MAI-2018-02

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

REPORT OF INVESTIGATION

Surface Nonmetal Mine
(Construction Sand and Gravel)

Fatal Machinery Accident
March 14, 2018

Hansen Pit
Geneva Rock Products, Inc.
Draper, Salt Lake County, Utah
Mine ID No. 42-02107

Investigators

Ernesto A. Vasquez
Mine Safety and Health Inspector

Peter A. Del Duca
District Staff Assistant

Originating office
Mine Safety and Health Administration
Rocky Mountain District
P.O Box 25367, DFC
Denver, CO 80225-0367

David Weaver, District Manager

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OVERVIEW

Lee G. Mackay, a 56 year old Crusher Maintenance Mechanic, died on March 14, 2018, while helping install a discharge chute assembly on a vibrating screen deck. As a crane operator lowered the discharge chute assembly, it wedged between the surrounding steel structures. Mackay and another miner tried to pry the chute assembly loose, and the victim suffered a fatal head injury when the discharge chute assembly shifted.

The accident occurred because management did not have policies, procedures and controls for persons installing and removing discharge chute assemblies on vibrating screen decks, including not working under suspended loads.

GENERAL INFORMATION

Geneva Rock Products, Inc. owns and operates the Hansen Pit, a surface sand and gravel mine for construction materials. The mine is located in Draper, Salt Lake County, Utah. Jim Golding, President, is the principal official and Ed Clayson, Production Manager, is in charge of health and safety at the mine. The mine operates five to six days a week with two, ten-hour shifts per day. Total employment is forty-eight miners.

The mine uses bulldozers to extricate the sand and gravel material at the multi-bench operation and wheeled loaders to load haul trucks, which feed the crushing operation. The operator crushes, screens, and separates the material into separate stockpiles. The mine sells the final product to the construction industry.

The Mine Safety and Health Administration (MSHA) completed its last regular inspection of the operation on January 22, 2018.

DESCRIPTION OF THE ACCIDENT

On March 14, 2018, Lee G. Mackay (victim) began work at 7:00 a.m. Miners were performing scheduled maintenance during a two-week shutdown of the plant. Chris Hardy, Aggregate Foreman, assigned Mackay and Louis Jacobson, Crusher Maintenance Mechanic, to weld steps at a vibrating feeder. Mechanics worked in pairs as per company policy.

At approximately 10:00 a.m., Jacobson stopped work on the vibrating feeder to help Soothie Hohrein, Crusher Operator, remove the discharge chute assembly from the Cedar Rapids 8'x20' triple deck screen deck (vibrating screen deck). Hardy operated the RT635C crane used in the process. After placing the discharge chute assembly on the ground, Hardy left the area, and Hohrein and Jacobson began replacing the self-cleaning tail pulley on the #2 Chip Belt. Mackay finished welding the steps and joined Hohrein and Jacobson in replacing the tail pulley.

At approximately 12:30 p.m., Hardy returned to the area. Jacobson and Hardy rigged the replacement discharge chute assembly using three wire ropes ¾-inch x 10-feet long. One of the three wire ropes had a ¾-ton come-along attached between the wire rope and the lifting point to facilitate tilting the chute assembly.

After rigging the replacement chute assembly, Daxton Reece, Crusher Operator, Hohrein, Jacobson and Mackay traveled on the catwalk along the vibrating screen deck as Hardy hoisted the replacement discharge chute assembly in place with the crane. Hohrein and Mackay positioned themselves on the west side of the discharge chute assembly while Jacobson and Reece worked from the east side. The discharge chute assembly became wedged between steel structures of the vibrating screen deck as Hardy lowered it. Jacobson and Mackay climbed over the handrails of the vibrating screen deck and across the elevated belt conveyors to attempt to free the suspended chute assembly. Mackay and Jacobson began prying the discharge chute assembly with 30-inch pry bars. The discharge chute assembly shifted, hitting Mackay in the head and causing him to slump down in a seated position.

Hohrein called to Mackay, but he was unresponsive. Jacobson ran around the discharge chute assembly and attempted to hold Mackay's head upright while Hardy climbed onto the belt. Hardy called and asked Clayson, who was not on-site during the incident, to call 911. At 1:05 p.m., Clayson called 911, and 911 was connected to Hardy to facilitate emergency care. Hohrein and Reece retrieved first aid materials and then Jacobson, Hardy, and Reece attended to Mackay while Hohrein traveled to the entrance of the site to escort Emergency Medical Services (EMS) personnel to the scene. EMS arrived on the scene at 1:15 p.m. EMS administered CPR and used an Automated External Defibrillator, but pronounced Mackay dead at the scene at 1:32 p.m.

INVESTIGATION OF THE ACCIDENT

Gary Hatch, Safety Director, called the Department of Labor National Contact Center (DOLNCC) at 2:19 p.m. on March 14, 2018, and notified MSHA of the accident. DOLNCC notified Peter Del Duca, Staff Assistant, in MSHA's Rocky Mountain District. MSHA issued an order under provisions of Section 103(k) of the Mine Act to ensure the safety of the miners and began the investigation. MSHA issued a non-contributory citation for failure to comply with 30 CFR § 50.10, which requires the operator to immediately contact MSHA at once without delay and within 15 minutes once the operator knows or should know that an accident has occurred.

MSHA's accident investigation team traveled to the mine, conducted a physical examination of the accident, interviewed miners, and reviewed conditions and work procedures relevant to the accident. MSHA conducted the investigation with the assistance of mine management, miners and their representatives, and the Draper City Police Department.

DISCUSSION

Location of the Accident

The accident occurred at the west vibrating screen deck located at the L8 crushing circuit.

Weather

Weather reports on the day of the accident indicated mostly cloudy with intermittent rain and a high of 58°F. Investigators did not consider weather as a factor in the accident.

Chute Design

The discharge chute assembly for the vibrating screen deck is a one-piece structure made of three individual compartments, which channel the sized aggregate to the corresponding conveyors. The overall weight is 8600 pounds, and dimensions are 8' x 10' x 10.5'. The surface of discharge chutes wears over time, and the operator must replace the chutes as needed. Geneva Rock Products, Inc. has two, identical vibrating screen decks directly adjacent to each other: the west Cedar Rapids 8'x20' triple deck screen deck where the accident took place and the east Cedar Rapids 8'x20' triple deck screen deck. The discharge chute assemblies for the vibrating screen decks are interchangeable and miners replace each discharge chute assembly annually.

Rigging and Come Along

Miners rigged the chute assemblies for hoisting by using three ¾-inch x 10-feet long wire ropes, with two rigged to the top lifting points. Miners attached the third wire rope to a Coffing ¾-ton Model LSB-B come-along. They attached wire ropes to the chute assemblies with 4-inch lifting hooks. Investigators detected no signs of failure in the wire ropes and determined that neither the rigging nor the come-along contributed to the accident.

TRAINING AND EXPERIENCE

Lee G. Mackay worked at this mine for 15 years, 37 weeks and 4 days. A representative of MSHA's Educational Field and Small Mine Services (EFSMS) staff conducted a review of the operator's training plan and records. EFSMS determined that Mr. Mackay received all required training, including annual refresher training according to 30 CFR Part 46.

Investigators reviewed company policies and procedures in relation to the work being performed. The operator did not have any policies in place at the time of the accident to address changing of discharge chute assemblies.

ROOT CAUSE ANALYSIS

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

Root Cause: Management did not have policies, procedures and controls for miners removing and installing discharge chute assemblies, on vibrating screen decks.

Corrective Action: The company developed policies, procedures and new training materials for safely changing discharge chute assemblies. The workforce at the mine was retrained using the new policies, procedures and training materials, with additional emphasis on not working underneath suspended loads.

CONCLUSION

Lee G. Mackay died while helping install a discharge chute assembly on a vibrating screen deck. The accident occurred because management did not have policies, procedures and controls for miners while removing and installing discharge chute assemblies, including working under suspended loads, on vibrating screen decks.

ENFORCEMENT ACTIONS

Order No. 8930719 – Issued March 14, 2018, under the provisions of Section 103(k) of the Mine Act:

> *A fatal accident occurred at this operation on March 14, 2018 when miners were attempting to install discharge chutes on the Classifiers at the L-8 Crusher. This order is issued to assure the safety of all persons at this operation; it prohibits all activity (with the exception of lowering the suspended load with the crane) at the L-8 Classifiers, related conveyors, and the Grove Crane. The mine operator is reminded of their responsibility to preserve the scene and evidence under 50.12. The mine operator shall obtain prior approval from and Authorized Representative for all actions to recover and/or restore operations to the affected area.*

Order No. 9343317 – Issued June 6, 2018, under the provisions of Section 104(d)(2) of the Mine Act:

> *A fatal accident occurred at this operation on March 14, 2018 while a crusher mechanic was assisting with positioning a discharge chute assembly on the 8'x20' Cedar Rapids Triple Deck Screen located at the L8 Crusher. While the discharge chute assembly was being lowered into place, the discharge chute assembly became hung up. While the victim and another miner were attempting to free the discharge chute assembly with 30-inch pry bars, the discharge chute assembly shifted, crushing the victim's head. Management engaged in aggravated conduct constituting more than ordinary negligence when the foreman allowed the victim to work under the suspended load. This violation is an unwarrantable failure to comply with a mandatory standard.*

Approved By: _____ Date: _____

David Weaver,
District Manager

Appendix A
Persons Participating in the Investigation
(Persons interviewed are indicated by a * next to their name)

Geneva Rock Products Inc

Scott Thayne	Area Manager
Ed Clayson	Production Manager
Gary Hatch	Safety Director
Chris Hardy*	Aggregate Foreman
Louis Jacobson*	Crusher Maintenance Mechanic
Soothie Hohrein*	Crusher Operator
Daxton Reece*	Crusher Operator

Operating Engineers Local No. 3

Jason Madsen	Business Representative
RJ Peery	Senior Business Representative

Draper City Police Department

Marie Bross	Crime Scene Investigator

Mine Safety and Health Administration

Ernesto A. Vasquez	Mine Safety and Health Inspector
Clayton B. Johnson	Mine Safety and Health Inspector
Peter A. Del Duca	District Staff Assistant
Mike H. Tromble	Mine Safety and Health Specialist (Training)

Appendix B
Victim Information

Accident Investigation Data - Victim Information
Event Number: 6 7 7 6 0 3 0

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:
Lee G. Mackay	*M*	*56*	*01 Fatal*

5. Date(MM/DD/YY) and Time(24 Hr.) Of Death:	6. Date and Time Started:
a. Date: 03/14/2018 b.Time: 13:32	*a. Date: 03/14/2018 b.Time: 7:00*

7. Regular Job Title:	8. Work Activity when Injured:	9. Was this work activity part of regular job?
104 Crusher Maintenance	*039 Installing discharge chute assembly*	Yes X No

10. Experience	Years	Weeks	Days		Years	Weeks	Days		Years	Weeks	Days		Years	Weeks	Days
a. This Work Activity:	*15*	*37*	*4*	b. Regular Job Title:	*15*	*37*	*4*	c: This Mine:	*15*	*37*	*4*	d. Total Mining:	*15*	*37*	*4*

11. What Directly Inflicted Injury or Illness?	12. Nature of Injury or Illness:
034 Discharge Chute Assembly	*220 Circular Fracture*

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

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: X | CPR: X | EMT: X | Medical Professional: | None:

16. Part 50 Document Control Number: (form 7000-1)

17. Union Affiliation of Victim: *9000* *Other not listed*