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UNITED STATES
DEPARTMENT OF LABOR
MINE SAFETY AND HEALTH ADMINISTRATION
Metal and Nonmetal Mine Safety and Health

REPORT OF INVESTIGATION

Surface Nonmetal Mine
(Crushed and Broken Stone)

Fatal Machinery Accident
January 27, 2006

Northfork Excavating Inc.
Northfork Excavating Incorporated
Aurora, Washington County, Oregon
Mine I. D. No. 35-03418

Investigators

Stephen A. Cain
Supervisory Mine Inspector

Ronald L. Eastwood
Mine Safety and Health Inspector

David J. Small
Mine Safety and Health Inspector

Eugene D. Hennen
Mechanical Engineer

John Kathmann
Mine Safety and Health Specialist

Originating Office
Mine Safety and Health Administration
Western District
2060 Peabody Road, Suite 610
Vacaville, California 95687
Arthur L. Ellis, District Manager


Dozer Rolled
From Here
Approx.
50 Feet
Dozer Landed
Here

OVERVIEW

Dwight J. Boris, heavy equipment operator, age 60, was fatally injured on January 27, 2006, when the dozer he was operating backed over the edge of a highwall and fell approximately 50 feet. The dozer landed in mud and water which had accumulated on the level below.

The accident occurred because the victim was operating the dozer in a work area without sufficient illumination to provide safe working conditions. He had maneuvered the dozer backwards onto the five-foot berm located near the edge of the highwall. The center weight of the dozer then shifted to the rear, causing it to slam down and travel backwards over the highwall. The operator was not wearing his seatbelt at the time of the accident which may have contributed to the victim losing control of the dozer.

GENERAL INFORMATION

Northfork Excavating Incorporated, a surface crushed stone operation, owned and operated by Northfork Excavating Inc., was located in Aurora, Washington County, Oregon. The principal operating officials were Jeff Hargens, vice president, and John Fisher, operations manager. The mine operated one ten-hour shift per day, five days per week. Total employment was 15 persons.

Rock was drilled and blasted from multiple benches in the quarry and hauled by front-end loaders and off-road haul trucks to a crusher. Crushed material was screened and stockpiled. The finished products were sold for construction aggregate.

The last regular inspection at this operation was completed on April 25, 2005.

DESCRIPTION OF THE ACCIDENT

On the day of the accident, Dwight J. Boris (victim) arrived at work about 6:00 a.m., his normal starting time. Boris, Jason Endicott, dozer operator, and John Fisher, operations manager, met and discussed the work assignments for the day. Endicott would operate a D8 dozer and Boris would operate a D6 dozer to push the overburden from the top of the highwall to prepare the area for drilling.

Boris drove his pick-up truck to the staging area at the top of the highwall where both dozers were parked. Boris did a walk around inspection of the D6 dozer. After starting the dozer, Boris and Endicott discussed the job and the procedures they were going to use to push the remaining overburden over the edge of the highwall.

They decided that Endicott would push material over the edge and Boris would push in the trench that had been established previously. Endicott said he was going to wait until daylight to push material over the edge of the highwall. Boris stated he was going to make a couple of passes in the trench. He made the first pass while Endicott watched from the D8 dozer parked on the side of the trench opposite the edge of the highwall. When Boris made the second pass, Endicott moved the D8 dozer down into the trench and traveled a short distance. Endicott then backed the dozer out of the trench and parked on a slight hill on the opposite side of the trench from where he was previously parked, about 20 feet from the edge of the highwall.

Boris waited at the dump point on the south end of the highwall while Endicott positioned his dozer. The victim then backed the D6 dozer approximately 30 feet away from the dump point, turned the dozer approximately 90 degrees to the right, and continued backing, traveling up the 5-foot berm. When the dozer crested the berm, it rocked backwards and slammed down. The dozer then increased speed and traveled approximately 15 feet before it went over the 50-foot highwall.

Endicott got out of his dozer and ran to where Boris' dozer had traveled over the edge to see if Boris was laying anywhere on top of the highwall. Before driving to the bottom

of the highwall where the dozer had landed, Endicott called Ken Massingale, equipment operator, and told him that Boris had driven off the highwall in the D6 dozer. When Endicott reached the dozer, it was on its side with the cab partially visible above the water and mud. He could not locate Boris. Emergency rescue personnel arrived a short time later and initiated efforts to recover the victim. Boris was pronounced dead at the scene by the county coroner. Death was attributed to drowning.

INVESTIGATION OF THE ACCIDENT

MSHA was notified of the accident at 7:30 a.m. on January 27, 2006, by a telephone call from John Fisher, operations manager, to Randy Cardwell, acting assistant district manager. An investigation was started the same day. An order was issued under the provisions of Section 103(k) of the Mine Act to ensure the safety of the miners. MSHA's accident investigation team traveled to the mine, made a physical inspection at the accident scene, interviewed employees, and reviewed conditions and work procedures relevant to the accident. MSHA conducted the investigation with the assistance of management, employees, and the local sheriff's office.

DISCUSSION

Location of the Accident

The accident occurred at the edge of the highwall on the east side of the quarry. The highwall where the dozer overtraveled the edge was approximately 53 feet high. The main trench where the dozer had been working was approximately 255 feet long, running at an angle toward the edge of the highwall. The dump point was located at the end of the trench about 30 feet from the highwall's edge. This was the first time that two dozers had worked together in this area.

The weather was cloudy with intermittent rain and a temperature of approximately 50 degrees Fahrenheit. The accident occurred at approximately 6:41 a.m. The sun rose at 7:37 a.m.

There was no natural illumination present at the time of the accident. The only illumination available was provided by the lights on the two dozers which illuminated directly in front and to the rear of the equipment. There was no illumination on the sides of the dozers.

Equipment

The machine involved in the accident was a 1997 Caterpillar, Model D6M track dozer, equipped with a VPAT (variable pitch power angle tilt) blade. It was powered by an in-line 6-cylinder Caterpillar Model 3116 turbocharged diesel engine rated at 140 horsepower. The gross weight of the dozer was 37,300 pounds. The dozer had a Caterpillar Model 2CYL00862 8961 transmission with three forward speeds and three

reverse speeds. It had extra wide tracks that provided low ground pressure for working in soft material.

The machine cab was an open design with a Roll Over Protective Structure (ROPS) canopy. Although the canopy was damaged during the accident, the operator's working area under the canopy was not compromised. The ROPS certification tag was located on the outside of the canopy's right support post.

The investigation of the machine did not reveal any defects except for damage caused by the accident.

Seat Belt

The dozer was equipped with a seat belt which was found unbuckled after the accident. The seat belt had a tag with punch-out numbers that indicated the date it was installed, but the numbers on this tag were not punched out. The seat belt was not damaged and the buckle latched and unlatched properly.

Lights

The bulldozer had two running lights in the front and two running lights in the rear. The light on the left front was damaged and the two rear lights were torn off the machine during the accident. All four lights were illuminated at the time of the accident.

Training and Experience

Dwight J. Boris had ten years mining experience as a heavy equipment operator and had operated the dozer that was involved in the accident for approximately two years. He had received training in accordance with 30 CFR, Part 46.

ROOT CAUSE ANALYSIS

A root cause analysis was performed and the following factors were identified:

Root Cause: Standards and controls were inadequate and failed to require auxiliary lighting to be installed when work was performed near elevated areas during darkness.

Corrective Action: Management should establish policies that require auxiliary lighting during non daylight hours when self-propelled mobile equipment is operated near drop offs or at elevated areas.

Root Cause: Controls were inadequate and did not ensure the operator of the dozer wore his seat belt when operating the equipment.

Corrective Action: Management should strengthen and monitor their mandatory seat belt requirement by doing spot checks of the equipment operators to increase employee awareness of the necessity of wearing seat belts.

CONCLUSION

The accident occurred because illumination to provide safe working conditions was not provided in the work area where the dozer was operated.

It was determined that the victim may have become disorientated due to darkness and the position of the other dozer. The victim's failure to wear the provided seat belt may have contributed to his inability to regain control before the dozer overtraveled the edge of the highwall.

ENFORCMENT ACTIONS

Order No. 6383365 was issued on January 27, 2006, under the provisions of Section 103 (k) of the Mine Act:

> A fatal accident occurred at this operation on January 27, 2006, when the dozer operator overturned off the highwall. This order is issued to ensure the safety of persons at this operation and prohibits any work in the affected area until MSHA determines that it is safe to resume normal operations as determined by an Authorized Representative of the Secretary of Labor. The mine operator shall obtain approval from an Authorized Representative for all actions to recover and/or restore operations in the affected area.

This order was terminated on January 31, 2006. Conditions that contributed to the accident have been corrected and normal mining operations can resume.

Citation No. 6363567 was issued on February 9, 2006, under the provisions of Section 104(a) of the Mine Act for a violation of 30 CFR 56.9101:

> A fatal accident occurred at this mine on January 27, 2006, when a D6M dozer (self-propelled mobile equipment), backed over a berm and fell off the edge of a highwall while removing overburden. The operator of the dozer failed to maintain control of the dozer while in motion.

This citation was terminated on February 15, 2006, when management retrained all their employees in the safe operation of equipment in and around highwalls and elevated areas.

Citation No. 6363568 was issued on February 9, 2006, under the provisions of Section 104(a) of the Mine Act for a violation of 30 CFR 56.17001:

> A fatal accident occurred at this mine on January 27, 2006, when a D6M dozer operator backed over a berm and fell off the edge of a highwall while removing overburden. The accident occurred before daylight, at approximately 6:41 am. The work area was not provided with sufficient illumination to provide safe working conditions.

This citation was terminated on February 15, 2006, when management provided sufficient illumination to all work areas. The mine operator implemented a written policy and changed employee working hours to operate only in daylight hours. Additionally, all miners were trained in the use of illumination for work areas and the mine operator implemented a policy of discipline for failure to adhere to the policy.

Citation No. 6363569 was issued on February 9, 2006, under the provisions of Section 104(a) of the Mine Act for a violation of 30 CFR 56.14130(g):

> A fatal accident occurred at this mine on January 27, 2006, when a D6M dozer backed over a berm and fell off the edge of a highwall while removing overburden. The operator (victim) was found out of the cab of the dozer and directly beneath the dozer in approximately 10 to 15 feet of water and mud. The seat belt provided in the dozer was not being worn by the operator at the time of the accident.

This citation was terminated on February 15, 2006, when management retrained all employees on the use of seat belts. The mine operator implemented a new written policy for ensuring compliance with the seat belt policy, including discipline.

Approved By:

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Arthur L. Ellis
District Manager

Date

APPENDIX

Persons Participating in the Investigation

Northfork Excavating Incorporated

Deborah J. Eaton	owner/president
John L. Fisher	operations manager
Doug T. Brandon	maintenance manager
Kenneth T. Massingale	equipment operator
Jason A. Endicott	equipment operator

Washington County Sheriff's Office

Cory Hoffman	deputy sheriff

Mine Safety and Health Administration

Stephen A. Cain	supervisory mine safety and health inspector
Ronald L. Eastwood	mine safety and health inspector
David J. Small	mine safety and health inspector
Eugene D. Hennen	mechanical engineer
John Kathmann	mine safety and health specialist