half percent grade under the load out at the 4150 batch plant. The transmission was placed in neutral, the engine was left running, and the victim exited the operator's cab. The parking brakes were not set and the wheels were not turned into the rib allowing the truck to drift and strike the victim.

This citation was terminated on October, 4, 2004, after the mine operator reinstructed employees regarding the requirement to chock the wheels or turn them into the rib when parking mobile equipment.

Approved by:

Lee D. Ratliff
District Manager

Date: _____

APPENDIX A

Persons Participating in the Investigation

Barrick Goldstrike Mines, Inc.

Victor L. Christensen superintendent
Blaine L. Bovee general supervisor, rodeo development
Frank V. Goglio general supervisor, production
Chad K. Marchand supervisor, rodeo development
Chet L. Creamer maintenance superintendent
Alan Michaels director of safety & health / training
Mike P. Hayworth training coordinator
Lance L. Steilman safety coordinator, rodeo
Bradley J. Young chief mine engineer

State of Nevada Mine Safety and Training Section

Edward M. Tomany chief administrative officer
Tim Killbreath mine inspector / training specialist
Chuck Golden mine inspector

DUX Machinery Machinery Corporation

Richard E. Potter service manager
Darold Evans service mechanic

Eureka County Sheriff's Office

Ralph E. Schable deputy sheriff

Mine Safety and Health Administration

Rodney D. Gust supervisory mine safety and health inspector
Kevin G. Hirsch mine safety and health inspector
Richard A. Skrabak mechanical engineer
Joseph N. Rhoads mine safety and health specialist