

UNITED STATES  
DEPARTMENT OF LABOR  
MINE SAFETY AND HEALTH ADMINISTRATION

REPORT OF INVESTIGATION

Underground  
(Coal)

Fatal Machinery Accident  
February 28, 2022

GMS Mine Repair (Contractor ID MVK)  
Mt. Lake Park, Maryland

at

Berwind Deep Mine  
Ramaco Resources, LLC  
Berwind, McDowell County, West Virginia  
ID No. 46-09533

Accident Investigators

Steven Campbell  
Mine Safety and Health Specialist

Robert Maynard  
Mine Safety and Health Specialist

Greggory Ward  
Supervisory Mine Safety and Health Specialist

Originating Office  
Mine Safety and Health Administration  
Pineville District  
4499 Appalachian Highway  
Pineville, West Virginia 24874  
Brian Dotson, District Manager

## TABLE OF CONTENTS

OVERVIEW	1
GENERAL INFORMATION	1
DESCRIPTION OF THE ACCIDENT	2
INVESTIGATION OF THE ACCIDENT	4
DISCUSSION	4
Location of the Accident	4
Equipment Involved	4
Training and Experience	6
Examinations	6
ROOT CAUSE ANALYSIS	7
CONCLUSION	7
ENFORCEMENT ACTIONS	8
APPENDIX A – Mine Map	10
APPENDIX B – Persons Participating in the Investigation	11
APPENDIX C – Drawing of the Accident Scene	12



## OVERVIEW

On February 28, 2022, at approximately 5:00 a.m., Steven Hively, a 52 year-old project manager for GMS Mine Repair (GMS) with approximately 20 years of mining experience, died when he was crushed between a coal rib and a single boom face drill (drill). Hively was walking alongside the drill using the onboard tram lever controls when the accident occurred.

The accident occurred because the mine operator did not: 1) maintain the drill in safe operating condition, and 2) conduct an examination of the drill before placing it in service.

## GENERAL INFORMATION

Ramaco Resources, LLC owns and operates the Berwind Deep Mine. This mine is an underground coal mine located in Berwind, McDowell County, West Virginia. Berwind Deep Mine employs 51 miners and operates three nine-hour shifts, six days per week. The mine operates one mechanized mining unit using a continuous mining machine (CMM) to extract the coal. Shuttle cars transport the coal from the CMM to the coal feeder, where belt conveyors transport the coal to the surface stockpile. GMS is a contractor hired by Ramaco Resources, LLC to move the drill from underground to the surface. Hively was a project manager for GMS.

The principal management officials at the Berwind Deep Mine at the time of the accident were:

Timothy Addair  
Michael Golden  
Derek Roberts  
Mark S. Muncy

Mine Superintendent  
Mine Foreman  
Chief Electrician  
Safety Manager

The principal management officials for GMS Mine Repair at the time of the accident were:

Courtland Helbig  
Steven Tressler

President/Secretary  
Vice President/Treasurer

The Mine Safety and Health Administration (MSHA) completed the last regular safety and health inspection at this mine on December 6, 2021, and a regular safety and health inspection was ongoing although no inspector was at the mine at the time of the accident. The 2021 non-fatal days lost incident rate for Berwind Deep Mine was zero, compared to the national average of 3.04 for mines of this type.

## DESCRIPTION OF THE ACCIDENT

On February 27, 2022, Hively arrived at the mine at 10:30 p.m. Hively met Bradley Johnson, Belt Technician for GMS, and discussed their duties for this shift. Hively was responsible for moving the drill from underground to the surface. Johnson entered the mine at 11:14 p.m. through the track entry/alternate escapeway on a scoop, with Hively following him on a four-wheeled, rubber-tired personnel carrier (four-wheeler). At 11:54 p.m., Hively and Johnson traveled into the intake aircourse/primary escapeway through the airlock doors located at the No. 51 crosscut, which is located one crosscut inby No. 4 belt drive. Hively left the four-wheeler near the airlock doors and traveled with Johnson to the No. 90 crosscut (see Appendix A).

On February 28, 2022, at approximately 12:30 a.m., Hively and Johnson loaded a 480-Volt Alternating Current (VAC) distribution box (d-box) into the bucket of the scoop and dragged the power cable behind. Hively and Johnson transported the d-box to the No. 60 crosscut, routed the d-box cable and connected it to a power center at the No. 48 crosscut, adjacent to the No. 3 belt conveyor entry. Hively and Johnson extended the power cable for the drill to the d-box. Johnson parked the scoop in a crosscut near the airlock doors and drove Hively to the drill on the four-wheeler. Hively operated the drill because Johnson did not know how to operate the drill.

At 4:55 a.m., Hively exited the four-wheeler at the No. 70 crosscut where the drill was located. Johnson then drove the four-wheeler approximately four crosscuts outby and parked it. At approximately 5:00 a.m., as Johnson walked toward the drill, he noticed it was running and saw Hively pinned between the drill and the coal rib. Johnson began calling out to Hively, but Hively was unresponsive. Johnson approached Hively, checked his wrist, and did not detect a pulse. Johnson did not know how to operate the drill and could not free Hively. Johnson shut off the drill using the emergency stop switch and went to call for help.

Johnson drove the four-wheeler outby to the airlock doors and called Brian Hawks, Dispatcher, on the mine phone at the No. 4 belt drive. Johnson informed Hawks of the accident and requested assistance. Hawks immediately began paging underground personnel on the mine phone and sending text messages to the miners' electronic tracking/communication devices. Timothy Gibson, Fireboss, and Joey Davis, Electrician, were at the No. 5 belt drive when both received a text message from Hawks at 5:08 a.m. Hawks' text message stated, "go to four drive asap." Gibson sent a text message to Hawks at 5:11 a.m. asking "what's wrong." At 5:17 a.m., Hawks called 911 to request an ambulance. At 5:19 a.m., Hawks sent a text message back to

Gibson informing him of the accident. Gibson traveled to the No. 4 belt drive on another four-wheeler and Davis followed Gibson on a rail-mounted personnel carrier.

Davis and Gibson met Johnson at the airlock doors and rode the four-wheelers to the accident scene. Davis left his rail-mounted personnel carrier on the track to ride on Gibson's four-wheeler. Gibson and Davis assessed Hively, and neither could detect a pulse. Gibson and Davis did not know how to operate the drill and could not free Hively. At 5:38 a.m., Gibson sent a text message to Hawks requesting assistance. Davis rode a four-wheeler back to the No. 4 belt drive to call and update Hawks of the accident and request additional assistance. After informing Hawks of Hively's condition, Davis traveled back to the accident scene.

Roger Price, Maintenance Foreman, and Jason Green, Electrician, were near the No. 7 belt drive at the Triad Mine when Price heard the urgency of Hawks' voice from the mine phone. The Triad Mine is also owned by Ramaco Resources, LLC and is located approximately one quarter of a mile from Berwind Deep Mine. Both mines share the same communication system which made it possible for Price to hear Hawks on the mine phone. Price responded to Hawks and was informed of the accident. Price and Green then traveled to the surface on a four-wheeler and proceeded to the maintenance shop at the Berwind Deep Mine.

Price and Green arrived at the Berwind Deep Mine at approximately 5:30 a.m. Due to the lack of battery charge on their four-wheeler, Price and Green transferred a jack, chain ratchet, hammer, and pry bar from their four-wheeler into a rail-mounted personnel carrier in case they were needed to recover Hively. Price and Green then traveled underground to the No. 4 belt drive in the rail-mounted personnel carrier.

At 5:42 a.m., Price and Green arrived at the No. 4 belt drive and did not see anyone. Price noticed the d-box power cable was connected to the power center and decided he and Green would follow the cable. Price and Green followed the cable to the accident scene. Price asked Gibson, Davis, and Johnson why they had not removed Hively from the pinned position and was informed that none of them knew how to operate the drill.

Price spoke to Hively but did not get a response. Price checked for a pulse but did not detect any. Price and Green did not know how to operate the drill and worked together to find the drill's start button and operational controls. Price used the onboard tram lever controls on the side of the drill to free Hively from the pinned position. Price and Green laid Hively on the mine floor and checked for a pulse again but could not detect one. Price began chest compressions but discontinued them due to the severity of Hively's injuries. Price, Green, Johnson, and Gibson placed Hively on a four-wheeler and traveled to the track entry/alternate escapeway adjacent to the airlock doors.

At 6:15 a.m., Michael Shelton, Mine Foreman, and Johnny White II, Supply Man/Emergency Medical Technician, were on the surface when they heard about the accident. Shelton and White retrieved first aid equipment and traveled underground on a four-wheeler where they met Price, Gibson, Green, Davis, and Johnson. Everyone worked together to secure Hively to a backboard, transfer him to a rail-mounted personnel carrier, and transport him to the surface.

Jan Care Ambulance Service arrived at the mine at 6:03 a.m., parked near the mine portal, and waited until Hively was brought to the surface at 6:55 a.m. Paramedics assessed Hively and did not attempt cardiopulmonary resuscitation due the severity of his injuries. Paramedics transferred Hively to a stretcher and placed him into the ambulance. Paramedics spoke with Regional Command at Raleigh General Hospital in Beckley, West Virginia. Paul Goyt, M.D. issued a “Do Not Resuscitate” order and pronounced Hively dead at 6:59 a.m.

## INVESTIGATION OF THE ACCIDENT

On February 28, 2022, at 5:25 a.m., Brad Justice, Vice President of Safety of Ramaco Resources, LLC, called the Department of Labor National Contact Center (DOLNCC). The DOLNCC contacted David Thacker, Supervisory Mine Safety and Health Inspector. Thacker contacted Brian Dotson, District Manager; Clark Blackburn, Assistant District Manager; and Mark E. Muncy and Kenneth Butcher, Supervisory Mine Safety and Health Inspectors. Mark E. Muncy contacted Herman Morgan, Mine Safety and Health Inspector, and sent him to the mine. Blackburn contacted Steven Campbell, Mine Safety and Health Specialist, and sent him to the mine.

Morgan arrived at the mine at 7:40 a.m. and met with Justice. At 7:45 a.m., Morgan 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. Jason Hess, Assistant District Manager, and Mark E. Muncy arrived at the mine at 8:30 a.m. Campbell arrived at 9:00 a.m. and Thacker arrived at 9:05 a.m. Dotson and Blackburn arrived at 9:30 a.m. MSHA’s accident investigation team met with Benjamin Hamilton, Inspector at Large; Janice Martin, Assistant Inspector at Large; and Mark Lester and Shane Lester, District Inspectors, of the West Virginia Office of Miners’ Health, Safety, and Training (WVOMHST) to discuss the investigation. In conjunction with WVOMHST, the investigation team conducted an examination of the accident scene, obtained written statements from miners, mine management, and reviewed conditions and work procedures relevant to the accident. See Appendix B for a list of persons who participated in the investigation.

## DISCUSSION

### Location of the Accident

The accident occurred at the No. 70 crosscut (Survey Station No. 519) of the intake air course/primary escapeway (see Appendix C).

### Equipment Involved

The drill involved in the accident was a Fletcher Model 3411RE, single boom face drill. The drill does not have an operator’s compartment. The drill is equipped with a wireless remote controller and onboard tram control levers located near the center on the right side of the machine. The mine operator contracted Cowin & Company, Inc. (Cowin) to operate the drill for internal slope development, beginning in March 2021. During the final slope work in December 2021, Cowin used both the remote controller and onboard controls to operate the drill. When the slope project was completed, Cowin parked the drill in the No. 120 crosscut.

On February 28, 2022, investigators observed the remote controller stored in an opening on the rear of the drill. It was not being used at the time of the accident due to discharged batteries. Since the remote controller would not operate the drill because the batteries were discharged, investigators determined that there was no safe way to move the drill to conduct functional tests. At this time, the mine operator locked and tagged the drill out of service until a J.H. Fletcher & Company (Fletcher) representative could make necessary repairs to the remote controller on March 1, 2022.

On March 1, 2022, Blackburn; Gregory Ward, Supervisory Mine Safety and Health Specialist; and Robert Maynard, Mine Safety and Health Specialist, traveled to the mine and met with Donald Walker, Field Representative for Fletcher; Shelton; Timothy Addair, Superintendent; Christopher Blanchard, President; Michael Golden, Mine Foreman; Derek Roberts, Chief Electrician; Joel Helbig, GMS Director of Operations; Brian Marcum, GMS Southern Appalachian Regional Manager; Michael Pack, Assistant Inspector at Large for WVOMHST; Corey Fields, Electrical Specialist for WVOMHST; and M. Lester. After the batteries were replaced in the remote controller, Walker used it to move the drill to a safe location in the intersection to perform an examination and functional tests.

During the examination of the drill, when using the remote controller, all functions operated properly. When the drill's operational control was switched from remote operation to manual operation, the right-side crawler track began tramming upon startup. The drill was immediately shut down for examination. While examining the onboard tram lever controls, investigators observed the right-side crawler track lever not centering to the neutral position when released. When the lever was manually centered in the neutral position, the drill began tramming immediately upon startup. When operating properly, the tram control levers will automatically center and return to the neutral position when released, stopping the crawler tracks.

The mine operator removed the hydraulic valve assembly from the drill, including the left-side and right-side tram control levers. MSHA investigators took custody of the hydraulic valve assembly for further examination.

On March 7, 2022, MSHA conducted bench testing of the hydraulic valve assembly at the Pineville District office in Pineville, West Virginia. During the testing of the tram control levers, investigators observed the right-side tram lever out of adjustment. A set of adjustable bolts installed at the base of the tram control levers push the hydraulic valves down to activate hydraulic pressure to the tram motors when the levers are moved backward or forward. Investigators observed the right-side tram control lever out of adjustment, causing the forward side valve to be pushed in approximately one quarter of an inch when in the center position. Additionally, when released from the reverse direction, the right-side tram control lever did not return to the center position due to the improperly adjusted bolt contacting the forward valve. This resulted in the reverse valve remaining activated, which allowed the drill to continue tramming. Also, the tram control lever's locking mechanism did not prevent the tram control lever from activating the right-side crawler track.

Investigators determined that the lever being out of adjustment contributed to the accident. The right-side tram controls were out of adjustment which caused the drill to tram towards the coal rib, thereby crushing the victim between the coal rib and the drill.

#### Training and Experience

Hively had approximately 20 years of mining experience. Hively received experienced miner training on February 21, 2022, for the Berwind Deep Mine. GMS reported Hively had approximately three weeks of experience operating the drill involved in the accident at another mine two years prior to the accident, and one week of experience at this mine. However, neither the mine operator nor the contractor could produce records to verify Hively's task training.

#### Examinations

Leroy Marsingill, Electrician, conducted the last weekly electrical examination of the drill on December 13, 2021, and reported no hazards. The last record for the drill in the weekly electrical examination record book was not dated and stated that the drill was "out of service" due to the completion of the slope project. Additionally, the mine operator disconnected the plug from the power center, locked out the plug, and put the plug and trailing cable on the drill. Investigators determined the mine operator did not conduct an electrical examination of the drill before placing it back in service on February 22, 2022.

The mine operator planned the project of moving the drill to the surface and hired GMS to perform the task. None of the GMS miners were qualified to perform the electrical examination. The mine operator did not conduct the required electrical examination to assure the drill was in safe operating condition before allowing the contractor to operate it. Additionally, the mine operator's training plan for weekly examiners did not include the use of the manufacturer's operator manual. The Start of Operations and Shift Safety Checklist in the manufacturer's operator manual states, "Operate all control levers, making sure they move freely and smoothly, and return to the NEUTRAL (OFF) position when released."

Marsingill, who had conducted the weekly electrical examinations months prior to the accident, was unfamiliar with the drill's operations, and would usually just watch the drill operator tram and operate the levers during his examination. Marsingill stated that he didn't always check the levers himself to assure that they were functioning properly and was never task trained to operate or examine this drill. Investigators determined this practice 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 maintain the drill in safe operating condition.

Corrective Action: The mine operator employed a Fletcher Field Service Technician to replace and properly adjust the onboard tram control levers. The mine operator revised their training plan to include the use of the manufacturer's operator manual and retrained all electrical examiners to assure the drill is maintained in safe operating condition.

2. Root Cause: The mine operator did not conduct an electrical examination of the drill before placing it in service.

Corrective Action: The mine operator conducted a complete electrical examination of the drill. The examination has been recorded. The mine operator provided additional training to all electrical examiners of the requirements of 30 CFR 75.512 to assure adequate electrical examinations are conducted.

## CONCLUSION

On February 28, 2022, at approximately 5:00 a.m., Steven Hively, a 52 year-old project manager for GMS Mine Repair (GMS) with approximately 20 years of mining experience, died when he was crushed between a coal rib and a single boom face drill (drill). Hively was walking alongside the drill using the onboard tram lever controls when the accident occurred.

The accident occurred because the mine operator did not: 1) maintain the drill in safe operating condition, and 2) conduct an examination of the drill before placing it in service.

Approved By:

---

Brian Dotson  
District Manager

---

Date

## ENFORCEMENT ACTIONS

1. A 103(k) order was issued to Ramaco Resources, LLC.

A fatal accident occurred on February 28, 2022, at approximately 5:00 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. 104(d)(2) order was issued to Ramaco Resources, LLC for a violation of 30 CFR 75.1725(a).

A fatal accident occurred at this mine on February 28, 2022, when a contract miner was crushed between the coal rib and a Fletcher Model 3411RE, single boom face drill. The victim was walking alongside the drill using the onboard tram lever controls when the accident occurred. The mine operator did not maintain the drill in safe operating condition. The right-side onboard tram lever control was out of adjustment, causing the forward side valve to be pushed in approximately one quarter of an inch when in the center position. This condition prevented the tram lever from automatically centering into the neutral position when the tram lever was released, which allowed the drill to begin tramping upon startup and continue tramping after the lever was released. Also, the tram control lever's locking mechanism did not prevent the tram lever control from activating the right-side crawler track. When the right-side tram lever is in the locked center position the tram function is still activated because of the lever not being properly adjusted.

The mine operator engaged in aggravated conduct constituting more than ordinary negligence by not maintaining the Fletcher 3411RE, single boom face drill in safe operating condition. Based on the condition of the levers, investigators determined that the hazardous condition existed prior to the contractor moving the drill. This is an unwarrantable failure to comply with a mandatory standard.

3. A 104(d)(2) order was issued to Ramaco Resources, LLC for a violation of 30 CFR 75.512.

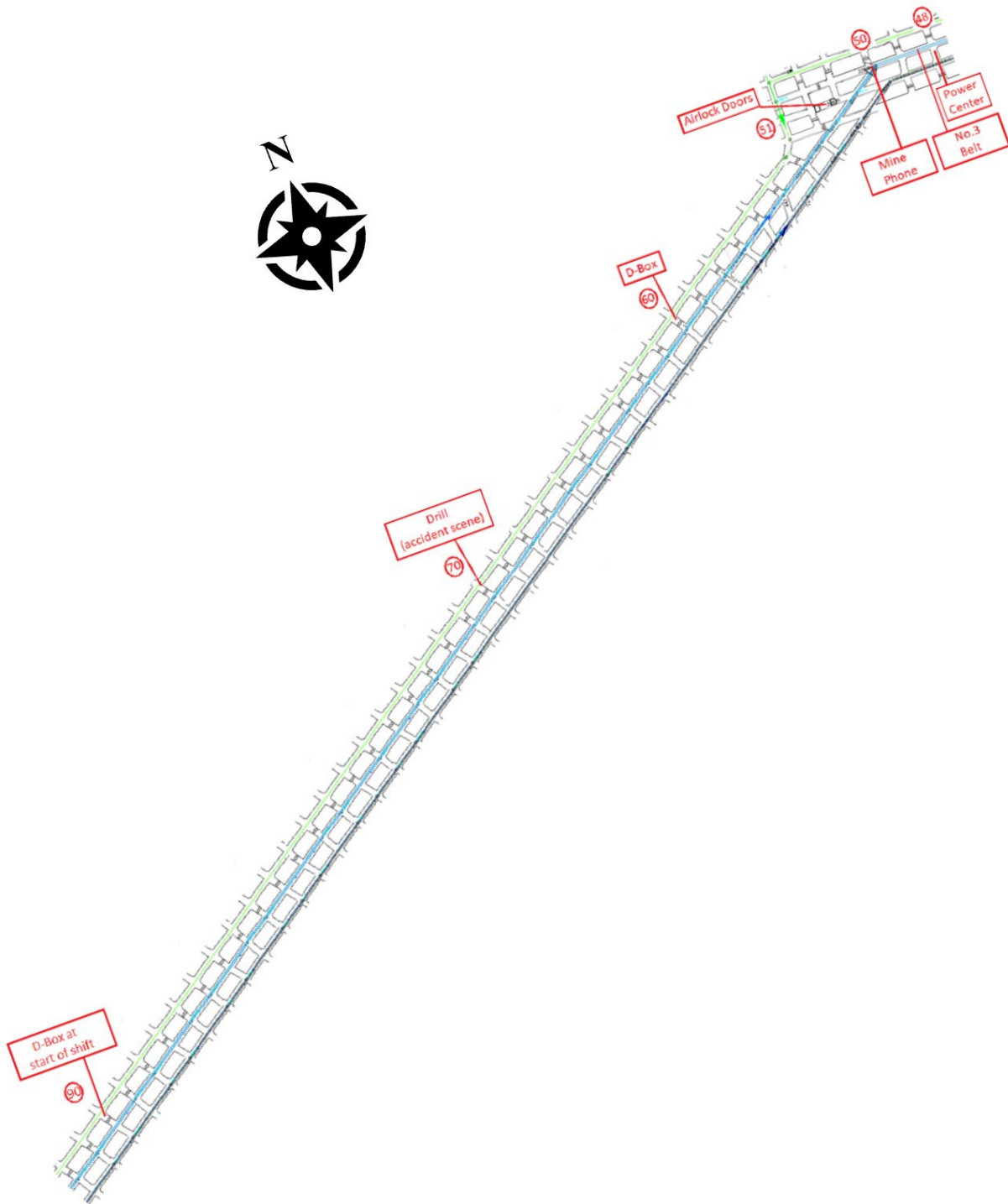
A fatal accident occurred at this mine on February 28, 2022, when a contract miner was crushed between the coal rib and a Fletcher Model 3411RE, single boom face drill. The victim was walking alongside the drill using the onboard tram lever controls when the accident occurred. The mine operator did not conduct an electrical examination of the drill before placing it into service on February 22, 2022. The last weekly electrical examination of the drill was conducted on December 13, 2021 and no hazards were documented. The last record for the drill in the weekly electrical examination record book indicates that the drill was out of service due to completion of the slope project with no out of service date provided. Investigators determined the mine operator did not conduct an examination of the drill before placing it back in service on February 22, 2022. The mine operator planned the

project of moving the drill to the surface and hired GMS to perform the task. None of the GMS miners were qualified to perform the examination. The mine operator did not conduct this required examination to assure the drill was in safe operating condition before allowing the contractor to operate it. The weekly examiner, who had conducted the weekly electrical examinations months prior to the accident, was unfamiliar with the drill's operations, and would usually just watch the drill operator tram and operate the levers during his examination. He stated that he didn't always check the levers himself to assure that they were functioning properly. This examiner was never tasked trained to operate this drill.

The mine operator engaged in aggravated conduct constituting more than ordinary negligence by allowing the Fletcher 3411RE, single boom face drill to be placed into service before conducting an electrical examination to identify and correct hazardous conditions. The mine operator planned the project of moving the drill to the surface and hired GMS to perform the task. None of the contract miners were qualified to perform this examination. The mine operator did not conduct this required examination to ensure it was in safe operating condition before directing the contractor to operate it. This is an unwarrantable failure to comply with a mandatory standard.

APPENDIX A – Mine Map

Not to scale.



APPENDIX B – Persons Participating in the Investigation

Ramaco Resources, LLC

Christopher Blanchard	President
Brad Justice	Vice President of Safety
Timothy Addair	Superintendent
Derek Roberts	Chief Electrician
Roger Price	Maintenance Foreman
Timothy Gibson	Fireboss
Joey Davis	Electrician
Jason Green	Electrician
Leroy Marsingill	Electrician
Michael Shelton	Mine Foreman
Michael Golden	Mine Foreman
Johnny White II	Supply Man/Emergency Medical Technician
Brian Hawks	Dispatcher

GMS Mine Repair

Joel Helbig	Director of Operations
Brian Marcum	Southern Appalachian Regional Manager
Bradley Johnson	Belt Technician

J.H. Fletcher & Company

Donald Walker	Field Representative
Robert Green	Field Service Technician

West Virginia Office of Miners' Health, Safety, and Training

Benjamin Hamilton	Inspector at Large
Janice Martin	Assistant Inspector at Large
Michael Pack	Assistant Inspector at Large
Mark Lester	District Inspector
Shane Lester	District Inspector
Corey Fields	Electrical Specialist

Mine Safety and Health Administration

Clark Blackburn	Assistant District Manager
Jason Hess	Assistant District Manager
Greggory Ward	Supervisory Mine Safety and Health Specialist
Herman Morgan	Mine Safety and Health Inspector
Steven Campbell	Mine Safety and Health Specialist
Robert Maynard	Mine Safety and Health Specialist

APPENDIX C – Drawing of the Accident Scene

