CAI-2012-11

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
July 14, 2012

Colowyo Mine
Colowyo Coal Company LP
Meeker, Moffat County, Colorado
Mine ID No. 05-02962

Accident Investigators

Scott A. Markve
Coal Mine Safety and Health Inspector

James E. Ellenberger
Coal Mine Safety and Health Inspector

Originating Office
Mine Safety and Health Administration
District 9 P.O. Box 25367, Denver, Colorado 80225

Carlos Mosley
Acting District Manager

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Figure 1: Overturned articulating water truck.

Overview

On Saturday, July 14, 2012, 25- year old Jason Kawcak, Water Truck Driver, received fatal, blunt force trauma injuries after being ejected and run over by the truck he was operating. Kawcak (victim) lost control of his water truck while ascending a 9.6 per cent grade. The truck traveled backwards after the victim lost control. There were no witnesses to the accident.

The accident occurred because: the victim was not trained in emergency shutdown procedures for this piece of equipment; he did not maintain control of the water truck; a toxicology report for the victim indicated presence of the chemical 1,1 Diflouroethane, which likely impaired him; and the victim was not wearing his seatbelt.

Figure 2: Site evidence of truck travel and cause of truck deviation.

Figure 3: Can of 1,1- Diflouroethane found in vehicle.

General Information

The Colowyo Mine is owned and operated by Colowyo Coal Company LP. Colowyo is a subsidiary of Western Fuels Association Inc., Tri-state Generation & Transmission. The mine is located 25 miles south of Craig, Colorado on Highway 13.

Prior to the accident, the last regular inspection (E01) conducted by the Mine Safety and Health Administration (MSHA) was completed on February 21, 2012. The non-fatal days lost (NFDL) injury incidence rate for the mine through the second quarter of 2012 was 1.57 at the time of the accident, compared to the National NFDL rate of 1.08 for surface mines for the same time period.

The principal officials at the mine were: Chris McCourt, Mine Manager; Noah Meyring, Production Supervisor, C-Crew; and Michael Gush, Health and Safety Supervisor.

Description of Accident

On Saturday, July 14, 2012, Jason Kawcak, C-crew Water Truck Driver, was assigned to drive the Volvo A35C water truck at various locations throughout the mine. Kawcak's work shift started that day at 7:00 a.m. Kawcak had received his assignment from Noah Meyring, Production Supervisor for the C-Crew. Kawcak's duties for the shift included ensuring haul roads on the mine site were kept watered to control road dust from mobile equipment traffic. Two water trucks were operating on the mine at the time of the accident. Kawcak continued operating the water truck throughout the day in various locations around the mine, as needed. During the shift, Kawcak noticed a warning light on the dash was illuminated and he called the field mechanic to get the light checked. Joe Pickering, Field Mechanic, checked the water truck and could find no warning light illuminated. The water truck was released to resume normal operations.

At 5:40 p.m., Kawcak lost control of the water truck while ascending the haul road known as Ridge Road. The accident investigators believe that Kawcak shut off the truck because the "engine stop" was pulled when rescuers reached the truck. Moreover, investigators found that the truck was not running when it overturned. The truck lost power after being shut off. Ridge Road is a perimeter haul road, with a varying grade that averages 9.6 per cent. After losing power, Kawack's water truck traveled backwards and downhill for 6 tenths of a mile, until the water truck contacted the berm along the east side of Ridge Road. Eighty-one feet after initial contact with the berm, the water truck struck a large rock, causing the water truck to deviate its path by five feet. Kawcak was ejected from the water truck. The water truck continued downhill, with the left side tires on top of the berm for 66 additional feet, until the truck dropped off the berm. Dropping off the berm caused Kawcak to be ejected from the water truck and run over with the right front tire of the water truck. The water truck continued downhill for another 300 feet, until it struck the west side slope, causing the truck to roll over and come to rest. Kawcak was not wearing a seatbelt during the accident.

Keith Ford, Dragline Operator, in an adjacent pit observed the water truck rolling over and notified Meyring of the incident. Meyring arrived on site and called a mine wide "may-day," notifying the mine's surface mine rescue team (SMRT) to respond to the accident scene. Meyring began searching for Kawcak. Ray Price, an emergency medical technician (EMT) for the surface rescue team, arrived at the accident scene.

Kawcak could not be located in the cab of the truck and no signs of him trapped under the truck were found. Price started uphill to locate Kawcak and located Kawcak fifteen feet from the downhill end of the east berm. Kawcak was positioned with his head downhill and was found unresponsive. Price started first responder actions, including CPR and attempted the use of an Automated Electric Defibrillator (AED). Meyring notified the guard shack to call the civilian ambulance service. An ambulance was dispatched from Craig, Colorado. By this time, Josh Slaight and Joe Pickering, two other members of the surface mine rescue team had arrived. Kawcak was placed on a backboard, loaded into the mine's ambulance, and transported to the local hospital, where he was pronounced dead.

Investigation of the Accident

The MSHA Call Center was notified of the accident by Meyring at 6:03 p.m. on July 14, 2012. The Call Center notified William Reitze, District 9 Ventilation Supervisor, at 6:13 p.m. July 14, 2012. Reitze called Colowyo mine and issued a 103(j) order verbally to Noah Meyring at 6:22 p.m., to secure the accident scene and assure miners safety at the mine. Reitze then notified Barry Grosely, Craig Field Office Supervisor at 6:25 p.m., and instructed Grosley to dispatch an inspector to the accident scene. Grosely directed Coal Mine Inspectors Phillip Gibson and Jim Ellenberger to go to the mine and initiate the accident investigation. Gibson modified the 103(j) order to a 103(k) order upon arrival at the mine. Scott Markve, Lead Accident Investigator, was dispatched from the Gillette, Wyoming Field Office on July 15, 2012.

Upon arrival at the accident scene, the investigation team conducted a preliminary examination of the truck and the surrounding area. Photos and measurements were taken of the water truck's route of travel. The in-cab controls and cab contents were also photographed and examined. MSHA Technical Support Branch assisted with the investigation. MSHA's Educational Field Services Division also assisted with the investigation.

On July 22, 2012, the on-site portion of the investigation was completed. A list of persons who participated in the investigation is shown in Appendix A. The accident investigation team conducted nine interviews during the investigation. A list of persons interviewed is shown in Appendix B.

Discussion

Accident Site

The haul road where the accident occurred is known as Ridge road. Ridge road is a perimeter haul road that runs in a north/south direction along the west perimeter of the mine, between the West pit and South Taylor pit. The accident occurred in line with the West pit. The road is cut into the side of the mountain with a berm on the east side and the slope of the mountain serving as a barrier to the west. This road is one and one half miles in length. The road has an average grade of 9.6 per cent. This road is maintained by the mine and was dry and in good condition at the time of the accident. Temperatures were in the mid 90 degree range. The berm and slope kept the water truck from leaving the road, as designed. All aspects of the haul road were found to be in compliance. The haul road condition and maintenance of the road was ruled out as a direct causal factor in this accident. The maintenance and physical condition of the haul road did not contribute to the cause of the accident.

Water Truck

1) General Machine Information: The machine involved in the accident was a 1997 Volvo Model A35C Articulated Hauler and consisted of two main sections, the tractor unit and the load unit. Instead of an elevated dump body, the load unit was fitted with an 8,000 gallon Wotco water tank; model WT 8000 – A35C, serial # 2556-01, that was manufactured on 5/28/2003. The empty operating weight of the truck was approximately 57,000 pounds (lbs.) and the rated load capacity was 70,500 lbs. The weight of a full tank of water (67,000 lbs.) was within the rated load capacity. The truck was powered by a Volvo Model TD122 KAE, 12 liter, six cylinder, turbocharged diesel engine, and was equipped with an exhaust retarder. The automatic transmission had six forward gears and two reverse gears. It also had a high and low range in the drop box that was selected using a rocker switch on the dashboard. The top speed in sixth gear, low range was 20.9 mph and the top speed in sixth gear, high range was 33.8 mph. The steering was actuated by hydraulic cylinders with a ground dependent hydraulic pump that provided secondary steering. The hauler had six wheels, with one axle on the tractor unit and two axles on the load unit. The truck had constant 4-wheel drive at the steering and front tandem axles; and 6-wheel drive function can be engaged with a dashboard switch. There were 13,542.1 hours on the hour meter.

2) Damage From the Accident: The tractor portion of the water truck was found overturned on its left side and the water tank unit was upside down. The water tank had one dent in the upper-left quadrant of the tank. The left side fender and engine cover on the tractor unit were bent and the air cleaner housing was partially crushed. The right rear side window in the truck's cab was knocked out as a result of the accident and the left side mirror was broken. The interior and exterior of the cab were not damaged. The missing cab window was on the right side of the cab, opposite the door, and was 17 inches wide at the top, 27½ inches long, and 21 inches wide at the

bottom. The hydraulic lines, electrical lines, and air lines were inspected. A wire connector to the low brake pressure sensor came apart when the wiring was pulled tight due to the relative rotation of the load and tractor units during the roll-over. Two plastic air lines for the water cannon control valve located at the top-rear of the water tank were also broken and the two left side tires on the load unit were deflated due to forces on the tire and rim during the rollover.

3) Control Positions: The cab control positions were noted upon arrival at the accident site. The transmission selector was in the "forward, drive" position. The high-low gear range selector was in the "high" position. The parking brake was released. The spring for the throttle, brake, and retarder pedals returned to the neutral position and operated freely. The exhaust retarder toggle switch was in the "on" position. The engine stop control was in the "out" position. These control positions may have been changed by the first rescuers on the scene.

4) Fuel System and Engine Shutdown Control Evaluation: After the truck was up-righted, the fuel system was evaluated. The fuel filters were removed and both were full of fuel. The water separator was also removed and found to be full of fuel without any water. This indicated the engine did not run out of fuel at the time of the accident. The fuel injectors were removed and the starter motor was operated to expel small amounts of oil that entered the cylinder bores during the rollover. After the injectors were replaced, the engine started readily, which allowed operational tests to be conducted. Prior to starting, the engine oil level was found to be to the full mark on the dipstick.

After the engine was started, the fuel gauge indicated the tank was ¼ full. The engine was designed to be shut down by pulling a red push-pull control marked "stop" which cut off the fuel when pulled outward. Turning the ignition key to the "off" position alone will not stop the engine.

5) Transmission Evaluation: After the truck was started the transmission fluid level was checked and found to be low. Nine gallons of transmission fluid was added to bring it to the full mark on the dipstick. The total capacity of the transmission, including the filters and oil cooler, was 10.6 gallons according to the service manual. The position of the truck after the rollover allowed transmission fluid to leak out. When the machine was operated to test the brakes and steering there were no transmission leaks. The oil level visible in the hydraulic tank sight glass was in the acceptable operating range. The drop box and axle fluid levels were also in the correct operating range.

6) Brake System Design: The hauler was equipped with 6-wheel, external, caliper-disc service brakes. The service brakes were fully hydraulic and split into a front circuit for the tractor unit, and a rear circuit for the load unit. The front axle was equipped with four calipers per wheel and both rear axles had three calipers per wheel. The system included 14 accumulators that were fed by an unloading valve from an engine driven pump and each circuit of the split brake system had its own accumulators.

The parking brake consisted of a spring-applied, air-released, disc brake that acted on the drive shaft of the load unit. The parking brake could be applied manually using a lever in the cab

located on the right side cab console near the gear shift lever. If the air in the parking brake system was depleted the parking brake would self-apply. The parking brake was not designed to automatically apply when the engine was shut down.

7) Brake System Evaluation and Testing: After the truck was up-righted and the damage caused by the accident was repaired, brake testing was conducted.

Before starting the engine the fluid level showing in the brake oil tank sight glass indicated a full tank. After the engine was started and the brake accumulators were charged, no fluid was showing in the brake tank reservoir sight glass, giving the appearance that the tank level was low. According to the Volvo service manual, the brake fluid level should be checked after depleting the stored oil in the accumulators. This is done by pumping the service brake pedal at least 30 times, which depletes the stored brake oil in the accumulators and consequently, raises the oil level in the brake tank. The brake tank was apparently overfilled at the time of the accident, because when the service brake was pumped numerous times to deplete accumulator pressure to allow the installation of a test gauge, the brake reservoir tank overflowed and about a quart of oil came out of the filler cap opening and onto the ground. Pre-operational check sheets for the truck indicated an oil leak on the left side of the truck. The overflowing brake tank and brake tank breather were on the left side of the engine compartment. No other oil leaks were found during the examination of the engine compartment.

Service brake pressure tests: As specified in the service manual a test gauge was connected to the pressure check connection port located on the tractor unit accumulator bank. The engine was started and at low idle the hydraulic pressure increased to 2,700 psi which was within the correct operating range stated in the service manual. The brake was applied repeatedly to decrease the pressure and at 2,400 psi the pump cut-in pressure was reached and the pressure increased back to 2,700 psi indicating correct operation according to the service manual. With the engine stopped, the service brake was applied four times and the pressure dropped to 2,125 psi, which was more than the minimum pressure of 2,103 psi specified in the service manual for this test. Since the pressure remained above 2,103 psi, no further action is needed according to the service manual. If the pressure falls below 2,103 psi during the four-application brake test, the service manual recommends an additional pressure build-up test. Even though the truck involved in the accident passed the four-application brake test, the additional test was performed. The additional test consisted of operating the starter motor while the engine stop control was in the “out” position (the engine will not start under these conditions). The manual stated that the test gauge connected at the pressure check connection port will show a rapid pressure increase to the lowest pressure pre-charge pressure of the accumulators. Then the pressure will increase very slowly. Testing showed that the transition point was at 800 psi which was below the 1,232 psi specified in the service manual. This was an indication that the pre-charge pressure in an accumulator was possibly low.

Dynamic service brake deceleration tests were done next and a Tapley deceleration meter was used to measure the deceleration rate. The tests were conducted while the truck was empty, as it was during the accident, from a speed of 5 to10 mph on a level, hard packed dirt surface. A deceleration of 0.60 G (gravity force) was measured for the forward direction of travel and 0.47

G in the reverse direction of travel. This is equivalent to a grade holding ability of approximately 75 per cent in the forward direction and 53 per cent in the reverse direction.

The truck was also placed on a test ramp and the service brake had the capability of holding the empty truck on an 11 per cent test grade.

While the truck was on the test ramp and with the hydraulic pressure in the normal operating range, the engine was shut off. The service brake was released and then immediately reapplied a dozen times as the truck incrementally moved down the grade and then stopped each time when the service brake was reapplied. Finally, after the twelfth stop the service brake pedal was held down by the operator for 3½ minutes and the truck maintained its position on the test ramp.

The service brake lining thicknesses and service brake rotor thicknesses were measured and all were within the specifications stated in the Volvo service manual. The built-in lining thickness indicator pins were present in 19 of the calipers but were missing in the top-front caliper on the right side rear tandem. The missing pins (one for the inner pad and one for the outer pad) apparently scored the brake rotor at this wheel but the rotor thickness was still within the Volvo specification. All the brake rotors and linings were clean with no oil contamination.

The parking brake also had the capability of holding the empty truck on an 11 percent test ramp. In addition, during the truck recovery the Volvo truck was pulled forward with a dozer and the parking brake had the capability to slide the steering axle tires and the forward tandem axle tires on a dirt surface. As described in the service manual, the parking brake acts on the load unit drive shaft and two axles are affected by the parking brake since the truck has constant 4-wheel drive and a longitudinal differential lock. The parking brake self-applied when all the air pressure was lost.

There were three indicator lights related to the braking system on the dashboard and these were evaluated. The “park brake applied” indicator light on the dashboard did not function because the bulb was burned out. When a replacement bulb was installed the “park brake applied” light functioned as designed.

The functionality of the low service brake oil warning light was verified by removing the float valve from the brake tank and simulating a low brake oil condition. When this was done the low brake oil warning light illuminated, as it was designed to do. The low service brake pressure warning light also illuminated, as it was designed to do, when the key was turned to the “run” position and was extinguished when the brake pressure reached 2,103 psi.

The parking brake rotor and linings were examined and there was no evidence of brake burning or a bluish color in the brake disc. If the parking brake had been applied for the distance the truck drifted down the hill, evidence of a bluish disc color or other heat related effects would be likely. The brake disc and linings were clean.

8) Steering System Design: The truck was equipped with hydraulic cylinder actuated articulated steering and was controlled with a steering wheel in the cab. The truck was also provided with a

ground dependent hydraulic pump for the secondary steering system. The ground driven pump was located in the drop box and supplied oil for emergency steering when the machine was moving in the forward direction at speeds down to approximately 1.9 mph. The ground driven pump does not provide oil for emergency steering in the reverse direction.

9) Steering System Evaluation: The steering system was operated extensively and no steering defects were found.

10) Retarder System Design The truck was equipped with two retarders; an engine exhaust retarder and a hydraulic transmission retarder. The engine exhaust retarder was controlled by a dashboard switch. If it was switched on, the exhaust retarder was designed to engage whenever the throttle pedal was released. The exhaust retarder was designed to function only if the engine speed was between 1,100 rpm and 2,400 rpm.

The transmission retarder was applied using a foot pedal and was designed to function if the engine speed was above 840 rpm and the travel speed exceeded 1.1 mph.

11) Retarder Engine Stall Tests: The truck was held on an 11 per cent test grade using the service brake and with the front end up-slope; the engine ran without any tendency to stall. (The truck was ascending a 9.6 per cent grade at the time of the accident.) The retarder pedal was then depressed while the service brake pedal was held down and the engine did not stall. An attempt was made to pull through the applied service brake to further load the engine while on the 11 per cent slope and the engine showed no tendency to stall. The truck was driven off the test ramp and operated in a level open area. While the truck was in motion, the brake pedal and retarder pedal were pushed down simultaneously while the exhaust brake switch was in the "on" position and the engine did not show any signs of stalling.

12) Other: The seat belt latched and unlatched when tested. The back-up alarm also functioned.

Summary of Physical Factors for the Water Truck

1) The truck was empty when the accident occurred. Testing showed that the service brake had the capability of holding the empty truck on a 75 per cent grade in the forward direction and a 53 per cent grade in the reverse direction. All the brake rotor thicknesses and brake lining thicknesses were within the dimensions specified in the service manual. The built-in lining thickness indicator pins were present in 19 of the calipers but were missing in the top-front caliper on the right side rear tandem. Service brake system pressure tests described in the service manual were performed and indicated the truck was in an acceptable operational condition.

2) The "parking brake applied" indicator light did not function. No other parking brake defects were found.

3) The steering system was evaluated and no defects were found.

4) The seatbelt was in safe operating condition.

Summary: The water truck functioned correctly. No evidence of defects in the brakes, steering, exhaust, seatbelt or air conditioning units were found.

Toxicology

An autopsy found the presence of the chemical 1,1-Diflouroethane in the victim's body, as a result of "Intentional Inhalation." The only source of this chemical present in the victim's water truck was a can of Compucessory Power Duster, which is a computer accessory. The chemical's material safety data sheet (MSDS) Section 2. states, the hazard of inhalation as "Excessive intentional inhalation may cause respiratory tract irritation and central nervous system effects (headache, dizziness). Vapors may cause dizziness or suffocation." MSDS Section 7. Handling and Storage, lists the directions for safe handling as "Avoid breathing mists or aerosols of this product. Use good industrial hygiene practices in handling this material." The MSDS Section 8., Exposure Controls/Personal Protection, has these items listed; Engineering controls, "Use only under good ventilation conditions or with respiratory protection." Respiratory protection, "Where exposure guideline levels may be exceeded, use an approved NIOSH respirator." The can of Compucessory Power Duster was the only source of the chemical 1,1-Diflouroethane present in the cab of the water truck.

The 1,1-Diflouroethane can showed no punctures or damage, which could have caused a discharge from the can. Accidental inhalation, such as from an unplanned discharge from the can, would be very unlikely as 1,1-Diflouroethane is heavier than air and would have settled toward the floor of the cab, near the victim's feet. The truck's air conditioner selector levers were set to intake fresh air into the cab, which could have diluted the concentration of 1,1-Diflouroethane.

Colowyo Coal Company Hazardous Communication Program

This program is required under 30 CFR, § 47.1. The program shall apply to all employees and contractors who may be exposed to potential hazardous products. The Hazardous Communication Program addresses all aspects of hazardous products used at this mine including:

- Inventory of potentially hazardous products
- Procurement of new hazardous products
- Procedures for safe handling and use of hazardous products
- Worker health awareness through Hazard Communication
- Hazardous product recycling or disposal
- Employee training on hazardous products

The mine had a Hazardous Communication Program in place, however no record of training could be found for the victim concerning the use of Compucessory Power Duster. Training in

the hazards of this product was not provided. The mine only trained on the generic requirements of the Hazardous Communication program during annual refresher training, experienced miner training, or new miner training. The practice of not training miners on the specific hazards of the chemical 1,1-Diflouroethane was contributory to this accident.

Company Safety Policy

The company safety program addressed general requirements for employment at the Colowyo Mine. Two subjects addressed as a result of the accident that were found in non-compliance were the mandatory use of seatbelts and also the victim was found to be under the influence of a chemical, which caused physical impairment. The mandatory use of seatbelts in all mobile equipment operated on the mine site was a condition of employment. This subject matter is presented to all employees when they are hired initially and is also given during Part 48 training (new miner, experienced miner, and annual refresher).

Experience and Training

Kawcak had 31 weeks of mining experience, with 7 days as an operator for this model of water truck (Volvo Model A35C Articulated Hauler). All of Kawcak's mining experience was at this mine.

Kawcak had received the required Part 48 training for a new miner. An evaluation of the mine's Part 48 training plan showed the mine to be in compliance with the exception of the task training module for the Volvo water truck (c/n 266). The review of task training on the water truck involved in the accident showed no structured task training on the safe operation of this specific water truck. This was the only water truck of its type on the mine site and was significantly different from the other water trucks on this mine site. The mine did not have a task module to guide the task training on this truck. The training given to miners trained on this truck did not include mention of emergency operation for the water truck involved in the accident. The task training modules for all other water trucks on this mine included emergency operating procedures, including braking, steering, and shut down procedures. The training modules for other water trucks and heavy equipment at this mine also included a written checklist to ensure the training covered all aspects of the operation of the equipment.

The water truck emergency operating procedures for the Volvo water truck involved in the accident were never discussed with the victim. Although the mine did provide basic operating training for this truck (how to start the truck, drive the truck, fill the water tank, and turn on the valves for the water tank), the mine did not complete the emergency operating procedures portion of the training for Kawcak prior to permitting him to operate the water truck. The lack of this aspect of task training contributed to the accident.

No record of specific hazardous material training for Kawcak was found for the Compucessory Power Duster. The lack of the hazardous material training also contributed to this accident.

Root Cause Analysis

An analysis was conducted to identify the most basic causes of the accident that were correctable through reasonable management controls. The following root causes were identified:

1. *Root Cause:* The mine operator failed to train the operators of this model water truck (Volvo Model A35C Articulated Hauler) in all aspects of operation. Specifically, no emergency operating procedures were presented to the operators of this model water truck.

   Corrective Action: The mine operator developed specific task training modules for all mobile equipment used at the mine and trained all mobile equipment operators and mechanics on operating procedures, including emergency operating and stop procedures.

2. *Root Cause:* The mine's program of instruction did not ensure the water truck driver wore his seatbelt at all times while operating the truck.

   Corrective Action: The mine re-enforced the safety program policy to all miners concerning the mandatory use of seatbelts in all mobile equipment operated on the mine site. A record of the training discussion with the miners was provided to MSHA

3. *Root Cause:* The mine operator did not ensure the operator of the water truck maintained full control of the water truck.

   Corrective Action: The mine operator shall ensure the mobile equipment operators follow all mine policies concerning safe equipment operation. All truck and equipment operators were trained in company policies and safe equipment operation.

4. *Root Cause:* The mine's program of instruction failed to prevent the mine employees from being affected or impaired by the chemical 1,1-Diflouroethane, which was available to employees at the mine. The miners were allowed to obtain hazardous chemicals from the warehouse, without being provided training on the hazards of the chemicals. The chemical, 1,1-Diflouroethane, if inhaled, can cause various physical effects, including light-headedness, dizziness, unconsciousness, and death.

   Corrective Action: The mine was required to provide specific training on the use of any hazardous chemical present at this mine, as per the Hazardous Communication Plan in effect at the mine. The miners were trained in the hazards of 1,1-Diflouroethane.

Conclusion

The accident occurred because the mine operator failed to train the operators of this model water truck (Volvo Model A35C Articulated Hauler) in all aspects of operation. The victim lost control of his water truck while ascending the haul road. The water truck lost motive power and descended the haul road with the truck cab facing uphill. The accident occurred when the victim failed to maintain full control of the water truck while in motion. In addition, the operator of the truck (victim) was not trained adequately in any emergency shutdown procedures for this model of water truck. Finally, a post mortem toxicology report for the victim indicated the presence of the chemical 1,1-Diflouroethane. The chemical, if inhaled, can cause various physical effects, including light-headedness, dizziness, unconsciousness, and death.

Signed,

Carlos Mosley

Date 1/16/13

Carlos Mosley,
Acting District Manager

Enforcement Actions

1. A 103(j) Order, number 8477810, was issued to ensure the safety of all miners during and after any recovery actions for the affected area. This order was modified to include all rubber-tired equipment at this mine, with the exception of pick-up trucks. The order was modified to section 103(k) order at 11:06 pm on July 14, 2012.

2. A 104(d)(1) citation was issued for failure to present/complete task training as prescribed in 30 CFR, § 48.27(a)(3). No miner was trained on any emergency procedures for the truck involved in a fatal accident at this mine.

3. A 104(a) citation was issued for a violation of 30 CFR, § 77.1708. The mine did not ensure the victim was following the mine's program in regards to safety.

4. A 104(a) citation was issued for a violation of 30 CFR, § 77.1710(i). The miner (victim) was not wearing the seatbelt where a Roll Over Protection System (ROPS) was provided.

5. A 104(a) violation was issued for a violation of 30 CFR, § 77.1607(b). The miner failed to maintain full control of the water truck during operation, which resulted in a fatal accident.

Appendix A

List of persons participating in the investigation:

Tri-State Generation and Transmission Association

Kent Mahanna	Senior Manager Corporate Safety
Seth Villard	CSP

Colowyo Management Officials

Chris McCourt	Mine Manager
Blake Davis	Mobile Equipment Maintenance Supervisor
Noah Meyring	C-Crew Production Supervisor
Michael Gush	Safety Administrator
Travis Sondrol	Maintenance Manager

Colowyo Miner's Representatives

Bill Shue	Miner's Representative
Tim Mose	Miner's Representative
Steve Berquist	Miner's Representative
Jim Hatfield	Miner's Representative

Colowyo Employees

Crew

Carl Moomey	Dragline Operator
Joe Pickering	Mechanic
Jerry Magas	Surveyor
Josh Slaight	MERT Member
Ray Price	MERT Member/EMT
Suzanne Alder	Equipment Operator
Bruce Steffel	Equipment Operator
Curtis Schrimsher	Equipment Operator

Volvo CE

Tim O'Neill	Company Representative
Mike Rogers	Company Representative
John Bartz	Director Product Assistance

Sherwin & Howard LLC.

Pat Miller	Counsel
Rod Smith	Counsel

Kineticorp LLC

Neal Carter	Technician
Eric Thomas	Technician

Power Equipment Company

Alan Bennett	Mechanic

Mine Safety and Health Administration
Accident Investigators

Scott A. Markve	Lead Accident Investigator
Jim Ellenberger	Accident Investigator
Phillip Gibson	Accident Investigator
Barry Grosley	Accident Investigator
Ronald Medina	Mechanical Engineer
Bill Schroeder	Educational Field Services
Christina Stalnaker	Industrial Hygienist, Office of the Center Chief
Michael Valoski	Sr. Industrial Hygienist, Physical/Toxic Agents Div

State of Colorado, Division of Reclamation Mining and Safety

Scott Waybright	Mine Inspector/Safety Trainer

Appendix B

Persons Interviewed

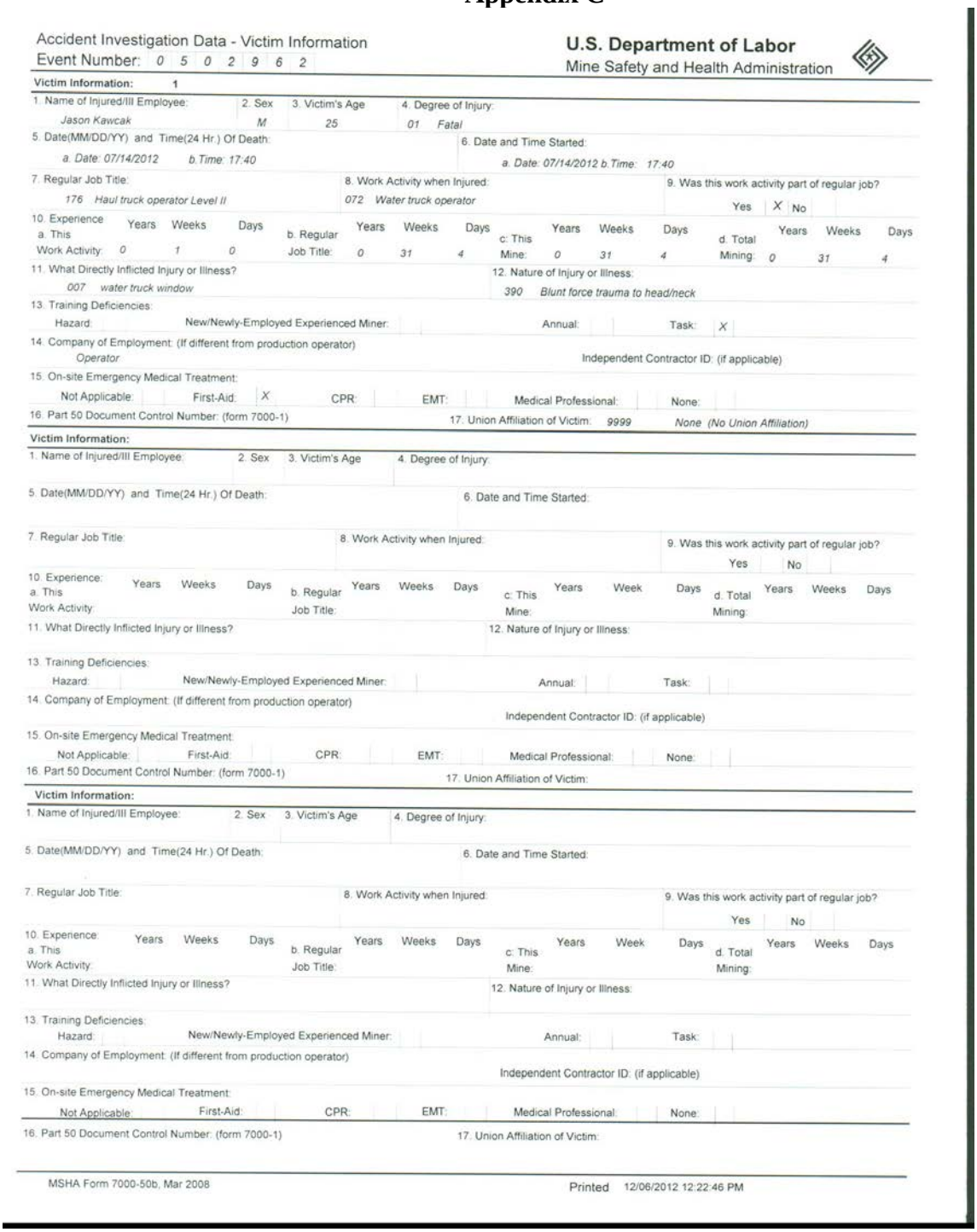
Colowyo Employees

Josh Slaight	MERT Member
Ray Price	MERT Member/EMT
Suzanne Alder	Equipment Operator
Bruce Steffel	Equipment Operator
Curtis Schrimsher	Equipment Operator
Carl Moomey	Dragline Operator
Joe Pickering	Mechanic

Colowyo Management Officials

Blake Davis	Mobile Equipment Maintenance Supervisor
Noah Meyring	C-Crew Production Supervisor

Appendix C



Accident Investigation Data - Victim Information
Event Number: 0 5 0 2 9 6 2

U.S. Department of Labor
Mine Safety and Health Administration

Victim Information: 1

1. Name of Injured/Ill Employee: *Jason Kawcak*
2. Sex: *M*
3. Victim's Age: *25*
4. Degree of Injury: *01 Fatal*
5. Date(MM/DD/YY) and Time(24 Hr.) Of Death: *a. Date: 07/14/2012 b.Time: 17:40*
6. Date and Time Started: *a. Date: 07/14/2012 b.Time: 17:40*
7. Regular Job Title: *176 Haul truck operator Level II*
8. Work Activity when Injured: *072 Water truck operator*
9. Was this work activity part of regular job? Yes: X No:
10. Experience

	Years	Weeks	Days
a. This Work Activity:	0	1	0
b. Regular Job Title:	0	31	4
c: This Mine:	0	31	4
d. Total Mining:	0	31	4

11. What Directly Inflicted Injury or Illness? *007 water truck window*
12. Nature of Injury or Illness: *390 Blunt force trauma to head/neck*
13. Training Deficiencies: Hazard: New/Newly-Employed Experienced Miner: Annual: Task: X
14. Company of Employment: (If different from production operator) *Operator* Independent Contractor ID: (if applicable)
15. On-site Emergency Medical Treatment: Not Applicable: First-Aid: X CPR: EMT: Medical Professional: None:
16. Part 50 Document Control Number: (form 7000-1)
17. Union Affiliation of Victim: *9999 None (No Union Affiliation)*

Victim Information:

1. Name of Injured/Ill Employee:
2. Sex:
3. Victim's Age:
4. Degree of Injury:
5. Date(MM/DD/YY) and Time(24 Hr.) Of Death:
6. Date and Time Started:
7. Regular Job Title:
8. Work Activity when Injured:
9. Was this work activity part of regular job? Yes: No:
10. Experience

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

11. What Directly Inflicted Injury or Illness?
12. Nature of Injury or Illness:
13. Training Deficiencies: Hazard: New/Newly-Employed Experienced Miner: Annual: Task:
14. Company of Employment: (If different from production operator) Independent Contractor ID: (if applicable)
15. On-site Emergency Medical Treatment: Not Applicable: First-Aid: CPR: EMT: Medical Professional: None:
16. Part 50 Document Control Number: (form 7000-1)
17. Union Affiliation of Victim:

Victim Information:

1. Name of Injured/Ill Employee:
2. Sex:
3. Victim's Age:
4. Degree of Injury:
5. Date(MM/DD/YY) and Time(24 Hr.) Of Death:
6. Date and Time Started:
7. Regular Job Title:
8. Work Activity when Injured:
9. Was this work activity part of regular job? Yes: No:
10. Experience

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

11. What Directly Inflicted Injury or Illness?
12. Nature of Injury or Illness:
13. Training Deficiencies: Hazard: New/Newly-Employed Experienced Miner: Annual: Task:
14. Company of Employment: (If different from production operator) Independent Contractor ID: (if applicable)
15. On-site Emergency Medical Treatment: Not Applicable: First-Aid: CPR: EMT: Medical Professional: None:
16. Part 50 Document Control Number: (form 7000-1)
17. Union Affiliation of Victim:

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