*This presentation is for illustrative and **general** educational purposes only and is not intended to substitute for the official MSHA Investigation Report analysis nor is it intended to provide the sole foundation, if any, for any related enforcement actions.*

GENERAL INFORMATION

Coal Mine Fatal Accident 2004-05

Operator:	Raw Coal Mining Company, Inc.
Mine:	Cucumber Mine
Accident Date:	February 10, 2004
Classification:	Powered Haulage
Location:	District 4, McDowell County, WV
Mine Type:	Underground
Employment:	39
Production	650 tons/day

OVERVIEW

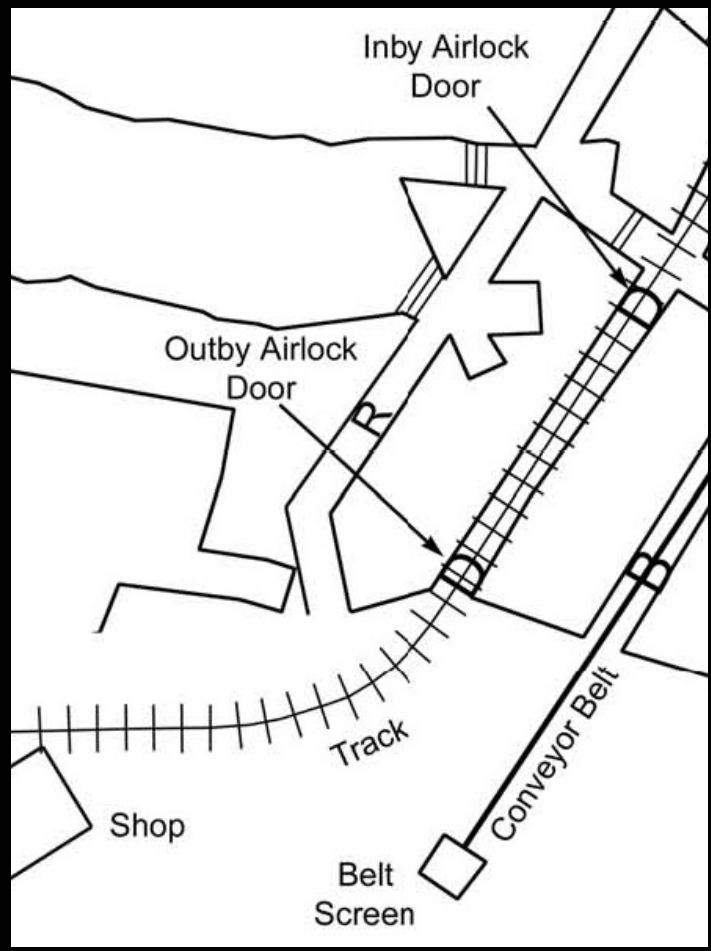
Coal Mine Fatal Accident 2004-05

Powered Haulage

- On Tuesday, February 10, 2004, at 7:35 a.m., a 25-year old roof bolting machine operator with 7 years of mining experience was fatally injured while operating an open-type, battery-powered, track-mounted personnel carrier.
- The personnel carrier entered the track portal through an open airlock door and continued to gain speed as it descended an 8 to 21% grade on damp to wet rails for approximately 139’ where it struck the closed inby airlock door.
- The victim was fatally injured during the impact with the inby airlock door.
- The personnel carrier traveled an additional 320’ before derailing.

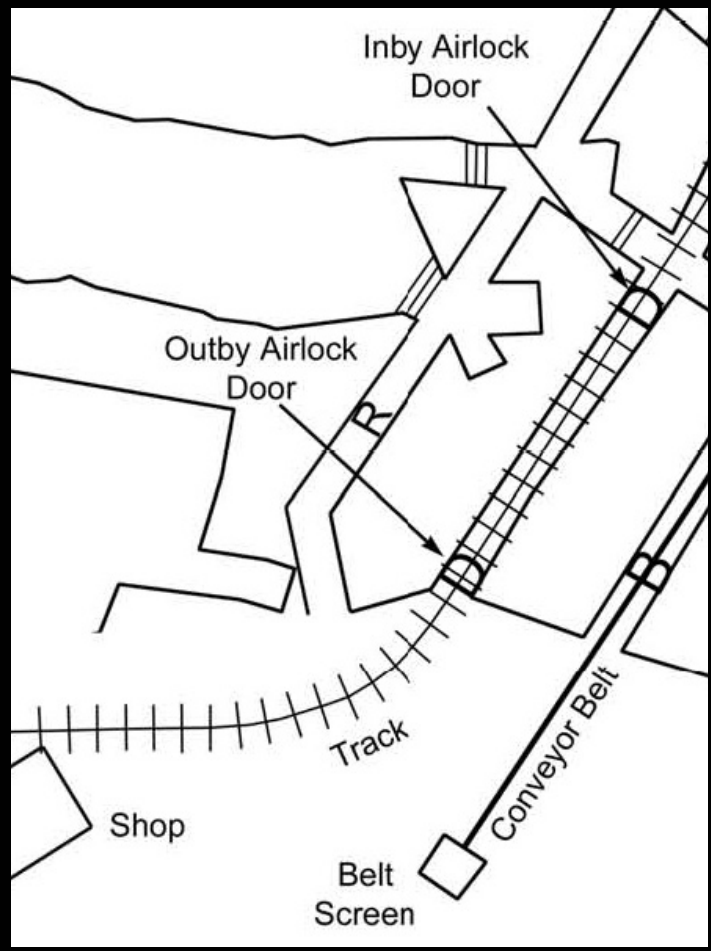
ACCIDENT DESCRIPTION

- During the midnight maintenance shift on February 10, 2004, routine maintenance was performed on the personnel carrier.
- Maintenance on the personnel carrier included using compressed air to blow out any wet sand in the pots and discharge hoses.
- At the start of dayshift, the victim filled the two sanders on the inby end of the personnel carrier, immediately before 6 other miners boarded the machine.
- A surface miner opened the outby airlock door which allowed the personnel carrier to enter the mine without stopping to operate the electric door hoist.
- The personnel carrier entered the mine at a faster than normal speed.



ACCIDENT DESCRIPTION

- Continuing to gain speed, the victim shouted a warning to passengers on the personnel carrier while approaching the closed inby airlock door.
- The victim was fatally injured during impact with the airlock door – before the personnel carrier continued traveling approximately 320 feet on the track before derailing.
- Observing that the victim was seriously injured, one of the passengers notified the surface.
- The damaged door was cleared from the track and medical assistance was provided.
- The victim was transported to Welch Community Hospital where he was pronounced dead at 8:37 a.m.



EQUIPMENT

- The personnel carrier was a West Virginia Armature model HD which had been rebuilt by Mankin Equipment, Inc.
- The nominal weight of the personnel carrier was 16,000 lbs. The frame was 22 feet long and 7 feet wide, with a height of 28 inches above the track. Wheel diameter was 16 inches and operated on a track gauge of 42 inches.
- The operator's compartment was in the center of the machine and situated the operator in a reclined position – perpendicular to the direction of travel.
- Following the accident, the left inby sander was found to be empty while the right inby sander contained sand.
- During post-accident testing, the sanders were not operating properly. Due to deterioration in the linkage, the plunger did not adequately plug the left inby sander box – allowing all sand to escape in less than 2 minutes.
- A delay before the personnel carrier entered the mine on the day of the accident likely allowed all sand to drain from the left sander box – significantly reducing braking capacity.

EQUIPMENT

- The airlock doors were 3/16-inch steel, hinged at the top and were operated by an electric chain hoist and pulley assembly.
- Ordinarily, it was necessary that track-mounted equipment operators stop and depress switches to open the doors – limiting the speed of vehicles entering the mine. However, because the door was opened by a surface miner on the day of the accident, the personnel carrier entered the mine at a higher speed than was customary.

ROOT CAUSE ANALYSIS

Causal Factor: The track was on a slope from 8.9 to 21.2 percent, over a distance of approximately 170 feet into the mine.

Corrective Actions: After removing the track, a continuous mining machine was used to reduce the grade from the portal to the inby airlock door location.

Causal Factor: Airlock doors were installed on or near step grades which required track equipment, entering or leaving the mine, to stop and restart on grades.

Corrective Actions: The track portal canopy was extended 50 feet and the set of airlock door were installed on the surface.

ROOT CAUSE ANALYSIS

Causal Factor: The sanding devices provided for the personnel carrier were not maintained in proper operating condition. When tested, the sander on the inby operator's side of the vehicle would remain open and continue to apply sand until the sander was empty. Management did not require pre-operational examinations to detect such equipment malfunctions or failures.

Corrective Actions: New stainless steel sanding devices were installed on the personnel carrier. Management has implemented a program to conduct effective pre operational checks of equipment.

ROOT CAUSE ANALYSIS

Causal Factor: The personnel carrier entered the mine portal at a rate of speed that did not allow the vehicle to be stopped before contacting the closed airlock door.

Corrective Actions: A safeguard was issued that required mine management to ensure all self propelled personnel carriers are operated at speeds consistent with conditions and equipment being used. Management has designated specific operators for the track equipment and implemented a program requiring all employees to receive task training every three months. A policy was also established allowing only those persons actually traveling through doors to open and close them.

Causal Factor: An adequate pre-operational examination was not conducted on the personnel carrier prior to it being put into service.

Corrective Actions: A safeguard requiring pre-operational examinations of mobile track equipment, including the sanders and braking systems, is to be performed and documented.

CONCLUSION

The personnel carrier was operated at a speed that was inconsistent with track and equipment conditions, and was not controlled so that it could be stopped before striking the inby, closed, airlock door. Track conditions affecting stopping distances at the approach to the airlock doors included damp to wet rails installed on steep grades. The outby airlock door was opened by someone other than the equipment operator or a passenger, allowing the personnel carrier to approach the door at a speed that was faster than normal.

An equipment defect, the inoperable sanding device, likely reduced the braking capacity on the personnel carrier at the time of the accident. This defect was not identified and corrected before the personnel carrier was placed in operation because an adequate pre-operational inspection was not conducted. Mine management did not require such inspections or other equivalent means to ensure that sanding devices were well-maintained prior to using personnel carriers. .

ENFORCEMENT ACTIONS

104(a) Citation for a violation of 30 CFR 75.1403 pursuant to safeguard 7201460 dated March 20, 2001.

The operator failed to properly maintain the sanding devices, provided for the No. 2 personnel carrier, serial number 200-1451, manufactured by West Virginia Armature. During an accident investigation, it was determined that the sander on the inby end, operators side, would not hold sand. When sand was added to the sand box, the sand immediately and continuously flowed from the sand box until the box was empty.

ENFORCEMENT ACTIONS

314(b) Safeguard.

Requires pre-operational examinations of all mobile track equipment, including the sanders and braking systems to be performed and documented before the equipment is operated.

314(b) Safeguard.

According to testimony obtained in a fatal powered haulage accident that occurred on February 10, 2004, the No. 2 personnel carrier was not being operated at speeds consistent with conditions and equipment being used. The mantrip entered the mine portal at a speed that did not allow the mantrip to be stopped before contacting the closed inby airlock door. This is a notice to provide safeguards requiring that all self propelled personnel carriers be operated at speeds consistent with conditions and equipment being used and should be so controlled that they can be stopped within the limits of visibility.

BEST PRACTICES

- Avoid placing doors, switches, and other installations in haulageways where significant grades exist.
- Ensure that sanding devices contain adequate sand and are working properly before operating track mounted equipment.
- Exercise caution when approaching grades and operate track-mounted equipment at speeds consistent with grades and track conditions. Remember, as your speed increases, your ability to stop without sliding decreases and, once you start sliding, it becomes even more difficult to stop.
- Install haulageway doors such that they can be opened on the fly without the need to stop and exit the equipment.
- Ensure dead-man controls fail safe and do not neutralize brakes or dynamic retarding controls.