

UNITED STATES
DEPARTMENT OF LABOR
MINE SAFETY AND HEALTH ADMINISTRATION

COAL MINE SAFETY AND HEALTH

REPORT OF INVESTIGATION

Surface Coal Mine

Fatal Equipment Fire Accident
September 7, 2018

Bear Run Mine
Peabody Bear Run Mining LLC
Carlisle, Sullivan County, Indiana
ID No. 12-02422

Accident Investigators

Bub Whitfield
Coal Mine Safety and Health Inspector

Jason Noel
Coal Mine Safety and Health Inspector

Dustin Galloway
Coal Mine Safety and Health Inspector

Terry Marshall
Mechanical Engineer

Michael Hockenberry
Fire Protection Engineer

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OVERVIEW

On Friday, September 7, 2018, at approximately 3:44 a.m., Robert A. Grostefon, a 60-year-old contract employee with 1 year of total mining experience, was injured after a fire ignited on the Caterpillar 793C haul truck he was operating. Grostefon received burns while exiting the cab of the haul truck. Grostefon died due to complications from his injuries on September 12, 2018.

The likely cause of the fire was a steering hose rupture on the Caterpillar 793C haul truck, company number 2-170, causing hydraulic fluid under high pressure to spray onto hot surfaces of the engine, resulting in a fast-growing fire. The mine operator did not ensure the fire suppression system was properly installed and maintained so that it could mitigate the fire as the haul truck operator escaped. Additionally, the mine operator did not ensure the primary egress stairs and the alternate egress ladder were properly installed and maintained, impeding Grostefon's ability to escape the fire.

GENERAL INFORMATION

The Bear Run Mine is a surface coal mine located near Carlisle, Sullivan County, Indiana, and is operated by Peabody Bear Run Mining, LLC. The mine started

producing coal from the Springfield 7, 6, 5, and 5A seams on September 13, 2010. The coal seams are accessed by two multiple-bench open pits and occasional highwall mining machines. At the time of the accident, the mine employed 619 employees and 93 contract laborers. The mine operates two 10-hour production shifts, seven days per week, producing approximately 20,000 tons of coal per day. The production process involves two draglines, shovels, and haul trucks. Maintenance is performed between production shifts.

The principal officers at this mine at the time of the accident were:

Drew KimeryGeneral Manager
Jeff WheelerProduction Manager

At the time of the accident, a regular (E01) safety and health inspection was in progress. The previous E01 inspection was completed on March 28, 2018. The non-fatal days lost (NFDL) incident rate for the mine for 2017 was 0.64, compared to the national average of 0.78 for mines of this type.

DESCRIPTION OF THE ACCIDENT

On Thursday, September 6, 2018, at approximately 6:45 p.m., Robert A. Grostefon reported for work on his normally scheduled night shift. Grostefon was assigned to operate a Caterpillar 793C haul truck, hauling overburden. His travel route for this shift was from the company number 1-195 shovel, located in Pit 4, to the North and South ends of the Pit 4 dump, a distance of approximately 1 mile.

At approximately 3:40 a.m., Grostefon drove to the South dump and positioned the truck to dump the load of overburden near the berm of the dump site. John Moreland, Bulldozer Operator, noticed flames coming from underneath the operator's cab and wrapping around to the front of the truck as it passed by. Moreland told investigators that he attempted to contact Grostefon on the company radio to notify him of the fire, but by then Grostefon was already trying to get off the truck. Moreland called out a Code Red over the company radio to report an equipment fire on the Pit 4 South dump site. A Code Red is used at the mine to alert miners and the mine's emergency response crews of an emergency situation.

The company dispatch center reported that Grostefon's truck went offline at approximately 3:44 a.m. The truck likely lost communication due to fire damage to the electrical wiring.

According to comments by Grostefon during the rescue and in the hospital, as well as testimony from witnesses, Grostefon tried twice to actuate the fire suppression system in the cab but it did not activate. As Grostefon exited the left side of the cab, he received

burns from flames coming through the grated steel walkway outside, and his polyester shirt caught on fire. Grostefon continued along the grated steel walkway while trying to remove his shirt. He attempted to use the alternative egress ladder but he could not unfasten a section of handrail that blocked him. He then descended the truck's main stairs, in front of the engine. The stairs ended at a platform about 5 feet 3 inches above the ground. From there, another set of stairs is usually lowered to the ground using hydraulic power. However, the Power Step stairs did not fully descend when Grostefon tried twice to lower them. He then jumped to the ground.

Moreland exited the bulldozer and went toward Grostefon's truck. When he saw that Grostefon was clear of the fire, he returned to his bulldozer to reposition it out of the way of emergency vehicles.

Cody Faulk, Fill-in Shift Foreman, was at the equipment parking area when he heard Moreland announce the Code Red. He drove to the South dump, calling for a company ambulance over the radio on the way. He told the ambulance crew to go to the Intercept 1 point at the Pit 4 employee parking lot.

Faulk arrived at the accident site about 2 to 3 minutes after hearing the Code Red. He saw Grostefon bent over with his shirt lying on the ground. Grostefon got in Faulk's pickup truck and they moved away from the fire. After Moreland also got in the truck, Faulk drove to the Intercept 1 point. Tyler Potts, Senior Lead Shot Firer, followed Faulk's truck to the Intercept 1 point.

When the group arrived at the Intercept 1 point, Grostefon was transferred to the company ambulance driven by Matt Plano, Preparation Plant Electrician. Moreland, Potts, and Plano, all members of the Surface Mine Emergency Team (SMET), treated Grostefon's burns by irrigating them with saline and applying burn gel bandages. Grostefon had burns on his head, back, and arms. The SMET team assessed them as 2nd degree burns.

Josh Damron, Water Truck Operator, arrived at the scene of the accident 4 to 5 minutes after hearing the Code Red over the company radio. Damron extinguished the fire in approximately 5 minutes, using the water cannon on the truck. Damron then repositioned the water truck to spray water on the left front tire to help cool it. An additional company water truck and a volunteer fire crew from Dugger, Indiana arrived on scene to assist.

The Sullivan County Ambulance Team arrived at 4:23 a.m. and took over Grostefon's care. Grostefon was taken to Terre Haute Regional Hospital in Terre Haute, Indiana. After his injuries were assessed, he was transferred to Eskenazi Burn Center in Indianapolis, Indiana. Grostefon died from complications from his injuries after five days of treatment. He was pronounced dead on September 12, 2018, at 7:12 p.m.

INVESTIGATION OF THE ACCIDENT

The accident occurred on September 7, 2018, at approximately 3:44 a.m. It was not immediately reported by the mine operator because Grostefon's injuries were not initially considered to be reportable. After the injuries were reassessed at Terre Haute Regional Hospital, the mine operator notified MSHA.

Brock Rider, Safety Supervisor, called the Department of Labor (DOL) National Contact Center at 7:46 a.m. on September 7, 2018, to report the accident. At 8:01 a.m., the Contact Center notified Doug Herndon, Roof Control Supervisor. Herndon notified George Heacock, Supervisory Coal Mine Safety and Health Inspector, who in turn assigned Dustin Galloway, Coal Mine Safety and Health Inspector, to investigate the accident.

Galloway arrived at the mine and issued a 103(k) order at 9:35 a.m. Galloway then traveled to the South dump accident site to conduct the initial on-site investigation. Ryan Swaringen, Fire Suppression Technician, with Cintas Corporation, which installed and maintained the fire suppression system on the haul truck, assisted in the examination.

On September 10, 2018, Jason Noel, Coal Mine Safety and Health Inspector/Surface Specialist, inspected the 2-170 haul truck.

On September 11, 2018, Bub Whitfield, Coal Mine Safety and Health Inspector/Electrical Specialist, traveled to the mine with Noel to continue the investigation. Noel conducted informal interviews.

On September 12, 2018, Whitfield and Noel continued their investigation. Chad Barras, Peabody Director of Safety and Compliance, notified MSHA District Manager Ronald W. Burns that Grostefon had died from complications from his injuries.

On September 13, 2018, Terry Marshall and Mark Kvitkovich, Mechanical Engineers with MSHA Technical Support, worked with investigators to examine the hydraulic stair on the 2-170 haul truck.

On September 19, 2018, formal interviews were conducted at the Bear Run Mine. See Appendix A for a list of those interviewed.

On September 25, 26, and 27, 2018, Kvitkovich and Michael Hockenberry, Fire Protection Engineer with MSHA Technical Support, worked with investigators to determine the cause of the fire and examine the fire suppression system.

DISCUSSION

Company Number 2-170 Caterpillar 793C haul truck

The company number 2-170 Caterpillar 793C haul truck, serial number 4AR00300, was manufactured in 1997. The rigid frame haul truck was placed into service at the mine on April 20, 2010 to haul overburden. The 240-ton truck was equipped with a 2,166 horsepower Caterpillar diesel engine and had a 24 Volt direct current (VDC) electrical system. The mine operator reported the truck had 116,945 operating hours.

The mine operator contracted Cintas to install an ANSUL LT-A-101-30 manual fire suppression system on the haul truck on April 21, 2010. The following year, on August 24, 2011, the mine operator installed a Power Step Inc. electro-hydraulic folding stair assembly (see Appendix B) on the primary egress stairs.

Likely Cause of Fire

The likely cause of fire was traced to a ruptured steering hose underneath the operator's cab (see Appendix C). The hose, which supplied the primary hydraulic pressure from the steering valve to the steering metering pump, had multiple broken steel wire braids in an area about 1-1/2" by 1-1/2". The interior hose liner also had a hole about 1/8"-inch wide by 1-inch long. Investigators were not able to determine why the hose ruptured.

According to the manufacturer, pressure in the hose can reach 3,100 psi during steering operations. At the time the fire started, the operator would probably have been making a sweeping turn to line up the truck with the dump point location. That turn would have provided full pressure to the hose that failed, possibly causing the rupture and allowing high pressure hydraulic fluid to spray onto the hot surfaces of the engine. This would have resulted in a fast-growing fire.

Fire Suppression System

The fire suppression system consisted of four storage tanks, each capable of holding 30 pounds of multipurpose dry chemical agent. The four tanks were mounted on the right side of the truck deck near the engine compartment and were plumbed together to discharge simultaneously when actuated. The four storage tanks and expellant cartridges received minimal heat damage from the fire. Sixteen fixed discharge nozzles were located around the perimeter of the engine compartment.

The truck had two manual actuator stations, one in the cab to the right of the truck operator's seat near the gear console, and one on the front bumper of the truck that was accessible at ground level. To actuate the system, the truck operator would pull a pin and depress the plunger, which would in turn break a foil seal, setting off a burst of pressure through the actuator hoses. The pressure would then cause nitrogen bottles on

the chemical storage tanks to discharge, sending fire suppression chemicals to the 16 nozzles and extinguishing the fire.

Investigators found that the actuator station in the cab had been used. The safety pin had been pulled and the actuator bottle in the cab had been discharged. However, the nitrogen bottles on the chemical storage tanks had not been discharged, and the four storage tanks still contained the proper amount of fire suppression powder. When tested, the pneumatic actuators on the storage tanks and the safety relief valve operated properly.

The fire suppression system actuation hoses were routed through the engine compartment of the truck and were not sleeved with an extreme temperature heat-resistant fire jacket, contrary to recommendations in the ANSUL Vehicle Fire Suppression and Detection Systems manual. The manual describes the engine compartment as a typical vehicle fire hazard and states, "Do not route actuation hose through fire hazard areas. If this cannot be avoided, the hose must be fire jacketed."

The destruction of the actuation hoses in a fire would make the fire suppression system inoperable because the hoses would not be able to transfer pressure from the manual actuators to the actuators on the dry chemical storage tanks. MSHA's investigation found that the rubber components (inner and outer hose coverings) in the engine compartment were consumed in the fire.

The investigation noted that the actuator in the cab was near a display screen that provides the truck operator with instructions from the control room. Although the plastic components were consumed in the fire, the metal mounting post for the display screen remained intact. The screen may have obstructed attempts to strike the manual actuator depending on how the mounting arm was positioned prior to the fire.

The manual actuator on the front bumper had not been activated. The safety pin was still in place and the foil seal was still intact.

The fire suppression system included an engine shutdown pressure switch designed to shut down the engine automatically when the system is activated. Upon inspection, the pressure switch appeared to be in the OFF position, indicating that, at some point during the fire, pressure from the actuation circuit reached it. The pressure may have been created when the victim actuated the system, or heat from the fire could have caused the nitrogen actuator cartridge to vent through the foil seal from overpressure. Given these possibilities, and the fact that the actuator cartridge from the cab had been removed and handled by Jeff Wheeler, Production Manager, before the accident was considered reportable, it could not be determined whether the shutdown switch was moved due to pressure from the heat or actions by the victim.

Emergency Ladder

An alternative egress ladder designed for emergency use was located in front of the operator's cab. Safe access to the ladder required removing a section of handrail that was held to the post by a chain. The manufacturer recommended using a snap clip to allow easy removal of the chain, so that the ladder could be used quickly in an emergency. However, in this case the chain was fastened with a screw pin clevis that could not be unfastened by hand. This condition would impede the ability of the truck operator to use the alternative egress ladder. A miner would have to go between the upper hand rail and chain, below the chain or over the handrail to use the alternative egress vertical ladder.

Folding Stairway

A folding stairway -- Power Step model number TS793C2 -- had been installed to provide safe access to the ground from the end of the primary stairs, which ended more than 5 feet above the ground (see Appendix B). The electro-hydraulic unit was powered by the truck's battery and controlled by switches at the top of the stairway and at ground level.

Tests and visual observations of the step assembly concluded that the electro-hydraulic unit itself was functional but the power supply cable had sustained fire damage. It is likely that fire damage to the power supply cable caused the unit to malfunction when Grostefon tried to use it.

The hydraulic system had an internal leak which allowed the stairs to drift down when not latched, which explains why it was found by investigators in the fully lowered position even though a witness reported that it had been stuck halfway during the accident. A manual release intended to lower the folding stairs when electrical power was lost was inoperable because the pull rod was broken off inside the power unit housing.

A fuse that should have been installed inside the haul truck's battery box to protect the electrical wiring from damage due to excessive current, per the Power Step installation manual, had not been installed.

The toggle switch, located at the top of the folding stairs, used to lower and raise the stairs was labeled incorrectly, reversing the up and down functions. Also, the ground level switch, which was designed to be mounted on the top of the front bumper, was found stuck between the platform frame and the front bumper.

Truck Inspections and Maintenance

Maintenance records for the required semi-annual inspection and maintenance of the fire suppression system were reviewed. The mine operator contracts a local company,

Cintas Fire Protection, to perform the maintenance on all fire suppression systems on the mine site. Based on these records, the last three maintenance inspections for the fire suppression system were conducted on July 31, 2017, January 26, 2018 and most recently July 26, 2018. No defects were noted in the inspection/maintenance records.

The pre-operational inspection conducted by Grostefon at the beginning of his shift on the company number 2-170 haul truck revealed no safety defects.

Training and Experience

On September 17, 2018, John Dagner, MSHA Training Specialist, reviewed training records and found that Grostefon, who had 1 year of total mining experience, had received training as required by 30 CFR § Part 48. However, Grostefon's Form 5000-23 training records were found to have documentation deficiencies. A noncontributory 104(a) citation was issued to Peabody Bear Run Mining LLC for a violation of 30 CFR § 48.9(a).

ROOT CAUSE ANALYSIS

MSHA conducted an analysis to identify the most basic cause or causes of the accident that were correctable through reasonable management controls. Root causes were identified that, if eliminated, would have either prevented the accident or mitigated its consequences.

Listed below are the root causes identified during the analysis and the corresponding corrective actions which were implemented to prevent a recurrence.

Root Cause: The mine operator and Cintas did not ensure the fire suppression system on the Caterpillar 793C haul truck, company number 2-170, was installed and maintained in accordance with manufacturer's recommendations.

Corrective Action: The company number 2-170 haul truck has been removed from service. The mine operator implemented a written program to ensure ANSUL fire suppression systems on rock trucks are properly installed and maintained. In accordance with the program, an ANSUL certified vendor examined these fire suppression systems and all deficiencies are in the process of being repaired. Also, manual fire suppression systems will be replaced with automatic fire suppression systems.

Additionally, all truck operators were retrained on the proper emergency shut down sequence and operation of the ANSUL LT-A-101-30 dry chemical fire suppression system. The mine operator implemented the use of a manual fire suppression actuator simulator and trained all end dump truck operators. Also, all miners were retrained in "Leaks 101," a training course developed by the mine operator on identifying and addressing leaks and/or accumulations that could create a fire hazard.

Cintas retrained its technicians who install and maintain the ANSUL LT-A-101-30 fire suppression systems on the Caterpillar 793C haul trucks in the requirements of the ANSUL manual. Whenever inspecting, maintaining, or recharging fire suppression systems in the future, Cintas technicians will inform mine operators that MSHA expects the actuation hose to be routed outside the engine compartment or fire-jacketed. For all future installations, Cintas will attempt to avoid routing the actuation hose through the engine compartment of this type of vehicle. If that cannot reasonably be done due to the configuration of the vehicle, Cintas will install a heat resistant fire jacket (heat shielding) around the actuation hose.

Root Cause: The mine operator did not ensure the primary egress stairs and the alternative egress vertical ladder were properly installed and maintained on the Caterpillar 793C haul truck, company number 2-170, to allow miners to escape safely in an emergency situation.

Corrective Action: The mine operator removed all of the Power Step boarding ladders from the Caterpillar 793 end dumps and replaced them with a fixed boarding ladder that is similar to the one installed by the original equipment manufacturer. The mine operator examined all alternative vertical egress ladders on end dumps and repaired/replaced any deficiencies to make sure they are readily accessible as per the original equipment manufacturer's design. The mine operator has trained miners on the installation, maintenance, and preoperational examination of the alternative egress vertical ladder.

CONCLUSION

On Friday, September 7, 2018, at approximately 3:44 a.m., Robert A. Grostefon, a 60-year-old contract employee with 1 year of total mining experience, was injured after a fire ignited on the Caterpillar 793C haul truck he was operating. Grostefon received burns while exiting the cab of the haul truck. Grostefon died due to complications from his injuries on September 12, 2018.

The likely cause of the fire was a steering hose rupture on the Caterpillar 793C haul truck, company number 2-170, causing hydraulic fluid under high pressure to spray onto hot surfaces of the engine, resulting in a fast-growing fire. The mine operator did not ensure the fire suppression system was properly installed and maintained so that it could mitigate the fire as the haul truck operator escaped. Additionally, the mine operator did not ensure the primary egress stairs and the alternate egress ladder were properly installed and maintained, impeding Grostefon's ability to escape the fire.

Approved by:

Ronald W. Burns
District Manager

Date

ENFORCEMENT ACTIONS

1. A 103 (k) Order No. 9110103, was issued to Peabody Bear Run Mining LLC, on September 7, 2018.

An accident occurred at this operation on 9/7/2018 at approximately 3:44 a.m. As rescue and recovery work is necessary, this order is being issued, under Section 103(k) of the Federal Mine Safety and Health Act of 1977, to assure the safety of all persons at this operation. This order is also being issued to prevent the destruction of any evidence which would assist in investigating the cause or causes of the accident. It prohibits all activity on the Pit 4 Spoil dump, extending from the south edge of the dump to 300 feet north including the Caterpillar 793C haul truck company number 2-170, until MSHA has determined that it is safe to resume normal mining operations in this area. This order applies to all persons engaged in the rescue and recovery operation and any other persons on-site. This order was initially issued orally to the mine operator at 9:30 a.m. and has now been reduced to writing.

2. 104(a) Citation No. 9106776 was issued to Peabody Bear Run Mining LLC, for a violation of 30 CFR § 77.404(a).

On September 7, 2018, at approximately 3:44 a.m., a miner suffered burn injuries due to a fire occurring on the company number 2-170 Caterpillar 793C haul truck. The miner passed away from his injuries on September 12, 2018, at 7:12 p.m. The company number 2-170 Caterpillar 793C haul truck was not being maintained in safe operating condition due to the following conditions.

The ANSUL LT-A 101-30 manual fire suppression system installed on the haul truck did not properly operate when activated by the miner operating the truck during a fire. The fire suppression actuation lines are routed through the engine compartment of the truck, which is a typical vehicle fire hazard area according to the ANSUL Vehicle Fire Suppression and Detection Systems manual. The manual states, "Do not route actuation hose through fire hazard areas. If this cannot be avoided, the hose must be fire jacketed." The actuation hoses were not sleeved with an extreme temperature heat-resistant fire jacket in accordance with the ANSUL Vehicle Fire Suppression and Detection Systems manual.

The hydraulic Power Step assembly on the stairs on the company number 2-170 Caterpillar 793C haul truck used as the primary means of escape and evacuation from the operators cab is not being properly maintained for adequate means of escape due to the following conditions; 1) The knob and release valve rod are missing from the Power Step power unit module that is intended to allow a

miner to lower the step in the event that the electrical power to the step is lost. 2) The 250 amp fuse referred to in the Power Step installation manual for the 24VDC battery cable supplying power to the step had not been installed. 3) The switch used by miners to lower and raise the step from the stair platform is labeled incorrectly for the up/down functions. 4) The switch designed to be mounted on the top of the front bumper to lower and raise the step from the ground is missing from the mount. It was found stuck between the stair platform frame and the bumper.

In addition, the alternative egress vertical ladder used for escape and evacuation from the operators cab is not being properly maintained. The clevis used to attach the removable lower section of handrail to the vertical handrail post next to the platform outside of the operator cab of the truck could not be unfastened by hand.

3. 104(a) Citation No. 9106777 was issued to Cintas, Contractor ID, NFE, for a violation of 30 CFR § 77.404(a).

On September 7, 2018, at approximately 3:44 a.m., a miner suffered burn injuries due to a fire occurring on the company number 2-170 Caterpillar 793C haul truck. The miner passed away from his injuries on September 12, 2018, at 7:12 p.m. The company number 2-170 Caterpillar 793C haul truck is not being maintained in safe operating condition due to the ANSUL LT-A 101-30 manual fire suppression system installed on the haul truck did not properly operate when activated by the miner operating the truck during a fire. The fire suppression actuation lines are routed through the engine compartment of the truck, which is a typical vehicle fire hazard area according to the ANSUL Vehicle Fire Suppression and Detection Systems manual. The manual states, "Do not route actuation hose through fire hazard areas. If this cannot be avoided, the hose must be fire jacketed." The actuation hoses were not sleeved with an extreme temperature heat-resistant fire jacket in accordance with the ANSUL Vehicle Fire Suppression and Detection Systems manual.

4. 104(a) Citation No. 9106778 was issued to Peabody Bear Run Mining LLC, for a violation of 30 CFR § 77.1606(a).

On September 7, 2018, at approximately 3:44 a.m., a miner suffered burn injuries due to a fire occurring on the company number 2-170 Caterpillar 793C haul truck. The miner passed away from his injuries on September 12, 2018, at 7:12 p.m. The mine operator did not ensure the company number 2-170 haul truck was properly inspected before being placed in operation.

The hydraulic Power Step assembly on the stairs on the company number 2-170 Caterpillar 793C haul truck used as the primary means of escape and evacuation

from the operators cab is not being properly maintained for adequate means of escape due to the following conditions; 1) The knob and release valve rod are missing from the Power Step power unit module that is intended to allow a miner to lower the step in the event that electrical power to the step is lost. 2) The switch used by miners to lower and raise the step from the stairs is labeled incorrectly for the up/down functions. 3) The switch designed to be mounted on the top of the front bumper to lower and raise the step from the ground is missing from the mount. It was found stuck between the stair platform frame and the bumper.

In addition, the alternative egress vertical ladder used for escape and evacuation from the operators cab is not being properly maintained for adequate means of exit due to the clevis used to attach the removable lower section of handrail to the vertical handrail post next to the platform outside of the operator cab of the truck could not be unfastened by hand.

APPENDIX A
Persons Participating in the Investigation
(Persons interviewed are indicated by a * next to their name)

Peabody Bear Run Mining LLC Bear Run Mine Employees

Chad Barras..... Director of Safety and Compliance
Arthur WolfsonAttorney
*John Moreland Bulldozer Operator
*Cody Faulk Fill-in Shift Foreman
*Josh Damron..... Water Truck Operator
*Jeff Wheeler Production Manager
*Drew KimeryGeneral Manager
*James Crockett Pit Supervisor

Custom Staffing Employees

*Adam Moon Dayshift Truck Driver
Jeffrey AhlersAttorney

Fire & Risk Alliance

Justin Geiman Senior Fire Protection Engineer

Caterpillar

Steve Judy..... Fire Investigator

Cintas Corporation

Ryan SwaringenFire Suppression Technician

Mine Safety and Health Administration

Bub Whitfield.....Coal Mine Safety and Health Inspector/Electrical Specialist
Jason NoelCoal Mine Safety and Health Inspector/Surface Specialist
Dustin Galloway Coal Mine Safety and Health Inspector
Terry MarshallMechanical Engineer, MSHA Technical Support
Mark KvitkovichMechanical Engineer, MSHA Technical Support
Michael Hockenberry Fire Protection Engineer, MSHA Technical Support
John Dagner.....Training Specialist

APPENDIX B
Company Truck 2-170 with Power Step Lowered



APPENDIX C
Ruptured Steering Hose



APPENDIX D Victim Information Form

Accident Investigation Data - Victim Information

U.S. Department of Labor

Mine Safety and Health Administration



Event Number: 7 0 0 0 7 2 7

Victim Information: 1

1. Name of Injured/Employee: Robert A. Grostefon		2. Sex: M	3. Victim's Age: 60	4. Degree of Injury: 0 1 Fatal	
5. Date(MM/DD/YY) and Time(24 Hr.) Of Death:			6. Date and Time Started:		
a. Date: 09/12/18		b. Time: 19:12		a. Date: 09/07/18	
b. Time: 18:45					
7. Regular Job Title: 0 7 6 Truck driver		8. Work Activity when Injured: 0 7 6 Truck Driver		9. Was this work activity part of regular job? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
10. Experience: Years Weeks Days a. This Work Activity: 1 13 0		b. Regular Job Title: 1 13 0		c. This Mine: 1 13 0	
d. Total Mining: 1 13 0					
11. What Directly Inflicted Injury or Illness? 0 4 5 Flame, Fire, Smoke, NEC			12. Nature of Injury or Illness: 1 2 0 Burn or scald (heat/hot substance)		
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: X		CPR: EMT: Medical Professional: None:	
16. Part 50 Document Control Number: (form 7000-1)					
17. Union Affiliation of Victim:					