

UNITED STATES
DEPARTMENT OF LABOR
MINE SAFETY AND HEALTH ADMINISTRATION

COAL MINE SAFETY AND HEALTH

REPORT OF INVESTIGATION

Underground Mine

Fatal Powered Haulage Accident
July 11, 2011

Voyager #7
Martin County Coal
Inez, Martin County, Kentucky
ID No. 15-19193

Accident Investigators

Anthony Burke
Supervisory Coal Mine Safety and Health Inspector

Kenneth Fleming
Coal Mine Safety and Health Inspector

James L. Angel
Mechanical Engineer
MSHA Approval and Certification Center

Originating Office
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District 6
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Norman G. Page, District Manager

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ACCIDENT SITE



OVERVIEW

On Monday, July 11, 2011, at approximately 6:45 p.m., Ryan K. Thatcher was fatally injured while operating a 15-ton supply locomotive or motor. Mr. Thatcher was 26-years-old and had six years of mining experience. The locomotive he was operating was pulling two loaded supply cars into the mine to an area of low, overhead clearance at a return overcast. The compartment where the operator is located in the locomotive is covered by a retractable cover which had been left open. This allowed the victim to place his body outside the protective compartment in order to get a better view of the load he was pulling. The victim's fatal injuries were a result of his body being caught between the return overcast and the locomotive operator's compartment cover.

GENERAL INFORMATION

The Voyager #7 mine is an underground coal mine located near Inez in Martin County, Kentucky. The mine is owned and operated by Alpha Natural Resources.

This operation uses the room and pillar method utilizing two "super" sections to mine bituminous coal. The mine normally operates two nine hour production shifts per day, five to six days per week. The mine employs sixty-three people, with sixty working underground and three on the surface. The miners are not represented by a labor organization. The mine produces on average 5,100 tons of raw material per day.

The principal officials for the mine at the time of the accident were:

David Jude	Superintendent
Clifford Keener	General Mine Foreman
Johnse May	Evening shift Mine Foreman/Chief Electrician

Prior to the accident, the Mine Safety and Health Administration (MSHA) completed the last regular safety and health inspection on June 29, 2011. The Non-Fatal Days Lost (NFDL) injury incident rate for the mine in 2010 was 0.00 compared to the National NFDL rate of 3.58.

DESCRIPTION OF ACCIDENT

On Monday, July 11, 2011, Ryan K. Thatcher (victim) arrived at work for the evening shift shortly before 4:00 p.m. Thatcher was the motorman and had worked at the mine for a total of two years and five months. Shortly after arriving at the mine, Thatcher began making preparations to take supplies into

the mine using two rail-mounted flat cars. The victim normally worked outby the working sections hauling supplies to and from each mechanized mining unit (MMU).

Thatcher was given instructions by Clifford Keener, General Mine Foreman, to take the company flat bed pickup truck to White Cabin #9 to retrieve an electrical transfer box known as the "tram-box." Upon returning to the mine, Keener instructed Thatcher to report to Johnse May, who was the newly hired evening shift mine foreman/chief electrician. He was to give Thatcher instructions on the location of where he needed his personal tool chest underground.

The "tram-box" and tool chest were taken underground using two flatcars. This was a violation of a previously issued Safeguard, dated December 10, 2008 which limits the number of flatcars being pushed to one.



Thatcher loaded the tram-box onto the first flatcar. The tram-box was needed on the 001-0 MMU or #1 Section to aid in tramming the continuous mining machine to the next panel. He then loaded May's tool chest onto the second flatcar and proceeded underground via the track travel way at approximately 6:30 p.m.

After traveling approximately 1,700 feet underground, Thatcher stopped his locomotive prior to entering the track switch near the No. 1A Belt Drive. He arrived at approximately 6:45 p.m.

At this location, Thatcher met continuous mining machine operator Max Beverly. Beverly was on his way to the surface via a rail mounted mantrip to retrieve grease fittings necessary to repair the #2 Section continuous mining machine. After a short conversation, Thatcher positioned the track switch in order to tram his locomotive inby toward the #2 Section. This allowed Beverly to pass by him on a mantrip with a clear path of travel to the surface.

After the meeting at the track switch, Thatcher began moving his locomotive toward the return overcast. It appears that before traveling underneath the overcast and while the locomotive was still in motion, Thatcher positioned his head outside the confines of the locomotive operator's compartment through the retractable cover. Apparently, Thatcher was facing in the outby direction, looking at the rear of the locomotive toward the flatcars.

The retractable canopy was in the "Open" position allowing the equipment operator to extend his head through the opening.



At 6:50 p.m., mine examiner Benny Salyers and belt shoveler James Moore arrived at the scene to find the victim's locomotive stationary, with the engine idling. Salyers parked his rail mounted mantrip and proceeded cautiously toward the locomotive, to determine if Thatcher was nearby. Upon arriving at the locomotive, Salyers observed Thatcher partially suspended outside of the confines of the operator's compartment of the locomotive. Salyers instructed Moore to assist him in removing Thatcher from the locomotive and place him on the mine floor. Upon placing Thatcher on the mine floor, CPR was immediately started. Salyers instructed Moore to contact the surface and inform the outside person that a serious accident had occurred and paramedics were needed immediately.

Upon receiving the information from Moore, Paul Crum, the outside/utility man, contacted Martin County Coal's dispatcher who called the Inez NET-CARE Ambulance Service at 7:00 p.m.

CPR was administered and continued from the underground accident scene to the surface. Upon arriving on the surface, Thatcher's care was turned over to the paramedics who arrived on-site at 7:37 p.m. Paramedics worked with Thatcher until 7:47 p.m.

CPR was halted when life signs could not be detected and the Coroner's office was contacted. The victim was pronounced dead at 8:45 pm by the Martin County Coroner, Joseph Mullins.

INVESTIGATION OF THE ACCIDENT

After being notified of the accident, Supervisory Coal Mine Safety and Health Inspector Greg Ison verbally issued a 103(j) Order. Ison notified the assistant district manager for enforcement, William Sergent, who notified coal mine safety and health inspector/accident investigator, Kenneth Fleming and coal mine safety and health supervisory inspector, Anthony Burke of the accident. Fleming and Burke were dispatched and arrived at the mine at approximately 11:00 p.m. Immediately on arrival, Fleming modified the 103(j) Order to a 103(k) Order to insure the safety of all persons during the accident investigation and to preserve all evidence at the accident scene.

The investigation was conducted in cooperation with the Kentucky Office of Mine Safety and Licensing (KOMSL). The accident scene was photographed, sketched and surveyed. Interviews were conducted with persons considered to have knowledge of the facts and circumstances surrounding the accident. A list

of the persons who participated in the investigation is contained in Appendix A. The victim information is contained in Appendix B.

DISCUSSION

Location and Usage of Locomotive

Pre-operational checks were performed before the locomotive was used by the day shift locomotive operator on the day of the accident. The motorman did not report any deficiencies or abnormalities to mine management.

The locomotive was attached to two flatcars connected by a metal coupler and aided by a chain as an additional safety feature. The first flatcar had been loaded with an electrical box and the second with a tool chest.

Both flatcars were being pulled into the mine at the same time. The termination of the rail track on each of the two working sections was not provided with a means to turn the locomotive around, nor was this mine equipped with an additional locomotive to pull the cars back to the surface. This leaves the locomotive operator with no option other than to push the flat cars outby to the surface. A Noncontributory citation was issued for this violation.

The locomotive, and in particular the braking systems, were examined and found to be functioning properly. Interviews and observations made at the accident site on separate occasions did not provide any evidence to indicate that faulty braking caused or contributed to the accident.

Safeguard

On December 10, 2008, a safeguard was issued to minimize the hazards associated with pushing cars on main haulage roads as prescribed by Title 30 Code of Federal Regulations, § 75.1403-10(b).

Machine information

The machine involved in the accident was manufactured by Brookville Equipment Corp. The model no. is BDC-15UP, serial number 93169. The weight is 15 ton (actual weight 28,580 pounds), and the machine is also a diesel-powered locomotive. The locomotive is approximately 260 inches long and 80 inches wide. It has a hood height of 41.125 inches to the top of the rail. The locomotive has a wheel base of 78 inches and a track gage of 42 inches. The vehicle was powered by a Deutz BF4M1013FC diesel engine producing 157 hp at 2,200 rpm,

MSHA engine approval no. 07-ENA040007-0. The machine was manufactured in 2009 and the engine hour meter indicated the engine had run for 4,730 hours.

The two flatbed cars were attached to the locomotive at the time of the accident. The operator was transporting a tram-box on the car directly attached to the locomotive. During the field investigation, it was determined that the top of the tram-box was approximately at the same height of the low beam supporting the overcast. The second car carried a large electrician's tool chest.

Although it is uncertain why the victim placed his head outside the operator's compartment, there are two possible scenarios. 1) The victim may have been concerned whether the tram-box would clear or 2) the victim may have been trying to position the car carrying the tool chest at the adjacent crosscut so the tool chest could be unloaded more easily. In both scenarios, the victim may have needed additional visibility to perform either task which may have led him to place his head above the operator's compartment cover.

Machine controls and operation

The machine was started by turning a battery on/off switch to "on" and a heat/start switch to "start." These switches were located on a control panel facing the operator. An oil pressure shutdown override button also had to be held down until the engine built up oil pressure. The engine could be shutdown using the battery on/off switch or by depressing an emergency shutdown switch which was mounted on top of the control panel. No defects were found with the switches. It was noted that the location of the emergency shutdown switch on top of the control panel was difficult to access. The emergency shutdown switch was not specified in the locomotive's Operation/Maintenance Manual.

The locomotive was equipped with air-over-hydraulic wet-disk service brakes located on the axles. The service brake was applied by a brake pedal. An emergency/park brake button controlled the spring-applied, air-pressure-released wet-disk brake in the transmission. The emergency/park brake is applied when the button is pulled out and also designed to automatically apply with the loss of air pressure. Both the service brake pedal and the emergency/park brake button could be operated without difficulty. There was no indication that any material in the compartment would have interfered with their operation.

Tram-through tests of the service and emergency/park brake systems were performed in accordance with the instruction in the Operation/Maintenance Manual. The service brake held the locomotive stationary with the transmission in first gear at maximum engine speed. The emergency/park brake held the

locomotive stationary with the transmission in fourth gear at the maximum engine speed.

The locomotive was equipped with an automatic transmission controlled by two levers located in the operator's compartment. A direction control lever allowed the operator to select forward, neutral, or reverse and a gear selection lever allowed the operator to select first through fourth gear. Both levers moved through shift gates on the control panel and no problems were noted with the operation of the transmission controls. Based on earlier witness observations, the transmission controls were in neutral and second gear at the time of the accident.

The locomotive's speed was controlled by a throttle lever that moved horizontally. The lever's idle position was with the lever nearest the operator and the engine speed increased as the operator moved the lever away.

The throttle lever was found to be defective. The lever incorporated an internal spring designed to return the throttle lever to its idle position when the lever was released. Full rotation of the lever was approximately 180°. The spring did not provide any return force over the first 90° of movement from the idle position. In addition, the throttle lever stuck when moved to the full throttle position. Brookville personnel confirmed that based on its operation, the throttle return spring was defective.

The speed of the locomotive was measured without any cars attached and found to be approximately 1.8 mph. There was no significant difference in the speed of the locomotive with the throttle control at its idle position, and when it was positioned at approximately 90° of rotation (the point where the return spring started to act on the lever).

Tests were conducted at the accident site on the locomotive with the cars attached. At the time of the accident it was found that the locomotive would not drift if the brakes were released. From discussions with mine personnel, the victim may have been tramming the locomotive by "bumping" the transmission. The term "bumping" means to tram in second gear at idle, then shift the transmission direction control to neutral and allow the locomotive to coast to a stop, rather than use the service brakes. This would explain why the gear lever was found in the neutral position after the accident.

This scenario was recreated at the accident site. The locomotive was trammed at idle in 2nd gear, in the direction it would have been at the time of the accident (inby), and the transmission direction control lever was then shifted into neutral at a point directly under the beam supporting the overcast. The locomotive coasted to a stop in about 39 inches. When observed, the locomotive had moved

approximately 30 inches from the point where the victim first contacted the overcast beam to the location where the locomotive came to a stop.

The Operation/Maintenance Manual makes no reference to “bumping.” The manual does specify that “When stopping or slowing down the machine, the service brake control should be used under normal conditions.”

The operation of the other controls and gages on the control panel (excluding the re-railing system, coupler, power take-off, and sanders) was observed and no defects were noted.

Machine’s operator compartment

The operator’s compartment was provided with a seat facing the centerline of the locomotive, i. e. perpendicular to the forward/reverse direction of travel. A cover was provided over the operator’s compartment. Note that this cover provided some protection from falling material but is not a certified canopy under § 75.1710-1.

The cover was provided with pipe post supports, pre-drilled with four height positioning holes spaced approximately three inches apart. The posts were positioned at the third hole up from the bottom of the posts. This provided an approximate 12 inch clearance between the bottom of the cover and the top of the operator’s compartment side walls. The cover was within four inches of the top of the locomotive’s engine cover. This severely limited the visibility over the locomotive. It was concluded that better visibility was available along the side of the locomotive where there was a larger opening between the bottom of the cover and the side wall of the operator’s compartment adjacent to the operator’s seat.

The top cover included a section that could be slid open. The sliding section was not directly above the operator’s seat. The sliding section extended approximately from the operator’s left shoulder and out away from the operator’s seat. No guidance is provided by Brookville in the Operation/Maintenance Manual on the use of the sliding cover. In discussions with mine personnel, they stated the cover was intended to provide ease of access/egress and that it should be closed during tramming of the locomotive.

Maintenance records

Maintenance and pre-operation inspection records for the locomotive were requested during the investigation but mine personnel could not find any.

Records of inspections of the fire suppression system were provided with no defects noted.

Records of gas sampling in the operator's compartment were also provided. These samples were apparently taken to document engine performance. The mine operator has classified this locomotive as a light duty machine, therefore the engine emission sampling specified in §75.1914(g) is not required. However, if the mine operator intends to monitor the performance of the engine, sampling should be performed in accordance with §75.1914(g). Emission sampling in the operator's compartment does not provide valid information of the actual emissions from the engine.

During inspection of the locomotive, several components were found to require maintenance. However, none of these items are considered to have contributed to the accident.

Machine summary

No equipment related failures were identified as contributing to the accident.

The operator's compartment top cover had to be positioned close to the same level as the machine's hood in order to provide clearance between the cover and the low overcast support beam. This severely limited visibility over the locomotive. When open, the sliding portion of the cover allowed for an unsafe vantage point above the cover that provided better operator visibility. Several mine personnel were aware of this hazard and stated during formal interviews that the cover should be closed while tramming. No instructions/warnings were provided by Brookville on the use of the sliding portion of the cover.

It is not clear whether the practice of "bumping" the transmission to position the locomotive was used by the victim, or if this practice contributed to the accident. The accident may still have occurred if the operator had used the service brake to stop the locomotive. However, based on the location of the service brake pedal and the position in which the victim would have had to place himself for his head to be above the cover, the victim may have found it too awkward or difficult to depress the service brake pedal at the same time.

General Track Conditions

Measurements were taken to determine the height of mine roof in the track travelways from the surface to each underground working section to determine if any abrupt changes were present that would create a hazard. The overcast

where the accident occurred had the lowest clearance and measured 46.5 inches at the lowest horizontal beam to the top of the ball of the rail. (See appendix F)

This overcast had been installed approximately two and one half years ago and separates the track travel way (alternate escapeway) from the #2 Section's Main return air course.

Following the accident, the operator was required to increase the rail equipment visibility or increase the height beneath this overcast. The operator decided to do both by removing the first overcast beam, raising the second and exchanging the 15-ton locomotive with a smaller, 12-ton locomotive, which resulted in a 7-inch height gain in the area of the accident.

Conditions and Observations

The accident occurred in an area where a return overcast had been built near the No. 1A Belt Drive. The mine roof at this location is predominately sandstone. This influenced the amount of roof that was cut out for this overcast. The lower than usual height has been determined to have contributed to the accident.

The overall mining height was lower in the accident area due to sandstone roof.



The area was surveyed following the accident for elevation changes. The track is on a level grade inby and outby the accident site. The first miners to find the victim stated the locomotive was idling and not moving.

The combination of the overhead clearance and low locomotive compartment cover height provided inadequate visibility to the locomotive operator. This inadequate visibility most likely contributed to the victim extending his head up through the retracted canopy opening to look at his load while the locomotive was moving.

Evidence at the scene indicated that the locomotive had moved approximately 39 inches in the inby direction after its canopy made contact with the victim. This distance correlates to the distance the locomotive will travel if placed in second gear, idle speed, and placed into the neutral gear position without touching the brake.

Salyers and Moore, the persons who arrived on the scene, stated they did not move the locomotive or tamper with any evidence except to reach in the operator's compartment to turn the machine off and remove the victim from the compartment.

Testing

No visible movement of the locomotive occurred from the time immediately following the accident until tests were conducted approximately 40 hours after the accident. The motor had remained stationary on the level grade with the park brakes set. The locations of the wheels on the locomotive motor were noted during the initial site investigation and there was no indication that movement occurred.

After clearing the track, controlled tests were conducted on the locomotive's braking system to determine if it was defective. For each test, the motor was placed on the level grade at the location immediately prior to the accident location. The tests involved varying the status of the motor's service and park brakes to determine which brakes would hold.

The tests revealed the motor would not move if the service brakes or the park brakes were engaged. No movement occurred when the park brake was fully applied.

Work Experience and Training

Ryan K. Thatcher had a total of 6 years and 4 weeks of mining experience. His initial hiring date at this mine was August 10, 2009, which was also the day he was task trained for the 15-ton motor.

A review of the training records for the victim indicated the training was up-to-date. However, the training was not sufficient and did not cover the hazards associated with operating the locomotives in areas of low clearance. Further, a review of the mine operator's training plan indicated that the plan did not address the specifics of hazard recognition. The approved training plan will be revised to incorporate diesel locomotive operators in the task training matrix. The revised training that has been given and will be given to diesel locomotive operators will warn and identify each close clearance location, as well as any abrupt height changes. These locations have been depicted on the § 75.1200 map and maintained on the surface to aid in such training.

ROOT CAUSE ANALYSIS

A root cause analysis was conducted to identify the causes of the accident that were correctable through reasonable management controls. Listed below are the root causes identified during the analysis and the corresponding corrective actions implemented to prevent a reoccurrence of the accident.

Root Cause: The mine operator did not ensure that adequate visibility was provided for operators of the 15-ton locomotive. This lack of visibility contributed to the victim placing himself in a hazardous position, outside of the canopy's protection, while the machine was in motion.

Corrective Action: The mine operator must ensure adequate visibility for each piece of rail mounted equipment being used at this mine. The operator removed the 15-ton locomotive from mine property and replaced it with a smaller 12-ton motor. Adequate visibility is now being achieved for the locomotive operators as a result of this change. The mine operator also elected to increase the clearance height at the overcast where the accident occurred.

Root Cause: The mine operator did not have adequate policies or procedures in place to ensure that the retractable compartment covers of the 15-ton locomotive remained closed while the machine was in motion.

Corrective Action: The mine operator chose to make it company policy to ensure that at no time is anyone allowed to have the canopy open while equipment is being moved. Persons are to be trained on this policy on an annual basis.

Root Cause: The mine operator did not have adequate policies or procedures in place to ensure that locomotive operators stayed within the confines of the operator's compartment at all times while the machine was in motion.

Corrective Action: The mine operator has trained its personnel to stay inside the operator's compartment at all times while the locomotive is in motion. They were also trained on hazards presented by pinch-points and to stay clear of pinch points until assured that equipment has been secured against movement.

Root Cause: The mine operator failed to maintain the safety of the locomotive operator(s) at this mine by not providing or installing visible close-clearance signs or lights where there was an abrupt change in the overhead clearance.

Corrective Action: The mine operator installed clearly visible warning signs in areas where abrupt seam height changes were encountered along the mine track

haulage way. The area where the accident occurred is now sufficiently identified and illuminated for a sufficient distance.

Additionally, the approved training plan has been revised to incorporate diesel locomotive operators in the task training matrix. The training that has been given and will be given to diesel locomotive operators will warn and identify each close clearance location, as well as any abrupt height changes. These locations have been depicted on the § 75.1200 map and maintained on the surface to aid in such training.

CONCLUSION

A 26-year old locomotive operator received fatal injuries when he positioned himself above the operator's compartment cover of the locomotive he was operating as it trammed beneath an overcast. Inadequate visibility across the 15-ton locomotive may have influenced the victim to position his body outside of the operator's compartment cover while the locomotive was in motion. Practical means for increasing the locomotive operator's visibility could have prevented the accident. Effective procedures and training were not in place to protect miners from hazards encountered during transportation of supplies through close overhead clearances by way of a 15-ton locomotive.


Norman G. Page
District Manager District 6

1-3-2012
Date

ENFORCEMENT ACTIONS

§ 103(j) Order No. 8262499:

An accident occurred at this operation on July 11, 2011, at approximately 1845. This order is being issued, under 103(j) of the Federal Mine Safety and Health Act of 1977, to assure the safety of persons at this operation. This order is also being issued to prevent the destruction of any evidence which would assist in investigating the cause or causes of the accident. It prohibits all activity at this mine until MSHA has determined that it is safe to resume normal mining operations in this area. This order applies to all persons engaged in the rescue and recovery operation and any other person on-site. This order was initially issued orally to the mine operator at 20:15 and has now been reduced to writing.

§104(a) Citation No. 8262504 was issued citing 30 CFR §75.1916(b):

A fatal, powered haulage accident occurred on July 11, 2011, when an operator of a 15-ton diesel locomotive (s/n 93169) was struck by a metal overcast beam while protruding his head outside of the retractable canopy. This locomotive operator did not have full control of the equipment due to having to position his body away from the equipment controls while it was in motion. There was inadequate visibility between the canopy and the locomotive engine covers.

§314(b) Safeguard No.8262505 was issued citing 30 CFR §75.1403:

A fatal, powered haulage accident occurred on July 11, 2011, when the operator of a 15-ton diesel locomotive (s/n 93169) was struck by a low, metal return overcast beam. This overcast is located two (2) cross-cuts in by the No. 1A track switch, traveling toward the #1 Section and presents an abrupt change in the overhead clearance which is not provided with adequate warning signs or lights as per 75.1403-10[c].

This is a notice to provide safeguard requiring this area and all abrupt changes in the overhead clearance locations to be provided with adequate illumination or signs of adequate size, that are positioned where the track equipment operators can see them from the operator's compartments.

§314(b) Safeguard No. 8262506 was issued citing 30 CFR §75.1403:

A fatal, powered haulage accident occurred on July 11, 2011, when the operator of a 15-ton diesel locomotive (s/n 93169) was struck by a metal overcast beam while protruding his head outside of the retractable canopy.

This is a notice to provide safeguard requiring this and all canopy's that are provided with a retractable opening, to remain in a closed position while the equipment is in motion.

§314(b) Safeguard No. 8262507 was issued citing 30 CFR §75.1403:

A fatal, powered haulage accident occurred on July 11, 2011, when an operator of a 15-ton locomotive (s/n 93169) was struck by a metal overcast beam while protruding his head outside of the retractable canopy while the equipment was in motion.

This is a notice to provide safeguard requiring all employees to keep all body parts inside of mobile track equipment while it is in motion.

§314(b) Safeguard No. 8262508 was issued citing 30 CFR §75.1403:

A fatal powered haulage accident occurred on July 11, 2011, when an operator of a 15-ton diesel locomotive (s/n 93169) was struck by a metal overcast beam, while protruding his head outside of the retractable canopy. There was inadequate visibility between the canopy and the locomotive engine covers.

This is a notice to provide safeguard requiring this and all rail-mounted equipment that transports men/or materials to be provided with adequate visibility in all directions from the operator's compartment.

APPENDIX A

Persons participating in the investigation:

Martin County Coal Company

Keith Runyon	General Mine Manager
David Jude	Superintendent
Clifford Keener	General Mine Foreman
Jim Brock	Maintenance Superintendent
Dave Hensley	Senior Advisor
Benny Salyers	Outby Mine Examiner
Dean Slone	Foreman

Kentucky Office of Mine Safety and Licensing

Tracy Stumbo	Chief Investigator
Greg Goins	Lead Accident Investigator
Nathan Moore	Electrical Inspector
Orville Mitchell, Jr	Roof Control Specialist
Wesley Gearhart	Chief Electrical Inspector

Mine Safety and Health Administration

James Poynter	Assistant District Manager- Technical
William Sergent	Assistant District Manager - Enforcement
Anthony Burke	Supervisory CMS&H Inspector
James K. McElroy	Electrical CMS&H Specialist
Kenneth Hall	CMS&H Inspector
Arnold Fletcher	Electrical CMS&H Specialist
Eric Picklesimer	CMS&H Inspector
Billy Stiltner	CMS&H Inspector
James Angel	Mechanical Engineer/Tech Support
Kenneth Fleming	Lead Accident Investigator

APPENDIX B

Victim Information:

Accident Investigation Data - Victim Information

U.S. Department of Labor
Mine Safety and Health Administration

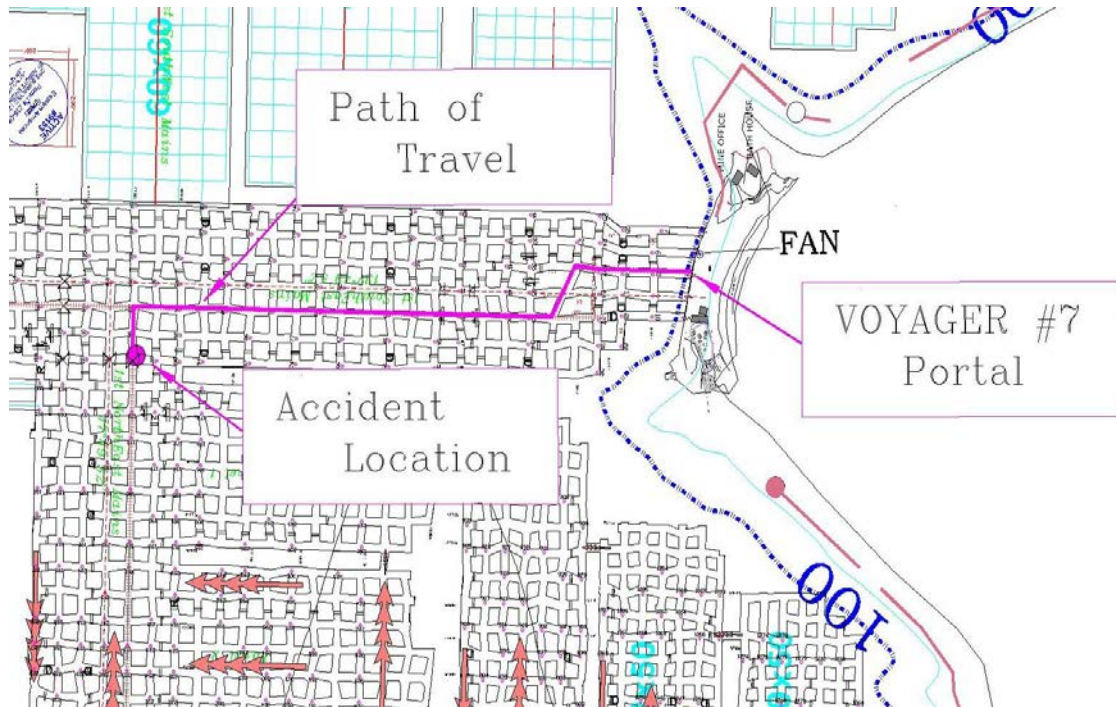


Event Number: 4 1 9 9 2 5 5

Victim Information: 1

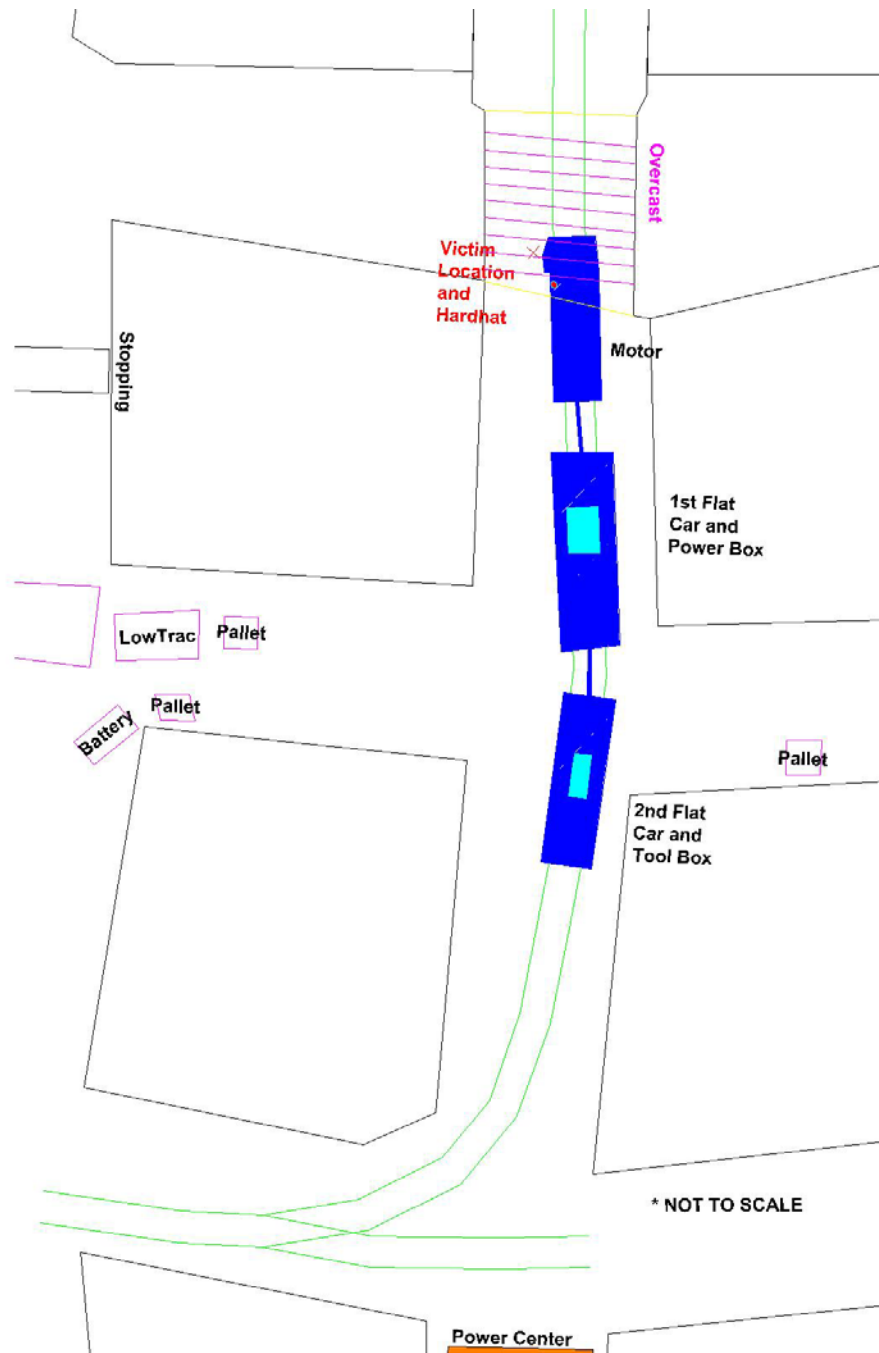
1. Name of Injured/Ill Employee: <i>Ryan K. Thatcher</i>			2. Sex: <i>M</i>	3. Victim's Age: <i>27</i>	4. Degree of Injury: <i>01 Fatal</i>														
5. Date(MM/DD/YY) and Time(24 Hr.) Of Death: <i>a. Date: 07/11/2011 b. Time: 19:00</i>					6. Date and Time Started: <i>a. Date: 08/07/2010 b. Time: 12:00</i>														
7. Regular Job Title: <i>069 Supply Motor Operator</i>				8. Work Activity when Injured: <i>041 Operating supply motor</i>			9. Was this work activity part of regular job? <div style="text-align: right;">Yes <input type="checkbox"/> X No <input type="checkbox"/></div>												
10. Experience		Years	Weeks	Days	b. Regular		Years	Weeks	Days	c. This		Years	Weeks	Days	d. Total		Years	Weeks	Days
a. This					Job Title:					Mine:					Mining:				
Work Activity:		<i>1</i>	<i>24</i>	<i>0</i>			<i>1</i>	<i>24</i>	<i>0</i>			<i>1</i>	<i>24</i>	<i>0</i>			<i>5</i>	<i>8</i>	<i>0</i>
11. What Directly Inflicted Injury or Illness? <i>039 Canopy installed on motor.</i>										12. Nature of Injury or Illness: <i>170 Head was crushed.</i>									
13. Training Deficiencies:																			
Hazard:		New/Newly-Employed Experienced Miner:										Annual:		Task:					
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:		First-Aid:		<i>X</i>		CPR:		<i>X</i>		EMT:		Medical Professional:		None:					
16. Part 50 Document Control Number: (form 7000-1)										17. Union Affiliation of Victim: <i>9999 None (No Union Affiliation)</i>									

APPENDIX C
Map of Accident Scene:
*Not to scale



APPENDIX D

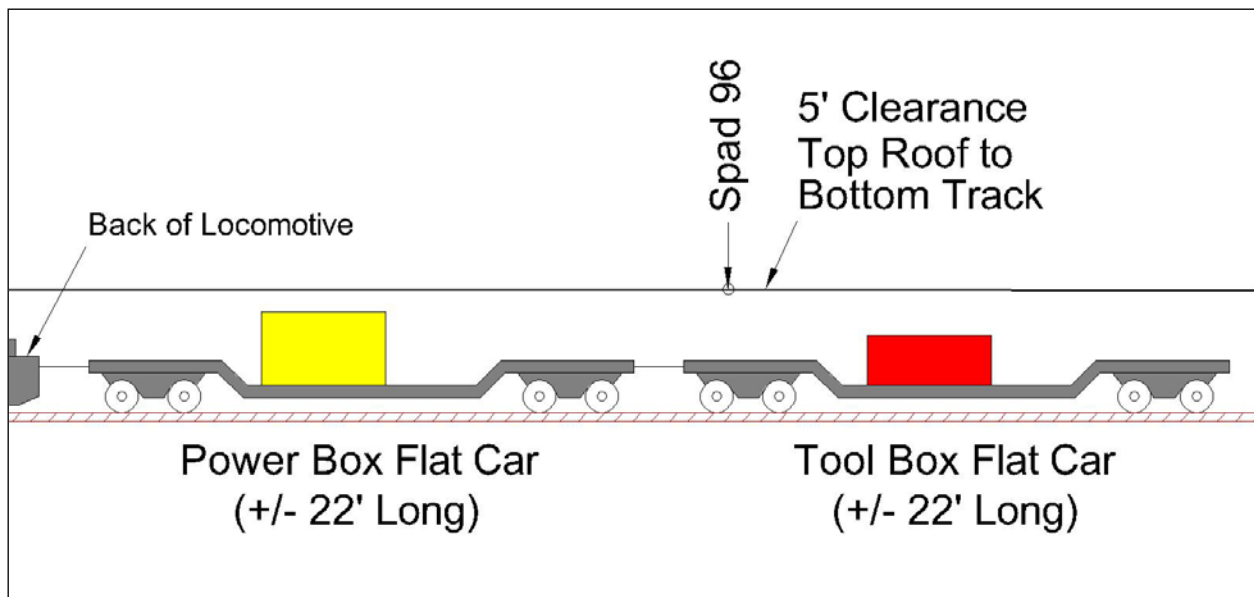
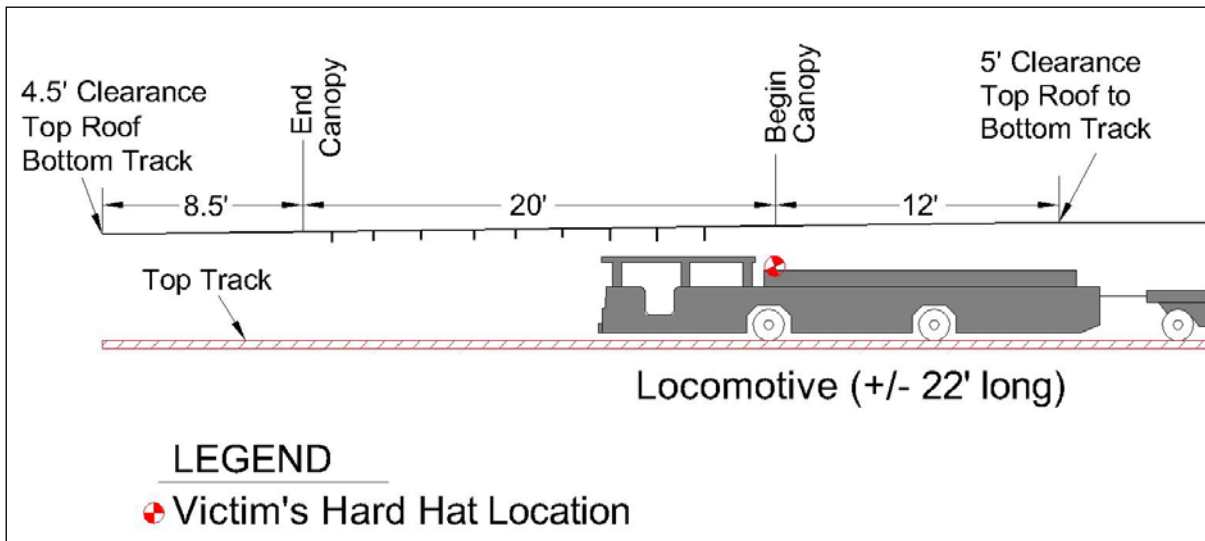
Sketch of Accident Scene:



APPENDIX E

Expanded View of Locomotive/Overcast Area

*Not to Scale



APPENDIX F

Enlargement View of Locomotive/Overcast Area

*Not to Scale

