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

LESSON PLAN

621B SCRAPER

NCOO-A03

ENGINEER EQUIPMENT OPERATOR NCO

A16ACX1

REVISED 12/15/2011

APPROVED BY_____ **DATE**_____

(SLIDE #1)

INTRODUCTION **(10 MINS)**

1. **GAIN ATTENTION:** As heavy equipment operators there will come times where you will be required to move mass amounts of material. You could utilize Motor Transport from longer distances or you could be self reliant and utilize the Cat 621B Scraper.

_____
_____
_____
_____

2. **OVERVIEW.** Good morning/afternoon, my name is _____. The purpose of this lesson is to familiarize you, the student, with the CAT 621B Scraper.

_____
_____
_____
_____

INSTRUCTOR NOTE
Introduce the learning objectives.

(SLIDE #2)

3. **LEARNING OBJECTIVES.**

INSTRUCTOR NOTE
Have students read learning objectives to themselves.

a. **TERMINAL LEARNING OBJECTIVE.**

(1) Provided a 621B Scraper, an engineer equipment requirement, engineer equipment records and forms, and references, operate the 621B Scraper to safely meet operational requirements with no injury to personnel or damage to the equipment per the references. (1345-XENG-2001)

b. **ENABLING LEARNING OBJECTIVE.**

(1) Without the aid of reference, identify the characteristics of the 621B Scraper per the TM 5-3805-248-14&P-1.(1345-XENG-2001a)

(2) Provided a621B Scraper, engineer equipment records and forms, and with the aid of reference, initiate operator forms and records per the TM 4700-15/1_. (1345-XENG-2001b)

(3) Provided a 621B, engineer equipment records and forms, tools, petroleum, oils, and lubricants, and with the aid of reference, perform operator checks(before, during, after)per the TM 5-3805-248-14&P-1.(1345-XENG-2001c)

(4) Provided a 621B, engineer equipment records and forms, move 621B to job site per the TM 5-3805-248-14&P-1.(1345-XENG-2001d)

(5) Provided a 621B, a 850J MCT Crawler Dozer, engineer equipment records and forms, and references, perform 621B operations per the TM 5-3805-248-14&P-1.(1345-XENG-2001e)

(6) Provided a 621B, engineer equipment records and forms, and references complete operational records per the TM 5-3805-248-14&P-1.(1345-XENG-2001f)

4. **METHOD/MEDIA:** This period of instruction will be taught using the lecture method with aid of power point presentation, instructor demonstrations, practical applications, and the 621B Scraper.

INSTRUCTOR NOTE

Explain Instructional Rating Forms and Safety Questionnaire to students.

5. **EVALUATION**. You will be evaluated by a written exam and a practical application exam at the times indicated on the training schedule.

6. **SAFETY/CEASE TRAINING (CT) BRIEF.** All instructors and students will use caution when walking around the equipment lot during equipment operations. Sun block should be used to avoid sunburn. Issue students bug spray if required. Encourage students to stay hydrated as temperatures can reach 100 degrees plus during the summer months. In the event of a casualty, emergency services (911) will be called and all students will move to the classroom and await further instruction.

TRANSITION: Are there any questions over what is going to be taught, how it will be taught, or how you the student will be evaluated? The first topic we will cover is the characteristics and capabilities.

_____
_____
_____

(ON SLIDE #3)

BODY **(67HRS 40MINS)**

1. **621B SCRAPER CHARACTERISTICS AND COMPONANTS** **(35 Min)**

The 621B Scraper is a motorized, single axle, 4 wheeled earthmover powered by a Caterpillar 3406, 330 HP, 6 CYL turbocharged diesel engine. It has a semi-automatic transmission capable of 8 speeds forward and 1 speed in reverse. It is designed to operate using a push loader for loading assistance.

(ON SLIDE #4)

a. **Capabilities:**

(1) All weather operation.

(2) High ground clearance of 18 inches.

(3) Max speed of 31 MPH with no load and 20 MPH with a load.

(4) Adjustable cutting edges.

(5) Optimum hauling distance: 300’ to 5000’.

(6) Can move 48,000 lbs of material.

(ON SLIDE #5)

(7) Has two measured load sizes.

(a) Struck load capacity of 14 Loose Cubic Yards (LCY) – Struck capacity is when the bowl has a full load of material that is level with its sides.

(b) Heap load capacity of 18 LCY – Heap capacity is when the material is heaped in the bowl and slopes on a 1:1 repose slope to the sides of the bowl.

(ON SLIDE #6)

(8) Weight:

(1) Empty - 66,590

(2) Loaded – 114,590 (Load size may very do to soil weight)

(9) Length – 499”

(10) Width – 136”

(11) Height – 141”

(ON SLIDE #7)

(12) Turning Radius - 18 feet 3 inches

(ON SLIDE #8)

(13) The design of the 621B allows for Loading, Hauling, Dumping, Spreading, Rough leveling

(ON SLIDE #9)

b. **Components:**

(1) Engine:

(a) Caterpillar 3306 330 H.P. 6 cylinder Turbocharged Diesel

INSTRUCTOR NOTE

NOTE: 3-5 minute warm-up and cool-down period required prevent damage to the turbocharger.

(b) Lubrication: - 9 gals of 10W30

(c) Dipstick: Hot & Cold check

(ON SLIDE #10)

(2) Fuel system:

(a) 135 Gallons of Diesel or JP fuel but does not have a fuel gauge. The fuel amount is checked via the dipstick, which is broken down into 10% increments.

(b) Has a fuel/water separator.

(ON SLIDE #11)

(3) Air induction system:

(a) Has a pre-cleaner, primary and secondary air filter.

(b) Service pre-cleaner and primary air filter once air indicator reads red.

(c) Use 30 PSI of air or 40 PSI of water to clean from the inside out.

(d) Do not bump or tap filter elements.

(e) Primary filter must be replaced after the sixth cleaning.

(f) Secondary filter must be replaced after the third cleaning of the primary filter or if the scraper continue to emit black smoke.

(ON SLIDE #12)

(4) Cooling system:

(a) 20 Gallons: 50% coolant/50% water.

(b) Equipped with a coolant conditioner element.

(c) Fill at 5-gallon increments to prevent air locks.

(d) Self-adjusting belts which should have a deflection between 9/16” to 13/16”.

(ON SLIDE #13)

(5) Hydraulic system:

(a) 29 gallons of 10WT

(b) Must read between the add/fill marks on sight glass or dipstick with the scraper level, bowl and apron lowered, ejector forward, brake applied and engine off.

(c) Two hydraulic pumps – one to control steering and one to control the scraper bowl functions.

(d) Pressurized.

(ON SLIDE #14)

(6) Transmission:

(a) 8 forward speeds, 1 reverse.

(b) Will shift automatically from 2nd through 8th once RPM's are reached.

(c) 1st, 2nd and reverse must be selected manually.

(d) Equipped with a Downshift inhibitor, which will prevent the tractor from downshifting until RPMS have been lowered.

(e) Equipped with a transmission hold pedal to allow RPMS to hold without shifting through the gears.

(f) Equipped with a differential lock pedal to help prevent slippage of the tires while loading.

(g) Equipped with a transmission lockout to be utilized when the vehicle is in neutral to prevent accidental shifting of gears.

(h) 22 gals of 15W/40.

(i) Must read between the add/fill line with the scraper level, bowl and apron lowered, transmission in neutral, parking brake applied and engine at low idle.

(ON SLIDE #15)

(7) Retarder:

(a) Used with the brakes to assist in slowing down the Scraper.

(b) Works by creating resistance to the drive shaft, slowing down the rotation.

(c) Anticipate the braking action as it takes 3-4 seconds for the retarder to engage.

(ON SLIDE #16)

(8) Electrical system:

(a) 24-volt system with four 12V batteries in parallel.

(b) Equipped with a NATO slave receptacle.

1 Check cells weekly and fill to bottom of fill openings with distilled water.

2 Clean terminals and coat lightly with a petroleum jelly.

(ON SLIDE #17)

(9) Differential/Final Drive:

(a) 42 Gallons of 80W90 WT

(b) Final Drive must be filled with the scraper level, fill plug at three o'clock and drain plug at six o'clock to the bottom of the fill plug.

(c) Differential must read between the add/fill line with the scraper level, bowl and apron lowered, parking brake applied and engine off.

(ON SLIDE #18)

(10) Tires:

(a) Air pressure for parking or being transported will be 60 PSI in the front and 40 PSI in the rear.

(b) Air pressure when hauling material will be 55 PSI in the front and 45 PSI in the rear.

(c) When traveling with the scraper you must stop every 3 hours or 40 miles for 30 min to allow the tires, brakes and bearings to cool to prevent explosion.

SAFETY NOTE
An explosion can repel the tire, rim and final drive components 1500 feet. Danger is greatest once the tractor has stopped.

(ON SLIDE #19)

(11) Brakes:

(a) The braking system consists of shoe type air brakes which provide three types of braking.

1 Service

2 Emergency

3 Parking

(b) If service brakes do not hold with engine speed lower than 1400 RPM or if the Emergency/parking brake does not hold at lower than 900 RPM than the scraper is not operational.

(c) If air pressure drops below 40 PSI, emergency brakes will apply. Prepare for sudden stop.

(d) The air tanks must be drained to remove moisture and sediment that may have built up during operation. There are two drain plugs on the tractor and one on the scraper.

(ON SLIDE #20)

(12) Scraper Bowl/Pan: The bowl is the loading and carrying component of the 621B Scraper. The bowl is comprised of three parts, the pan, the apron, and the ejector.

(a) Bowl Pan: Contains the cutting edges and router bits which extend across the bottom front edge.

1 Cutting edges and router bits must be changed when 1” from moldboard (the floor of the bowl).

2 Cutting edges can be reversed to increase the life of the cutting edge.

3 To extend the life of the router bits, flip them from one side to the other.

4 Three reversible cutting edges and two reversible router bits. Just flip end for end for cutting edges and on router bits change from one side to the other.

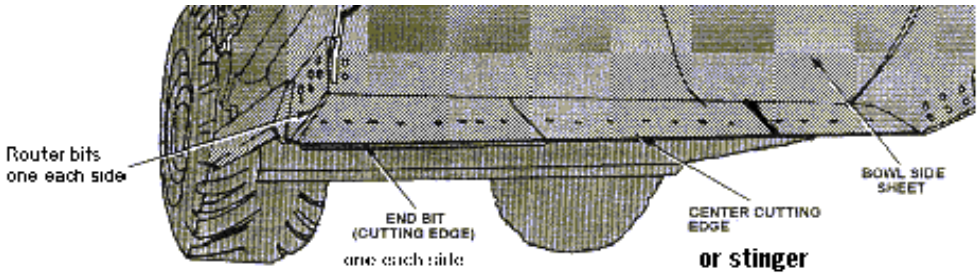
5 The center cutting edge can be extended to create a stinger bit for better penetration into harder material.

(ON SLIDE #21)

6 Cut width: 119”

7 Maximum cut depth: 13.4”

8 Maximum spread depth of 36”



(ON SLIDE #22)

SAFETY NOTE

When changing out cutting edges/router bits ensure you block up the bowl and put in the safety lock pin. The safety lock pin is located on left side of bowl and is installed with the apron in the up position to prevent the crushing of the operator.

(ON SLIDE #23)

(b) Apron: The Apron is the front wall of the Bowl. It is independent of the Bowl and when raised, it provides an opening for loading and spreading.

1 Lower the Apron during hauling to prevent spillage of material.

(c) Ejector: The ejector is the rear wall of the Bowl.

1 Keep the ejector to the rear of the bowl during loading and move forward during spreading/dumping operations.

(ON SLIDE #24)

TRANSITION: We have covered the major components of the 621B. Do you have any questions on what we have covered so far? I have some questions for you. (Q1) How many cubic yards is a struck load? **(A1) A STRUCK LOAD IS 14 CUBIC YARDS.** (Q2) How many cubic yards is a heap load? **(A2) A HEAP LOAD IS 18 CUBIC YARDS**

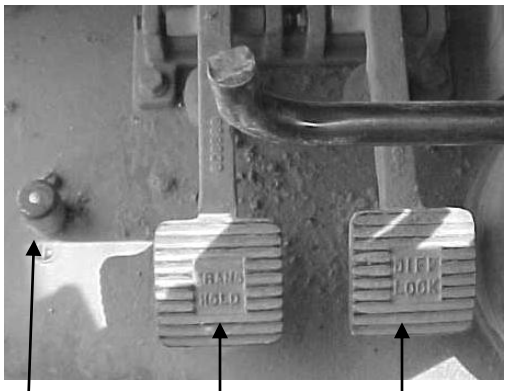
TRANSITION: The next items we will cover the operator controls and gauges.

(ON SLIDE #25)

2. **Operator Cab Controls and Instruments:** **(30 Min)**

(ON SLIDE #26)

a. **Floor and steering column controls**

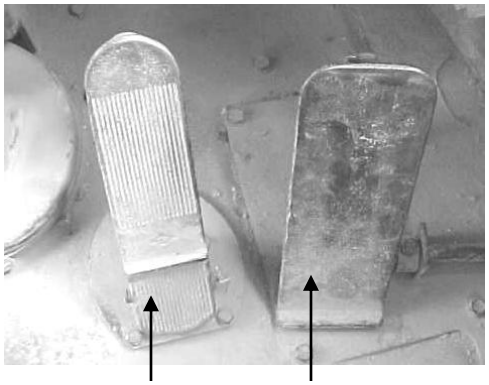


(1) **(2)** **(3)**

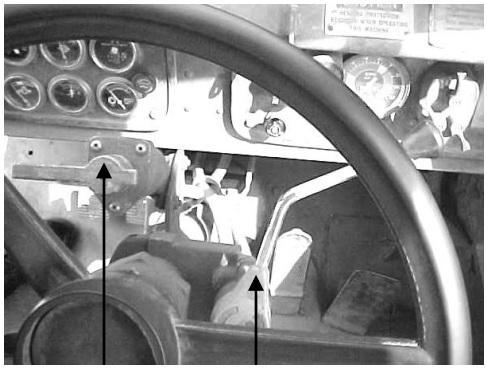
(1) Headlight dimmer switch – controls low/high beam.

(2) Transmission hold pedal – prevents the transmission from shifting while maintaining RPMs.

(3) Differential lock – helps prevent wheel slippage during loading. Use on wet or soft ground. Do not lock wheel differential with wheels spinning. Lower RPM's momentarily when locking.



(4) **(5)**



(6) **(7)**

(4) Brake pedal.

(5) Accelerator pedal. Must be pulled on to shut down tractor.

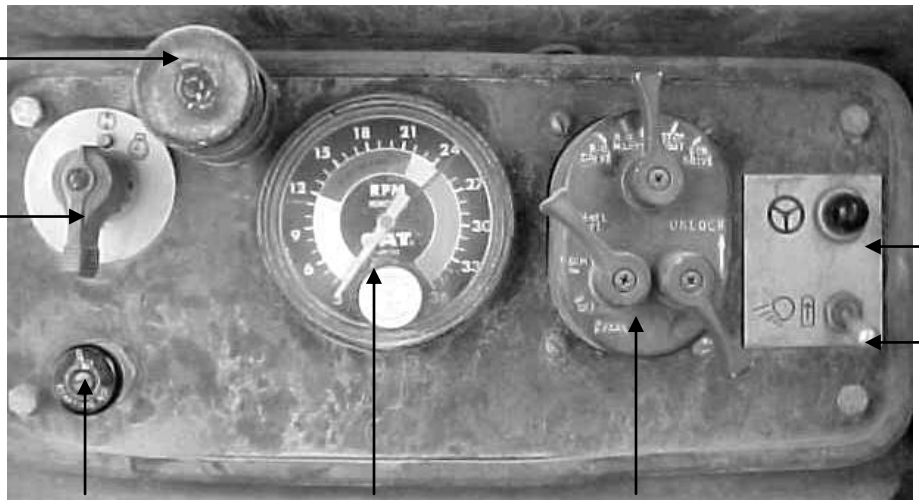
(ON SLIDE #27)

(6) Turn signal switch

(7) Engine retarder control. Ensure retarder handle is disengaged if temperature gets into the red and allow to cool before further use.

(ON SLIDE #28)

b. **Dash Board**



(8) Panel light

(9) Start switch - If engine does not start within 30 seconds of cranking, allow 2 minutes for the starting motor to cool before trying to start again.

(10) Starting aid switch – used in cold weather only to aid in starting the engine.

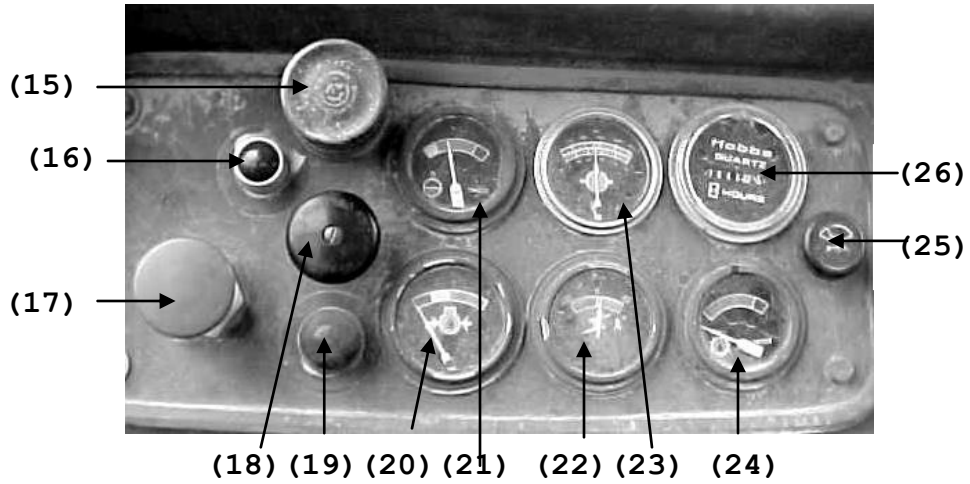
(11) Tachometer – Normal range is 1200 – 2200 RPM's.

(12) Standard military light switch.

(13) Flood light switch.

(14) Supplemental steering light – comes on when the supplemental steering has been engage by either the engine stops or the hydraulic pump has a failure.

(ON SLIDE #29)



(15) Panel light

(16) Low air pressure light – lights and activates warning buzzer when the pressure drops below 60 PSI.

(17) Parking brake button.

(18) Warning horn shut-off switch.

(19) Horn

(20) Oil pressure gauge – should read in the white while idling and green at operating speed. If the engine oil pressure gauge doesn't register within 10 to 15 seconds, shut down the engine. By pulling up on the accelerator

(21) Engine temperature gauge – should read in the green during operation.

(22) Voltmeter – should read zero soon after the engine starts.

(23) Air pressure gauge – should be in the green during operation.

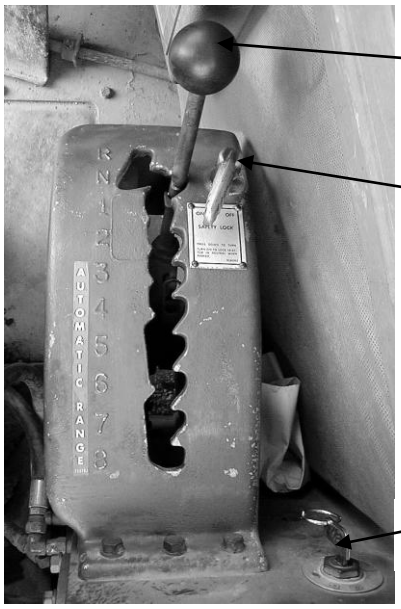
(24) Torque converter and retarder temperature gauge – should read in the green during operation.

(25) Windshield wiper control.

(26) Hour meter.

(ON SLIDE #30)

c. **Transmition Control Lever**



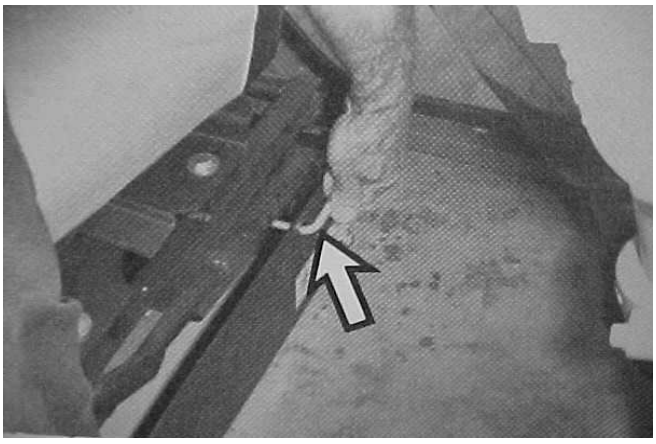
(27) Transmission control lever.

(28) Transmission neutral safety lock.

(29) Battery disconnect switch.

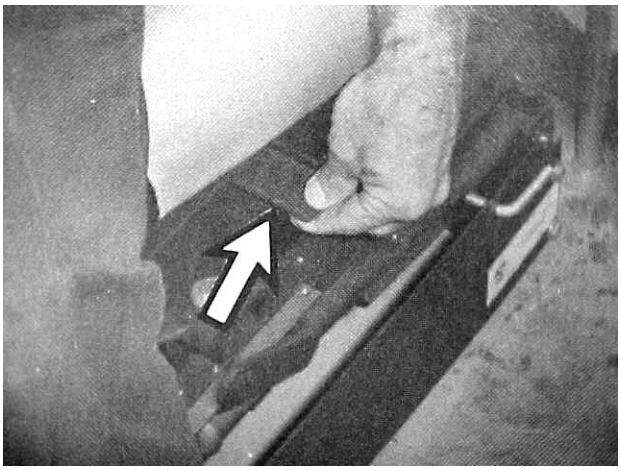
(ON SLIDE #31)

d. **<u>Seat adjustments:</u>**

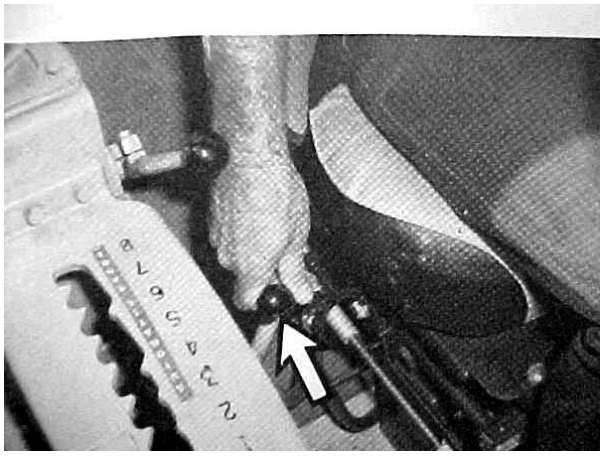


(1) <u>Suspension</u> (front lower left side) Move the lever up for a firmer ride or down for a softer ride.

(ON SLIDE #32)



(2) Forward & Back (front middle under seat). Lift the lever. Move forward or back. Release the lever; move slightly to lock in place.

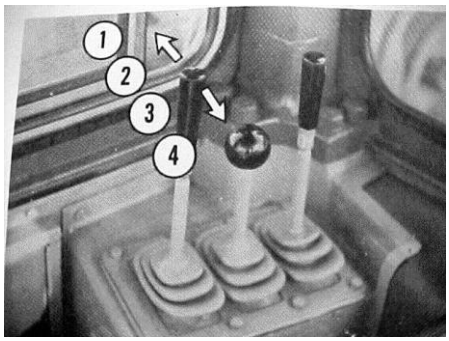


(ON SLIDE #33)

(3) Height (right side of seat). Move the lever forward to raise the seat. Move the lever to the rear to lower the seat.

(ON SLIDE #34)

e. **Scraper controls:**



(1) Bowl control lever.

(a) Quick drop. – Push the lever all the way to the right to drop the bowl quickly.

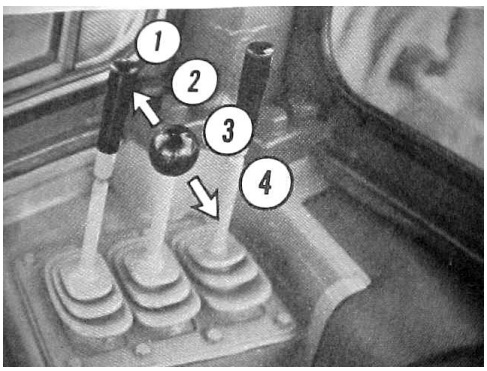
(b) Lower. – Move the lever part way to right to lower the bowl slowly.

(c) Hold. – The bowl will not raise or lower.

(d) Raise. – Pull the lever to raise the bowl.

(e) Additional function feature. – Move the lever towards the front of console to close the apron and lift the bowl at the same time. Hold for 3 seconds then pull towards you for 1 second.

(ON SLIDE #35)



(2) Apron control lever:

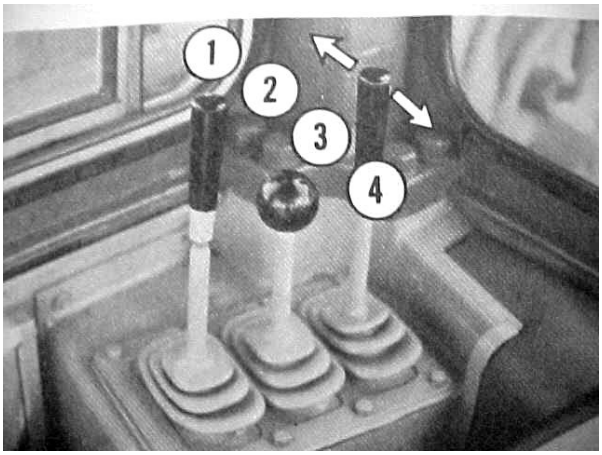
(a) Float – Push the lever all the way to the right to allow the apron to seek its own level (float). When Apron is in the Float position (it will stay to the right) and you cannot operate the Ejector.

(b) Close – Move the lever part way to the right to close (lower) the apron.

(c) Hold – The apron will not open or close.

(d) Open – Pull the lever to open (raise) the apron.

(ON SLIDE #36)



(3) <u>Ejector control lever:</u>

(a) Automatic ejector return kick out – Push the lever all the way to the right and release it. The lever will remain in automatic ejector return kick out until the ejector is at the rear of bowl. Then, it will return to the hold position.

(b) Return - push the lever part way to the right to move the ejector to the rear.

(c) Hold – The ejector will stay where it is.

(d) Forward – pull the lever to the left to move the ejector forward.

(ON SLIDE #37)

TRANSITION: During this period we discussed the Operator Cab Controls and Instruments of the 621B. Are there any questions over the material we have just covered? I have a couple questions for you. (Q1) What must be done to shut down the engine? **(A1) YOU MUST PULL UP ON THE ACCELERATOR PEDAL.** (Q2) The low air pressure light and warning buzzer activate if the air pressure drops below what PSI? **(A2) 60 PSI**

(ON SLIDE #38)

BREAK (10 MIN)

TRANSITION: Are there any more questions? Now let's talk about the operations of the 621B.

(ON SLIDE #39)

3. **621B SCRAPER OPERATIONS: (20 Min)**

a. **Parkline:**

(1) Park brake engaged

(2) Transmission in neutral

(3) Neutral safety lock engaged

(4) Bowl on ground

(5) Ejector to the rear, to protect the hydraulic cylinder from the elements.

(6) Apron closed and in float

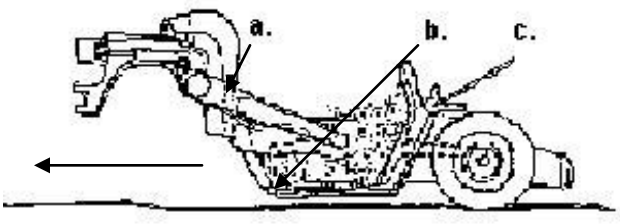
(ON SLIDE #40)

b. **Travel position empty or loaded:**

(1) Apron closed and in float

(2) Bowl height 4" to 6" off of the ground or at least high enough to clear obstacles.

(3) Ejector to the front if empty.



(ON SLIDE #41)

c. **Loading:** Loading can be performed in two manners, one being a self loading method or with the aid of an MCT.

(1) When coming to the cut, reduce your speed with the service brakes, or retarder. The transmission will down shift to 2nd gear automatically.

(2) Ensure the Ejector is to the rear. Open the Apron 12”-15”.(Use the three Knuckle reference)

(3) When the transmission shifts into 2nd gear, push and hold the trans. hold pedal for duration of the cut.

(4) Keep the engine RPM at operating range (1200-1500RPMs). Start the cut.

(5) Lower the bowl to an efficient cut depth. The cut should be approximately 2-4 inches. It should allow the machine to move at a constant speed, without bogging down the engine. Decrease the cut depth if the engine bogs down or if the drive wheels begin to slip.

(6) Wheel slippage can increase tire wear drastically. Apply the differential lock to prevent one wheel from slipping. You must stop the tractor to apply the differential lock.

SAFTEY NOTE
Do not attempt to turn the machine with the differential lock applied.

(7) Regulate the apron opening to prevent material from piling in front of the lip, or falling out of the bowl.

(8) When the bowl is full, raise it slowly to leave the cut smooth and close the apron.

(9) Release the Trans and Diff hold petals and accelerate to pull out of the cut.

(ON SLIDE #42)

(10) Excavating a load with dozer assistant:

(a) Remove right foot from throttle.

(b) Look over right shoulder.

(c) Lower bowl 2”- 4” inches into the ground.

(d) Place left foot on D/L and T/H pedals. (Dozer pushes 10-25 ft.)

(e) Slowly raise RPM’s to 1200 to 1500. (To assist the dozer).

(f) Place left foot back on “L” peg. (After bowl is full).

(g) Full throttle and complete additional functions.

(h) Place apron in float position (After apron is closed).

(ON SLIDE #43)

d. **DOZER PROCEDURES FOR ASSIST LOADING:**

(1) After scraper enters the cut, move the dozer into the cut behind it.

(2) Lower blade until push arms are parallel to ground.

(3) As the crawler tractor moves forward into cut, center the reinforced area of dozer blade on the scrapers push block.

(4) Slow down (using decelerator in conjunction with brakes) and gently engage the dozer blade to the push block. Don’t slam into the scraper!!!

(5) Once contact has been made: remove hands from steering levers and let off decelerator and brakes (go to full throttle).

(6) Crawler tractor operator push's the scraper in 2nd gear.

(7) Continue pushing the scraper through the cut, and out clear of the cut area.

(8) Re-position crawler tractor for next pass and repeat steps.

(ON SLIDE #44)

e. **Spreading**

(1) Lower or raise the bowl to 4-6 inches off the ground.

(2) Dump material at the highest practical travel speed.

(3) Lower the bowl to the desired spread depth. Open the apron at the start of the dump area.

(4) When the material has fallen from the back of the apron, move the ejector forward.

(5) When the bowl is empty, close the apron. Return the ejector to the rear.

(6) Raise the bowl slowly to leave the fill area smooth. Then raise it high enough to clear obstacles.

(7) Return to the cut area at the highest safe speed.

(ON SLIDE #45)

f. **Rough Leveling:** This is used to maintain haul roads and job sight maintenance. This is best performed with the cutting edges not in a stinger bit formation.

(1) Open apron all the way.

(2) Move ejector to the front.

(3) Raise bowl approximately ½" off the deck

(4) Travel at a speed that will allow the tractor to travel without bouncing.

(ON SLIDE #46)

g. **Production Techniques:** These are techniques that will depend on operator efficiency and space available.

(1) Downhill loading: Uses force of gravity, increases production up to 20%

(a) Position the scraper at the top of the hill facing desired downhill direction.

(b) Remove right foot from throttle.

(c) Look over right shoulder.

(d) Lower bowl 2 to 4 inches into the ground

(e) When dozer makes contact place left foot on differential lock and transmission hold, raise RPM's to 1200 to 1500 constantly looking back and forward to ensure that (the bowl is not coming out of the ground and that you are maintaining a straight cut). **NOTE:** You also need to watch for when the bowl is full of material.

(f) When the bowl is full place left foot back up on L shaped peg.

(g) Go to **FULL THROTTLE** and complete **Additional functions** (bowl 3 seconds to the front windshield and then 1 second to you).

(h) After the apron is closed place apron in the float position (away from you to side window).

(i) Adjust travel height of bowl 4 to 6 inches off the ground.

(2) Pump loading: Used when loading sand. To aid in pump loading, if time is available use the MCT ripper to loosen the ground.

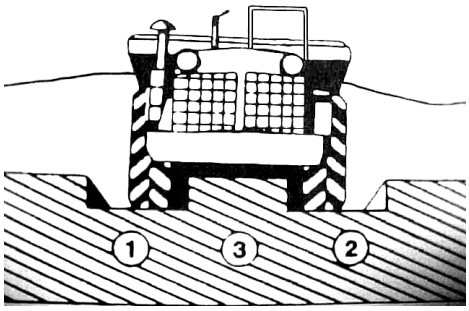
(a) Enter the cut area as fast as possible.

(b) Lowers the bowl slowly, picking up as much as possible using the scrapers momentum.

(c) Once the momentum is lost, begin pumping the bowl up and down.

(d) To finish cut, drop the bowl sharply 3 times then close the apron, raise the bowl, and exit the cut area.

(3) Straddle loading: Increases production on 3rd pass.



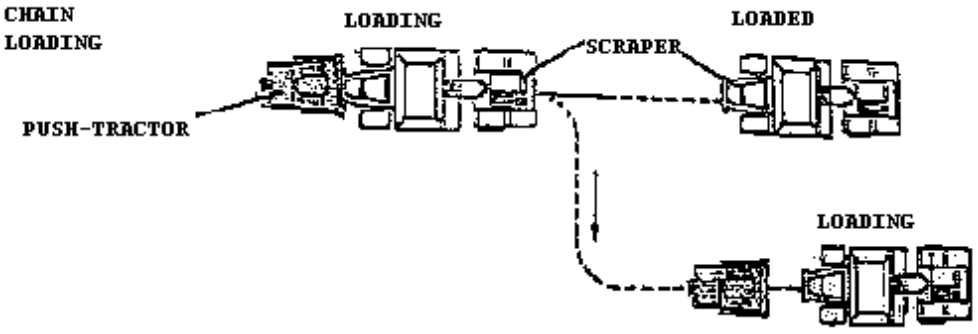
(a) Make a pass at the desired depth.

(b) Make your second pass approximately 5 or 6 feet over from your first pass. The row between the first two cuts must be no wider than the distance between the scraper's wheels.

(c) Make your third pass. The resistance on tractor will be greatly reduced, improving your production.

(ON SLIDE #47)

(4) Chain loading: Long, continuous cut with two or more scraper's.



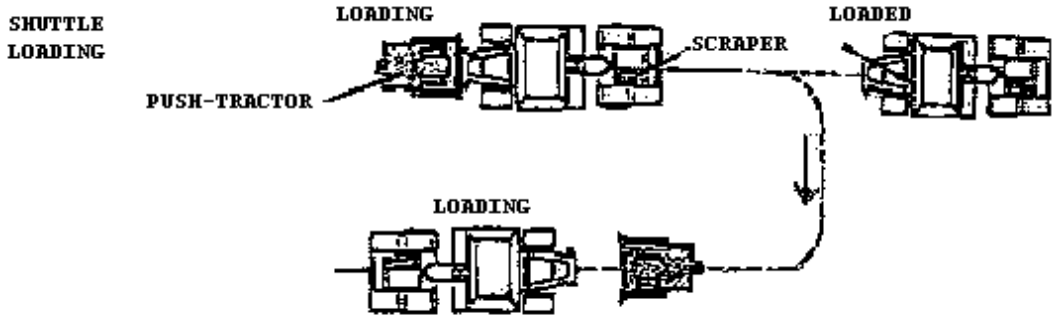
(a) Dozer pushes 1st scraper until loaded

(b) The dozer then backs up at a 45% angle to the side and comes in after 2nd scraper goes to where 1st scraper finished loading and pushes 2nd scraper

(c) Continue this process to the end of the dig pit, and then turn around and continue.

(d) Depending on how wide a cut you are going to make you can move over to have two different cuts going in same direction or three and use straddle with chain loading.

(5) Shuttle loading: Short cuts in both directions. Used for smaller dig pits.

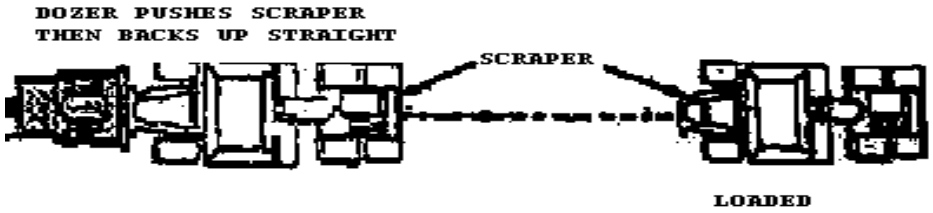


(a) The dozer pushes the scraper in one direction to the end of the dig pit.

(b) The dozer then makes a U-turn and pushes the next scraper in the opposite direction.

(ON SLIDE #48)

(6) Backtrack loading: Short cuts, used when impractical to load in both directions.



(a) Dozer pushes 1st scraper until loaded then backs up and comes in after 2nd scraper goes to where 1st scraper finished loading and pushes 2nd scraper and so on.

(ON SLIDE #49)

TRANSITION: During this period we discussed the operation and techniques of the 621B. Are there any questions over the material we have just covered? I have a couple questions for

you. (Q1) What Dozer is designed to aid in push loading the scraper? **(A1) THE JOHN DEERE 850J MCT.** (Q2) What gear should the 621B be in when being push loaded? **(A2) 2ND GEAR.**

(ON SLIDE #50)

BREAK (10 MIN)

TRANSITION: Are there any more questions? Now let's talk about preventive maintenance check and services.

(ON SLIDE #51)

4. **PREVENIVE MAINTENANCE CHECKS AND SERVICES: (15 Min)**

a. Any equipment operator or mechanic can be trained to detect a breakdown and get it fixed. The real skill is to recognize a potential problem and prevent it from happening. That's where preventive maintenance comes in.

b. Preventive maintenance checks are ALWAYS DONE BY THE BOOK. Use the preventive maintenance checklist that is located in the TM 5-3805-248-14&P-3 APPENDIX B.

c. The checks do not have to be performed in the same steps as in the book, but all checks must be performed.

d. If you locate an item that will deadline the piece of equipment, annotate it on the proper form and inform your supervisor.

e. Once you have completed you're before operations checks, then it is time to perform lubrication IAW lube order located in TM 5-3805-248-14&p-3 PG 3-386 and 3-387.

f. Along with following the lubrication order, which indicates lube intervals, some reasons to lubricate are:

(1) Working in dusty conditions.

(2) Equipment having worked with attachments under water.

(3) Working longer than 8 hours a day, 5 days a week.

g. While lubricating the equipment, there are several things to keep in mind that will keep the equipment operating properly:

(1) Do not lubricate items, which do not require it.

(2) Wipe off all grease fittings prior to lubricating.

(3) Wipe off all grease fittings after lubricating.

(4) Keep lubricants in their container, and free of foreign matter.

h. If anything looks wrong and you can't fix it, write it on the proper form. If you find something seriously wrong or you are not sure report it to your supervisor or organizational maintenance ASAP (before operating the piece equipment).

i. Keep it clean: Dirt, grease, oil and debris only get in the way and may cover up a serious problem. Clean as you work and as needed. Use water when you clean rubber or plastic material.

j. Check that all bolts, nuts and screws are not loose, missing, bent or broken. Tighten anything that you find loose. Report it to your supervisor or organizational maintenance if you can't tighten it, or find replacement bolts, nuts or screws when you found some missing or damaged.

k. Check the welds for loose or chipped paint, rust or gaps where parts are welded together. If you find a bad weld, report it to your supervisor or organizational maintenance.

l. Check electric wires and connectors for cracked or broken insulation, bare wires and loose or broken connectors. Report damaged or loose wiring to your supervisor or organizational maintenance.

m. Check hoses and fluid lines for wear damage and leaks. Make sure clamps and fittings are tight. Wet spots show leaks, of course, but a stain around a fitting or connector can mean a leak. If a leak comes from a loose fitting or connector, tighten it. If something is broken or worn out report it to your supervisor or organizational maintenance.

n. It is necessary for you to know how fluid leaks affect the status of your equipment. The following are definitions of the types/classes of leakage you need to know to be able to determine the status of your equipment. Learn and be familiar with them and REMEMBER – When in doubt, notify your supervisor.

(ON SLIDE #52)

(1) LEAKAGE DEFINITIONS FOR OPERATOR/CREW PMCS

(a) Class I Seepage of fluid (as indicated by wetness or discoloration) not great enough to form drops.

(b) Class II Leakage of fluid great enough to form drops, but not enough to cause drops to drip from the item being checked/inspected.

(c) Class III Leakage of fluid great enough to form drops that fall from the item being checked/inspected.

(ON SLIDE #53)

CAUTION

Equipment operation is allowable with minor leakage (Class I or II). Of course, consideration must be given to the fluid capacity in the item/system being checked/inspected. When operating with a Class I or II leaks, continue to check fluid levels as required to ensure it stays full. Class III leaks should be reported to your supervisor or organizational maintenance.

(ON SLIDE #54)

INTERIM TRANSITION: Up to this point we have discussed characteristics, capabilities, operations, and maintenance of the 621B. Are there any questions over this material? At this time we will take a ten minute break.

_____
_____
_____
_____

BREAK (10 MIN)

INTERIM TRANSITION: Prior to the break we discussed characteristics, capabilities, operations, and maintenance of the 621B. I will now demonstrate how to perform the pre-operations check and services, operations, and post operations checks.

_____
_____
_____

INSTRUCTOR NOTE
Perform the following demonstration.

DEMONSTRATION. (1 HOUR) The purpose of this demonstration is to show the students how to operate the 621B. Before the demonstration the Instructor will have one 621B and MCT dozer prepared. One instructor is required.

STUDENT ROLE: The students will gather around the 621B with student handouts and observe the instructors demonstration. Students will be encouraged to ask questions.

INSTRUCTOR ROLE: The instructor will conduct a detailed demonstration of how to operate the 621B.

1. Safety Brief: Instructor will cover ORAW. Hard hats will be worn while on the lot. Each student and Instructor will have hearing protection. Ensure all personnel are clear of the equipment prior to starting or moving the equipment. Ground guides will be utilized when necessary. In case of mishap students will move to the classroom and instructor will call emergency personnel.

2. Supervision and Guidance: The instructor will demonstrate the following.

(1) Introduction to the 621B.
(2) 360 walk around.
(3) Pre Op checks.
(4) Excavate material being push loaded by an MCT.
(5) Pump loading method.
(6) Rough leveling method to dress up the area.
(7) During operations checks.
(8) Post ops checks.

3. Debrief: Allow students the opportunity to comment on what they experienced and/or observed. Provide overall feedback, guidance on any misconceptions, and review the learning points of the demonstration.

INTERIM TRANSITION: We have discussed the characteristics and demonstrated the operations of the 621B. You will now perform a practical application to develop this skill.

_____
_____
_____
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INSTRUCTOR NOTE

Coordinate with BEEO SNCOIC for use of the MC 1150 pit.
Introduce the following practical application.
Refer to the Instructor Preparation Guide.

PRACTICAL APPLICATION. (65 HOURS) The purpose of this Practical Application is to allow the students the opportunity to practice operating the 621B. Before the practical application the Instructor will have all 621Bs and MCTs prepared. One instructor is required.

PRACTICE: Each student will be assigned a piece of equipment to operate; an additional student will be assigned to that piece of equipment as a ground guide for the student operating. Students are allowed to use hand outs and ask questions. The students will practice the following task.

(1) Initiate trip ticket.
(2) 360 walk around.
(3) Pre Op checks.
(4) Excavate material being push loaded.
(5) Pump loading method.
(6) Rough leveling method to dress up the area.
(7) During operations checks.
(8) Post ops checks.
(9) Complete trip ticket.

PROVIDE HELP: The Instructor will assist students throughout the practical application and will ensure the students are properly operating the equipment.

1. Safety Brief: Instructor will cover ORAW. Hard hats will be worn while on the lot. Each student and Instructor will have hearing protection. Ensure all personnel are clear of the equipment prior to starting or moving the equipment. Ground guides will be utilized when necessary. In the case of lightning training will stop and the class will move in doors. In case of

mishap students will move to the classroom and instructor will call emergency personnel.
2. Supervision and Guidance: Brief the students of their responsibilities during the practical application. The Instructor will be on the lot observing operations, assisting students and answering questions.
3. Debrief: Allow students the opportunity to comment on what they experienced and/or observed. Provide overall feedback, guidance on any misconceptions, and review the learning points of the Practical Application.

TRANSITION: During this period we performed loading, spreading, and rough leveling operations pre-operations check and services, and post operations checks. Are there any questions over the material we have just covered? I have a couple questions for you. (Q1) How far from the moldboard must the cutting edges be changer? **(A1) WHEN WITHIN 1".** (Q2) What safety precautions must be in place to change the cutting edges? **(A2) THE BOWL MUST BE BLOCKED UP AND THE APRON LOCKING PIN MUST BE INSTALLED.**

Summary **(10 MIN)**

During this period of instruction we have covered the characteristics and capabilities of the 621B Scraper. We have also covered the operator controls and functions, as well as the operations and employment of the scraper. What you have learned in this period of instruction will enable you to employ the scraper in your earth moving operations as well as give you a better understanding of the equipment when planning you horizontal construction mission.

INSTRUCTOR NOTE
Ensure to collect all IRF's and safety questionnaires handed out.

REFERENCES

850 JR CRAWLER DOZER TM 11503A-OR

GROUND EQUIPMENT RECORD PROCEDURES TM 4700-15/1_

TECHNICAL MANUALFOR SCRAPER, EARTH MOVING, MOTORIZED DIESEL ENGINE DRIVEN TM 5-3805-248-14&P-1