What are the Potential Hazards?

- Three Bench Drills Operating
- Flatbed Truck Collecting drill cuttings
- Service Truck
- Victim was operating this drill
- Truck that Struck Victim
Accident Time Line

• About 12:00 PM, the victim finished drilling the 12th blast hole, and started backing the drill into position to drill another hole.

• At this time, a sample crew (truck driver and two samplers) was collecting drill cutting sample bags in the same area.

• About 12:25, the victim finished positioning the drill, exited the cab and began walking across the drilling area.

• At the same time, the sampling crew driver was backing up the truck to collect the filled sample bags. The driver was looking at the driver’s side mirror for the drill holes and the two samplers. Truck speed was 2-3 mph. The truck had traveled about 124 feet prior to hitting the victim.
Accident Time Line

• The two samplers were standing 80 feet behind the drill and about 36 feet to the left. One sampler saw the victim walking toward the path of the truck; she shouted to him and waved her arms. At that time the victim looked up and was then immediately hit by the truck.

• Death due to blunt force trauma.
Conditions at Time of Accident

- All 3 drills were operating at high idle
- Only 1 drill was drilling
- The flatbed truck was equipped with a workable back-up alarm
- The alarm was mounted in rear bumper area, in board of bed’s rear face plate, 33 inches above the ground with the sound opening pointed toward the ground
- Weather: sky was overcast, temperature was 58 °F
Employee Information

- Victim
  - 57 years old
  - 27 years of mining experience
  - Received 30 CFR Part 48 training

- Truck Driver
  - 9 months of mining experience (at this mine)
  - Received 30 CFR Part 48 training
A 57-year old surface driller with 27 years of experience was fatally injured at a surface gold mine. The victim was drilling in a pit, exited the drill, and was walking in the drill area when he was struck by a flatbed truck as it backed up. The truck was in the area to collect drill cutting sample bags.
Top View of Accident Scene
Detailed View of Accident Scene
Mirrors and Visibility
Back-up Alarm Specifications

• ECCO Model 850
  – Rated sound pressure level of 112 ± 4 dBA at a distance of 4 feet
  – Should be mounted 4 feet above ground level in area of the rear face of the bed
  – Sound opening facing the “target hazard area”

• Additional Recommendation: Provide a spotter for the driver when backing vehicle in high noise areas where people may be walking
Back-up Alarm Test

• Alarm SLMs – attached to truck
  – 113 dBA 2 inches from alarm
  – 82 dBA 3 feet behind the truck
  – 78.9 dBA 3 feet beside rear dual tires

• Alarm SLMs – not attached to truck
  – 113 dBA 2 inches from alarm
  – 90 dBA 2 feet from alarm

• Drilling area SLMs (simulated)
  – 86 dBA facing rear of truck (where victim was hit)
  – 86 dBA 7 feet to the passenger side of the truck at rear wheel well
  – Truck engine idling with transmission in reverse / all 3 drills were operating at high idle and 1 was drilling
What is the Root Cause?
Management policies and procedures failed to:

• **Address the hazards associated with foot traffic in this work area.**
  – The direction of travel for mobile equipment traveling in this area was not specified. The truck involved had backed up approximately 124 feet prior to striking the victim.

• **Ensure the flatbed truck operating in the drilling area had a back-up alarm audible above the surrounding noise levels.**
  – The back-up alarm was not mounted on the flatbed truck at a location recommended by the manufacturer.
Root Cause Analysis

Management policies and procedures failed to:

• **Address the hazards associated with foot traffic in this work area.**
  – The direction of travel for mobile equipment traveling in this area was not specified. The truck involved had backed up approximately 124 feet prior to striking the victim.

• **Ensure the flatbed truck operating in the drilling area had a back-up alarm audible above the surrounding noise levels.**
  – The back-up alarm was not mounted on the flatbed truck at a location recommended by the manufacturer.
  – A spotter was not used to assist the driver when backing a vehicle in an area with noise levels exceeding the alarm sound level.
  – Did not consider hearing loss of drill operator from exposure to high noise levels and aging.

• **Ensure adequate training was provided for identifying hazards or operating equipment in an active working area.**
  – Truck driver had only 9 months of mining experience.
MSHA Best Practices

- Before moving mobile equipment, look in the direction of travel, use all mirrors, cameras, and installed proximity detection devices to ensure no one is in the intended path.
- Sound the horn to warn persons of movement and wait to give them time to get to a safe location.
- Operate mobile equipment at reduced speeds in work areas.
- Do not operate mobile equipment in reverse for extended distances when it is possible to travel forward.
- Be aware of the location of mobile equipment in your work area before exiting your equipment.
- Communicate with mobile equipment operators and ensure they acknowledge your presence.
- Wear high visibility clothing when working around mobile equipment.
- Train all miners to recognize work place hazards.

Which best practices would have prevented the fatality?
Are there any other best practices that could have prevented this fatality?
CONSIDER THE VICTIMS CONDITION:

- 57 years old
- 27 years of mining experience

WHAT CONDITION COULD HAVE LED TO THE ACCIDENT??
3 Deaths have occurred in recent years because pedestrians were struck by haulage trucks or loaders. One unfortunate accident occurred when a loader operator backed over his wife when placing material along a newly installed truck scale.

When you dismount your mobile equipment you become the pedestrian. Unless you are in a designated area for parking and dismounting your equipment, do not dismount. A person outside the cab is exposed to numerous hazards; including mobile equipment, stockpile sloughing, material falling from loader bucket, material falling off trucks, conveyors, etc.

• Require operators to prepare trucks for loading before entering the loading area; truck safety inspection, cleaning bed, checking tires.

• Instruct loader operators to halt loading activities if the truck operator is outside of vehicle.

• Prepare an area where haulage vehicles and equipment operators can safely park during breaks. The area should include ample space for turning and maneuvering when other mobile equipment is present.

• Pedestrians should notify all equipment operators of their location at all times before they enter the operating area of the mobile equipment. NEVER ASSUME YOU ARE IN THE VIEW OF THE OPERATOR - MAKE EYE CONTACT.