OVERVIEW

- A 57 year old mechanic with 8 years of mining experience was fatally injured at a surface shop of an underground coal mine.
- The victim was repairing a 1-ton truck that was raised and supported by jack stands.
- The victim was positioned under the truck and the truck’s rear wheels were on the floor.
- A coworker, who was assisting, entered the truck, depressed the clutch pedal, and started the truck.
OVERVIEW, CONT’D

• The truck was in gear when it was started.
• The coworker’s foot slipped off the clutch pedal of the standard transmission, causing the truck to lurch forward.
• The truck fell off the jack stands and struck the victim resulting in fatal crushing injuries.
INFORMATION

- The front wheels of the vehicle had been removed and the front end of the truck was supported by jack stands.
- The prior shift workers were not comfortable with the contact point of the stands with the truck frame and could not find a flat spot on the frame. They placed a heavy duty floor jack under the front bumper.
- The floor jack was not in place at the time of the accident.
- The victim was lying on the shop floor under the front of the truck.
INFORMATION

• The victim had asked for assistance in removing the old power steering fluid from the system.
• Examination of the clutch pedal showed that the rubber friction pad for the top of the clutch pedal was missing.
• The pedal had mud on it when examined indicating that the cover was missing prior to the accident.
POWER STEERING UNIT TAKEN OFF TRUCK
View of AC Delco Jack Stand
View of Clutch Pedal (left) and Brake Pedal (right)
ACCIDENT CAUSE

WHAT WAS THE CAUSE OF THIS ACCIDENT?
BASIC CAUSES

- The accident occurred due to the truck being left in gear when it was started.
- The truck was not securely blocked in position.
- The rubber friction pad/anti-slip cover for the tip of the clutch pedal was missing.
- The lack of a service lift or pit in the shop caused the victim to position himself in an unsafe location on the floor under the front of the truck.
MSHA ROOT CAUSE

• THE MINE OPERATOR DID NOT HAVE SAFE PROCEDURES FOR SUPPORTING AND SECURING ELEVATED EQUIPMENT DURING MAINTENANCE WORK.
• MANAGEMENT DID NOT MAINTAIN THE TRUCK IN SAFE CONDITION IN THAT THE RUBBER FRICTION PAD/ANTI-SLIP COVER FOR THE TIP OF THE CLUTCH PEDAL WAS MISSING.
ACCIDENT PREVENTION

WHAT COULD HAVE PREVENTED THIS ACCIDENT
ACCIDENT PREVENTION

OUTLINE THE PROPER PROCEDURE FOR PERFORMING THIS TASK
PROCEDURE TO PREVENT ACCIDENTS

• Before working on equipment, lock out the power and block equipment components from movement.
• Securely block equipment against all hazardous motion at all times while performing maintenance work.
• If the equipment being blocked has multiple degrees of movement of freedom, exercise extreme caution because some instability modes may not be obvious.
PROCEDURE TO PREVENT ACCIDENTS

• If provided, always use the manufacturers provided safety device or features for securing components against motion.

• Avoid steel on steel blocking if at all possible as these two surfaces together can easily slide thus reducing the effectiveness of the motion prevention design.

• Avoid using long, slender members as blocking in situations where the blocking will be loaded in compression. These types of members may be prone to buckling failure.
PROCEDURE TO PREVENT ACCIDENTS

• The ground on which the blocking is to be placed must be capable of supporting the loads transferred from the equipment.

• To prevent the blocking from punching into the ground, larger plates or blocking may be necessary to spread the load over a wider area.

• Study the manufacturer’s maintenance manual for safety precautions and recommended blocking securing procedures BEFORE initiating repairs.
MSHA BEST PRACTICES

• Block vehicles against motion in all potential directions of movement prior to any work.
• Keep standard transmission vehicles in neutral with the park brake engaged when work is performed on the vehicles.
• Position yourself out of the path of travel in the event a failure occurs.
• Jacks and blocks should be positioned on level ground and ensure they are all raised to equal heights.
• If available, use a pit to perform maintenance work underneath mobile equipment.
EXAMPLES OF CHOCKS & BLOCKS
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• Jack Stands
EXAMPLES OF CHOCKS & BLOCKS

Wheel chocks can be used on vehicles as little as forklifts or as big as large dump trucks.
EXAMPLES OF CHOCKS & BLOCKS