**05 BLADE, CAT M Series**

Revised 01/06/2012

This task training outline is provided solely for training purposes and should not be considered a substitute for the recommendations of the equipment manufacturer or MSHA or OSHA requirements

Gauges, Warning Lights, and Signals

 1. Oil pressure.

 2. Ammeter.

3. Hour meter.

 4. Temperature.

 5. Fuel pressure.

 6. Slope meter (2).

 7. Articulation.

 8. Oil light.

9. Alternator/Amp.

10. Temperature light.

11. Fuel light.

12. Oil level (Aid system).

13. Differential light (when locked, light is off).

14. Shock absorber light.

 a. Floating blade.

 b. Solid blade.

Note: Some new machines have symbols explaining on/off function.

 Switches



 



Levers



Secondary Steering – not Emergency Steering



COLD START

 1. Walk around blade. Check for obstructions, people and 'Do not Operate' tags.

 2. Check hydraulic (left side of machine behind cab).

 3. Mount right rear of machine.

 a. Caution: Always mount facing machine.

 b. Use grab irons.

 4. Check water. Caution: Coolant may be under pressure-use sight glass.

 5. Check belts.

 6. Check transmission. Do not start with low level.

 7. Check oil - crankcase. Do not start with low level.

 8. Dismount rear of machine. Caution: Always dismount facing machine.

 9. Mount machine by cab.

 a. Caution: Always mount facing machine.

 b. Use grab irons.

10. Engine start-up procedure.

1. Master switch.
2. Check all gauges to see that they are in normal operation range.
3. Turn on lights.
4. Adjust the seat and consoles prior to operation.
5. Adjust the mirrors prior to operation.
6. Check Park Brake Switch to make sure it is engaged.
7. Check Forward/Reverse Switch and make sure it is in neutral (center) position.
8. Place the left joystick in the same approximate position as the front wheels.
9. Turn key to the on position and allow the system to cycle. Once the system has completed its check, turn to the on position and release once the unit has started.
10. Confirm that you have steering control, if yes then release the park brake, select direction and proceed.
11. If no steering:
	1. If the two steering lights on the front console are on, and messenger has a message that steering alignment is not aligned, slowly move the joystick into the position of the wheels. ( The joystick may be moved quickly until the angle of the joystick is close to the wheel angle then moving it slowly in that position.) Once the joystick has control of the front wheel the lights will go out, messenger will clear and the front wheel will follow the joystick.

11. Dismount machine. Caution: Always dismount facing machine.

12. Do complete walk around inspection.

 a. Tires: Check for cuts and gouges.

 b. Circle drive: Inspect for leaks.

 c. Blade and end bits: Inspect for wear damage, loose or missing parts.

 d. Blade linkage: Inspect for damage, loose or missing parts.

 e. Step and grab irons: Inspect for cleanliness and condition.

 f. Hydraulic system: Inspect for leaks, worn hoses, or damaged lines

 g. Pivot point: Inspect for dirt or debris buildup.

 h. Transmission and differential compartment: Inspect for leaks.

 i. Tandem housings: Inspect for leaks and trash buildup, check level.

 j. Engine compartment: Inspect for oil and fuel leaks.

 k. Cooling system: Inspect for leaks, worn hoses, and trash buildup.

 l. Check condition of cutting edges for excessive wear. If equipped with serrated edges check condition of bits and excessive wear and replace bits as necessary.

13. Redo all fluid checks as described before (engine, transmission, hydraulic, coolant).

14. Check lights.

15. Mount machine.

 a. Caution: Always mount facing machine.

 b. Use grab irons.

16. In cab.

 a. Check back-up alarm.

 b. Check glass for cracks, ice, and dirt.

 c. Loose items in cab.

 d. Hydraulic - operate controls.

 e. Steering.

 f. Windshield wipers.

 g. Seat belts.

 h. Horn.

17. Fill out safety check cards.

18. Horn signals.

 a. Use horn signals before moving machine.

 b. 1 - blast for forward.

 2 - blasts for reverse.

 OPERATING PROCEDURES

General Guidelines

 1. Be careful when articulating to avoid cutting tires.

 2. Only one operator is allowed in the cab except during approved training situations.

 3. Do not back drag with the blade.

Blading Haul, Access, and County Roads

 1. Watch for other traffic or objects on roads.

 2. Always use beacon.

 3. Avoid working in wrong lane when possible.

 4. Know haul and loading patterns.

 5. Always watch for smaller equipment, pickups, tractors, etc.

 6. Avoid leaving windrows at road intersections.

 7. Avoid leaving windrows where water will pond along the edge of roads.

 8. Avoid having more than one windrow when possible.

 9. Blade rocks to shoulder of road.

10. Avoid turning around in heavy traffic areas.

11. Communicate road condition (wet, muddy, rough, dusty) to supervisor.

12. Do not blade snow or mud onto un-top soiled areas. Check with supervisor (soil contamination).

13. Be aware of power cables.

14. Watch for culvert end staking and avoid covering up these ends with snow, mud, or dirt.

Cleaning Coal

 1. Be aware of pit conditions, including high wall, spoils, equipment patterns, and small vehicles.

 2. Look out for sumps, pump hose, and cables.

 3. Be aware of other pit equipment and personnel, including load and haul equipment, light vehicles, and equipment patterns.

 4. Be aware of blasting and drilling operations. Refer to blasting plan.

 5. Be aware of visibility problems, including steam (especially in winter), dust, and dark or shaded areas.

Pulling Skids, Cable Trees, or Other Short Objects

 1. Use proper rigging for object being pulled.

 2. Check with supervisor before moving any electrical equipment.

 3. Be aware of high wall conditions (rocks and cracks) and equipment or personnel below before moving skids along high wall.

 4. Always have ground person present and be aware of his/her location when moving electrical equipment.

 5. Be aware of top-heavy skids (cable trees).

 6. Be aware of in-place cables feeding other equipment.

Pulling Tow Cables and Black Pipe

 1. Use lower speeds to reduce cable whip.

 2. When pulling objects over 200 feet:

 a. Flag high traffic areas.

 b. Check corners.

 c. Watch for cable binding or whipping.

 d. Use a ground person or second vehicle.

 3. Gloves must be worn when handling cable.

 4. Do not pull wire cable over nylon crossing.

 5. You are responsible for returning cable to storage areas and hanging one end on the cable tree.

 6. Do not back over what you are towing or your ground person.

Cutting Slopes, Ditches, and Stockpiles

 1. Operate slowly when on extreme or rough slopes.

 2. Be aware of conditions that could tip you over, including rocks, holes, soft spots, frozen ground, loose material, and muddy conditions.

 3. Be aware of people and equipment above and below you.

 4. Be aware of hazards while articulating on slope.

 5. Do not work on a slope you are unsure of. Check with supervisor.

 6. Keep blade and ripper low.

 7. Use caution while turning or backing on slope.

 8. Do not run over stockpile signs.

 9. Blade top of stockpile to concave shape to assure proper water management and safe edges for scraper traffic.

10. Blade rocks in windrows to toe of stockpile when possible.

11. Know traffic patterns of scrapers and dozers working on stockpiles.

Pulling Light Vehicles

 1. Have a ground person present when backing up.

 2. Have a large enough anchor for braking when towing freewheeling vehicles.

 3. Make sure everyone is clear (breaking cable).

 4. Ground person should stay calm.

Ripping and Scarifying

 1. Avoid tire spin.

 2. Use caution when working rocky areas, or muddy areas.

 3. Rip at low speeds to avoid being thrown forward if a solid object is hit. (Wear your seat belt.)

 4. Check location of trail cables and ask about buried cables.

 5. Communicate ramp ripping operations to those traveling the ramp (supervisor, haul trucks, etc).

Reclamation Blading

 1. Don't contaminate soils (mixing topsoil, subsoil, and overburden).

 2. Always watch for or ask about trail cable and buried cables.

 3. Blade areas to assure proper water management.

 4. Do not blade into or otherwise disturb established water management structures, including diversion ditches, berms, and culverts.

 5. Know the staking codes and keep all stakes in place.

 6. Check with supervisor before pioneering new area.

Blading Parking Area

 1. Extra precautions must be taken while working around office/shop complex because of:

 a. High pedestrian traffic.

 b. High traffic areas (Company equipment and vendors).

 c. Parked equipment.

 d. Light poles.

 e. Fences.

 f. Curb stops

 2. Look before backing. You are responsible if parked equipment or their fixed objects are hit.

Blading and Packing Pipe Beds, Backfilling, and General Construction Site Blading

 1. Be aware of other people and equipment working in the area.

 2. Be sure all parked vehicles are parked at safe distances from other working equipment.

 3. Graders can and do crush culverts. Know where your wheels are in relation to the culvert and culvert ends.

 4. Watch for construction waste material in work area.

Lifting Equipment or Pulling Posts, Signs and Trees

 1. Heavy equipment or other heavy objects should not be lifted with the blade or ripper.

 2. Fence posts and signposts can be pulled if proper rigging is used.

Entering and Leaving Maintenance Bays

 1. Don't try to beat a closing shop door as equipment damage or personal injury may occur.

 2. Use proper signals when entering or leaving a bay.

 3. Watch for blocks or other shop equipment when entering.

 4. Do a walk around prior to leaving.

 5. Watch for pedestrians in and around shop areas.

 6. Be aware of lighting changes when entering from bright daylight or darkness.

Pushing Equipment With Blade

 1. Do not push equipment.

Cleaning Dozer Blades

 1. At supervisor's discretion.

Getting Stuck and Unstuck

 1. When a little assistance from the circle or blade will get you unstuck, use them with caution. Call for assistance if actions will likely result in damage to rams, circle, gearbox, etc.

Blading Hot Spots on Coal Pile

 1. Contact supervisor.

 2. Be aware of fire hazard caused by leaking fuel or oil line.

 3. If you cannot get through it, don't go in it.

 4. Be aware of steam after spreading which will reduce visibility.

Roading

 1. Drive slow enough so tires do not spray mud on windows.

 2. Keep machine under control. Use proper speed and gears for conditions.

 3. Always activate implement lock out.

Cutting Edges

1. Care must be taken to closely monitor the condition of the cutting edges. When operating under certain material condi­tions edges can be worn down in a matter of a few hours. Generally a cutting edge should be replaced when within 1/4 inch of the frog in any one spot along the edge.
2. When the machine is equipped with serrated edges. All bits must be in place prior to operation. Bits should be replaced if there is evidence of excessive bit wear. (a rounded configuration). Correct positioning of the blade is extremely important to insure correct functioning of the bits and to eliminate damage to the cutting edge. Roll the top portion of the moldboard all the way forward so that the bits are in a vertical position or perpendicular to the road surface prior to operation. Monitor bits on a regular basis and never operate without all bits in place.

## SHUTDOWN

Temporary Shutdown of Machine

 1. Look for and park in area clear of other equipment when:

 a. Talking with supervisor.

 b. Having mechanical troubles.

 c. Taking lunch and breaks.

 2. Do not park close to high wall or spoil.

 3. Place transmission in neutral and lock.

 4. Set brake and lock.

 5. Lower all raised equipment.

 6. Dismount and mount facing machine using proper handholds.

 7. Prior to moving, make walk around and use proper horn signals.

Long Term Shutdown

 1. Find level area.

 2. Maintain minimum distance of 10 feet between equipment.

 3. Do not park close to high wall.

 4. Place transmission in neutral and lock.

 5. Set brake.

 6. Lower all raised equipment.

 7. Dismount properly.

 8. Idle engine five minutes prior to shutting off.

 9. Turn off all switches.

10. Turn off master switch.

1. Dismount facing machine and use proper handholds.
2. Place steering lever in center detent.

CAUTION: Loud noise will damage your hearing. This machine requires that you wear hearing protection when the machine is running.

Task Training Accident Review

**Motor Grader**

1. The blade of a motor grader was rotated into place for a cutting edge change. During the process, the step was bumped, bending it slightly. When rotating the blade constant attention must be paid to prevent rotating the blade into the steps or the tires. Costly damage can occur.
2. A lunch pail was placed in front of the column of a blade. The operator forgot it was there, put the column ahead, and pushed out the bottom front glass. Lunch boxes and thermos must be properly stored and secured at all times during operation.
3. A KIM hot start station was badly damaged when a blade operator pulled away and did not unplug the hoses. A thorough walk around MUST be done prior to driving.
4. While working a 1:1 slope with the blade swung out to the side, the blade rode up the virgin material and tipped over on its side. Inexperience was a factor. When trying new tasks use caution and when in doubt, ask questions.
5. While cleaning coal chunks off the east mine area hopper, the motor grader tires slid off the grizzly into the hopper. Motor graders must exercise extreme caution when cleaning the grizzlies. Not only is there the danger of the open hopper, but damage to the grizzly itself can happen quickly.

1. While backing up a ramp, a motor grader received extensive damage when it backed into a coal truck. Backing with any equipment is dangerous. With motor graders we are sometimes trying to change blade positions or wheel positions while backing. In that moment that you check your controls and accident can happen. Know where you are backing at all times.
2. While opening a motor grader door the wind caught it and slammed it into the cab, breaking the glass. Motor grader doors are large and catch the wind easily. Park into the wind when possible and always hold onto the door securely.
3. A motor grader front spindle broke when it hit a large chunk while blading coal. Front spindles are susceptible to this type of damage. The blade operator must keep an eye on the path of travel at all times.
4. A moldboard was damaged when the blade operator lowered the blade while traveling at excessive speed. The blade hooked a rock. The motor grader must come to a controlled speed before lowering the blade.
5. A ramp sign was damaged while a motor grader was cleaning up around the sign. Graders are required to work in close proximity to other objects. Use caution, tilt your wheels away from danger, and when in doubt stay away.
6. A blade operator lowered the blade into an unshot, loaded blast hole. When cleaning coal you must always be aware of the blast area and keep a SAFE distance. It is possible that a pylon on the ripper may have confused the operator while backing up.
7. A near miss accident occurred when a blade operator, while cleaning a pit bottom made a pass behind a working front-end loader. Different pieces of equipment like dozers, loaders, draglines, and shovels, have work radiuses that you should never enter unless they are fully aware of your presence.