

UNITED STATES
DEPARTMENT OF LABOR
MINE SAFETY AND HEALTH ADMINISTRATION

REPORT OF INVESTIGATION

Surface
(Crushed, Broken Limestone NEC)

Fatal Machinery Accident
August 21, 2020

Moore Quarry
Martin Marietta Materials Inc.
Gilmore City, Pocahontas County, Iowa
ID No. 13-02188

Accident Investigators

James A. Hines
Mine Safety and Health Inspector

Anthony Runyon
Supervisory Mine Safety and Health Inspector

Originating Office
Mine Safety and Health Administration
Central Region
Duluth District
515 West First Street, Room 323
Duluth, Minnesota 55802-1302
Christopher A. Hensler, District Manager

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OVERVIEW

On August 21, 2020, Dennis A. Dose, a 69 year-old tractor-trailer driver with ten years of professional over-the-road driving experience, sustained fatal head injuries while he was deploying the tarp system on his fifth-wheel side-dump trailer.

After activating the automatic tarp deployment system, Dose was walking beside the trailer when the tarp system drive chain came off the sprockets. This caused the tarp roll tube to deploy uncontrolled and strike him in the head.

GENERAL INFORMATION

Martin Marietta Materials Inc. owns and operates the Moore Quarry in Gilmore City, Pocahontas County, Iowa. Moore Quarry employs 30 miners and operates two, eleven-hour shifts, five days a week. Miners drill and blast to extract the limestone. Miners crush and screen the limestone to specified sizes to make various products, including agricultural lime (ag-lime).

The principal officers for Martin Marietta Materials Inc. at the time of the accident were:

C. Howard Nye	President, Chief Executive Officer
Jim Nickolas	Senior Vice President, Chief Financial Officer
Roselyn Bar	Executive Vice President, General Counsel, Corporate Secretary
Craig LaTorre	Senior Vice President, Human Resources

The Mine Safety and Health Administration (MSHA) completed the last regular inspection of the mine on January 21, 2020. The non-fatal days lost (NFDL) incident rate for the Moore Quarry in 2019 was 0 compared to the national average of 1.05.

Dennis A. Dose was employed by Darron Uhl Trucking LLC as an over-the-road tractor-trailer driver. Nutrien Ag Solutions contracted Darron Uhl Trucking LLC to transport ag-lime from the Moore Quarry to the Nutrien Ag Solutions facility in Odebolt, Iowa. Nutrien Ag Solutions is a supplier of fertilizer, lime, and farm chemicals.

DESCRIPTION OF THE ACCIDENT

On August 21, 2020, at 6:00 a.m., Dose arrived at the Moore Quarry to receive a load of ag-lime. After receiving the load, Dose drove to the scale and received a scale ticket at 7:32 a.m. Dose then drove to the area designated for customer trucks to tarp their loads.

After he departed the scale, no one observed Dose until approximately 7:35 a.m., when Kregg Schaffer, Truck Driver, observed him lying on the ground. Schaffer radioed Brenda Benjamin, Scale Clerk, and informed her that a person was lying on the ground near the back of the trailer. Benjamin went to the office and informed Guy Dewey, Plant Manager, John Weydert, Leadman, and Duane Lathrop, Leadman, that there was a person lying on the ground in the tarping area. Dewey, Weydert, and Lathrop responded. Weydert began cardiopulmonary resuscitation on the victim. Lathrop secured the scene to ensure emergency personnel would have safe access to the area. Dewey radioed Benjamin to call 911, and drove to the main road to direct emergency responders to the scene.

Gilmore City Ambulance Service and Pocahontas County Ambulance Service arrived on-site at approximately 7:57 a.m. Pocahontas County Ambulance Service transported Dose to Pocahontas Community Hospital. Dose was air-lifted by helicopter to Iowa Methodist Medical Center. Dr. Richard Sidwell pronounced Dose dead at 1:25 p.m.

On August 21, 2020, at approximately 10:30 a.m., Nutrien Ag Solutions sent two truck drivers to the mine to pick up the victim's tractor-trailer. They found the tarp hanging loosely over the driver's side of the trailer and not rolled back to the tightened transport position. Ryan Hemer and Brady Pudenz, Truck Drivers, activated the truck's tarp system. Hemer and Pudenz both stated that the tarp system "made noise but did not move the tarp." Before moving the truck, Hemer and Pudenz removed the cover off the drive box and found the chain had slipped off the roll tube drive sprocket. They reinstalled the chain so the tarp could be rolled back to the tightened transport position. Hemer drove the truck off the mine site that day at approximately 10:45 a.m.

INVESTIGATION OF THE ACCIDENT

On August 21, 2020, at 10:15 a.m., Matt Kapuska, Safety Manager for Central Division West at Martin Marietta, contacted the Department of Labor National Contact Center (DOLNCC). The DOLNCC contacted Christopher A. Hensler, District Manager. Around the same time, Anthony

Runyon, Supervisory Mine Safety and Health Inspector, received notification from Kapuska informing him of a potential heart attack at the Moore Quarry.

On August 24, 2020, at 3:00 p.m., James A. Hines, Mine Safety and Health Inspector, arrived on scene to investigate the reported heart attack, but found the facts were inconsistent with a heart attack. MSHA's accident investigation team conducted interviews and a physical examination of the accident scene where the truck had been located. Investigators traveled to the Darron Uhl Trucking LLC shop and examined the tractor-trailer and tarp system involved in the accident. See Appendix A for a list of persons who participated in the investigation.

DISCUSSION

Location of the Accident

The accident occurred at Moore Quarry's designated tarping area across from the scale house on the west side of 330th Avenue in Gilmore City, Iowa.

Equipment Involved

The victim was operating a 2013 Mack tractor with a Smith Co. side-dump fifth-wheel trailer. The trailer was equipped with an Aero Side Kick 2 tarp system.

The Aero Side Kick 2, manufactured by Aero Industries, Inc., is an automated tarp system designed to cover the box of fifth-wheel side-dump trailers to prevent material from blowing out of the trailer during transport. The automated tarp system uses two swing arms, a roll tube, and an electric motor to deploy a tarp over the box of the side-dump trailer. One end of the tarp is attached to the passenger side of the trailer while the other end of the tarp is attached to the roll tube. The swing arms have torsion springs that apply tension to the swing arms and roll tube. The tension of the torsion springs drive the swing arms and roll tube across the trailer box to the covered position, while the electric drive motor assembly acts as a brake to counteract the spring tension. When uncovering a load, the drive motor rolls the tarp onto the roll tube, thereby reapplying tension to the swing arm torsion springs.

Cause of the Accident

Although Dose's death was reported to MSHA as a heart attack, testimony and reports from both ambulance services indicated that Dose suffered a head injury. The medical examiner's report and the death certificate both list the cause of death as "Cranio-cerebral Trauma." Investigators received no testimony that indicated the victim was wearing a hard hat at the time of the accident.

Although there were no eyewitnesses, physical and testimonial evidence indicate the accident likely occurred as follows:

After arriving in the designated tarping area, Dose exited the cab of the truck and initiated the trailer's Side Kick 2 tarp system near the front of the side dump trailer (see Appendix B) and walked along the driver's side of the dump trailer toward the trailer axel area (see Appendix C).

As the Side Kick 2 tarp system deployed, the tarp's roller chain that restricts the speed of deploying the system with spring tension, came off the sprockets (see Appendix D). This allowed the tension of the swing arms torsion springs to release (see Appendix E) and allowed the roll tube to deploy uncontrollably and strike Dose in the head.

Tarp Controller and Control Switch

The tarp controller and control switch that control the direction of travel of the tarp system are located on the frame of the trailer's tongue (see Appendix B). The tarp controller allows the tarp system to continue to extend/retract without constant pressure applied to the control switch. Once the tarp system fully extends or retracts, the controller automatically switches to the off position.

Investigators determined that a non-automatic tarp control switch was initially installed inside the cab of the truck, but was replaced with an automatic-type controller with a built-in switch and repositioned to the frame of the trailer's tongue to enable this trailer to be attached to other trucks. The original non-automatic switch required constant pressure to be applied by the driver to extend or retract the tarp system.

Weather

The weather at the time of the accident was sunny and 66 degrees with a light south-southwest wind. Investigators determined that weather was not a factor in the accident.

Training and Experience

Dennis Dose had worked as a tractor-trailer driver for Darron Uhl Trucking LLC for eight years. Dose had received the required Part 46 Site-Specific Hazard Awareness Training from Martin Marietta Materials Inc.

ROOT CAUSE

The accident investigation team conducted a root cause analysis to identify the underlying cause of the accident and fatality. The team identified the following root cause:

Root Cause: The owner of the side-dump trailer did not prevent persons from walking or working alongside the trailer during the tarp system extend/retract cycle or require persons to wear hard hats when exiting the truck.

Corrective Action: The owner is installing a switch that requires the driver to provide constant pressure to extend or retract the tarp system. The owner is also implementing a policy that requires persons walking or working near the trailer to wear hard hats, and is training persons not to enter the hazardous area while the tarp system is being extended or retracted. Furthermore, the owner is also placing signs at the end of each trailer that warn of potential struck-by hazards.

The mine operator has erected warning signs in the tarping area. The signs instruct truck drivers of the hazards posed by tarp system moving parts during the extension and retraction of tarps.

CONCLUSION

On August 21, 2020, Dennis A. Dose, a 69 year-old tractor-trailer driver with ten years of professional over-the-road driving experience, sustained fatal head injuries while he was deploying the tarp system on his fifth-wheel side-dump trailer.

After activating the automatic tarp deployment system, Dose was walking beside the trailer when the tarp system drive chain came off the sprockets. This caused the tarp roll tube to deploy uncontrolled and strike him in the head.

Approved By:

Christopher A. Hensler
District Manager

Date

ENFORCEMENT ACTION

A 103(k) Order was issued to Martin Marietta Materials Inc. as follows:

A fatal accident occurred at this operation on August 21, 2020, when a customer truck driver was working in the tarping area west of the scale house. This order is issued to assure the safety of all persons at this operation. It prohibits all activity 50 yards south of the stockpile extending to the southern edge of the tarping area and the entire width running east to west of that same tarping area until MSHA has determined that it is safe to resume normal mining operations in this area. The mine operator shall obtain prior approval from an authorized MSHA representative for all actions to recover and/or restore operations to the affected area.

APPENDIX A
Persons Participating in the Investigation

Darron Uhl Trucking LLC

Darron Uhl	Owner
Jianna Uhl	Co-Owner

Nutrien Ag Solutions

Ryan Hemer	Truck Driver
Brady Pudenz	Truck Driver

Martin Marietta Materials Inc.

Guy Dewey	Plant Manager
Matt Kapuska	Safety Manager for Central Division West
John Weydert	Leadman
Duane Lathrop	Leadman
Brenda Benjamin	Scale Clerk

Independent Truck Driver

Kregg Schaffer	Truck Driver
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Gilmore City Ambulance Service

Alissa Wiemers	Emergency Medical Technician/Registered Nurse
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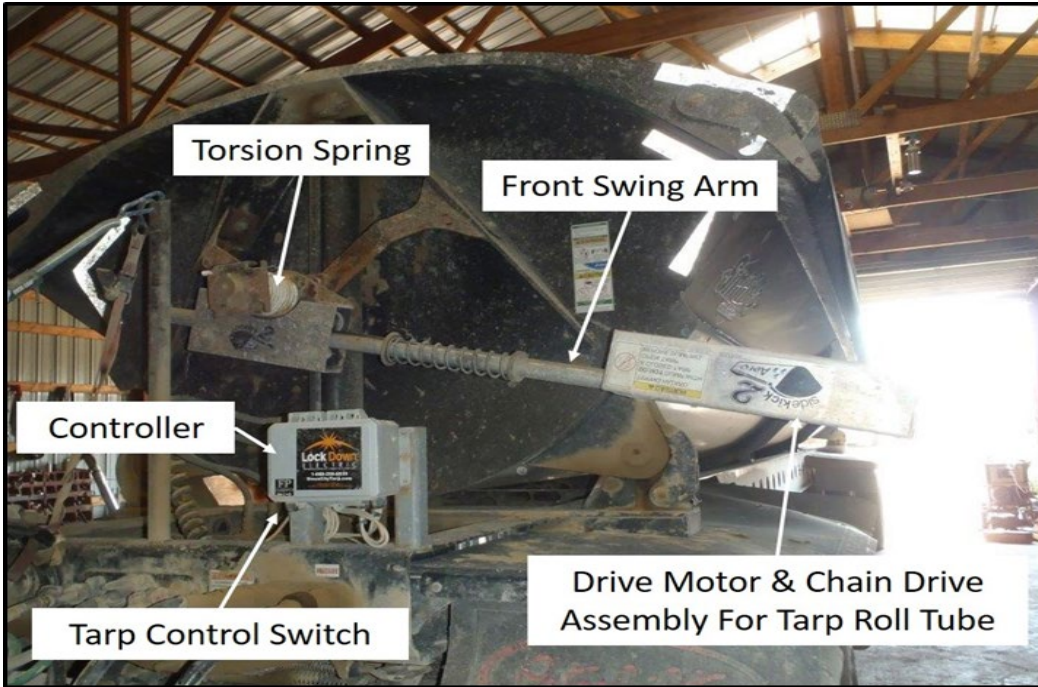
Pocahontas County Ambulance Service

Patrick Moorey	Emergency Medical Service Coordinator
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Mine Safety and Health Administration

James A. Hines	Mine Safety and Health Inspector
Anthony Runyon	Supervisory Mine Safety and Health Inspector
F. Terry Marshall	Mechanical Engineer

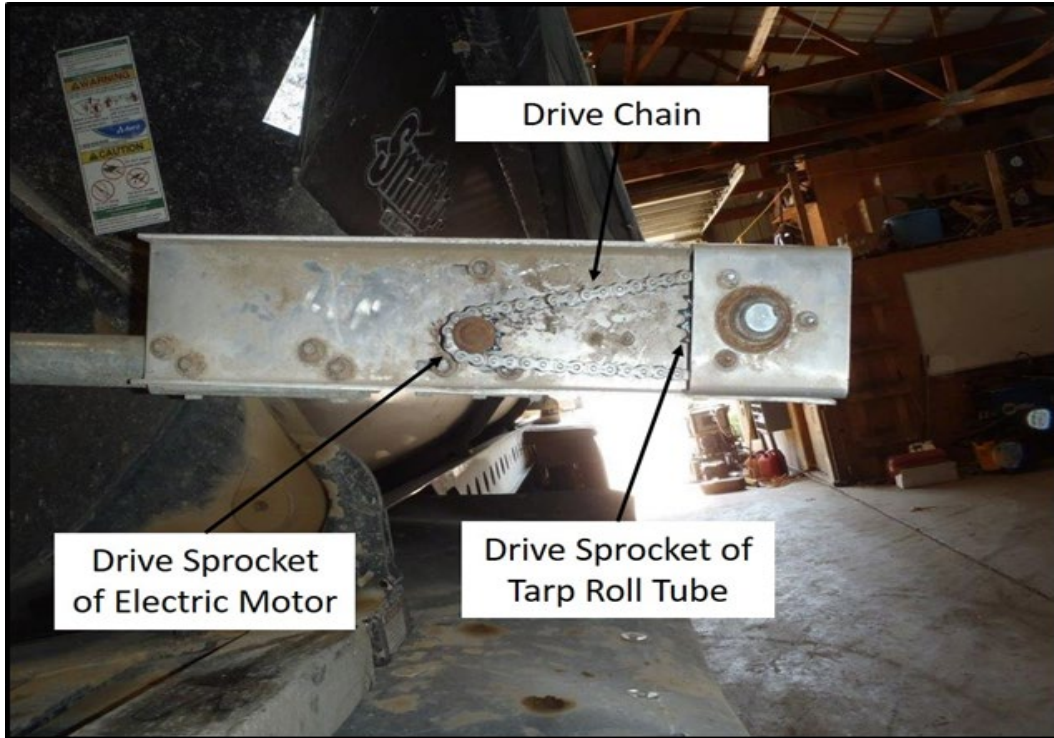
APPENDIX B
Tarp System Controls



APPENDIX C
Auxiliary Lift Axle Control Switch



APPENDIX D
Drive Box Unit Assembly



APPENDIX E
Roll Tube in the Fully-Opened Position with the Tarp Hanging Loosely

