FAI-4126748-1

UNITED STATES
DEPARTMENT OF LABOR
MINE SAFETY AND HEALTH ADMINISTRATION

REPORT OF INVESTIGATION

Underground
(Limestone)

Fatal Machinery Accident
June 20, 2022

Kimballton Plant #1
Lhoist North America of Virginia, Inc.
Ripplemead, Giles County, Virginia
ID No. 44-00082

Accident Investigators

Russell Dresch
Mine Safety and Health Inspector

Danny Hagy
Mine Safety and Health Inspector

Originating Office
Mine Safety and Health Administration
Norton District
716 Spring Avenue SE
Wise, VA 24293
Lloyd Robinette, Jr., Acting District Manager

TABLE OF CONTENTS

OVERVIEW

On June 20, 2022, at approximately 3:00 p.m., Stuart Moore, a 50 year-old heavy equipment operator with over 15 years of mining experience, was fatally injured when the excavator he was operating became engulfed with material.

The accident occurred because the mine operator did not: 1) take down or support hazardous ground conditions before permitting work in the affected area, and 2) adequately examine ground conditions in areas where work was to be performed and as ground conditions warranted during the work shift.

GENERAL INFORMATION

Lhoist North America of Virginia, Inc. (Lhoist), a subsidiary of Lhoist Group, owns and operates Kimballton Plant #1 located in Ripplemead, Giles County, Virginia. The facility consists of an underground limestone mine and preparation plant. Kimballton Plant #1 employs 82 miners with 24 working at the underground mine. Kimballton Plant #1 operates two ten-hour shifts, Monday through Thursday, and one ten-hour shift on Friday and Sunday. According to the company, on February 10, 2021, the mine stopped limestone production for economic reasons. On July 26,

2021, Lhoist began to remove Lime Kiln Dust (LKD) from the mine. LKD is a waste byproduct generated from processing limestone at the preparation plant. Beginning in the 1950's, LKD was brought into the mine and stored. As Lhoist was preparing to abandon the mine, it began removing the LKD to reduce potential pH level impact to the local water table. Miners operated bulldozers and excavators to collect the LKD, while another excavator loaded it onto haul trucks. The haul trucks then transported the LKD to the surface where it was stored.

The principal management officials at Kimballton Plant #1 at the time of the accident were:

Mark Luxbacher	Mine Manager
Jeffrey Pack	Environmental, Health, & Safety Manager
Robert Shelor	Plant Manager

Lhoist contracted Gillman Services, Inc. to remove the LKD. Mine management at Kimballton Plant #1 directed the work of Gillman Services, Inc. miners.

Lhoist also contracted SoNev Construction (SoNev) to assist in the removal of LKD. SoNev provided miners and equipment and directed their work force.

The principal management official for SoNev at the time of the accident was:

Omar Driver	Superintendent

The Mine Safety and Health Administration (MSHA) completed the last regular safety and health inspection at this mine on March 30, 2022. A regular safety and health inspection was ongoing at the time of the accident. The 2021 non-fatal days lost incident rate for Kimballton Plant #1 was zero, compared to the national average of 2.90 for mines of this type.

DESCRIPTION OF THE ACCIDENT

On June 20, 2022, at approximately 7:00 a.m., Moore started his shift by attending the morning general safety meeting. After the meeting, Zachary Whitt, Heavy Equipment Operator, drove Moore to an excavator located underground on Level 7. Moore trammed the excavator to Window 13, and loaded LKD into haul trucks. Windows are openings that connect the different levels to convey material (See Appendix A). According to interviews, sometime after mid-day, Moore finished loading from Window 13. Moore then trammed the excavator to Window 15 on Level 7 and continued to load haul trucks.

Nikko Shamburger, Heavy Equipment Operator, was operating a haul truck and preparing to be loaded by Moore. According to Shamburger's interview, Moore told Shamburger to stop his haul truck and wait because mud and large rocks had broken through the berm at Window 14 and covered the haul road. The mud in the haul road was one to three feet thick. At approximately 2:45 p.m., Moore flashed his outside cab lights to indicate that Shamburger could resume operations. Shamburger backed the haul truck toward the excavator and felt the haul truck start to slide. Shamburger let off the accelerator pedal to slow down. Moore honked his horn indicating that Shamburger should stop, which was the normal procedure when haul trucks are in

the correct position to be loaded. When Shamburger applied the brakes, he felt the haul truck slide toward the left. Shamburger then felt the excavator bucket hit the haul truck. In Shamburger's interview, he stated that he believed Moore purposefully moved the excavator bucket to hit the haul truck to prevent it from sliding into the ditch and solid wall. At that time, Shamburger was unaware of the material that slid from Window 15 into the haul road and engulfed the excavator.

Shamburger radioed to Moore, but Moore did not reply. Dameon Clark and William Riggs, Heavy Equipment Operators, were operating haul trucks nearby when they heard Shamburger on the radio and drove their haul trucks closer to Window 15. Interviewees stated they could only see the boom, stick, and bucket of Moore's excavator. The material around the excavator was firm enough to walk on and when Clark and Shamburger reached the excavator, they attempted to reach Moore by digging with their hands but were unsuccessful. The mine operator brought additional excavators to the accident scene to remove material from around Moore's excavator. At 4:35 p.m., Adam Lafferty, Heavy Equipment Operator, broke the back cab window. This allowed Omar Driver, Superintendent, to access the cab and check Moore for a pulse, but he did not detect one.

Darren Blankenship, Mechanical Lead Technician, and Christopher Christian, Maintenance Technician, arrived at the accident scene. Blankenship, Christian and Tyler Prichard, Heavy Equipment Operator, removed Moore from the cab. Emergency Medical Services arrived and transported Moore to the surface where Benjamin Holdren, Emergency Medical Technician-Paramedic, pronounced Moore dead.

INVESTIGATION OF THE ACCIDENT

On June 20, 2022, at 3:53 p.m., Jeffrey Pack called the Department of Labor National Contact Center (DOLNCC) to report the accident. At 4:11 p.m., the DOLNCC contacted Carl Cline, Supervisory Mine Safety and Health Inspector. Cline contacted Fred Harless, Supervisory Mine Safety and Health Inspector, and informed him of the accident. Harless contacted Danny Hagy and David Nichols, Mine Safety and Health Inspectors, and sent them to the mine to assist with the investigation.

At 6:00 p.m., Hagy arrived at the mine site to secure the accident scene and begin the investigation. Soon after that, Nichols and Harless arrived at the mine. Nichols issued an order under the provision of section 103(k) of the Mine Act to ensure the safety of the miners and preservation of evidence. Hagy and Harless went underground with Luxbacher and examined the accident scene. Harless contacted Russell Dresch, Mine Safety and Health Inspector, and assigned him as the lead accident investigator. On the morning of June 21, 2022, Dresch arrived at the mine to continue the investigation along with inspectors from the Virginia Department of Energy.

The accident investigation team interviewed management, miners, contractors and other pertinent personnel, and reviewed conditions and work practices relevant to the accident. Fred Martin, Mine Safety and Health Training Specialist, reviewed relevant training records. See Appendix B for a list of persons who participated in the investigation.

DISCUSSION

Location of the Accident

The accident occurred at Window 15 on Level 7 of the mine. Windows are openings at irregular intervals that connect the levels together (see Appendix C). Due to the elevation differences between the levels, the windows are sloped. The elevation changes approximately 234 feet from Level 4, the level that material was being cast from, to Level 7. The haul road on Level 7 is 46 feet in width. The width of the windows varies depending on the shape of the pillars.

Lime Kiln Dust Removal and Ground Conditions

Investigators learned that the mine operator implemented a new LKD removal process about three weeks prior to the accident. A bulldozer would gather the LKD close to a window on Level 4, and an excavator would cast it into the window. Casting refers to the excavator operator's positioning of the bucket over the sloping window before taking action to dump the LKD. The LKD would then flow through the windows down to Level 7. There, an excavator would load the LKD onto haul trucks that transported it to the surface and stored it.

The LKD did not flow freely from Level 4 to Level 7. It accumulated as it was cast into a window which caused an unstable condition. The LKD accumulations repeatedly built up and collapsed randomly as it traveled down to Level 7, creating hazardous ground conditions. A waterfall area would saturate the LKD along Window 15. This caused greater instability of the accumulated LKD. The mine operator did not take down or support the hazardous ground conditions before permitting work in the affected area.

Investigators also learned that the mine operator established a procedure to prevent the LKD from being cast into the same window on Level 4 that was being loaded on Level 7 during the LKD removal process. This required the excavator operator on Level 7 to coordinate with the miners on Level 4. Additionally, the excavator on level 7 was supposed to operate from an elevated pad along the haul road behind a pillar to avoid being directly in line with the window. The excavator operator was required to build a berm along the top of the pad and a ditch between the pad and the LKD to be loaded. Investigators determined that the mine operator did not ensure miners followed this procedure. However, even if followed, this procedure did not protect miners from falling LKD while traveling across windows to reach the window that was being loaded. Investigators also determined these conditions and procedures contributed to the accident.

According to interviews, there was uncontrolled movement of LKD out of the windows on Level 7, where it traveled beyond the ditch and berm and into the haul road on an almost daily basis. On at least one occasion on Level 7, Driver, Luis Sierra, Project Manager, and Myron Squires, Consultant, witnessed the uncontrolled movement of LKD. After this, the mine operator revised the LKD removal procedure to require the excavator to sit behind a pillar in the haul road. Driver stated that he discussed concerns he had with management and miners about the instability of the LKD accumulations and the hazard associated with miners excavating in the windows. During daily morning general safety meetings, several miners expressed their concerns and told mine management about the uncontrolled movement of LKD. These members

of management included Sierra; Jeffrey Perkins, Supervisor; Luxbacher; and Christopher Carter, Fill in Supervisor. About one hour before the accident, Randall Dickerson, Heavy Equipment Operator, told Squires that Window 15 was dangerous and the LKD could slide at any time. Squires replied that they were keeping an eye on it.

On June 17, 2022, Alexus Dudeck, Heavy Equipment Operator, operated the hydraulic excavator involved in the accident on Level 7 in Window 15. Dudeck informed Squires and Driver it was not safe to work in this location. She told them LKD came down through Window 15 so fast that it "back splashed against the rib and flowed back." She said the excavator became surrounded by LKD and she did not want to work in the area until it was safe. On the next day, the mine operator reassigned her to another job on the surface.

Equipment Involved

The excavator involved in the accident was a Caterpillar Model 336F, company number 336 EX. The mine operator was unable to remove the excavator from the accident site to examine and test it. The pre-operational inspection record for this excavator indicated the boom lights were not functional during the night shift on June 19, 2022. The purpose of boom lighting is to illuminate the excavator's bucket and surroundings. Without these lights, the excavator operator had reduced visibility. A pre-operational inspection record for the day shift on June 20, 2022, was not available. The mine operator was not able to produce records to indicate the lights were repaired.

The haul truck involved in the accident was a Caterpillar model 771D, company number 14. Investigators examined and tested the truck and found no hazards that contributed to the accident.

Training and Experience

Moore had 15 years of surface mining experience, and five years of experience operating an excavator prior to working at this mine. Investigators reviewed Moore's training records and determined that Moore received all required training in accordance with MSHA Part 48 training regulations. Moore received new underground miner training on April 8, 2022, which covered hazard recognition and a tour of the mine. Moore received task training on the 336 EX excavator on May 10, 2022. Based on interviews, the miners said the mine operator instructed them on procedures to remove material from Level 7, which would have included erecting a berm and staying behind the pillar.

Examinations

On the day of the accident, the mine operator did not perform a workplace examination prior to miners entering the mine or working along the main haul road, on Level 4, and on Level 7. Miners began entering and working underground at 6:15 a.m., however Perkins did not begin the workplace examination of the underground mine until 8:00 a.m. and completed it at 8:45 a.m.

Investigators reviewed the mine operator's ground condition examination records. On the day of the accident, the mine operator did not perform a ground condition examination prior to the start of work activity. In addition, four different members of management conducted ground condition examinations throughout the ten-hour shift, but these examinations were not adequate

because they did not identify the hazardous ground conditions. Shelor performed one of the ground condition examinations and indicated his cap light was not adequate to illuminate the area around Window 15. Shelor also did not ensure that miners installed a berm on the elevated pad at Window 15, which was a safety feature required by the established procedure for the LKD removal process. The mine operator did not adequately examine ground conditions in areas where miners would perform work and as ground conditions warranted during the work shift. Investigators determined that not examining the ground conditions as warranted contributed to the accident.

ROOT CAUSE ANALYSIS

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

1. Root Cause: The mine operator did not take down or support hazardous ground conditions before permitting work in the affected area.

   Corrective Action: The mine operator has stated in a written letter that prior to any future LKD removal activities, the mine operator will develop procedures to ensure the safety of workers. These procedures will be sent to MSHA for review prior to removal activities beginning.

2. Root Cause: The mine operator did not adequately examine ground conditions in areas where work was to be performed and as ground conditions warranted during the work shift.

   Corrective Action: The mine operator has stated in a written letter that prior to any LKD removal activities, the mine operator will develop procedures to ensure the safety of workers. These procedures will be sent to MSHA for review prior to removal activities beginning.

CONCLUSION

On June 20, 2022, at approximately 3:00 p.m., Stuart Moore, a 50 year-old heavy equipment operator with over 15 years of mining experience, was fatally injured when the excavator he was operating became engulfed with material.

The accident occurred because the mine operator did not: 1) take down or support hazardous ground conditions before permitting work in the affected area, and 2) adequately examine ground conditions in areas where work was to be performed and as ground conditions warranted during the work shift.

Approved By:

_____ _____

Lloyd Robinette, Jr. Date
Acting District Manager

ENFORCEMENT ACTIONS

1. A 103(k) order was issued to Lhoist North America of Virginia, Inc.

   A fatal accident occurred on June 20, 2022, at approximately 3:00 p.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.

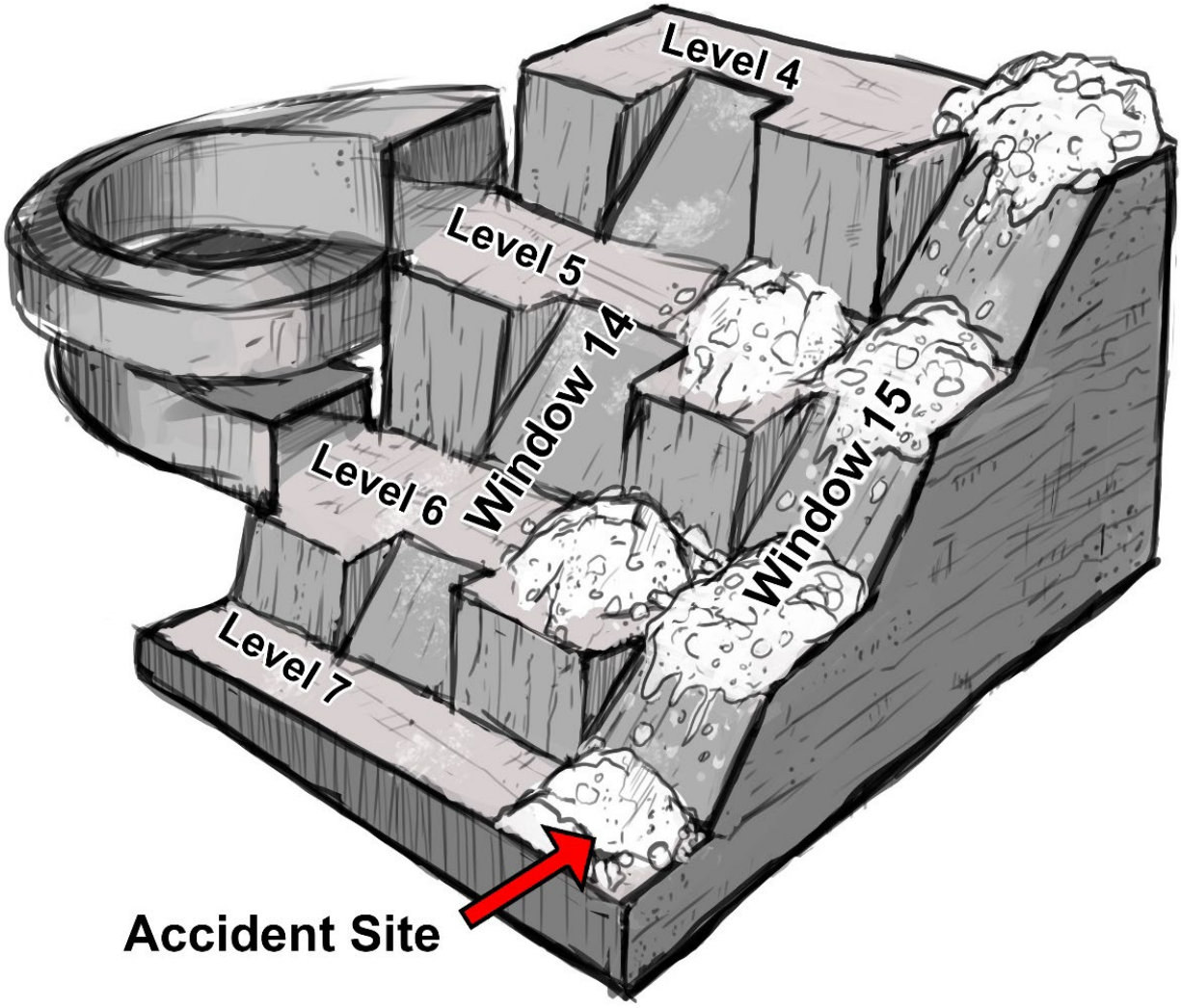
2. A 104(d)(1) citation was issued to Lhoist North America of Virginia, Inc. for a violation of 30 CFR 57.3200.

   The mine operator did not take down or support hazardous ground conditions before permitting work in the affected area. The mine operator's process to remove material from the mine created unstable ground conditions. A fatal accident occurred at this operation on June 20, 2022. The ground conditions between Level 4 and Level 7 along Window 14 and Window 15 became unstable. While preparing to load a haul truck, LKD mixed with water and mud began to slide. The material engulfed the company number 336 EX excavator killing the miner in the cab. The mine operator engaged in aggravated conduct constituting more than ordinary negligence by having knowledge of the uncontrolled LKD movement due to the LKD removal process and not correcting the hazard. Miners expressed safety concerns and the mine operator was aware of the higher safety risk in this area. This violation is an unwarrantable failure to comply with a mandatory standard.

3. A 104(d)(1) order was issued to Lhoist North America of Virginia, Inc. for a violation of 30 CFR 57.3401.

   The mine operator did not examine ground conditions in areas where work was to be performed and as ground conditions warranted during the work shift. No examination was completed prior to work commencing. The mine operator's process to remove material from the mine created unstable ground conditions. The examinations conducted during the 10-hour day shift as conditions changed were not adequate because they did not identify the hazards in the area. A fatal accident occurred at this operation on June 20, 2022, when a miner was engulfed in the cab of an excavator by loose ground material. The operator had knowledge that the LKD removal process caused uncontrolled LKD movement resulting in significant ground control hazards. The mine operator failed to conduct required examinations to protect the safety of miners. The mine operator engaged in aggravated conduct constituting more than ordinary negligence. This violation is an unwarrantable failure to comply with a mandatory standard.

APPENDIX A – Artist Depiction of Windows at the Kimballton Plant #1



*Note: This drawing is only meant to illustrate what the term “Windows” are used at the Kimballton Plant #1’s Mine and do not reflect the mine’s actual layout.

APPENDIX B – Persons Participating in the Investigation

Lhoist North America of Virginia, Inc.

Mark Luxbacher	Mine Manager
Robert Shelor	Plant Manager
Jeremy Thompson	Regional Safety and Health Manager
Jeffrey Pack	Environmental, Health, & Safety Manager
Luis Sierra	Project Manager
Charles Morgan	Counsel Alston and Bird
Jeffrey Perkins	Supervisor
John Johnson	Supervisor
Christopher Carter	Fill in Supervisor
Myron Squires	Consultant
Michael Crigger	Miner
Paul Lucas	Miner
Greg Parsell	Miner
Darren Blankenship	Mechanical Lead Technician
Christopher Christian	Maintenance Technician

Gillman Services, Inc.

David Gillespie	Vice President of Safety and Risk Management
Amy Baker	Heavy Equipment Operator
Dameon Clark	Heavy Equipment Operator
Kellen Cooper	Heavy Equipment Operator
Branden Cosper	Heavy Equipment Operator
Alexus Dudeck	Heavy Equipment Operator
Greg Holdren	Heavy Equipment Operator
Adam McClanahan	Heavy Equipment Operator
Ariel Ramos	Heavy Equipment Operator
William Riggs	Heavy Equipment Operator
Nikko Shamburger	Heavy Equipment Operator
Terry Sizemore	Heavy Equipment Operator
Tyler Walton	Heavy Equipment Operator
Zachary Whitt	Heavy Equipment Operator
Desmond Woods	Heavy Equipment Operator
James Wyatt	Heavy Equipment Operator

SoNev Construction

Keith Gilbert	Owner
Omar Driver	Superintendent
Darrell Day	Heavy Equipment Operator
Randall Dickerson	Heavy Equipment Operator
Adam Lafferty	Heavy Equipment Operator

Marvin Potter	Heavy Equipment Operator
Richard Potter	Heavy Equipment Operator
Tyler Prichard	Heavy Equipment Operator

Virginia Department of Energy

Willart Cochran	Lead Compliance/Assistant Specialist
Eric Snowadzky	Compliance/Assistant Specialist

Mine Safety and Health Administration

Benjamin Harding	District Manager
Michael Colley	Staff Assistant
Fred Harless	Supervisory Mine Safety and Health Inspector
Fred Martin	Mine Safety and Health Training Specialist
Russell Dresch	Mine Safety and Health Inspector
Danny Hagy	Mine Safety and Health Inspector
David Nichols	Mine Safety and Health Inspector

APPENDIX C – Mine Map