

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

COAL MINE SAFETY AND HEALTH

REPORT OF INVESTIGATION

Surface Mine

**Fatal Machinery Accident
September 09, 2003**

at

**T & W Enterprises, LLC
No. 1
Sitka, Johnson County, Kentucky
ID No. 15-18661**

Accident Investigators

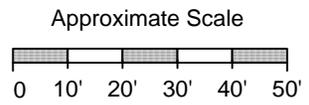
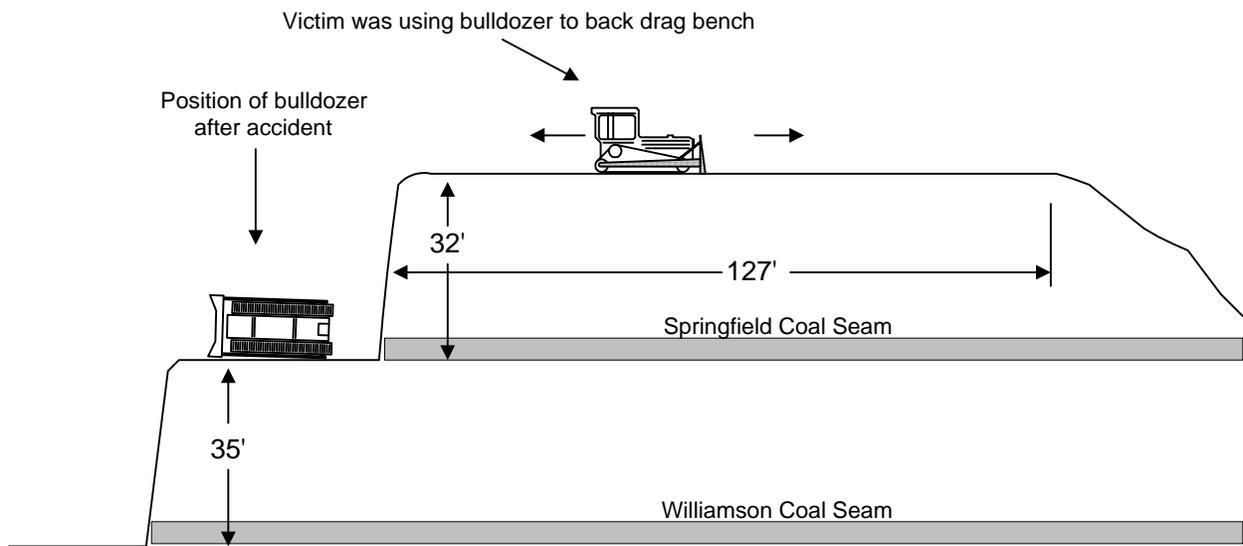
**Jimmy Brown
Coal Mine Safety and Health Inspector**

**Eugene Hennan
Mechanical Engineer**

**Originating Office
Mine Safety and Health Administration
District 6
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Franklin M. Strunk, District Manager**

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Fatal Machinery Accident
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 No. 1 (15-18661)
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OVERVIEW

On Tuesday, September 09, 2003, at approximately 8:15 a.m., bulldozer operator Preston Lee Dye, age 73, was fatally injured when the Caterpillar D8-L bulldozer he was operating went over a 32-foot highwall. Dye had 42 years of mining experience operating heavy equipment, and approximately 16 weeks experience at this mine. There were no witnesses to the accident. The accident occurred as Dye was back-dragging the strip mine bench in preparation for drilling operations.

A thorough technical examination of the bulldozer identified no mechanical defects that may have contributed to the accident. Other potential causes, such as medical conditions, were considered during the investigation. Visibility issues associated with weather conditions were considered along with lighting and other factors.

GENERAL INFORMATION

The No. 1 surface mine of T & W Enterprises, LLC, is located on Daniels Branch Road, just off State Route 201, approximately 9 miles north of Sitka, Kentucky. The mine employs 3 persons and works a single, 10-hour production shift, 5 days per week. Mining is conducted in the Williamson and Springfield coal seams, each of which average 28 inches in thickness. The overburden in this area averages 35 feet between the Williamson and Springfield seams and approximately 30 feet over the Springfield coal seam. The mine produces an average of 50 tons per day from these two seams.

DESCRIPTION OF THE ACCIDENT

On Tuesday, September 09, 2003, Dye started his shift at approximately 6:45 a.m. at the mine site. He met with Billy M. Ward, General Partner and Mine Foreman for T & W Enterprises, LLC, and discussed the plans for the day. Only Dye and Ward were working at the time of the accident. Ward stated that the fog was very thick that morning. As Ward left to get a front-end loader to clean the Williamson pit, Dye began tramping the bulldozer from the previous day's location toward the upper drill bench to clear away rocks and dirt in preparation for drilling operations.

Ward returned to the Springfield pit area at approximately 8:15 a.m. and trammed the front end loader into the pit to begin cleanup work. As he was turning the front end loader around, he heard the backup alarm on Dye's bulldozer continuously beeping. As he approached the location where the sound was originating, he saw the bulldozer lying on its side on the Springfield coal seam bench.

Ward ran to the bulldozer and checked Dye for vital signs and found none. He returned to his vehicle and called 911. Ward then called Claude Stamper, agent for the

operator, to inform him of the accident. Stamper told Ward to stay by the phone and he would notify MSHA and the State. Stamper notified MSHA and the Kentucky Department of Mines and Minerals at approximately 8:35 a.m.

Shortly thereafter, personnel from the Johnson County Sheriff's office and the local ambulance service arrived at the mine. The Johnson County Coroner's office was contacted and the Coroner's presence was requested. The victim was recovered from the bulldozer and transported to the Kentucky State Medical Examiner's Office in Frankfort, Kentucky.

INVESTIGATION OF THE ACCIDENT

Immediately upon receiving notification of the incident, MSHA District 6 accident investigators were dispatched to the scene. Jimmy Brown, Surface Mine Inspector, Robert H. Bellamy, Mining Engineer, and Thomas Meredith, Assistant District Manager (Technical Division) traveled to the mine site and began the investigation. Brown issued a 103(k) Order of Withdrawal to ensure the safety of all persons until an investigation could be completed and a determination made that the area was safe.

The investigation team examined the scene, took measurements, and informally interviewed employees who were at the mine at the time of the accident. Formal interviews were conducted on September 10, 2003, at the KDMM office located in Martin, Kentucky. The two co-owners were interviewed during this session.

MSHA's Approval and Certification Center was contacted, and Eugene D. Hennan, Mechanical Engineer from the Mechanical & Engineering Safety Division was dispatched to assist with the investigation. The 1986 Caterpillar D8-L bulldozer (S/N 53Y04153) was examined to determine if there were any equipment related factors that may have contributed to this accident. No evidence was found to indicate that any mechanical failure had occurred. A discussion of the examination is included in Appendix C of this report.

During the investigation, violations for conditions or practices that did not contribute to the accident were cited under a separate inspection, and are not included in this report. The investigation team and personnel from MSHA's Educational Field Services Division reviewed the operator's training records.

DISCUSSION

Method of Mining

T&W Enterprises, LLC, utilizes the contour method of strip mining at the No. 1 Mine with 2 front-end loaders, 2 trucks, 1 bulldozer and 1 highwall drill. After the bulldozer is used to prepare a drill bench, a pattern of 6 ¾" diameter holes are drilled with an Ingersoll DM-45 highwall drill. The holes are loaded with an Ammonium Nitrate/Fuel Oil Mixture (ANFO) and electric or non-electric detonators. Blasting is performed by either Mountain Valley Explosives or Austin Powder on a contract basis. The resulting highwall is limited by the ground control plan to a maximum of 60 feet in height and is required to be slanted away from the coal pit at an angle greater than 90 degrees to prevent overhanging rock. The top of the highwall is cleaned and cleared of trees, debris, and hanging materials as it is taken.

The operator was following the acknowledged ground control plan. Neither the method of mining nor mining practices appeared to have contributed to the accident.

Equipment

Examination of the equipment on site did not reveal any defects that could have contributed to the accident. A detailed report of the examination of the bulldozer is included in Appendix C.

Examinations

According to testimony, workplace examinations were performed routinely by Billy Ward, Co-Owner and Foreman, but examination records were not being kept as required by 30 CFR 77.1713. An examination of the accident scene and work site did not reveal any hazards. Failure to record the results of workplace examinations was not a contributing factor to the accident.

Weather

On the day of the accident, the weather was dry, but visibility was impaired by moderate to heavy fog that was present until approximately 9:15 a.m. After returning to the Springfield pit area, Ward heard the bulldozer's backup alarm, but due to the fog, he did not see the bulldozer until he was within 40 feet of the machine.

Training

A lack of records for experienced miner training and task training for the victim was cited as a part of this investigation. Although other deficiencies relating to training for this mine were found, they were cited as part of a separate inspection because they were determined not to be contributing factors to the accident. Dye had 42 years of

total mining experience, most of which was operating bulldozers, and 16 weeks experience at this mine.

Human Factors

It is possible that the physical condition of the victim may have contributed to the accident. The victim suffered from diabetes and was 73 years of age. Although the victim was known to be a severe diabetic, the autopsy report did not identify this as a contributing factor to the accident. The cause of death was listed as “Blunt impacts and crushing injuries of head, trunk and extremities with multiple skeletal and visceral injuries.”

ROOT CAUSE ANALYSIS

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

1. Causal Factor: The victim may have misjudged the distance to the edge of the highwall.

Corrective Action: Continual focus on work activities, and adherence to all safety factors related to the task being performed. A procedure should be established to prohibit activities when visibility is inadequate to permit safe operation.

2. Causal Factor: The victim may not have been able to see the edge of the highwall due to heavy/thick fog conditions.

Corrective Action: Adequately marking the edge of the highwall, or performing other, less hazardous duties until weather conditions/visibility improve. A procedure should be established to prohibit activities when visibility is inadequate to permit safe operation.

3. Causal Factor: The victim was not wearing a seat belt where there was a danger of overturning and where ROPS were provided.

Corrective Action: Management must enforce all safety regulations and safety practices.

CONCLUSION

At approximately 8:15 a.m. on September 9, 2003, a 73-year old bulldozer operator with 42 years of mining experience traveled off a highwall in heavy fog while back-dragging the bench. The bulldozer operator was fatally injured during the 32-foot fall from the highwall. Based on information gathered during the investigation, the most likely cause of the accident was a misjudgment or inability to see the edge of the highwall due to heavy fog. The fog made visibility difficult. This misjudgment or inability to see the highwall edge may have been aggravated by a lack of any visible point of reference.

Additionally, the operator failed to meet the requirement for wearing a seat belt where there is a danger of overturning. The failure to wear a seat belt likely contributed to the severity of the victim's injuries.

ENFORCEMENT ACTIONS

1. 103(k) Order No. 7402131 was issued to ensure the safety of any person in the mine until an examination or investigation is made to determine that the mine is safe.
2. 104(a) Citation No. 7402155 was issued to T&W Enterprises, LLC, because evidence obtained at the scene of the accident indicated that seat belts provided in the cab of the Caterpillar D8L bulldozer were not in use when the accident occurred.
3. 104(a) Citation No. 7402156 was issued to T&W Enterprises, LLC, because testimony taken during the investigation along with evidence obtained at the mine site revealed that the victim had not received the required training prescribed by 30 CFR, Part 48. There were no records to indicate that the victim received experienced miner training for the specifics of this operation, nor had task training for this particular occupation been given by an approved instructor.

APPROVED BY:

Franklin M. Strunk
District Manager

Date: _____

APPENDIX A

List of Persons Participating in the Investigation

T & W Enterprises, LLC.

Michael D. Trimble Co-Owner, Coal Broker
Billy M. Ward Co-Owner, Mine Foreman

Kentucky Department of Mines and Minerals

Randy Smith District Supervisor – Martin District
Jerome Howard Inspector
John Runyon Inspector
Tracy Stumbo Chief Investigator

Mine Safety and Health Administration

Robert H. Bellamy Mining Engineer
Mary Beth Bernui Solicitor’s Office - Nashville
Jimmy Brown Coal Mine Safety & Health Inspector
Eugene Hennan Mechanical Engineer
Gerald McMasters Conference & Litigation Representative
Frankie Mullins Educational Field Services
Arlie A. Webb District 6 Accident Investigation Coordinator

APPENDIX B

List of Persons Interviewed

T & W Enterprises, LLC.

Michael D. Trimble Co-Owner, Coal Broker
Billy M. Ward Co-Owner, Mine Foreman

APPENDIX C

Equipment Related Physical Factors for Caterpillar D8L Bulldozer

MACHINE INFORMATION:

The machine involved in the accident was a Caterpillar Model D8L bulldozer manufactured in 1986. The bulldozer had an operating weight of approximately 84,000 lb. It was equipped with a 335 horsepower Caterpillar Model 3408 turbocharged diesel engine.

MACHINE DAMAGE:

The bulldozer was damaged in the accident to the extent that the engine was not operational. Actual performance tests of the braking system, transmission, and steering with the engine operating could not be performed.

SERVICE BRAKE:

The service brake consists of two spring applied hydraulically released brakes. These brake units are located in the drive assembly for each side of the machine. These brake units can be applied by pulling the steering levers all the way back. If both steering levers are pulled all the way back, both of the brake units apply. If only one of the steering levers is pulled back, only the brake unit on that side of the machine applies. Both brake units are applied when the floor mounted service brake pedal is applied. A complete evaluation of the service brake could not be conducted, because the engine could not be started due damage to the machine during the accident. When the machine evaluation was being conducted there was no pressure in the brake system. With no pressure in the system the service brakes should be applied. To confirm the service brakes were applied the bulldozer was pushed with another machine. The other machine could not push the bulldozer. When the bulldozer was being pushed the tracks locked-up on each side of the bulldozer, showing the service brakes were holding the bulldozer in place.

SERVICE BRAKE CONTROLS:

In order for the service brakes to be applied, the hydraulic pressure holding the brake released must be allowed to escape from the brake units. A three section hydraulic valve is used to dump the pressure so the service brake will apply. Each steering control lever is connected to a spool in the valve section that dumps the pressure on that side only, allowing that brake to be applied. Pulling the left steering lever back causes

the bulldozer to turn left, pulling the right steering lever back causes the bulldozer to turn right, and pulling both steering levers all the way back causes the bulldozer to stop. The foot pedal is connected to the spool in the valve section that dumps the pressure from the brake units on both sides of the bulldozer. Pushing the brake pedal caused the service brakes to be applied on both sides of the machine.

TRANSMISSION CONTROLS:

The planetary type power shift transmission has three speeds forward and three speeds in reverse. The transmission is controlled by a shift lever located to the left of the operator's seat. The control has a U-shaped shift pattern. One side of the U-shaped shift pattern controls the forward speeds and the other side controls the reverse speeds. Moving the shift control from side to side on the U-shaped shift pattern shifts the transmission between forward and reverse. When the shifter is at the bottom between the sides of the U-shaped shift pattern, the transmission is in neutral. The shift control is connected by mechanical linkages to the shift controls mounted on the transmission. Placing the operator's shift control in the neutral position and in the position for each gear for both forward and reverse direction resulted in a corresponding movement on the shift controls mounted on the transmission.

OPERATOR PROTECTIVE STRUCTURE:

The cab on the bulldozer was designed to give the operator protection from both machine rollover and from falling objects. The ROPS (Rollover Protective Structure) on this machine meets SAE J1040c ROPS criteria and the FOPS (Falling Object Protective Structure) meets SAE J231 FOPS criteria. The operator's envelope inside of the cab was not compromised during the accident.

SAFETY GLASS:

When the bulldozer was shipped from the manufacturer the rear window was a heat treated safety glass conforming to the ANSI Z26.1, Item 2, Section 4. This glass had been replaced with a glass that was not a safety glass. The victim was thrown through the rear window during the accident. There were sharp edges on the broken glass.

LIGHTS:

The bulldozer had six running lights. There were two lights on the rear, two lights on the front, and one light on each side of the bulldozer. During the accident the right rear light was destroyed. Testing of the lights revealed that all the lights functioned, except for the one that had been destroyed.

SEAT BELT:

The bulldozer had a seat belt. The seat belt was undamaged, and it latched and unlatched when tested. Reportedly, the victim was not wearing the seat belt at the time of the accident.

SUMMARY:

- 1) A push test revealed the service brakes were holding the machine.
- 2) Pulling each steering control lever all the way back moved each spool in the valve that applies the service brake on that side. Application of the service brake pedal moved the spool in the valve, which applies the service brake on both sides of the bulldozer.
- 3) Moving the operator's transmission control to each position resulted in a corresponding movement of the transmission controls attached to the transmission.
- 4) Both the ROPS and FOPS met SAE criteria.
- 5) The operator's envelope inside of the cab was not compromised during the accident.
- 6) The safety glass that was installed in the rear of the cab when the machine was shipped from the manufacturer had been replaced with glass that was not safety glass.
- 7) All of the running lights on the bulldozer worked except the right rear light, which had been destroyed in the accident.
- 8) At the time of the accident, the bulldozer had an operational seat belt which reportedly was not being used by the operator.



Photograph of Accident Scene
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