

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

REPORT OF INVESTIGATION

Surface Nonmetal Mine
Sand and Gravel

Fatal Falling Material Accident
August 2, 2014

Fossum Ready Mix
Belzer Pit
Glasgow, Valley County, Montana
Mine I.D. No. 24-00420

Investigators

David J. Small
Mine Safety and Health Inspector

Dustin Hinchman
Mining Equipment Compliance Specialist

Phillip Dahl
Mine Safety and Health Specialist (Training)

Kathy Cattles
Mine Safety and Health Specialist (Training)

Originating Office
Mine Safety and Health Administration
Rocky Mountain District
PO Box 25367 DFC
Denver, CO 80225-0367
Richard Laufenberg, District Manager

MAI-2014-17

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OVERVIEW

Robert L. Irwin, Foreman, age 53, was killed at this operation on August 2, 2014. Irwin was working under the raised bed of a dump truck when a weathered block of wood supporting the load suddenly failed, allowing the bed to fall and pin him. No other miners were working at the mine on the day of the accident. Irwin was working alone and was not found until 10:00 a.m., on August 3, 2014. He was performing maintenance on the truck bed's hydraulic lift system.

The accident occurred due to management's failure to establish procedures to ensure persons could safely perform maintenance on a truck bed in a raised position. The raised truck bed was not secured to prevent accidental lowering when the victim was performing maintenance. The victim was not instructed in the safety and health aspects and safe work procedures of the task of performing maintenance on the truck's hydraulic lift system. Additionally, Irwin was assigned to perform work alone where hazardous conditions existed that would endanger his safety and he could not communicate with others, be heard, or be seen.

GENERAL INFORMATION

Belzer Pit, a surface sand and gravel operation owned and operated by Fossum Ready Mix, is located in Glasgow, Valley County, Montana. The principal operating official is Steve Fossum, Vice-President. The mine operates one 10 hour shift a day, 5 days a week. Total employment is 2 persons. One person works on weekends performing maintenance.

Material is brought to the mine site by over-the-road haul trucks from various pits. The material is screened, sized, and washed. The material is then used at the company-owned concrete plant and construction business or sold to customers.

The Mine Safety and Health Administration (MSHA) completed the last regular inspection at this operation on June 13, 2013.

DESCRIPTION OF ACCIDENT

On the day of the accident, Robert L. Irwin (victim) arrived at the mine at about 6:30 a.m., his normal starting time. On August 2nd, as this was a Saturday, Irwin typically worked alone performing maintenance work. He set up to begin performing maintenance on a dump truck by positioning a front-end loader nearby to supply air for the work to be done.

Irwin then parked a pickup truck containing tools beside the dump truck. An air hose was connected to the front-end loader and one end of an air hose was hung over the turn signal of the dump truck. Irwin raised the half-loaded bed of the truck and placed a block of wood on the frame rail so he could fill the hoist cylinder with fluid. The block was placed at the back of the truck bed, between the bed and the frame rail, in an attempt to hold the bed in a raised position. Irwin went under the raised bed, removed the plug on

the hoist cylinder, and began filling it with hydraulic fluid from a small metal container. While Irwin was under the raised truck bed, the weathered block of wood positioned to secure the component in the raised position suddenly failed. The wood split into two pieces and the bed fell, pinning Irwin between the bed and the frame rail of the truck.

The next day, August 3, 2014, Sally Irwin, the victim's wife, traveled to the mine because Robert Irwin had not returned home from work. She arrived at the mine about 10:00 a.m., and found the victim. Sally Irwin called her sister, Gina Reyling, and told her that she needed help. Reyling called 911 and the Valley County Sheriff's department arrived at the scene at 10:19 a.m., and removed the victim from the truck. The Glasgow, Montana, ambulance service and the Montana Highway Patrol also responded. Irwin was pronounced dead by Glen Meir, Valley County, Montana Coroner, at 10:28 a.m., on August 3, 2014. Meir determined that the victim died at 11:00 a.m., on August 2, 2014. The cause of death was attributed to a crushing injury.

INVESTIGATION OF THE ACCIDENT

MSHA was notified of the accident at 11:04 a.m., on August 3, 2014, by a telephone call from Steve Fossum, Vice-President, to MSHA's National Call Center. The National Call Center notified Dustan Crelly, Assistant District Manager, and 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 the miners. This order was modified to a 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 and employees.

DISCUSSION

Location

The accident occurred at the maintenance shed across from the wash plant. The truck was parked about 17 feet from the shed. The area was flat, dry, and covered with gravel.

Weather

The weather on the day of the accident was mild, clear, and the winds were calm. The weather was not considered to be a factor in the accident.

Truck

The dump truck involved in the accident is a 1965 International Harvester, Model No. 1980 Loadstar. The truck, purchased as a frame only vehicle, is a single drive axle chassis truck with a maximum gross vehicle weight rating of 25,500 pounds. The dump bed, a four ton 1954 Heil Co. Model No. A610-167, and lifting device/hoist cylinder

system were installed on the truck after purchase as an aftermarket system. The truck was modified to a dump bed approximately 40 years before the accident occurred and the dump bed had never been modified to include a means to mechanically block it.

The investigators inspected the dump truck and noted the following items:

- The dump bed raise/lower cylinder serves as the hydraulic system reservoir. There was a severe leak in the hydraulic system, as indicated by spills of fluid at several locations where the truck routinely dumped material.
- The dump bed was approximately half full of wet coarse sand which was estimated to weigh 4,000 pounds.
- The truck's dump bed had no integral mechanical blocking capabilities such as a blocking pin.
- The operation of the dump bed was observed. The dump control lever had a raise, lower, and neutral (hold) position. The control remained in the selected position when it was released. When the engine was running, the dump control lever functioned to raise, lower, and hold the bed. When the engine was off, the bed remained elevated while the control lever was in the neutral or raise position and lowered when the control was placed in the lower position. To remove the victim, first responders had to start the truck and raise the bed using the dump control lever so its position at the time of the accident could not be determined.

Wood Block

The weathered block of wood used to block the truck was 6 inches wide, 6 inches high, and 20 inches long.

TRAINING AND EXPERIENCE

Robert L. Irwin (victim) had approximately 25 years, 4 weeks of mining experience. Representatives of MSHA's Education Policy and Development staff conducted an in-depth review of the mine operator's training records. The training records for Irwin were reviewed and investigators found that he had not received training in accordance with Part 46.7(a).

ROOT CAUSE ANALYSIS

The investigators conducted a root cause analysis of this accident and the following root causes were identified and the corresponding corrective actions implemented to prevent a recurrence of the accident:

Root Cause: Management failed to establish procedures to ensure persons could safely perform maintenance on a raised truck bed. The raised truck bed was not secured to prevent accidental lowering when the victim was performing maintenance. Management failed to ensure the victim received instruction in the safe work procedures of the task of performing maintenance of the truck's hydraulic lift system.

Corrective Action: Management established procedures to ensure raised components of mobile equipment are secured to prevent accidental lowering when persons are performing maintenance. All persons received task training regarding the procedures to be used when working under raised components on mobile equipment.

The following are the company's newly established procedures:

All vehicles/equipment shall be tagged and locked out prior to performing maintenance work.

The following is the standard lockout procedures for vehicles/equipment.

- Ensure there is sufficient space around the vehicle/equipment to perform work safely
- Set the parking brake and chock all of the wheels to prevent any unwanted movement of the vehicle/equipment during maintenance
- Shut down any power sources like the engine
- Remove the keys from the ignition
- Put a tag on the steering wheel and other appropriate locations, such as hydraulic controls, to prevent anyone from operating the vehicle/equipment
- Place operating equipment in such a way to prevent possible free fall of any elevated equipment
- Follow manufacturer's maintenance manual for safety precautions and recommended blocking securing procedures BEFORE initiating repairs
 - When performing maintenance on hydraulic systems, make sure that blocking systems are enabled before hydraulic pressure is released
- If provided, always use the manufacturer's provided safety device or features for securing components against motion
- Avoid steel on steel blocking if at all possible as these two surfaces together can easily slide thus reducing the effectiveness of the motion prevention design
- Avoid using long, slender members as blocking in situations where the blocking will be loaded in compression. These types of members may be prone to buckling failure
- The ground on which the blocking is to be placed must be capable of supporting the loads transferred from the equipment. To prevent the blocking from punching into the ground, larger plates or blocking may be necessary to spread the load over a wider area.
- Ensure adequate contact area with equipment components being supported to avoid crushing the blocks and to increase stability
- Never use blocks exhibiting rot, splits, twists or bows
- Observe blocking and jack stands during loading and ensure they remain solid without any tilting or sliding

Root Cause: Management failed to establish procedures to ensure persons would not work alone when they could not communicate with others, be heard, or be seen.

Corrective Action: Management developed and implemented policies prohibiting persons from working alone at any time including weekends.

CONCLUSION

The accident occurred due to management's failure to establish procedures to ensure persons could safely perform maintenance on a truck bed in a raised position. The raised truck bed was not secured to prevent accidental lowering when the victim was performing maintenance. The victim was not instructed in the safety and health aspects and safe work procedures of the task of performing maintenance on the truck's hydraulic lift system. Additionally, Irwin was assigned to perform work alone where hazardous conditions existed that would endanger his safety and he could not communicate with others, be heard, or be seen.

ENFORCEMENT ACTIONS

Issued to Fossum Ready Mix

Order No. 8824044 - Issued under the provisions of Section 103(j) of the Mine Act:

An accident occurred at this operation on August 2, 2014, at 1000 hours. As rescue and recovery work is necessary, this order is being issued under Section 103(j) of the Federal Mine Safety and Health Act of 1977, to ensure the safety of all persons at this operation. This order is also being issued to prevent the destruction of any evidence which would assist in investigating the cause or causes of the accident. It prohibits all activity at the mine in this area. This order applies to all persons engaged in the rescue and recovery operation and any other persons on-site. This order was initially issued orally to the mine operator at 1225 hours on August 3, 2014, and has now been reduced to writing.

The order was terminated on September 18, 2014, after conditions that contributed to the accident no longer existed.

Citation No. 8762914 – Issued under provisions of Section 104(d)(1) of the Mine Act for a violation of 30 CFR 56.18020:

A fatal accident occurred on August 2, 2014, when a miner had been allowed to work alone at the mine site on the weekends. The miner had been performing maintenance work on the plant and mobile equipment without any communications with others, and without being able to be seen or heard. Mine management was aware that the miner worked on the weekends and did not require him to communicate with others when he was working at the mine site. The mine operator engaged in aggravated conduct constituting more than ordinary negligence in that he was aware of this practice and had allowed it to

continue. This violation is an unwarrantable failure to comply with a mandatory safety standard.

Order No. 8762915 – Issued under provisions of Section 104(d)(1) of the Mine Act for a violation of 30 CFR 56.14211(c):

A fatal accident occurred on August 2, 2014, when a miner that was working on the International haul truck, Model No. 1980 Loadstar, Serial No. FD84469F, was struck and crushed by the improperly secured truck bed that was in the raised position. The bed was approximately half full of material. The miner was performing maintenance on the bed hydraulic lift system when the weathered block of wood positioned between the bed and the frame rail failed. The block split and allowed the bed to fall and crush the victim. Mine management was aware of the practice of using weathered wood to secure raised components of equipment while working on and around them and made no attempt to correct the hazardous practice or provide proper blocking materials or other means to secure raised components. The mine operator engaged in aggravated conduct constituting more than ordinary negligence in that he was aware of this practice and allowed it to continue. This violation is an unwarrantable failure to comply with a mandatory safety standard.

Citation No. 8762916 – Issued under provisions of Section 104(a) of the Mine Act for a violation of 30 CFR 46.7(a):

A fatal accident occurred on August 2, 2014, when a miner was struck and crushed by an improperly secured truck bed that fell while he was working on the truck bed's hydraulic lift system. He was not instructed in the safety and health aspects and safe work procedures of the task of performing maintenance of the truck's hydraulic lift system. The Federal Mine Safety and Health Act of 1977 declares that an untrained miner a hazard to himself and to others.

Approved By:

Date: October 30, 2014



Richard Laufenberg
District Manager

LIST OF APPENDICES

Appendix A-Persons Participating in the Investigation
Appendix B-Victim Data Information

APPENDIX A

Persons Participating in the Investigation

Fossum Ready Mix

| | |
|--------------|----------------|
| Steve Fossum | Vice-President |
| Lucas Knaff | Miner |

Mine Safety and Health Administration

| | |
|-----------------|--|
| David Small | Mine Safety and Health Inspector |
| Dustin Hinchman | Mining Equipment Compliance Specialist |
| Phillip Dahl | Mine Safety and Health Specialist (Training) |
| Kathy Cattles | Mine Safety and Health Specialist (Training) |

APPENDIX B

Victim Data Information

Accident Investigation Data - Victim Information

U.S. Department of Labor
Mine Safety and Health Administration



Event Number:

Victim Information: 1

| | | | | | | |
|---|--|--|------------------------------|---|--|---|
| 1. Name of Injured/Ill Employee: <i>Robert L. Irwin</i> | | 2. Sex <i>M</i> | 3. Victim's Age <i>53</i> | 4. Degree of Injury: <i>01 Fatal</i> | | |
| 5. Date(MM/DD/YY) and Time(24 Hr.) Of Death: <i>a. Date: 08/02/2014 b. Time: 11.00</i> | | | | 6. Date and Time Started: <i>a. Date: 08/02/2014 b. Time: 6.30</i> | | |
| 7. Regular Job Title: <i>149 Foreman</i> | | 8. Work Activity when Injured: <i>039 Maintenance on truck hydraulic system</i> | | 9. Was this work actively part of regular job? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> | | |
| 10. Experience a. This Work Activity: <i>25</i> <i>4</i> <i>2</i> | | b. Regular Job Title: <i>25</i> <i>4</i> <i>2</i> | | c. This Mining: <i>25</i> <i>4</i> <i>2</i> | | d. Total Mining: <i>25</i> <i>4</i> <i>2</i> |
| 11. What Directly Inflicted Injury or Illness? <i>104 Bed of mine dump truck</i> | | | | 12. Nature of Injury or Illness: <i>170 Crushed between bed and truck frame</i> | | |
| 13. Training Deficiencies: Hazard: <input type="checkbox"/> New/Newly-Employed Experienced Miner: <input type="checkbox"/> Annual: <input type="checkbox"/> Task: <input checked="" type="checkbox"/> | | | | | | |
| 14. Company of Employment: (if different from production operator) <i>Operator</i> | | | | Independent Contractor ID: (if applicable) | | |
| 15. On-site Emergency Medical Treatment: Not Applicable: <input type="checkbox"/> First-Aid: <input type="checkbox"/> CPR: <input type="checkbox"/> EMT: <input type="checkbox"/> Medical Professional: <input type="checkbox"/> None: <input checked="" type="checkbox"/> | | | | | | |
| 16. Part 50 Document Control Number: (form 7000-1) | | | | 17. Union Affiliation of Victim: <i>9999</i> <i>None (No Union Affiliation)</i> | | |