CAI-2009-06

UNITED STATES
DEPARTMENT OF LABOR
MINE SAFETY AND HEALTH ADMINISTRATION

COAL MINE SAFETY AND HEALTH

REPORT OF INVESTIGATION

Surface Coal Mine

Fatal Surface Haulage Accident
May 21, 2009

at

J&A Mining, Inc.
Friday Branch #1
Ermine, Letcher County, Kentucky
I.D. No. 15-18955

Accident Investigator

Robert H. Bellamy
Mining Engineer

Originating Office
Mine Safety and Health Administration
District 6
100 Fae Ramsey Lane
Pikeville, KY 41501
Norman G. Page, District Manager

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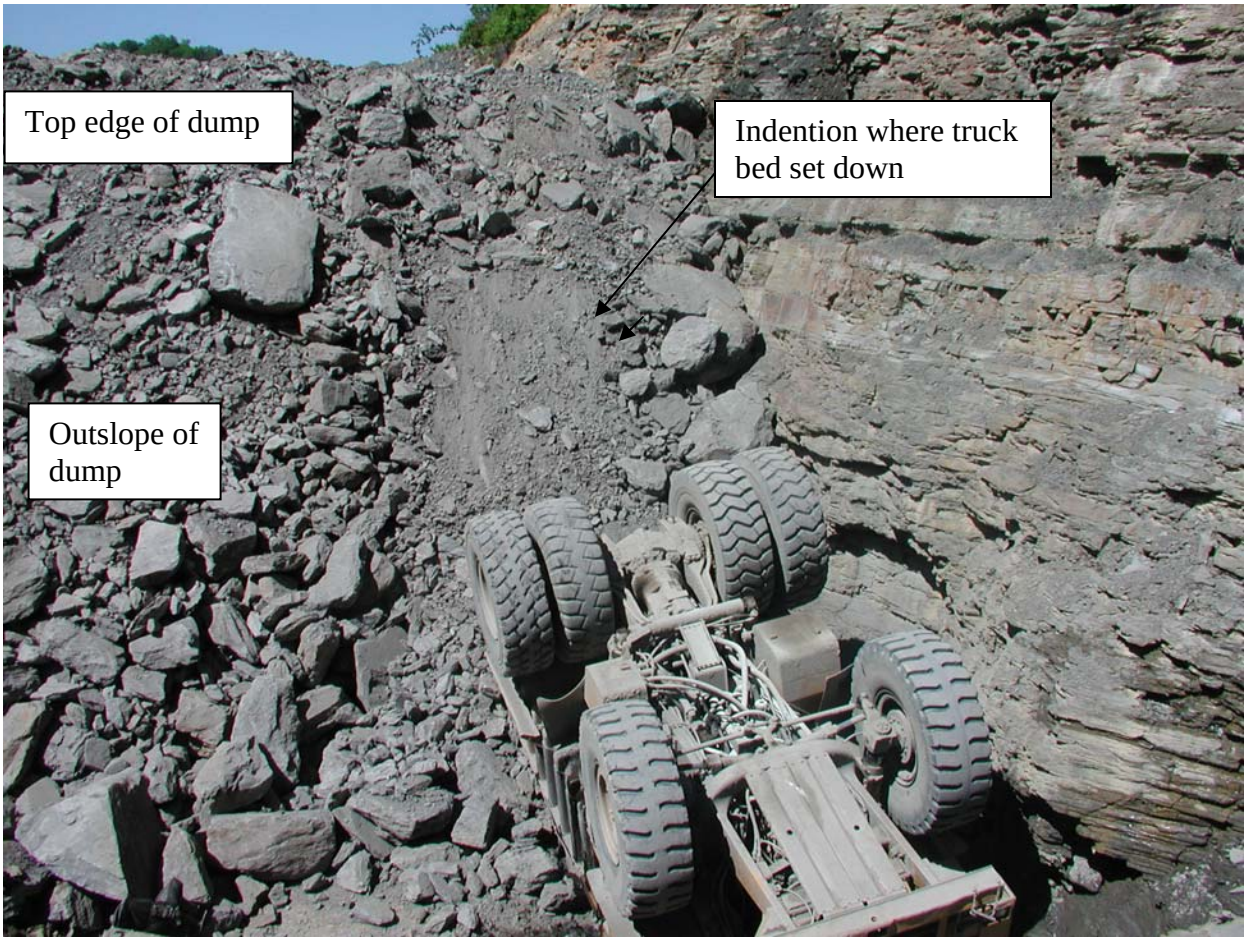


Photo of Accident Scene

OVERVIEW

At approximately 7:55 a.m., on Thursday, May 21, 2009, Jeremy L. Stewart, a 32-year old superintendent/equipment operator for J&A Mining, Inc, received fatal injuries when the Caterpillar (Cat) 773B rock truck, which he was operating, traveled over the edge of the spoil dump. The truck overturned length-wise onto its top, at the base of the spoil dump, approximately 63 feet below. Stewart had approximately 13 years mining experience in operating equipment, 11 months at this mine. Stewart was in the process of backing the loaded truck to the edge of the spoil dump in order to dump rock hauled from the pit, located approximately 1200 feet away. The accident occurred during Stewart's first load of the shift. There were no eyewitnesses to the accident.

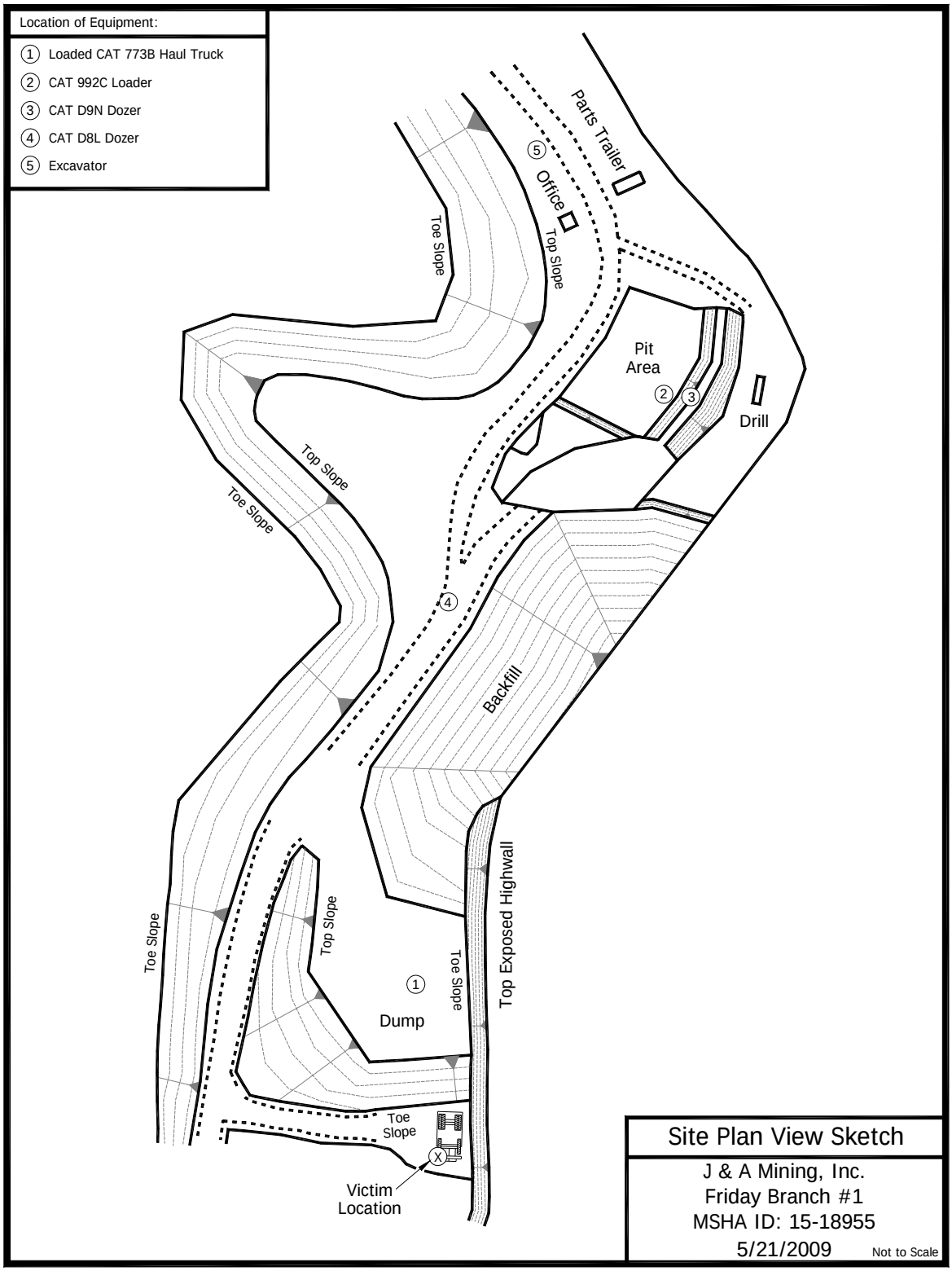
The accident occurred because the driver did not maintain full control of the truck while it was in motion, an adequate berm was not provided at the dumping location to

prevent overtravel of the truck, steepness of the ramp approaching the end of the dump, limited visibility, and an adequate examination for hazardous conditions at the dump site had not been performed by a certified person.

GENERAL INFORMATION

J &A Mining, Inc, Friday Branch #1 mine, is a family owned and operated bituminous surface coal mine, located at Ermine, Letcher County, Kentucky. Contour mining of multiple splits of the Elkhorn No. 3 seam, utilizing front end loaders and off road haul trucks is performed.

The principal officers of J&A Mining, Inc. are Audy Stewart, president, and his son, Jeremy Stewart (victim), superintendent. They also operate equipment as needed. The mine operates one nine-hour shift per day, 5 days per week and employs 9 persons. The mine produces approximately 200 tons of coal per day. The last regular safety and health inspection of the mine prior to the accident was completed on May 1, 2009. The injury incidence rate at this mine prior to the accident was 0.00, compared to a national average of 4.19.


Location of Equipment:
1 Loaded CAT 773B Haul Truck
2 CAT 992C Loader
3 CAT D9N Dozer
4 CAT D8L Dozer
5 Excavator
Parts Trailer
5
Office
Toe Slope
Top Slope
Pit Area
2
3
Drill
Top Slope
Toe Slope
4
Backfill
Top Exposed Highwall
Toe Slope
Top Slope
1
Dump
Toe Slope
Toe Slope
X
Victim Location
Site Plan View Sketch
J & A Mining, Inc.
Friday Branch #1
MSHA ID: 15-18955
5/21/2009
Not to Scale

DESCRIPTION OF ACCIDENT

On Thursday, May 21, 2009, the shift began at 7:30 a.m. Audy Stewart, President/Foreman, conducted a pre-shift examination of the work areas between 7:00 a.m. and 7:30 a.m. The crew and work assignments were the following:

1. Jeremy Stewart, Superintendent/Foreman, fill in for absent rock truck driver;
2. John Bentley, Jr., Drill Operator, drill blast holes for a break down shot;
3. Clifford Gales, Dozer Operator, maintain the haul road and the dump;
4. Mike Stanley, Rock Truck Driver, haul shot rock spoil;
5. Joe Frazier, Loader Operator, load rock trucks at the pit;
6. Audy Stewart, President/Foreman, supervise the job and operate equipment as needed; and,
7. Arnold Stewart, Foreman/Mechanic, maintenance of equipment, operate water truck.

Note: For simplicity, first names only will be used for Jeremy Stewart, Audy Stewart, and Arnold Stewart in the remainder of this section of the report. Others will be identified by last names.

The day's work was to consist of hauling previously blasted spoil from the pit to the spoil dump approximately 1200 feet away, in order to expose the Elkhorn No. 3 Rider coal seam. Citizens Band (CB) radio communication is provided in each piece of equipment and at the mine office.

Frazier loaded the Cat 773B rock truck, being operated by Stanley, for the first load of the day. The dumping location used this day was moved to an area where the highwall was being backfilled. This dump location had not been used during the previous two days. Stanley hauled the first load to the dump, turned the truck and backed up the dump ramp to the right side of the 75 foot wide dumping area and dumped his load. Stanley then drove back to the pit where Jeremy was being loaded.

Gales began the shift by using the D8 bulldozer to grade the haul road from the pit toward the dump. Jeremy passed Gales along the haul road on his way to the dump. As Gales continued working the road, he noticed that Jeremy had not passed him going back to the pit. After Stanley passed Gales on his way back to the dump with his second load, Gales proceeded on the dozer to the dump to check the whereabouts of Jeremy. Gales trammed to the edge of the dump where he spotted the 773B rock truck located at the bottom of the out slope on its top near the base of the highwall. Gales flagged Stanley, who was backing up the middle of the ramp to dump. Stanley used the CB radio to alert the crew. The time was estimated to be 7:55 a.m. Stanley then ran over the edge of the dump to check on Jeremy.

At that time, Bentley was located in the drill and had nearly completed the drilling of one 20 foot hole. Bentley responded to Stanley's CB message and then went to the scene in his personal pickup truck.

Stanley was the first person to arrive at the overturned truck. Jeremy was conscious and alert. Jeremy told Stanley he thought he was alright but that his arm was pinned. Jeremy was lying on his back with his head outside the door's window. Because the truck was resting on its top, it put Jeremy in an inverted position. That is, his feet were at a higher elevation than his head. His right arm was pinned by the steering wheel and his feet were in the pedal area. Stanley attempted to open the cab door but could not. He then went around the truck to check on an alternate way of accessing Jeremy.

Audy, Arnold, Frazier, and Bentley arrived at the scene. As they worked to free Jeremy, he first told them he was "ok." After a while, Jeremy stated that he needed oxygen and asked Audy to call 911. Audy directed Arnold to get the excavator and Stanley to get the medical supplies, both of which were located at the mine office.

The first emergency responder from the Whitesburg, KY Fire Department arrived at 8:33 a.m. The Neon, KY Fire Department ambulance arrived at 8:40 a.m. with Emergency Medical Technician (EMT) personnel and equipment.

Arnold arrived at the scene with the excavator. Audy connected a chain to the cab door of the overturned truck and used the excavator to pull the door off. He then removed the seat from the truck; however, Jeremy's arm remained caught by the steering wheel. Audy attempted to pry the steering wheel with a steel bar, but was unable to do so. Additional personnel from the Whitesburg Fire Department arrived with a jaws-of-life device and cut the steering wheel. Jeremy was then removed from the cab.

Jeremy was placed on a stretcher to be carried to the ambulance and became unresponsive. The ambulance left the scene at 9:16 a.m. He was transported by ambulance to the Wings Air Medical helicopter at the nearby KY State Highway Garage. By that time, Jeremy had stopped breathing and cardio pulmonary resuscitation (CPR) administered en route had been ineffective. The helicopter medical crew joined the ambulance crew and Jeremy was transported by ambulance to the Whitesburg Appalachian Regional Hospital, where he was pronounced dead at 9:47 a.m.

INVESTIGATION OF ACCIDENT

David Ison, Supervisory Coal Mine Inspector at the MSHA Whitesburg Field Office was notified of the accident by Kentucky State Police Trooper David Combs at 9:14 a.m. at the request of Audy Stewart. A non contributory citation was issued for a failure to

comply with 30 CFR, §50.10, which requires a mine operator to contact the MSHA call center at once, without delay, and within 15 minutes.

MSHA personnel were immediately dispatched to the scene. A 103(k) Order was issued to secure the accident scene while the investigation was conducted and to ensure the safety of any person working at the mine. The investigation was conducted in cooperation with the Kentucky Office of Mine Safety and Licensing.

Photographs and relevant measurements were taken. A review of the training records was conducted. A mechanical evaluation of the Caterpillar 773B truck involved in the accident was performed by the MSHA Approval and Certification Center, Mechanical Engineering and Safety Division. The preliminary observation of the truck in the post accident position was performed on May 22, 2009, and the mechanical evaluation was conducted May 26-29, after the truck was moved to a suitable work area. Interviews were conducted with six employees of J&A Mining, Inc. and Mark Cook of Mark Cook Trucking. The interviews were conducted at the MSHA Whitesburg Field Office on May 22, 2009. Follow up interviews of two J&A Mining, Inc. employees were conducted on May 28, 2009, at the MSHA Whitesburg Field Office.

DISCUSSION

ACCIDENT SCENE

The dump site where the accident occurred was being developed to backfill an existing highwall where previous mining had been conducted. The dump was developed by progressively dumping or pushing the shot rock over the edge and ramping up as the dump extended, in order to eventually place backfill to a point near the top of the highwall. The surface of the ramp leading to the edge was well-compacted and relatively smooth.

A sketch of the dump is provided in Appendix A of this report. At the time of the accident, the vertical height at the end of the dump was 63 feet. The ramp for the trucks to back up before dumping was elevated 7.3 degrees (12.8%) and was 198 feet long. The end of the dump site was 75 feet wide. The angle of the outslope, from the top edge of the dump down to the toe, was 32.5 degrees, which is the angle of repose. An indention was identified on the outslope, beginning at a point 17 feet, 4 inches from the top, indicating the rear end of the truck bed contacted the slope at that point. The indention continued down the outslope to a point near the end of the truck bed in its final position. The truck rotated 180 degrees over the end of the bed, sliding down the outslope as it rotated over. It then fell onto its top, coming to rest with the front end past the toe of the outslope and the rear end elevated on the lower portion of the outslope. The cab of the truck was partially collapsed. When the truck was turned

upright during the investigation, a pile of rock material was under the truck bed, indicating the truck was loaded when it went over the edge.

The exact size of the berm at the edge of the dump prior to the accident could not be conclusively determined due to the berm being altered before MSHA investigators arrived. The berm was built up by Joe Frazier, Loader Operator. Frazier stated during the investigation that after the accident occurred, a voice on the CB radio told him to "beef up" the berms at the dump. Frazier did not know whose voice he heard on the radio. He operated the 992C loader to dig out the road surface near the end of the ramp and used the material to build up the front of the berm along the edges of the ramp and the end of the dump site, including the location where the truck went over the edge. There was no opening left in the altered berm where the truck went over. Mine management and other employees stated they did not direct Frazier or hear any one else direct him to build up the berm. A non-contributing citation was issued because the accident site was altered.

Measurements taken indicate the original berm was 12 ½ inches high on the left side and nine inches high on the right side, when facing the end of the dump at the location where the truck went over the edge. However, the measurements are not conclusive due to the added material overlapping the base of the original berm on the downhill side.

The dump was oriented in a northeasterly direction, such that the sun was behind and to the left of the drivers as they backed up the dump ramp, which put the sun in the driver's side rear view mirror. Stanley stated during his interview that the sun had blinded him when backing up to dump the first load of the day and he had stopped multiple times when approaching the edge, because he could not see in the reverse direction. The effect of the sun's reflection may have restricted the victim's ability to see the edge of the dump.

The 12.8% uphill grade of the dump ramp may have been a factor in the accident when combined with limited visibility. In order to maintain a constant speed while backing the loaded trucks up the dump ramp, the drivers were required to utilize a high rate of fuel throttle. It is possible that the victim was backing the truck under high throttle, and misjudged the location of the edge, due to limited visibility when he drove through the berm.

MECHANICAL EVALUATION OF THE TRUCK

A mechanical evaluation of the truck was conducted by the Approval and Certification Center, Mechanical and Engineering Safety Division, Eugene Hennen and Jonathan Hall, Mechanical Engineers. The following information was obtained from the report detailing the results of the mechanical evaluation:

General Machine Information

The machine involved in the accident was a rigid frame, off-road, 50 ton dump truck with Caterpillar Model 773B, Serial Number 63W0604 markings. The truck was manufactured in 1980. The hour meter read 23,515 hrs. The truck was approximately 30' long, 14' wide, and 14' high. The truck had a total gross weight of approximately 185,000 lbs with a 100,000 lb payload.

Rollover Protection System (ROPS) and Seat Belt

The truck was equipped with a seat belt and not equipped with a ROPS cab. 30 CFR, §77.403-1(a) does not include haul trucks in the list of equipment which is required to be provided with ROPS. A seat belt was provided, but was not worn by the victim. 30 CFR, §77.1710(i) only requires that seat belts be worn in a vehicle where there is a danger of overturning and roll protection is provided. It is not known that a ROPS cab and the use of the seat belt would have prevented fatal injuries in this accident, but it is probable.

Controls

The positions of the operator's controls were observed after the accident. The engine start switch (key) was in the "OFF" position. The transmission gear selector lever was in the first gear position. The front brake switch was in the "OFF" position. The master (battery) switch behind the operator's seat was in the "OFF" position. The parking brake was in the "OFF" position. The mine owner/ foreman stated that during recovery of the victim he turned off the engine start switch and the master (battery) switch. Other control positions may have been affected during the accident or recovery. A procedure provided by Caterpillar confirmed that the transmission was in forward and first gear at the time the master switch was turned off.

Brake System

The truck was equipped with service, parking, and secondary brake systems. A switch on the dashboard enabled the operator to switch the front brakes out of service. The front brake switch was "OFF" when observed after the accident and was likely to have been "OFF" during the accident. Audy Stewart stated that he task trained his men not

to use the front brakes, since he considered the front brakes to have an adverse effect on steering and handling of the vehicle. The front brakes were not operational initially during testing. Hydraulic oil was added to the reservoir supplying the front brake master cylinder and the front brakes were bled. After several applications of the front brakes, they began operating with 300 psi of hydraulic pressure. The manufacturer's recommended hydraulic pressure is 600 psi.

Tests revealed that the rear service brakes, parking brake, secondary brake, and retarder were operational. The air and hydraulic operating pressures and brake wear of these systems were within the manufacturer's specifications. The condition of the front brakes is not considered to contribute to the accident because the front brakes were switched "OFF."

WORKPLACE EXAMINATIONS

30 CFR, §77.1713 (a) requires examinations by a certified person of each working area of the mine at least once during each shift.

Examinations of the work areas for J&A Mining, Inc. were performed by Audy Stewart, who is a certified person. The record for the workplace examination on the date of the accident stated, "all work areas appear safe." The dump site used the day of the accident had been inactive the previous two days.

Audy Stewart stated during the investigation that he did not include the dump for the examination conducted on May 21, 2009, which was supposed to cover all work areas. The record of the examination does not identify particular areas.

TRAINING

A review of the training records for J&A Mining, Inc. revealed that Jeremy Stewart had last received Annual Refresher Training on January 21, 2008. MSHA policy provides that Annual Refresher Training be conducted not later than during the 12th month following the last annual retraining received. However, Experienced Miner Training was received on June 13, 2008, when this mine started. MSHA policy provides that receipt of Experienced Miner Training starts a new cycle for the Annual Refresher Training , so Stewart's Annual Refresher Training did not expire until June 30, 2009.

ROOT CAUSE ANALYSIS

An analysis was conducted to determine the most basic causes of the accident. Listed below are the root causes identified during the analysis and the corresponding corrective actions implemented to prevent a recurrence of the accident.

Root Cause: The mine operator failed to follow his established policies and procedures to ensure that an adequate berm to prevent overtravel of rock trucks at the edge of the dump was provided at all times. The operator's established ground control plan states that "Before dumping begins, and throughout the shift, equipment operators and their supervisors will routinely check the dump area for unsafe conditions, such as cracks, inadequate berms, unstable material on the slope below the dump point, or a loaded-out slope below the dump point." Had this precaution been followed, the inadequate berm may have been identified and corrective action taken to build up the berm before the dump was used.

Corrective Actions: The operator retrained all the equipment operators and supervisors in the requirement to maintain an adequate berm in dumping areas and directed the equipment operators to report inadequate berms to supervisors.

Root Cause: The policies and procedures of the operator were inadequate to assure that proper examinations of all work areas were conducted by a certified person. The workplace examination did not include a physical examination of the dump area by the designated certified person on the date of the accident.

Corrective Actions: The operator's established ground control plan was revised to require pre-shift examinations by a certified person and recorded. Hazardous conditions identified during pre-shift examinations are required to be corrected before miners are allowed to enter the area. These pre-shift examinations are in addition to the on-shift examinations required by 30 CFR, § 77.1713.

CONCLUSION

The accident occurred because an adequate berm to prevent overtravel and overturning of rock trucks at the dump site was not provided. An adequate examination by a certified person of the active working area at the dump was not conducted and the victim did not maintain full control of the truck while it was in motion.

It is most likely that a combination of factors; inadequate berm, steepness of the ramp approaching the end of the dump, and limited visibility contributed to the accident.

Approved by:

Norman G. Page
District Manager

10-1-09
Date

ENFORCEMENT ACTIONS

1. A 103(k) Order, No. 8219687, was issued on May 21, 2009, to J&A Mining, Inc. to assure the safety of all persons at the mine.

   Condition or Practice: "This mine has experienced a fatal truck haulage accident at the mine refuse dumping area. This order is issued to assure the safety of any person at the coal mine until an examination or investigation is made to determine the refuse dumping area and all other areas of the mine are safe. Only those persons selected from company officials, state officials, the miners' representative and other persons who are deemed by MSHA to have information relevant to the investigation may remain in the affected areas."

2. A 104(a) Citation, No. 6660578, was issued for a violation of 30 CFR, §77.1607(b) for failure of the truck driver to maintain full control of the rock truck while it was in motion.

   Condition or Practice: The driver of the Caterpillar 773B rock truck involved in the fatal accident on May 21, 2009, did not maintain full control of the truck while it was in motion. The truck was backed over the edge of the dump site before overturning.

3. A 104(d)(1) Citation, No. 6660579, was issued for a violation of 30 CFR. §77.1605(l) for failure to provide a berm to prevent overtravel at the dump site.

   Condition or Practice: A berm to prevent overtravel and overturning of trucks was not provided at the dump site. A fatal accident occurred on May 21, 2009, when a Caterpillar 773B rock truck overtraveled the edge of the dump site and overturned.

   The mine operator engaged in aggravated conduct constituting more than ordinary negligence. This violation is an unwarrantable failure to comply with a mandatory standard.

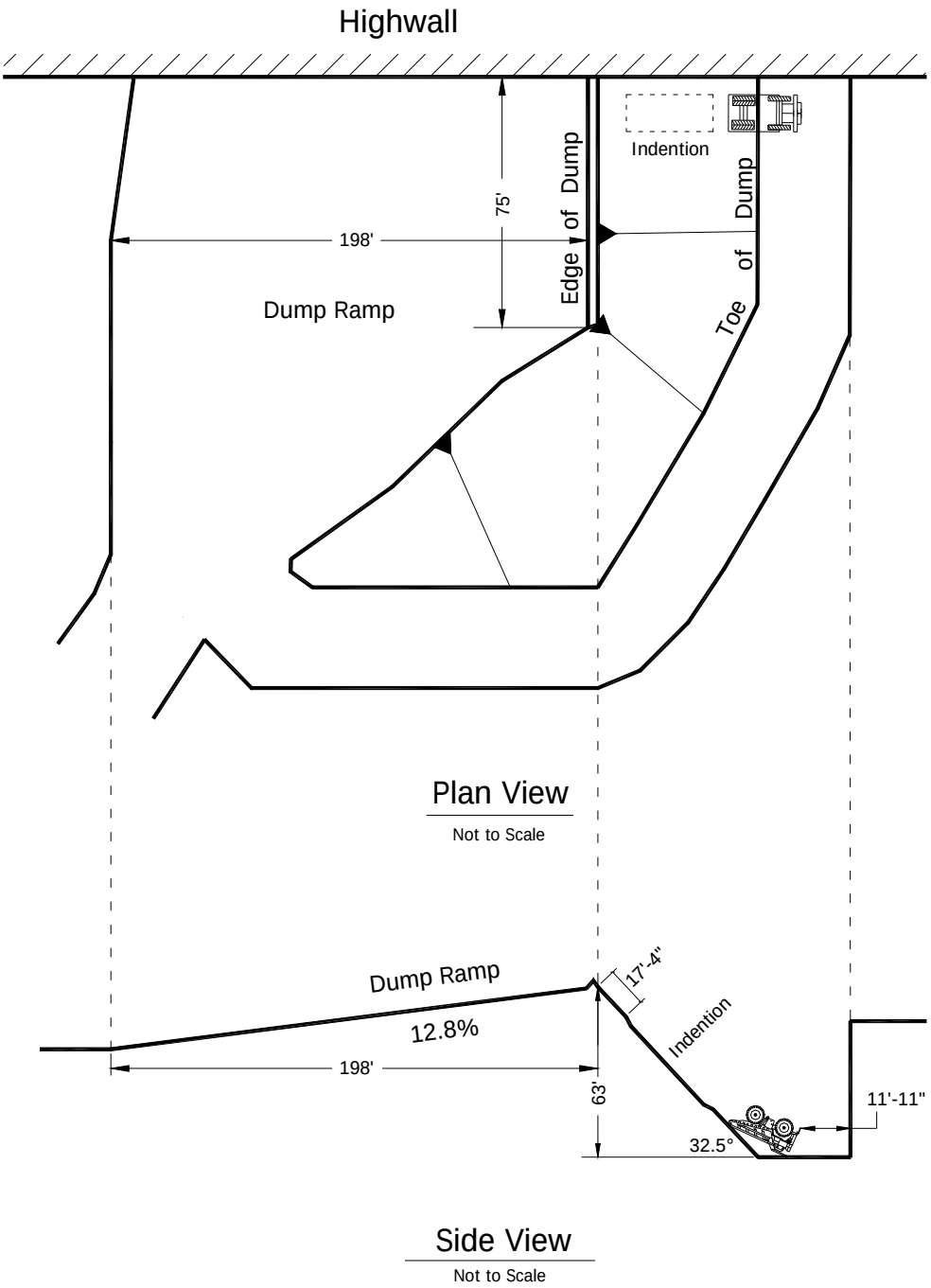
4. A 104(d)(1) Order, No. 6660580, was issued for a violation of 30 CFR, §77.1713(a) for failure to conduct an examination of the active dump site.

   Condition or Practice: An inadequate examination was conducted at this surface mine on May 21, 2009. The certified person conducting the examination did not physically examine the active dump area.

   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

Sketch of Dump Site



Appendix B

List of Persons Interviewed

J&A Mining, Inc.

Audy Stewart	President
Arnold Stewart	Foreman
Clifford Gales	Dozer Operator
Michael Stanley	Rock Truck Driver
John Bentley, Jr.	Drill Operator
Joseph Frazier	Loader Operator

Mark Cook Trucking

Mark Cook	Owner

APPENDIX C

List of Persons Participating in the Investigation

Kentucky Office of Mine Safety and Licensing

Greg Goins	Accident Investigator
Tracy Stumbo	Chief Accident Investigator
Tim Fugate	Accident Investigator
Gary Fugate	Inspector
Michael Eldridge	Inspector

Mine Safety and Health Administration

David Ison	Supervisory Coal Mine Inspector
Gerald McMasters	Supervisory Special Investigations
Debbie Combs	Training Specialist, Educational Field Services
Robert Bellamy	Mining Engineer/Accident Investigator
Craig Plumley	Staff Assistant/Accident Investigation Coordinator
Tom Grooms	Attorney
William Collins	Coal Mine Inspector
James Fields	Coal Mine Inspector
Michael Belcher	Special Investigator
Eugene Hennen	Mechanical Engineer
Jonathan Hall	Mechanical Engineer
Gregory Hall	Civil Engineer

APPENDIX D
Photographs

Photo 1. The Caterpillar 773B truck in the post-accident position at the toe of the outslope of the dump

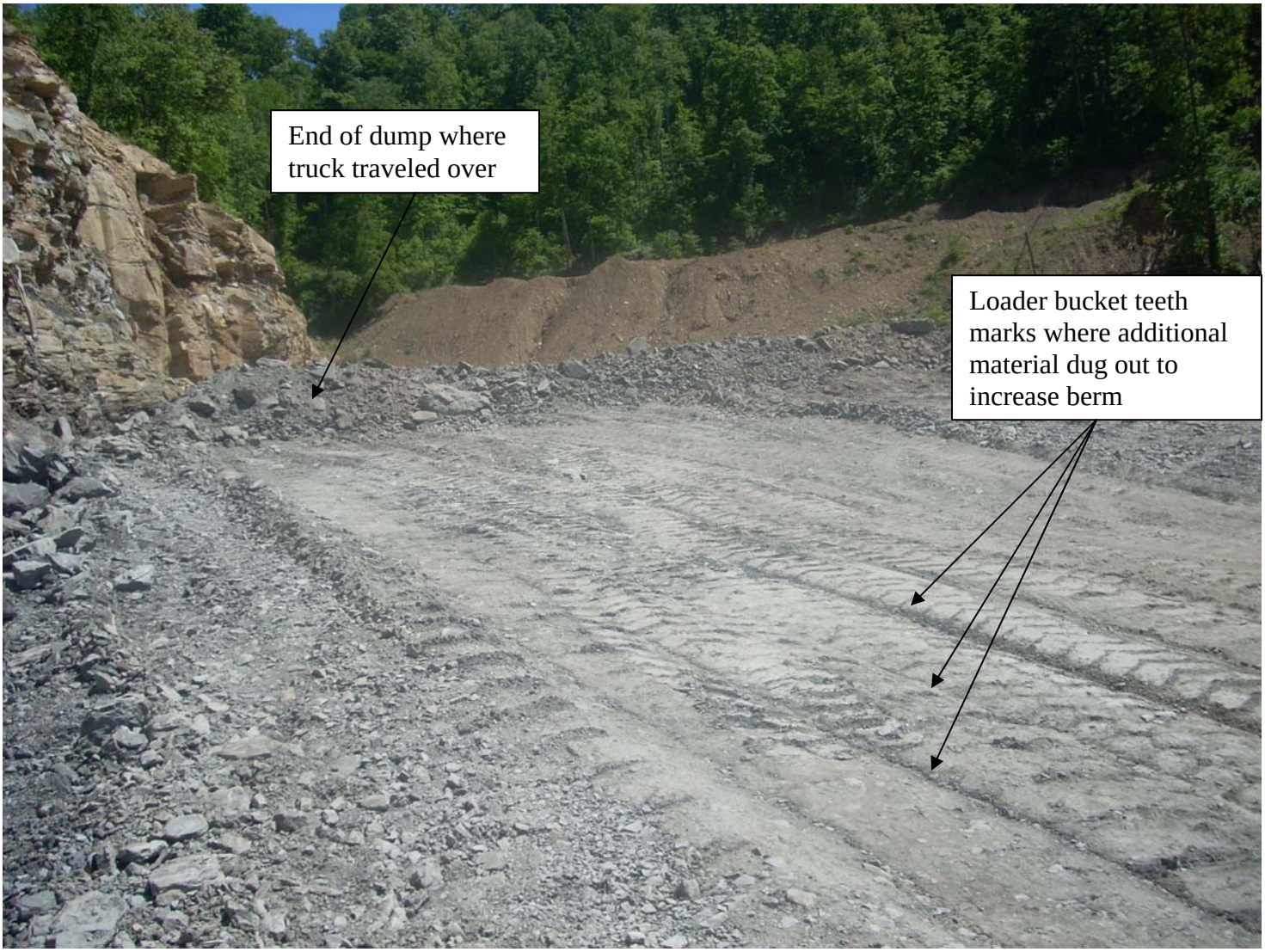


Photo 2. Top of dump site

Photo 3. Edge of dump after accident

Photo 4. Caterpillar 773B rock truck after being up righted and moved to evaluation area

APPENDIX E
Victim Information

Accident Investigation Data - Victim Information

Event Number: 4 1 8 2 4 9 5

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

Victim Information: 1

1. Name of Injured/Ill Employee:	2. Sex	3. Victim's Age	4. Degree of Injury:
Jeremy L. Stewart	*M*	*32*	*01 Fatal*

5. Date(MM/DD/YY) and Time(24 Hr.) Of Death:	6. Date and Time Started:
a. Date: 05/21/2009 b.Time: 9:47	*a. Date: 05/21/2009 b.Time: 7:30*

7. Regular Job Title:	8. Work Activity when Injured:	9. Was this work activity part of regular job?
049 Foreman	*058 Operate rock truck*	Yes X No

10. Experience	Years	Weeks	Days		Years	Weeks	Days		Years	Weeks	Days		Years	Weeks	Days
a. This Work Activity:	*13*	*5*	*4*	b. Regular Job Title:	*8*	*5*	*1*	c: This Mine:	*0*	*42*	*0*	d. Total Mining:	*13*	*5*	*4*

11. What Directly Inflicted Injury or Illness?	12. Nature of Injury or Illness:
002 Bodily motion	*170 crushing*

13. Training Deficiencies:
Hazard: | New/Newly-Employed Experienced Miner: | Annual: | Task:

14. Company of Employment: (If different from production operator)
Operator
Independent Contractor ID: (if applicable)

15. On-site Emergency Medical Treatment:
Not Applicable: | First-Aid: | CPR: X | EMT: X | Medical Professional: | None:

16. Part 50 Document Control Number: (form 7000-1)

17. Union Affiliation of Victim: *9999* *None (No Union Affiliation)*