



## **Surface 07 (Black Hat)** **Study Guide**

- 1. How long must an apprentice miner work before testing for a certificate of competency and qualification as an experienced coal miner?**  
6 months with a minimum of 108 shifts
- 2. What length of time is an individual miner given to notify the operator in writing that he has obtained any additional mining certification?**  
4 days
- 3. Where shall the required first-aid supplies be located with respect to the working pit when a ten (10) unit first-aid kit is not provided in the working pit?**  
Within 1,000 feet of the working pit
- 4. What kind of certification shall a person have to be employed as a surface coal miner?**  
Surface miner certificate or surface apprentice card
- 5. How many exits are required on each floor of a tipple or preparation plant?**  
Two (2)
- 6. How many red hat (apprentice miners) can a black hat (certified miner) be in charge of at any given time?**  
One (1)

**7. What civil penalty may any miner in West Virginia be subject to when knowingly violating any mine health and safety law?**

An IPA (Individual Personal Assessment) up to \$250 for each occurrence

**8. How often must fire drills and demonstrations of various types of available fire-fighting equipment be held for employees?**

Annually

**9. Does state law require all employees in or around a surface mine to wear a hard hat and hard-toed shoes?**

Yes

**10. Who has the right to determine that a piece of equipment is unsafe to operate?**

The operator, foreman or mechanic

**11. Who is responsible for ensuring that the equipment is in a safe and proper working order and reporting when it is not?**

The equipment operator assigned to the equipment

**12. Who should perform pre-operational checks on equipment prior to putting into operation?**

The person operating the equipment

**13. How shall all safety equipment on all machinery be maintained?**

In a safe working condition

**14. What must each piece of mobile equipment, including coal truck, have?**

Fire extinguisher, back-up alarm, and seat belts

**15. What is the duty of equipment operators and helpers, relative to others in the vicinity, while the equipment is in operation?**

- They shall not permit other persons to remain near the equipment
- They shall keep themselves and others out of pinch point areas of the equipment

**16. What protective devices should be used on gears, belts and revolving parts of machinery?**

Properly installed guards and shields

**17. What precautions should be taken with machinery and equipment raised for repairs?**

It should be securely blocked to prevent accidental falling

**18. How should mobile equipment be maintained and operated by the equipment operator?**

To be able to bring the equipment to a stop

**19. What must be legibly marked and not exceeded on all lifting jacks?**

The manufacturers rated capacity

**20. When are you allowed to work under a raised truck bed?**

Only when the bed has a safety pin installed or is securely blocked to prevent falling

**21. How soon must any tire with a defect, which could be a hazard to the safe operation of a vehicle or to other persons, be replaced?**

Immediately

**22. How long must the written preoperational report remain with each piece of mobile equipment operated on a surface mine?**

30 days

**23. How shall doors on mobile equipment be maintained?**

In good operating condition

**24. How many trucks are allowed in the auger pit at one time?**

Two (2)

**25. What must an equipment operator do if the unit of equipment they are operating comes in contact with an energized power line?**

Stay in the equipment until notified by a certified electrician or foreman that the line is deenergized

**26. When must an employee wear a seat belt when operating a vehicle on surface coal mines?**

- When the vehicle is rated at 5 ton or greater
- When there is danger of overturning
- When the vehicle is equipped with rollover protection

**27. What should the coal truck driver do when being loaded?**

Stay in the cab of the truck

**28. What should be done if hauler traffic differs from normal patterns?**

Post warning signs along haulage roads at strategic points in letters at least three (3) inches high

**29. How must all exhaust tail pieces be positioned and maintained?**

To prevent carbon monoxide and other toxic fumes from entering the operator's compartment

**30. All trucks and mobile equipment must be equipped with what type of fire extinguisher?**

5 lb. dry chemical

**31. Do you have the right to refuse to operate a piece of equipment that is unsafe?**

Yes

**32. Who is responsible for a miner's safety?**

The miner and the company

**33. Persons shall not cross a moving conveyor belt except where?**

Where suitable crossings facilities are provided

**34. What requirements apply to guards installed on equipment in such a manner as to prevent accidental contact with moving parts?**

- They must be of substantial construction and not have openings large enough to admit a person's hand
- They must be firmly bolted or otherwise installed in a stationary position
- They must be of a sufficient dimension to exclude the possibility of bodily contact while the equipment is in motion

**35. What is the motor often referred to that runs the conveyor belt?**

The belt drive

**36. What is the device that automatically keeps the conveyor belt tight?**

The belt take-up

**37. What should be provided on belt take-ups and belt drives to prevent someone from getting caught in them?**

Guards

**38. Which of the following are typical types of conveyor belt accidents?**

- An individual gets caught in a moving conveyor
- The belt unexpectedly starts

**39. What is the main cause of accidents to miners at a preparation plant?**

Conveyor belts

**40. Properly installed guards shall be used on what?**

- Gears
- Belt drives and take-ups
- Revolving parts of machinery

**41. Can cleaning around belt conveyors and failure to use electrical lockout procedures result in a conveyor accident?**

Yes

- 42. Is it safe to cross a belt by stepping on it when it is turned off?**  
No
- 43. What type of shovel should be used when shoveling around a moving belt or belt equipment?**  
Shovel without a hole in the handle
- 44. What direction should you shovel coal onto the conveyor belt?**  
The same direction as the belt is moving
- 45. Should your clothes be snug fitting when working around a moving conveyor belt?**  
Yes
- 46. When are you allowed to remove guards for maintenance or cleanup?**  
When the belt is off, locked and tagged out
- 47. What piece of equipment receives the coal from the trucks and then discharges it onto the conveyor belt?**  
The "bin"
- 48. Where is the coal separated from impurities, sized, washed and then loaded for shipment?**  
Preparation Plant or tipple
- 49. What must be worn if you climb on top of the bin grating?**  
Safety harness and safety rope
- 50. What gas is odorless, colorless, tasteless and explosive in a concentration of five percent (5%) to fifteen percent (15%)?**  
Methane
- 51. How many gases does the typical Multi-Gas Detector detect?**  
Three (3), (Methane, Oxygen and Carbon Monoxide)
- 52. How often does a Multi-Gas Detector have to be calibrated?**  
Every thirty (30) days

**53. At what volume percent of methane must you shut off power to all equipment in the affected area and reventilate?**  
One percent (1.0%) or more

**54. What type of alarms are activated when a gas is detected on the Multi Gas detector?**  
Audible, Visual and Vibration

**55. What is the multi-gas detector's low alarm level for methane?**  
1.0% or below

**56. What is the multi-gas detector's low alarm level for O2?**  
19.5 % or below

**57. What is the multi-gas detector's low alarm level for CO?**  
50 PPM or below

**58. In fresh air, what should be the O2 reading on the multi-gas detector?**  
20.8% to 21.0%

**59. If someone has a compound fracture, you should attempt to set the broken bone.**  
False

**60. If a victim has a broken forearm, where would you tie the splint when applying?**  
Above and below the break to immobilize the limb

**61. The first method of controlling bleeding is to?**  
Apply direct pressure on the wound

**62. If a choking victim becomes unconscious, you should?**  
Use abdominal thrusts

**63. What should you treat a miner for if they are exposed to severe cold for an extended period?**  
Shock, hypothermia and frostbite

**64. Victims of electrical shock can be?**  
Extremely burned, disoriented and without a pulse

- 65. A victim who has fallen, should be treated the same as?**  
If they had a broken spine or neck
- 66. How should you treat someone that has a foreign object stuck in their eye?**  
By covering both eyes and immediately getting them to a doctor
- 67. All accident victims of a serious injury should be treated for shock.**  
True
- 68. Cardiopulmonary Resuscitation (CPR) is administered to someone who has?**  
Stopped breathing and has no heartbeat
- 69. How often shall each coal mine employee be required to take a refresher First Aid Course?**  
Not less than five (5) hours every twenty-four (24) months of employment
- 70. What is the proper way to move an unconscious victim onto a back board?**  
Perform a four (4) man log-roll maneuver, with each four (4) men in place, roll the victim carefully while keeping the spine straight, slide the board under the victim, lower him/her down onto the board in unison, pad and strap accordingly.
- 71. Which of the following can prevent accidents?**  
Paying close attention to your surroundings, not taking chances or shortcuts, and following safe operating procedures
- 72. Frost bite can cause the loss of fingers and toes.**  
True
- 73. If an accident victim has severe burns from an electrical explosion, you should cover the burn area with an ointment before dressing.**  
False
- 74. What is the most important thing to do if you suspect a spine or back injury?**  
Immobilize head and neck before and after placing on stretcher



**75. If a patient had a broken arm, a cut on his/her head and blood spurting from an open wound on the leg, which injury would you treat first?**

Blood spurting from open wound

**76. When performing CPR, when should you stop doing chest compressions?**

Only when you are being relieved of the duty by another qualified person or when you just can't go any further because of fatigue and there is no one else available to assist or relieve you.

**77. When performing artificial ventilation, how many breaths per minute should you give the victim?**

Twelve (12) (One breath every 5 seconds)

**78. What is the universal sign for choking?**

The victim clutching his/her throat with their hands

**79. What material allows electrical current to flow through it with ease?**

Conductor

**80. What material does not allow electrical current to flow through it with ease?**

Insulator

**81. What are good examples of a conductor?**

Copper, steel, and aluminum

**82. What are good examples of an insulator?**

Rubber and dry wood

**83. What must be done before any person is permitted to perform any work within the confines of the cargo space of a crusher, feeder, or rotary breaker?**

It must be deenergized, locked out, and suitably tagged

**84. How far from mine openings, occupied buildings, and public roads must surface blasting magazines be located (unless barricaded)?**

200 feet

**85. Open fires and flames are prohibited within how many feet of an area where explosives are being stored, handled, or used?**

50 feet

**86. The use and handling of all explosives at the surface mine must be done by or supervised by whom?**

Certified shot blaster

**87. How must detonators, blasting caps, and explosives be stored?**

In separate magazines at least 25 feet apart

**88. How long shall you wait to return to a shot if the highwall shot misfires?**

30 minutes

**89. What is one of the greatest hazards working around auger equipment?**

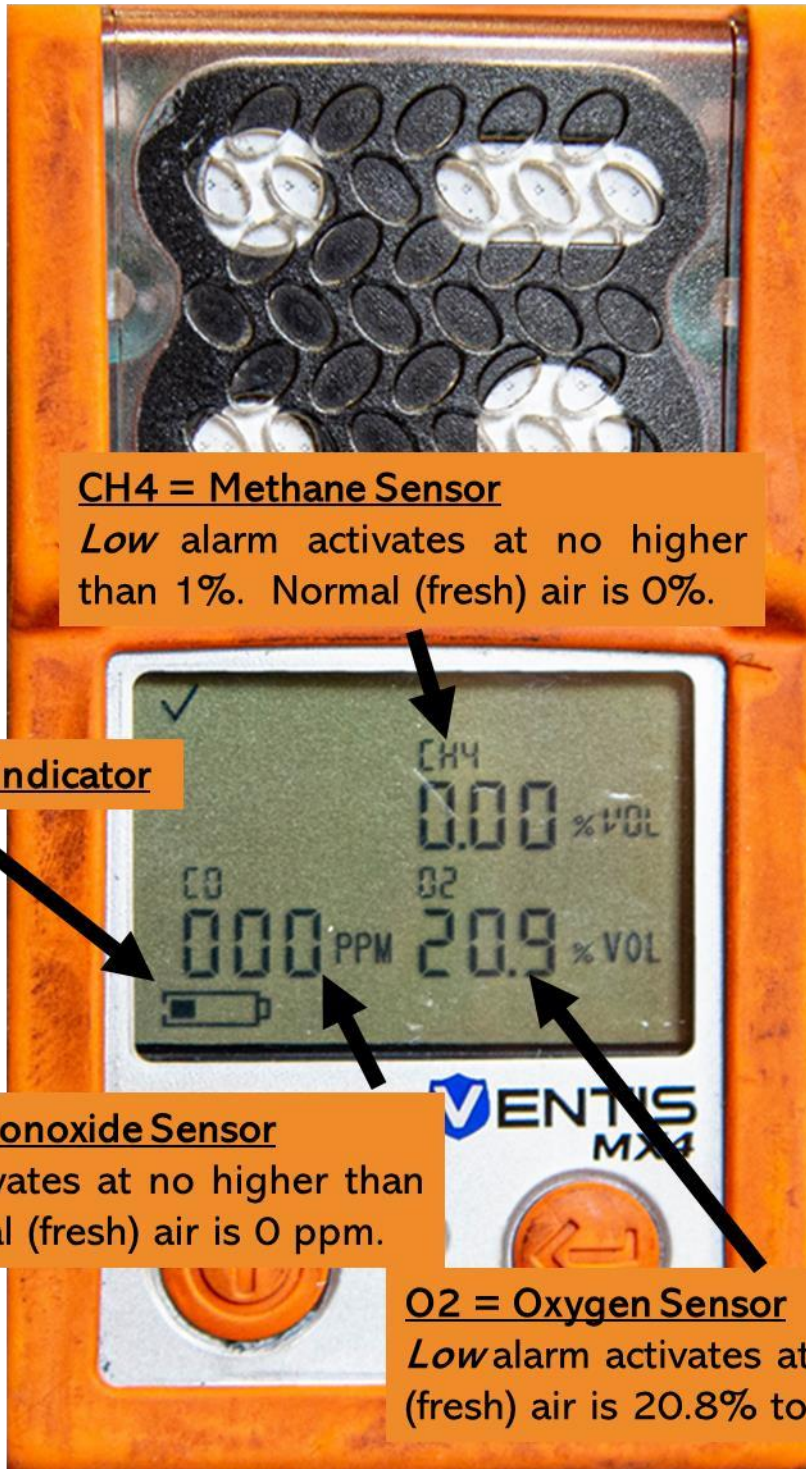
Chances of being caught in moving equipment

**90. What should you do if you see a dangerous crack in the highwall?**

Move a safe distance from the highwall, notify foreman, and put up a danger board

# Basic Three (3) Gas Detector

Audible (beeps), Visual (lights)  
and Vibration Alarms



CH4 = Methane Sensor

*Low* alarm activates at no higher than 1%. Normal (fresh) air is 0%.

Battery Charge Indicator

CO = Carbon Monoxide Sensor

*Low* alarm activates at no higher than 50 ppm. Normal (fresh) air is 0 ppm.

O2 = Oxygen Sensor

*Low* alarm activates at 19.5%, Normal (fresh) air is 20.8% to 21%.

# **GAS TESTING**

**THE FOLLOWING ARE DETECTOR ALARM LEVELS FOR METHANE (CH<sub>4</sub>), CARBON MONOXIDE (CO), and OXYGEN (O<sub>2</sub>).**

**1% OR LESS METHANE (CH<sub>4</sub>) LOW ALARM LEVEL**

**1.5% OR LESS METHANE (CH<sub>4</sub>) HIGH ALARM LEVEL**

**50 PPM OR LESS CARBON MONOXIDE (CO) LOW ALARM LEVEL**

**100 PPM OR LESS CARBON MONOXIDE (CO) HIGH ALARM LEVEL**

**19.5% OXYGEN (O<sub>2</sub>) LOW ALARM LEVEL**

**THE EXPLOSIVE RANGE OF METHANE IS 5% TO 15%.**

**NO ELECTRICAL EQUIPMENT SHALL BE OPERATED IN A MINE FOR A PERIOD LONGER THAN TWENTY (20) MINUTES WITHOUT A METHANE EXAMINATION.**

**POWER TO EQUIPMENT SHALL BE REMOVED WHEN 1% OR GREATER METHANE (CH<sub>4</sub>) IS DETECTED AND THE AFFECTED AREA REVENTILATED TO LOWER METHANE LEVELS. A RETEST FOR METHANE WILL BE PERFORMED TO CONFIRM THE METHANE HAS BEEN REMOVED.**

**WHEN METHANE (CH<sub>4</sub>) LEVELS REACH 1.5% POWER TO ALL EQUIPMENT IN THE AFFECTED AREA IS DEENERGIZED AND MINERS (MEN/WOMEN) REMOVED. THE AREA MUST BE REVENTILATED TO LOWER METHANE LEVELS AND RETESTED PRIOR TO MINERS REENTERING THE AFFECTED AREA.**

**GAS DETECTORS SHALL BE CALIBRATED WITHIN THIRTY (30) CALENDAR DAYS.**

**THE FOLLOWING ARE THE CHECKS PERFORMED ON A GAS DETECTOR PRIOR TO USE.**

- 1. CHECK CASE INTEGRITY (SCREWS AND SEALS IN PLACE)**
- 2. CHECK SCREEN READABILITY (NOT SCRATCHED ENOUGH THAT YOU CAN'T READ)**
- 3. CHECK SENSOR SCREENS (MUST NOT BE BLOCKED OR PLUGGED UP)**
- 4. CHECK AUDIBLE AND VISUAL ALARMS**
- 5. CHECK BATTERY LEVEL (SHOULD BE FULLY CHARGED PRIOR TO USE)**
- 6. CHECK SENSOR ZERO (MUST ZERO IN FRESH AIR)**
- 7. CHECK CALIBRATION**

<b>Carbon Monoxide Level</b>	<b>Signs and Symptoms Of Exposure</b>	<b>Oxygen Level</b>	<b>Signs and Symptoms Of Exposure</b>
<b>35 ppm</b>	Headache and dizziness within 6-8 hours	<b>23.5%</b>	Maximum safe level. High levels of O2 present fire hazards
<b>100 ppm</b>	Headache and dizziness within 2-3 hours	<b>20.8%</b>	Normal air
<b>200 ppm</b>	Headache and dizziness within 1-2 hours, loss of judgement	<b>19.5%</b>	Minimum safe level. Most gas detectors will alarm at this level
<b>400 ppm</b>	Severe frontal headache within 1-2 hours	<b>15-19%</b>	First signs of hypoxia. Decreased ability to work. Respirations increase
<b>800 ppm</b>	Dizziness, nausea, convulsions within 45 min; insensible within 2 hours	<b>12-14%</b>	Breathing becomes difficult, rapid pulse, impaired coordination, poor perception and judgement. Possible loss of consciousness
<b>1,600 ppm</b>	Headache, rapid pulse, dizziness, nausea within 20 min. death within 2 hours	<b>10-12%</b>	Rapid respirations. Blue lips. Likely loss of consciousness. Eventual death
<b>3,200 ppm</b>	Headache, dizziness, nausea in 5-10 min. Death within 30 min.	<b>8-10%</b>	Mental failure, unconsciousness, ashen face, blue lips, nausea, vomiting, lack of mobility. Death
<b>6,400 ppm</b>	Headache, dizziness in 1-2 min. convulsions, respiratory arrest, death within 20 min	<b>6-8%</b>	Death within 8 minutes
<b>12,800 ppm</b>	Unconsciousness after 2-3 breaths. Death within 3 min.	<b>4-6%</b>	Coma within 40 seconds. Convulsions, death within minutes

**Signs and Symptoms can always vary from person to person based on health and various physiological factors**



To operate an extinguisher:

**P**ull

**A**im

**S**queeze

**S**weep

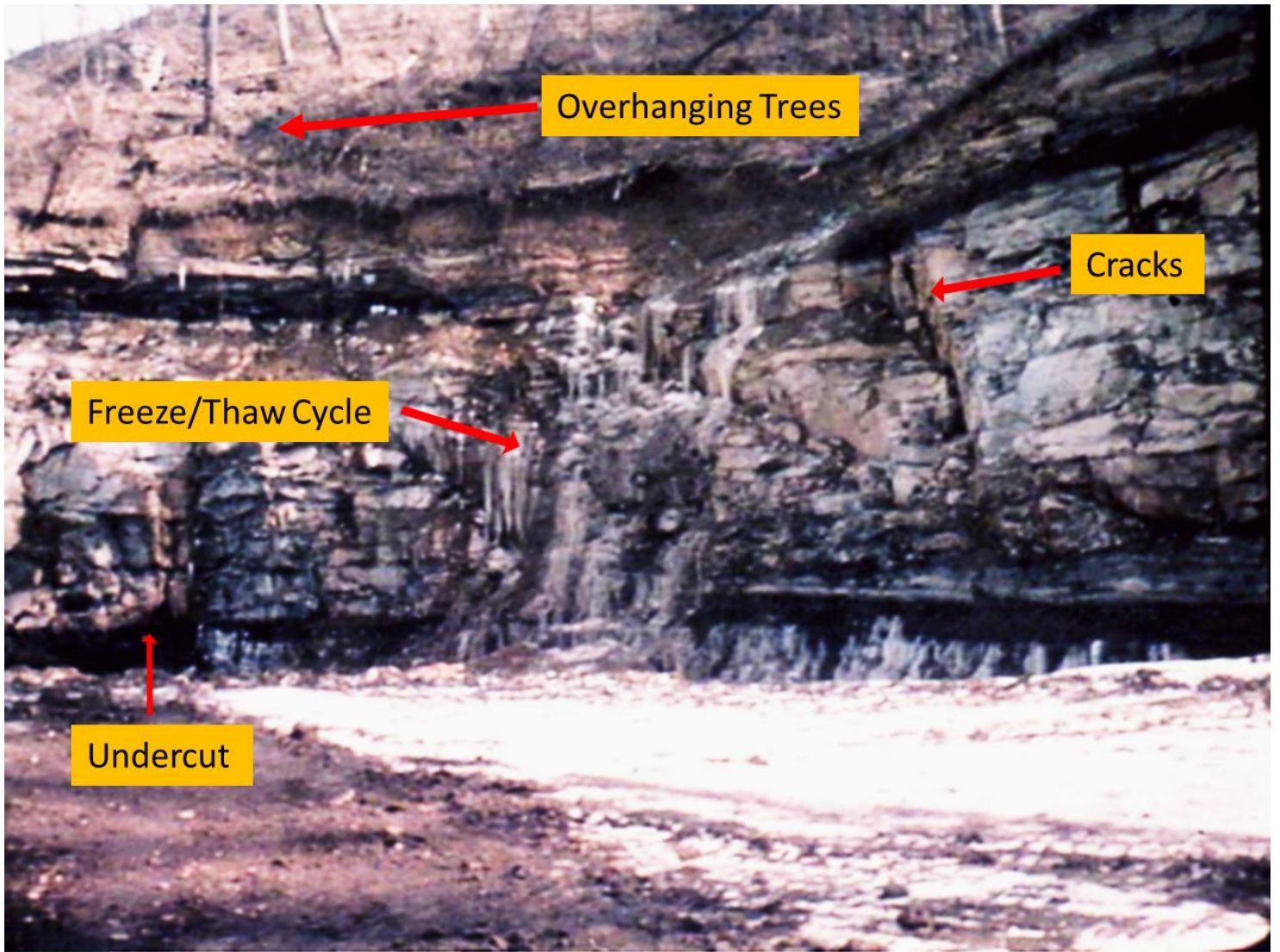


Know your extinguisher

Use the correct extinguisher

*(Check your own extinguisher's label for detailed instructions.)*

# HIGHWALLS



# **Pre-Shift Inspections On Equipment**

- ✓ **Performed before the start of the shift**
- ✓ **It is the equipment operator's responsibility**
- ✓ **State law, Federal law, and Company Policy require it**
- ✓ **It doesn't take a trained mechanic to perform this inspection**
- ✓ **The inspection should be thorough and performed in the same manner every time to eliminate any wasted motion**
- ✓ **This inspection is both inside and out of the equipment being inspected**
- ✓ **Always looking for violations of law and any hazards or safety defects such as: missing or damaged parts, housekeeping, and as well as hazards in the area of operation**
- ✓ **Any imminent dangers found must be corrected immediately such as: brakes, steering, malfunctioning back-up alarms, etc.**
- ✓ **Turn in the pre-shift report with-in 4 hours from the start of the shift**
- ✓ **Pre-shift inspections performed on equipment belonging to contractors must be kept with the equipment for 30 days**