

UNITED STATES
DEPARTMENT OF LABOR
MINE SAFETY AND HEALTH ADMINISTRATION

COAL MINE SAFETY AND HEALTH

REPORT OF INVESTIGATION

Underground Coal Mine

Fatal Falling Material Accident
August 19, 2015

Mine No. 1
Hamilton County Coal, LLC
McLeansboro, Hamilton County, Illinois
I.D. No. 11-03203

Accident Investigators

David Stepp
Staff Assistant

Michael Rennie
Supervisory Mine Safety and Health Inspector

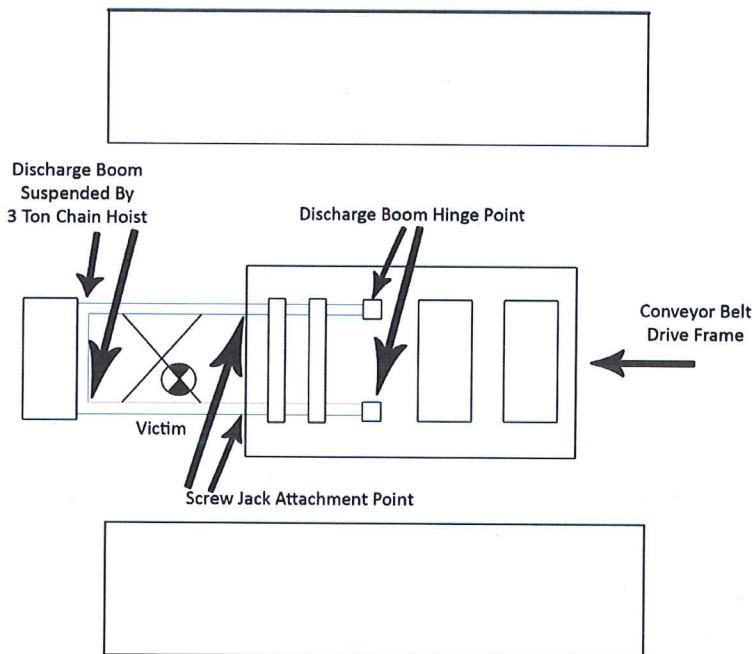
Robert L. Hatcher
Mine Safety and Health Inspector

Harry Wilcox
Mine Safety and Health Inspector

Originating Office
Mine Safety and Health Administration
District 8
2300 Willow Street
Vincennes, Indiana 47591
Ronald W. Burns, District Manager

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Images Not To Scale

OVERVIEW

On Wednesday, August 19, 2015, at approximately 8:45 p.m., William E. Swain (victim), a 45-year-old belt man, was injured when the discharge boom of a conveyor belt drive he was installing, fell and struck him on the left shoulder and neck area. He passed away on October 1, 2015. The death certificate listed clinical debilitation due to left shoulder injury as a contributing cause, and stated that the manner of death was "accident." Based on the conclusions stated on the death certificate and autopsy, MSHA's Fatality Review Committee determined that the death should be charged to the mining industry.

The accident occurred because the mine operator failed to ensure that the raised conveyor belt drive discharge boom had been securely blocked in position before miners performed work under it. Drill holes for the belt hangers being used to support the discharge boom were oversized for the roof bolts installed and were an indirect cause of the accident.

GENERAL INFORMATION

The Mine No. 1 is located near Dahlgren, Hamilton County, Illinois, and is operated by Hamilton County Coal, LLC. Coal is mined from the Herrin No. 6 coal seam, which averages 7 feet in height and has a depth-of-cover of approximately 950 feet. At the

time of the accident, the mine employed 324 personnel. The mine operates five days per week, three production shifts each day, and produces an average of 30,116 tons of raw material per day.

The mine has a dual-purpose slope. The upper compartment of the slope is a conveyor belt system used to transport coal to the surface, and the lower compartment of the slope is used to transport supplies into and out of the mine. Men are transported into and out of the mine via the dual compartment shaft at the Main Portal. The mine is ventilated with one blowing main mine fan, which is connected to the mine via a vertical shaft opening from the coal seam to the surface, and one exhausting fan located in the back of the longwall bleeder system. The mine operates one longwall mining section and two developing gate sections.

The mine liberates 1,825,477 cubic feet of methane in a 24-hour period and is on a 5-day spot inspection schedule for excessive methane in accordance with Section 103(i) of the Mine Act.

The principal officers at this mine at the time of the accident were:

Ezra French.....General Manager
Michael Hathaway..... Safety Manager

A regular (E01) safety and health inspection was ongoing at the time of the accident. This inspection began on July 2, 2015, and was completed on September 29, 2015. The Non-Fatal Days Lost (NFDL) injury incidence rate for this mine operator in 2015 was 3.10, compared to the National NFDL rate of 3.18 for mines of this type.

DESCRIPTION OF THE ACCIDENT

On Wednesday, August 19, 2015, William E. Swain, Belt Man, reported to work on the second shift. Phillip Fox, Belt Coordinator, assigned Damon Morris, Lead Belt Man, Jeffery Whitley, Belt Man, and Swain to install a temporary conveyor belt drive at the new 5th Left Gate Panel construction area.

Morris, Whitley, and Swain entered the mine at approximately 3:00 p.m. and traveled to the 5th Left construction area. They worked the first part of the shift gathering equipment and supplies needed to install the temporary belt drive. Due to the size of the complete belt drive unit, the discharge boom was disconnected from the belt drive frame to make it easier to move.

The parts of the belt drive were moved into the belt entry near where the unit was to be installed. The discharge boom was reconnected to the belt drive frame at the hinge point. A 3-ton chain hoist was then used to raise the discharge roller end of the boom so the screw jacks could be installed.

Whitley was working on the south side of the discharge boom and Swain was working directly under the boom trying to get the hole in the screw jack to line up with the hole

in the belt drive frame so they could install the pins to hold the boom in place. At approximately 8:45 p.m., the chain hangers holding the chain hoist pulled out of the mine roof, due to the weight of the discharge boom, allowing it to suddenly drop and strike Swain on the left shoulder and neck area.

At the accident site, Swain was attended to by mine personnel and then taken outside by Morris. He was transported to a local hospital emergency room by Jan Conci, Safety Technician, for treatment. Swain was released from the emergency room with an appointment to follow up with an orthopedic specialist for the pain in his left shoulder. He also was excused from work due to his injury.

On October 1, 2015, while off work due to his shoulder injury, Swain attended a public event with his wife. He became ill and complained of shortness of breath. Swain's wife called 911 and an ambulance transported him to St. Joseph Memorial Hospital in Murphysboro, Illinois. While in transit to the hospital, Swain went into cardiac arrest. Resuscitative measures were started and continued after the ambulance arrived at the emergency room. Swain was pronounced dead by Douglas Frankel, MD at 7:25 p.m.

INVESTIGATION OF THE ACCIDENT

This accident did not meet the criteria of an immediately reportable accident as outlined in 30 CFR § 50.10. An autopsy was performed at the Williamson County Coroner's Office Morgue facility in Marion, Illinois, on Saturday, October 3, 2015. The autopsy findings were used to determine the cause and manner of death.

A copy of the death certificate was provided to Ezra French, General Manager, on February 17, 2016. French immediately contacted Ronald W. Burns, District 8 Manager, to report that the manner of death listed on the death certificate was "accident." Burns contacted Michael Rennie, Supervisory Mine Safety and Health Inspector, Marion field office. Rennie assigned Robert L. Hatcher, Coal Mine Safety and Health Inspector, to travel to the mine to begin the investigation.

MSHA did not issue an order under Section 103(k) of the Mine Act because the belt conveyor drive was not being used at the time of the investigation and there had been an extended period between the time of the accident and the time of the investigation.

The accident investigation was conducted in cooperation with Hamilton County Coal, LLC personnel. Appendix A lists the persons participating in the accident investigation.

On February 18, 2016, Hatcher traveled to the mine to conduct informal interviews. See Appendix B for a list of persons interviewed. Hatcher traveled underground to the 5th Left construction area accident scene and to the storage location of the conveyor belt drive involved in the accident to collect measurements and document information.

Hatcher collected several of Swain's medical records, including those related to this accident. This information was submitted to the MSHA Fatality Review Committee (FRC) on March 3, 2016. On October 13, 2016, the FRC's medical doctor concluded that the left shoulder injury and subsequent debilitation contributed to his death, and therefore, the accident should be charged to the mining industry.

Due to a large reduction in the work force, most mine personnel present at the time of this accident were no longer employed by Hamilton County Coal, LLC when the investigation started. Therefore, no formal interviews were conducted.

DISCUSSION

Belt Installation

The 42" BW, single 150 H.P. belt drive unit, that was being installed on a temporary basis, was manufactured by Joy Global Inc. Typically, a smaller conveyor belt is installed in a new longwall gate panel so the panel can be developed to allow room for the larger longwall conveyor belt drive and its components. The discharge boom of this belt drive unit was connected to the main belt drive frame by hinge pins and screw jacks (see Appendix C). The screw jacks were installed from the bottom of the drive frame to the bottom of the discharge boom to provide support and allow the discharge roller to be raised or lowered in small increments.

When the boom fell, it did not pin the victim to the mine floor. Due to the design of the belt drive unit, when the pins are installed at the hinge point, the boom will hit the frame of the belt drive, leaving approximately 4 feet between the bottom of the discharge boom and the mine floor.

Chain Hanger Roof Bolts

The chain hoist used to lift the discharge boom was attached to the mine roof by hooking it into chain hangers that had been installed in the roof to permanently support the conveyor belt structure. The chain hangers were installed in the mine roof using 36 inch long, 5/8 inch diameter, conventional roof bolts equipped with a bail type expansion shell (see Appendix D). The holes drilled into the mine roof measured 37 inches deep for the north hole and 36 inches deep for the south hole. The inside diameter of the holes measured $1 \frac{7}{16}$ inch for the north hole and $1 \frac{1}{2}$ inch for the south hole. The manufacturer recommends $1 \frac{3}{8}$ inch drill hole for these bolts. MSHA standard 30 CFR § 75.204(e)(1) requires: "the diameter of finishing bits shall be within a tolerance of plus or minus 0.030 inch of the manufacturer's recommended hole diameter for the anchor used." Both the north and south drill holes exceeded the 0.030 inch tolerance of the manufacturer's recommended hole diameter. MSHA issued a noncontributory citation for a violation of 30 CFR § 75.204(e)(1).

Securely Blocking in Position

When performing work under machinery or equipment that has been raised, the machinery or equipment is required to be securely blocked in position. Instead of properly blocking the belt conveyor drive discharge boom in position prior to working underneath it, Swain and Whitley depended on the chain hoist attached to the mine roof mounted chain hangers to support the discharge boom.

Training and Experience

Swain had 7 years and 26 weeks of total mining experience with 1 year and 50 weeks at this mine. All of Swain's time at this mine was spent as a belt man. During Swain's mining career he obtained experience in blocking equipment and/or machinery against motion. A review of Swain's training records indicated he received the appropriate Part 48 training.

ROOT CAUSE ANALYSIS

The accident investigation team conducted an analysis to identify the underlying cause of the accident that was correctable through reasonable management controls. The team identified a root cause that, if eliminated, would have either prevented the accident or mitigated its consequences.

Listed below is the root cause identified during the analysis and the corresponding corrective action implemented to prevent a recurrence of the accident.

1. Root cause: The mine operator failed to ensure that the raised belt conveyor drive discharge boom had been securely blocked in position before miners performed work under it.

Corrective action: The mine operator developed a written blocking policy to comply with 30 CFR § 75.1726(b) when miners work on or under equipment or machinery that is in a raised position. Miners have been trained in the blocking policy. This policy will be reviewed during annual refresher, newly employed inexperienced miner, experienced miner, and new task training.

CONCLUSION

Belt man William Swain died as a result of injuries he sustained when he was struck by a discharge boom of a conveyor belt drive. The accident occurred because the mine operator failed to ensure the raised belt conveyor drive discharge boom had been securely blocked against motion before miners performed work under it. Drill holes for the belt hangers being used to support the discharge boom were oversized for the roof bolts installed and was an indirect cause of the accident.

Approved By:

Ronald W. Burns

Ronald W. Burns
District Manager

3/16/2017

Date

ENFORCEMENT ACTIONS

1. 104(d)(1) Citation No. 9039248 was issued for a violation of 30 CFR § 75.1726(b). On August 19, 2015, at approximately 8:45 p.m., a miner was injured while working to install the discharge boom of the 5th Left temporary belt conveyor drive unit. The discharge boom was in a raised position and was not securely blocked against motion. The victim received injuries when the discharge boom fell, striking him on the left shoulder and neck area. The victim later passed away due to complications from this accident. The mine operator has engaged in aggravated conduct constituting more than ordinary negligence. This violation is an unwarrantable failure to comply with a mandatory standard.

APPENDIX A

Persons Participating in the Investigation

Mine Safety and Health Administration

David Stepp
Michael Rennie
Robert L. Hatcher
Harry Wilcox

Staff Assistant
Supervisory Mine Safety and Health Inspector
Coal Mine Safety and Health Inspector
Coal Mine Safety and Health Inspector

Management Personnel

Ezra French
Michael Hathaway

General Manager
Safety Manager

APPENDIX B

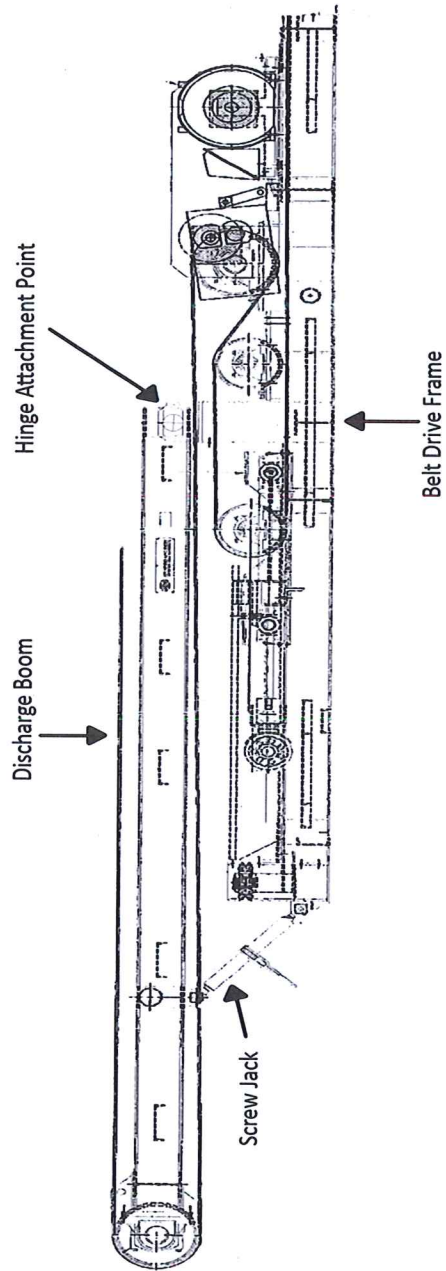
List of Persons Interviewed

Damon Morris
Jeffery Whitley
Phillip Fox
Wes Jackson

Lead Belt Man
Belt Man
Belt Coordinator
Section Foreman

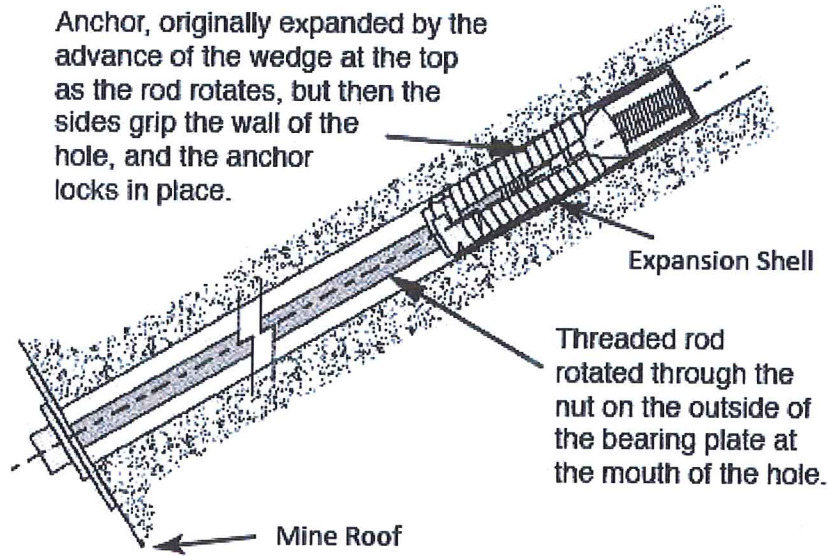
APPENDIX C

Drawing of Conveyor Belt Drive Unit



APPENDIX D

Conventional Roof Bolt



APPENDIX E

Victim Information

Accident Investigation Data - Victim Information

U.S. Department of Labor

Event Number:

Mine Safety and Health Administration



Victim Information: 1														
1. Name of Injured/Ill Employee: <i>William E. Swain</i>				2. Sex <i>M</i>		3. Victim's Age <i>45</i>		4. Degree of Injury: <i>01 Fatal</i>						
5. Date(MM/DD/YY) and Time(24 Hr.) Of Death: <i>a. Date: 10/01/2015 b. Time: 19:25</i>								6. Date and Time Started: <i>a. Date: 08/19/2015 b. Time: 15:00</i>						
7. Regular Job Title: <i>001 Bellman</i>				8. Work Activity when Injured: <i>041 Installing Conveyor Belt Drive</i>				9. Was this work activity part of regular job? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>						
10. Experience														
a. This			Years	Weeks	Days	b. Regular			Years	Weeks	Days	c. This		
Work Activity:			<i>1</i>	<i>50</i>	<i>6</i>	Job Title:			<i>1</i>	<i>50</i>	<i>6</i>	d. Total		
												Mining: <i>7 26 0</i>		
11. What Directly Inflicted Injury or Illness? <i>035 Conveyor Belt Drive Discharge Boom</i>								12. Nature of Injury or Illness: <i>160 Contusion to Left Shoulder and Neck</i>						
13. Training Deficiencies:														
Hazard:		New/Newly-Employed Experienced Miner:				Annual:		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 checked="" type="checkbox"/>		CPR: <input type="checkbox"/>		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>						