

On-Site Orientation

Bulldozer Operator

Ministry of Training, Colleges and Universities

On-Site Orientation

Bulldozer Operator

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This document is the property of the trainee/employee named inside and represents the official record of his/her training.

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PREFACE

The Workplace Training Branch of the Ministry of Training, Colleges and Universities (MTCU) developed this equipment-specific orientation document, in consultation with representatives from the logging industry. It is intended to be used by employers for on-site orientation of their workers/trainees before registration to the on-the job training or operating the machine related to their duties.

The care and maintenance of this document is the joint responsibility of the worker/trainee and the employer. The document is an official record of a worker's/trainee's orientation.

Employers or designates and workers/trainees are required to attest to successful on-site machine specific orientation by filling their names and signing on the appropriate lines.

NOTICE/DECLARATION FOR COLLECTION OF PERSONAL INFORMATION

1. This information is collected under the authority of the Order-In-Council Number 701/85.
2. The information is collected for the purpose of administering this modular training program within the Province of Ontario.
3. Questions regarding collection and use of this information may be directed to:

Director
Ministry of Training, Colleges and Universities
Service Delivery Branch
33 Bloor St. E 2nd Floor
Toronto, Ontario
M7A 2S3
(416) 326-5605

BULLDOZER OPERATOR

NOTE

This guide and checklist is designed to refer employers and employees to the most obvious and critical component in each skill area. However, since machine model and make vary greatly, the primary reference material for specific machine safety related operating requirements should be the operator's manual supplied by the manufacturer of the particular machine in question.

Employer Information:

Company: _____

Address: _____

Telephone: _____

Completed On-site Orientation Checklist: Worker and Employer/Designate Verification

- Inspect workplace for hazardous and/or potential hazardous conditions
- Verify zero energy state
- Identify bulldozer components and terminology
- Conduct circle check
- Perform visual and operational checks of attachments and moving components
- for fluid leaks and damage
- Perform site planning and set up
- Travel with bulldozer
- Observe machine limitations
- Winch/Tow equipment
- Observe danger zone
- Shut down and immobilize bulldozer
- Refuel bulldozer
- Perform minor maintenance and adjustments

Worker Name (Please Print): _____

Worker Signature: _____

Date of Completion: _____

Employer/Designate (Please print): _____

Employer/Designate Signature: _____

INSPECT WORKPLACE FOR HAZARDOUS AND/OR POTENTIAL HAZARDOUS CONDITIONS

Performance Objective

Inspect workplace for hazardous and/or potentially hazardous conditions. Take corrective action by removing and/or addressing hazard according to legislative requirements, manufacturer specifications and recommendations.

Guidelines for Performance Objective:

1. Ensure that there is no unauthorized personnel in the work area. Access to the entire area must be guarded and controlled.
2. Review potential hazards such as undercut, overburden, angle of repose, and height of face. Height of working face of gravel pit or sand pit presents a risk to workers even if they are not working on top of it. Absolutely no undercutting of the working face is permitted. If the sand or gravel is being removed by powered equipment, the working face must be sloped at its angle of repose and the vertical height of the face must not be more than 1.5 metres above the maximum reach of the equipment. Identify and report hazards to supervision.

Component Checklist:

- Unauthorized personnel and equipment
- Undercut
- Overburden
- Angle of repose
- Height of face
- Unstable ground

VERIFY ZERO ENERGY STATE**Performance Objective**

Verify zero energy state, by ensuring machine is parked on level ground, lower hydraulic components to the ground or rest position, turn electrical switches and engine off, according to legislative requirements and manufacturer specifications and established lockout procedures, in order to protect self and others during inspection and maintenance.

Guidelines for Performance Objective:

1. The machine must be immobilized and all moving parts de-energized before an operator can begin to work close to the machine and its components. Most importantly all hydraulic implements must be lowered (or blocked). Follow lockout procedure.

NOTE: Check with manufacturer supplied operator's manual and immediate supervisor regarding correct procedures to apply the step-by-step lockout and verification procedure for your operation. Machines of different model or manufacturer may have different steps and requirements. The above is essential to ensure the safety of the operator and co-workers, as well as to confirm zero energy state prior to initiating the circle check procedures and other maintenance and trouble shooting functions. Operators must have proper out-of-the-cab PPE e.g. -safety boots laced to the top, hard hat, high visibility vest or clothing, as well as hand, hearing, and eye protection where required.

Component Checklist:

- Lower blade and other components to the rest position or to the manufacturer specifications.
- Engage transmission lock and/or parking braking system.
- Put engine in idle (cool down).
- Turn engine off.
- Follow lockout procedure.

IDENTIFY BULLDOZER COMPONENTS AND TERMINOLOGY

Performance Objective

Identify bulldozer components and terminology, visually and verbally, as described in the manufacturer manual, in order to ensure safe and efficient operation and maintenance. (Employer, supervisor or trainer refer to manufacturer manual to provide specifics regarding each component identified)

Guidelines for Performance Objective:

1. Having an understanding of the terminology used to describe major components is a vital part of using the manufacturer manual effectively and ensuring that such things as safety information, maintenance schedules, machine capacities and operating directions are understood and correctly applied. Reviewing the major (key) components from the machine manufacturer manual will assist the operator in identifying the key components, knowing their location on the machine and describing their purpose. (see appropriate pages in machine manufacturer manual for specific terminology and diagrams)

Component Checklist:

- Hydraulic cylinders and attachments (winch, blade, ripper)
- Carriage and components (Tires and Tire Chains, Tracks)
- Cab and Operator Controls
- Engine
- Hydraulic pumps
- Fire Suppression Equipment

CONDUCT CIRCLE CHECK**Performance Objective**

Perform visual and operational checks of attachments, ensuring that all attachments are lowered to the ground or in the rest position and the machine is properly shut down prior to initiating the circle check procedure. All substandard conditions and problems must be reported to the immediate supervisor. The circle check must be conducted at the beginning of each shift.

NOTE: Operators must have proper out-of-the-cab PPE e.g. - safety boots laced to the top, hard hat, high visibility vest or clothing, as well as hand, hearing and eye protection where required.

Guidelines for Performance Objective:

1. Cracks: Explain how to check and identify cracks and point out common locations where cracks may form (stress points). Point out that repairs must be done as soon as possible to prevent costly breakdowns and to prevent even further damage or the potential of injury to the operator and others.
2. Leaks: Show the locations where leaks (hydraulic fluid, brake fluid, fuel) can occur. Explain that leaks can lead to further more serious problems, cause fires or damage the environment. Leaks can also cause slip and fall injuries to operator and others due to fluid on machine. Explain the danger of checking for leaks where fluid is under high pressure (e.g. hydraulic fluid) and the proper method for checking.
3. Grease fittings: Identify the location (including remote connections), condition and purpose of grease fittings as described in the routine maintenance section of the owner's manual. Check to ensure they are in good condition and connected properly. Excessive grease build-up should be cleaned regularly to prevent the potential of slips and falls and fire.
4. Tracks, pads and pad bolts: Ensure adequate tension and proper adjustment of the tracks. Check for loose, worn, damaged or missing pads, bolts, grouser, idlers and main pins. Examine the condition of pins and bushings including the locking device on pins and watch for signs of wear or breakage of pins and bushings.
5. Tires, wheels, and chains: Explain the requirements for correct pressure, adequate tread, no punctures or defects, rim in good condition, cap on valve stem. Follow the manufacturer guidelines when inflating/deflating tires. Ensure that chains are properly installed and tightened. If too loose, debris can be caught in chains and thrown out with considerable force. Watch for excessive wear, missing or damaged clevis pieces or loose parts of the chain. Also check for loose or missing wheel lugs.
6. Engine/manifold area: Check engine compartment and exhaust manifold/turbo for debris. Check and remove debris from engine compartment to reduce the potential for fire, pay particular attention to the manifold/turbo/radiator areas.

7. Pins and Bushings: Examine holding pins and bushings for damage; ensure they're engaged properly and in place.
8. Check fluid levels: Identify location of site glass and/or dip stick/cap and filler locations and check for proper levels. Keep areas clean of debris, spilled fluids and grease build-up. Determine and confirm type of fluid at each filling location. Follow manufacturer guidelines for proper checking procedures of pressurized systems. No smoking during these procedures and know the hazards of hot fluids. When checking and identifying hydraulic hose requirements, the operator must be familiar with the types of hose fittings. (3 types - GIC, OFS and Pipe Thread)
9. Blade and winch (if applicable): Check visually all pins and pivot points, cutting edge and moldboard. Before angling blade manually ensure that the king pin is not damaged. Examine the condition of the winch cable and drum, and winch hook for burrs or frayed cables, check rollers for free movement and wear. Wear double palm gloves when handling cable.
10. Lift and tilt cylinders: Check for cracks, condition of pins (locks), and the condition of cylinders keeping an eye out for leaks, damaged grease fittings, hoses, and bolts.
11. Condition of guards, catwalks, handholds and steps: Examine all guards to ensure that they are properly installed and in good condition. Do not operate without guards installed. Check the condition of all handholds, steps and walkways to ensure they are not damaged and free from debris, ice snow, grease and oil.
12. Fire extinguisher and/or fire suppression system: Operators must know how to access equipment and how to use it. Check daily to ensure a proper charge, maintenance tag is updated, the pin is in place and device is properly secured in cab. A full water pack in working condition is required for fire season. For machines equipped with a fire suppression system, know the location(s) of activation plungers and ensure they are in good condition. Check outlets for good condition.
13. Escape hatch: The operator must know the location of the escape hatch and procedure to exit. Check to ensure that the hatch opens and, the latches, hinges, handle, and pins are in good condition, and the procedure to exit.
14. Seat belt: Examine seat belt to ensure that it is in good working condition (wear, anchors, frayed, buckle works freely).
15. Lights: Turn on all lights to check that they are in good working order. If guarded, make sure the guards are in place, the lenses are cleaned and wiring harnesses are intact.
16. Windows/doors: Examine windows and doors to ensure they are clean and in good condition. Broken or missing windows must be reported and repaired. Check to see door opens and closes properly. Make sure wipers and wiper blades are in working order, and that window guards/screens (if equipped) are properly installed.

17. Housekeeping and loose equipment in cab: Keep all tools outside the cab or properly secured in the cab. No loose items in the cab. Keep floor clean and air conditioning/heater filters clear of materials. Aerosol containers should be secured and away from heat sources.
18. Radio communications: Check the radio to ensure that it is in good working order and equipped for channels used in your area (if applicable).
19. First-Aid Kit: Know the location, condition and required contents of the first aid kit. It should be easily accessible. Know trained first aid caregivers on-site.
20. Spill Kit: Know the location, condition, how to use it, required contents of the spill kit. It should be easily accessible.
21. Reflective/Flare kit: Know the location, condition, how to use the required contents. It should be easily accessible.
22. Back-up Alarm: Check back-up alarm to ensure that it is in good working order and audible.

Component Checklist:

- Check for cracks and leaks
- Identify grease fittings
- Check Tire/Track components condition
- Check engine compartment and manifold for debris
- Check Condition of pins and bushing
- Check fluid levels
- Check condition of blade
- Check condition of hydraulic cylinders
- Check condition of guards, handholds and steps
- Check condition of fire extinguisher and/or fire suppression system
- Check condition of escape hatch
- Check condition of seat belt
- Check lights
- Check condition of windows, wipers and guards
- Check housekeeping and remove, or properly stow loose equipment in cab
- Check radio communication (if applicable)
- Check first-aid kit
- Check spill kit
- Check back-up alarm

PERFORM VISUAL AND OPERATIONAL CHECKS OF ATTACHMENTS AND MOVING COMPONENTS FOR FLUID LEAKS AND DAMAGE

Performance Objective

Check attachments for proper operation, fluid leaks and damage, according to manufacturer specifications, in order to ensure safe and efficient operation of equipment

Guidelines for Performance Objective:

1. Activate parking brake and/or hydraulic/transmission interlocks: Check the danger zone to ensure it is free of co-workers or other equipment prior to activating the system. Check for proper operation of components. If defects are detected report immediately to your supervisor.
2. Check attachments for damage: Make sure the attachments are not damaged and that no leaks are apparent.
3. With the transmission locked or in neutral, all controls in the rest position, engine running, lights turned on and emergency braking applied, dismount from cab using 3-point contact, complete one more walk around the machine, checking for fluid leaks or other obvious damage.

Component Checklist:

- Activate parking brake and/or hydraulic/transmission interlocks
- Check attachments for damage and leaks
- Visual inspection, when walking around machine, with engine running

PERFORM SITE PLANNING AND SET UP**Performance Objective**

Plan and organize dozing pattern, using maps, photographs, and established road/pit boundaries, in order to facilitate material extraction and minimize ground disturbances. Evaluate and recognize ground conditions by observing changes in terrain and weather conditions, in order to prevent equipment and environmental damage and to protect self and others. Observe road/pit boundaries, according to pre-established prescriptions and legislative requirements in order to prevent entry into protected and non-allocated areas.

Guidelines for Performance Objective:

1. Identify dozing pattern: Check with your immediate supervisor to determine any environmental or other potential hazards in the immediate area utilizing maps, photographs and established road/pit boundaries to assist you. (i.e. chicots, hang-ups, terrain, traffic or other equipment, power lines).
2. Identify travel route: Check with your immediate supervisor and/or cross-shift operator regarding hazardous terrain that must be taken into consideration (i.e. Rough terrain, wet areas).
3. Minimize rutting and ground disturbances: Be aware of ground disturbance guidelines for your operation and if unsure check with your immediate supervisor. RUTS CAN POSE UNSAFE CONDITION FOR MACHINE OPERATION
4. Maintain a safe operating distance between neighbouring equipment: Be aware of other equipment working in your work area. Check with your immediate supervisor and co-workers to identify appropriate danger zones for your operation. Follow the danger zone communication rules for your operation.
5. Working on hills: When possible, working on inclines should be conducted in direction of slope to reduce potential of roll over. Working should be conducted straight up and down steep hills. Avoid travelling over high stumps, rocks and windfalls. Discuss ground condition concerns with your immediate supervisor or the previous shift co-worker at beginning of each shift.
6. Seasonal concerns (winter, summer) requires extra caution to be exercised due to poor visibility and hidden hazards. Be aware of these hidden hazards due to seasonal conditions (i.e. ditches along roadways frozen/covered with snow, culverts hidden by snow, hidden areas of concerns such as recently planted areas, hidden rock outcrops/cliffs). Summer conditions pose a hazard of fire being ignited due to machine tracks on rocks. Operators must be on the look out for ignition of underbrush.
7. Operate equipment within identified boundaries: Check with your immediate supervisor in relation to boundary identification rules. (i.e. colour of ribbon used to identify concerns and boundaries). Observe established rules and if unsure confirm with your immediate supervisor.

Component Checklist:

- ❑ Identify dozing pattern
- ❑ Identify travel route
- ❑ Minimize rutting and ground disturbance
- ❑ Maintain a safe operating distance between neighbouring equipment
- ❑ Operate equipment within identified road/pit boundaries
- ❑ Working on hills should be conducted in direction of slope to reduce potential of roll over
- ❑ Minimize crossing of drainage areas to reduce rutting in wet areas
- ❑ Seasonal concerns (winter, summer) require extra caution due to poor visibility, hidden hazards and slippery surfaces

TRAVEL WITH BULLDOZER**Performance Objective**

Prepare machine for travel by placing attachments in travel position. Adjust speed according to conditions of the environment and manufacturer specifications to protect self and others and to prevent damage to equipment.

Guidelines for Performance Objective:

1. Place attachments in the travel position: The attachments should be maintained in a position not to impede visibility by maintaining an appropriate height.
2. Select speed appropriate to ground conditions while maintaining control of the machine. Maintain a speed and engine RPM that allows the operator to maintain full control of the machine at all times taking into consideration ground conditions, weather,
3. Maintain control, travel at a safe speed and keep right on roadways or on route to landing to ensure public safety. Watch local traffic and observe traffic and warning signs posted within work area. Keep speed appropriate to road conditions, weather, volume of traffic and seasonal conditions (dust, weather). Be aware of soft shoulders.
4. Maintain communication with other equipment operators. Check to ensure your radio is in good working order and proper channel is used. Monitor the local channel for traffic (if applicable). Check with your immediate supervisor for communication protocol within your work area.
5. Passing Protocol Park machine with attachment on the ground and throttle at idle with parking brake engaged and/or transmission/hydraulic interlock engaged when allowing traffic to pass while on roadside.

Component Checklist:

- Place attachments in travel position
- Select a speed appropriate to ground conditions while maintaining control of machine
- Maintain control, travel at a safe speed and keep right while travelling on roadway or on route to and from work site while maintaining radio communication (if applicable) to ensure public safety
- Maintain communication with other operators

OBSERVE MACHINE LIMITATIONS

Performance Objective

Observe machine limitations according to manufacturer specifications by identifying equipment load chart, recognizing conditions that affect machine capabilities such as steep terrain in order to protect self and others and prevent equipment damage.

Guidelines for Performance Objective:

1. Apply the manufacturer standards for machine capacity and limitations in determining the size of load keeping in mind ground conditions and terrain.

Component Checklist:

- Understand the load limitation of the machine according to ground conditions

OBSERVE DANGER ZONE

Performance Objective

Observe danger zone by keeping a safe distance between self, others and equipment, recognizing potential hazards from falling trees, limited visibility and blind spots, according to manufacturer specifications, legislative requirements and established procedures, in order to protect self and others and prevent damage to equipment.

Guidelines for Performance Objective:

1. Review danger zone requirements and identify site-specific hazards. Know the danger zone as it applies to other equipment and operating equipment near other workers. Consult operator's manual for recommended danger zone for this equipment.

Component Checklist:

- Maintain a safe operating distance between machinery and all other personnel

SHUT DOWN BULLDOZER

Performance Objective

Shut down and immobilize bulldozer in a normal and emergency situation, according to manufacturer specifications and requirements.

Guidelines for Performance Objective:

1. Lower attachments to the ground: Park machine on level bare mineral soil and lower attachments to ground, engage transmission lock or parking braking system and shut off master switch when completing shutdown procedure. Maintain 3-point contact during dismount.

Component Checklist:

- Lower attachments to the ground
- Shut down procedures
- Safe dismount, maintaining 3-point contact

REFUEL BULLDOZER

Performance Objective

Refuel bulldozer in a well ventilated area; shutting off engine; maintaining the area free of smoking; and preventing spills or damage to the environment; according to legislative requirements, manufacturer specifications and recommendations.

Guidelines for Performance Objective:

1. Back up bulldozer to the fuel tank to prevent damage to the fuel tank.
2. Shutdown bulldozer: Follow previously noted shutdown procedures.
3. Dismount using 3-point contact.
4. Fuelling procedures: Follow local fuelling procedures, no smoking, never leave the nozzle unattended, and properly store the hose after use.

Component Checklist:

- Back up bulldozer to the fuel tank
- Shut down procedures
- Safe dismount, maintaining 3-point contact
- Fuelling procedures

WINCH/TOW EQUIPMENT**Performance Objective**

Winch/tow equipment according to legislative requirements and manufacturer specifications in order to protect self and others and prevent equipment damage.

Guidelines for Performance Objective:

1. Ensure proper personal protective equipment is worn while handling winch cable: Workers must wear double palm gloves when handling cable. When out of the cab proper head protection, safety boots laced to the top, and high visibility clothing must be worn.
2. Position and immobilize bulldozer to facilitate a straight pull: The bulldozer is positioned with blade down and parking brake on to allow winching to be done safely in a straight line. It also reduces the potential for damage to the cable and the machine. Winching from an angle can cause a roll over.
3. Ensure bulldozer is immobilized and winch is released before handling cable: Ensure that the cable is partially unwound from the spool before directing any worker to handle the cable. CAUTION: It is very dangerous to handle bulldozer winch cable because it could wind in the opposite direction drawing the worker into the machine.
4. Maintain communication between equipment operator and workers: Establish a plan of action between all workers prior to initiating the pull. Maintain ongoing communication between workers involved using radio, hand signals or other means.
5. Ensure other workers are clear of the potential cable breakage danger zone before engaging the winch. Establish an appropriate danger zone for the circumstances and ensure that this danger zone is maintained throughout the pull.
6. Immobilize all equipment and allow slack in the cable prior to disconnecting. In all cases parking brake must be engaged, blade down and machine secured prior to any workers entering the danger zone. No worker shall enter the danger zone until signalled by the operators.

Component Checklist:

- Ensure proper personal protective equipment is worn while handling winch cable
- Position bulldozer to facilitate a straight pull
- Ensure bulldozer is immobilized and winch is released before dismounting
- Maintain communications between equipment operators
- Ensure other workers are clear of the potential cable breakage danger zone before engaging the winch
- Immobilized all equipment and allow slack prior to disconnecting cable

PERFORM MINOR MAINTENANCE AND ADJUSTMENTS

Performance Objective

Perform minor maintenance and adjustment on the bulldozer, after immobilizing (locking out) machine, lubricating equipment and attachment, maintaining fluid levels, ensuring replacement of belts and hoses, and checking and completing maintenance and/or deficiencies report, according to legislative requirements, manufacturer specifications and recommendations,

Guidelines for Performance Objective:

1. Shut down bulldozer: Immobilize machine, lower attachments to the ground, shut down engine, and follow lock out procedures.
2. Dismount using 3-point contact.
3. Lubricate/maintain fluid levels: following manufacturers' specifications for greasing. It is a good opportunity to check for cracks, leaks, wear in pins and bushings.
4. Report deficiencies: Complete report according to local procedures, perform repairs that you are qualified to do and/or report to the supervisor or mechanic or service person.

Component Checklist:

- Shut down bulldozer and lock out
- Safe dismount, maintaining 3-point contact
- Lubricate/maintain fluid levels
- Report deficiencies

NOTE: All skill areas in the Modular Training Standards book will be continuously discussed during the training process.