CAI-2011-21

UNITED STATES
DEPARTMENT OF LABOR
MINE SAFETY AND HEALTH ADMINISTRATION

COAL MINE SAFETY AND HEALTH

REPORT OF INVESTIGATION

Surface Coal Mine

Fatal Machinery Accident
November 2, 2011

at

Mill Branch
Nally & Hamilton Enterprises, Inc.
Closplint, Harlan County, Kentucky
ID No. 15-17821

Accident Investigators

David A. Faulkner
Surface Coal Mine Health and Safety Inspector

Jonathan A. Hall
Mechanical Engineer, Mechanical Engineering & Safety Division

Originating Office
Mine Safety and Health Administration
District 7
3837 S. U.S. Hwy. 25 E
Barbourville, Ky. 40906
Irvin T. Hooker, District Manager

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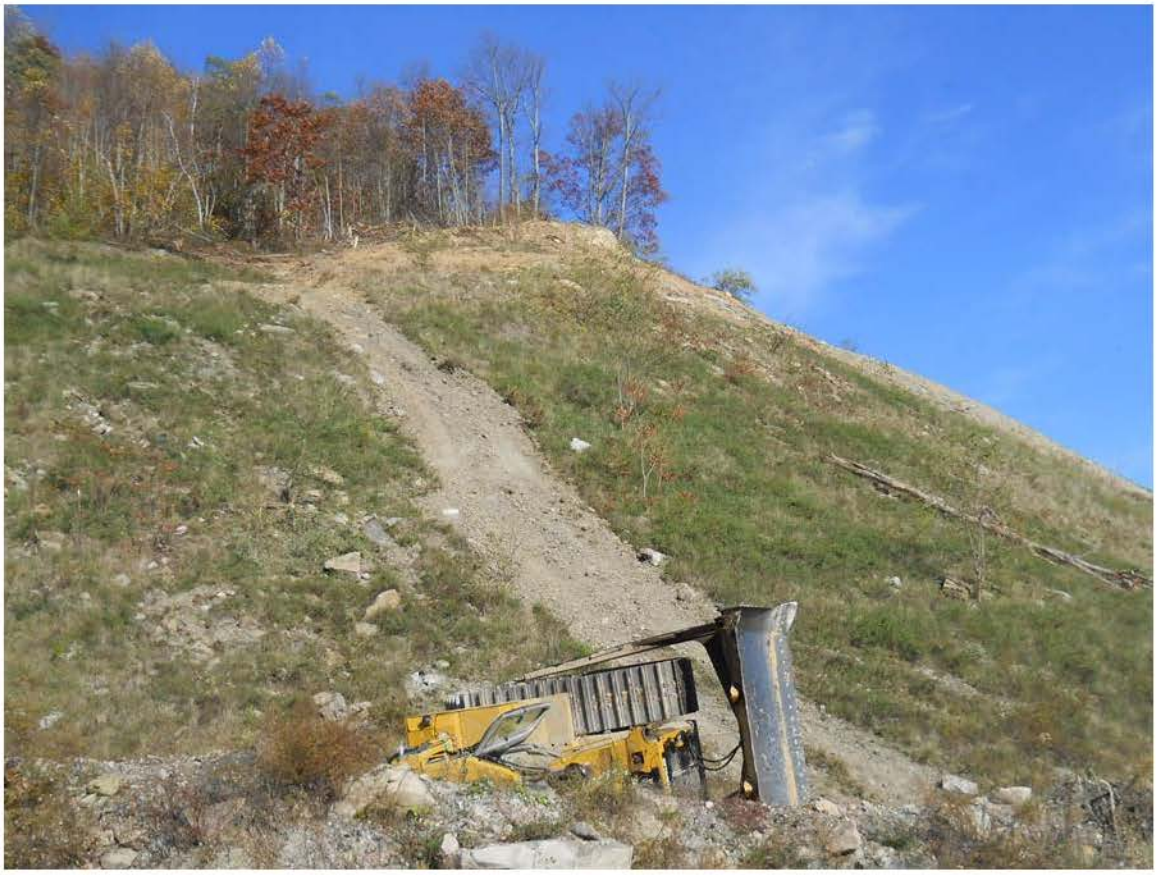
PHOTOGRAPH OF ACCIDENT SCENE



OVERVIEW

On Wednesday, November 2, 2011, at approximately 9:45 a.m., a machinery accident occurred at the Nally & Hamilton Enterprises, Inc., Mill Branch mine, located near Closplint, Harlan County, Kentucky. The bulldozer operator, David J. Middleton, who was 28 years old and had 8 years of mining experience, received multiple injuries when the Caterpillar D6T bulldozer he was operating overturned along the top of a reclaimed slope. The bulldozer traveled approximately 289 feet, overturning several times before coming to rest on its right side on the mine access road. (See Appendix D for sketch). The victim died November 14, 2011, from injuries sustained in the accident.

The investigation team determined that while conducting reclamation work along the top of the slope, the bulldozer's right side track encountered a large rock in unconsolidated material. The rock slid off the edge of the working area while underneath the right side tracks of the bulldozer, causing the bulldozer to slide over the edge and begin overturning.

GENERAL INFORMATION

The Nally & Hamilton Enterprises, Inc., Mill Branch mine is a surface coal mine that became active on July 1, 1996. The mine is located approximately four miles northeast of Highway 38 on Route 179 at Closplint, Kentucky. The mine currently has 10 employees, and operates one production shift daily, four to five days per week. The active work area is identified as Mill Branch No. 4 and the reclamation work area is identified as Mill Branch No. 3. The mine produces 1,500 tons of coal per day from the High Splint, Middle Splint, and Low Splint coal seams. Coal is mined with wheel loaders, haul trucks, and bulldozers and transported from the coal pit to delivery locations off the mine site by contract trucking companies.

The principal officers for Nally & Hamilton Enterprises, Inc. are:

Thomas R. Hamilton.....President
Leo Hamilton ..... Vice President
Stephen T. Hamilton ..... Secretary/Treasurer
Stephen L. Hamilton ..... Vice President of Operations

The last regular safety and health inspection (E01) conducted by the Mine Safety and Health Administration (MSHA) was completed on May 12, 2011. The mine's Non Fatal Days Lost (NFDL) incidence rate for 2011 was 10.54, compared to the national average of 1.10 for mines of the same type.

DESCRIPTION OF ACCIDENT

At approximately 7:00 a.m. on Wednesday, November 2, 2011, David J. Middleton, Bulldozer Operator, met with Graylon Dennis Short, Excavator Operator and Site Foreman, in the reclamation area of the mine identified as Mill Branch No. 3. A Caterpillar D6T bulldozer and a Caterpillar 329 excavator were located in this area after conducting work on November 1, 2011, the previous shift.

Middleton conducted a pre-operational examination of the bulldozer and refueled it before proceeding to the top of the reclaimed slope area to begin work. Short, operating the excavator, proceeded further up the area to position the excavator on top of an exposed surface rock that he and Middleton had been instructed to cover up with spoil. Middleton began pushing spoil material around the top of the slope to an area within reach of the excavator. Short then scooped the material with the excavator and began covering the exposed surface rock.

Short and Middleton communicated by CB radio between themselves and other equipment operators located in the production area of the mine identified as Mill Branch No. 4.

Work continued normally for approximately two hours. Short observed a large rock in the bulldozer's path located under the blade of the bulldozer. Short notified Middleton to watch out for the rock and turned the excavator to continue scooping spoil material. The next time Short turned the excavator in Middleton's direction he saw the bulldozer overturning down the slope.

Short contacted Donnie Elliot, Loader Operator, at the production area of the mine by radio and instructed him to notify Alfred Collins Jr., Production Foreman, to come quickly, stating that the bulldozer Middleton was operating had rolled down the slope. Short immediately proceeded down the slope to the accident scene and found Middleton in the bulldozer suspended by the seat belt. Middleton was unresponsive.

Collins and Ed Fuson, Mine Emergency Technician (MET), arrived at the accident site, cut the seatbelt, removed Middleton from the bulldozer, and began administering medical attention. Lifecare Ambulance Service arrived and transported Middleton to a nearby helicopter that arrived on site. Middleton was flown to Holston Valley Medical Center in Kingsport, Tennessee. Middleton subsequently died on November 14, 2011, from injuries he sustained in the accident.

INVESTIGATION OF ACCIDENT

Darrell Huff, Company Safety Director, called the National Call Center. The Mine Safety and Health Administration (MSHA) was notified of the accident by the National Call Center at 9:54 am on November 2, 2011. Robert Rhea, Coal Mine Safety and Health Supervisor at the Harlan Field Office, was the person who was notified. A 103(j) Order was verbally issued by Rhea at 10:00 am to ensure the safety of the miners and to preserve the accident scene. MSHA inspectors from the Harlan Field Office were dispatched to the mine. Upon arrival, Argus Brock, MSHA Surface Specialist, modified the order to a 103(k) order.

David A. Faulkner, MSHA Accident Investigator from the Barbourville Field Office, traveled to the accident scene where preliminary information was gathered and the accident scene was examined. The accident investigation was conducted in cooperation with the Commonwealth of Kentucky Office of Mine Safety and Licensing (OMSL).

Interviews were conducted on November 4, 2011, at the Kentucky OMSL office in Harlan, Kentucky. None of the persons interviewed requested that their statements be kept confidential. For a list of those who participated in the interviews see Appendix B.

Jonathan A. Hall and Gary L. Clark, Mechanical Engineers from the Mechanical Safety Division of the MSHA Approval and Certification Center assisted with the investigation.

DISCUSSION

The accident occurred while Middleton, operating a Caterpillar D6T bulldozer, was pushing spoil material to an excavator along the top of a steep (28 degrees) slope. Middleton encountered a large rock approximately 48 inches in width, 40 inches in length, and 30 inches thick in the center of the bulldozer path. While attempting to remove the rock from the bulldozer's path, the bulldozer's right side track encountered another large flat rock 60 inches in width, 80 inches in length, and 9 inches thick in unconsolidated material on the outer edge of the bulldozer push area. The large rock slid off the edge of the working area, while underneath the right side tracks of the bulldozer. The rock acted like a sled, causing the bulldozer to slide over the edge and overturn. The bulldozer rolled several times while traveling down the slope a distance of approximately 289 feet.

MACHINE INFORMATION

The Caterpillar Model D6T Track-Type Bulldozer, S/N-SKL00579, had an operating weight of 47,328 pounds and indicated 5,533 operating hours at the time of the accident.

This bulldozer was equipped with an enclosed cab, a seat belt**,** and a Rollover Protective Structure (ROPS). The seat belt was cut to release the victim during recovery operations. No visible damage to the ROPS was found.

ENGINE, TRANSMISSION AND POWER TRAIN TESTING

The gear selector lever was found in the "reverse" position. The steering hand grip lever could rotate easily between the reverse, neutral, and forward gear position. The transmission shift buttons could be shifted to the various gears as indicated by the dash panel's LED display. The decelerator pedal returned to the "up" position when released, as designed.

SERVICE BRAKE, PARKING BRAKE AND SECONDARY BRAKE DESIGNS

The machine is equipped with totally enclosed Belleville Spring brakes in both the right and left planetary gear trains. The service brakes are spring-applied, hydraulically released brakes, which are used to stop the bulldozer.

The parking brake solenoid under normal operation is an on/off type of solenoid valve that operates independently of the Electronic Control Modules (ECM). The parking brake solenoid valve is energized by the parking brake switch.

The bulldozer is equipped with a secondary brake on/off type solenoid that is primarily controlled by the secondary brake limit switch on the brake pedal. No defects were found with the service and parking brake controls.

STEERING SYSTEM DESIGN AND TESTING

The steering control lever is located on the operator's left side. The steering control lever moved easily and returned to the center (neutral) position when released from either the right or left turning position.

CODE READING

The bulldozer's 4 ECM indicated no active fault codes or active events with the engine speed or the transmission at the time of the accident.

WEATHER CONDITIONS

Weather data obtained for the mine location at the approximate time of the accident indicated the temperature to be 53 degrees Fahrenheit, the dew point 30 degrees Fahrenheit, relative humidity 41%, winds SSW at 3 mph, and visibility was 10 miles. The weather was not a contributing factor to this accident.

TRAINING & EXPERIENCE

Training records indicate that Mr. Middleton received Experienced Miner Training and a copy of the company safety rules on October 2, 2006. The last Annual Refresher Training was received on August 6, 2011. Middleton's Task Training records for the Caterpillar D6T bulldozer indicate the training was received October 14, 2011. Task Training records indicate that Middleton had also received Task Training on Caterpillar D11, D10, D9, D8, and D6 bulldozers.

Although the victim did not maintain full control of the bulldozer under the extreme slope conditions, information obtained through interviews along with records revealed that Middleton was reported to be knowledgeable of a bulldozer's safe operating procedures

and had demonstrated proficiency while operating each type of the bulldozers identified above.

The investigation revealed Mr. Middleton's hire date as October 2, 2006, with three years prior bulldozer experience, totaling eight years experience.

A review of the operator's training program was conducted. Deficiencies were found for certified surface examiners not fully completing training as required by 30 CFR § 77.107, which did not contribute to the accident. A violation was issued under a separate event for this deficiency.

ROOT CAUSE ANALYSIS

An analysis was conducted to determine the most basic causes of the accident that were correctable through reasonable management controls. Listed below is a root cause identified by the analysis and the corrective action implemented to prevent a recurrence of the accident.

Root Cause: The mine operator failed to implement policies and procedures to ensure safe working conditions for equipment operators working near extreme slope conditions.

Corrective Action: The mine operator established and implemented a policy which outlines all procedures to be followed when working near extreme slope conditions. Equipment operators were given additional training in the newly implemented procedures to identify extreme conditions, operate equipment safely in extreme conditions, and recognize the limitations of equipment in extreme conditions.

CONCLUSION

The accident occurred because the company failed to implement policies and procedures to ensure that the bulldozer operator was able to maintain full control of the bulldozer while conducting reclamation work near extreme slope conditions. The victim was wearing a seat belt. However, the lap belt design failed to prevent the operator's body from excessive movement, which resulted in injuries that eventually caused the death of the victim.

Irv T. Hooker

Irvin T. Hooker
District Manager

4/16/12

Date

ENFORCEMENT ACTIONS

Order No. 8374000 was issued to Nally & Hamilton Enterprises, Inc. on November 2, 2011, under the provisions of Section 103(j) of the Mine Act:

An accident occurred at this operation on November 2, 2011, at approximately 09:45 a.m. As rescue and recovery work is necessary, this order is being issued, under section 103(j) 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 the investigating the cause or causes of the accident. It prohibits all activity at the Entire Mine Site 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 10:00 a.m. by CMI Supervisor, Bob Rhea, and has now been reduced to writing.

104(a) Citation No. 8369296 was issued to Nally & Hamilton Enterprises, Inc. for violation of 30 CFR § 77.1607(b).

As a result of a fatal accident investigation at the Nally & Hamilton Enterprises, Inc. Mill Branch mine, it has been concluded that management failed to ensure the bulldozer operator maintained full control of the Caterpillar D6T Bulldozer, S/N SKL00579, while conducting reclamation work at the top of reclaimed mine slope. The work area of the mine is identified as Mill Branch No. 3. Mobile equipment operators shall have full control of the equipment while it is in motion.

APPENDIX A

List of persons furnishing information and/or present during the investigation

Nally & Hamilton Enterprises, Inc. Officials & Employees

Stephen L Hamilton ..... Vice President of Operations
Michael W. Lewis ..... Mine Superintendent
James Tracey Creech ..... Safety Coordinator
Graylon Dennis Short ..... Excavator Operator/Foreman
Cameron Noel Martin ..... Reclamation Foreman
Alfred Collins, Jr ..... Mine Foreman
Lincoln Smith ..... Mechanic

Kentucky Office of Mine Safety & Licensing

Greg Goins ..... Deputy Chief Accident Investigator
Tim Fugate ..... Accident Investigator
Ernest Hawkins ..... Inspector
Tim Pennington ..... Surface Analysis

Mine Safety and Health Administration

Steven L. Sorke ..... Accident Investigation Coordinator /Staff Assistant
David A. Faulkner ..... CMS&H Surface Inspector/Accident Investigator
Argus Brock ..... CMS&H Surface Specialist
Robert W. Rhea ..... Supervisory CMS&H
Lester Cox ..... Supervisory CMS&H
Larry B. Boggs ..... CMS&H Surface Inspector
Mark Lowe ..... CMS&H Surface Inspector
Brandon Baker ..... CMS&H Inspector
George M. Jackson ..... CMS&H Inspector
Jonathan A. Hall ..... Mechanical Engineer, Mechanical & Engineering Safety Division
Gary L. Clark ..... Mechanical Engineer, Mechanical & Engineering Safety Division
Clayton E. Sparks ..... Assistant District Manager
Irvin T. Hooker ..... District Manager

APPENDIX B

List of Persons Interviewed

Graylon Dennis Short .....Excavator Operator/Foreman
Cameron Noel Martin .....Reclamation Foreman
Alfred Collins, Jr.....Mine Foreman
Michael W. Lewis.....Mine Superintendent

APPENDIX C
MSHA Form 7000-50b

Accident Investigation Data - Victim Information
Event Number: 6 4 2 5 9 3 2

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

Victim Information: 1

1. Name of Injured/Ill Employee:	2. Sex	3. Victim's Age	4. Degree of Injury:
David J. Middleton	M	28	01 Fatal

5. Date(MM/DD/YY) and Time(24 Hr.) Of Death: a. Date: 11/14/2011 b.Time: 16:45

6. Date and Time Started: a. Date: 11/02/2011 b.Time: 7:00

7. Regular Job Title: 168 Bulldozer/tractor operator

8. Work Activity when Injured: 047 Operate Bulldozer

9. Was this work activity part of regular job? Yes | X | No

10. Experience	Years	Weeks	Days
a. This Work Activity:	8	0	0
b. Regular Job Title:	8	0	0
c: This Mine:	5	0	0
d. Total Mining:	8	0	0

11. What Directly Inflicted Injury or Illness? 002 Bodily Motion

12. Nature of Injury or Illness: 370 Multiple injuries

13. Training Deficiencies: Hazard: | New/Newly-Employed Experienced Miner: | Annual: | Task:

14. Company of Employment: (If different from production operator) Operator

Independent Contractor ID: (if applicable)

15. On-site Emergency Medical Treatment: Not Applicable: | First-Aid: | CPR: | EMT: X | Medical Professional: | None:

16. Part 50 Document Control Number: (form 7000-1)

17. Union Affiliation of Victim: 9999 None (No Union Affiliation)

Victim Information:

1. Name of Injured/Ill Employee:	2. Sex	3. Victim's Age	4. Degree of Injury:

5. Date(MM/DD/YY) and Time(24 Hr.) Of Death:

6. Date and Time Started:

7. Regular Job Title:

8. Work Activity when Injured:

9. Was this work activity part of regular job? Yes | No

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

11. What Directly Inflicted Injury or Illness?

12. Nature of Injury or Illness:

13. Training Deficiencies: Hazard: | New/Newly-Employed Experienced Miner: | Annual: | Task:

14. Company of Employment: (If different from production operator)

Independent Contractor ID: (if applicable)

15. On-site Emergency Medical Treatment: Not Applicable: | First-Aid: | CPR: | EMT: | Medical Professional: | None:

16. Part 50 Document Control Number: (form 7000-1)

17. Union Affiliation of Victim:

Victim Information:

1. Name of Injured/Ill Employee:	2. Sex	3. Victim's Age	4. Degree of Injury:

5. Date(MM/DD/YY) and Time(24 Hr.) Of Death:

6. Date and Time Started:

7. Regular Job Title:

8. Work Activity when Injured:

9. Was this work activity part of regular job? Yes | No

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

11. What Directly Inflicted Injury or Illness?

12. Nature of Injury or Illness:

13. Training Deficiencies: Hazard: | New/Newly-Employed Experienced Miner: | Annual: | Task:

14. Company of Employment: (If different from production operator)

Independent Contractor ID: (if applicable)

15. On-site Emergency Medical Treatment: Not Applicable: | First-Aid: | CPR: | EMT: | Medical Professional: | None:

16. Part 50 Document Control Number: (form 7000-1)

17. Union Affiliation of Victim:

MSHA Form 7000-50b, Mar 2008 Printed 12/08/2011 10:03:08 AM

APPENDIX D
Sketch of Accident Scene