

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

REPORT OF INVESTIGATION

**Surface Nonmetal Mine
(Limestone)**

Fatal Powered Haulage Accident

August 29, 2006

**New Enterprise Stone & Lime Co., Inc.
Somerset, Somerset County, Pennsylvania
Contractor I.D. No. V42**

at

**New Enterprise Stone & Lime Co., Inc.
Somerset Quarry & Mill
Somerset, Somerset County, Pennsylvania
Mine I.D. No. 36-00233**

Investigators

**John A. Dagner
Mine Safety and Health Specialist**

**Bret A. Park
Mine Safety and Health Specialist**

**Ronald Medina
Mechanical Engineer**

**Originating Office
Mine Safety and Health Administration
Northeast District
Thorn Hill Industrial Park
547 Keystone Drive, Suite 400
Warrendale, Pennsylvania 15086-7573
James R. Petrie, District Manager**



OVERVIEW

Larry P. Yoder, a 61-year old contractor paving supervisor, was fatally injured while walking from the mine's main shop toward the plant when he was struck by a front-end loader. The front-end loader bucket, loaded with rock and positioned several feet off the ground, blocked the operator's view of the victim. The six-person crew Yoder supervised was preparing to pave an area south of the mine's main shop.

The accident occurred because mine management failed to establish procedures for safe movement of mobile equipment through a congested area. No risk assessment was conducted to ensure that persons could safely perform tasks while working near mobile equipment traveling in the area to be paved.

GENERAL INFORMATION

The Somerset Quarry & Mill, a surface limestone operation, owned and operated by New Enterprise Stone & Lime Co., Inc., was located in Somerset, Somerset County, Pennsylvania. The principal operating official was Gene Barron, general manager. The mine operated two 9-hour shifts per day, five days per week, and employed 26 persons.

New Enterprise Stone & Lime Co., Inc. and its subsidiaries also operated several asphalt batch plants and employed paving crews throughout the states of Pennsylvania, Maryland, and West Virginia. One of these asphalt operations was located on a separate property adjacent to the mine. The principal operating official was Gene Barron, general manager.

Limestone was blasted from multiple benches and transported by front-end loaders, haul trucks, and conveyors to the crushing plant where it was broken and separated into various sized materials. Finished products were sold for use as construction aggregate.

The last regular inspection at this operation was completed on June 5, 2006.

DESCRIPTION OF ACCIDENT

On the day of the accident, Larry P. Yoder (victim) reported to the mine at approximately 11:15 a.m. The six-person paving crew he supervised had arrived approximately one hour earlier. Gene Barron, general manager, had instructed the crew to work at the mine because their scheduled paving job on a public highway had been cancelled due to rain.

The crew spent the first hour excavating to prepare an area on the south side of the main shop for asphalt paving. When Yoder arrived, he told the crew to make final preparations in the area. Several of the crew members left the area and traveled southeastward to a staging area near the plant to get their tools and paving equipment. A tri-axle dump truck loaded with fresh asphalt was parked near the paving crew's equipment.

About the same time, Mark Schrock, front-end loader operator, was loading customer trucks in an area east of the main shop. As time permitted, Schrock transported loads of material to a stockpile southwest of the main shop. To perform this task, Schrock had to maneuver his front-end loader through mobile equipment and pedestrian traffic in the area behind the main shop where the asphalt crew was working.

About 12:00 p.m., Yoder left the main shop area and walked southeastward to the staging area where his crew was preparing their equipment. At the same time, Schrock finished loading a customer truck, picked up a bucketful of material, and traveled westward toward the stockpile near the main shop. Two members of the asphalt crew, Calvin Hahn and Ronald Gindlesperger, saw Yoder, wearing a green reflective vest, walking toward them with his head down. They also saw Schrock's front-end loader, with the loaded bucket raised, traveling toward Yoder. At that time, the two men began yelling and waving their arms to get Yoder's or Schrock's attention, but both continued on. Yoder was struck by the left front

side of the front-end loader bucket, knocked to the ground, and run over. Schrock stopped immediately when he saw Gindlesperger waving his arms.

Mark Zambanini, front-end loader operator, was parked west of Shrock's moving loader and saw the accident in his rear view mirror. Zambanini immediately called on his cell phone for emergency medical assistance and ran to the accident scene. Wayne Broadwater, mechanic, saw the accident and ran to the mine office to get help. Zambanini found Schrock visibly shaken and took him to the shop foreman's office. Zambanini then returned to the accident scene, assessed Yoder's condition, and called for the coroner and the Pennsylvania State Police.

Yoder was pronounced dead at the scene by the responding emergency medical personnel. The cause of death was attributed to crushing injuries.

INVESTIGATION OF THE ACCIDENT

MSHA was notified of the accident at 12:03 p.m. on August 29, 2006, by a telephone call from Steven E. Tomlinson, corporate safety director, to James R. Petrie, district manager. An order was issued under the provisions of Section 103(k) of the Mine Act to ensure the safety of miners. An investigation was started the same day. MSHA's accident investigation team traveled to the mine, made a physical inspection of the accident scene, interviewed employees, and reviewed documents and work procedures relevant to the accident. MSHA conducted the investigation with the assistance of mine management, employees, miners' representative, and personnel from the Pennsylvania Department of Environmental Protection.

DISCUSSION

Location of the Accident

The accident occurred on the south side of the main shop.

Weather

On the day of the accident, the weather was cloudy and cool with intermittent rain.

Front-End Loader

The front-end loader involved in the accident was a 2002 Caterpillar Model 980G II Wheel Loader with an articulating frame. It was powered by a Caterpillar turbocharged, six-cylinder, Model 3406, diesel engine. The loader's operating weight was approximately 65,700 pounds and it was equipped with a 7.5 cubic yard bucket (SAE nominal heaped capacity). The electronically controlled transmission had four forward and four reverse speeds and a neutral position.

Braking Systems

The front-end loader was equipped with hydraulic wet disc service brakes in the front and rear axles. The heat from braking friction was removed by oil in the axle housing. The service brake could be applied using foot pedals located on either side of the steering column. In addition to applying the brake, the left side pedal neutralized the transmission. The equipment operator could disable this feature by depressing the transmission neutralizer override switch after the engine had started. When operating in the disabled mode, the left side pedal still activated the service brakes. The service brake stopped and held the fully loaded machine, in both directions of travel, on a 14 percent grade when either of the two brake pedals was depressed.

The parking brake consisted of a spring applied, hydraulically released, driveline, drum brake. According to the manufacturer's service manual, the parking brake release pressure and the service brake application pressure were supplied by a common pump and accumulator hydraulic circuit that had a normal operating pressure of 2,100 +/- 50 psi. The parking brake could be engaged by pulling the parking brake control knob located on the machine dashboard. In addition, the parking brake would automatically apply if the pressure in the service/parking brake hydraulic system dropped below 875 +/- 75 psi. The parking brake held the loader while facing upgrade on a 14 percent grade, but not when facing downgrade as the loader slowly inched forward through the applied parking brake. This defect did not contribute to the accident and a non-contributory citation was issued.

Steering

The steering wheel was mechanically linked to a steering valve. The steering valve controlled the hydraulic oil flow to the steering cylinders. No steering defects were found.

Other Safety Features

The operator's compartment windows were intact and clean. The windshield wipers provided on the front and rear windows functioned. Four convex rearview mirrors were intact and clean. The headlights, horn, and backup alarm functioned. The throttle pedal moved freely and no defects were found. The two ends of the seat belt latched and unlatched when tested.

Visibility from the Operator's Seat

According to the manufacturer's service manual, the bucket or other attachments should be raised 15 inches above the ground when the front-end loader was traveling to provide operator visibility and machine stability.

Since the front-end loader was traveling with its bucket approximately two to four feet off the ground at the time of the accident, a simulated test was conducted to determine the "blind areas" for the equipment operator at these raised bucket positions. In this test, the blind area was defined as the area that a six foot tall person, standing on the ground a measured distance from the machine, was not visible to the loader operator. During the test, an observer, who

was approximately the same height as the loader operator, sat in the operator's seat. The bucket contained a load similar to the one at the time of the accident.

The attached photo and figure (Appendix B) illustrate the view from the operator's compartment and the resultant blind areas the loader operator experienced. The blind area in front of the loader extended out to 20 feet, 35 feet, and 85 feet, when the bottom of the bucket was two feet, three feet, and four feet above the ground, respectively.

Training and Experience

Larry P. Yoder had 31 years experience with the company's asphalt paving division and 10 years of mining experience at this mine. He had not received site-specific hazard awareness training in accordance with 30 CFR Part 46. A non-contributory citation was issued.

ROOT CAUSE ANALYSIS

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

Root Cause: A risk assessment to determine all possible hazards and to establish safe work procedures was not conducted prior to paving near the mine shop. The area was congested with moving mine equipment, asphalt equipment, and paving personnel.

Corrective Actions: Procedures should be established that require a risk assessment be conducted to identify and correct potential hazards associated with the task to be performed. Safe traffic control procedures should be developed and implemented to ensure the safety of all persons working near mobile equipment.

Root Cause: Management policies and controls were inadequate in that a front-end loader traveled through a congested work area with its bucket raised, blocking the operator's vision.

Corrective Actions: Procedures should be established to use spotters, cameras, lights, signs, barricades, training or other practical means, to ensure the safety of all employees at the work area.

CONCLUSION

The accident occurred because mine management failed to establish procedures for safe movement of mobile equipment through a congested area. No risk assessment was conducted to ensure that persons could safely perform tasks while working near mobile equipment traveling in the area to be paved.

ENFORCEMENT ACTIONS

New Enterprise Stone & Lime Co., Inc.

Order No. 6036060 was issued on August 29, 2006, under the provisions of Section 103(k) of the Mine Act:

A fatal accident occurred at this mine site on August 29, 2006, at approximately 11:40 a.m., when the Caterpillar 980G front-end loader was moving rock material south of the main shop. This order is being issued to assure the safety of persons at the mine. This order prohibits any movement of the Caterpillar 980G front-end loader located near the south end of the scale. The mine operator shall obtain prior approval from an authorized representative for all actions to recover and/or restore this piece of equipment.

The order was terminated August 30, 2006. Conditions that contributed to the accident have been corrected and normal operations can resume.

Citation No. 6036062 was issued on September 18, 2006, under the provisions of Section 104(a) of the Mine Act for a violation of 30 CFR 56.9100(a):

On August 29, 2006, a fatal accident occurred at this operation when a paving contractor supervisor, who was making preparations to lay asphalt near the mine shop, was struck by a front-end loader, which was moving rock from a stockpile. The area was congested with moving mine equipment, foot traffic, and asphalt equipment. The front-end loader operator had poor visibility because he was traveling with the bucket elevated approximately three feet off the ground and the rock in the bucket was piled higher than the top of the bucket. The mine operator did not have any rules established regarding right-of-way, direction of movement, or use of headlights in this area.

The citation was terminated September 19, 2006. The mine operator had developed and implemented new traffic control and safety procedures. A safety meeting was held with all mine employees to review the contents of the new procedures and to ensure their adherence to the requirements of the program.

Approved: _____
James R. Petrie
District Manager

Date: _____

APPENDIX A

Persons Participating in the Investigation

New Enterprise Stone & Lime Co., Inc.

Steven E. Tomlinson	corporate safety director
David Yonish	senior safety representative
Gene Barron	general manager
John C. Hostetler	miners' representative

Pennsylvania Department of Environmental Protection

Harry A. Barnes	mine inspector supervisor
Matthew Riley	environmental trainee

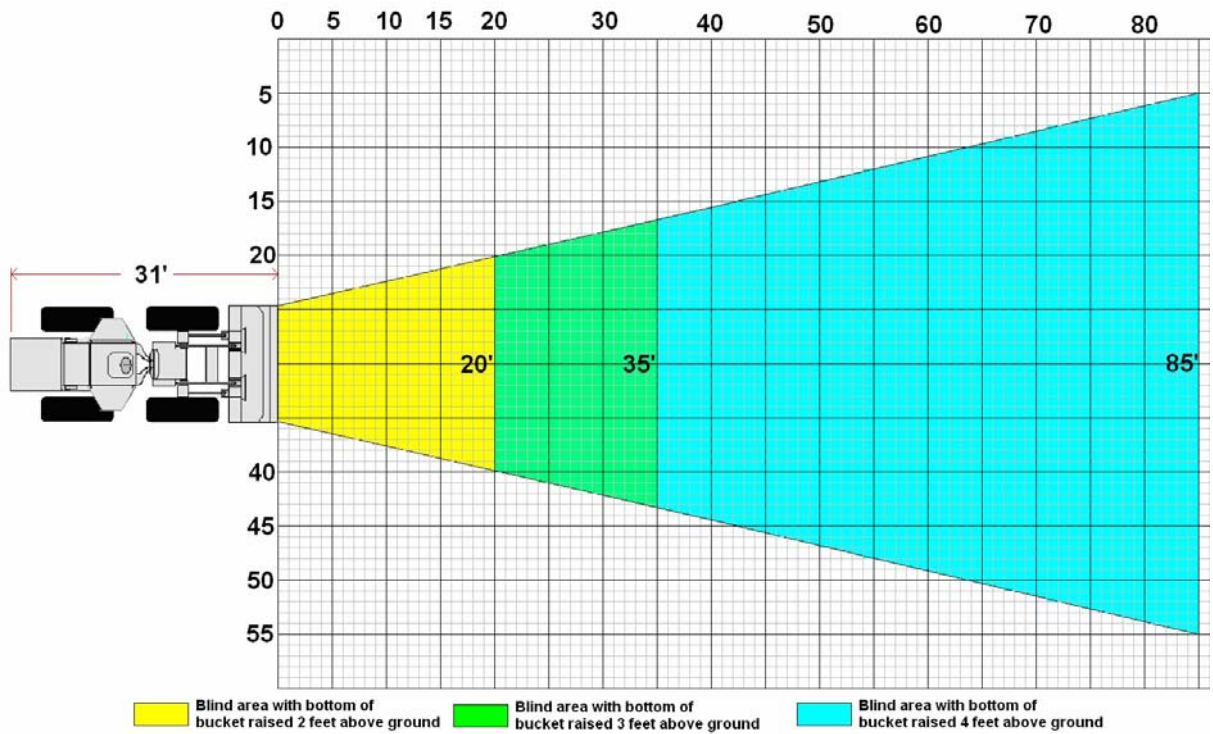
Mine Safety and Health Administration

John A. Dagner	mine safety and health specialist
Bret A. Park	mine safety and health specialist
Ronald Medina	mechanical engineer

APPENDIX B



View from Operator's Cab



Blind Areas in Operator's Field of Vision