MAI-2008-07

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

REPORT OF INVESTIGATION

Underground Nonmetal Mine
(Industrial Sand)

Fatal Powered Haulage Accident
April 24, 2008

Pattison Sand Company, LLC
Pattison Sand Company, LLC
Clayton, Clayton County, Iowa
Mine I.D. No. 13-02297

Investigators

Thaddeus J Sichmeller
Mine Safety and Health Inspector

Ronald Medina
Mechanical Engineer, P.E.

Originating Office
Mine Safety and Health Administration
North Central District
515 W. First Street, Room 333
Duluth, MN 55802-1302
Steven M. Richetta, District Manager

OVERVIEW

Rebecca A. Dysart, laborer, age 48, was fatally injured on April 24, 2008. Dysart was struck by a front-end loader that backed up.

The accident occurred because management policies and procedures failed to ensure that persons could safely work in areas where mobile equipment operated and failed to ensure that safety defects were corrected in a timely manner. The right rear-view mirror on the front-end loader was broken along the top portion and the mounting bracket was bent.

The victim's cap lamp was not positioned on her hard hat and no reflective material was on the hard hat. Reflective material on the victim's equipment belt was obscured by the cap lamp battery, self-rescuer, and possibly by the black coat she was wearing.

GENERAL INFORMATION

Pattison Sand Company, LLC, an underground industrial sand mine, owned and operated by Pattison Sand Company LLC, was located in Clayton, Clayton County, Iowa. The principal operating official was Kyle Pattison, manager. The mine normally operated two, 12-hour shifts a day, seven days per week. Total employment was 70 persons.

Industrial sand was drilled, blasted, and then mucked by a front-end loader. The material was conveyed to the surface where it was crushed, washed, screened, and stockpiled. The finished product was sold as industrial sand and used for various manufacturing purposes.

The last regular inspection at this operation was completed on April 23, 2008.

DESCRIPTION OF THE ACCIDENT

On the day of the accident, Rebecca A. Dysart, reported to work at 6:00 a.m., her normal starting time. Richard Leatherberry, foreman, assigned Dysart, Brian Schoulte, miner, and Chris Peterman, laborer, to walk the working sections in the mine to check for any areas that needed to be scaled after they were blasted on a previous shift. The crew was to travel down Aisle 3 to the intersection of M, cross over from crosscut M to Aisle 2, check Aisle 2, and cross over to Aisle 1 (see Appendix C).

Leatherberry instructed Barry Brinkman, loader operator, to operate the front-end loader, hauling material from the intersection of M and Aisle 3, down Aisle 2, and to the hopper. He instructed Brinkman to blend one bucket of material piled at Aisle K for every three hauled from the M area.

Brinkman hauled sand for about 30 minutes while Dysart, Peterman, and Schoulte traveled on foot north in Aisle 2 toward the hopper when they noticed Brinkman approaching. As Brinkman traveled north in Aisle 2 and passed near the intersection of Aisle L, Dysart, Peterman, and Schoulte flashed their cap lamp lights to alert him of their position. Brinkman acknowledged the miners by honking the front-end loader's horn and went to the hopper to dump.

Dysart, Peterman, and Schoulte went down Aisle 2 to the intersection of Aisle L. Peterman and Schoulte walked east through crosscut L and entered into Aisle 1 but Dysart remained approximately 30 feet behind.

About 8:00 a.m., Brinkman dumped the load of sand at the hopper and began backing southbound in Aisle 2. He looked through crosscut L and saw lights in Aisle 1. Brinkman backed the front-end loader, turned east into crosscut L, stopped, and then turned and moved forward in Aisle 2 to get another load of sand. When Brinkman returned, he noticed a person lying near the intersection

of Aisle 2 and Aisle L. He immediately stopped, discovered Dysart and checked her condition, then left to summon Leatherberry. Michael Hansen, laborer, saw the front-end loader stopped, approached the area, discovered the accident, and shouted for Schoulte and Peterman's help. He phoned for emergency medical assistance.

Emergency medical personnel arrived but Dysart was non-responsive and was pronounced dead by the Clayton County medical examiner. Death was attributed to blunt force trauma.

INVESTIGATION OF THE ACCIDENT

The Mine Safety and Health Administration (MSHA) was notified of the accident at 8:11 a.m., April 24, 2008, by a telephone call to the National Call Center from Kyle Pattison, manager. Steven M. Richetta, district manager, was notified and an investigation began the same day. An order was issued pursuant to Section 103(k) of the Mine Act to ensure the safety of the miners.

MSHA's accident investigation team traveled to the mine, conducted a physical examination of the accident scene, interviewed employees, and reviewed documents and work procedures relative to the accident. MSHA conducted the investigation with the assistance of mine management, employees, and the State Medical Examiner's office.

DISCUSSION

Location of the Accident

The accident occurred underground at the intersection of Aisle 2 and Aisle L. Aisle 2 ran North to South with crosscuts K, L, and M intersecting. The hopper was located in Aisle 2, North of crosscut L. The roadway condition at the accident scene consisted of loose, sandy material. A slight grade existed where the front-end loader backed from the hopper to crosscut L.

The area at the hopper was illuminated with area lighting. Crosscut L, where the victim was struck was darker and shaded.

Front-End Loader

The front-end loader involved in the accident was a Caterpillar 988H turbo-charged, articulated wheel loader. The rated operating weight of the loader was approximately 109,250 pounds. The electronically controlled transmission had four forward speeds, three reverse speeds, and a neutral position. The front-end loader was equipped with an "Autoshift Control" on the overhead switch panel. This control allowed the operator to select the maximum gear into which the

transmission would be allowed to shift. The autoshift control also had a manual (i.e. “off”) position for operator controlled shifting.

The front-end loader was equipped with two, 16 inch x 10 inch convex rearview mirrors. They were mounted outside the cab, one on each side of the Roll-Over Protective Structure (ROPS). The mirror on the right side was partially broken and the rear mounting bracket bent. A strip approximately 2 inches wide was broken at the top of the mirror and another portion approximately 5-inches by 3-inches wide was broken on the right side of the mirror. The left side mirror was intact and clean. The operator’s cab window glass was clean.

The front-end loader was placed in a stationary, unarticulated position so the investigators could determine the visibility to the rear of the machine from the operator’s compartment. Appendix B depicts blind areas to the loader operator when using either side mirror or looking over the shoulder. The blind area was greater on the right side of the front-end loader due to the broken mirror. The victim was positioned on the right side of the front-end loader as it backed away from the hopper.

A single joystick-type controller operated by the left hand allowed the operator to steer the machine and control transmission gear selection. This joystick controlled the hydraulic oil flow to the steering cylinders. No steering or transmission defects were found.

The loader was equipped with eight forward headlights, four on top of the ROPS and four mounted on the machine frame above the two front tires. All the forward facing headlights functioned. Four rear facing headlights were provided, two on the top of the ROPS and two at the top of the engine compartment at the rear of the machine. All the rear facing headlights functioned.

The service brake system, parking brake system, steering system, throttle system, transmission, headlights, horn, backup alarm, and seat belt were evaluated and no defects were found.

Training and Experience

Rebecca A. Dysart had 32 weeks experience, all as a laborer at this mine, and had been trained in accordance with 30 CFR, Part 48.

Barry Brinkman had 41 weeks experience operating front-end loaders at this mine and 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: Management policies and procedures failed to ensure that safety defects that were reported were corrected in a timely manner.

Corrective Action: Management should establish policies and procedures to correct reported safety defects in a timely manner.

Root Cause: Management policies and procedures failed to ensure that persons could safely work in areas where equipment operated.

Corrective Action: Management should establish policies and procedures to ensure cap lamps and reflective material are worn on the miners' hard hats and that all persons wear reflective clothing.

CONCLUSION

The accident occurred because management policies and procedures failed to ensure that persons could safely work in areas where mobile equipment operated and failed to ensure that safety defects were corrected in a timely manner. The right rear-view mirror on the front-end loader was broken along the top portion and the mounting bracket was bent.

The victim's cap lamp was not positioned on her hard hat and no reflective material was on the hard hat. Reflective material on the victim's equipment belt was obscured by the cap lamp battery, self-rescuer, and possibly by the black coat she was wearing.

ENFORCEMENT ACTIONS

Order No. 6407003 was issued on April 24, 2008, under the provisions of Section 103(k) of the Mine Act:

> A fatal accident occurred at this operation on April 24, 2008 when a miner was crushed by the wheel of the CAT 988H front-end loader. This order is issued to assure the safety of all persons at this operation. It prohibits all activity in Aisle L between Aisles 1 and 2 and to the CAT 988H front-end loader until MSHA has determined that it is safety to resume operations. The mine operator shall obtain prior approval from an authorized representative for all actions to recover and/or restore operations in the affected area.

This order was terminated on April 26, 2008. Conditions that contributed to the accident no longer exist and normal operations can resume.

Citation No. 6407062 was issued on August 11, 2008, under the provisions of Section 104(d)(1) of the Mine Act for a violation of 30 CFR 57.14100(b):

> A fatal accident occurred at this mine on April 24, 2008, when a miner conducting scaling checks was struck by a front-end loader that was backing away from a hopper. The right side-view mirror on the front-end-loader was broken along the top portion and the mounting bracket was bent. As a result of this condition, the equipment operator could not use the mirror to effectively see persons standing at the rear of the machine. This violation is an unwarrantable failure to comply with a mandatory standard. Management engaged in aggravated conduct constituting more than ordinary negligence in that the broken mirror had been repeatedly reported as a safety defect since April 20, 2008.

This citation was terminated on August 15, 2008. Management discussed with all miners the policy of timely repairs of safety defects. The mine operator has additionally established a spare parts inventory to address the timely replacement of defective items.

Approved by: Date:

Steven M. Richetta
District Manager
North Central District

LIST OF APPENDICES

APPENDIX A

Persons Participating In The Investigation

Pattison Sand Company, LLC

Kyle Pattison	manager
Richard Leatherberry	supervisor
John Ashley	supervisor
Courtney Severson	human resource manager

Clayton County Sheriffs' Office

Chad Bauwens	deputy officer

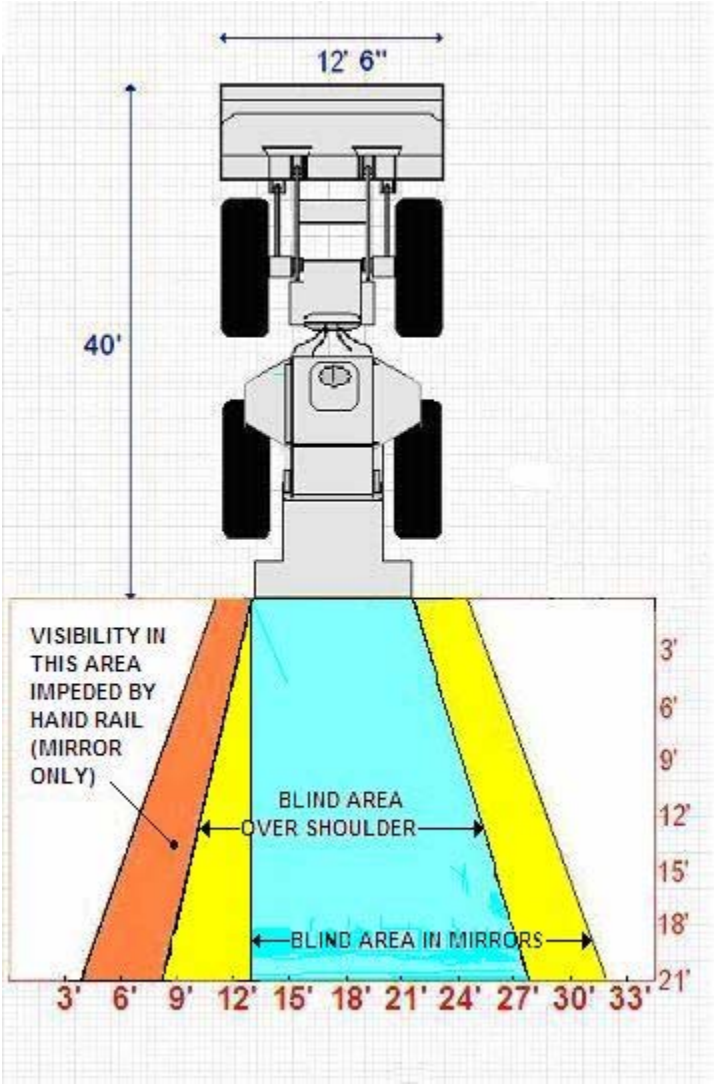
Iowa State Medical Examiner's Office

Jon Kramer	medical examiner

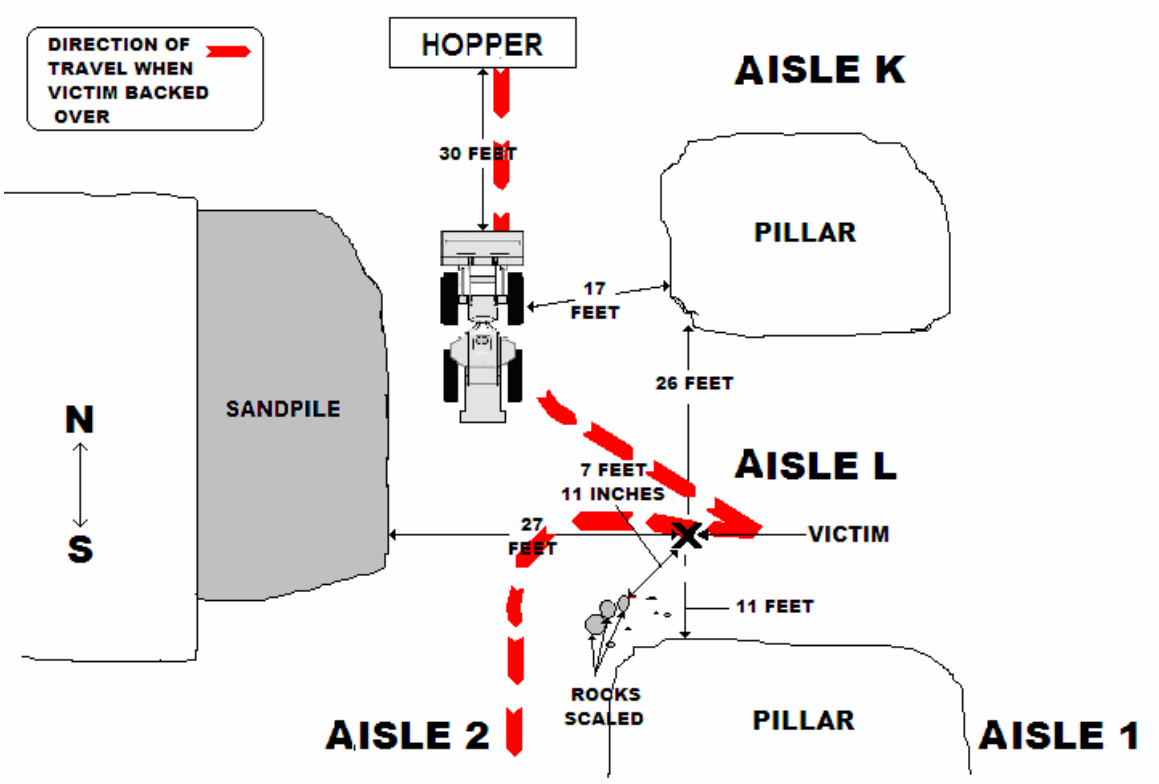
Mine Safety and Health Administration

Thaddeus Sichmeller	mine safety and health inspector
Ronald Medina	mechanical engineer, PE

APPENDIX B


12' 6"
40'
VISIBILITY IN THIS AREA IMPEDED BY HAND RAIL (MIRROR ONLY)
BLIND AREA OVER SHOULDER
BLIND AREA IN MIRRORS
3'
6'
9'
12'
15'
18'
21'
3' 6' 9' 12' 15' 18' 21' 24' 27' 30' 33'

APPENDIX C


DIRECTION OF TRAVEL WHEN VICTIM BACKED OVER
HOPPER
AISLE K
30 FEET
PILLAR
17 FEET
26 FEET
N
S
SANDPILE
7 FEET 11 INCHES
AISLE L
27 FEET
VICTIM
11 FEET
ROCKS SCALED
AISLE 2
PILLAR
AISLE 1

APPENDIX D

Accident Investigation Data - Victim Information
Event Number: 1 0 0 5 8 2 3

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:
Rebecca A. Dysart	F	48	01 Fatal

5. Date(MM/DD/YY) and Time(24 Hr.) Of Death: a. Date: 04/24/2008 b.Time: 6:00

6. Date and Time Started: a. Date: 04/24/2008 b.Time: 6:00

7. Regular Job Title: 016 Laborer

8. Work Activity when Injured: 092 walking

9. Was this work activity part of regular job? Yes X No

10. Experience	Years	Weeks	Days
a. This Work Activity:	0	34	4
b. Regular Job Title:	0	34	4
c: This Mine:	0	34	4
d. Total Mining:	0	34	4

11. What Directly Inflicted Injury or Illness? 077 Underground mining machine

12. Nature of Injury or Illness: 170 Crushing

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: | EMT: | Medical Professional: | None:

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

17. Union Affiliation of Victim: 9999 None (No Union Affiliation)

Victim Information:

1. Name of Injured/Ill Employee:	2. Sex	3. Victim's Age	4. Degree of Injury:

5. Date(MM/DD/YY) and Time(24 Hr.) Of Death:

6. Date and Time Started:

7. Regular Job Title:

8. Work Activity when Injured:

9. Was this work activity part of regular job? Yes | No

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

11. What Directly Inflicted Injury or Illness?

12. Nature of Injury or Illness:

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

14. Company of Employment: (If different from production operator)
Independent Contractor ID: (If applicable)

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

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

17. Union Affiliation of Victim:

Victim Information:

1. Name of Injured/Ill Employee:	2. Sex	3. Victim's Age	4. Degree of Injury:

5. Date(MM/DD/YY) and Time(24 Hr.) Of Death:

6. Date and Time Started:

7. Regular Job Title:

8. Work Activity when Injured:

9. Was this work activity part of regular job? Yes | No

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

11. What Directly Inflicted Injury or Illness?

12. Nature of Injury or Illness:

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

14. Company of Employment: (If different from production operator)
Independent Contractor ID: (If applicable)

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

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

17. Union Affiliation of Victim: