

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

REPORT OF INVESTIGATION

**Underground Metal Mine
Silver Ore**

**Fatal Hoisting Accident
June 2, 2014**

**Silver Opportunities Partners LLC
Sunshine Mine
Kellogg, Shoshone County, Idaho
MSHA I.D. No. 10-00089**

Investigators

**Steven Kidwell
Mine Safety & Health Inspector**

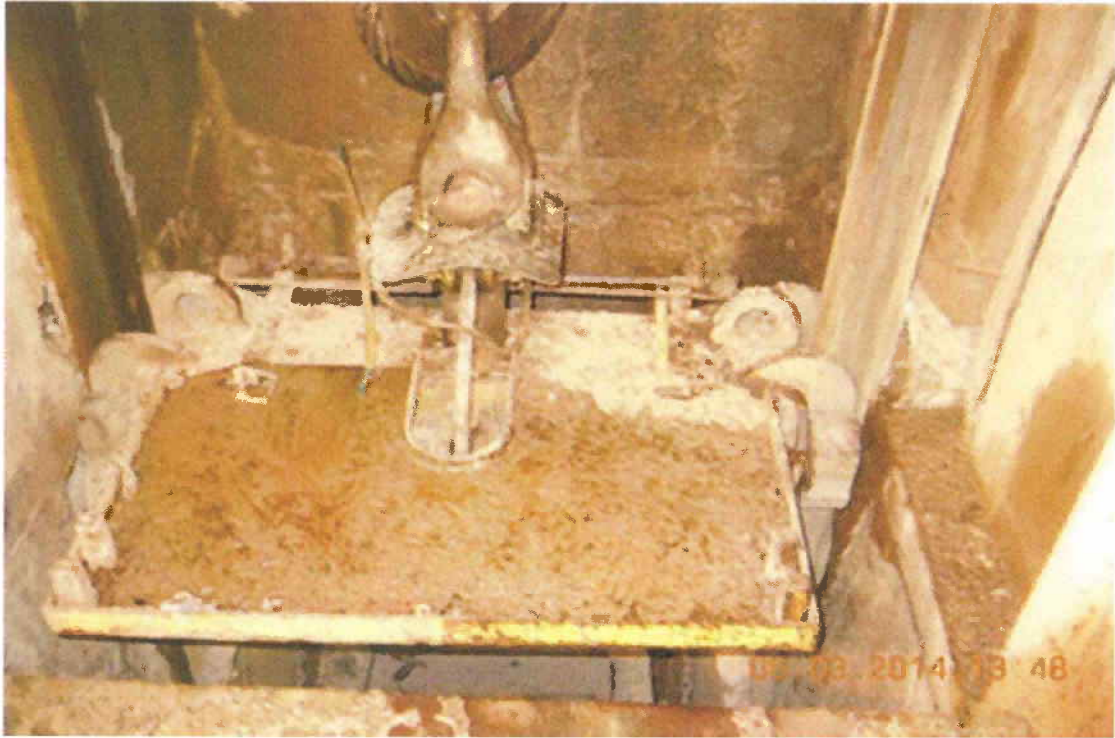
**Denis Karst
Mine Safety & Health Inspector**

**Thomas Barkand
Electrical Engineer**

**Joseph Rhoads
Mine Safety & Health Specialist (Training)**

Originating Office

**Mine Safety and Health Administration
Western District
991 Nut Tree Road
Vacaville, CA 95687
Wyatt S. Andrews Western District Manager**



Top of the work deck in the Jewell Shaft chippy compartment

OVERVIEW

Nicholas P. Rounds, Shaft Repairman, age 36, was killed on June 2, 2014, while working in the chippy (personnel) hoist compartment of the Jewell Shaft. N. Rounds and another miner were working in the shaft performing rehabilitation work. Prior to the accident, N. Rounds had tied off his fall protection lanyard to a stationary metal rod (hanging rod) located on the shaft wall behind him. After loading and securing wooden lacing onto the chippy work deck, the hoist operator was given the okay to move the hoist upwards to the surface. However, the victim had not disconnected his lanyard from the hanging rod and when the chippy conveyance moved, he was pulled into the space between the chippy work deck and the shaft wall.

The accident occurred due to management's failure to identify possible hazards and establish safe work procedures associated with performing shaft maintenance work, specifically where miners were to safely tie off their lanyards. A safe procedure for replacing or transporting wooden lacing during shaft maintenance had not been developed or implemented. Material on the chippy work deck affected where the miners could tie off their lanyards while performing shaft maintenance.

GENERAL INFORMATION

The Sunshine Mine, an underground silver ore mine owned and operated by Silver Opportunity Partners LLC, is located in Kellogg, Shoshone County, Idaho. The principal operating official is John Kinyon, Vice-President and General Manager. The mine is currently being rehabilitated and in a non-producing status. Work is conducted on one 8 hour shift, 5 days a week. Total employment is 28 persons.

The Jewell Shaft is being rehabilitated before production begins. Worn and damaged timbers and wooden lacing are being replaced in all four of the vertical shaft compartments. The Mine Safety and Health Administration (MSHA) completed the last regular inspection at this mine on April 16, 2014.

DESCRIPTION OF THE ACCIDENT

On the day of the accident, Nicholas Rounds, victim, arrived at the mine about 5:30 a.m. At 6:00 a.m., he attended a safety meeting conducted by Keith Schillinger, Mine Service and Construction Superintendent. About 6:30 a.m., Phillip Rounds (victim's father), Shaft Repairman, and Randy Leetch, Lead Shaft Repairmen, inspected the North and South double drum hoist compartments while N. Rounds and Josh Maravilla, Shaft Repairman, inspected the chippy hoist compartments. Maravilla and N. Rounds completed their inspection at approximately 10:00 a.m.

Maravilla and N. Rounds traveled down the shaft on a work platform on top of the chippy conveyance to timber set #113 in the shaft. A timber set is a square shaped timber frame used to support the sides of the shaft. They pulled out the lacing boards in the pipe compartment and went back up to the "cutout" station on the 500 foot level. They dropped off the lacing and gathered the equipment needed to install bolts where the lacing had been removed. About 11:00 a.m., the miners traveled outside to take their lunch in the break room.

After lunch, they began work on timber set #113. After installing bolts, Maravilla and N. Rounds traveled back up to the 500 level to drop off the equipment. They went back down to timber set #114, the next timber set below timber set #113 to prepare for the next day.

After arriving at timber set #114, Maravilla crawled back into the pipe compartment to remove the lacing boards. N. Rounds stayed on the working platform while Maravilla removed the lacing. Maravilla handed five lacing boards to N. Rounds. N. Rounds stacked the boards vertically against the hoist rope on the work deck. At some point, N. Rounds disconnected his lanyard from the anchor point on the hoist rope and attached it to a stationary hanging rod located between the upper and lower timber sets on the shaft wall behind him.

When interviewed, Maravilla stated that when all of the boards were on the work deck, N. Rounds told him that it was time to go. Maravilla crawled back onto the platform as N. Rounds finished securing the lacing and began securing the tools on the chippy conveyance. Maravilla stated that before ringing the signal bell to move the skip, he asked N. Rounds if he was "all tucked in and ready to go" and N. Rounds responded that he was. Maravilla grabbed the bell cord and gave the signal to the hoist operator to hoist them up to the surface. At this point, Maravilla told N. Rounds that the "bells are in, are you sure you're ready" and N. Rounds responded that he was ready.

After receiving the signal, Jim Campbell, Chippy Hoist Operator, began raising the chippy conveyance toward the surface. As the hoist began to move, Maravilla heard N. Rounds speak and make a noise so he immediately pulled on the bell cord at which time the hoist operator stopped the conveyance. Maravilla gave another long bell signal. The conveyance had traveled approximately 20 to 24 feet coming to stop at timber set #110.

Maravilla looked over to where N. Rounds had been, but did not see him. Maravilla began yelling to Leetch and P. Rounds, who had been working in the south and north double drum compartments, located just below where Maravilla and N. Rounds were working.

Leetch and P. Rounds arrived at timber set #110 and spoke briefly with Maravilla. Leetch and P. Rounds, then traveled in the north double drum skip down to timber set #112 and removed the lacing boards that separated the two compartments and located N. Rounds. Leetch traveled back to timber set #110 and told Maravilla that he would be back soon to get him out. Leetch and P. Rounds then traveled to the surface. At 1:30 p.m., as the miners were traveling to the surface, Leetch radioed Stephen Rogers, Manager of Health and Safety to meet him at the Jewell Portal. Schillinger overheard the radio call to Rogers and met Leetch at the surface.

Leetch and Schillinger then went back down to timber set #110 to pick up Maravilla. They traveled back to the surface, arriving around 2:00 p.m. and Schillinger provided an update on the accident to Rogers.

The Central Mine Rescue team was called to recover N. Rounds. At 3:15 p.m., the rescue team was briefed and at 3:57 p.m., the recovery process began. The victim was removed from the mine at 8:31 p.m. The cause of death was attributed to multiple body fractures and internal injuries.

INVESTIGATION OF THE ACCIDENT

MSHA was notified of the accident at 2:07 p.m. on June 2, 2014, by a telephone call from Stephen Rogers, Manger of Health and Safety, to James Fitch, Mine Safety & Health Specialist. At that time, the condition of the miner was not known. Rodgers called the National Call Center at 2:47 p.m. to report the condition of the victim and the Call Center notified Fitch. A Part 50 citation was issued for untimely reporting. An investigation was started the same day. An order was issued under the provisions of Section 103(j) of the Mine Act to ensure the safety of miners during the recovery effort. This order was subsequently modified to Section 103(k) of the Mine Act when the first Authorized Representative arrived at the mine.

MSHA's accident investigation team traveled to the mine, conducted a physical inspection of the accident scene, interviewed employees, and reviewed documents and work procedures relevant to the accident. MSHA conducted the investigation with the assistance of mine management, employees, and miners' representatives.

DISCUSSION

Location of the Accident

The accident occurred in the chippy (personnel) hoist compartment of the Jewell Shaft, a 22.5 foot by 7.5 foot rectangular intake air ventilation shaft that is 4,088 feet deep from the collar to the sump. The shaft is divided into four compartments each measuring 4.5 feet wide by 5.5 feet deep. The four compartments are arranged linearly and are designated from north to south in the following order: north main hoisting compartment, south main hoisting compartment, chippy (personnel) hoist compartment, and utility compartment. The shaft is undergoing a rehabilitation construction project and is flooded to the 3600 foot level.

Personnel access the mine through a horizontal tunnel leading to the top station level that intersects the Jewell Shaft 95 feet below the collar. The shaft compartments are concrete lined for the first 60 feet below the top station and timbered for the remaining shaft depth. The wall timbers are 12 inches by 12 inches and the divider timbers are 10 inches by 12 inches. The timber sets are installed on 6 foot vertical center lines. The shaft is lined with 2-inch by 10-inch lagging lacing boards installed between the shaft wall plates. Lacing panels are also installed to separate the chippy compartment from the south main hoisting compartment.

Hoists

A 1916 Nordberg double-drum production hoist services the north and south main hoisting compartments. A 1.16 inch diameter rope suspends an ore skip and underslung personnel trailer cage in each compartment. Each skip is equipped with safety catches and each trailer cage has a capacity of 10 persons.

A 1967 Nordberg unbalanced hoist provides personnel hoist service in the chippy compartment. The chippy conveyance is equipped with safety catches and has four decks arranged vertically and suspended by a 1.5 inch diameter wire rope. The cage capacity is 10 persons per deck for a maximum capacity of 40 persons. The utility compartment is accessible by ladders. The investigators inspected the hoists and no problems were found.

Chippy Conveyance

A metal canopy and work deck can be installed on each shaft conveyance so persons can stand on it to perform shaft repair and maintenance. The work deck is constructed

with two separate pieces and creates a 56 inch by 38 inch platform.¹ Removable handrails may be installed on the work deck.

The chippy conveyance is 5 feet deep by 43.5 inches wide. The clearance between the wall timber and the chippy conveyance is 3 inches. A metal canopy and work deck, without handrails, is installed on the chippy conveyance. The clearance between the work deck and the wall timber is 5 inches. Fall protection anchor points are attached to the suspension rope. The anchor point on the east side of the work deck is 75 inches above the work deck and the anchor point on the west side is 84 inches above the work deck. There were no noted defects to the chippy conveyance and no indication that a malfunction of the hoist contributed to the accident.

Hanging Rods

Hanging rods are metal rods that are ¾-inch diameter and hook shaped on one end.² The other end has 6 inches of thread which allows them to be bolted to the timbers. The hooks are used during the installation of the shaft wall timbers.

The threaded end of a hanging rod is inserted vertically with the hooked end hanging down, through a pre-drilled hole at each end of a top timber and secured using a nut. During the installation of new bottom timber, a hanging rod is inserted into and secured to the bottom timber with the hooked end of the rod facing upward. The connection of the rods allows the miners to temporarily “hang” the bottom timber in position for blocking

Physical Factors of Chippy Work Deck and Compartment After the Accident

Five lagging lacing boards were on the north east corner of the chippy work deck. The 2-inch by 10-inch rough sawed lacing boards were standing on end and tied to the suspension rope. Four of the boards were approximately 68 inches long and one board was approximately 62 inches long. The distance between the east side lanyard anchor and the top of the lacing boards was estimated to be less than 1 foot.

N. Rounds was wearing a fall protection harness equipped with a 6-foot shock adsorbing lanyard. The lanyard contracts to 4.5 feet when not in tension and can reach a maximum elongation of 9.5 feet. The lanyard was attached to a 1 inch diameter (“j” hook) wall plate hanging rod for timber set #114. The hanging rod was installed vertically 11 inches away from the south compartment divider beam. Timber set #114 was approximately 750 feet below the top station sub level.

¹ See photo #1 in APPENDIX C

² See photo #2 in APPENDIX C

Due to the accident, the lacing panels for timber sets #112 and #113 were pushed outward toward the face of the shaft in the chippy compartment. The support brackets for the east side of the chippy work deck were bent and the work deck was angled downward. Ground water infiltration was present in the shaft, but did not contribute to the accident.

TRAINING AND EXPERIENCE

Nicholas Rounds (victim) had 18 years of mining experience and had worked at this operation for 1 year and 14 weeks. A representative of MSHA's Educational Field Services conducted a review of N. Rounds' training records. N. Rounds had received Experienced Miner training on February 22, 2013, and Annual Refresher training for both surface and underground on January 24, 2014, at the Sunshine Mine. The victim's training records were found to be in compliance with MSHA training requirements.

ROOT CAUSE ANALYSIS

A root cause analysis was conducted to identify the underlying cause of the accident. Listed below is the root cause identified and the corresponding corrective action implemented to prevent a recurrence of the accident:

Root Cause: Management failed to ensure that a safe procedure for shaft maintenance work. Material on the deck affected where the miners could tie off while performing shaft maintenance. The victim had tied his lanyard off to a stationary metal hanging rod located on the wall of the shaft between the timber sets. When the conveyance was moved, the victim was pulled from the platform he was standing on.

Corrective Action: Management developed and implemented procedures for shaft maintenance work. The procedures also address the proper use of fall protection while working from conveyances. The miners involved in the rehabilitation of the shaft were all trained regarding the new procedures.

CONCLUSION

The accident occurred due to management's failure to identify possible hazards and establish safe work procedures associated with performing shaft maintenance work, specifically where miners were to safely tie off their lanyards. A safe procedure for replacing or transporting wooden lacing during shaft maintenance had not been developed or implemented. Material on the chippy work deck affected where the miners could tie off their lanyards while performing shaft maintenance. The victim

had tied his lanyard off to a stationary metal hanging rod located on the wall of the shaft between the timber sets. When the conveyance was moved, the victim was pulled from the platform he was standing on.

ENFORCEMENT ACTIONS

Issued to Silver Opportunities Partners LLC

Order No. 6389989 -- Issued on June 2, 2014, under the provisions of Section 103(j) of the Mine Act:

A fatal accident occurred at this operation on 06/02/2014 at 14:00 when two miners were working in the Jewel shaft on the top of the skip at set 112. A oral 103j order was issued by Jim Fitch - Western District to Steve Rogers - Safety Manager at 15:41 to assure the safety of all persons at this operation during rescue and recovery of the victim. It also prohibits any activity in the area until the accident investigation is complete.

This order was subsequently modified to Section 103(k) of the Mine Act when the first Authorized Representative arrived at the mine. The order was terminated on July 21, 2014, when the conditions that contributed to the accident no longer existed.

Citation No. 8782163 -- Issued under the provisions of Section 104(a) of the Mine Act for violation of 30 CFR § 57.15005:

On June 2, 2014, a fatal accident occurred at this mine when a shaft repairman was caught between the shaft conveyance and the shaft timber. The victim had tied his lanyard off to a stationary metal hanging rod located on the wall of the shaft between the timber sets. When the conveyance was moved, the miner was pulled from the platform he was standing on.

Citation No. 8782164 -- Issued under the provisions of 104(a) of the Mine Act for violation of 30 CFR § 57.19120:

On June 2, 2014, a fatal accident occurred at this mine when a shaft repairman was caught between the shaft conveyance and the shaft timber. A safe maintenance procedure for replacing or transporting timber lacing during shaft maintenance had not been developed or implemented. Material on the deck affected where the miners could tie off while performing the shaft maintenance.

John Perena for
Approved By
Wyatt Andrews
District Manager

10/21/2014
Date

