**UNITED STATES**
**DEPARTMENT OF LABOR**
**MINE SAFETY AND HEALTH ADMINISTRATION**

**COAL MINE SAFETY AND HEALTH**

**REPORT OF INVESTIGATION**

**Surface Coal Facility**

**Fatal Exploding Vessel Under Pressure Accident**
**July 30, 2006**

**Circle M Enterprises, Inc. (T7I)**

**Philippi, WV**

**at**

**Star Bridge Preparation Plant-Rail Loadout**
**Carter Roag Coal Company**
**Starbridge, Randolph County, West Virginia**
**I.D. No. 46-06736**

**Accident Investigators**

**Ronald T. Tulanowski**
**Coal Mine Safety and Health Inspector-Roof Control**

**Ronald L. Postalwait**
**Coal Mine Safety and Health Inspector**

**Jerry W. Vance**
**Mine Safety and Health Specialist (Training)**

Originating Office
Mine Safety and Health Administration
District 3
604 Cheat Road
Morgantown, West Virginia 26508
Carlos T. Mosley, Acting District Manager

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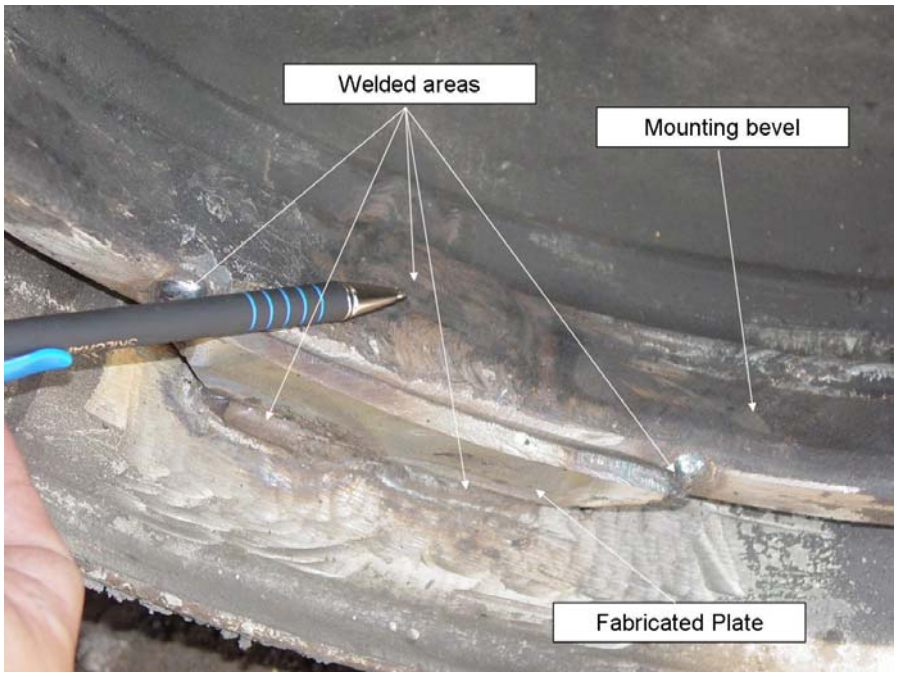
## OVERVIEW

On Sunday July 30, 2006, at approximately 3:00 p.m., Jeremy Todd Heckler, a 30 year old contractor truck driver and welder employed by Circle M Enterprises, Inc., I.D. No. T7I, with approximately 10 years of welding experience, was fatality injured while welding and grinding on a tire rim that had an inflated tire mounted on it. The victim had been employed by the contractor for 23 days, and had approximately 10 years of welding experience and 23 days mining experience. The heat from welding and grinding resulted in an ignition and explosion as the interior of the tire released combustible gases as the tire was heated.



## GENERAL INFORMATION

The Star Bridge Preparation Plant-Rail Load, Carter Roag Coal Company, is located near Helvetia, Randolph County, West Virginia. The plant began processing coal in 2005. The plant processes coal from two company owned underground coal mines located near the plant. The coal is transported by contractor trucking companies from the mines to the plant. After the coal is processed, it is transported by contractor trucking companies to the clean coal stockpile storage area. The refuse is also transported by contractor trucking companies to the refuse disposal facility.

The preparation plant processes coal three shifts a day, five days a week, and employs 17 people. An average of 6,000 tons of raw coal is processed daily.

A truck shop owned by Carter Roag Coal Company, leased by Circle M Enterprises, Inc. Mine Safety and Health Administration (MSHA) I.D. No. T7I is used to service and repair trucks. The shop is located behind the clean coal stockpile storage area on mine property.

The principal officers for the preparation plant at the time of the accident were:

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|---|---|
| Rick McFall | General Manager |
| Donald Jones | Safety Director |

The principal officers for the Circle M Enterprises, Inc. at the time of the accident were:

| | |
|---|---|
| Randall McCauley | Owner |

Prior to the accident, MSHA completed the last regular safety and health inspection on February 09, 2006. The non-fatal day's lost (NFDL) incident rate during the previous quarter for the preparation plant was 0.0. Prior to July 30, 2006 the rate for Circle M Enterprises, Inc. was 0.0.

## DESCRIPTION OF THE ACCIDENT

On Saturday, July 29, 2006, Jeremy Heckler, Truck Driver/Welder, employed by Circle M Enterprises, Inc., I.D. No. T7I, had driven the No. 18 truck from the central shop operated by Circle M Enterprises, Inc., near Arden in Barbour County, West Virginia, to the Star Bridge Preparation Plant in Randolph County, West Virginia. Caroline Watson, friend of the victim, was following the truck in a personal vehicle and picked up Heckler. The two left the plant immediately after dropping the truck off.

On Sunday, July 30, 2006 at approximately 11:00 a.m., Heckler and Watson entered the preparation plant property. The two traveled in a personal vehicle to the truck shop located behind the clean coal stock pile storage area. Heckler and Watson parked the personal vehicle in the shop. Heckler removed an electric welding machine, a hand-held grinder and other hand tools to work on the truck.

Heckler drove the No. 18 truck to the front of the shop and removed the left front tire. He then attempted to re-weld a crack on the rim of the tire, and used the grinder in the process. Watson assisted him by pouring water and placing wet rags on the tire in order to cool the tire as welding and grinding were being performed. This process continued for a couple of hours.

Watson entered the passenger door of the personal vehicle to eat lunch, while Heckler continued to weld and grind on the rim of the tire. Approximately thirty minutes later, at about 1:30 p.m., as Heckler was using the grinder to smooth the weld, the tire and rim assembly exploded.

There were no eyewitnesses to the accident. Immediately after the explosion, Watson began to search for Heckler in the smoke/dust laden environment. She began moving materials that had fallen from the roof of the shop. She finally located Heckler under some material, near the rear of the personal vehicle. Heckler showed no sign of life.

Karl Amorusa, employee of Circle M Enterprises, Inc., was servicing air conditioning systems on dump trucks that were parked near the shop. Amorusa heard the explosion and immediately entered the shop. He removed fallen materials in order to provide access into the area where Heckler and Watson were located. Amorusa drove a personal vehicle to the front gate of the plant and informed Jerry McClure, security guard, of the accident. McClure attempted to use the preparation plant office phone, but was unable to contact Emergency Services. He then drove to the Carter Roag Coal Company, 1-A underground mine, approximately 2 miles away and contacted the Randolph County/Upshur

County EMS at approximately 2:57 p.m. The Randolph County EMS, Pickens Fire Department and The Randolph County Sheriffs Department responded at approximately 3:15 p.m. Brenda Daley, Randolph County Medical Examiner, pronounced Mr. Heckler dead on the scene at 3:20 p.m. on July 30, 2006.

## INVESTIGATION OF ACCIDENT

At approximately 6:11 p.m., on Sunday July 30, 2006, Kenneth Kelly notified Greg Fetty, Staff Assistant to the District 3 manager, that a fatal accident had occurred. Fetty verbally issued a 103 (k) order to ensure the safety of miners until an investigation of the accident scene could be completed. Ronald T. Tulanowski, MSHA Coal Mine Safety and Health Inspector, Roof Control Group and Ronald L. Postalwait, MSHA Coal Mine Safety Health Inspector from the Bridgeport Field Office were dispatched to the scene. They arrived at 10:00 p.m. and secured the area.

An investigation was conducted in cooperation with the West Virginia Office of Miner's Health, Safety and Training. Other participants included management personnel of Carter Roag Coal Company. A list of those persons who participated in the investigation is contained in Appendix A of this report.

On July 31, 2006 Jerry W. Vance, MSHA Mine Safety and Health Specialist (Training) joined the investigation. Formal interviews were conducted, the accident scene was investigated, photographs, measurements and sketches were made of the area and training records were reviewed. MSHA received custody of the rim and tire and arranged to have it analyzed by MSHA Technical Support.

## DISCUSSION

### Equipment

The equipment involved was an International Paystar 5000 dump truck, Company Number 18, Vehicle Identification Number 2HTTGJTOHC000554, model F-5040, manufactured 11-07-02. The tire was a Goodyear tubeless type 425/65R22.5, usually inflated with the maximum recommended air pressure of 120 pounds. The rim was identified as a single piece Firestone 15 degree drop-center demountable type rim, size 22.5 X 13.00, manufactured May 12, 1986. The welder was a 230 volt, 45.5 amp made by Airco, owned by the victim. The grinder was a hand held 7.0 amp Craftsman, also owned by the victim.

## Examinations

June 15, 2006 was the last recorded date a pre-operational examination was conducted on the No.18 International Paystar 5000 dump truck. No defects were recorded. The truck had been removed from service for repairs. The welder and grinder were personal property of the victim, brought from his residence on the day of the accident and no record of any examination could be found.

## Training

The victim's occupation was Truck Driver/Welder. One of the job assignments was hauling refuse from the Star Bridge Preparation Plant to the refuse storage area. This occupation is part of the production process and regularly exposed the victim to mine hazards. Therefore the victim was a miner as defined in 30 CFR Part 48.22 (a) (1). Through interviews it was also determined the victim never worked in or around a surface or underground mine prior to his employment with Circle M Enterprises at the Star Bridge Preparation Plant.

Interviews and training records revealed that the operator did not provide the victim with comprehensive new miner training as required in 30 CFR Part 48.25(a). The operator also did not instruct the victim in the safety and health aspects and safe work procedures as required in 30 CFR Part 48.27(c) for the task of rim repair.

The operator did provide a completed MSHA training form (5000-23) indicating the victim had received 8 hours of surface truck driver training on June 16, 2006 prior to his employment at Circle M Enterprises Inc. In reviewing the West Virginia Office of Miners' Health Safety, and Training Coal Truck Driver Training Program Manual, and a interview with Jack Hefner, Safety Consultant who provided the training, instruction and course material did not provide training associated with mine hazards for rim and tire replacement.

## Accident Scene

At the time of the explosion, a Paystar dump truck, company number 30 and a 1999 Chevrolet Cavalier, the personal vehicle of Ms. Caroline Watson, was also parked inside the truck shop. Two mounted tires that would fit or replace the left front tire of the number 18 truck were located in the shop. The tire and rim assembly was inflated with air during the welding/grinding process when the accident occurred.

## Laboratory Analysis

The laboratory evaluation was conducted by the Approval and Certification Center (A&CC) and the Pittsburgh Safety and Health Technical Center (PS&HTC) as part of this investigation.

Microscopic examination of a sample from the tire liner near the welded area showed signs of liner material degasification. Degasification begins at lower temperatures than the self ignition temperature and mixing these gases with compressed air within the tire produces a combustible gas/air mixture which can be ignited.

The observed heat damage to the tire liner indicates that the liner burned or smoldered prior to the accident. The welding of the mounting bevel provided the mainstay source of heat to cause the tire liner to start burning or smoldering. Subsequent welding of the fabricated plate to the rim provided an ignition source.

The physical evidence supports two possible sources of ignition which may have ignited the combustible gas/air mixture during the welding of the fabricated plate to the rim: 1. Additional welding caused direct contact of the gas/air mixture to a hot rim surface near the welds; 2. Hot brands/embers of burning liner material directly contacted the combustible gas/air mixture.

## 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 or mitigated its consequences.

Listed below are the root causes identified during the analysis and the corresponding corrective actions implemented to prevent a recurrence of the accident:

Root Cause: Management did not have effective safety procedures for replacing truck tires, rims/wheels, and prohibiting the repair of rims.

Corrective Actions: Management has instituted policies prohibiting the repair of rims, replacement of tires and rims, and procedures for general tire/rim safety. In the replacement policy, damaged rims/or wheels shall be replaced according to manufacturer recommendations. Management has trained all affected miners in these new policies.

Root Cause: Procedures and policies were not in place to ensure that training requirements were being met. Lack of training pursuant to 30 CFR 48.27(c) further contributed to the likelihood of the accident.

Corrective Actions: The operator shall provide instruction in the safety and health aspects and safe work procedures for the task of tire and rim repair (replacement).

## CONCLUSION

The accident was caused by the application of heat to the rim and tire assembly, which caused a buildup and subsequent ignition of combustible gases inside the tire. The accident resulted from the failure of the operator to prohibit rim repair, provide oversight to ensure proper tire and wheel replacement, and failure to ensure proper training.

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Carlos T. Mosley Date
Acting, District Manager

## ENFORCEMENT ACTIONS

A 103(k) Order, No. 7099732 was issued to Circle M Enterprises Inc., to ensure the safety of all persons until an investigation was completed and the equipment and the area deemed safe.

A 104(a) Citation, No. 6602328, was issued to Circle M Enterprises Inc. for a violation of Title 30 CFR 77.1607(l).

On Sunday July 30, 2006, at approximately 3:00 p.m., a 30 year old truck driver/welder, employed by Circle M Enterprises, Inc., was fatally injured in the truck shop located near the Star Bridge Preparation Plant. The victim was welding and/or grinding on a truck rim that had an inflated mounted tire. The fatal accident was caused by the application of heat to the tire rim, which caused a buildup and ignition of combustible gases inside the tire.

The victim had been employed by the contractor for 23 days.

A 104(a) Citation, No. 6602329, was issued to Circle M Enterprises, Inc. for a violation of Title 30 CFR 48.25(a).

On Sunday July 30, 2006, at approximately 3:00 p.m., a 30 year old truck driver/welder, employed by Circle M Enterprises, Inc., was fatally injured in the truck shop located near the Star Bridge Preparation Plant. The victim was welding and/or grinding on a truck rim that had an inflated mounted tire. Through interviews and reviewing the training records of Circle M Enterprises, Inc., it was determined the operator did not provide the victim with comprehensive training as required in 30 CFR Part 48.25(a) (Training of new miners).

Through interviews and the investigation, it was determined the victim's occupation was Truck Driver/Welder. One of the job assignments was hauling refuse from the Star Bridge Preparation Plant to the Refuse Storage Area. This occupation is part of the production process and regularly exposed the victim to mine hazards. Therefore the victim was a miner as defined in 30 CFR Part 48.22 (a) (1). Through the interviews it was also determined the victim never worked in or around a surface or underground mine prior to this employment.

If the victim was given the above training, then he would have been aware the task he was performing would require additional hazard specific training.

A 104(d)(1) Citation, No. 6602330, was issued to Circle M Enterprises Inc. for a violation of Title 30 CFR 48.27(c).

On Sunday July 30, 2006, at approximately 3:00 p.m., a 30 year old truck driver/welder, employed by Circle M Enterprises, Inc., was fatally injured in the truck shop located near the Star Bridge Preparation Plant. The victim was welding and/or grinding on a truck rim that had an inflated mounted tire. Through the interviews and reviewing the training records of Circle M Enterprises it was determined the operator did not instruct the victim in the safety and health aspects and safe work procedures as required in 30 CFR Part 48.27 (c) for the task of Rim and Tire Repair (Replacement).

Through the interviews and the investigation it has been determined the operator had knowledge the victim was going to repair the truck rim.

If the victim was given the above training, then he would have recognized the hazard specific to the task he was performing.

## APPENDIX A
## PERSONS PARTICIPATING IN THE INVESTIGATION

### Carter Roag Coal Company

Kenny Walter.....Plant Foreman
Robert McAtee.....Safety Director
Donald Jones.....Safety Director
Rick McFall.....General Manager

### Circle M. Enterprises, Inc.

Randall McCauley.....Owner
Paul D. Swecker.....Truck Boss
Karl Amorusa.....A/C Mechanic
John Freeman.....Truck Driver

### KELLY SURVEYING

Kenny Kelly.....Owner

### Mountaineer Investigation & Security, Inc.

Jerry McClure.....Security Guard

### West Virginia Miners Health Safety & Training

James Dean.....Acting Director
Brian Mills.....Inspector at Large
Terry Farley.....Administrator
John Meadows.....Surface Inspector

### Mine Safety and Health Administration

Ronald T. Tulanowski.....Coal Mine Inspector-Roof Control
Ronald L. Postalwait.....Coal Mine Inspector
Jerry W. Vance.....Mine Safety and Health Specialist (Training)

### MSHA – Approval & Certification Center

F. Terry Marshall..General Engineer, Applied Engineering Division

**APPENDIX B**
**Accident Site**