MAI-2008-14

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

REPORT OF INVESTIGATION

Underground Nonmetal Mine
(Limestone)

Fatal Machinery Accident

August 18, 2008

Bailey Machine Company
Contractor I.D. No. UMH

at

Coolspring Mining Inc.
Coolspring Stone Supply Inc.
Uniontown, Fayette County, Pennsylvania
Mine I. D. No. 36-00155

Investigators

Reecle C. Horn, Sr.
Mine Safety & Health Inspector

Scott H. Ohlinger
Mine Safety & Health Inspector

Phillip L. McCabe
Mechanical Engineer

Originating Office
Mine Safety and Health Administration
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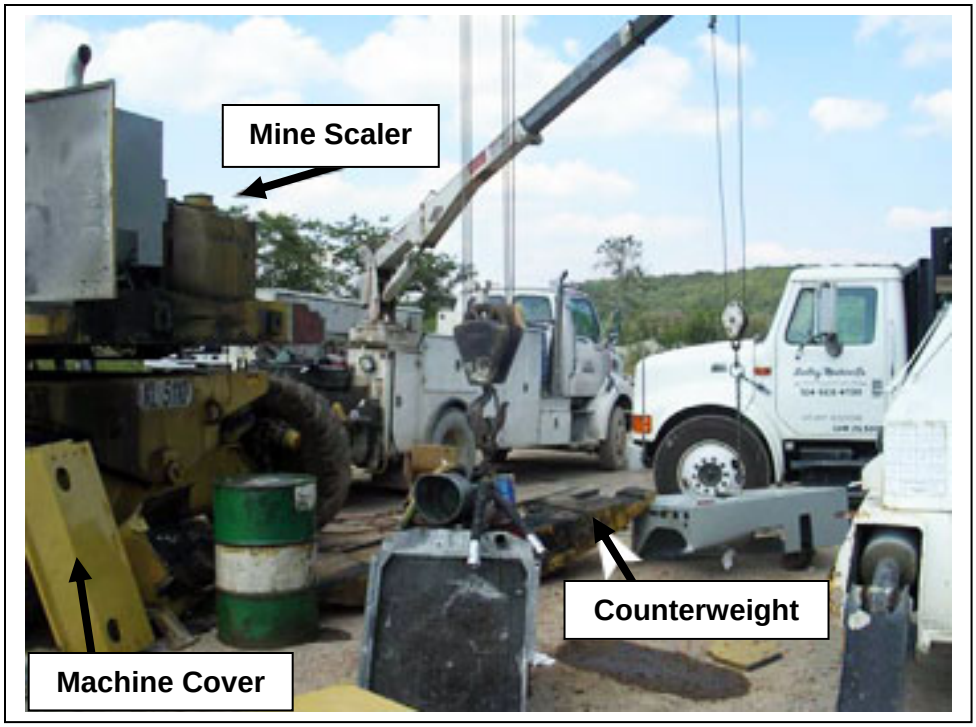
Warrendale, Pennsylvania 15086-7573
James R. Petrie, District Manager


Mine Scaler
Counterweight
Machine Cover

OVERVIEW

Robert J. Stoots, a 28-year old contractor welder, was fatally injured on August 18, 2008, while helping to install a 7,000 pound counterweight on a mine scaler. The chain being used to lift the counterweight failed, causing the counterweight to fall and strike the victim.

The accident occurred because management policies, procedures, and controls were inadequate. A risk assessment to discuss the task with the crew and identify possible hazards was not conducted prior to lifting the counterweight. The connectors used for lifting the counterweight were underrated for the load being lifted.

GENERAL INFORMATION

Coolspring Mining Inc., an underground limestone mine and surface sandstone quarry, owned and operated by Coolspring Stone Supply Inc., was located in Uniontown, Fayette County, Pennsylvania. The principal operating official was Frank J. Mazurek, operations manager. The mine operated two 10-hour shifts, five days per week. Total employment was 50 persons.

Limestone was mined underground using the room and pillar mining method. It was drilled and blasted, loaded into haul trucks by front-end loaders, and transported to the surface plant where it was crushed and sized. The limestone was sold to the construction industry.

Bailey Machine Company was an independent contract welding and fabricating company located in Connellsville, Fayette County, Pennsylvania. The principal operating officials were Thomas R. Bailey and George E. Bailey, owners. Bailey Machine Company was contracted by Coolspring Stone Supply Inc. to fabricate and install new frame work and machine covers for a mine scaler.

The last regular inspection at this operation was completed on July 12, 2008.

DESCRIPTION OF ACCIDENT

On the day of the accident, Robert J. Stoots (victim) reported to work at Bailey Machine Company at 7:23 a.m. His normal starting time was 7:00 a.m. Joseph Bailey, supervisor, assigned Matthew E. Stoots, machinist/welder (victim's uncle), and Robert Stoots to travel to Coolspring Mining Inc. to install machine covers on the mine scaler.

Matthew Stoots and Robert Stoots arrived at the mine about 8:00 a.m. and met with James E. Wallace Sr., mechanic. A counterweight had to be installed before the machine covers on the mine scaler could be placed. Wallace and Abraham J. Howard, mechanic, connected chains and a tagline on the counterweight to lift it into place. Wallace handed the tag line to Howard, showed him where to stand, and how to use the tag line. Wallace operated a mobile crane to lift the counterweight approximately 68 inches off the ground. He then lowered the counterweight placing it about four inches from its location on the rear of the mine scaler.

Robert Stoots walked to the rear of the mine scaler to check the alignment of the counterweight with the bolt holes on the mine scaler. He gave Wallace a signal to lower the counterweight into place. Matthew Stoots was retrieving bolts to secure the counterweight when he heard a loud noise. He turned and saw Robert Stoots move forward. The connecting link located on the right side of the chain broke allowing the counterweight to swing and strike Robert Stoots. The load then shifted causing a connecting link on the left side of the chain to break and the counterweight fell on the victim.

Matthew Stoots used a cell phone to call for emergency medical assistance at 9:45 a.m. At 9:55 a.m., emergency medical personnel arrived and transported Robert Stoots to a hospital where he

received medical care until he was pronounced dead by the attending physician at 5:30 p.m. The cause of death was attributed to multiple blunt force injuries.

INVESTIGATION OF THE ACCIDENT

The Mine Safety and Health Administration (MSHA) was notified of the accident at 10:04 a.m. on August 18, 2008, by telephone from Frank J. Mazurek, operations manager, to the National Call Center. John A. Dagner, conference litigation representative, was subsequently notified and 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 of the accident scene, interviewed employees, and reviewed documents and work procedures relevant to the accident. MSHA conducted an investigation with the assistance of mine management, mine employees, contractors, personnel from the Pennsylvania Department of Environmental Protection – Bureau of Deep Mine Safety, and the Pennsylvania State Police.

DISCUSSION

Location

The accident occurred on the surface at a maintenance area referred to as the "upper surge area." The ground was level and dry. Due to the nature of the repairs on the mine scaler, the area was congested with parts and other machinery.

Weather

The weather conditions on the day of the accident were clear and sunny with a temperature of 82 degrees Fahrenheit. Weather was not a factor in the accident.

Crane

The crane involved in the accident was a P&H, Model No. CN122D, rough terrain crane rated at 22 tons. The mobile hydraulic crane was designed for general lifting on improved and unimproved terrain. The crane was examined and no defects were found.

Mine Scaler

The mine scaler involved in the accident was a Gradall, Model No. XL5110, that was used to remove loose rock and material from the roof and ribs in the mine. The mine scaler, manufactured in 2002, had an overall length of 38 feet 5 inches and a chassis width of 13 feet 7 inches. The overall height at boom level was 14 feet 4 inches. The approximate working weight was 62,000 pounds. The mine scaler had been damaged by a roof fall and had been brought outside for repairs.

Chain Sling

The double leg chain sling used to lift the counterweight was assembled from various components. The sling was comprised of an oblong shaped master link and a hinge type chain connector. The double legs were then connected to the chain connector. The first leg was assembled using an oblong link, a screw pin anchor shackle, a 30-inch piece of welded chain, a figure-8 connector, and an eye slip hook. The second leg was assembled using an oblong link, a pin type twin clevis link, a 30-inch piece of welded chain, a figure-8 connector, and an eye slip hook. Both figure-8 connectors failed. (see Appendix C, Figure 1)

Chain Sling Figure-8 Connector

The figure-8 connectors were used to attach the welded chain to the eye slip hooks. These connectors failed catastrophically causing the counterweight to fall. No manufacturer's identification was found on either of the failed connectors. A "1/2" identifier was embossed on the side of each connector. Investigators were unable determine where the connectors were purchased. Appendix C, Figure 2 shows a typical connector.

Investigators determined that, although one connector was partially intact, the link was previously broken. Visible corrosion was observed next to the break that occurred at the time of the accident. The connectors were the only sling components exhibiting severe mechanical damage. (see Appendix C, Figure 3)

Typically this type of connector is used for cable stringing and pulling. It is not to be used for overhead lifting, as a link for a chain, or to repair chain. The work load limit for a ½-inch connector was 925 pounds. When the accident occurred, the miners were attempting to lift a 7,000 pound counterweight onto the mine scaler using these figure-8 connectors as integral parts of the chain sling.

Training and Experience

Robert J. Stoots (victim) had 8 years of welding and fabricating experience and Matthew E. Stoots had 13 ½ years of welding, fabricating, and crane operating experience with the Bailey Machine Company. James E. Wallace, Sr. had 20 years of mining experience and Abraham J. Howard had 15 months of mining experience with Coolspring Mining Inc. All of these persons onsite during the accident, including Robert Stoots, had been trained in accordance with 30 CFR, Part 48.

ROOT CAUSE ANALYSIS

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

Root Cause: A risk assessment to determine potential hazards and to establish safe work procedures was not conducted prior to lifting the 7,000 pound counterweight.

Corrective Action: 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 lifting and rigging procedures should be developed and implemented to ensure the safety of all persons working near the lifting area.

Root Cause: Management policies, procedures, and controls were inadequate and failed to ensure that the chain, attached connectors, and rigging, were examined prior to lifting the counterweight.

Corrective Action: Management should establish policies, procedures, and controls to ensure that all rigging be examined prior to any lift.

Root Cause: Management policies, procedures, and controls were inadequate and failed to ensure that proper training regarding lifting suspended loads was provided to all persons before performing the task.

Corrective Action: Management policies, procedures, and controls should be established to ensure that all persons receive training specifically to stay clear of suspended loads.

CONCLUSION

The accident occurred because management policies, procedures, and controls were inadequate. A risk assessment to discuss the task with the crew and identify possible hazards was not conducted prior to lifting the counterweight. The connecting links for the chain were underrated for the load being lifted.

ENFORCEMENT ACTIONS

Coolspring Stone Supply Inc.

Order No. 6062219 was issued on August 18, 2008, under the provisions of Section 103(k) of the Mine Act:

A fatal accident occurred at this operation on August 18, 2008, when a miner was struck by a counterweight that was suspended by a crane cable. This order is issued to assure the safety of all persons at this operation. It prohibits all activity in the area of the crane until MSHA determines 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 restore operations to the affected area.

This order was terminated on August 20, 2008. The mine operator developed and implemented a written procedure for re-installation of the counterweight on the Gradall mine scaler.

Citation No. 6062227 was issued on September 18, 2008, under the provisions of Section 104a of the Mine Act for a violation of 30 CFR 57.14100(c):

A fatal accident occurred at this mine on August 18, 2008, when a contract employee was crushed beneath a 7,000 pound counterweight that was being lowered into position onto a Gradall mine scaler. Two figure-8 connectors used in the rigging suspending the counterweight broke in succession causing the counterweight to swing into and then fall on the victim. Oxidation was found at the break in one of the figure-8 connectors indicating that it had sustained prior damage. The mine operator failed to adequately examine the chain and its attached connectors prior to using it for the lift and failed to remove the connector from service.

This citation was terminated on September 23, 2008. The mine operator developed and implemented a written procedure for proper lifting and inspection of lifting devices and established "out-of-service" criteria for slings and chains. In addition, safety meetings were held with all miners to review the company's lifting and inspection procedures.

Citation No. 6062228 was issued on September 18, 2008, under the provisions of Section 104a of the Mine Act for a violation of 30 CFR 57.14205:

A fatal accident occurred at this mine on August 18, 2008, when a contract employee was crushed beneath a 7,000 pound counterweight that was being lowered into position onto a Gradall mine scaler. Two figure-8 connectors used in the rigging to suspend the counterweight failed in succession causing the counterweight to swing into and then fall on the victim. The chains and figure-8 connectors used in the rigging were not designed for lifting and were being used beyond the design capacity intended by their manufacturer creating a hazard to persons.

This citation was terminated on September 23, 2008. The mine operator developed and implemented a written procedure for proper lifting and inspection of lifting devices and established "out-of-service" criteria for slings and chains. In addition, safety meetings were held with all miners to review the company's lifting and inspection procedures.

Citation No. 6062229 was issued on September 18, 2008, under the provisions of Section 104a of the Mine Act for a violation of 30 CFR 57.16009:

A fatal accident occurred at this mine on August 18, 2008, when a contract employee failed to stay clear of a suspended load and was crushed beneath a 7,000 pound counterweight that was being lowered into position onto a Gradall mine scaler. Two figure-8 connectors used in the rigging suspending the counterweight broke in succession causing the counterweight to swing into and then fall on the victim.

This citation was terminated on September 23, 2008. The mine operator developed and implemented a written procedure for staying clear of suspended loads. In addition, safety meetings were held with all miners to review the company's lifting procedure.

Bailey Machine Company

Citation No. 6062230 was issued on September 18, 2008, under the provisions of Section 104a of the Mine Act for a violation of 30 CFR 57.16009:

A fatal accident occurred at this mine on August 18, 2008, when a contract employee failed to stay clear of a suspended load and was crushed beneath a 7,000 pound counterweight that was being lowered into position onto a Gradall mine scaler. Two figure-8 connectors used in the rigging suspending the counterweight broke in succession causing the counterweight to swing into and then fall on the victim.

This citation was terminated on September 29, 2008. The contractor developed and implemented a written procedure for proper lifting and inspection of the area which emphasized staying clear of suspended loads. In addition, safety meetings were held with all contract employees to review the company's lifting and inspection procedures.

Approved: _____ Date: _____

James R. Petrie
District Manager

APPENDICES

A. Persons Participating in the Investigation
B. Victim Data Sheet
C. Detailed Views of Hoisting Chain and Components

APPENDIX A

Persons Participating in the Investigation

Coolspring Stone Supply Inc.

Frank J. Mazurek	operations manager
James E. Wallace Sr.	mechanic/crane operator
Abraham J. Howard	mechanic

Bailey Machine Company

Matthew E. Stoots	machinist/welder
Joseph S. Bailey	supervisor

Pennsylvania Department of Environmental Protection – Bureau of Deep Mine Safety

Joseph A. Sabaffoni	bureau director
Mark E. Eckley	industrial minerals underground mine inspector
John A. Bentzel	industrial minerals underground mine inspector.

Pennsylvania State Police

Charles M. Morrison	trooper
David Bell	trooper
Matthew Steffey	corporal

Mine Safety and Health Administration

Reecle C. Horn, Sr.	mine safety & health inspector
Scott H. Ohlinger	mine safety & health inspector
Phillip L. McCabe	mechanical engineer

APPENDIX B

Victim Data Sheet

Accident Investigation Data - Victim Information
Event Number: 0 9 0 2 7 6 8

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:
Robert J. Stoots	*M*	*28*	*01 Fatal*

5. Date(MM/DD/YY) and Time(24 Hr.) Of Death:	6. Date and Time Started:
a. Date: 08/18/2008 b.Time: 17:30	*a. Date: 08/18/2008 b.Time: 7:23*

7. Regular Job Title:	8. Work Activity when Injured:	9. Was this work activity part of regular job?
021 Welder/Mechnic	*039 intstalling counter weight on Gradall*	Yes | No X

10. Experience	Years	Weeks	Days		Years	Weeks	Days		Years	Weeks	Days		Years	Weeks	Days
a. This Work Activity:	*0*	*0*	*0*	b. Regular Job Title:	*8*	*9*	*1*	c: This Mine:	*6*	*9*	*1*	d. Total Mining:	*8*	*9*	*1*

11. What Directly Inflicted Injury or Illness?	12. Nature of Injury or Illness:
127 Counter Weight	*170 crushed liver,bladder, spleen and pelvis*

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

14. Company of Employment: (If different from production operator)
Bailey Machine Company
Independent Contractor ID: (if applicable) *UMH*

15. On-site Emergency Medical Treatment:
Not Applicable: | First-Aid: X | CPR: X | EMT: X | Medical Professional: | None:

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

APPENDIX C

Detailed Views of Hoisting Chain and Components

Figure 1. – Approximate configuration of double leg chain sling and identification of components:

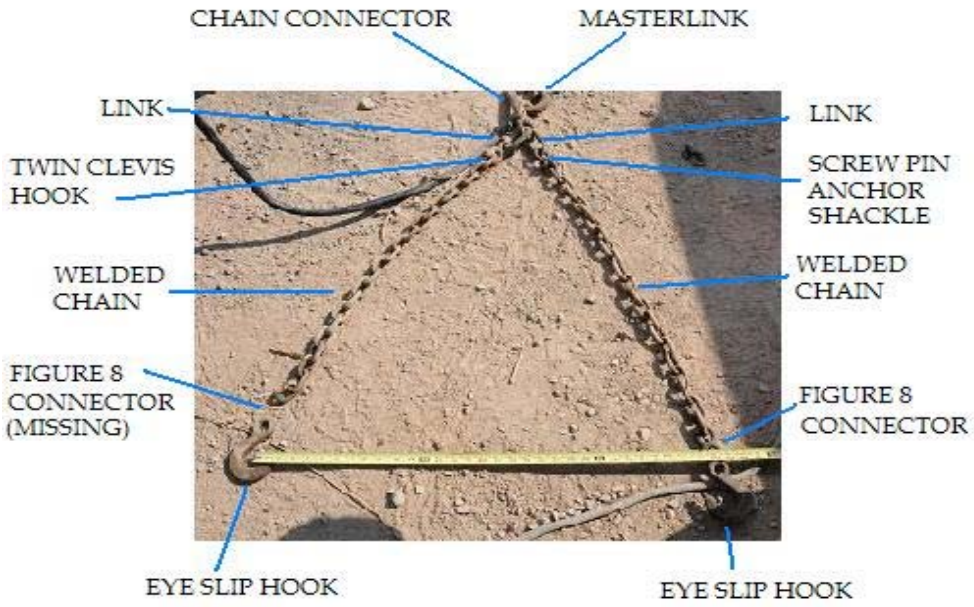


Figure 2. – Figure-8 Connector, typical link:

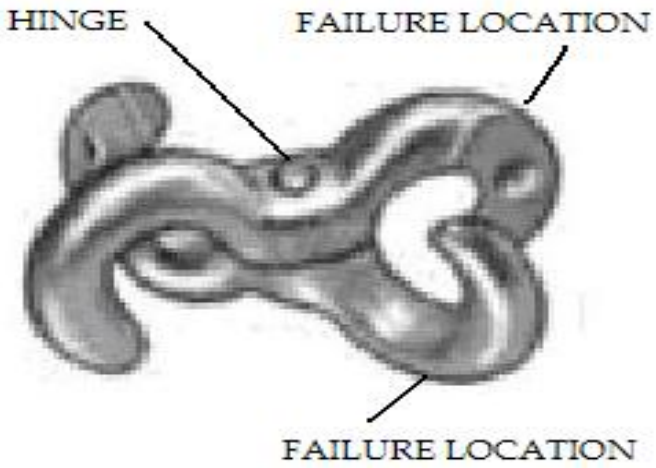


Figure 3. – Broken Figure-8 Connector, end view, breaks: