

UNITED STATES
DEPARTMENT OF LABOR
MINE SAFETY AND HEALTH ADMINISTRATION

REPORT OF INVESTIGATION

Underground
(Coal)

Fatal Powered Haulage Accident
November 1, 2021

Mountaineer II Mine
Mingo Logan Coal LLC
Sharples, Logan County, West Virginia
ID No. 46-09029

Accident Investigators

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Mine Safety and Health Electrical Specialist

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OVERVIEW

On November 1, 2021, at 4:56 p.m., Brian Wallen, a 49 year-old assistant maintenance shift supervisor with 25 years of mining experience, died when he lost control of the No. 7 Electric Mine Utility Vehicle (EMU) while traveling down a mine slope. The No. 7 EMU crashed at the bottom of the slope, pinning Wallen underneath.

The accident occurred because the mine operator did not: 1) have procedures in place for safe travel of rubber-tired, self-propelled equipment on the Surface Slope, and 2) remove unsafe equipment from service to prevent miners from operating equipment with known safety defects.

GENERAL INFORMATION

Mingo Logan Coal LLC, a wholly owned subsidiary of Arch Resources, Inc., owns and operates the Mountaineer II Mine in Sharples, Logan County, West Virginia. The underground coal mine employs 334 miners and operates three nine-hour shifts, five days per week. The mine operates five mechanized mining units using continuous mining machines (CMM) to extract coal. Shuttle cars transport coal from CMMs to coal feeders, where belt conveyors transport coal to the surface stockpile.

The principal management officials for Mountaineer II Mine at the time of the accident were:

Jonathan Hensley
David Porter
Jerry Mann

Mine Manager
Production Superintendent
Safety Manager

The Mine Safety and Health Administration (MSHA) completed the last regular safety and health inspection at this mine on September 28, 2021, and a regular safety and health inspection

was ongoing at the time of the accident. The 2020 non-fatal days lost (NFDL) incident rate for the Mountaineer II Mine was 3.20, compared to the national average of 2.98 for mines of this type.

DESCRIPTION OF THE ACCIDENT

On November 1, 2021, at approximately 2:00 p.m., Wallen arrived at the mine. Wallen gathered his tools and supplies and placed them on the No. 7 EMU parked outside of the maintenance shop (shop). After receiving clearance from Adam Ooten, Dispatcher, the mine surveillance video shows Wallen entering the mine from the top of the Slope portal on the No. 7 EMU at 4:56 p.m.

Shortly after Wallen went underground, Oliver Walker, Warehouse Technician, contacted Ooten on the mine phone and instructed him to look at the video monitor for the camera located at the bottom of the Slope. Walker informed Ooten that the video monitor showed what looked like an EMU overturned. Ooten viewed the video monitor in the dispatcher's office and replayed the video. He saw the No. 7 EMU crash at the bottom of the Slope.

Ooten attempted to contact Wallen by radio but received no response. Ooten immediately radioed Anthony Hunt, Motor Crewman/Emergency Medical Technician (EMT), and Kevin Johnson, Outby Laborer, who were located near the bottom of the Slope, approximately 500 feet from the accident scene. Ooten then went to the mine foreman's office and informed Carl Hitchcock, Shift Supervisor/EMT, of the accident. Hitchcock went to the dispatcher's office, observed the overturned No. 7 EMU on the video monitor, and ran to the Slope to go underground to the accident scene.

Walker went to the shop and informed Steven Workman, Electrician/EMT, and Garrett Lambert, Electrician, of the accident. Workman and Lambert went to the top of the Slope and followed Hitchcock into the mine on foot. Raun Parsley, Fireboss, and Michael Deckard, Parts Runner, were at the bottom of the elevator shaft when Ooten informed Parsley on the mine phone about the accident. Ooten instructed Parsley to go to the accident scene to assist. Parsley and Deckard then traveled on a rail-mounted personnel carrier to the accident scene.

A. Hunt and Johnson arrived at the accident scene and saw the No. 7 EMU overturned with Wallen pinned underneath. Wallen was unresponsive, and Johnson could not detect a pulse. Johnson instructed A. Hunt to go to the supply area to retrieve first aid supplies and a chain ratchet to lift the No. 7 EMU off Wallen. Johnson radioed Ooten to inform him of Wallen's condition and instructed him to send assistance.

Hitchcock arrived at the accident scene shortly after Johnson and A. Hunt. Workman, Lambert, Parsley, and Deckard arrived just after Hitchcock. Hitchcock called Ooten on the radio and instructed him to call 911 and send others into the mine to help. Ooten called 911 at 5:07 p.m. Ooten radioed Austin Preece, Section/Outby Foreman, and instructed him to take his crew to the accident scene. Preece informed his crew and traveled to the accident scene with Micah Mahon, CMM Operator, and Andrew Reynolds, Outby Laborer.

At 5:10 p.m., Johnson connected one end of a chain ratchet to an I-beam while Deckard connected the other end of the chain ratchet to the frame of the No. 7 EMU. Johnson operated the chain ratchet and lifted the No. 7 EMU enough to free Wallen. Parsley and Johnson used crib blocks to secure the No. 7 EMU when it was lifted off the mine floor. Hitchcock, Workman, and Deckard pulled Wallen from underneath the No. 7 EMU. Hitchcock did not detect a pulse on Wallen. Hitchcock and Deckard began cardiopulmonary resuscitation (CPR). Hitchcock instructed Ooten on the radio to send emergency medical kits (EMT Kits) to the accident scene.

Jessie Alfrey, Warehouse Technician, overheard Walker on the mine phone talking about the accident. Alfrey went to the hoist house to see if he could assist and was instructed by Walker to get the EMT Kits. Alfrey drove the shop truck to the warehouse, loaded the EMT Kits, and took them to the hoist house where they were sent down the Slope on the hoist car.

Upon arrival at the accident scene, Preece was instructed by Hitchcock to get the EMT Kits that were coming down the Slope. Mahon arrived and assisted with CPR, switching out with Deckard, Lambert, and Workman. At 5:34 p.m., Preece and Parsley retrieved an EMT Kit from the hoist car and carried it to the accident scene.

Charles Browning, Assistant Shift Supervisor, who overheard miners talking about the accident on the radio, contacted Hitchcock on the radio and asked if he (Hitchcock) needed help. Hitchcock instructed Browning to come to the accident scene. As Browning arrived at the accident scene, Deckard, Hitchcock, Mahon, Workman, and Preece were securing Wallen to a stretcher. A. Hunt and Browning carried Wallen to the hoist car. While travelling to the surface, Browning continued CPR, and A. Hunt and Deckard administered oxygen.

Paramedics from the Logan County Emergency Ambulance Service Authority arrived at the mine at 5:36 p.m. and parked the ambulance near the top of the Slope. At the surface, Wallen was placed on a gurney and carried to the ambulance. The paramedics received Wallen at 5:50 p.m. and began their medical assessment in the ambulance. The paramedics called Medical Command located at Cabell Huntington Hospital, Huntington, West Virginia, to report a death in the field. Andrew Young, MD, from the Medical Command, responded to the call and pronounced Wallen dead at 6:00 p.m.

INVESTIGATION OF THE ACCIDENT

On November 1, 2021, at 5:22 p.m., Ooten contacted the Department of Labor National Contact Center (DOLNCC) to report the accident. At 5:45 p.m., the DOLNCC contacted Mark Muncy, Supervisory Mine Safety and Health Inspector. Muncy contacted Brian Dotson, District Manager; Tracy Calloway, Staff Assistant; and David Thacker, Supervisory Mine Safety and Health Inspector. Thacker sent Paul Milum, Mine Safety and Health Inspector, and Calloway sent Robert Maynard, Mine Safety and Health Electrical Specialist, to the mine.

Milum and Thacker arrived at the mine site at 7:20 p.m. and met with Jonathan Hensley, Mine Manager; John Kinder, Deputy Director; Benjamin Hamilton, Inspector at Large; Mark Keyser, District Inspector, Michael Pack, Assistant Inspector-at-Large, and Stephen Evans, District Inspector with the West Virginia Office of Miners' Health, Safety, and Training (WVOMHST)

to discuss the accident. At 7:25 p.m., Milum issued an order under the provisions of Section 103(k) of the Mine Act to assure the safety of miners and preservation of evidence. MSHA's accident investigation team conducted an examination of the accident scene, interviewed miners and management, and reviewed conditions and work procedures relevant to the accident. MSHA conducted this investigation in conjunction with the WVOMHST. See Appendix A for a list of persons participating in the investigation.

DISCUSSION

Events Leading up to the Accident

October 30, 2021 Evening Shift

On October 30, 2021, at approximately 4:00 p.m., Billy Hunt, Maintenance Shift Supervisor, Lambert, and William Gray, Electrician, boarded the No. 7 EMU at the underground charging station near the elevator. B. Hunt noticed the rear driver-side tire rubbing against the suspension spring of the No. 7 EMU. B. Hunt, Lambert, and Gray got off the No. 7 EMU and didn't observe any obvious defects. B. Hunt drove the No. 7 EMU back to the underground charging station with Lambert. B. Hunt left the No. 7 EMU at the charging station and took the No. 5 EMU. Later in their shift, B. Hunt informed Hitchcock that the No. 7 EMU was making a noise and there might be a problem with the rear suspension. Hitchcock told B. Hunt he would take the No. 7 EMU outside to the shop.

Hitchcock performed a pre-operational examination of the No. 7 EMU and then drove it to the surface with Michael Ramey, Shuttle Car Operator. While driving, Hitchcock noticed that the rear end of the No. 7 EMU was loose and heard a popping sound. Hitchcock also noticed that, when pressed, the brake pedal went further to the floor compared to the No. 8 EMU. After arriving on the surface, Ramey drove the No. 7 EMU to the shop and connected it to the battery charger. Hitchcock sent an email to management and maintenance personnel stating that the No. 7 EMU had been brought outside and the rear brakes and suspension needed work.

October 31, 2021, at 7:00 p.m., Shawn Gillispie, Fireboss, arrived at the mine. Gillispie asked Kyle Brown, Shift Supervisor, if he could use the No. 7 EMU. Brown allowed it, so Gillispie conducted a pre-operational examination of the No. 7 EMU and drove it out of the shop. Nicholas Bishop and Jackie Bell, Move Crew Foremen, rode the No. 7 EMU with Gillispie. Gillispie stopped at the top of the Slope to check the brakes and make sure the No. 7 EMU was in low gear. While traveling down the Slope, Gillispie began losing control of the No. 7 EMU and tried to stop by first using the service brakes, then pulling the parking brake. Gillispie was unable to stop the No. 7 EMU until it reached the bottom of the Slope where the ground was level.

October 31, 2021 Midnight Shift

Based on interviews, investigators learned that after completing preshift examinations, Gillispie, Bishop, and Bell tried to take the No. 7 EMU back up the Slope to the surface for brake repairs. Approximately 500 feet from the surface, the No. 7 EMU lost power and began rolling backward down the slope. Bishop and Bell jumped off the No. 7 EMU, as Gillispie steered the rear of the machine into the wall of the Slope entry to stop it. Gillispie, Bishop, and Bell left the No. 7

EMU on the Slope and walked to the surface. At approximately 10:45 p.m., Gillispie, Bishop, and Bell, informed Brown of the incident with the No. 7 EMU and that the brakes needed to be checked. Gillispie also told Brown the No. 7 EMU lost power while returning to the surface and was left on the slope.

Brown and Okie Adams, Greaser, walked down the slope to the No. 7 EMU. Brown towed the No. 7 EMU to the surface with a hoist car. Brown informed Mark Pauley, Assistant Maintenance Shift Supervisor, that the No. 7 EMU was disabled and was by the hoist house. Zachary Podunavac, Warehouse Technician, used a forklift to take the No. 7 EMU to the shop where Charlie White, Electrician, connected the No. 7 EMU to the battery charger. Later during the shift, White noticed the batteries were not charging on the No. 7 EMU and that the terminal end of the positive battery terminal wire had burned off. The bolt which connected the battery wire to the battery was also burned. White spliced a four-inch 1/0 American Wire Gauge wire with a terminal onto the original battery wire. White then connected the battery wire to the battery terminal with a new bolt and began recharging the batteries. At approximately 5:00 a.m. on November 1, 2021, White informed Brown that he had repaired the battery wire and the No. 7 EMU was ready for use. White was not informed of any issues with the braking systems and therefore did not conduct any testing or repairs other than the battery wire and bolt.

November 1, 2021 Day Shift

On November 1, 2021, after attending a safety meeting at 7:00 a.m., Steve Curry, Electrician, went to the shop, disconnected the No. 7 EMU from the battery charger, and parked it outside so he could clean the shop. Roy Duncan, Maintenance Shift Supervisor, instructed Joshua Spears, Electrician, to conduct a pre-operational examination on the No. 7 EMU. Duncan informed Jason Chambers, Continuous Miner Coordinator, that he was preparing an EMU to replace an emergency personnel carrier that had broken down. Bishop overheard Duncan speaking to Chambers. Bishop told Duncan not to take the No. 7 EMU. Bishop explained to Duncan and Chambers the trouble he, Gillispie, and Bell encountered during the previous shift.

At approximately 7:30 a.m., Duncan went to the shop, where Spears informed Duncan that David Plumley, Electrician, saw brake fluid leaking from a brake caliper underneath the No. 7 EMU. Duncan stated that they did not have time to work on the No. 7 EMU. Duncan, Plumley, and Spears went underground and left the No. 7 EMU behind the shop. At approximately 3:00 p.m., Duncan returned to the surface and met with Wallen in the shop. Duncan did not discuss any issues with the No. 7 EMU with Wallen. Despite multiple reports of safety issues with the No. 7 EMU, over October 30, 31, and November 1, the mine operator did not initiate any action to remove the No. 7 EMU from service to prevent others from operating it.

Location of the Accident

The accident occurred at the bottom of the Surface Slope, which extends from the surface down to the Alma Coal Seam level. The Slope is 1,536 feet long, with an average 12-degree grade. The No. 7 EMU came to rest approximately 50 feet in by Survey Station No. 34 at the bottom of the Slope (see Appendix B).

Equipment Involved

The No. 7 EMU is a Pillar Innovations, LLC (Pillar) Electric Mine Utility Vehicle, Model LT-4. EMUs are rubber-tired, self-propelled equipment that miners use to travel and transport light materials from the surface to underground areas and throughout the mine. When investigators examined the No. 7 EMU at the accident scene, the main power switch was in the “off” position, the gear selector was in the “low” position, and the differential was in the “one-wheel drive” position. Investigators found no visual defects on the operational controls. Investigators also observed brake fluid leaking from the piston chamber.

Modifications

Originally manufactured by Polaris, Pillar modified the No. 7 EMU from a two-seat vehicle to a four-seat vehicle. According to the Polaris manual, the Gross Vehicle Weight (GVW) for the Polaris base model is 2,750 pounds. GVW is the weight of the empty vehicle plus the maximum payload capacity. Maximum payload capacity is the amount of weight the vehicle can carry before it is overloaded.

Pillar extended the frame, added seats, and added a steel plate on the bottom of the vehicle as a skid plate, replacing the plastic plate installed by Polaris. The modifications increased the weight of the No. 7 EMU and lowered the maximum payload capacity set by Polaris. Pillar provided the original Polaris manual for the No. 7 EMU after making these modifications, which did not account for the reduced payload capacity.

The weight of an identical EMU to the No. 7 EMU with the same cargo that was in the No. 7 EMU at the time of the accident is 2,680 pounds. To remain under the maximum payload capacity, the person operating the No. 7 EMU must weigh less than 70 pounds. With Wallen operating the No. 7 EMU, the maximum payload capacity was exceeded at the time of the accident. Operating in an overloaded condition can result in poor handling, reduced braking capacity, and faster wear of parts. Investigators determined that this contributed to the accident.

Brakes

MSHA Technical Support investigators examined the service brakes from the No. 7 EMU and used a calibrated micrometer to measure the thickness of the brake pads and discs. All brake pad measurements were in compliance with the manufacturer’s recommendations. The left rear brake caliper had broken off the No. 7 EMU prior to the accident, and was secured to the frame with a plastic cable zip tie. The zip tie was used to keep the damaged caliper from dragging along the mine floor while it was being operated. The missing piston and seal from the caliper indicated that there was no rear braking capacity, which contributed to the accident.

MSHA Technical Support investigators also tested the parking brake and determined that it was out of adjustment. When applied, the parking brake provided no resistance to the drive axles due to slack in the parking brake cable.

Drive Axles

MSHA Technical Support investigators conducted rotation testing of the drive axles and differentials and did not identify any mechanical deficiencies. The left rear axle carrier knuckle was severely worn where the wheel hub had been previously attached. Investigators determined

that the wear observed on the knuckle was the result of prolonged use with a misaligned wheel hub assembly.

Wheel Hub

The wheel hub of the No. 7 EMU had multiple cracks around the splined section (section with ridges or teeth), which connects the rear driveshaft to the wheel. These cracks indicate that the driveshaft did not have a tight connection with the wheel hub, causing spline wear. The splines were severely worn, indicating the cracks and loose connection were present prior to the accident. The damage caused the power to improperly transfer from the motor to the wheel.

Suspension

MSHA Technical Support investigators found the torsion bar top mounts on both sides of the rear were broken. The torsion bar is part of the rear suspension that helps stabilize the load of the EMU. The torsion bars cannot function properly without the mounts that hold them in place, therefore the broken mounts negatively affected the handling of the No. 7 EMU.

Electrical Components

MSHA Technical Support observed the examination of the No. 7 EMU motor controller conducted by the manufacturer, Sevcon, and determined that the motor controller was in proper operating condition. MSHA Technical Support examined the bolt which connected the battery wire to one of the 12 Volt direct current (DC) NexSys® batteries on the No. 7 EMU at the MSHA Approval and Certification Center located in Triadelphia, West Virginia.

The bolt was not the correct material, length, or thread pitch, based on the battery manufacturer's requirements, resulting in a relatively high electrical resistance. The improper bolt and washer combination, and low bolt torque, likely caused an excessive voltage drop at high loading conditions, causing the No. 7 EMU to lose its regenerative braking ability. Investigators determined that this condition contributed to the accident.

Examinations

Bruce Epperheart, Assistant Maintenance Manager, conducted the last required weekly electrical examination of No. 7 EMU on October 26, 2021, and reported no hazards. MSHA does not require pre-operational examinations on this type of equipment. When conducting pre-operational examinations on the EMUs at Mountaineer II Mine, miners do not use a checklist or make a record.

Training and Experience

Wallen had approximately 25 years of mining experience, including over one year at the Mountaineer II Mine. Wallen received task training to operate and conduct pre-operational examinations on an EMU on August 14, 2020, and annual refresher training on December 5, 2020. All training was completed in accordance with MSHA Part 48 training regulations.

ROOT CAUSE ANALYSIS

The accident investigation team conducted an analysis to identify the underlying causes of the accident. The team identified the following root causes, and the mine operator implemented the corresponding corrective actions to prevent a recurrence.

1. Root Cause: The mine operator did not have procedures in place for safe travel of rubber-tired, self-propelled equipment on the Surface Slope.

Corrective Action: The mine operator developed and implemented a written plan that prohibits the operation of all self-propelled mobile equipment on the Surface Slope.

2. Root Cause: The mine operator did not remove unsafe equipment from service to prevent miners from operating equipment with known safety defects.

Corrective Action: The mine operator developed and implemented written procedures to conduct pre-operational examinations on all personnel carrier equipment and properly remove equipment from service, including locking out and tagging out, when safety defects are present.

CONCLUSION

On November 1, 2021, at 4:56 p.m., Brian Wallen, a 49 year-old assistant maintenance shift supervisor with 25 years of mining experience, was fatally injured when he lost control of the No. 7 Electric Mine Utility Vehicle (EMU) while traveling down a mine slope. The No. 7 EMU crashed at the bottom of the slope, pinning Wallen underneath.

The accident occurred because the mine operator did not: 1) have procedures in place for safe travel of rubber-tired equipment on the Surface Slope, and 2) remove unsafe equipment from service to prevent miners from operating equipment with known safety defects.

Approved By:

Brian Dotson
District Manager

Date

ENFORCEMENT ACTIONS

1. A 103(k) order was issued to Mingo Logan Coal, LLC.

A fatal accident occurred on November 1, 2021, at approximately 4:56 PM. This order is being issued under the authority of the Federal Mine Safety and Health Act of 1977, under Section 103(k) to insure the safety of all persons at the mine, and requires the operator to obtain the approval of an authorized representative of MSHA of any plan to recover any persons in the mine or to recover the mine or affected area. The operator is reminded of the obligation to preserve all evidence that would aid in investigating the cause or causes of the accident in accordance with 30 CFR 50.12

2. A 104(d)(2) order was issued to Mingo Logan Coal, LLC for a violation of 30 CFR 75.1725(a).

A fatal accident occurred at this mine on November 1, 2021, when a miner traveling down the Surface Slope in the No. 7 Electric Mine Utility Vehicle (EMU) crashed and overturned at the bottom of the slope, resulting in crushing injuries to the miner. The mine operator did not maintain the No. 7 EMU in safe operating condition and did not remove it from service. The following unsafe conditions were observed by investigators and contributed to a failure of the braking of the EMU:

1. The braking components were defective, including the left rear brake caliper which was broken off prior to the accident and tied to the frame of the EMU with a plastic cable zip tie.
2. The parking brake did not operate when activated.
3. The left rear wheel bearings were worn and damaged.

Additionally, investigators found the following condition and practice:

1. An improper electrical connection on one of the batteries supplying power to the No. 7 EMU.
2. Repeated operation of the No. 7 EMU that exceeded the maximum payload capacity. This caused poor handling, reduced braking, and faster wear of parts.

Investigators determined numerous agents of the operator knew the No. 7 EMU was not safe to operate and did not take appropriate actions to remove the No. 7 EMU personnel carrier from service. Investigators determined numerous miners were exposed to these unsafe conditions in the days leading up to the fatal accident.

The mine operator engaged in aggravated conduct constituting more than ordinary negligence. The mine operator identified the No. 7 EMU personnel carrier as having a defective braking system on October 30, 2021, October 31, 2021, and November 1, 2021, and did not remove the No. 7 EMU from service. This is an unwarrantable failure to comply with a mandatory standard.

3. A 314(b) safeguard was issued to Mingo Logan Coal, LLC under the provisions of 30 CFR 75.1403-7(f).

A fatal accident occurred at this mine on November 1, 2021, when a miner traveling down the Surface Slope lost control of the No. 7 EMU four-passenger rubber-tired personnel carrier. The personnel carrier crashed and overturned at the bottom of the slope resulting in crushing injuries to the miner. The investigation has determined the operation of rubber-tired equipment on the slope which averages 12-degree grade for a distance exceeding 1,500 feet cannot be safely accomplished. Operating self-propelled equipment on the steep grade creates a situation where a failure of a braking component would result in a serious accident due to the continuous grade without any type of recovery options.

This is a notice to provide safeguard(s) prohibiting the operation of the No. 7 EMU and all other self-propelled mobile equipment on the Surface Slope.

4. A 314(b) safeguard was issued to Mingo Logan Coal, LLC under the provisions of 30 CFR 75.1403-7(g).

A fatal accident occurred at this mine on November 1, 2021, when a miner traveling down the Surface Slope lost control of the No. 7 EMU. The No. 7 EMU crashed and overturned at the bottom of the slope resulting in crushing injuries to the miner. The investigators determined the mine operator knew, or should have known, prior to the accident, that the No. 7 EMU had safety defects affecting the braking system and did not remove it from service or correct the defects.

This is a notice to provide safeguard(s) requiring a pre-operational examination of all personnel carriers to be conducted by a qualified person. Any safety defects observed shall be corrected prior to operation. The results of the pre-operational examinations shall be recorded and maintained on the surface for one year. These examinations shall be reviewed and certified by a mine foreman or equivalent mine official during the next regularly scheduled shift following the shift in which the examination was conducted. The examination records shall be made available to MSHA upon request.

5. A 314(b) safeguard was issued to Mingo Logan Coal, LLC under the provisions of 30 CFR 75.1403-10(l).

A fatal accident occurred at this mine on November 1, 2021, when a miner traveling down the Surface Slope lost control of the No. 7 EMU. The No. 7 EMU crashed and overturned at the bottom of the slope resulting in crushing injuries to the miner. The investigation of this accident determined the mine operator identified safety defects of the braking system on the No. 7 EMU two consecutive days prior to the accident. The mine operator did not have procedures in place to verify self-propelled mobile equipment was removed from service when safety defects were identified to prevent the equipment from being operated before repairs were completed.

This is a notice to provide safeguard(s) requiring the operator to take the following steps when safety defects are found on mobile equipment.

1. The mobile equipment will be immediately removed from service. The equipment will be provided with a lock and tag to prevent it from being inadvertently returned to service. Repairs will begin as soon as possible when the materials needed to repair are available.
2. Electrical equipment that is provided with a means to disconnect the power source shall have the lock and tag attached to the visible disconnect (power plug, cathead, etc.).
3. Mobile equipment, such as personnel carriers, that do not have a visual disconnect for the power source shall have a lock and tag attached to secure the steering wheel or other operational controls to prevent the machine from being inadvertently returned to service prior to the defects being repaired.
4. Before placing any track mounted or rubber-tired personnel carrier into service, a pre-operational check will be conducted to ensure that no safety defects are present. This check will be recorded in a pre-operational inspection book provided on the equipment. All safety defects will be repaired prior to placing the machine in service, or the machine will be locked and tagged out in accordance with the above procedures.

APPENDIX A – Persons Participating in the Investigation

Mountaineer II Mine

Doug Conaway	Corporate Safety Director
Jonathan Hensley	Mine Manager
David Porter	Production Superintendent
Sherman Collins	Mine Foreman
Jerry Mann	Safety Manager
Roy Duncan	Maintenance Shift Supervisor
Billy Hunt	Maintenance Shift Supervisor
Bruce Epperheart	Assistant Maintenance Supervisor
Mark Pauley	Assistant Maintenance Shift Supervisor
Kyle Brown	Shift Supervisor
Carl Hitchcock	Shift Supervisor/EMT
Charles Browning	Assistant Shift Supervisor
Aaron Smith	Assistant Shift Supervisor
Austin Preece	Section/Outby Foreman
Jason Chambers	Continuous Miner Coordinator
Jackie Bell	Move Crew Foreman
Nicholas Bishop	Move Crew Foreman
Shawn Gillispie	Fireboss
Raun Parsley	Fireboss
Steven Workman	Electrician/EMT
Steve Curry	Electrician
Jeff Epperheart	Electrician
William Gray	Electrician
Garrett Lambert	Electrician
David Plumley	Electrician
Joshua Spears	Electrician
Benny White	Electrician
Charlie White	Electrician
Micah Mahon	CMM Operator
Michael Ramey	Shuttle Car Operator
Anthony Hunt	Motor Crewman/EMT
Josh Blackburn	Outby Laborer
Kevin Johnson	Outby Laborer
Andrew Reynolds	Outby Laborer
Michael Deckard	Parts Runner
Jessie Alfrey	Warehouse Technician
Zachary Podunavac	Warehouse Technician
Oliver Walker	Warehouse Technician
Adam Ooten	Dispatcher
Okie Adams	Greaser
Joshua Belcher	Surveyor
Christopher Adkins	Surveyor

Pillar Innovations, LLC

Tim Tice
Eric Guthrie

Vehicle Product Manager
Vice President of Operations

West Virginia Office of Miners' Health, Safety, and Training

John Kinder
Benjamin Hamilton
Michael Pack
Mark Keyser
Stephen Evans

Deputy Director
Inspector at Large
Assistant Inspector-at-Large
District Inspector
District Inspector

Mine Safety and Health Administration

Mark Muncy
Robert Maynard
James Grimmett
Paul Milum
Jordan Rose
Gary Rethage

Supervisory Mine Safety and Health Inspector
Mine Safety and Health Electrical Specialist
Mine Safety and Health Inspector
Mine Safety and Health Inspector
Electrical Engineer, MSHA Technical Support
Mechanical Engineer, MSHA Technical Support

APPENDIX B – Drawing of the Accident Scene

