

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

REPORT OF INVESTIGATION

**Surface Nonmetal Mine
(Dimensional Granite)**

**Fatal Machinery Accident
May 13, 2019**

**Millstone Quarry
Greene County Quarries, Inc.
Carlton, Oglethorpe County, Georgia
Mine ID No. 09-01109**

Investigators

**James (Mike) Hollis
Supervisory Mine Safety and Health Inspector**

**Ed Jewell
Mine Safety and Health Inspector**

Originating Office

**Mine Safety and Health Administration
Southeastern District
1030 London Drive, Suite 400
Birmingham, Alabama 35211
Samuel K. Pierce, District Manager**

Table of Contents

OVERVIEW	1
GENERAL INFORMATION.....	2
DESCRIPTION OF ACCIDENT	2
INVESTIGATION OF ACCIDENT	3
DISCUSSION	3
Weather Conditions	3
Training and Experience	3
Location of Accident.....	3
Crane.....	4
Boom Pawl.....	4
Examinations.....	4
ROOT CAUSE ANALYSIS	4
CONCLUSION.....	4
ENFORCEMENT ACTIONS	5
APPENDIX A - Persons participating in the investigation.....	6



OVERVIEW

Danny Roth, a 59-year old superintendent with 40 years of mining experience, died on May 13, 2019, at approximately 11:30 a.m. when the 90-ton crane he was operating fell into the quarry. Roth was using the crane to lift a section of granite weighing approximately 15 tons from the quarry when the boom started lowering. This caused the crane to tip over and fall approximately 80 to 85 feet into the quarry.

The accident occurred because the boom pawl designed to prevent the boom from lowering was either not engaged or did not function properly.

GENERAL INFORMATION

The Robert E. Paul family owns Greene County Quarries, Inc., which operates Millstone Quarry (Millstone), a surface dimensional granite mine located in Carlton, Oglethorpe County, Georgia. The mine operates one, nine-hour shift, five days a week and employs seven people.

Millstone drills and diamond saws large blocks of granite. Each block is sized by drilling and driving wedges to break it into segments. The segments are approximately 4 feet wide and high and 15 feet long and weigh 15 to 18 tons. A 90-ton crane is used to lift the segments from the quarry bottom to an area on the top of the highwall. The segments are then loaded onto highway trucks and taken to various locations in Elberton, Georgia for manufacturing granite products.

The Robert Paul family also operates two adjacent quarries: Blue Ridge Quarries, Inc., Blue Ridge Quarry (Mine ID No. 09-01085) and the Eagles Danburg Quarry, Inc., Eagles Danburg Quarry, Inc.–Site 2 (Mine ID No, 09-01239). Personnel at each of these mines work closely together and provide mutual assistance as needed.

The principal officers at this mine at the time of the accident were:

Danny Roth (victim)..... Superintendent
Robert E. Paul, Jr..... Office Manager
Robert E. Paul, Sr.Owner

The Mine Safety and Health Administration (MSHA) completed the last regular inspection of this operation on May 1, 2019. The non-fatal days lost (NFDL) incidence rate for the Millstone Quarry for 2018 was 12.39 (one NFDL injury reported) compared to the national average of 1.85 for mines of this type.

DESCRIPTION OF ACCIDENT

On May 13, 2019, Danny Roth, victim, arrived at the mine site at approximately 6:00 a.m. He instructed the miners in the tasks to be performed for the day and performed his regular duties as superintendent.

Later that morning, Roth went to the top of the highwall to operate the crane, which was located approximately ten feet from the highwall edge. He used the crane to remove various tools and equipment from the quarry. According to Fernando Sigale, Flagman, Roth’s operation of the crane was normal and routine. Roth began to lift the first piece of granite between 11:15 a.m. and 11:30 a.m. The procedure was normal until the granite cleared the top of the highwall, at which time the crane boom began lowering. Sigale yelled at Roth but did not get a response. As the boom lowered with its 15-ton load, the crane began to tip over. Sigale said Roth grabbed each side of the window frame and was looking straight ahead as the crane tipped over and fell into the quarry approximately 80 to 85 feet below.

At the time of the accident, David Streetman, Blue Ridge Quarry Foreman, was loading a truck approximately 50 yards away. He did not witness the crane go over the highwall but heard the

resulting crash. Shane Robertson, Eagles Danburg Quarry-Site 2 Foreman, was helping diamond saw a block of granite at the north end of the quarry, approximately 200 to 250 feet from the crash site, and witnessed the crane fall from the highwall. He saw the crane complete a 360° roll before it landed on its wheels.

Kyle Burden, Drill Helper who was trained in first-aid, arrived on scene and checked Roth for a pulse but did not find one. Burden observed severe lacerations on Roth's left side and right hand. Robertson called 911 at 11:31 a.m., and Burden remained at the scene until Emergency Medical Services arrived. Roth was pronounced dead at the mine site by Howard Sanders, Ogelthrope County Coroner, at 11:45 a.m. The cause of death was extensive trauma.

INVESTIGATION OF ACCIDENT

At 11:39 a.m., David Streetman called the Department of Labor's National Contact Center (DOLNCC). The DOLNCC contacted Judith Etterer, MSHA Southeastern District Staff Assistant, at 11:55 a.m. MSHA Inspector Ken Cumming was dispatched to the mine site. Upon arrival, Cumming issued an order under Section 103(k) of the Mine Act to secure the scene and ensure the safety of miners.

MSHA's accident investigation team: James M. Hollis, Supervisory Mine Safety and Health Inspector; Ed Jewell, Mine Safety and Health Inspector; Ken Cumming, Mine Safety and Health Inspector; Sam Collier, Mine Safety and Health Inspector; and Brett Calzaretta, Educational Field and Small Mine Services, conducted a physical examination of the accident scene, interviewed seven mine employees, reviewed training documentation, and examined work procedures relevant to the accident. MSHA conducted the investigation with the assistance of mine management, miners, and the Elberton Granite Association.

DISCUSSION

Weather Conditions

Weather reports on the day of the accident indicated a temperature of 77° Fahrenheit with no visibility restrictions. Weather was not a factor in the accident.

Training and Experience

Roth was trained in the operation of the Lorain MC790 crane and had approximately 25 years of experience operating the crane. Roth was listed as the trainer on the company's training plan. He had 40 years total mining experience with 26 years at this mine and 30 years at this activity. MSHA determined that there were no contributory training deficiencies.

Location of Accident

The accident occurred on the west side of the open quarry mining area. The Lorain MC790 crane was on the highwall to lift sections of granite from the quarry floor.

Crane

The crane involved in the accident was a Lorain MC790 90-ton crane, S/N E19275. It was the only crane of this model used at the quarry and the victim was its only operator. There were no documented mechanical issues with the crane. Chad Geenter, Mechanic, stated that the only maintenance he had to perform on the crane in the past two years was adding engine oil and tightening fan belts.

Boom Pawl

The crane is equipped with a boom pawl designed to lock the boom in place once the desired angle is determined based on the weight being lifted. When the pawl is engaged, the boom should not lower but the load can still be raised and lowered. MSHA investigators examined the pawl but, due to the extensive damage caused by the fall, were unable to determine whether it had been engaged before the accident. Therefore, it could not be determined whether the pawl failed to function properly or was never engaged in the first place.

Examinations

MSHA investigators inspected pre-operational examination records and conducted interviews to determine if these examinations were made and whether there were any reported safety issues or concerns with the crane. The accident investigators concluded that required examinations were made and there were no reports of safety defects or concerns prior to the accident.

ROOT CAUSE ANALYSIS

Investigators conducted a root cause analysis and identified the following root cause:

Root Cause: The accident occurred because the boom pawl designed to prevent the boom from lowering, was either not engaged at the time of the accident or did not function properly if it was engaged.

Corrective Action: The crane involved in the accident was the only one of this model used at the quarry and the accident victim was its only operator. The mine operator trained all miners in proper examination and testing of the means and devices used to prevent accidental boom lowering according to manufacturer's recommendations. This training included training on what to do if the boom pawl failed to operate properly.

CONCLUSION

Danny Roth was killed when the 90-ton crane he was operating fell 80 to 85 feet into the quarry. He was using the crane to lift a section of granite weighing approximately 15 tons from the quarry when the boom started lowering causing the crane to topple over. The accident occurred because the boom pawl designed to prevent the boom from lowering was either not engaged at the time of the accident or did not function properly if it was engaged.

ENFORCEMENT ACTIONS

Order No. 9423267 – issued May 13, 2019, pursuant to Section 103(k) of the Federal Mine Safety & Health Act of 1977

A fatal accident occurred at this operation on 13May2019 at approximately 1130 when Danny Roth, Supervisor, was thrown from the cab of the crane when it fell into the quarry. This order is being issued under Section 103(k) of the Federal Mine Safety and Health Act of 1977 to ensure the safety of all personnel at this operation. It prohibits all activity at Millstone Quarry until MSHA has determined that it is safe to resume normal mining operations at this mine. The mine operator shall obtain prior approval from an authorized representative for all actions to recover and/or restore operations at this mine.

Citation No. 8910441 – issued pursuant to Section 104(a) of the Federal Mine Safety & Health Act of 1977 for a violation of 30 CFR § 56.14211(c) Blocking Equipment in a Raised Position:

On May 13, 2019, a miner received fatal injuries when the boom of the 90-ton crane he was operating started lowering as a block of granite weighing approximately 15 tons was being lifted from the quarry. The lowering action of the boom caused the crane to tip over and fall approximately 80 to 85 feet. The boom, a raised component, was not secured to prevent accidental lowering, creating a hazard to the victim and others working in the area.

Approved: _____ Date: _____
Samuel Pierce
Southeastern District Manager

APPENDIX A - Persons participating in the investigation
(Persons interviewed are indicated by a * next to their names)

Millstone Quarry

Daniel Benton*Ledgeman
Fernando Sigale*Flagman
Bobby Burgess*Pit Flagman
Lance Johnson*Drill Helper
Kyle Burden*Drill Helper
Chad Geenter*Mechanic

Eagles Danburg Quarry-Site 2

Shane Robertson*Foreman

Blue Ridge Quarry

David Streetman*Foreman

Elberton Granite Association

Matthew PruittExecutive Assistant and Vice President

Mine Safety and Health Administration

James M. HollisSupervisory Mine Safety and Health Inspector
Ed JewellMine Safety and Health Inspector
Ken CummingMine Safety and Health Inspector
Sam CollierMine Safety and Health Inspector
Brett CalzarettaEducational Field and Small Mine Services