

UNITED STATES  
DEPARTMENT OF LABOR  
MINE SAFETY AND HEALTH ADMINISTRATION

REPORT OF INVESTIGATION

Underground  
(Bituminous Coal)

Fatal Fall of Face, Rib, Pillar or Highwall Accident  
March 2, 2022

Maple Springs Mine  
LCT Energy, LP  
Hollisopple, Somerset County, Pennsylvania  
ID No. 36-09973

Accident Investigators

David McDonald  
Mine Safety and Health Inspector

Jason Boring  
Mine Safety and Health Specialist

Originating Office  
Mine Safety and Health Administration  
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## OVERVIEW

On March 2, 2022, at approximately 11:00 a.m., Paul Springer, a 44 year-old scoop operator with approximately 15 years of mining experience was fatally injured when a rock brow (an overhanging rock from the pillar rib) fell and struck him. At the time of the accident, Springer was positioned between a roof bolting machine and the mine rib.

The accident occurred because the mine operator was unable to detect the hazard presented by the rock brow due to its shape and lack of visible cracks or separations.

## GENERAL INFORMATION

LCT Energy, LP owns and operates the Maple Springs Mine located in Hollsopple, Somerset County, Pennsylvania. The underground mine operates a single mechanized mining unit in the Lower Kittanning coal seam (bituminous) with an average mining height of 50 inches. The mine employs 50 miners, and operates two, ten-hour shifts, five days per week. Maple Springs Mine uses the room and pillar mining method in which coal is partially mined, creating open rooms and leaving large pillars of coal intact to support the roof.

The mine operator extracts coal using a continuous mining machine (CMM), which is then transported by rubber-tired shuttle cars to a dumping point. From the dumping point, the mine operator uses a belt conveyor to transport coal to the surface. The mine uses self-propelled, rubber-tired personnel carriers and scoops to transport miners and materials in and out of the mine.

The principal management officials at Maple Springs Mine at the time of the accident were:

Joseph Kimmel  
Ronald Weakland

Mine Superintendent  
Mine Foreman

The Mine Safety and Health Administration (MSHA) completed the last regular safety and health inspection at this mine on December 21, 2021. The 2021 non-fatal days lost injury incidence rate for the Maple Springs Mine was 2.59 compared to the national average of 3.48 for mines of this type.

## DESCRIPTION OF THE ACCIDENT

On March 2, 2022, at 6:00 a.m., the Main A crew entered the mine to advance the electrical power center and belt conveyor on the Main A Section (Section). The miners arrived on the Section at approximately 6:30 a.m. Ronald Weakland, Mine Foreman, brought Mathew Owens, Underground Bituminous Mine Inspector for the Pennsylvania Bureau of Mine Safety (PA BMS), to the Section to continue his inspection of the CMM. Bradley Lepley, Section Mechanic, and Joshua Sarver, Chief Mine Electrician, assisted Owens with the CMM. The other miners were actively working on maintenance of the Section feeder, placing floor-to-roof support (cribs) in the No. 4 and No. 5 entries, and advancing the electrical power center in the No. 5 entry.

At approximately 10:55 a.m., Springer approached Bradley Speigle, Roof Bolter, and Dylan Drenner, Roof Bolter, on foot as they were working on the roof bolting machine in the No. 5 entry. While standing between the coal pillar and the operator's compartment canopy of the roof bolting machine, Springer asked Speigle and Drenner to move the roof bolting machine out of the entry to allow him to drive his scoop through the No. 5 entry. At approximately 11:00 a.m., a rock brow fell from above the coal rib, striking Springer and forcing his chest against the canopy. Springer freed himself and yelled for help while walking inby the roof bolting machine to notify Speigle that he needed medical assistance. Springer told Speigle that the rock landed on his lower leg or foot. Speigle immediately yelled for someone to find Justin Logue, Shuttle Car Operator, who is also an Emergency Medical Technician. Logue was located two crosscuts outby in the No. 4 entry. Speigle helped Springer walk approximately 14 feet outby and sit down.

Owens was inspecting the CMM when he heard the calls for help. Owens immediately went to Springer to provide first aid. Weakland was assisting with maintenance of the Section feeder when he heard the calls for help and also went to Springer, arriving just after Owens. Springer was sitting on the mine floor complaining of chest pain. David Koval, Section Foreman, heard yelling coming from his location outby in the No. 4 entry and traveled to Springer's location, accompanied by Mathew Certo, Utility Person.

Certo retrieved the first aid kit and the backboard located near the electrical power center in the No. 5 entry. Koval told Cody Frederick, CMM Operator, to bring the personnel carrier to the accident scene. Weakland and Owens secured Springer on the backboard. Logue arrived and helped place Springer on the personnel carrier.

At approximately 11:05 a.m., Frederick drove the personnel carrier out of the Section while Weakland and Logue monitored Springer. Springer lost consciousness and Weakland began cardiopulmonary resuscitation (CPR), but stopped when he felt a pulse.

James Dallas, Safety Manager, was on the surface when he heard the Emergency Medical Services (EMS) request. Dallas immediately traveled into the mine on a personnel carrier with an enhanced set of emergency supplies that included medical oxygen. Dallas met the personnel carrier that was transporting Springer and turned and followed it as they traveled toward the surface. The personnel carrier holding Springer had mechanical problems approximately two miles from the surface, so Springer was transferred to the personnel carrier that Dallas was operating.

Weakland and Dallas monitored Springer, administered oxygen, and as Logue drove to the surface, Weakland began performing CPR again. Springer was in and out of consciousness when he arrived at the surface where Conemaugh Township EMS was waiting. Paramedics assumed care and transported Springer to Conemaugh Hospital where Ira Hart, Cambria County Deputy Coroner, pronounced him dead at 12:07 p.m.

## INVESTIGATION OF THE ACCIDENT

On March 2, 2022, at 11:29 a.m., Joseph Kimmel, Mine Superintendent, called the Department of Labor National Contact Center (DOLNCC) to report a serious accident. The DOLNCC contacted Susan Sikora, Secretary, who notified Michael Kelley, District Manager. Kelley contacted Dennis Zeanchock, Supervisory Mine Safety and Health Inspector, who sent William Kibler, Jr., Mine Safety and Health Inspector, to the mine. Kelley also contacted and sent Jason Boring, Mine Safety and Health Specialist, to the mine. Kibler arrived at the mine site at 12:48 p.m., met with mine management, and began to gather preliminary information. Zeanchock arrived at the mine site at 1:30 p.m., and issued an order under the provisions of Section 103(k) of the Mine Act to assure the safety of the miners and preservation of evidence. Boring arrived at 2:00 p.m.

Kelley contacted Richard Gray, Supervisory Mine Safety and Health Inspector, who sent David McDonald, Mine Safety and Health Inspector, to the mine the following morning to lead the investigation. In conjunction with PA BMS, MSHA's accident investigation team conducted an examination of the accident scene, interviewed miners and mine management, and reviewed conditions and work practices relevant to the accident. See Appendix A for a list of persons who participated in the investigation.

## DISCUSSION

### Location of Accident

The accident occurred in the Main A Section, in the No. 5 entry approximately 210 feet from the working face on the corner of the coal pillar between the No. 4 and No. 5 entries (see Appendix B). The No. 5 entry was mined approximately 18 feet wide, and the depth of cover was about 400 feet at the accident site.

Adverse roof conditions were encountered when the accident site was originally mined, approximately two weeks before the accident occurred (more details regarding the adverse roof are presented below in the "Geology" section). The area of loose roof had been removed with a

CMM, as was a standard practice at Maple Springs Mine according to interviews. The resulting mining height was 4.5-5.5 feet including 1.5-2 feet of roof rock.

The removal of the adverse roof resulted in a slightly arched entry profile, which in turn created a rock brow that was not rectangular or stair-stepped like a typical rock brow, but instead was angled at about 45 degrees from the top of the coal rib to the flat roof (see Appendix C). The rock brow fell when an unseen vertical tension fracture developed at the back of this rock brow above the coal rib line. Investigators estimated that the rock brow measured 52 inches long, 24 inches wide, and 18 to 24 inches thick.

### Geology

On March 8, 2022, Kelley, Boring, Owens, and Heather Campbell, Geologist for PA BMS; Sandin Phillipson, Senior Geologist for MSHA Technical Support; and Christopher Snyder, Civil Engineer for MSHA Technical Support, traveled underground to examine the roof and rib conditions in the Section.

The Section had advanced by eight crosscuts during two months of mining into a geological feature known as a compaction zone. A compaction zone is an area where shale and coal deform over time beneath a body of sandstone. The compaction zone in Main A hosts a series of slickensides (polished fault surfaces) that deformed the roof and ribs (see Appendix D).

The compaction zone has two sides (see Appendix B). The left side was first encountered in the No. 1 entry about seven crosscuts outby the accident site and the right side was first encountered in the No. 7 entry about five crosscuts outby the accident site. The left and right sides come together within 60 feet of each other at the accident site, increasing the deformation of the roof and ribs. Slickensides weakened the coal seam, although very little sloughing was apparent immediately after the accident. The slickensides were the source of the adverse roof that was removed before the accident.

### Roof Control Plan and Support

The approved roof control plan states that in areas of adverse roof conditions, where a slip, cutter, clay vein, or faults are visible, the minimum length of roof bolt will be six feet. These roof bolts will be used in conjunction with either:

- a) Channels, straps or cross bars,
- b) Reduced roof bolt spacing,
- c) Larger roof bolt bearing plates, or
- d) Cable bolts anchored in a minimum of two feet of competent material.

Prior to the accident, the mine operator recognized the sub-normal roof conditions and was installing longer primary support with T-3 channels throughout the Section and 12-foot cable bolts in accordance with the roof control plan. The approved plan did not have any provisions for supporting or removing rock brows.

### Examinations

The on-shift and preshift examinations were made on the Section as required. No hazardous conditions were recorded in relation to the ribs and roof for the day of the accident or the two preceding shifts. Based on interviews and observations at the accident site, the rock brow that fell was wedge-shaped rather than the rectangular shape that is typical of rock brows. The rock brow did not appear to have any visible cracks or separations that would have indicated that it was susceptible to falling out at the time of the accident (see Appendix C).

Rock brows along the rib are unusual features at the Maple Springs Mine, because they are linked to the localized compaction zone in Main A and its associated slickensided, adverse roof. However, the mine operator was unaware of the compaction zone. The mine operator was also unaware that the slickensides that affected the roof also affected the wedge-shaped rock brows. The existence of the compaction zone was discovered during the accident investigation. For these reasons, investigators determined that examiners did perform adequate examinations.

The roof control plan required miners to examine the roof and ribs in an area prior to working in that area. Examiners did not identify the rock brow as a hazard for the same reasons as the preshift and on-shift examiners. Examiners believed that the quantity and type of support that was installed were sufficient to provide adequate protection.

### Training and Experience

Paul Springer had approximately 15 years of mining experience and worked at Maple Springs Mine for over 21 weeks. Springer received experienced miner training on October 4, 2021. Investigators reviewed the training records and found that Springer received all training in accordance with MSHA Part 48 training regulations.

## ROOT CAUSE ANALYSIS

The accident investigation team conducted an analysis to identify the underlying causes of the accident. The team identified the following root cause, and the mine operator implemented the corresponding corrective action to prevent a recurrence.

Root Cause: The mine operator was unable to detect the hazard presented by the rock brow due to its shape and lack of visible cracks or separations.

Corrective Action: The mine operator trained all miners to identify this specific type of rock brow. The mine operator proposed, and MSHA approved, an amendment to their roof control plan that addresses adequately supporting ribs and rock brows in areas that have loose material in the roof due to adverse roof and rib conditions. When rock brows are encountered during mining they will be removed, if possible. If a rock brow cannot be removed, it will be secured during the roof bolting cycle. The roof bolters will be informed of the rock brow before they enter the cut. If it cannot be supported, the rock brow will be dangered off immediately and recorded by the end of the shift. The mine operator trained all miners on this amendment to their roof control plan.

## CONCLUSION

On March 2, 2022, at approximately 11:00 a.m., Paul Springer, a 44 year-old scoop operator with approximately 15 years of mining experience, was fatally injured when a when a rock brow (overhanging rock from the pillar rib) fell and struck him. At the time of the accident, Springer was standing between a roof bolting machine and the mine rib.

The accident occurred because the mine operator was unable to detect the hazard presented by the rock brow due to its shape and lack of visible cracks or separations.

Approved By:

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Michael Kelley  
District Manager

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Date



## ENFORCEMENT ACTIONS

1. A 103(k) order was issued to LCT Energy, LP.

A fatal accident occurred on March 2, 2022, at approximately 11:00 a.m. This order is being issued under the authority of the Federal Mine Safety and Health Act of 1977, under Section 103(k) to insure the safety of all persons at the mine, and requires the operator to obtain the approval of an authorized representative of MSHA of any plan to recover any person in the mine or to recover the mine or affected area. This order prohibits any activity in the affected area. The operator is reminded of the obligation to preserve all evidence that would aid in investigating the cause or causes of the accident in accordance with 30 CFR 50.12.

2. A 104(a) citation was issued to LCT Energy, LP for a violation of 30 CFR 75.202(a).

On March 2, 2022, a scoop operator on the Main A Section was fatally injured when a rock brow fell and struck him. While the scoop operator was standing between the coal pillar and the operator's compartment canopy of a roof bolting machine, a large, wedge-shaped rock brow fell from above the coal rib, striking the scoop operator and forcing his chest against the canopy. The mine operator did not adequately support or otherwise control the roof and ribs in areas where miners work or travel.

APPENDIX A – Persons Participating in the Investigation

LCT Energy, LP

Donald Foster	Safety Director
James Dallas	Safety Manager
Joseph Kimmel	Mine Superintendent
Joshua Sarver	Chief Mine Electrician
Ronald Weakland	Mine Foreman
David Koval	Section Foreman
Ryan Heffelfinger	Assistant Chief Electrician
Justin Hutsky	Assistant Chief Electrician
Nicholas Botteicher	Shuttle Car Operator
Kenneth Boyce	Shuttle Car Operator
Justin Logue	Shuttle Car Operator
Mathew Certo	Utility Person
Dylan Drenner	Roof Bolter
Andrew Frederick	Roof Bolter
Geoffrey Lang	Roof Bolter
Bradley Speigle	Roof Bolter
Bradley Lepley	Section Mechanic
Cody Frederick	CMM Operator

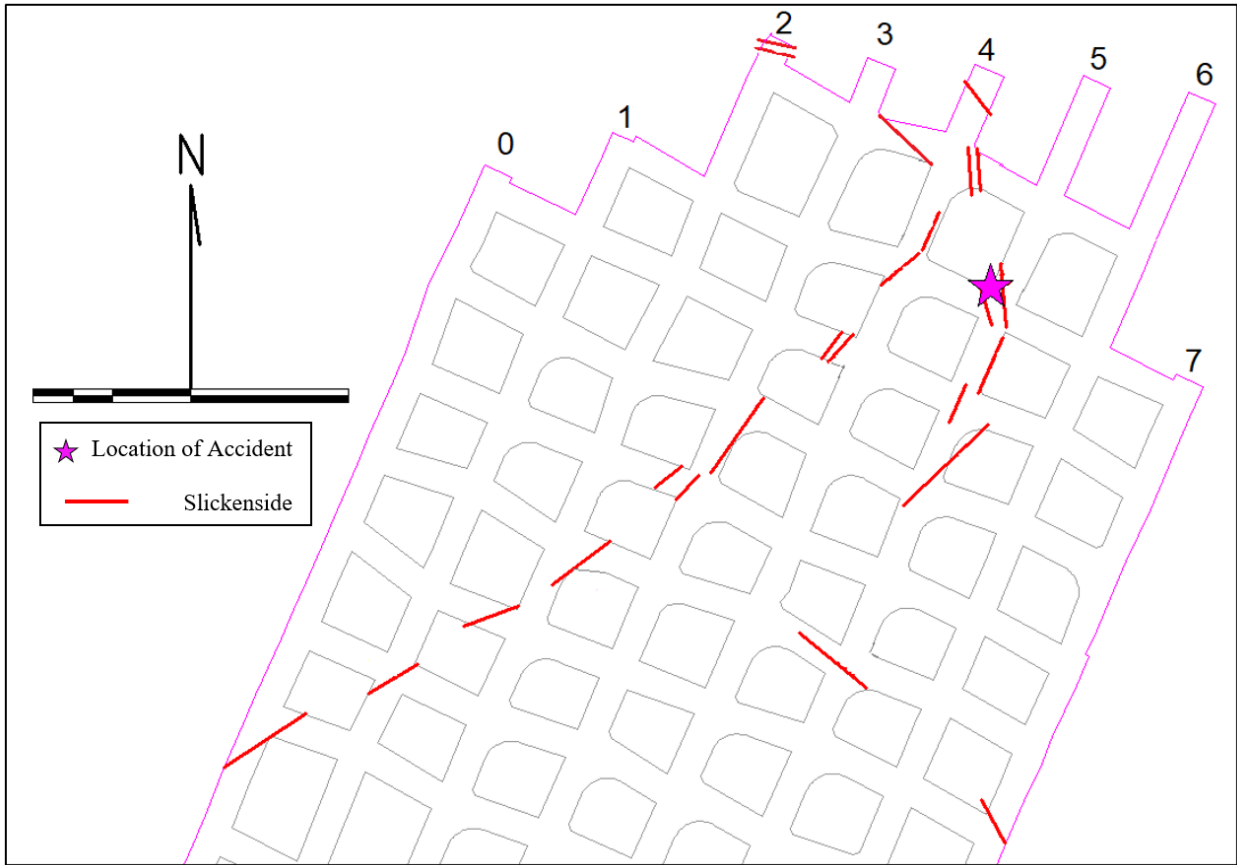
Pennsylvania Bureau of Mine Safety

William Hudak	Engineering Manager
Mark Gindlesperger	Underground Bituminous Mine Inspector Supervisor
Richard Murphey	Underground Bituminous Mine Inspector Supervisor
Michael Castner	Mining Engineer
Heather Campbell	Geologist
Mathew Owens	Underground Bituminous Mine Inspector

Mine Safety and Health Administration

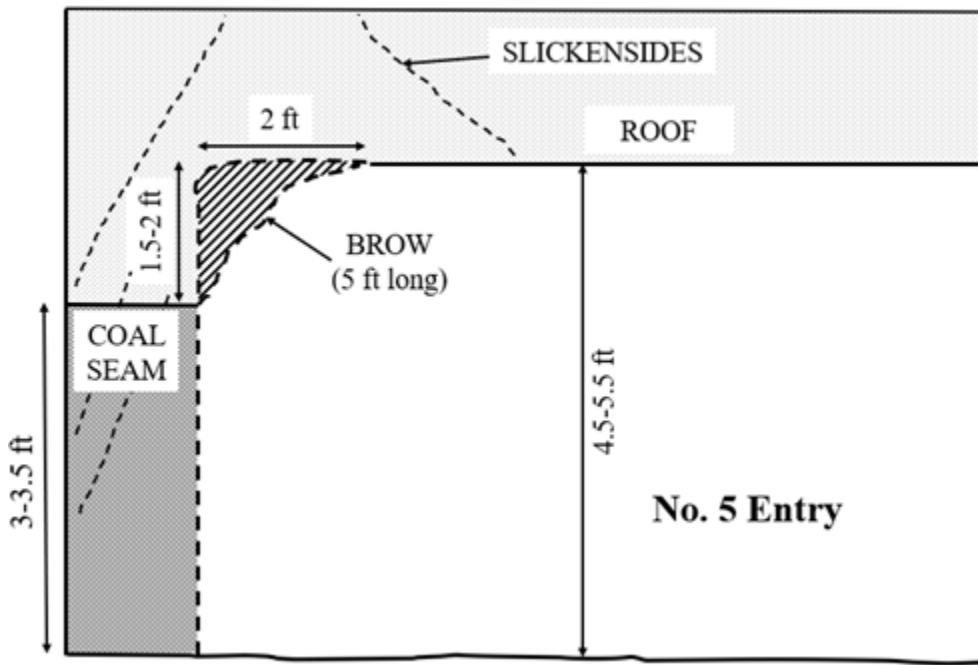
Michael Kelley	District Manager
Todd Anderson	Assistant District Manager
Dennis Zeanchock	Supervisory Mine Safety and Health Inspector
Jason Boring	Mine Safety and Health Specialist
William Kibler, Jr.	Mine Safety and Health Inspector
David McDonald	Mine Safety and Health Inspector
Sandin Phillipson	Senior Geologist
Christopher Snyder	Civil Engineer

APPENDIX B – Drawing of the Main A Section



Not to Scale

APPENDIX C – Drawing of Rock Brow



Not to Scale

APPENDIX D – Slickenside Visible in Roof

