

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 Fall of Person Accident
July 26, 2012

Portable Crushing Plant #1
Strata Corporation
Fairview, Richmond County, Montana
I.D. No. 21-02843

Investigators

David Small
Mine Safety and Health Inspector

Maxwell Clark
Electrical Engineer

Kent L. Norton
Mine Safety and Health Specialist

Originating Office
Mine Safety and Health Administration
Rocky Mountain District
P.O. Box 25367, DFC
Denver, Colorado 80225
Richard Laufenberg, District Manager

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Photograph of Accident Scene



OVERVIEW

On July 26, 2012, Peter P. Faust, equipment operator, age 49, was killed when he was thrown off the discharge end of a 150-foot long stacker conveyor. Faust was standing on the belt, greasing the head pulley, when a coworker started the stacker conveyor by switching the disconnect to the “on” position. Faust fell off the stacker conveyor 51 feet to the ground below.

The accident occurred because management previously directed the electrical panel for the conveyor to be modified, allowing the stacker conveyor’s start/stop switches to be bypassed. The wiring was changed to bypass the start/stop switches on the stacker conveyor’s electrical panel provided by the manufacturer.

At the end of each day and in preparation for the next day, the disconnect switch on the electrical panel located on the side of the stacker was placed in the “on” position so a person could remotely control the stacker conveyor from inside a control van, located approximately 230 feet away. This condition contributed to the stacker conveyor starting by a means other than recommended by the manufacturer.

Additionally, Faust was greasing the head pulley on the stacker conveyor and it was not deenergized, locked and tagged out, and blocked against motion. The audible warning device was not sounded, as required, to warn Faust who was working on the stacker conveyor that the conveyor was going to start.

GENERAL INFORMATION

Portable Crushing Plant #1, a sand and gravel operation, owned and operated by Strata Corporation, was located in Grand Forks, North Dakota. The mine operated on a schedule of eleven days on and three days off. The hours of each shift varied.

Material was removed from a single bench and pushed into stockpiles with a dozer. A front-end loader fed the material into the plant where it was crushed and screened. Finished products were sold for construction aggregate.

The Mine Safety and Health Administration (MSHA) completed the last regular inspection at this operation on August 30, 2011.

DESCRIPTION OF THE ACCIDENT

On the day of the accident, Peter P. Faust (victim) arrived at the mine at 5:00 a.m., his usual arrival time. Faust operated a track-mounted dozer during his shift.

About 4:30 p.m., Nicholas Boucher, front-end loader operator, saw Faust park his dozer at the fuel station and descend the dozer to fuel and grease it.

About 5:30 p.m., Boucher and Jeffery Bjerke (plant operator) repositioned the jumper and stacker conveyors and rolled up the power cable for the stacker conveyor. Boucher, Bjerke, and Cameron Hughes (foreman) moved one jumper conveyor out of the circuit, repositioned two other jumper conveyors to move the stacker conveyor closer to allow more room for processed material. Faust was observed greasing the No. 1, No. 2, and No. 3 conveyors while the other miners were repositioning the conveyors.

About 6:00 p.m., Boucher and Bjerke completed rolling up the power cable and Bjerke switched the power disconnect for the stacker conveyor to the "on" position. The stacker conveyor started, throwing Faust off the discharge end that was 51 feet above the ground. Bjerke immediately shut down the stacker conveyor and contacted Hughes. At 6:10 p.m., Hughes called for emergency medical services (EMS).

EMS arrived at 6:17 p.m., administered cardiopulmonary resuscitation (CPR), and transported Faust to the Sidney Heath Center in Sidney, Montana, where Dr. Dana Osborne pronounced him dead at 6:45 p.m. The cause of death was blunt force trauma.

INVESTIGATION OF THE ACCIDENT

On July 26, 2012, MSHA was notified of the accident at 6:37 p.m., by a telephone call from Michael Venaccio, safety and compliance director, to the National Call Center. The Call Center notified Melvin Lapin, supervisory mine safety and health inspector, and an investigation began the same day. MSHA verbally issued an order under the provisions of Section 103(j) of the Mine Act to ensure the safety of the miners. This order was later modified to Section 103(k) of the Mine Act when the first Authorized Representative arrived at the mine. A Part 50.10 citation (immediate notification) was issued.

MSHA's accident investigators traveled to the mine, made 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, mine employees and local law enforcement.

DISCUSSION

Location of the Accident

The accident took place at the head pulley on the Superior powerstacker belt conveyor.

Weather Conditions

The weather conditions on the day of the accident were clear and calm with a temperature of 100 degrees Fahrenheit. Weather was not considered a factor in the accident.

Stacker Conveyor

The stacker conveyor involved in the accident was a Superior powerstacker belt conveyor. It was approximately 150 feet long and could reach a maximum height of approximately 51 feet. It had just been repositioned at the end of the shift to start creating a new pile the next day.

The stacker conveyor was equipped with an electrical panel that was located on the right (roadside) of the conveyor. From the electrical panel location, a person could see the underside of the conveyor belt but not the top of the belt. There was no startup alarm at the electrical panel controls. The electrical panel controls consisted of a main disconnect, which fed the internal electrical components, and start/stop control buttons for the conveyor belt and hydraulic motor.

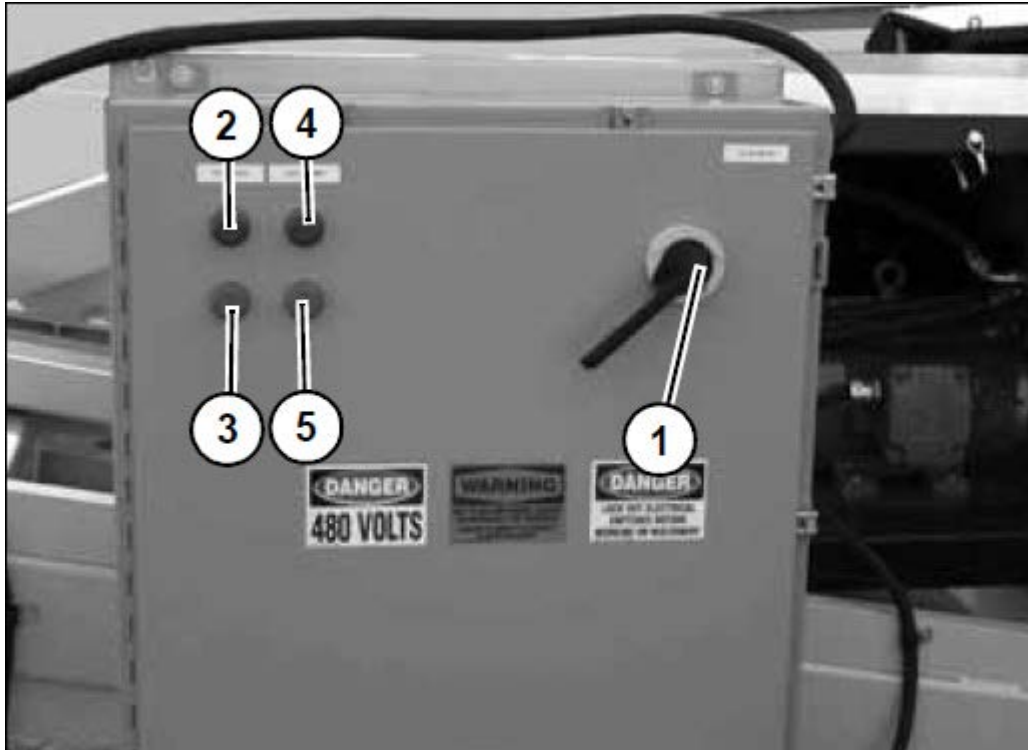


Figure 1 - Stacker Belt Conveyor Electrical Panel

The electrical panel controls were designed and according to manufacturer instructions to perform the following functions:

- The main disconnect (Figure 1, Item 1) controlled the main breaker inside the electrical panel. When the main disconnect was in the “off” position, there should not be any power source on the load side of the main breaker which fed the electrical panel.
- Momentary push button to start the conveyor belt (Figure 1, Item 2).
- Momentary push button to stop the conveyor belt (Figure 1, Item 3).
- Momentary push button to start the hydraulic motor (Figure 1, Item 4).
- Momentary push button to stop the hydraulic motor (Figure 1, Item 5).

The electrical panel power input was controlled remotely via a push button, labeled stacker, located inside a control van. The internal electrical system of the stacker conveyor electrical panel provided by the manufacturer had been modified. The start/stop stacker conveyor buttons (Figure 1, Items 2 and 3) were inoperative and the main disconnect (Figure 1, Item 1) controlled the stacker conveyor in conjunction with the push button located inside the control van. According to interviews during the investigation, the modification was performed by the maintenance staff as directed by

management. The intent of the modification was to give persons the capabilities to turn the stacker conveyor on/off via the stacker button located inside the control van. The electrical modifications changed the operation of the electrical panel controls. The modifications included the following:

- (1) A push button in the control van connected/disconnected the main power source of the electrical panel.
- (2) The hydraulic pump breaker line side was moved from the main breaker load side to the main breaker line side, i.e. the main breaker was bypassed; therefore, the hydraulic motor could operate while the main disconnect was in the “off” position and the control van provided power via the stacker button located inside the control van.
- (3) The momentary push button to start the conveyor belt (Figure 1, Item 2) was bypassed; therefore, the stacker conveyor would turn on when the main disconnect was set to the “on” position and the control van provided power via the stacker button located inside the control van.

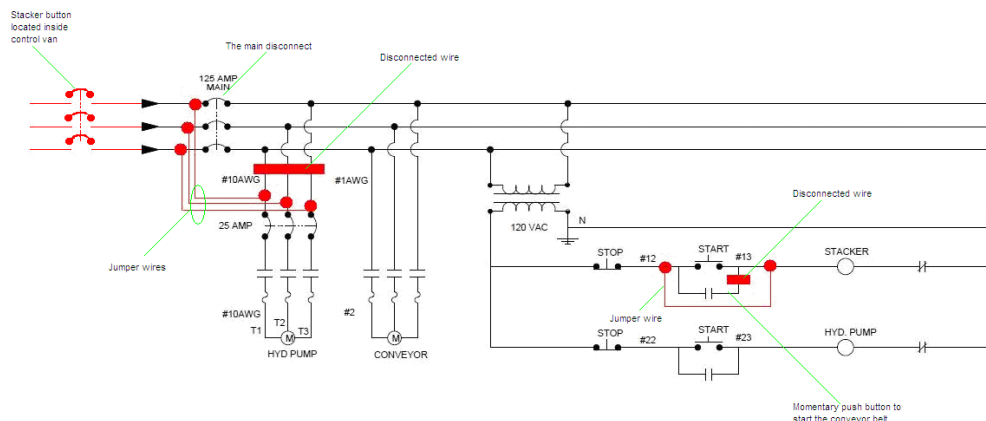


Figure 2 - Stacker Conveyor Electrical Panel Schematic with Modifications in Red. With the momentary push button to start the stacker conveyor (Figure 1, Item 2) bypassed, the stacker conveyor started when the electrical panel had power from the control van and the main disconnect switch (Figure 1, Item 1) was turned to the “on” position. Therefore, the stacker conveyor was controlled by the main disconnect (Figure 1, Item 1) in conjunction with the stacker push button in the control van rather than momentary push button to start the conveyor belt (Figure 1, Item 2) and the momentary push button to stop the conveyor belt (Figure 1, Item 3). This was not the design of the original manufacturer but was modified by the mine operator.

This modification to the wiring allowed persons to turn the main disconnect to the “on” position and start/stop the stacker conveyor by supplying/removing the power source from the electrical panel which was accomplished via the stacker button located inside

the control van. Consequences of the modification included the inability to stop the stacker conveyor via the momentary push button (Figure 1, Item 3) as the label would indicate a person could. The stacker conveyor would only temporarily slow down while the momentary push button to stop the stacker conveyor (Figure 1, Item 3) was depressed. Once the button was released, the stacker conveyor would start again.

The hydraulic motor was connected to the line side of the main breaker, allowing the hydraulic motor to operate with the main disconnect (Figure 1, Item 1) in the “off” position. This was not the design of the original manufacturer but was changed by the mine operator. This allowed a person to set the position of the stacker without starting the stacker belt conveyor. Unintended consequences of this modification included the starting of the stacker conveyor after the position of the stacker was set due to the fact that a person had to turn the main disconnect (Figure 1, Item 1) in the “on” position to regain control of the stacker conveyor from the stacker push button located inside the control van. This is the scenario that occurred at the time of the accident, causing the stacker conveyor to start while the victim was on top of the belt, subsequently throwing him off the discharge end of the belt.

Warning Siren

The warning siren for the stacker conveyor was located on the control booth about 230 feet from the location of the accident. The operating procedures for starting the stacker conveyor involved in the accident required that the warning siren be used before energizing it. On the day of the accident, the stacker conveyor was started remotely at the belt conveyor’s modified on-board control panel and the warning siren was not used.

Training and Experience

Peter Faust (victim) had approximately 18 weeks and 4 days of mining experience all at this mine. A representative of MSHA’s Educational Field Services staff conducted an in-depth review of the mine operator’s training records. Faust had not received task training for the task he was performing. Additionally, he had not received appropriate new miner training and a non-contributory citation was issued.

ROOT CAUSE ANALYSIS

A root cause analysis was conducted and the following root causes were identified:

Root Cause: Management directed the wiring to be modified to bypass the start and stop switches on the stacker conveyor’s electrical panel that was provided by the manufacturer.

Corrective Action: The wiring was returned to a manufacturer approved design.

Root Cause: Management did not ensure that safe operating procedures were followed while persons greased the head pulley of the stacking belt conveyor. The victim

accessed the stacker conveyor without ensuring that it had been deenergized, locked and tagged out, and blocked against hazardous motion.

Corrective Action: Management established policies, procedures, and controls to ensure that belt conveyors were deenergized, locked and tagged out, and blocked against hazardous motion before persons work on them. Management also installed grease lines that could be reached from the ground. A man-lift has also been provided to provide safe access. All miners have been trained regarding these new procedures.

Root Cause: Management did not ensure that safe operating procedures were followed prior to starting the stacker conveyor. The required audible warning device was not sounded at the location of the accident when the stacker conveyor was started.

Corrective Action: A standard operating procedure for sounding the horn before starting the equipment was implemented and all miners were trained accordingly.

CONCLUSION

The accident occurred because management previously directed the electrical panel for the conveyor to be modified, allowing the stacker conveyor's start/stop switches to be bypassed. The wiring was changed to bypass the start/stop switches on the stacker conveyor's electrical panel provided by the manufacturer.

At the end of each day and in preparation for the next day, the disconnect switch on the electrical panel located on the side of the stacker was placed in the "on" position so a person could remotely control the stacker conveyor from inside a control van, located approximately 230 feet away. This condition contributed to the stacker conveyor starting by a means other than recommended by the manufacturer.

Additionally, Faust was greasing the head pulley on the stacker conveyor and it was not deenergized, locked and tagged out, and blocked against motion. The audible warning device was not sounded, as required, to warn Faust who was working on the stacker conveyor that the conveyor was going to start.

ENFORCEMENT ACTIONS

Order No. 8749284 was issued on July 26, 2012, under the provisions of Section 103(j) of the Mine Act. This order was modified to Section 103(k) of the Mine Act.

A fatal accident occurred at this operation on July 26, 2012, when a miner fell from the top of the Superior powerstacker belt conveyor while he was greasing the head pulley. This order was issued to ensure the safety of all persons at this mining operation. It prohibits all activity at this mine site until MSHA has determined that it is safe to resume normal mining activities. The mine operator shall obtain prior approval from an Authorized Representative for all actions to recover and/or restore operations to the affected area.

This order was terminated on August 27, 2012, after conditions and practices that contributed to the accident no longer existed.

Citation No. 8749363 was issued on September 17, 2012, under the provisions of Section 104(a) of the Mine Act for a violation of 30 CFR 56.12016:

A fatal accident occurred at this operation on July 26, 2012. An equipment operator was greasing the head pulley on the 150 feet long Superior powerstacker belt conveyor. The head pulley was located approximately 51 feet above the ground. He was positioned on top of the belt conveyor when it was energized, throwing him off the discharge end of the belt conveyor. The electrically-powered equipment was not deenergized and locked out or other measures taken to prevent the equipment from being energized without the knowledge of the person working on it. This condition was a violation of 56.12016 or, in the alternative, 56.14105.

Citation No. 8749364 was issued on September 17, 2012, under the provisions of Section 104(d)(1) of the Mine Act for a violation of 30 CFR 56.11001:

A fatal accident occurred at this operation on July 26, 2012. An equipment operator was greasing the head pulley on the 150 feet long Superior powerstacker belt conveyor. The head pulley was located approximately 51 feet above the ground. He was positioned on top of the belt conveyor when it was energized, throwing him off the discharge end of the belt conveyor. Safe access was not provided to ascend or descend this hazardous work area. This condition contributed to the inability of the miner to safely access this work area. Management engaged in aggravated conduct constituting more than ordinary negligence in that they were aware of this unsafe work practice. This violation is an unwarrantable failure to comply with a mandatory safety standard.

Order No. 8749365 was issued on September 17, 2012, under the provisions of Section 104(d)(1) of the Mine Act for a violation of 30 CFR 56.14201(b):

A fatal accident occurred at this operation on July 26, 2012. An equipment operator was greasing the head pulley on the 150 feet long Superior powerstacker belt conveyor. The head pulley was located approximately 51 feet above the ground. He was positioned on top of the belt conveyor when it was energized, throwing him off the discharge end of the belt conveyor. An audible warning was not provided to this area when the belt conveyor was started. Management engaged in aggravated conduct constituting more than ordinary negligence in that they failed to provide a conveyor start up warning at the conveyor. This violation is an unwarrantable failure to comply with a mandatory safety standard.

Order No. 8749366 was issued on September 17, 2012, under the provisions of Section 104(d)(1) of the Mine Act for a violation of 30 CFR 56.12002:

A fatal accident occurred at this operation on July 26, 2012. An equipment operator was greasing the head pulley on the 150 feet long Superior powerstacker belt conveyor equipped with an electrical panel from the manufacturer. The head pulley was located approximately 51 feet above the ground. He was positioned on top of the belt conveyor when it was energized, throwing him off the discharge end of the belt conveyor. The electrical panel provided by the manufacturer had been modified such that the start/stop conveyor belt buttons were ineffective and the electrical panel disconnect controlled the conveyor belt. This condition contributed to the conveyor starting by a means other than what the manufacturer designed. Management engaged in aggravated conduct constituting more than ordinary negligence in that they instructed this change of design to the manufactured switches. This violation is an unwarrantable failure to comply with a mandatory safety standard.

Order No. 8749367 was issued on September 17, 2012, under the provisions of Section 104(d)(1) of the Mine Act for a violation of 30 CFR 46.7(a):

Peter Faust (victim), equipment operator, had not received the MSHA required task training on greasing the head pulleys of the belt conveyors in the plant prior to assuming his duties. Faust last received task training for operating the track-mounted dozer, front-end loader and skid steer loader on March 28, 2012, then on March 30, 2012, he was given site-specific hazard training and then he was provided annual refresher training on April 3, 2012. The mine operator was aware of the Part 46 training requirements. The Federal Mine Safety and Health Act of 1977 states that an untrained miner is a hazard to himself and to others. Management engaged in aggravated conduct constituting more than ordinary negligence in that they were aware of the training requirements and failed to provide the required training. This violation is an unwarrantable failure to comply with a mandatory safety standard.

Approved By:

Date: December 3, 2012



Richard Laufenberg
District Manager

LIST OF APPENDICES

Appendix A-Persons Participating in the Investigation

Appendix B-Victim Data Sheet

Appendix A

Persons Participating in the Investigation

Strata Corporation

Cameron Hughes	Supervisor
Michael Venaccio	Safety and Compliance Director
Nicholas Boucher	Front-end Loader Operator
Jeffery Bjerke	Plant Operator
Travis Brua	Supervisor
Bob Brinkman	Supervisor

Mine Safety and Health Administration

David Small	Mine Safety and Health Inspector
Kent Norton	Mine Safety and Health Specialist
Maxwell Clark	Electrical Engineer

Appendix B

Accident Investigation Data - Victim Information

U.S. Department of Labor

Mine Safety and Health Administration



Event Number: 6 5 5 7 5 0 8

Victim Information: 1

1. Name of Injured/Ill Employee: <i>Peter P. Faust</i>		2. Sex <i>M</i>	3. Victim's Age <i>49</i>	4. Degree of Injury: <i>01 Fatal</i>	
5. Date(MM/DD/YY) and Time(24 Hr.) Of Death: <i>a. Date: 07/26/2012 b. Time: 17:45</i>				6. Date and Time Started: <i>a. Date: 07/26/2012 b. Time: 5:00</i>	
7. Regular Job Title: <i>168 Dozer operator</i>		8. Work Activity when Injured: <i>039 Greasing head pulley on stacker conveyor</i>		9. Was this work activity part of regular job? <div style="text-align: right;">Yes No <input checked="" type="checkbox"/> X</div>	
10. Experience	Years	Weeks	Days	b. Regular	Years Weeks Days
a. This					
Work Activity:	<i>0</i>	<i>18</i>	<i>4</i>	Job Title:	<i>0 18 4</i>
				c. This	Years Weeks Days
				Mine:	<i>0 18 4</i>
				d. Total	Years Weeks Days
				Mining:	<i>0 18 4</i>
11. What Directly Inflicted Injury or Illness? <i>117 Fall to ground</i>				12. Nature of Injury or Illness: <i>370 Blunt Force Trauma</i>	
13. Training Deficiencies:					
Hazard:		New/Newly-Employed Experienced Miner:		Annual:	Task: <input checked="" type="checkbox"/> X
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:	First-Aid:	<input checked="" type="checkbox"/> X	CPR:	<input checked="" type="checkbox"/> X	EMT: <input type="checkbox"/> Medical Professional: <input type="checkbox"/> None: <input type="checkbox"/>
16. Part 50 Document Control Number: (form 7000-1)				17. Union Affiliation of Victim: <i>9999 None (No Union Affiliation)</i>	