MAI-2003-18

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

REPORT OF INVESTIGATION

Surface Nonmetal Mine
(Sand & Gravel)

Fatal Powered Haulage Accident
September 29, 2003

Welch Sand & Gravel, Inc.
East Miami Pit
Cincinnati, Hamilton County, Ohio
Mine I.D. 33-01598

Accident Investigators

Fred H. Tisdale
Mine Safety and Health Inspector

Dueard W. Hilt
Mine Safety and Health Inspector

Cynthia S. Shumiloff
Mine Safety and Health Specialist

Originating Office
Mine Safety and Health Administration
North Central District
515 West First Street, Room 333
Duluth, MN 55802-1302
Michael S. Okuniewicz, Acting District Manager

OVERVIEW

On September 29, 2003, John E. Riordan, dredge operator, age 55, was fatally injured when he was struck from behind by a front-end loader. The front-end loader had dumped material into the plant's feed hopper and was backing down the ramp when it struck Riordan.

The accident occurred because the loading ramp used by mobile equipment was also used as a walkway. The loader operator didn't realize that Riordan had exited the control booth and was walking down the ramp because his view to the rear was restricted. The layout of roads and ramps to the plant promoted foot traffic in the same locations where heavy equipment traveled.

GENERAL INFORMATION

East Miami Pit, a sand and gravel operation, owned and operated by Welch Sand & Gravel, Inc., was located in Cincinnati, Hamilton County, Ohio. The principal operating officials were Charles Welch, president; and James Welch, vice-president. The mine was normally operated one, 10-hour shift per day, five and one-half days per week.

Sand and gravel was mined from the pit with a clam shell dredge. The material was conveyed to the plant using a series of floating and overland conveyors. The system was designed to dump material directly into the plant feed hopper for further screening and sizing. A dragline was also used to mine sand and gravel. This material was hauled to the plant by articulating haul trucks and stored at a stockpile located near the plant feed hopper. When the dredge was not running, a front-end loader would feed the plant using this stockpiled material.

The last regular inspection at this operation was completed August 14, 2003. Another inspection was conducted following this investigation.

DESCRIPTION OF ACCIDENT

On the day of the accident, John E. Riordan (victim) reported for work at 7:00 a.m., his normal starting time. After meeting with Richard Goessling, supervisor, Riordan traveled to the dredge where he performed his normal maintenance and pre-startup duties. A weekend storm pushed the dredge about 200 feet from its mining location. Riordan attempted to reposition the dredge using electric winches to pull in and play out wire ropes attached to anchor points, away from the dredge. Riordan was having difficulty using the winches and called Goessling.

Goessling came to the dredge and found low voltage problems. He called the electric company that supplied power to the mine. Utility company personnel concluded that a phase had gone to ground. At 10:00 a.m. they recommended that persons be removed from the dredge until the problem could be resolved. Goessling directed Riordan and Timothy Riggs, cleanup and maintenance man, to go to the plant to help plant operator, David Owens.

Riordan and Riggs helped Owens in the operation and maintenance of the plant, doing cleanup, servicing, and other chores. About 2:30 p.m., Owens was at the scalper screen, discussing a job with a maintenance man. Riordan and Riggs were in the control booth. Riggs was watching the hopper while Riordan exited the booth and started walking down the roadway ramp. A front-end loader, operated by James Harris, was parked at the hopper, dumping a bucket of material, about 4 feet away from the control booth doorway. The loader dumped its bucket and began to back down the ramp.

Rande Pierson, truck driver, had been in his truck on the scale located north of the ramp, and saw Riordan standing near the bottom of the ramp near the left edge as Harris was backing down. Pierson saw Harris look over his right shoulder, and saw the victim disappear.

Raymond Simpson, a contractor welder, had just left the welding shop, located about 100 feet from the bottom of the ramp. Simpson saw something fly out from under the loader bucket when the loader backed down the ramp. He ran and got Harris' attention, told him to stop the loader, and call 911. Harris had not realized that he had run over Riordan. Simpson called Goessling on a cell phone and went to the victim's aid. Emergency medical personnel arrived and pronounced the victim dead at the scene.

INVESTIGATION OF THE ACCIDENT

MSHA was notified of the accident at 3:05 p.m. on September 29, 2003, by a phone call from Joe Catanzaro, safety director for Welch Sand and Gravel, Inc., to Robert Lemasters, field office supervisor in Newark, Ohio. An investigation was started that day. An order was issued under the provisions of Section 103(k) of the Act to ensure the safety of the miners. MSHA's accident investigators traveled to the mine, made a physical inspection of the accident scene, interviewed employees, and reviewed conditions and work procedures relevant to the accident. MSHA conducted the investigation with the assistance of mine management, employees, and the Ohio Department of Natural Resources.

DISCUSSION

Location of the Accident

The accident occurred near the bottom of the feed hopper access ramp. The ramp was about 150 feet long and 20 feet wide with a 10% grade. The victim was found about 108 feet from the top of the ramp. Footprints indicated that the victim may have been standing on a berm and slipped under the loader as it passed. The loader was backing up, close to the left side of the ramp. One witness stated that most operators did this to give a power pole located on the right side of the ramp, a wide berth. This ramp was used by front-end loaders and articulating haul trucks to feed the plant with sand and gravel. The primary control booth was located at the top of the ramp. The booth had two access doors; one faced the plant, the other opened onto the ramp. When a loader was on the ramp dumping a load in the hopper, the front left tire was about 4 feet from the booth door. Mine personnel used this ramp to access the primary control booth, located at the top of the ramp, despite heavy equipment traffic.

Front-end Loader

The front-end loader was a Caterpillar 980-F, serial number 8CJ01007. The loader was equipped with an audible backup alarm that functioned when the transmission was placed in reverse. The service brakes, parking brakes, and throttle were evaluated and no defects were found. The machine weighed about 61,523 pounds. The loader was equipped with two rearview mirrors, one on each side of the operator's cab. The mirrors, 9 inches wide by 13 inches high, were convex and were clean, as were the windows. The loader measured about 12 feet 8 inches to the top of the ROPS and about 8 feet from ground level to the top of the radiator. A blind spot existed to the rear of the loader where a person 6-feet tall could not be seen unless they were more than 13 feet away from the loader. A person could be seen in the convex mirror, on the side of the loader, if he stood within 4 feet of the loader's side.

Weather

Weather on the day of the accident was cloudy and cool.

Training and Experience

The victim had 32 years mining experience, of which 20 weeks were at this mine. He occasionally had performed work in the plant in the past. He had received training in accordance with 30 CFR, Part 46.

ROOT CAUSE ANALYSIS

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

Causal Factor - The victim was transferred to the plant area after the dredge encountered electrical problems.

Corrective Action – When reassigning employees to another work area, ensure that they are trained in work procedures that address the health and safety aspects of the task to be performed.

Causal Factor – Pedestrians could access the plant hopper ramp and haul roads designated for large mobile equipment.

Corrective Action – A policy should be developed that restricts pedestrian access to roadways and ramps where mobile equipment routinely travels. Ensure that foot traffic is restricted on the ramp to the plant hopper when mobile equipment is used to feed the hopper. Ensure, by signal or other means, that all persons are clear before moving equipment. When approaching large mobile equipment, do

no proceed until eye contact is made with, or approval obtained from, the equipment operator.

CONCLUSION

The accident occurred because a loading ramp being used by a front-end loader was also used as a walkway. The loader operator didn't realize that a person was on foot in the area because his view was restricted. Pedestrians could access the control booth from the same ramp that large mobile equipment used. The layout of roads and ramps to the plant promoted foot traffic in the same locations where heavy equipment traveled.

ENFORCEMENT ACTIONS

Order No. 6157437 was issued on September 29, 2003 under the provisions of Section 103(k) of the Mine Act:

> A fatal accident occurred at this operation on September 29, 2003, when a miner was struck by a Caterpillar 980-F front-end loader as it backed down the primary feed hopper ramp. This order is issued to assure the safety of all persons at this operation. It prohibits all activity at the primary feed hopper and the Caterpillar 980-F (serial number 8CJ01007) until MSHA has determined that it is safe to resume normal mining conditions in the area. The mine operator shall obtain prior approval from an authorized representative for all actions to recover and/or restore operations to the mining area.

This order was terminated on September 30, 2003. Conditions that contributed to the accident no longer exist and normal mining conditions can resume.

Approved by: Date:

Michael S. Okuniewicz
Acting District Manager
North Central District

APPENDICES

A. Persons Participating in the Investigation

B. Persons Interviewed

APPENDIX A

Persons Participating in the Investigation

Welch Sand & Gravel, Inc.

Richard F. Goessling III	plant foreman
Joseph J. Catanzaro	safety and health director

Ohio Department of Natural Resources

Bruce K. Dean	mine safety coordinator
Jerry J. Luyster	mine safety inspector

Mine Safety and Health Administration

Fred H. Tisdale	mine safety and health inspector
Dueard W. Hilt	mine safety and health inspector
Cynthia S. Shumiloff	mine safety and health specialist

APPENDIX B

Persons Interviewed

Welch Sand & Gravel, Inc.

James W. Harris	loader operator
David H. Owens	plant operator
Timothy W. Riggs	cleanup/maintenance
Richard F. Goessling III	plant foreman

WGS Transportation

John H. Westey Jr.	truck driver
Rande I. Pierson	truck driver

Infrasource Underground Construction

Bryan P. Jacobs	truck driver

R and L Welding

Raymond L. Simpson	welder