MAI-2009-13

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

REPORT OF INVESTIGATION

Surface Nonmetal Mine
(Dimension Stone)

Fatal Machinery Accident

July 2, 2009

R Arnold #1 Quarry
Richard L. Arnold II
Montrose, Susquehanna County, Pennsylvania
Mine I.D. No. 36-09316

Investigators

Rodney L. Rice
Mine Safety and Health Inspector

Byron D. Moore
Mine Safety and Health Inspector

Ronald Medina, P.E.
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

Walk-Behind Concrete Saw Involved in the Accident

OVERVIEW

Richard L. Arnold II, Owner/Operator, age 52, was fatally injured on July 2, 2009. Arnold was working alone and was cutting stone on top of a bench using a walk-behind concrete saw. Apparently, Arnold was operating the saw near the edge of the bench when he tripped and fell. Arnold and the saw went over the 9-foot ledge and the saw fell on him.

The accident occurred because management failed to ensure that a berm or barrier was installed along the highwall edge to prevent a fall of person or machinery from the bench.

GENERAL INFORMATION

R Arnold #1 Quarry, a surface dimension stone mine, owned and operated by Richard L. Arnold II, was located near South Montrose, Susquehanna County, Pennsylvania. The principal operating official was Richard L. Arnold II, owner/operator. The mine operated one shift, from 8 to 12 hours per day, 5 to 7 days per week, depending on customer orders. Total employment was two persons.

Dimensional stone was removed from multiple benches using a self-propelled concrete saw. The saw operator followed a grid pattern laid out on each bench prior to cutting. Cut blocks or slabs were removed and transported to the yard for processing or shipment. The stone was sold for use in construction and landscaping.

The mine was originally opened on March 18, 2005, and was abandoned on August 11, 2005, before it could be inspected by the Mine Safety and Health Administration (MSHA). The mine operator failed to notify MSHA when he resumed operations later that year.

DESCRIPTION OF THE ACCIDENT

On July 2, 2009, Richard L. Arnold II (victim) arrived at the mine around 7:00 a.m. Robert L. Manning, Contract Mechanic, also arrived to repair a skidsteer loader. Shortly afterward, Arnold began working alone on the east bench in the quarry operating a walk-behind concrete saw. At approximately 8:45 a.m., Arnold made a cut in a row and backed up the saw to make a second cut.

While Arnold was walking backwards near the highwall edge to position the saw, he slipped or tripped. Investigators determined that while trying to hang on to the saw, Arnold grabbed the saw's hydrostatic transmission control and pulled it backward. The movement of the saw caused Arnold and the saw to fall over the edge nine feet to the bench below. About 9:00 a.m., Manning went to the quarry to see if Arnold needed help removing the cut slabs of stone from the bench.

Manning found Arnold lying unresponsive on the quarry floor. Manning called for emergency medical services (EMS) but poor cell phone reception forced him to leave the quarry and seek a location with a stronger signal. EMS and the Pennsylvania State Police arrived and Arnold was pronounced dead at the scene by the county coroner. The cause of death was attributed to multiple traumatic injuries.

INVESTIGATION OF THE ACCIDENT

MSHA was not immediately notified of the fatal accident. A non-contributory citation was issued for untimely reporting. William MacDonald, Mine Safety and Health Inspector, learned of the accident on July 4, 2009. MacDonald called Thomas J. Shilling, Supervisory Mine Safety and Health Inspector, who then called the Pennsylvania State Police to verify the accident occurred. Shilling notified James R. Petrie, District Manager. An order was issued under the

provisions of 103(k) of the Mine Act to ensure the safety of the miners. An investigation was started on July 6, 2009.

MSHA's accident investigation team traveled to the mine, made a physical inspection of the accident scene, interviewed an employee, and reviewed documents and work procedures relevant to the accident. MSHA conducted the investigation with the assistance of family members, an employee, the Susquehanna County Sheriff Department, the Susquehanna County Coroner's Office, and the Pennsylvania State Police.

DISCUSSION

Geology

The R Arnold # 1 Quarry was located within the bluestone formation district. Bluestone is a unique sandstone formation found primarily in northeastern Pennsylvania. As sediments fossilized into rock, minerals carried by groundwater through the rock deposits created various colored strata. Bluestone derived its name from its typical blue color. The stone was strong, stable, resisted cracking, and did not discolor.

Bluestone was marketed in two types: dimensional (architectural grade) used for stair steps, flooring, countertops, etc.; and flagstone used for walls, walkways, and patios. Stone was cut from various locations in the quarry based on the specific orders that the mine operator received.

Mining Method

Overburden was removed from the uppermost bench in the quarry exposing the top layer of stone to be removed. A rectangular grid pattern or "chalk line" was laid out on each bench to use as a guide during the extraction process. A self-propelled concrete saw was used to cut the slabs or blocks of stone from the bench. The cutting depth typically ranged from two to four feet.

A common practice was to position several steel plates on the bench floor and level each plate using wooden wedges. This allowed the saw operator to maneuver the saw on a level surface to produce a more uniform cut. The saw operator made a series of cuts in the same direction along the chalk lines in a particular row of the grid. He would then turn the saw around and cut along the perpendicular chalk lines in the row to complete the rectangular shape of each block in the row. These secondary cuts were known as "tails." After the tail cuts were completed, the steel plates were advanced to the chalk line in the next row of the grid.

This sequence of steps was repeated until all of the cuts were made for the grid on each bench. As each row of blocks or slabs was cut, they were removed and transported to the yard for processing or shipment. Some sections were transported to the saw barn to be split and re-cut to size.

Location of the Accident

The quarry pit dimensions were approximately 90 feet long by 70 feet wide. The two sides of the pit had benches approximately 10 feet high by 15 feet wide. The center portion of the pit had been mined and the level of stone stepped down from the rear center bench to the floor approximately 9 feet below the east (right) and the west (left) benches. At the time of the accident, the victim was cutting stone on the east bench and fell into standing water on the quarry floor below (See Appendix C – Figure 1).

Weather

The weather conditions on the day of the accident were overcast with intermittent light rain and a temperature of 72 degrees Fahrenheit.

Concrete Saw

The saw involved in the accident was a 1992 Target (Husqvarna) Pro 65II 36 walk-behind concrete saw. The saw was a self-propelled circular saw with a water-cooled blade. An air-cooled Wisconsin Model V-465D1, 65 horsepower, gasoline engine powered the blade and the hydrostatic rear-wheel drive system. The machine was equipped with a 12-volt electrical system and electric starter.

The saw operator stood at the rear of the machine and maneuvered the saw on its four wheels using two extendable handlebars. The unit was approximately 60 inches long (with the handlebars retracted), 41 inches high to the top of the control panel, and 29 inches wide. The weight of the unit was approximately 1,600 pounds.

Training and Experience

Richard L. Arnold II had 34 years of mining experience. Investigators determined that he had received Part 46 training. Robert L. Manning had not received any Part 46 training. A non-contributory citation was issued to the contractor.

ROOT CAUSE ANALYSIS

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

Root Cause: No procedures were in place for persons to safely operate a walk behind concrete saw on an elevated bench where there was a hazard of falling. No berms or guardrails were provided and maintained along the edge of the bench where a nine foot drop off existed.

Corrective Action: The victim was a sole proprietor and; therefore, the business terminated at the time of his death. Consequently, no corrective action was taken.

CONCLUSION

The accident occurred because management failed to ensure that a berm or barrier was installed along the highwall edge to prevent a fall of person or machinery from the bench.

ENFORCEMENT ACTIONS

Order No. 6535055 was issued on July 6, 2009, under the provisions of Section 103(k) of the Mine Act:

A verbal 103(k) order was issued at 2:34 p.m. this date as a result of the fatal accident that occurred on July 2, 2009, at the Arnold Natural Stone Products Mine ID 36-09777. The operator was attempting to saw stone from the upper bench when the accident occurred. The Target Pro 65 II (model # PRO65II36; serial # 134622) saw fell from the bench and struck the operator resulting in fatal injuries. This order is issued to assure the safety of all persons at this operation. It prohibits all activity from the stone barricade placed at the entrance road to the active pit area until MSHA has determined that it is safe to resume normal mining operations 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 affected area.

The order was terminated on July 9, 2009, after the accident investigation concluded. The mine operator was a sole proprietor and; therefore, the business terminated at the time of his death.

Citation No. 6535056 was issued on August 24, 2009, under the provisions of Section 104(d)(1) of the Mine Act for a violation of 30 CFR 56.9300(a):

A fatal accident occurred at this operation on July 2, 2009, when a mine operator and the concrete saw he was operating fell over the west side of the east bench in the pit. The operator was positioning the saw to cut stone when the accident occurred. Berms or guardrails were not provided and maintained along the edge of the bench where a nine foot drop-off existed. Richard Arnold II, owner, engaged in aggravated conduct by operating a saw on a bench which did not have berms or guardrails in place where a nine foot drop-off off existed. This violation is an unwarrantable failure to comply with a mandatory standard.

The citation was terminated on August 24, 2009. The mine operator was a sole proprietor and; therefore, the business terminated at the time of his death.

Approved: _____ Date: _____

James R. Petrie
District Manager

APPENDICES

A. Persons Participating in the Investigation
B. Victim Data Sheet
C. Schematic of the Accident Scene

APPENDIX A

Persons Participating in the Investigation

Family Members of the Richard L. Arnold II

Bill Arnold	Brother
David Arnold	Brother
Jessie L. Arnold	Daughter

Arnold Natural Stone Products

Sandra Stroble	Secretary

RD Manning Construction (Contractor I.D. No. X738)

Robert L. Manning	Owner/Mechanic

Pennsylvania State Police

Craig Purdum	Trooper

Susquehanna County Sheriff's Department

Lance M. Benedict	Sheriff
Paula Mack	Chief Deputy
Debra Strong	Deputy

Susquehanna County Coroner

Anthony J. Conarton	County Coroner

Pennsylvania Department of Environmental Protection

Colleen B. Stutzman	Supervisor, Pottsville District Office
Lawrence Faust	Inspector, Pottsville District Office

Mine Safety and Health Administration

Rodney L. Rice	Mine Safety and Health Inspector
Byron D. Moore	Mine Safety and Health Inspector
Ronald Medina, P.E.	Mechanical Engineer

APPENDIX B

Victim Data Sheet

Accident Investigation Data - Victim Information
Event Number: 0 8 9 8 4 8 4

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:
Richard L. Arnold II	*M*	*52*	*01 Fatal*

5. Date(MM/DD/YY) and Time(24 Hr.) Of Death:	6. Date and Time Started:
a. Date: 07/02/2009 b.Time: 8:45	*a. Date: 07/02/2009 b.Time: 7:00*

7. Regular Job Title:	8. Work Activity when Injured:	9. Was this work activity part of regular job?
149 Owner	*098 Operating stone saw*	Yes X No

10. Experience	a. This Work Activity:	b. Regular Job Title:	c: This Mine:	d. Total Mining:
Years	*34*	*34*	*5*	*34*
Weeks	*26*	*26*	*26*	*26*
Days	*2*	*2*	*2*	*2*

11. What Directly Inflicted Injury or Illness?	12. Nature of Injury or Illness:
127 Victim and stone saw fell from bench	*370 multiple Traumatic Injuries*

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

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: X | None:

16. Part 50 Document Control Number: (form 7000-1)
17. Union Affiliation of Victim: *9999* *None (No Union Affiliation)*

APPENDIX C

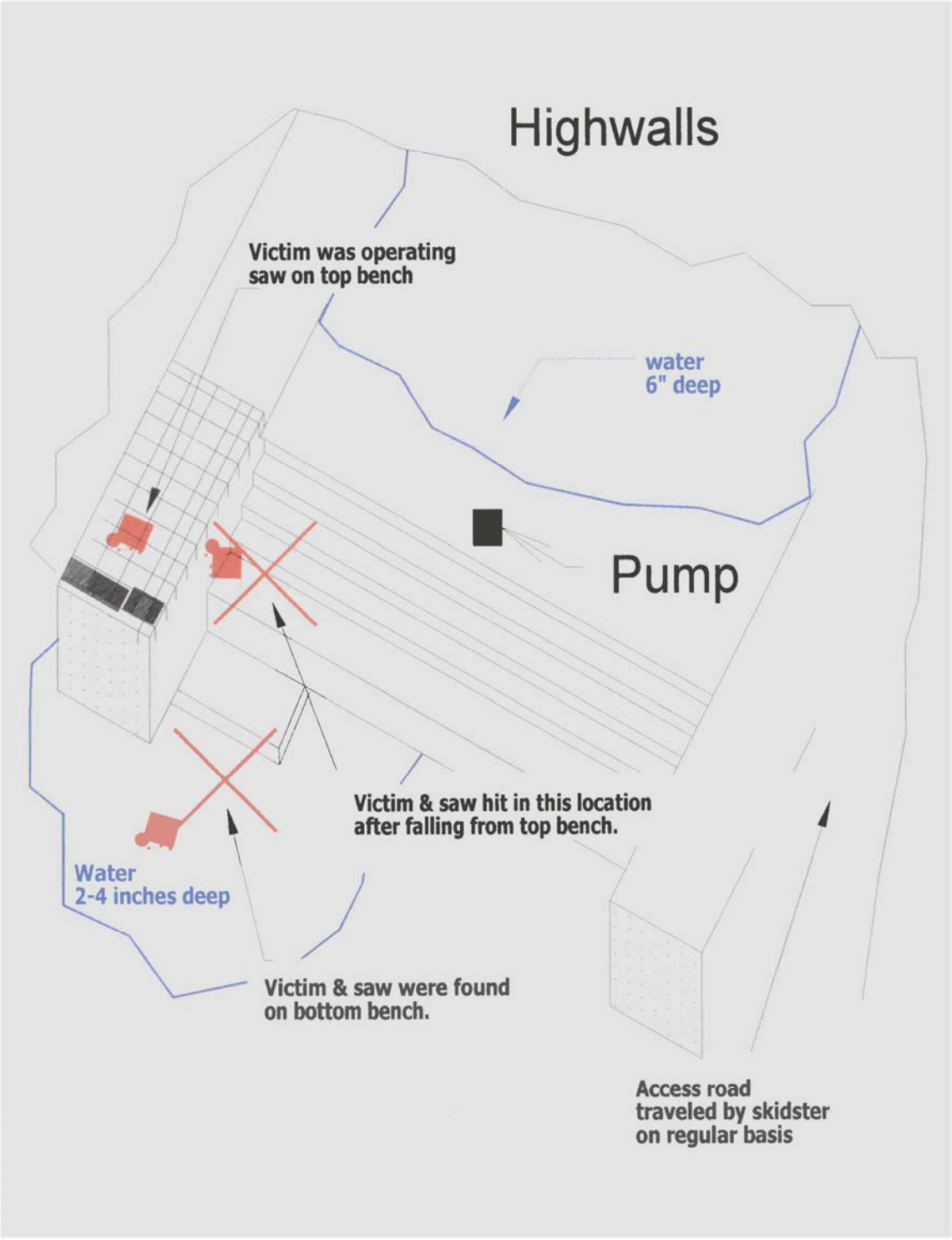

Figure 1 – Schematic of the Accident Scene