FAI-6947520-1

UNITED STATES
DEPARTMENT OF LABOR
MINE SAFETY AND HEALTH ADMINISTRATION

REPORT OF INVESTIGATION

Surface
(Sand and Gravel)

Machinery Accident
August 21, 2023

Portable Crusher #2
A & S Construction Co
Gunnison, Gunnison County, Colorado
ID No. 05-03808

Accident Investigator

Lee Hughes
Staff Assistant

Originating Office
Mine Safety and Health Administration
Lakewood District
6th & Kipling, 2nd Street, Building 25
Denver, Colorado 80225
Matthew Lemons, District Manager

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OVERVIEW

On August 21, 2023, at approximately 7:40 p.m., Matthew McCaghren, a 28 year-old laborer with eight days of mining experience, was fatally injured when a crusher lid that was being moved into place struck him. He died from his injuries on August 23, 2023.

The accident occurred because the mine operator did not: 1) ensure that the miner stay clear of the suspended load, and 2) use a suitable lifting strap to hoist the lid.

GENERAL INFORMATION

A & S Construction Co owns and operates the Portable Crusher #2 mine. This is a portable, surface sand and gravel mine, that was located near Gunnison, Colorado at the time of the accident. As a portable mine, this crusher frequently moves from one location to another. It had been at the location near Gunnison, Colorado for approximately one week at the time of the accident. The mine's main office is located in Florence, Fremont County, Colorado. The mine employs six miners and operates one 12-hour shift, five days per week. The mine extracts material from an open pit and hauls it to the crusher with a front-end loader. The mine operator sells the final products to various customers.

The principal management officials at Portable Crusher #2 at the time of the accident were:

Jack Herrell	Superintendent
David Fedriko	Foreman
Garry Whittemore	Foreman

The Mine Safety and Health Administration (MSHA) completed the last regular safety and health inspection at this mine on March 13, 2023. The 2022 non-fatal days lost incident rate for the Portable Crusher #2 mine was zero, compared to the national average of 0.97 for mines of this type.

DESCRIPTION OF THE ACCIDENT

On August 21, 2023, at 6:00 a.m., McCaghren began his shift as a laborer for the cone crusher plant at the Portable Crusher #2. According to interviews, Jack Herrell, Superintendent, and David Fedriko, Foreman, worked on replacing the wear parts on the vertical shaft impact (VSI) crusher. The hydraulic ram on the crusher, which is used to lift and swivel the lid out of the way for maintenance, was not functioning due to hydraulic issues. Herrell attached a one-ton rated chain hoist to the jib boom above the crusher and rigged a lifting strap to the lid (see Appendix A). Using a front-end loader, with Fedriko at the controls, a cable was attached to the jib boom and the bucket, Herrell raised the lid and Fedriko pulled it out of the way. Herrell and Fedriko then replaced the wear parts. Herrell discovered there were only two of the three plates needed for the replacement, so he used one of the old plates with the two new ones.

At approximately 4:00 p.m., Herrell brought McCaghren and Garry Whittemore, Foreman, over to the VSI crusher to assist with putting the lid back on the crusher. After placing the lid back on, Herrell, Fedriko, McCaghren, and Whittemore (the crew) started the crusher up to test the replaced parts. The crusher was vibrating and shaking, so they shut it down. The crew removed the lid so they could replace the two new wear plates with the two original plates that had been removed in the beginning. After completion, the crew began moving the crusher lid back over the crusher.

Herrell positioned McCaghren on the north side of the crusher, behind the steel support structure for the overhead feed hopper. Herrell directed McCaghren to help guide the lid in place. This involved manually guiding the lid into place. Investigators determined that it would have been possible to reach the lid to help guide it from behind the steel support structure.

Herrell and Whittemore were also manually guiding the lid into place, but were on the opposite side (south side) of the lid as McCaghren. Fedriko was in the front-end loader. As Fedriko was pulling the lid back into place, the lifting strap came into contact with a sharp edge on the crusher lid which cut the strap (see Appendix B). This caused the lid to fall and hit the top of the crusher, bounce off, and fall to the crusher's walkway on the west side. Herrell and Whittemore asked each other if they were okay and yelled out to McCaghren asking if he was okay. After receiving no answer, they moved around to the west side of the crusher and found McCaghren injured and unresponsive. He was pinned between the edge of the lid and the mid-rail of the

handrail. McCaghren had climbed through the structure and did not stay clear of the lid while it was being moved.

Herrell called 911 at 7:49 p.m. and at 7:57 p.m., Wesley Hersberger, Gunnison County Sheriff Sergeant, arrived on site, followed by Emergency Medical Services. A plan to extricate McCaghren from the catwalk was devised and executed. McCaghren was transported to St. Mary's Medical Center in Grand Junction, pronounced dead by Dr. Lukas Muniga at 12:10 a.m. on August 23, 2023.

INVESTIGATION OF THE ACCIDENT

On August 21, 2023, at 8:21 p.m., Herrell called the Department of Labor National Contact Center (DOLNCC). The DOLNCC contacted Sydel Yeager, Supervisory Mine Safety and Health Specialist for the Lakewood District. The Lakewood District referred the notification to Lee Hughes, Staff Assistant for the Denver District. Hughes contacted Dennis Bellfi, Supervisory Mine Safety and Health Inspector, who sent Kathleen Gearity, Mine Safety and Health Inspector, to the mine. At 7:24 a.m., Gearity arrived at the accident site and issued an order under the provisions of Section 103(k) of the Mine Act to ensure the safety of the miners and the preservation of evidence. Gearity gathered initial statements and took photos of the accident scene.

On August 23, 2023, at 11:00 a.m., Hughes arrived at the mine to continue the investigation. Hughes conducted an examination of the accident scene, interviewed miners and mine management, and reviewed conditions and work practices relevant to the accident. See Appendix C for a list of persons who participated in the investigation.

DISCUSSION

Location of the Accident

The accident occurred at the VSI crusher of the cone crusher plant.

Weather

The weather at the time of the accident was 81 degrees Fahrenheit, with sunny skies. Investigators determined that the weather did not contribute to the accident.

Equipment Involved

The VSI crusher involved in the accident was a 2018 Terex/Canica Model #2000. At the time of the accident, the hydraulic ram lift was not functioning. The ram is designed to safely lift and swivel the crusher lid out of the way during the replacement of the internal wear parts. A & S Construction Co purchased the crusher from Colorado Quarries, Inc. on January 4, 2023, and used it at one previous job prior to moving to Gunnison, Colorado. When Colorado Quarries, Inc. owned and operated the crusher, they modified the crusher lid by extending the central hub portion approximately five inches. This raised central hub had a sharp edge that cut through the nylon lifting strap, causing it to fall and strike McCaghren. If the central hub had not been raised, it would not have contacted the strap.

The one-ton chain hoist involved in the accident was a Jet Model #S90-100. Investigators determined that the chain hoist was in good mechanical condition.

A & S Construction Co's hoist inspection program referred to 29 CFR 1910.179, which is an OSHA standard for overhead and gantry cranes. It addressed rigging but did not include instruction on the importance of staying clear of suspended loads.

The lifting strap involved in the accident was a one-inch-wide by six-foot-long Equiprite Eye to Eye, Type Three, nylon sling. Investigators determined that the lifting strap was in good condition before the accident. However, the lifting strap was one inch away from a sharp edge on the raised central hub of the crusher lid, and was able to slide along the hook's surface, which occurred as the lid was being moved into place (see Appendix A). The sliding of the lifting strap through the hook allowed the strap to contact the sharp edge of the lid, cutting it, and causing it to break. Steel lifting chains were available but not used. The mine operator did not use a suitable lifting strap to hoist the lid, which contributed to the accident.

When lifting the lid, the mine operator did not ensure that McCaghren stayed clear of the suspended load.

Training and Experience

McCaghren had eight days of mining experience, all as a laborer at Portable Crusher #2. Mike Tromble, Supervisory Mine Safety and Health Specialist, reviewed the mine operator's training plan, including McCaghren's training records, and determined that McCaghren had received 23-3/4 hours of new miner training.

This was McCaghren's first time performing this task. According to Herrell, McCaghren was being tasked trained to conduct maintenance on the VSI crusher at the time of the accident.

Examinations

Herrell and Fedriko conducted a workplace examination of the VSI crusher area. Fedriko mentioned a low berm on the feed ramp. Investigators determined this did not contribute to the accident. There was no mention of the inoperable hydraulic ram on the VSI crusher. Investigators determined this did not contribute to the accident.

Herrell conducted pre-operational inspections of the chain hoist and rigging and determined they were safe to use. Herrell should have recognized that the nylon strap was not adequate for this lift due to the proximity of the sharp edge on the raised central hub of the lid.

ROOT CAUSE ANALYSIS

The accident investigation team conducted an analysis to identify the underlying causes of the accident. The team identified the following root causes, and the mine operator implemented the corresponding corrective actions to prevent a recurrence.

1. Root Cause: The mine operator did not ensure that the miner stayed clear of the suspended load.

   Corrective Action: The mine operator developed and implemented a new written procedure requiring all miners to stay clear of suspended loads. The mine operator trained all miners on this procedure.

2. Root Cause: The mine operator did not use a suitable lifting strap to hoist the lid.

   Corrective Action: The mine operator developed and implemented a new written procedure for the use of suitable rigging devices for suspended loads. The mine operator put selected miners through training to be certified riggers who will be present during all lifts.

CONCLUSION

On August 21, 2023, at approximately 7:40 p.m., Matthew McCaghren, a 28 year-old laborer with eight days of mining experience, was fatally injured when a crusher lid that was being moved into place struck him. McCaghren had not stayed clear of the suspended load. He died from his injuries on August 23, 2023.

The accident occurred because the mine operator did not: 1) ensure that the miner stay clear of the suspended load, and 2) use a suitable lifting strap to hoist the lid.
Approved By:

_____ _____

Matthew Lemons Date
District Manager

ENFORCEMENT ACTIONS

1. A 103(k) order was issued to A & S Construction Co.

   A fatal accident occurred on August 21, 2023, at approximately 7:40 p.m. This order is being issued under the authority of the Federal Mine Safety and Health Act of 1977, under Section 103(k) to insure the safety of all persons at the mine and requires the operator to obtain the approval of an authorized representative of MSHA of any plan to recover any person in the mine or to recover the mine or affected area. This order prohibits any activity in the affected area. The operator is reminded of the obligation to preserve all evidence that would aid in investigating the cause or causes of the accident in accordance with 30 CFR 50.12.

2. A 104(d)(1) citation was issued to A & S Construction Co for a violation of 30 CFR 56.16009.

   On August 21, 2023, a miner with eight days of mining experience was fatally injured when a crusher lid fell and struck him. The rigging broke while the crusher lid was being moved into place. The miner died from his injuries on August 23, 2023. The mine operator did not ensure that the miner stayed clear of the suspended load. The mine operator engaged in aggravated conduct constituting more than ordinary negligence in that the superintendent and two foremen were present when the miner failed to stay clear of the suspended load. This violation is an unwarrantable failure to comply with a mandatory standard.

3. A 104(d)(1) order was issued to A & S Construction Co for a violation of 30 CFR 56.16007(b).

   On August 21, 2023, a miner with eight days of mining experience was fatally injured when a crusher lid fell and struck him. The rigging broke while the crusher lid was being moved into place. The miner died from his injuries on August 23, 2023. The mine operator did not use a suitable lifting strap to hoist the lid. The mine operator rigged the crusher lid with a one-inch-wide by six-foot-long nylon lifting strap. The nylon strap was one inch away from a sharp edge on the raised central hub of the crusher lid, and was able to slide along the hook's surface, which occurred as the lid was being moved into place. The sliding of the lifting strap allowed it to contact the sharp edge, which cut it and caused it to break. The mine operator engaged in aggravated conduct constituting more than ordinary negligence in that the superintendent used a one-inch-wide nylon strap to lift the crusher lid, despite the strap being so close to a sharp edge. There was a four-leg lifting chain that, while being heavier and more difficult to use, would have been the best option for the lift. This violation is an unwarrantable failure to comply with a mandatory standard.

APPENDIX A – Nylon Lifting Strap Attached to the Lid

APPENDIX B – Damaged Lifting Strap

APPENDIX C – Persons Participating in the Investigation

A & S Construction Co

Jack Herrell	Superintendent
Roseanna Hunt	Safety Manager
Garry Whittemore	Foreman
David Fedriko	Foreman

Mine Safety and Health Administration

Lee Hughes	Staff Assistant
Mike Tromble	Supervisory Mine Safety and Health Specialist
Kathleen Gearity	Mine Safety and Health Inspector