

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

COAL MINE SAFETY AND HEALTH

REPORT OF INVESTIGATION

Surface Mine

**Fatal Machinery Accident
December 3, 2011**

**Oxford Mining #3
Oxford Mining Co LLC
New Lexington, Perry County Ohio
MSHA ID No. 33-04336**

Accident Investigators

**Thomas Tamasco, P.E.
Civil Engineer**

**Joedy N. Gutta, P.E.
Civil Engineer**

**Fred T. Marshall
Mechanical Engineer
MSHA Technical Support**

**Originating Office
District 3, Mine Safety and Health Administration
604 Cheat Road Morgantown, West Virginia 26508
Bob E. Cornett, District Manager**

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PHOTO OF ACCIDENT SCENE



OVERVIEW

On Saturday, December 3, 2011, Jeff Bishop (Victim), Bulldozer Operator was seriously injured when the bulldozer he was operating traveled over a highwall and fell approximately 90 feet to the pit below. Bishop was in the process of clearing and grubbing topsoil and preparing the area for the next shot. Bishop was not wearing a seatbelt and was ejected from the bulldozer when it traveled over the highwall. The victim died on December 6, 2011 from the injuries sustained in this accident.

GENERAL INFORMATION

The Oxford #3 Mine is owned and operated Oxford Mining Company LLC. The mine is located in New Lexington, Perry County, Ohio. The mine is a surface operation, utilizing typical drill and shoot methods to break the overburden. The overburden is removed by a shovel, loaders, excavators, dozers, scrapers and off road rock trucks. Once the overburden is removed, the coal seam is mined using front-end loaders, excavators, and off road trucks. The mine operates two shifts a day 5, days a week and day shift on Saturdays. The operator occasionally works a maintenance shift on Sunday. The mine personnel consisted of 52 hourly and 4 management employees. The primary coal seams being mined are the #7 Upper Freeport, #6 Middle Kittanning, and #5 Lower Kittanning, which have an average seam thickness of 12 inches, 51 inches, and 27 inches respectively. The height of the highwall at the time of the fatal bulldozer (dozer) accident was 89.5 feet. The daily average production rate is 2,100 tons.

The most recent semi-annual safety and health inspection (E01) was completed by MSHA on September 20, 2011. The Non-Fatal Days Lost (NFDL) injury incidence rate at the mine for the previous quarter was 5.42, compared to the national NFDL rate of 1.24 for surface coal mines.

The principal officials of the mine at the time of the accident were:

John Boyle.....Mine Foreman
Jerry Love.....Fill-in Mine Foreman

DESCRIPTION OF ACCIDENT

On Saturday, December 3, 2011, Jeff Bishop reported to work for the day shift at approximately 5:30 a.m. Bishop, along with Gary Hill, Bulldozer Operator, parked in the area west of Pole Cat Road adjacent to where the company bulldozers were stationed. Before leaving the parking area, the men received guidance on their work duties from John Boyle, Foreman. Bishop and Hill were assigned to finish the access road to the top of the Pole Cat Pit highwall, and then clear and grub the top of the highwall area for the next shot.

After conducting pre-operational checks at approximately 6:15 a.m., Hill trammed a Caterpillar D11 bulldozer across Pole Cat Road and worked on widening the crossing. Bishop then trammed a Komatsu D475A bulldozer past Hill to work on the access road. Bishop was still working on the access road around 6:45 a.m. and Hill passed him, while traveling to the area above the highwall. Bishop joined Hill shortly thereafter. The men waited on daylight and discussed their plan on how to clear material from the top of the highwall and create a bench.

Meanwhile, Jeff Armstrong was operating the Komatsu 2000 P Excavator in the northwest end of the pit, approximately 560 feet from the access road, excavating shale in the Pole Cat Pit area in preparation for coal seam extraction. Jason Allen, Truck Driver, was operating a Terex 4400 haul truck and was accessing the pit via an entrance ramp. He pulled the haul truck forward towards the base of the highwall and then backed toward the excavator to be loaded.

Hill started clearing and pushing topsoil around 7:10 a.m. He worked adjacent and perpendicular to the top of the highwall, forming the start of a bench. Bishop was bulldozing stumps adjacent to where Hill was working. At approximately 8:00 a.m., Boyle contacted Michael Whissen, Truck Driver, and directed him to take the Caterpillar 785 haul truck to Pole Cat Pit and assist in hauling the shale out of the pit area. Upon arrival, Whissen alternated with Allen transferring material from the pit to a dump site. Bishop had also started working with his bulldozer along the top of the highwall, over an area of 120 feet along the highwall and 70 feet perpendicular.

At Approximately 8:30 a.m., Allen was loaded and was travelling to the top of the pit access ramp, ready to access Pole Cat Road. Whissen's truck was empty and had pulled into the pit with the front of the truck facing the base of the highwall. Whissen heard Armstrong yell over the CB radio "lookout," and the Komatsu D475A bulldozer traveled off the edge of highwall, falling to the pit floor where it came to rest, approximately 8 feet in front of Whissen. Glen DeLong, Mechanic, was sitting in a truck parked at the top of the pit access road and saw the bulldozer land at the base of the highwall. The bulldozer's momentum caused it to rise up on its left track. DeLong saw an object ejected from the bulldozer cab and the dozer then came to rest on both of its tracks

Armstrong yelled "mayday, mayday dozer over highwall," over the CB radio. Whissen exited the haul truck to lend assistance to Bishop and Armstrong exited the excavator, turned off the bulldozer (which was still running), and assisted Bishop. Boyle overheard the CB radio conversation and called Becky Mumford, Secretary, who telephoned the Perry County Sheriff's Office. Boyle then directed contract truck drivers to station themselves at the different entries to the property to escort the emergency medical personnel (EMS) to the accident scene. Boyle traveled to the accident site. At approximately 8:50 a.m., New Lexington EMS arrived at the accident scene and

assessed the victim. The EMS personnel determined his injuries were severe and Med Flight would be required. At approximately 9:10 a.m., the Med Flight helicopter landed in Pole Cat Pit. Bishop was stabilized, and transported to Grant Medical Center at 10:02 a.m.

INVESTIGATION OF ACCIDENT

MSHA was notified by the National Call Center on Saturday, December 3, 2011, at approximately 9:20 a.m., that a potentially life-threatening accident had occurred at the Oxford Mining Company, Oxford Mining #3 Mine at the Pole Cat Pit. Michael Evanto, MSHA District 3 Chief, Impoundment Section, verbally issued a 103(j) Order to ensure the safety and health of miners until an investigation of the accident could be completed. Joseph Facello, Supervisory Coal Mine Inspector, Saint Clairsville Field Office, and Scott Grissett, Coal Mine Inspector, Surface, were the first to arrive and secured the accident scene. Joedy N. Gutta, Civil Engineer, and Thomas A. Tamasco, Civil Engineer, were assigned to investigate the accident. Gutta and Tamasco arrived on site and began the investigation of existing physical conditions, conducted initial interviews with mine employees present at the scene, and issued the appropriate control orders. The physical examination of the Komatsu D475A bulldozer, company number 0185, began on December 5, 2011 and was conducted by Fred T. Marshall, Mechanical Engineer, from MSHA's Office of Technical Support.

The accident investigation was conducted in conjunction with the Ohio Division of Mineral Resources Management (ODMRM), with assistance from the mine operator and employees. ODMRM officials were present at the site and began their investigation on December 6, 2011. Those persons interviewed who participated or were present during the investigation are listed in Appendix A of this report.

The investigation of the physical features of the accident was completed on December 7, 2011. Digital photographs, relevant measurements, and sketches of the scene were developed as part of the investigation. The investigation also included a review of training records and examination records. Additional interviews were conducted on December 9, 2011, with persons who had knowledge of the accident. These interviews revealed there were no eyewitnesses to the start of the accident, but a witness saw the dozer coming to rest at the bottom of highwall and the victim being ejected. The physical examination and function tests performed on the Komatsu D475A bulldozer were completed on December 16, 2011.

DISCUSSION

LOCATION OF ACCIDENT AND CONDITIONS

The surface scene where the accident occurred was located above an existing highwall that was left from previous mining. Bishop was clearing, grubbing, and removing top soil from this area. Bishop had worked previously constructing roads to access this location, but did not work in the location where the bulldozer traveled over the highwall until the day of the accident. The highwall measured 89.5 feet high where the dozer traveled off the edge of the highwall and fell to the pit floor. The accident occurred during daylight hours with no weather related visibility or illumination concerns.

The alignment of the outer-most edge of the highwall, to the West of where the dozer traveled over the highwall projected outward. This alignment of the highwall may have given Bishop a false sense of the distance between the dozer and the edge of the highwall.

The tracks from the dozer where Bishop was working above the highwall were in an irregular pattern, indicating difficulties of establishing a starting point from which to start working. The soil was soft in appearance with the bulldozer appearing to have bottomed out a number of times. The final set of tracks where the bulldozer over-traveled the highwall where perpendicular to the top of the highwall and continuous for a distance of sixty one feet. There was no evidence to indicate an attempt to turn or apply brakes to the machine.

The edge of the existing highwall had a discontinuity in that the edges were very jagged and inconsistent. Portions of the highwall protruded outward from the edge. The area where the highwall existed was initially mined approximately 40 years ago. There was vegetation growing along the edge of the highwall, which could have influenced the operator's judgment with regard to the location of the edge of the highwall. The bulldozer is believed to have traveled off the highwall in reverse. A small depression was present from the back side of the bulldozer blade that was created when the back of the dozer ascended a small berm, causing the blade on the front of the dozer to contact the ground. It appears as the bulldozer traveled off the wall and the back end descended quickly rotating the ripper, located on the back of the dozer, in to the rock strata near the top, breaking and fracturing the rock. The bulldozer likely made one revolution as it fell to the pit floor without any direct impact to top of the machine. This is evident by a small amount of mud and soil located on the bulldozer's Roll Over Protection.

The bulldozer came to rest at the base of the highwall in an upright position, parallel to the highwall, with the blade of the dozer facing west. The victim was ejected from the

cab on the South side of the dozer opposite from the highwall. The seat belt in the dozer was in the retracted position, with the male end of the belt tucked into the plastic sleeve at the base of the belt. There was no evidence to indicate the victim was wearing the seat belt.

The loose material at the base of the highwall, where the dozer came to rest after the fall was excavated to determine if a ground failure occurred that would have contributed to the accident. The material was a loose soil without any substantial rock, indicating a ground failure did not occur.

GENERAL MACHINE INFORMATION -

The 2008 Komatsu model D475A-5E0 bulldozer had a Komatsu model SAA12V140E3 diesel engine, rated at approximately 900 horsepower at 2,000 RPM and a 'torqflow' transmission, having three speeds in both the forward and reverse directions. The machine's service meter reading was 19,510.4 hours.

This machine, designated as company number 185, was equipped with an enclosed Falling Object Protective Structure (FOPS) level 2 type cab, a lap type seat belt, a two-post Roll Over Protective Structure (ROPS), a dual-tilt dozer blade and a variable angle single-shank ripper. The operating weight of the dozer at the time of the accident was estimated to be 240,000 pounds.

The dozer in its post accident position was such that it was in a generally upright position on its tracks at the toe of the highwall. It was reported that the engine was running after the accident and the key switch was used to shut the engine off.

The machine sustained relatively minor damage during the accident, including bent and/or crushed intake and exhaust components, which normally protrude from the engine cover; hydraulic hoses/plumbing to both of the blade lift cylinders; and some of the hydraulic hoses to the ripper cylinders (i.e., hoses/plumbing for the implement hydraulic system).

After a general inspection of the machine, the investigation team determined the machine could be started and it ran with relatively few repairs. Repairs to the implement hydraulic, engine intake and engine exhaust systems were performed during the field investigation. The machine was started subsequently and operated to conduct various system operational tests.

Operating conditions at the time of the accident such as demand engine speed, transmission output shaft speed, machine travel direction, gear speed, right & left side steering clutch states, and right & left side brake states could not be determined from examination of the electronic systems on the machine. The VHMS system for the machine did not record snapshot data for the 'engine oil pressure lowering' critical fault

code that occurred during the accident, since it did not last for a duration of at least 30 seconds. In addition, the directional shift mode selected by the dozer operator (F1-R1, F1-R2 or F2-R2) automatically defaults to the F1-R1 shift mode when the starting switch (key switch) for the engine is turned off.

No machine defects were identified that would have prevented the dozer operator from maintaining control of the dozer or that contributed to the severity of the accident:

- The parking brake lever and neutral start interlocks (starting interlocks) functioned. This required the dozer operator to have the brakes applied (via the parking brake lever) and the directional portion of the Palm Command Control System (PCCS) lever (i.e., the directional portion of the steering, directional and gear shift lever) in neutral in order to start the engine. In other words, the dozer could not have been inadvertently started with the parking brake released and the transmission in gear.
- No defects were found with the braking system or any of the brake control systems to include the parking brake, the service brake (foot pedal brake) and the steering brake control systems.
- The brake system passed the 250 hour pull thru performance test outlined in the Operation & Maintenance Manual (2nd gear forward, brakes fully applied using the service brake foot pedal and the engine at wide open throttle).
- The redundant feature of the service brake foot pedal functioned, i.e., the mechanical linkage activated the parking brake control valve to fully apply the brakes when the foot pedal was fully applied. This indicates that the brakes could have been fully applied by the dozer operator by fully applying the brake foot pedal even if an electronic anomaly occurred that would have prevented the electronic portion of the foot brake control system from operating properly.
- A lap type seat belt assembly was installed in the operator's cab. The seat belt assembly was visibly intact and the latching mechanism functioned when tested.

EXPERIENCE AND TRAINING RECORDS

Bishop was an experienced bulldozer operator, having 18 years of total mining experience, with 16 years and 40 weeks at this mine. Bishop had operated the Komatsu D475A bulldozer since it arrived at the mine in 2008.

An examination of the training records revealed Bishop received required training in accordance with 30 CFR Part 48. Bishop's Annual Refresher training was received on October 29, 2011, and he received Task Training for the Komatsu D475A Bulldozer when it arrived at the mine. Mine management failed to ensure that seatbelts are worn in vehicles where there is a danger of overturning and where roll protection is provided.

ROOT CAUSE ANALYSIS

An analysis was conducted. Root causes were identified that could have mitigated the severity of the accident or prevented loss of life. Listed below are root causes identified during the analysis and their corresponding corrective actions to prevent a recurrence of this type of accident.

1. *Root Cause:* Mine management failed to assure that seatbelts are worn in vehicles where there is a danger of overturning and where roll protection is provided.

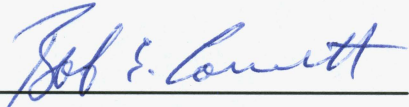
Corrective Action: The mine operator provided training requiring that all employees utilize seat belts during equipment operation. In addition, the operator will conduct regular safety talks to ensure that equipment operators are reminded of the seat belt requirements. A record of the training was documented for MSHA's review.

2. *Root Cause:* Mine management did not have safety precautions outlined in their ground control plan for working above a pre-existing highwall left from previous mining and to ensure that all miners are trained in the plan.

Corrective Action: The mine operator submitted a revision to the ground control plan to add safety precautions to protect miners when working above pre-existing highwall and train employees on these precautions. A record of the training was documented for MSHA's review.

CONCLUSION

The accident occurred because the bulldozer operator was working in close proximity to an edge of an existing highwall without an adequate berm or other indicator to identify the edge of the highwall. Trees, brush, and the irregular top edge of the highwall likely contributed to the bulldozer operator's disorientation of where the dozer was with respect to the top of the highwall. A contributing factor was failure to assure that seatbelts are worn in vehicles where there is a danger of overturning.



Bob E. Cornett
District Manager



Date

ENFORCEMENT ACTIONS

1. A 103(j) Order, No. 7134008, was issued to ensure the safety of the miners and protect the accident scene.
2. A 104(a) Citation was issued, citing § 77.1710(i), was issued for seatbelt not being worn in a vehicle where there is a danger of overturning and where roll protection is provided.
3. A 104(a) Citation was issued, citing § 77.1607(b), was issued for mobile equipment operator not having full control of the equipment operations while it is in motion.

APPENDIX A

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

Oxford Mining Co LLC

Greg Honish	Vice President
Mike Gardner	Attorney
Jeff Williams	Superintendent
Bill Alloway	Safety Director
John Boyle	Foreman
Jerry Love	Fill in Foreman

Ohio Department of Natural Resources Division of Mineral Resources Management

Charles Hutton Accident Investigator
 Jerry Luyster Accident Investigator

Mine Safety and Health Administration

Bob E. Cornett	District Manager
Greg Fetty	Staff Assistant/Accident Coordinator
Joe Facello	CMS&H Supervisor
Thomas Tamasco	CMS&H Inspector/Accident Investigator
Joedy Gutta	CMS&H Inspector/Accident Investigator
Scott Grissit	CMS&H Inspector
Terry Marshall	Mechanical Engineer Technical Support

Appendix B

List of Persons Interviewed

John Boyle	Foreman
Jerry Love	Fill in Foreman
Shawn Boyle	Excavator Operator
Glen Delong	Mechanic
Jason Allen	Truck Driver
Jeff Armstrong	Excavator Operator
Joe Robert Perali	Mechanic
Michael Whissen	Truck Driver
Gary Hill	Dozer Operator
Herman Degarmo	Dozer Operator

APPENDIX C, Victim Information, Form 7000-50b

Accident Investigation Data - Victim Information

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



Event Number: 6 2 6 4 4 6 6

Victim Information: 1											
1. Name of Injured/Ill Employee: Jeffrey J. Bishopp			2. Sex: M	3. Victim's Age: 67		4. Degree of Injury: 01 Fatal					
5. Date(MM/DD/YY) and Time(24 Hr.) Of Death: a. Date: 12/06/2011 b. Time: 16:14						6. Date and Time Started: a. Date: 12/03/2011 b. Time: 6:00					
7. Regular Job Title: 168 Bull Dozer Operator				8. Work Activity when Injured: 072 Running bulldozer				9. Was this work activity part of regular job? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>			
10. Experience											
a. This			b. Regular			c. This			d. Total		
Years	Weeks	Days	Years	Weeks	Days	Years	Weeks	Days	Years	Weeks	Days
3	26	0	3	26	0	16	40	0	16	0	3
11. What Directly Inflicted Injury or Illness? 076 Backed dozer over highwall						12. Nature of Injury or Illness: 170 Ejected from bull dozer - multiple					
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:	Medical Professional:	None:						
	X		X								
16. Part 50 Document Control Number: (form 7000-1)						17. Union Affiliation of Victim: 9999			None (No Union Affiliation)		

