

UNITED STATES MARINE CORPS
ENGINEER EQUIPMENT INSTRUCTION COMPANY
MARINE CORPS DETACHMENT
686 MINNESOTA AVE
FORT LEONARD WOOD, MISSOURI 65473-8963

LESSON PLAN

Marine Corps 1150E Crawler Tractor

LESSON ID: BEE0-B05

BASIC ENGINEER EQUIPMENT OPERATOR COURSE

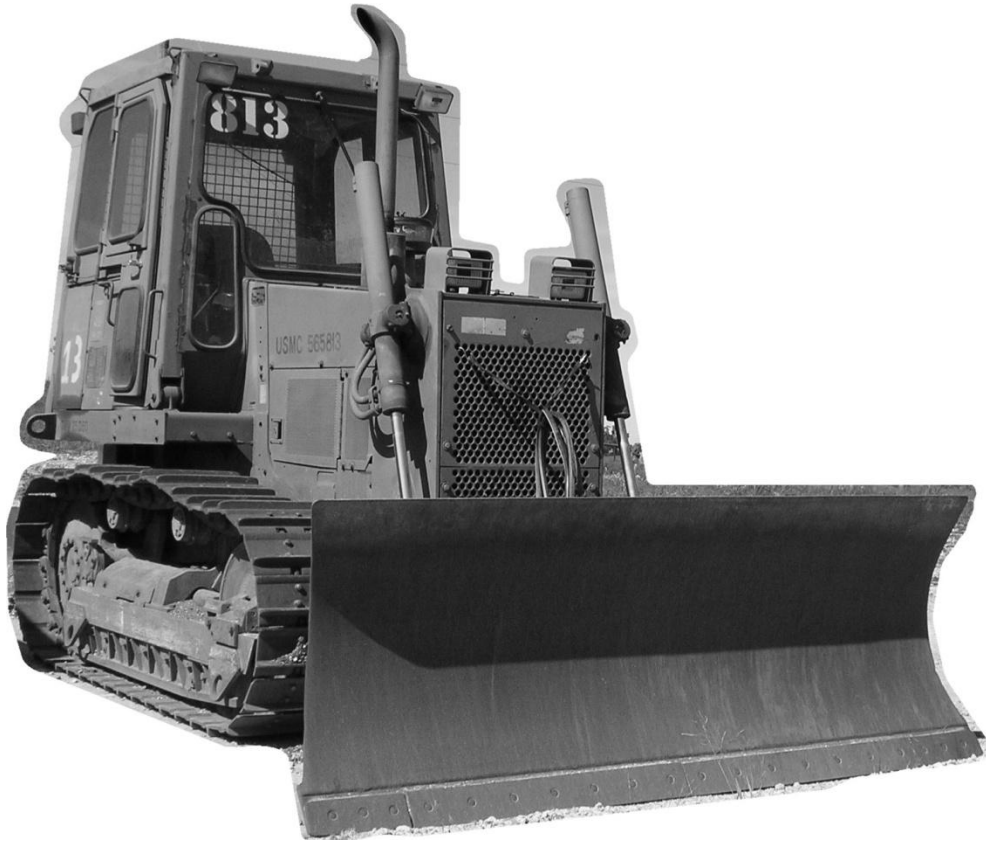
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REVISED 01/19/2012

APPROVED BY _____

DATE _____

1150E



CRAWLER TRACTOR

INTRODUCTION

(30min)

(On Slide #1)

1. **GAIN ATTENTION.** Show video (Bulldozer Song)

(On Slide #2)

2. **OVERVIEW.** Good morning, my name is _____, the purpose of this lesson is to give you the tools, knowledge, and skills to safely and effectively operate a MC1150E Dozer in support of engineer operations. I will cover safety and operator responsibilities, general characteristics, major components, instruments and controls, basic operations, operating techniques, and preventative maintenance checks and services.

3. **LEARNING OBJECTIVES.**

INSTRUCTORS NOTE

Introduce learning objectives.

(On Slide #3&4)

- a. **TERMINAL LEARNING OBJECTIVE.**

(1) Provided an MC 1150E tractor, an engineer equipment requirement and engineer equipment records and forms, operate the MC 1150E tractor to safely meet the operational requirement with no injury to personal or damage to equipment. (1345-XENG-1005)

(2) Provided engineer equipment, tools, equipment records and references, conduct engineer equipment preventive maintenance so that equipment is checked and serviced per the appropriate technical manual and actions/deficiencies/discrepancies are recorded per TM 4700-15/1H (1345-MANT-1001)

(On Slide #5-#10)

- b. **ENABLING LEARNING OBJECTIVES.**

- (1) Given the description and characteristics of the MC1150 tractor, and without the aid of references, identify the characteristics per the TM 09062A-OR. (1345- XENG-1005a)
- (2) Provided a MC 1150E, engineer equipment records and forms, and with the aid of references, initiate operator forms and records per the TM 4700-15H1 (1345-XENG-1005b)
- (3) Provided a MC 1150E, engineer equipment records and forms, technical manuals and lubrication orders, perform technical manual research per the TM-09062A-OR. (1345-XENG-1005c)
- (4) Provided a MC 1150E, engineer equipment records and forms, tools, and with the aid of references, demonstrate correct use of tools per the TM 10209-10/1. (1345-XENG-1005d)
- (5) Provided a MC 1150E, engineer equipment records and forms, tools, petroleum, oils, and lubricants and with the aid of references, demonstrate the correct use of petroleum, oils, and lubricants per the TM-09062A-OR(1345-XENG-1005e)
- (6) Provided with a MC 1150E tractor, engineer equipment records and forms, tools, petroleum, oils, and lubricants, and with the aid of references, perform operation checks (before, during, and after) per the TM-09062A-OR. (1345-XENG-1005F)
- (7) Provided with a MC1150E tractor, an operator, and without the aid of reference, perform hand and arm signals per the FM 21-60. (1345-XENG-1005g)
- (8) Provided with a MC1150E, an operator, and without the aid of references, perform stockpiling operations per the TM-09062A-OR.(1345-XENG-1005h)
- (9) Provided an MC1150E, engineer equipment records and forms, and references, perform leveling operations utilizing six way blade per the TM-09062A-OR(1345-XENG-1005i)
- (10) Provided with a MC1150E, engineer equipment records and forms, and references, perform ditching operations per the TM-09062A-OR(1345-XENG-1005j)
- (11) Provided an MC1150E, engineer equipment records and forms, and with the aid references, complete operator forms and records per the TM-4700-15/1 (1345-XENG-1005k)

(12) Provided with a MC1150E, tools, petroleum, oils, and lubricants, equipment records, and references, conduct preventive maintenance per the TM-09062A-OR.(1345-XENG-10051)

(Slide #11)

4. **METHOD/MEDIA**. This lesson will be taught utilizing the lecture, demonstration, and practical application methods. I will be added with the use of video, computer-aided graphics, your outline, and the actual end item of equipment.

INSTRUCTOR NOTE

Explain Instructional Rating Forms to students

5. **EVALUATION**. You will be evaluated on this period of instruction on the morning of the fifth training day. This will be in the form of a written exam, multiple-choice, twenty-five question test. That same afternoon you will be evaluated on your practical evaluations.

6. **SAFETY/CEASE TRAINING (CT) BRIEF**. Ensure seat belt is fastened at all times. All controls will remain in the neutral position until utilized. Apply Service and Parking Brakes when stationary. No passengers are allowed at any time. Be aware of all pinch points when servicing or around equipment. Keep hands and feet in the cab at all times. Before and during operation, check all clearances to power lines or other obstructions and keep all pedestrians/ground guides at a safe distance. Wear hardhat at all times. Every Marine is responsible for safety. If you witness an unsafe act you will call cease training and report it to your Instructor. Dress appropriate for the weather.

TRANSITION. Are there any questions relating to learning objectives, how this lesson will be conducted or how you'll be evaluated? (Pause: and receive any questions from the class.) If not, let's start by discussing the mission and general characteristics of the 1150E.

(On Slide #12)

BODY.

(34 HRS 25 MIN)

1. **MISSION, FUNCTIONS, CHARACTERISTICS: (10 min)**

a. The mission of the MC1150E is to support infantry, artillery, communications, and engineer units.

b. The MC1150E has two functions for the Marine Corps.

(1) The primary function of the MC1150E is basic leveling, stockpiling, and quick dozing.

(2) The secondary function of MC1150E is winching loads and vehicle recovery.

c. The MC1150E Crawler Tractor is diesel engine powered, full-tracked, lightweight dozer manufactured by J. I. Case.

d. It is able to perform fording operations through 60 inches of mud or water. The fan disconnect must be in the off position before fording operations.

e. The weight of the MC1150E is 25,050 lbs and can be transported internally and externally by aircraft.

(On Slide #14)

(1) View of CH-53 helicopter transporting an 1150E.

(On Slide #15)

TRANSITION: Are there any questions covering the mission, functions or characteristics of the MC11150E? If not, I have some questions for you.

**QUESTION 1: How can the MC1150E be transported by aircraft?
Internally and externally**

QUESTION 2: What is the mission of the MC1150E? To support infantry, artillery, communication, and engineer units

TRANSITION: If there are no more questions let's move on and discuss the major components.

(On Slide #16)

2. **MAJOR COMPONENTS: (15 min)**

(On Slide #17-#20)

a. **Engine:** It is a J. I. Case 6T-590 turbo charged diesel engine. It is a six cylinder with in-line fuel injection.

(1) Engine oil: 15/40w

(2) Air Compressor—the air compressor is found on the left side of the engine compartment and **is drained daily while performing after operation checks.**

(3) It has a maximum horsepower of 118 at 2100 RPM's

(4) The air intake system consists of a primary and secondary air filter.

INSTRUCTOR NOTE

To clean the air filters use an air compressor, blowing from the inside of the filter out. Do not tap the filters.

(5) Electrical System—is a 24-volt negative ground system that includes two 12-volt batteries.

(On Slide #21)

b. **TRANSMISSION:** The MC1150E has a power shift transmission.

(1) Each track is driven individually through a separate set of clutches and gears.

(2) Transmission oil: 10w

(3) The MC1150E has four gears forward and four gears reverse.

(4) The maximum forward speed is 6.3 mph.

(5) The maximum reverse speed is 7.6 mph.

(On Slide #22)

c. **COMPONENTS:** The MC1150E comes with a dozing blade and winch that are hydraulically operated using 10W oil.

Instructor Note

Ensure MC1150 blade is completely lowered before checking the hydraulic fluid.

(On Slide #23-#25)

d. **Blade:** 9 feet 2 inches wide and mounted on a "C" type frame.

(1) The blade consists of two cutting edges and two end bits that are replaced when worn $\frac{3}{4}$ of an inch from the moldboard.

(NOTE: The cutting edges and end bits can be flipped)

(2) The blade is made from a $\frac{1}{8}$ th inch piece of steel, which is not reinforced.

(3) The blade is able to tilt 13.6 inches left or right from center.

(4) The blade is able to angle 0 to 25 degrees left or right.

(On Slide #26)

e. **Winch:** (Model GH-15) is used for vehicle recovery operations.

(1) Single speed hydraulically operated.

(2) The winch has 164 feet of $\frac{3}{4}$ inch wire rope.

(3) Max pulling capacity of 30,000 lbs.

(NOTE: You must maintain a minimum of three to four wraps when performing winching operations).

(On Slide #27)

f. **ROPS:** The tractor is equipped with a Rollover Protection Structure (ROPS).

(On Slide #28)

TRANSITION: Are there any questions covering the major components of the MC11150E? If not, I have some questions for you.

**QUESTION 1: What is the maximum horsepower of the 1150E.
118hp at 2100 rpm's**

QUESTION 2: What type of transmission does the 1150E have?
Powershift

QUESTION 3: How many speeds does the winch have?
One(single speed)

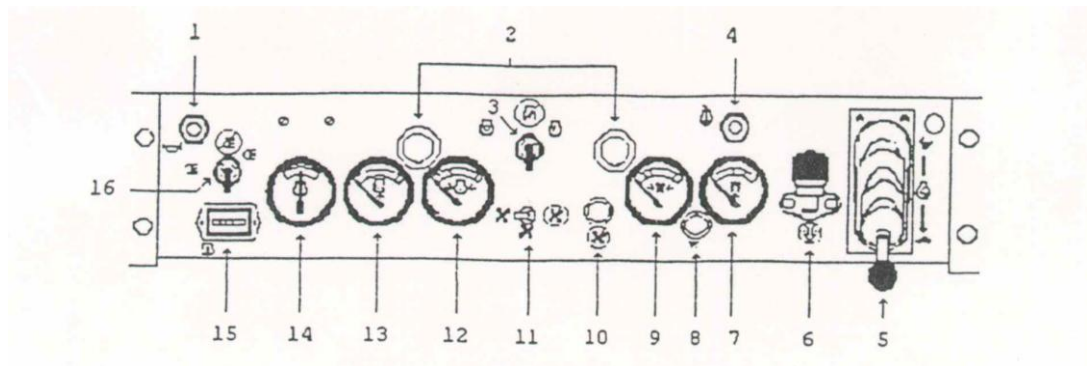
TRANSITION: If there are no more questions, let's move on and discuss the instruments and controls.

(On Slide #29)

3. INSTRUMENTS AND CONTROLS: (10 min) This section describes, locates, and illustrates the necessary information for the operator about the instruments and controls.

(On Slide #30)

a. **INSTRUMENT PANEL:** It tells the operator everything that is going on with the tractor while it is in operation. (See figure 1)



(FIGURE 1)

(1) Horn Button—Used only for emergencies and prior to backing up if the backup alarm is inoperative.

(2) Panel Lights—There are two panel lights which aid the operator in seeing the instruments in hours of darkness.

(3) Ignition switch—Turn this switch clockwise to start the flow of fuel to the engine. Turning the switch to the OFF position will stop the engine from running.

(4) Ether Start Aid—Injects a measured amount of ether into the engine. You should only activate this system when the temperature is below 32 degrees F.

INSTRUCTOR NOTE

Ether is no longer utilized in the Marine Corps yet the tractors in service still have the components to attach an ether bottle.

(5) Engine Hand Throttle—Push the engine hand throttle up to increase engine speed. Pull the engine hand throttle down to decrease engine speed. Do not use as a cruise control, however it is used when performing winching operations.

(6) Restriction Indicator—Shows the condition of the air cleaner filter.

(7) Converter Temperature Gauge—Shows the temperature of the transmission and torque converter oil.

(a) Green area—Normal operations

(b) Yellow area—Select a lower transmission gear or reduce the operating load of the machine.

(c) Red area—Stop the machine, let the engine idle, if it stays in the red, cut the engine off and contact the maintenance section.

(8) Transmission Filter Light—Shows the condition of the transmission filter. (NOTE: This light should come on when you turn the master disconnect switch on.)

(9) Transmission Oil Pressure Gauge—Shows the oil pressure of the transmission when the engine is running and the transmission direction controls are in the forward or reverse position.

(a) Green area—Shows normal operating pressure.

(b) Yellow area—Normal when the engine is running at low idle speed.

(c) Red area—DO NOT run the engine if the needle moves into this area. Contact maintenance section.

(10) Fan Indicator Light—Comes on when the fan is in stop mode for fording operations.

(11) Engine Fan Switch—This switch controls whether the engine fan is on or off.

(12) Engine Oil Pressure—Shows the oil pressure of the engine after it has been started.

(a) Green area—Shows normal operating pressure.

(b) Yellow area—Normal when the engine is running at low idle speed.

(c) Red area—DO NOT run the engine if the needle moves into this area. Contact maintenance section.

(13) Water Temperature Gauge—Shows the temperature of the coolant in the cooling system.

(a) Green area—Shows normal operating temperatures.

(b) Yellow area—Shows when the temperature is above normal.

(c) Red area—Stop the engine, and look for the problem. **(NOTE: Do not open radiator cap).**

(14) Alternator Gauge—Shows the condition of the charging system.

(a) Green area—Shows normal operations.

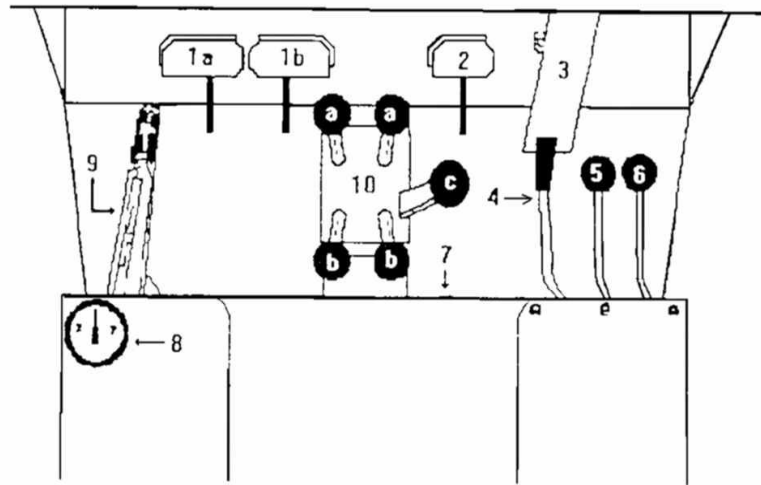
(b) Red area—Stop the engine and look for the problem.

(15) Hour Meter—Shows the hours and tenths of an hour the engine has ran. (NOTE: Read only the whole numbers).

(16) Light Switch—Two positions: On and Off.

(On Slide #31)

- b. **CONTROLS** Ensure that the controls are always operated from the operators seat only. (See figure 2)



(FIGURE 2)

(1) Track Brake Pedals—Controls the brakes in the final drives. Depressing these pedals will apply the brakes, slowing down the tracks. These brakes are used to turn the tractor only, do not use them to completely stop.

(a) Left Track Pedal—Activates the left track brake assembly.

(b) Right Track Pedal—Activates the right track brake assembly.

(2) Manual Brake Pedal—Used to slow down or stop the tractor. Depressing the pedal sets the brakes for both tracks and stops the tractor.

INSTRUCTOR NOTE

In order to assist the engagement of the Parking Brake, the Manual Brake Pedal may be depressed in conjunction with the park brake.

(3) Engine Foot Throttle—Used to control the engine speed. Push the pedal down to increase engine speed and release the pedal to decrease the engine speed.

(4) Blade Lift and Tilt Control Lever—Enables the operator to position the blade for depth of cut and to tilt the blade to distribute the load. This lever has six positions:

(a) Raise—Pull the lever to the rear.

(b) Lower—Push the lever forward.

(c) Hold—Used to hold the blade in the desired position.

(d) Tilt Left—Move this lever to the left until the tilt angle required is reached.

(e) Tilt Right—Move this lever to the right until the angle required is reached.

(f) Float—Push the lever all the way forward.
(NOTE: Used when at position PARKLINE).

(5) Blade Angle Control Lever—Enables the operator to set the blade at the desired angle. This lever has three positions:

(a) Angle Left—Move the lever forward.

(b) Hold—Used to hold the blade in the desired position.

(c) Angle Right—Pull the lever to the rear.

(6) Winch Control Lever—Used to reel the cable in and out of the winch. This lever has three positions:

(a) Cable Out—Pull the lever to the rear.

(b) Hold—Used to hold the winch in the desired position.

(c) Cable In—Push the lever forward.

(7) Master Disconnect Switch—Mounted below the operator's seat and to the right rear of the transmission control tower. This switch controls the power from the batteries to the tractor.

INSTRUCTOR NOTE

Ensure master switch is disengaged prior to shutting down operations for the day. Master disconnect switch is the last switch to turn off during shut-down procedures.

(8) Fuel Gauge—Located near the left side of the operator's seat, by the armrest.

INSTRUCTOR NOTE

Never trust the fuel gauge, always visually inspect the fuel tank to record proper fuel level.

(9) Parking Brake Lever—Used to hold the manual brake and prevent movement of the tractor when it is parked. To set the parking brake push down on the manual brake, then pull the lever up to a vertical position.

(10) Transmission Control Tower—Located directly in front of the driver's seat and has five transmission control levers. It also has the neutral safety lock and starter button. (See figure 2).

(a) Track Speed Control Levers—Have three positions: HI (High), N (Neutral), and LO (Low). The left lever is for the left track and the right lever is for the right track.

1 HI—Move the levers forward to operate the tracks at the maximum speeds. (3rd and 4th gear).

2 N—Make sure the levers are in neutral position (center position) before starting or disembarking the tractor.

3 LO—Move the levers to the rear to operate the tractor at a slower speed. (1st and 2nd gear).

(b) Track Direction Control Levers—Have three positions: F (Forward), N (Neutral), and R (Reverse). The left lever is for the left track and the right lever is for the right track.

1 F—Move the levers all the way forward.

2 N—Make sure the levers are in the neutral position (center) before starting or disembarking the tractor.

3 R—Pull the levers completely to the rear.

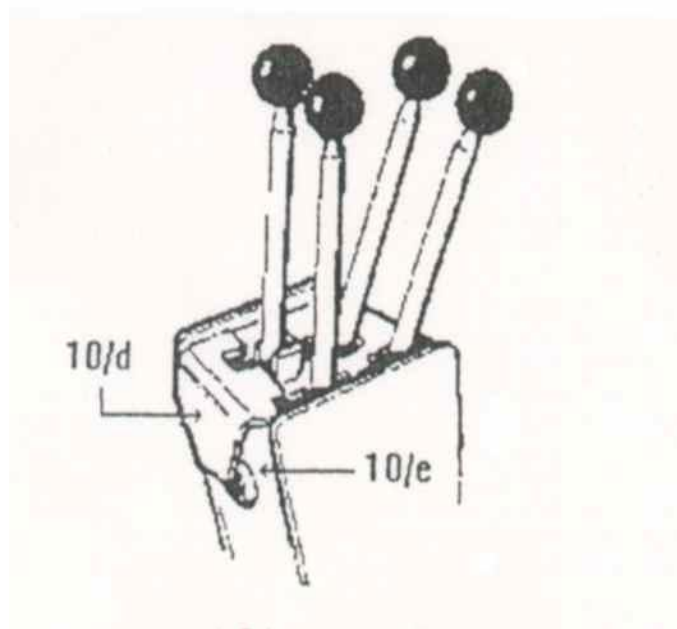
(c) Transmission Range Control Lever—Has two positions: LO (Low) and HI (High).

1 LO—Used when in rough terrain and pushing material. Pull the lever back towards the operator.

2 HI—Provides power needed to travel at the maximum speed. Push lever forward toward windshield.

(d) Neutral Lock—Mounted on top of the control tower. The transmission controls must be in the neutral position to engage the neutral lock. (See figure 3)

(e) Starter Button—Mounted on the front of the transmission control tower. Depress the button to activate the starter. (See figure 3)



(FIGURE 3)

(On Slide #32)

- a. Picture of transmission control tower.

(On Slide #33)

TRANSITION: Are there any questions covering the instruments and controls of the MC1150E? If not, I have some questions for you.

QUESTION 1: When do you apply the ether start? At 32 degrees or below

QUESTION 2: The hand throttle is only used when? For winching operations

QUESTION 3: Where is the starter button located? On the front of the transmission control tower.

QUESTION 4: What does the neutral lock do? Locks all speed controls in neutral

TRANSITION: Let's continue on to discuss the speed selections of the tractor.

(On Slide #34)

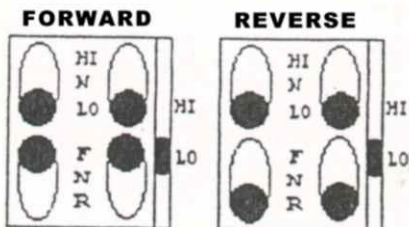
4. CONTROL SETTINGS: (10 min) The MC1150E is capable of four gears forward and four gears reverse.

NOTE:
Students should only operate in first gear while on the lot or in the pit unless told otherwise.

(On Slide #35)

a. First Gear—Both of the track speed control levers and the transmission range control lever in the LO position. (See figure 4)

1ST GEAR

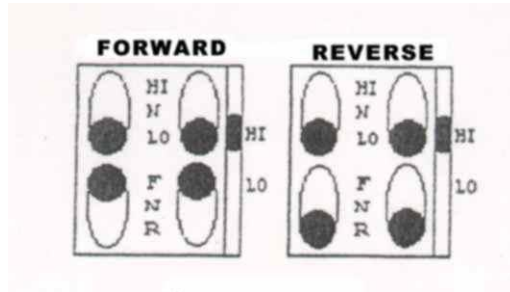


(FIGURE 4)

(On Slide #36)

b. Second Gear—Track speed control levers in the LO position and the transmission range control lever in the HI position. (See figure 5).

2nd Gear

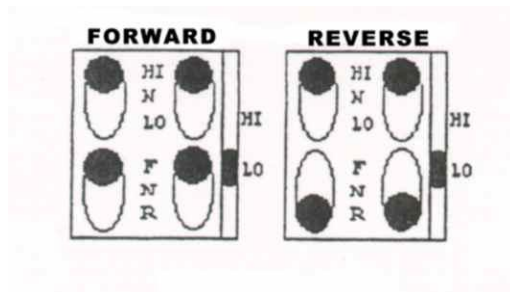


(FIGURE 5)

(On Slide #37)

c. Third Gear—Both of the track speed control levers in the HI position and the transmission range control lever in the LO position. (See figure 6).

3rd Gear

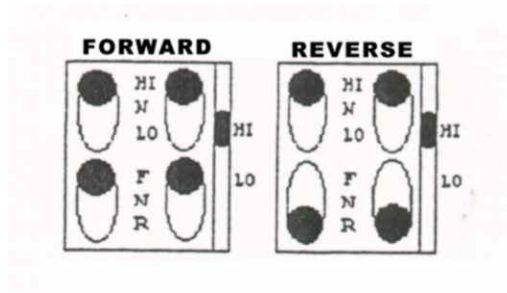


(FIGURE 6)

(On Slide #38)

d. Fourth Gear—Both of the track speed control levers and the transmission range control lever in the HI position. (See figure 7).

4th Gear



(FIGURE 7)

(On Slide #39)

TRANSITION: Are there any questions about the gear selection of the MC1150E? If not, I have questions for you.

Question 1: What is the range lever used for? Changing Gears

**Question 2: What levers control the direction of the tractor?
The rear control levers**

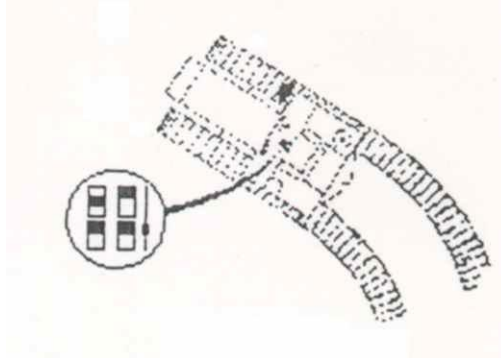
TRANSITION: Let's move on to the types of turns the 1150E can negotiate.

(On Slide #40)

5. **TURNS:** (5 min) The MC1150E has four types of turns.

(On Slide #41)

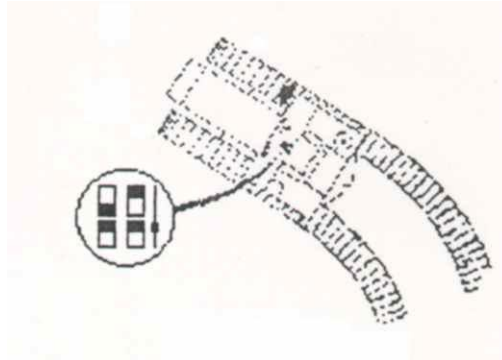
a. Gradual Turn—By putting one track speed control lever in neutral and the other in high or low, the tractor will turn towards the track in neutral. (See figure 8).



(FIGURE 8)

(On Slide #42)

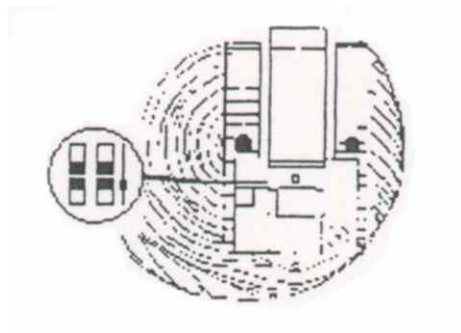
b. Power Turn—By putting one track speed control lever in high and the other in low, the tractor will turn towards the track in low. (See figure 9).



(FIGURE 9)

(On Slide #43)

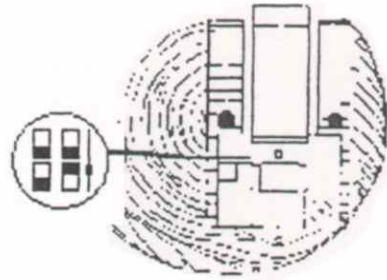
c. Brake Turn—By pushing the left or right brake pedal, the tractor will turn towards the track that has the brake applied. The brake turn is the safest turn to use in close areas or around other equipment, buildings, or structures. (See figure 10).



(FIGURE 10)

(On Slide #44)

d. Counter-Rotation Turn—By putting one track direction control lever in forward and the other in reverse, the tractor will turn towards the track in reverse. This needs to be done in low gear. (See figure 11).



(FIGURE 11)

(On Slide #45)

TRANSITION. Are there any questions covering the types of turns the MC1150 can negotiate? If not, I have questions for you.

QUESTION 1: What turn is used around other equipment? Brake Turn

QUESTION 2: What turn has one track in forward and one track in reverse? Counter Rotational Turn

(On Slide #46)

(BREAK 10 min)

TRANSITION: Let's move on and discuss the basic operations.

(On Slide #47)

6. BASIC OPERATIONS (30 min)

a. STARTING/STOPPING PROCEDURES:

(On Slide #48)

(1) Starting Procedures:

(a) Perform before operations checks in accordance with the NAVMC 10523 and the technical manual.

(b) Mount the tractor from left side utilizing the handrails and foot peg maintaining three points of contact. Do not mount the tractor from the right side.

(c) Verify that the parking brake is engaged.

(d) Ensure all the control levers are in the neutral position and the neutral safety lock is engaged.

(e) Turn the master disconnect switch to the ON position and turn the ignition switch to the ON position. It must be done in this order to prevent damage to the electrical system.

(f) Push the foot throttle half way down while depressing the engine start button.

(g) Allow the tractor to warm up for 3 to 5 minutes; this will prevent damage to the turbo charger.

(On Slide #49)

(2) Stopping Procedures:

(a) Bring the tractor to a complete stop in a designated parking area.

(b) Shift the transmission control levers and the speed control levers to their neutral positions, then raise the neutral safety lock.

(c) Push the manual brake down and pull up the parking brake lever to engage it.

(d) Slowly lower the blade to the ground, then place the blade lift and tilt control lever into float.

(e) Allow the engine to cool down 3 to 5 minutes, then turn the ignition switch to the off position. Then turn the master disconnect switch to the off position in this order.

(On Slide #50)

b. **FORDING OPERATIONS:** The MC1150E has the capability of fording up to 60 inches of water/mud.

(1) Check Area—First, check the area to be forded and verify the depth and condition of the area.

(2) Disconnect the Fan-By turning the switch to the off position, the fan will shut off. (NOTE: Visually inspect to ensure that the fan has stopped.)

(3) Approach the Water-Slowly, then enter and be alert on how the tractor reacts to the operation.

(4) Exit the Water-Turn the fan disconnect switch to the run position turning the fan back on. (NOTE: Visually inspect to ensure that the fan has started.)

(On Slide #51)

c. **VEHICLE RECOVERY:** There are two ways that the MC1150E can be recovered: utilizing the winch or blade to blade.

(On Slide #52)

(1) Winch-This is the preferred method and is used whenever possible.

(a) Back the recovery vehicle 25 to 150 feet from the disabled tractor.

<p>NOTE: Jobsite will dictate the distance between each tractor.</p>
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(b) The disabled tractor raises blade and puts tractor in reverse.

(c) Ensuring that the clevis hook is attached to the disabled tractor, begin to reel in on the winch. Make sure all unnecessary personal are standing back a minimum of 2 times the length of the wire rope reeled out. There must be only one ground guide, he will stand as far away as safely possible and be seen.

(d) As soon as the disabled tractor gets traction, the operator backs up until it is ok to stop and unhook the tractor from the recovery vehicle.

(On Slide #53)

(2) Blade to Blade-This procedure is only used if the operators cannot get to either winch on the tractors.

(a) Slowly approach the disabled tractor ensuring there is material built up in between the blades to act as a buffer.

(b) The disabled tractor needs to raise its blade 12 to 18 inches and put the tractor in reverse.

(c) The recovery vehicle will push the disabled tractor until it gets traction. The recovery vehicle needs to back up to prevent becoming stuck in the same area.

(On Slide #54)

d. **DOZING TECHNIQUES:** There are three different types of dozing techniques that can be done with the MC1150E. They are slot, blade to blade, and downhill dozing.

(On Slide #55)

(1) Slot Dozing—Uses the spillage from the first few passes to create windrows, which allows larger amounts of material to be carried in front of the blade. Slot dozing is used in stockpiling and high production bulldozing. With favorable grades and soil conditions, it increases production as high as 50%.

(On Slide #56)

(2) Blade to Blade Dozing—Used when moving large quantities of material. The blades must be kept close together and the tractors must be parallel. This method increases output when material is being moved at the distance of 50 to 300 feet. (NOTE: It is best used by experienced operators only).

(On Slide #57)

(3) Downhill Dozing—This is the most productive dozing technique and should be used whenever possible if the job site permits. This increases production the best because it uses the force of gravity and the weight of the dozer.

(On Slide #58)

e. **LEVELING:** Leveling consists of cutting the high spots in the terrain and moving the material to fill in the low spots creating a level surface.

(1) First Step—Survey the area to identify the high and low areas that need to be leveled.

(2) Second Step—With the tractor in first gear, begin cutting the highs and filling in lows. Ensure that you are only cutting 1 to 3 inches in the high areas and feathering the material out in the lows.

(3) Third Step—After your first pass, back straight up and center your tractor on the windrow, then repeat steps 1 and two.

(On Slide #59-#61)

f. **STOCKPILING:** Stockpiling can be used for many different reasons. One reason is to gather material together in preparation for transport to another location or to be used as fill. Another use for a stockpile is to construct berms.

(1) Start on a surface that is as level as possible.

(2) Lower the blade so it is level on the ground and begin cutting material. Do not try to excavate deeper than 1 to 3 inches in the ground. Push the material to a designated stockpile area no further than 50 feet away.

(3) As you reach the stockpile area, slowly raise your blade allowing the material to fall and form a stockpile.

(4) Back the tractor up to the beginning of the pass and position it with approximately 1/3 of the blade overlapping the first pass. Make sure that when you start cutting, it is the right side of your blade cutting. The left side of your blade should be skimming the ground to create a level surface all the way to your stockpile.

(5) You will create this stockpile by continuing to push material into the same area.

(6) Continue making passes until you reach a stockpile height of 5 feet.

(7) To spread the stockpile back out, turn the tractor around behind the stockpile so you are facing the opposite direction. Adjust the blade to the height of ground level and move the tractor to the right side of the stockpile so that you will cut only 1/3 of the blade length at a time.

(8) As you are spreading the stockpile out into the area you gather the material from, raise and lower the blade as needed to maintain a level area.

(9) Slowly raise the blade until the material is feathered evenly along the entire distance of your pass.

(10) Back the tractor up and repeat until the entire stockpile is spread out.

(11) Always spread the stockpile from the right side first, when the right side of the stockpile is evenly spread, then work on the left side. When the right and left side of the stockpile are spread out, work straight through the middle. There should only be a need to make one pass through the center.

(12) Never back blade to level an area.

(On Slide #62)

TRANSITION. Are there any questions concerning basic operations? If not, I have some questions for you.

QUESTION 1: The 1150E is capable of fording what depth? 60 inches

QUESTION 2: Personal should stand what distance from the winch cable during winching operations? 2x the cable length

QUESTION 3: How deep should you cut while stockpiling? 1-3 inches

QUESTION 4: How much of the blade is used when deconstructing you stockpile? 1/3 of the blade.

TRANSITION: Lets continue to briefly cover preventive maintenance checks and services changes.

(On Slide #63)

7. **PREVENTIVE MAINTENANCE:** (5 min) To ensure that the equipment is ready for operation at all times, it must be inspected systematically before, during, and after operations, so that defects may be discovered and corrected before they result in serious damage or failure. Follow the checks annotated on the back of the NAVMC 10523. (See figure 12).

a. There are some changes to the NAVMC 10523, which are required to be done by the dispatcher upon being issued to the operator. These changes reflect the checks that are only required for MC1150E.

(1) Clutch—There is no clutch on the MC1150E. It is required for you to put slashes in the before and during operations blocks.

(2) Air Tanks—There are no air tanks on the MC1150E, however there is an air compressor separator that must be drained daily by the student. You will cross out tanks in the coverage block and write next to it "compressor". It is required for you to put a slash in the before operations block and leave the after operations block as is. This is only an after operations check.

(3) Tires/Tracks—Cross out the tires in the coverage block because the MC1150E does not have tires.

(4) Block 23—Write the word "Blade". It is required for you to put a "C" in the before and after operations blocks reminding you that you are required to check the blade at these intervals.

(5) Block 24—Write the word "Winch". It is required for you to put a "C" in the before and after operations blocks reminding you that you are required to check the winch at these intervals.

(6) While you are doing the checks and services, utilizing the NAVMC 10523, you are required to accomplish all the blocks that have a character indicating that you are supposed to perform a task. Any block that you feel has a defect, you will annotate it on the bottom of the NAVMC 10523. If there is a question about any of these tasks, you will refer to the technical manual for assistance that you need. After you have looked in the manual, then ask for further assistance if needed.

DAILY "A" PM SERVICE

Legend for marking						
A - Adjust		S - Service		X - Adjustment / Repair Required		
C - Check		V - Verify		O - Defect Corrected		
L - Lubricate		/ - Not applicable				
ITEM NO.	COVERAGE	OPERATION			1 HOUR	SERVISE
		BEFORE	DURING	AFTER		
1	DAMAGE, PILFERAGE, LOSS	C	/	C		
2	LEAKS, GENERAL	C	/	C		
3	FUEL, OIL, WATER	V	/	S		
4	ENGINE WARMUP	C	/			
5	INSTRUMENTS	C	C			
6	SAFETY DEVICES	C				
7	TOOLS AND EQUIPMENT	C				
8	PUBLICATIONS	V	/			
* 9	CLUTCH	V	/			
10	STEERING	C	C			
11	ENGINE OPERATION	/	C	/		
12	UNUSUAL NOISES	C	C	/		
13	LIGHTS AND REFLECTORS	C				
* 14	AIR WASH COMPRESSOR	S	/	S		
15	DRIVE BELTS	C	/	C		
16	BATTERY ELEC. LEVEL	C	/	S		
17	ANTIFREEZE TEST TO ___ °F	V	/			
18	SERVICE BRAKES	V	C			
19	TRANSMISSION	C	C			
20	AIR FILTER	V	/	S		
21	FUEL FILTERS	S	/	S		
* 22	WASH TRACK	C	/	C		
* 23	BLADE	C	/	C		
* 24	WINCH	C	/	C		
25						

NOTES:
 1. Add other coverage and procedures designated by the appropriate technical manual.
 2. Band 10 hour scheduled PM's are considered as daily PM service.
 3. If repairs are required, notify the equipment chief.

Remarks:

(FIGURE 12)

NOTE: * = Annotated changes only apply to the MC1150E Crawler Tractor

INTERM TRANSITION: Are there any questions? If not lets take a 10 minute break and then I will give you a demonstration of a 360 walk around.

(10-minute break)

INTERM TRANSITION: Before the break we covered in the classroom the major points on how to operate the 1150; let's move on to the demonstration of a 360 walk around.

NOTE:

Ensure that all personnel are properly wearing the correct safety equipment when performing any type of PMCS.

INSTRUCTOR NOTE

Introduce Demonstration of 360 walk around

DEMONSTRATION. (20 Min) The purpose of this demonstration is to show the students how to perform before, during and after operational checks with the aid of a trip ticket. The demonstration also covers a 360 degrees walk around. Items required are a MC1150E Crawler Tractor for the Instructor to use and students will have trip tickets and student handouts. Have the students gather around the MC1150E Crawler Tractor for a demonstration of before, during and after operational checks and a 360 walk around. Normal class size is 12. There are two instructors required for this demonstration.

STUDENT ROLE: Students will observe the demonstration asking questions if they don't understand and also identify the checks with the trip ticket.

INSTRUCTOR(S) ROLE: Primary Instructor will demonstrate how to perform before, during and after operational checks with the aid of a trip ticket and a 360 walk around and the assistant Instructor will assist the primary Instructor with the demonstration and any student questions.

1. Safety Brief: No safety concerns with this class.

2. Supervision and Guidance: Instructor will show the students the following items.

TOP OF ENGINE COMPARTMENT

Air Filter

Engine Oil Check

Engine Oil Fill

Radiator
Coolant Reservoir
Exhaust
Dustbowl

LEFT SIDE

Tracks
Air Compressor
Cylinders
Hoses
Lights

RIGHT SIDE

Tracks
Engine Compartment
Cylinders
Hoses
Lights

Rear

Winch, Winch Cable, and Winch Hook
Batteries and Terminals
Slave Receptacle
Fuel Fill
Hydraulic Oil Check
Hydraulic Oil Fill
Transmission Check

Front

Cutting Edges
End Bits
Blade
Hoses
Moldboard

CAB

Instruments and controls

3. Debrief: Answer any student questions and review the learning points.

INTERIM TRANSITION: We've just went over how to perform before, during and after operational checks with the aid of a trip ticket and a 360 walk around are there any questions? If not, let's move on to the practical application of a 360 walk around

on the MC1150E Crawler Tractor

INSTRUCTOR NOTE

Introduce Practical Application of 360 walk around. Allow students to make head calls before the start of the Practical Application.

PRACTICAL APPLICATION. (1.5 Hrs) The purpose of this Practical Application is to allow the students to complete a 360 walk around on the MC1150E Crawler Tractor. Items required are four MC1150E Crawler Tractors for the students. Normal class size is 12. The students are broken into groups of four and assigned a tractor with one student conducting a 360 walk around and the others observing. There are two instructors required for this demonstration.

PRACTICE: Students will perform the following checks.

TOP OF ENGINE COMPARTMENT

Air Filter
Engine Oil Check
Radiator
Coolant Reservoir
Exhaust
Dustbowl

LEFT SIDE

Tracks
Air Compressor
Cylinders
Hoses
Lights

RIGHT SIDE

Tracks
Starter Wires
Cylinders
Hoses
Lights

Rear

Winch, Winch Cable, and Winch Hook

Batteries and Terminals
Slave Receptacle
Hydraulic Oil Check
Transmission Check

Front

Cutting Edges
End Bits
Blade
Hoses
Moldboard

CAB

Instruments and controls
Seatbelt
Parking Brake

- 1. Safety Brief:** Reference the ORAW
- 2. Supervision and Guidance:** Instructor is moving around the site assisting students.
- 3. Debrief:** Answer any student questions and review the learning points.

INTERIM TRANSITION: We've just went over the practical application of conducting a 360 walk around on the MC1150E Crawler Tractor, are there any questions? If not, let's move on to the demonstration of hand and arm signals.

INSTRUCTOR NOTE

Introduce Demonstration of hand and arm signals.

DEMONSTRATION. (15 Min) The purpose of this demonstration is to show the students how to use the correct hand and arm signals. Items required are student handouts for students to take any notes. Have the students gather around the Instructor for a demonstration of hand and arm signals. Normal class size is 12. There is one instructor required for this demonstration.

STUDENT ROLE: Students will observe the demonstration asking questions if they don't understand.

INSTRUCTOR(S) ROLE: Primary Instructor will demonstrate hand and arm signals, boom up and down, tilt left and right, and angle left and right.

1. Safety Brief: Reference the ORAW

2. Supervision and Guidance: Instructor will show the students the following items.

Hand and Arm Signals

3. Debrief: Answer any student questions and review the learning points.

INTERIM TRANSITION: We've just went over how to perform hand and arm signals are there any questions? If not, let's move on to the practical application of hand and arm signals.

INSTRUCTOR NOTE

Introduce Practical Application of hand and arm signals. Allow students to make head calls before Practical Application.

PRACTICAL APPLICATION. (2 Hrs) The purpose of this Practical Application is to allow the students to conduct hand and arm signals. No items are required. Normal class size is 12. The students are broken into groups of four and will conduct hand and arm signals. One instructor is required for this demonstration.

PRACTICE: Students will perform the following.

Hand and Arm Signals, boom up and down, tilt left and right, and angle left and right.

1. Safety Brief: Reference the ORAW

2. Supervision and Guidance: Instructor is moving around the site assisting students.

3. Debrief: Answer any student questions and review the learning points.

INTERIM TRANSITION: We've just went over the practical application of how to perform hand and arm signals are there any questions? If not, let's move on to the demonstration of how to operate a MC1150E Crawler Tractor.

INSTRUCTOR NOTE

Introduce Demonstration of equipment operations

DEMONSTRATION. (40 Min) The purpose of this demonstration is to show the students how to operate the MC1150E Crawler Tractor. Items required are a MC1150E Crawler Tractor for the Instructor to use and students will have student handouts to take any notes. Issue hearing protection to students. Have the students gather around the MC1150E Crawler Tractor for a demonstration of operations. Normal class size is 12. There are two instructors required for this demonstration.

STUDENT ROLE: Students will observe the demonstration asking questions if they don't understand.

INSTRUCTOR(S) ROLE: Primary Instructor will demonstrate operating the equipment and the assistant Instructor will assist the primary Instructor with the demonstration and any student questions.

1. Safety Brief: Read ORAW and conduct safety brief

2. Supervision and Guidance: Instructor will show the students the following items.

Proper 360 walk around

3 points of contact entering tractor

Wear of safety belt

Proper carry height of blade

Travel position

Pushing material in 1st gear

Full blade of material

Proper leveling techniques

Proper construction of a stockpile

Proper deconstruction of a stockpile

Proper park line position

3. Debrief: Answer any student questions and review the learning points.

INTERIM TRANSITION: We've just went over the demonstration of operating the MC1150E Crawler Tractor, are there any questions? If not, let's move on to the practical application.

INSTRUCTOR NOTE

Introduce Practical Application of equipment operations. Allow students to make head calls before Practical Application.

PRACTICAL APPLICATION. (26 Hrs) The purpose of this Practical Application is to allow the students to operate the MC1150E Crawler Tractor. Items required are four MC1150E Crawler Tractors for the students, hearing protection and radios. Normal class size is 12. The students are broken into groups of four and assigned a tractor with one student operating and the others observing. There are two instructors required for this demonstration.

PRACTICE: Students will perform the following.

Proper 360 walk around
3 points of contact entering tractor
Wear of safety belt
Proper carry height of blade
Travel position
Pushing material in 1st gear
Full blade of material
Proper leveling techniques
Proper construction of a stockpile
Proper deconstruction of a stockpile
Proper park line position

- 1. Safety Brief:** Reference the ORAW
- 2. Supervision and Guidance:** Instructor is moving around the site assisting students.
- 3. Debrief:** Answer any student questions and review the learning points.

INTERIM TRANSITION: We've just went over the demonstration of changing attachments, are there any questions? If not, let's move on to the demonstration of conducting PMCS.

INSTRUCTOR NOTE

Introduce demo of conducting PMCS

DEMONSTRATION. (15 Min) Have the students gather around the MC1150E Crawler Tractor for a demonstration of conducting PMCS. Normal class size is 12. There are two instructors required for this demonstration.

STUDENT ROLE: Students will observe the demonstration asking questions if they don't understand.

INSTRUCTOR(S) ROLE: Primary Instructor will demonstrate proper PMCS and the assistant Instructor will assist the primary Instructor with the demonstration and any student questions.

1. Safety Brief: Read ORAW

2. Supervision and Guidance: Instructor will show the students the following items.

Check fluids

Clean air filters

Grease points

Track tension

Check cutting edges and end bits

3. Debrief: Answer any student questions and review the learning points.

INTERIM TRANSITION: We've just completed the required steps for proper PMCS, are there any questions? If not, let's move on to the practical application of the PMCS.

INSTRUCTOR NOTE

Introduce practical application of conducting PMCS

PRACTICAL APPLICATION. (2 Hrs) The purpose of this Practical Application is to allow the students to conduct PMCS. Items required are all MC1150E Crawler Tractors on hand for the students, hearing protection, safety glasses and PMCS worksheets. Have the students break into groups of two's. Normal class size is 12. There are two instructors required for this practical application.

PRACTICE: Students will work the practical application checking for and correcting all discrepancies and complete the PMCS worksheet.

PROVIDE-HELP: N/A

1. Safety Brief: N/A

2. Supervision and Guidance: Instructor is moving around the ready line, assisting students, and answering questions as they arise.

Instructors Note

Answer all questions then go into the summary.

(On Slide #64)

TRANSITION: We've just completed the practical application for proper PMCS, are there any questions? If there are no questions let's move into the classroom to go over what we have covered this week.

QUESTION 1: What depth from the filler neck should the coolant be? ½ inch from the filler neck

QUESTION 2: What is the proper carry height of the blade? 12 to 18 inches

QUESTION 3: What position should the blade be in for the proper parkline position? Float

QUESTION 4: What should you do after engaging the fan disconnect switch? Visually inspect the fan blade

(On Slide #65)

SUMMARY

(5 mins)

This week we have covered various topic dealing with the 1150E. Specifically, we have covered the mission, general characteristics, major components, instruments and controls and operations. This concludes this period of instruction take a **10 minute break**.

(On Slide #65)

- a. Reference slide.

Tabulated Data for the MC1150E Dozer

<u>General Information:</u>		<u>Transmission:</u>	
Manufacturer	J.I. Case	Manufacturer	J.I. Case
Model	MC1150E	Model	G107561
Dimensions Length	190.4 in.	Type	Powershift
Height (with ROPS)	116.5 in.	Speed	4 For. 4 Rev.
Height (without ROPS)	91 in.	<u>Winch:</u>	
Width	109.6 in.	Manufacturer	Carco
Ground Clearance	12.9 in	Model	GH15
Weight (with ROPS)	25,050 lbs	Type	Hydraulic
<u>Operating Speeds:</u>		Drum Capacity	164', 3/4" cable.
Forward 1	2.1 MPH	Tractor Electrical System	
Forward 2	3.1 MPH	Voltage	24
Forward 3	4.4 MPH	Ground	Negative
Forward 4	6.3 MPH	Batteries	Two, 12 volt
Reverse 1	2.5 MPH	Capacities	
Reverse 2	3.7 MPH	Fuel Tank	52 gal
Reverse 3	5.3 MPH	Engine Crankcase	16qt
Reverse 4	7.6 MPH	Engine Cooling System	33 qt
<u>Engine</u>		Hydraulic Reservoir	15 gal
Manufacturer	J.I. Case	Transmission	14 gal
Model	6T-590	Final Drives	8 qt
Number of cylinders.	Inline 6	Winch	4.5 qt
Horsepower	118@2100 RPMs		

STUDENT REFERENCES:

Basic Operators Bag SL-3-11825A

Marine Corps Ground Equipment Record Procedures TM 4700-15/1_

Tractor, Full Tracked, With Angle Blade and Rear-Mounted Winch (Model: MC1150E) TM-09062A-OR

Use and Care of Hand Tools and Measuring Tools TM 10209-10/1

Visual Signals FM 21-60