AIR FORCE
QUALIFICATION TRAINING PACKAGE (AFQTP)

for

PAVEMENTS AND CONSTRUCTION EQUIPMENT OPERATOR

(3E2X1)

MODULE 15

MATERIAL HANDLING EQUIPMENT

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MATERIAL HANDLING EQUIPMENT

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Notice. This AFQTP is *NOT* intended to replace the applicable technical references nor is it intended to replace hands-on training. It is to be used in conjunction with these for training purposes only.

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Career Field Education and Training Plan (CFETP) references from 1 Apr 97 version.

OPR: HQ AFCESA/CEOF
AFCESA/CEOF
(SMSgt James R. Faulkner)

Certified by: HQ
(CMSgt Myrl Kibbe)

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AIR FORCE QUALIFICATION TRAINING PACKAGES
for
PAVEMENTS AND CONSTRUCTION EQUIPMENT OPERATOR
(3E2X1)

INTRODUCTION

Before starting this AFQTP, refer to and read the "Trainee/Trainer Guide" located on the AFCESA Web site **http://www.afcesa.af.mil/**

AFQTPs are mandatory and must be completed to fulfill task knowledge requirements on core and diamond tasks for upgrade training. ***It is important for the trainer and trainee to understand*** that an AFQTP ***does not*** replace hands-on training, nor will completion of an AFQTP meet the requirement for core task certification. AFQTPs will be used in conjunction with applicable technical references and hands-on training.

AFQTPs and Certification and Testing (CerTest) must be used as minimum upgrade requirements for Diamond tasks.

MANDATORY minimum upgrade requirements:

Core task:
AFQTP completion
Hands-on certification

Diamond task:
AFQTP completion
CerTest completion (80% minimum to pass)

Note: *Trainees will receive hands-on certification training for Diamond Tasks when equipment becomes available either at home station or at a TDY location*.

Put this package to use. Subject matter experts under the direction and guidance of HQ AFCESA/CEOF revised this AFQTP. If you have any recommendations for improving this document, please contact the Career Field Manager at the address below.

HQ AFCESA/CEOF
139 Barnes Dr. Suite 1
Tyndall AFB, FL 32403-5319
DSN: 523-6074, Comm: (850) 283-6074
Fax: DSN 523-6074
E-mail: CEOF.helpdesk@tyndall.af.mil

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DUMP TRUCKS

MODULE 15 **AFQTP UNIT 1**

PERFORM OPERATIONAL CHECKS (15.1.1.)

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PERFORM OPERATIONAL CHECKS

Task Training Guide

STS Reference Number/Title:	15.1.1. Perform Operational Checks
Training References:	• Local technical orders • Local Procedures
Prerequisites:	• Possess as a minimum a 3E231 AFSC
Equipment/Tools Required:	• Dump truck • Personal safety equipment
Learning Objective:	• The trainee will be able to perform operational checks on a dump truck
Samples of Behavior:	• The trainee will demonstrate the proper procedures for operational checks
Notes:	

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PERFORM OPERATIONAL CHECKS

Background: There are several types of dump trucks in the Air Force. Specific preoperational inspection procedures will be found in the owner's manual that accompanied the equipment. It is important to properly check and service the equipment prior to operation.

To perform this task, follow these steps:

Step 1: Utilizing AF Form 1806
Check all items that pertain to the dump truck.

Step 2: Vehicle Exterior
Inspection of the vehicle exterior begins with a 360-degree walk-around looking for damage and leaks.

HINT:
Puddles of fluid and dirty areas on the engine or ground normally indicate problem areas and should be investigated and repaired as soon as possible.

Step 3: Drive Engine Compartment
Check the engine oil, coolant, and transmission fluid levels and fill as needed. Inspect the drive belts for tension and alignment. Ensure the battery connections are secure and free of corrosion.

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Review Questions
for
Perform Operational Checks

Question	Answer
1. Vehicle inspections are only required once a month when the Vehicle NCO provides you with a new 1806.	a. True b. False
2. On a 360-degree walk around, what should you check for?	a. Leaks or puddles under the equipment b. Loose lug nuts or flat tires c. Look for broken parts d. All of the above
3. For best connection, ensure the battery terminals _____.	a. have a tight connection b. have good color and aren't extremely faded c. are free of corrosion d. Both a and c

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PERFORM OPERATIONAL CHECKS

Performance Checklist		
Step	**Yes**	**No**
1. Utilized AF Form 1806?		
2. Checked vehicle exterior?		
3. Drive Engine compartment?		

FEEDBACK: Trainer should provide both positive and/or negative feedback to the trainee immediately after the task is performed. This will ensure the issue is still fresh in the mind of both the trainee and trainer.

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DUMP TRUCKS

MODULE 15 **AFQTP UNIT 1**

PERFORM OPERATORS MAINTENANCE (15.1.2.)

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PERFORM OPERATORS MAINTENANCE

Task Training Guide

STS Reference Number/Title:	15.1.2. Perform Operators Maintenance
Training References:	• Owner's Manual
Prerequisites:	• Possess as a minimum a 3E231 AFSC
Equipment/Tools Required:	• Dump truck • Personal safety equipment
Learning Objective:	• To teach trainee proper maintenance checks on a dump truck
Samples of Behavior:	• The trainee should demonstrate all steps of the lesson plan with help from instructor when needed
Notes:	

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PERFORM OPERATORS MAINTENANCE

Background: Dump truck maintenance, like any other maintenance, is very important. If the machine is not running well, then how is the job going to get done? The more effective maintenance program we have for the equipment, the better our operation will run.

Correct and timely operator maintenance ensures the equipment will do the job when needed and it will last longer, this saves the Air Force money. A good operator maintenance program includes inspections to detect and correct minor deficiencies before they develop into major defects that could result in costly repairs. It also includes cleaning and servicing.

To perform this task, follow these steps:

Step 1: Cleaning

Clean the dump truck. If you have trash or dirt all over your dump truck, you won't be able to find lubrication points from the lube charts. It will also be hard to inspect the dump truck for damage or loose bolts.

Step 2: Lubrication

Lubricate the machine according to the intervals listed in the maintenance chart unless operating the machine in severe conditions, then lubricate the machine more frequently. Be sure to remove all the dirt from the grease fittings before and after lubricating.

Step 3: Refueling

Refueling the dump truck is easy if it can be driven to the service station. Simply drive to the service station and fill the fuel tank. If your equipment can't be driven to the service station, you must arrange for the fuel truck to come to the job site. You should fuel your dump truck **at the end of each working day** to prevent moisture from condensing and forming droplets within the fuel tank.

Step 4: Post Operation Inspection

As stated in operational checks, inspection is the best way to ensure that you give the proper care to your equipment. Air intake breathers are of special importance.

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Review Questions
for
Perform Operators Maintenance

Question	Answer
1. Why is cleaning an important part of vehicle maintenance?	a. To minimize breakdowns and save the AF money b. It is required by AF Form 1806 c. Enables you to find lubrication points from the lube charts d. It isn't important
2. Ensure the vehicle always has at least ¼ of a tank of gas at the end of each duty day.	a. True b. False

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PERFORM OPERATORS MAINTENANCE

Performance Checklist		
Step	**Yes**	**No**
1. Cleaned?		
2. Lubricated?		
3. Refueled?		
4. Posted operations inspection?		

FEEDBACK: Trainer should provide both positive and/or negative feedback to the trainee immediately after the task is performed. This will ensure the issue is still fresh in the mind of both the trainee and trainer.

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DUMP TRUCKS

MODULE 15 **AFQTP UNIT 1**

HAUL MATERIAL (15.1.3.1.)

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HAUL MATERIAL

Task Training Guide

STS Reference Number/Title:	15.1.3.1. Haul Material
Training References:	• Specific operator's manual • Local procedures
Prerequisites:	• Possess as a minimum a 3E231 AFSC
Equipment/Tools Required:	• Dump truck • Personal safety equipment
Learning Objective:	• Should learn how to haul material using a dump truck
Samples of Behavior:	• The trainee will demonstrate the proper procedures in hauling material
Notes:	

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HAUL MATERIAL

Background: Dump trucks are primarily used to haul loose material such as dirt, sand, gravel, and crushed rock to a construction site, especially when the haul distance is great. They are also used to haul asphalt from the plant to the paving site.

The difference between a truck that will dump and one that will not is the way it is equipped. This equipment includes a dump box, or body; a power take-off (PTO); and a hydraulic pump and cylinder. The dump box is raised using a two step process. First, engage the PTO that drives the pump. Second, engage the bed control valve that forces the hydraulic fluid into the cylinder that raises the bed. The cylinder is similar to a large hydraulic jack and is mounted to the truck frame under the dump box.

The make of the truck will determine the location of the controls used to raise and lower the dump body. Some models have two levers in the floor of the cab, others have controls on the dash or a combination of both floor and dash. The PTO knob or lever has two positions, engaged and neutral. The valve control lever has three positions; raise, hold, and lower. To engage the PTO with an automatic transmission, the vehicle must be stopped. With the transmission lever in gear, engage the PTO (if the gears do not mesh, let the truck creep ahead slowly while lightly pulling on the PTO control). After the PTO has engaged, you may move the transmission lever into neutral. With the PTO engaged and the truck engine operating slightly above idle, move the valve control lever to the raised position. To hold the dump box at any position, move the valve control lever to the hold position. To lower the box, move the control lever to the lower position. **CAUTION**. When lowering the dump box, push the lever back slowly to prevent the dump box from falling extremely fast possibly causing damage to the vehicle. After the dump box has been lowered and before traveling, place the valve control lever in the hold position and disengage the PTO.

NOTE:
The dump box operates with hydraulic pressure/flow. Therefore, the speed of operation will be determined by the speed of the truck engine. To prevent damage to the PTO, always check the operator manual for the maximum allowed rpm for that specific PTO.

To perform this task, follow these steps:

Step 1: Drive to fill site

Step 2: Observe loading and check truck after loading

Apply parking brake and get out of the vehicle**.** Some operators feel safe when being loaded with soft materials like sand or gravel, but a loader hydraulic malfunction could cause the bucket to come crashing down on the cab of the truck. It's not always the load that kills an operator.

SAFETY:
ALWAYS GET OUT OF THE TRUCK WHILE IT IS BEING LOADED.

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After the truck is loaded, complete a 360-degree walk around to make certain it is properly loaded (not loaded to one side), and there is no gravel or rocks that can fall out in transit. Check the truck's suspension for defects under a load. If the truck was overloaded or side loaded, back up and dump and let the loader operator try again. Once you accept the load, it is your responsibility.

Step 3: Haul to dump site

Before hauling the load to the dumpsite, always select the right gear for the terrain that you will be traveling over. The owner's manual has an in-depth description on what gear to use and when.

Safety Tip: Operate at a safe speed because speeding kills. Every year the Air Force loses operators to dump truck accidents that could have been avoided. Some ways to avoid accidents are, never wear musical headsets or eat while driving and practice safe braking (The braking distance of a loaded dump truck and an unloaded dump truck are very different). Reduce speed before curves and drive down hills at the same speed or slower than the truck would climb the hill.

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Review Questions
for
Haul Material

Question	Answer
1. During extreme cold conditions, the operator is allowed to remain in the cab while being loaded.	a. True b. False
2. A loaded dump truck needs about the same distance to stop as an empty one.	a. True b. False
3. The loader operator is responsible for any damage caused by a bad load.	a. True b. False

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HAUL MATERIAL

Performance Checklist		
Step	**Yes**	**No**
1. Drive to fill site?		
2. Observe loading and check truck after loading?		
3. Drive to dump site?		
4. Haul to dump site?		

FEEDBACK: Trainer should provide both positive and/or negative feedback to the trainee immediately after the task is performed. This will ensure the issue is still fresh in the mind of both the trainee and trainer.

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DUMP TRUCKS

MODULE 15 **AFQTP UNIT 1**

DUMP MATERIAL (15.1.3.2.)

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DUMP MATERIAL

Task Training Guide

STS Reference Number/Title:	15.1.3.2. Dump Material
Training References:	• Specific operator's manual • Local procedures
Prerequisites:	• Possess as a minimum a 3E231 AFSC
Equipment/Tools Required:	• Dump truck • Personal safety equipment
Learning Objective:	• Should learn how to dump material using a dump truck
Samples of Behavior:	• The trainee will demonstrate the proper procedures in dumping materials
Notes:	

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DUMP MATERIAL

Background: To dump dirt, gravel, or other like materials into a stockpile, back up to the pile, open the tailgate. (Ensure the tailgate chains are in the correct placement). If hauling large debris and the chains are set for sandy loose materials, the weight of the load can cause the front of the vehicle to come off of the ground. If you have the tailgate down for large debris and you unlatch the tailgate lever, the tailgate will drop off. This has happened to many airmen. Save yourself the embarrassment by simply checking the type of load, then making proper adjustments before dumping the load. Now you can dump the load. Before you dump the load, make sure the area is clear. Watch out for overhead obstructions such as power or telephone lines. To ensure the load is completely dumped, with the transmission in neutral, let your foot off the brake allowing the truck to roll forward slightly as the material is dumped. After the dump box has been emptied, lower the truck box completely before moving forward or backward. Always use a spotter when backing.

SAFETY:
SPECIAL CARE SHOULD BE TAKEN WHILE DUMPING ON AN INCLINE; NEVER ATTEMPT TO DUMP PARALLEL TO A SLOPE OR THE TRUCK COULD TIP.

To perform this task, follow these steps:

Step 1: Drive to dump site

Step 2: Back up to dumpsite

Back up to the dumping location. Always use a spotter when one is available. If you are alone, get out of the truck and walk around the truck to make sure there is nothing to run over or that the overhead clearance is enough for the truck while dumping. When you back up to a pile, do not back up until the truck hits the pile. When the truck runs up on the pile, the mud flaps are pushed up against the tires and will eventually be ripped off the truck.

Step 3: Apply parking brakes, check tailgate chains, and release tailgate lever

Once you are ready to dump, apply the parking brake and unlatch the tailgate lever.

Step 4: Engage PTO

Get back in the truck and release the parking brake and engage the PTO (see owner's manual for proper procedures for your truck).

Step 5: Raise bed

Slowly raise the bed until the material runs out of the truck. Ensure that you do not exceed the recommended rpm.

Step 6: Disengage PTO

Once the bed is completely raised, disengage the PTO.

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Step 7: Pull up to empty bed

Pull up a little bit until you hear the tailgate slam shut.

Step 8: Lower bed

Step 9: Apply parking brake and close tailgate lever

Apply parking brake and get out of the truck and close the tailgate lever.

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Review Questions
for
Dump Material

Question	Answer
1. What is the recommended rpm for dump trucks?	a. As indicated in the operator's manual b. Usually the same for all trucks c. Should not be considered d. Is 1200 rpm
2. If you can reach the tailgate lever from the cab, lean out the window to release it.	a. True b. False
3. Backing up on a pile will cause _____.	a. the mud flaps to be torn off b. the load to discharge faster c. excessive wear on the tire d. loose lug nuts
4. If the truck has rearview mirrors, a spotter is not needed.	a. True b. False

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DUMP MATERIAL

Performance Checklist		
Step	**Yes**	**No**
1. Drive to dump site?		
2. Backed up to dump site?		
3. Applied park brake and release tailgate lever?		
4. Engaged PTO?		
5. Raised bed?		
6. Disengaged PTO?		
7. Pulled up to empty bed?		
8. Lowered bed?		
9. Applied parking brake and close tailgate lever?		

FEEDBACK: Trainer should provide both positive and/or negative feedback to the trainee immediately after the task is performed. This will ensure the issue is still fresh in the mind of both the trainee and trainer.

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DUMP TRUCKS

MODULE 15 **AFQTP UNIT 1**

SPREAD GRAVEL (15.1.3.3.1.)

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SPREAD GRAVEL

Task Training Guide

STS Reference Number/Title:	15.1.3.3.1. Spread Gravel
Training References:	• Specific operator's manual • Local procedures
Prerequisites:	• Possess as a minimum a 3E231 AFSC
Equipment/Tools Required:	• Dump truck • Personal safety equipment
Learning Objective:	• Should learn how to spread material using a dump truck
Samples of Behavior:	• The trainee will demonstrate the proper procedures in dumping material
Notes:	

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SPREAD GRAVEL

Background: Sometimes you will need to spread material for other pieces of equipment. This is common during grader operations or when the material will be worked for leveling an area. If you look on the back of the tailgate, you will see two chains. These chains can be adjusted so you can spread loose materials in layers. If you choose to spread the materials in layers, stop the truck where you want to start the spread, place the dump control levers in the proper position, raise the bed about a foot, and trip the tailgate as you drive forward in low gear.

SAFETY:
SPECIAL CARE SHOULD BE TAKEN WHILE DUMPING ON AN INCLINE. NEVER ATTEMPT TO DUMP PARALLEL TO A SLOPE OR THE TRUCK COULD TIP.

To perform the tasks, follow these steps:

Step 1: Drive to the dumpsite

Step 2: Back up to the dumpsite
Back up to the dumping location. Always use a spotter when one is available. If you are alone, get out of the truck and walk around the truck to make sure there is nothing to run over or that the overhead clearance is enough for the truck while dumping. Check the chains to make sure they are not too tight.

SAFETY:
TIGHT CHAINS COULD CAUSE THE LOAD TO SHIFT, CAUSING THE TRUCKS FRONT TIRES TO COME UP OFF THE GROUND.

Step 3: Engage PTO
Get back in the truck and release the parking brake and engage the PTO (see owner's manual for proper procedures for your truck).

Step 4: Raise bed
Slowly raise the bed (about one foot) open the tailgate lever. Ensure that you do not exceed the recommended rpm for your truck.

Step 5: Drive forward to discharge and disengage PTO
Put the truck in a low gear, and then pull forward while raising the bed at the same time. Once the bed is completely raised, disengage the PTO and continue until all the material is out of the bed.

Step 6: Lower bed
Stop the truck and lower the bed completely.

Step 7: Apply parking brake and close tailgate lever
Apply parking brake and get out of the truck and close the tailgate lever.

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Review Questions
for
Spread Gravel

Question	Answer
1. What are the chains on the tailgate used for?	a. To regulate the thickness of the material being dumped b. Holding the tailgate closed c. For removing the tailgate d. For towing
2. You should check the entire area for overhead lines before spread dumping?	a. True b. False

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SPREAD GRAVEL

Performance Checklist		
Step	**Yes**	**No**
1. Drive to dump site?		
2. Backed up to dump site?		
3. Engaged PTO?		
4. Raised bed?		
5. Drive forward to discharge and disengage PTO?		
6. Lowered bed?		
7. Applied parking brake and close tailgate lever?		

FEEDBACK: Trainer should provide both positive and/or negative feedback to the trainee immediately after the task is performed. This will ensure the issue is still fresh in the mind of both the trainee and trainer.

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DUMP TRUCKS

MODULE 15 **AFQTP UNIT 1**

TOW EQUIPMENT (15.1.3.4.)

(OPTIONAL)

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TOW EQUIPMENT

Task Training Guide

STS Reference Number/Title:	15.1.3.4. Tow Equipment
Training References:	• Specific operator's manual • Local procedures
Prerequisites:	• Possess as a minimum a 3E231 AFSC
Equipment/Tools Required:	• Dump truck • Personal safety equipment
Learning Objective:	• Should learn how to tow equipment using a dump truck
Samples of Behavior:	• The trainee will demonstrate the proper procedures in towing equipment
Notes:	
This area is optional and available to use as a lesson plan when training on this non-core task	

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TOW EQUIPMENT

Background: You will often have to tow equipment such as the air compressor or concrete mixer to your job site. For this task, the dump truck is equipped with a pintle hook. The pintle hook is a jaw-like device that is opened by lifting the latch located at the top of the pintle hook, then pulling up on the upper jaw until it is open. The lunette is a round-shaped eyelet mounted on the front of the trailer or piece of equipment that is to be towed. With the aid of a spotter, back the dump truck until the lunette is positioned over the lower jaw of the pintle hook. After the truck is stopped, lower the lunette onto the lower jaw of the pintle hook. Close the upper jaw of the pintle hook and ensure the safety latch is properly in place. Insert the safety pin through the side of the upper jaw, ensuring the pin goes through the upper jaw and safety latch. This pin prevents the pintle hook from coming open when the vehicle is transporting the piece of equipment. Safety chains should then be attached to the dump truck from the piece of equipment being towed for added safety.

After you have everything hooked up and secured, you are ready to start towing. Start out slowly and keep a watch, not only on the equipment you are towing, but also on other drivers. If you need to stop in a hurry, the equipment you are towing and anything you are hauling in the bed will greatly increase your stopping distance. For this reason you need to anticipate not only yours but everybody else's moves.

Personally check the entire hook up before towing. It's your responsibility to make sure it's done correctly not the spotter or helper.

To perform this task, follow these steps:

Step 1: Position dump truck
Position the dump truck in front of the piece of equipment.

Step 2: Back up to the equipment
Back up to the equipment. Always use a spotter when one is available. If you are alone, get out of the truck and check for obstruction. Have the spotter open the pintle hook when the vehicle is about three feet from the piece of equipment.

Step 3: Watch spotter
Back up slowly while watching your spotter.

Step 4: Stop and apply parking brake
Once the pintle hook is under the lunette, stop the truck and apply the parking brake. Wait for a signal from the spotter when the weight of the equipment is resting on the open pintle hook.

Step 5: Turn off dump truck
Turn the truck off and get out of the truck to assist the spotter with the connections.

Notice. This AFQTP is *NOT* intended to replace the applicable technical references nor is it intended to replace hands-on training. It is to be used in conjunction with these for training purposes only.

Step 6: Ensure pintle hook is closed and safety pin is installed
Ensure the pintle hook is closed properly and put the cotter pin through the hole on top of the pintle to secure the latch from opening during transportation.

Step 7: Secure safety chains
Secure the safety chains to the back of the dump truck.

Step 8: 360 degree walk around to ensure hook-up is correct
Disengage any parking brake on the towed equipment and do a 360-degree walk around. Look at the towed equipment before starting out. It should have a regular pre-operation check like all other pieces of equipment.

Step 9: Know the maximum speed for towed equipment.
Know the maximum towing speed of the piece of equipment to be towed.

Notice. This AFQTP is *NOT* intended to replace the applicable technical references nor is it intended to replace hands-on training. It is to be used in conjunction with these for training purposes only.

Review Questions
for
Tow Equipment

Question	Answer
1. Who is responsible for the proper connection?	a. The one who closed the pintle hook b. The driver of the tow vehicle c. Vehicle operations d. The spotter
2. When should you check the entire connection?	a. It is not necessary to check the connection if a spotter was present b. During the tow c. Before towing d. After the tow
3. The safety chains are _____.	a. required to be connected if present b. usually too short for a dump truck c. only needed during heavy tows d. used for tie down only

Notice. This AFQTP is *NOT* intended to replace the applicable technical references nor is it intended to replace hands-on training. It is to be used in conjunction with these for training purposes only.

TOW EQUIPMENT

Performance Checklist		
Step	**Yes**	**No**
1. Positioned dump truck in front of equipment?		
2. Backed up to the equipment?		
3. Watched spotter?		
4. Stopped and applied parking brake?		
5. Turned off dump truck?		
6. Ensured pintle hook is closed and safety pin is installed?		
7. Secured safety chains?		
8. Performed 360 degree walk around--Ensure hook-up is correct?		
9. Verified maximum speed for towed equipment?		

FEEDBACK: Trainer should provide both positive and/or negative feedback to the trainee immediately after the task is performed. This will ensure the issue is still fresh in the mind of both the trainee and trainer.

Notice. This AFQTP is *NOT* intended to replace the applicable technical references nor is it intended to replace hands-on training. It is to be used in conjunction with these for training purposes only.

DUMP TRUCKS

MODULE 15 **AFQTP UNIT 1**

REMOVE TAILGATE (15.1.4.1.)

INSTALL TAILGATE (15.1.4.2.)

Notice. This AFQTP is *NOT* intended to replace the applicable technical references nor is it intended to replace hands-on training. It is to be used in conjunction with these for training purposes only.

TAILGATE REMOVAL/INSTALLATION

Task Training Guide

STS Reference Number/Title:	15.1.4.1. Remove Tailgate 15.1.4.2. Install Tailgate
Training References:	• CDCs 3E251 • Dump Truck Tailgate Removal/Installation Power Point lesson plan at http://www.afcesa.af.mil/ • http://www.afcesa.af.mil/Directorate/CEO/Training/training.htm • Local procedures
Prerequisites:	• Possess as a minimum a 3E231 AFSC • AF Form 171, Request for Driver's Training (Initial Training Only). • AF Form 2293, Government Vehicle Operator's Permit
Equipment/Tools Required:	• Dump truck • Forklift or Front End Loader with Forklift attachments • Personal safety equipment
Learning Objective:	• Should learn how to safely remove and install a dump truck tailgate
Samples of Behavior:	• The trainee will demonstrate the proper procedures in removing and installing a dump truck tailgate
Notes:	
Any safety violation is an automatic failure.	

Dump truck tailgate removal/installation procedures

Background: The tailgate is an integral part of the dump truck, it is very important that we understand when and how to configure the tailgate for proper use. Tailgate removal is accomplished to allow for installation of a spreader/sprayer auxiliary equipment, to dump large debris, or to spread material. Safety is always our first priority no matter what type of operation we are involved. These are the minimum requirements for tailgate removal and installation operations:

***To perform this task view*:** Dump Truck Tailgate procedures "Classroom Power point training" and print out Dump Truck Tailgate Field lesson plan for use during hands on training. Both are available at http://www.afcesa.af.mil/Directorate/CEO/Training/Enlisted/QTPs/3E2X1.htm

Notice. This AFQTP is *NOT* intended to replace the applicable technical references nor is it intended to replace hands-on training. It is to be used in conjunction with these for training purposes only.

Certification Requirements:

CerTest number 8175 is mandatory for certification on this task.

Contact your UETM to schedule testing.

Study reference materials for CerTest 8145 is located at the Dump Truck procedures Classroom training and Field lesson plan available at http://www.afcesa.af.mil/Directorate/CEO/Training/Enlisted/QTPs/3E2X1.htm

An 80 percent or greater on the CerTest is required to receive certification.

Take satisfactory printed CerTest result to VCO/VCNCO to receive an AF Form 483 "Certificate of Competency"

Refresher Training: Refresher training must be conducted every three years. Use above listed training products to accomplish training. Refresher training will be documented on an AF Form 483 "Certificate of Competency". The date of the previous training/evaluation controls the time frame for the next evaluation.

Tailgate Removal/Installation

Performance Checklist		
Step	**Yes**	**No**
1. Utilized proper personnel protective equipment?		
2. Conducted pre-brief of safety/operational procedures?		
3. Followed step by step instructions for removing tailgate at: http://www.afcesa.af.mil/Directorate/CEO/Training/Enlisted/QTPs/3E2X1/Dump%20Truck%20Tailgate%20Field%20Lesson%20Plan.pdf		
4. Followed step by step instructions for installing tailgate: (See Step 3 above for link)		

FEEDBACK: Trainer should provide both positive and/or negative feedback to the trainee immediately after the task is performed. This will ensure the issue is still fresh in the mind of both the trainee and trainer.

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WHEEL MOUNTED FRONT-END LOADERS

MODULE 15 **AFQTP UNIT 2**

PERFORM OPERATIONAL CHECKS (15.2.1.)

Notice. This AFQTP is *NOT* intended to replace the applicable technical references nor is it intended to replace hands-on training. It is to be used in conjunction with these for training purposes only.

PERFORM OPERATIONAL CHECKS

Task Training Guide

STS Reference Number/Title:	15.2.1. Perform Operational Checks
Training References:	• Local Technical Orders • Local Procedures
Prerequisites:	• Possess as a minimum a 3E231 AFSC
Equipment/Tools Required:	• Wheeled Loader • Personal Safety Equipment
Learning Objective:	• The trainee will be able to perform operational checks on a wheeled loader
Samples of Behavior:	• The trainee will demonstrate the proper procedures for operational checks
Notes:	

Notice. This AFQTP is *NOT* intended to replace the applicable technical references nor is it intended to replace hands-on training. It is to be used in conjunction with these for training purposes only.

PERFORM OPERATIONAL CHECKS

Background: There are several types of wheeled loaders in the Air Force. Specific pre-operational inspection procedures will be found in the owner's manual that accompanied the equipment. It is important to properly check and service the equipment prior to operation.

To perform this task, follow these steps:

Step 1: Utilizing AF Form 1806
Check all the items listed that pertains to the wheeled loader.

Step 2: Vehicle Exterior
Inspection of the vehicle exterior begins with a 360-degree walk around looking for damage and leaks. Check the bucket assembly for wear.

HINT:
Puddles of fluid and dirty areas on the engine or ground normally indicate problem areas and should be investigated and repaired as soon as possible.

Step 3: Drive Engine Compartment
Check the engine oil, coolant, transmission fluid levels, and fill as needed. Inspect the drive belts for tension and alignment. Ensure the battery connections are secure and free from corrosion.

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Review Questions
for
Perform Operational Checks

Question	Answer
1. What is the AF Form 1806 used for?	a. Inspecting heavy equipment b. It is not used by the Air Force c. It is used to authorize digging d. Report damage to a facility
2. On a 360-degree walk around, what needs to be checked?	a. Leaks or puddles under the equipment b. Loose lug nuts or flat tires c. Look for broken part d. All of the above
3. Who is responsible for performing the pre-operational check on the vehicle?	a. The shop supervisor b. The driver who parks the vehicle c. The operator getting into the vehicle d. The Transportation mechanics

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PERFORM OPERATIONAL CHECKS

Performance Checklist		
Step	**Yes**	**No**
1. Utilized AF Form 1806?		
2. Checked vehicle exterior?		
3. Drive Engine compartment?		

FEEDBACK: Trainer should provide both positive and/or negative feedback to the trainee immediately after the task is performed. This will ensure the issue is still fresh in the mind of both the trainee and trainer.

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WHEEL MOUNTED FRONT-END LOADERS

MODULE 15 **AFQTP UNIT 2**

PERFORM OPERATORS MAINTENANCE (15.2.2.)

Notice. This AFQTP is *NOT* intended to replace the applicable technical references nor is it intended to replace hands-on training. It is to be used in conjunction with these for training purposes only.

PERFORM OPERATORS MAINTENANCE

Task Training Guide

STS Reference Number/Title:	15.2.2. Perform Operators Maintenance
Training References:	• Owner's Manual • Local Procedures
Prerequisites:	• Possess as a minimum a 3E231 AFSC
Equipment/Tools Required:	• Front-end Loader • Personal Safety Equipment
Learning Objective:	• To teach trainee exactly what is needed to conduct maintenance on a front-end loader
Samples of Behavior:	• The trainee should demonstrate all steps of this AFQTP with help from instructor when needed
Notes:	

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PERFORM OPERATORS MAINTENANCE

Background: Front-end loader maintenance, like any other maintenance, is very important. If the machine is not running well, then how is the job going to get done? The more effective maintenance program we have for the equipment, the better our operation will run.

Correct and timely operator maintenance ensures the equipment will do the job when needed and it will last longer; this saves the Air Force money. A good, money-saving operator maintenance program includes inspections to detect and correct minor deficiencies before they develop into major defects that could result in costly repairs. It also includes cleaning and servicing.

To perform this task, follow these steps:

Step 1: Cleaning

Clean the front-end loader. If you have trash or dirt all over your wheeled loader, you won't be able to find lubrication points from the lube charts. It will also be hard to inspect the wheeled loader for damage or loose bolts.

Step 2: Lubrication

Lubricate the machine according to the intervals listed in the maintenance chart unless operating the machine in severe conditions. Then lubricate the machine more frequently. Be sure to remove all the dirt from the grease fittings before lubricating.

Step 3: Refueling

Refueling the front-end loader is easy if it can be driven to the service station. Simply drive to the service station and fill the fuel tank. If your equipment can't be driven to the service station, you must arrange for the fuel truck to come to the job site. You should fuel your wheeled loader at the end of each working day to prevent moisture from condensing and forming droplets within the fuel tank.

Step 4: Post operation Inspection

As stated in operational checks, inspection is the best way to ensure that you give the proper care to your equipment. Air intake breathers are of special importance. There are generally two elements: (1) the primary (outer) element and, (2) the secondary (inner) element. Under dusty operating conditions, clean both elements daily (even more often if working conditions are extremely dusty).

Step 5: Check cutting edges

Ensure the cutting edges are in good shape and not loose or worn excessively.

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Review Questions
for
Perform Operators Maintenance

Question	Answer
1. Why is cleaning an important part of vehicle maintenance?	a. To find lubrication points and keep dirt out of the fittings b. It is required by AF Form 1806 c. For lubrication d. It isn't important
2. When arranging for refueling at the job site, the operator must _____.	a. Get several portable gas cans and fill b. Call base fuels to make delivery c. Tell the shop supervisor d. None of the above
3. Why should you check the cutting edge?	a. For debris stuck in the cracks b. For excessive wear c. For reversibility d. You shouldn't

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PERFORM OPERATORS MAINTENANCE

Performance Checklist		
Step	**Yes**	**No**
1. Cleaned?		
2. Lubricated?		
3. Refueled?		
4. Post operations inspection?		
5. Inspected and changed cutting edges?		

FEEDBACK: Trainer should provide both positive and/or negative feedback to the trainee immediately after the task is performed. This will ensure the issue is still fresh in the mind of both the trainee and trainer.

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WHEEL MOUNTED FRONT-END LOADERS

MODULE 15 **AFQTP UNIT 2**

LOAD GRAVEL INTO DUMP TRUCK (15.2.3.1.)

Notice. This AFQTP is *NOT* intended to replace the applicable technical references nor is it intended to replace hands-on training. It is to be used in conjunction with these for training purposes only.

LOAD MATERIALS

Task Training Guide

STS Reference Number/Title:	15.2.3.1. Load Gravel into Dump Truck
Training References:	• AFQTP Video 613939 Wheel Mounted Front End Loader – Load Material • Specific Operator's Manual • Local Operating Procedures
Prerequisites:	• Possess as a minimum a 3E231 AFSC
Equipment/Tools Required:	• Wheeled Loader • Personal Safety Equipment
Learning Objective:	• Should learn how to load material using a wheeled loader
Samples of Behavior:	• The trainee will demonstrate the proper procedures in loading material
Notes:	

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LOAD GRAVEL

Background: A front-end loader is the best piece of equipment to use when loading soft to medium material, such as stockpiles. When the material is medium to hard, the front-end loader loses much of its efficiency. The loader works better on flat smooth-surfaced areas and has proper space to maneuver. If there are poor underfoot conditions and lack of space to operate efficiently, some other pieces of equipment may be more effective.

When there are no trucks to be loaded, you can improve your operating techniques by leveling the loading area. When your next truck arrives, this will make loading smoother and faster.

- ***To perform this task: Video 613939 Wheel Mounted Front End Loader – Load Material and follow these steps:***

Step 1: Approach the stockpile

Begin the scooping operation by making an approach with the bucket lowered, level, flat, and grounded. If the bucket is tilted too far forward, it will dig into the ground. If the bucket is tilted too far back, it will ride up the face of the stockpile.

Step 2: Enter the stockpile

Place the direction control lever in forward and the range control lever in first and slowly approach the stockpile. As you make contact with the stockpile, increase the acceleration to full throttle.

Step 3: Crowd the bucket

After the bucket has entered the stockpile approximately two feet or so, or is near stalling, alternately raise and roll the bucket back until it is full. Do not let the tires spin as you fill the bucket. This causes excessive tire wear and ruts that make an unleveled work surface.

Step 4: Leave the stockpile

Once the bucket is full or raised out of the stockpile, decrease the engine speed and put the direction control lever in reverse. Always travel with the loaded bucket as close to the ground as possible and then raise it to the desired height as you approach the truck.

Step 5: Position the truck

The positioning of the dump truck is important. The truck should be positioned at a 45-degree angle to the stockpile.

Step 6: Dump material in the truck

To keep from damaging the dump body, you dump the first load a little at a time. Know the capacity of the truck you are loading. Don't overload the truck by weight or volume. There shouldn't be material falling over the side or piled so high it will shift during travel.

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Review Questions
for
Load Gravel

Question	Answer
1. When approaching the stockpile, _____.	a. ride up on the pile by tilting back the bucket to make sure you do not dig in b. dig about 6 inches of the base material to ensure you get all the material c. have the bucket lowered, level, flat and grounded d. drive as fast as you can to crowd the bucket
2. When entering the stockpile, _____.	a. enter at a sharp angle to load only on side of the bucket b. spin the loader tires for better traction c. decrease the throttle d. increase the throttle
3. When placing material into the dump truck, _____.	a. dump the material with full force to level it out in the bottom of the truck b. use a soft material to line the bed before dumping c. place the material slowly a little at a time d. use half buckets until the bed is covered

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LOAD GRAVEL

Performance Checklist		
Step	**Yes**	**No**
1. Approached the stockpile?		
2. Entered the stockpile?		
3. Crowd the bucket?		
4. Leave the stockpile?		
5. Positioned the truck?		
6. Dumped the material?		

FEEDBACK: Trainer should provide both positive and/or negative feedback to the trainee immediately after the task is performed. This will ensure the issue is still fresh in the mind of both the trainee and trainer.

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WHEEL MOUNTED FRONT-END LOADERS

(OPTIONAL)

MODULE 15 **AFQTP UNIT 2**

LEVEL AREA (15.2.3.2.)

Notice. This AFQTP is *NOT* intended to replace the applicable technical references nor is it intended to replace hands-on training. It is to be used in conjunction with these for training purposes only.

LEVEL AREA

Task Training Guide

STS Reference Number/Title:	15.2.3.2. Level Area
Training References:	• AFQTP Video PIN # 613954, Front End Loader Operations • Specific Operator's Manual • Local Operating Procedures
Prerequisites:	• Possess as a minimum a 3E231 AFSC
Equipment/Tools Required:	• Wheeled Loader • Personal Safety Equipment
Learning Objective:	• Should learn how to level material using a wheeled loader
Samples of Behavior:	• The trainee will demonstrate the proper procedures in leveling material
Notes:	
This area is optional and available to use as a lesson plan when training on this non-core task	

Notice. This AFQTP is *NOT* intended to replace the applicable technical references nor is it intended to replace hands-on training. It is to be used in conjunction with these for training purposes only.

LEVEL AREA

Background: The wheeled loader is a good piece of equipment to level out small to medium size jobs. The leveling techniques do not change much between different types of equipment. The only difference is the control of the equipment.

To perform this task complete: Video PIN # 613954, Front End Loader Operations and follow these steps:

Step 1: Have a completed AF Form 103

The first step is to make sure you have a digging permit. Let your supervisor know that you cannot start digging until you have one.

Step 2: Assess the job site

Take a few minutes to look at the job and get a mental picture of what you want the project to look like when its finished. Decide where you need to start (usually where the most material is). Look for any hazards in the area., such as culverts, cable markers, etc.

Step 3: Cut and fill

Start cutting the high spots out of the area and pushing the material into the low spots. When you are cutting, try to do it in the highest speed possible without lugging the engine. This will keep excessive bucket movement to a minimum. It is better to level the low spots a little at a time. To do this, just pick your bucket up slightly and when there is no more material, go back and get some more and repeat the step. Don't push the material into the bottom of the hole because it is harder to find the final grade.

Step 4: Back drag the area

Once the cutting and filling is done and you have a lot of loose dirt in the area, back drag the area from the high spots to the low spots. When back dragging, start the wheeled loader in reverse; once it is moving, push the bucket all the way into float. When you get to the area where the material is needed, pull the bucket out of float for one second and start to raise it slightly until it is just a little above the final grade. Remember that the fill area will settle and the cut will not. Driving over the fill area will help with compaction. Continue until you get the desired result.

> **NOTE:**
> Remember while back dragging, you still must look over both shoulders for obstructions.

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Review Questions
for
Level Area

Question	Answer
1. AF Form 103 permit isn't always needed if the job site is far away from the main base.	a. True b. False
2. Push dirt from the high spot onto the low spots to level an area.	a. True b. False
3. Avoid back dragging; it could damage the wheeled loader bucket.	a. True b. False
4. Never put the bucket in float because it will cause uneven surfaces.	a. True b. False

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LEVEL AREA

Performance Checklist		
Step	**Yes**	**No**
1. Ensured you have AF Form 103?		
2. Assessed the job site?		
3. Cut and fill the area?		
4. Back-drag the area?		

FEEDBACK: Trainer should provide both positive and/or negative feedback to the trainee immediately after the task is performed. This will ensure the issue is still fresh in the mind of both the trainee and trainer.

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WHEEL MOUNTED FRONT-END LOADERS

OPTIONAL

MODULE 15 **AFQTP UNIT 2**

SPREAD MATERIALS (15.2.3.3.)

Notice. This AFQTP is *NOT* intended to replace the applicable technical references nor is it intended to replace hands-on training. It is to be used in conjunction with these for training purposes only.

SPREAD MATERIALS

Task Training Guide

STS Reference Number/Title:	15.2.3.3. Spread Materials
Training References:	• Specific Operator's Manual • Local Operating Procedures
Prerequisites:	• Possess as a minimum a 3E231 AFSC
Equipment/Tools Required:	• Wheeled Loader • Personal Safety Equipment
Learning Objective:	• Should learn how to spread material using a wheeled loader
Samples of Behavior:	• The trainee will demonstrate the proper procedures in spreading material
Notes:	
This area is optional and available to use as a lesson plan when training on this non-core task	

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SPREAD MATERIALS

Background: The front-end loader is excellent for spreading piles of material to level an area or to prep the area for more precise equipment such as a grader. There are so many different methods of doing this task that learning the basics and watching experienced operators, you will develop a technique that works for you.

To perform this task, follow these steps:

Step 1: Approach the stockpile
To level a stockpile, approach the stockpile from one side. Level the bucket and take about a quarter of a bucket and push through the stockpile.

Step 2: Dump the material
When you have reached the area where the material is needed, open the clamshell all the way and raise the bucket just slightly above the ground and continue until the bucket is empty. If the loader has a straight bucket, roll the bucket all the way forward where the material is needed and continue until the all the material is out of the bucket.

Step 3: Level the area
Continue with step 2 in a pattern. If there is a large hole, level the area in rows instead of a random pattern. This will keep the area from becoming overfilled and give you a better idea where the material is needed and how much more you will need.

Step 4: Compact the area
After filling the area, fill the bucket with material and drive over it several times. A loader is very good for initial compaction. If the material is considerably deep, have a steel wheel roller compact the area in layers instead of at the end of the fill.

Step 5: Re-level the area
After compacting, fill in any low spots with material using Step 2.

Step 6: Back drag the area
Back dragging the windrows and ruts to the desired specifications. Place the bucket in the level position and, while moving in reverse, place the loader in float and backup. Do this several times until the area is smooth.

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Review Questions
for
Spread Materials

Question	Answer
1. When approaching the stockpile _____.	a. use high gear and ram the pile to reduce wear on the loader b. move the whole pile at one time and dump into the fill area c. take about ¼ of the bucket and push through the pile d. take about ¾ of the bucket at one time
2. How should the material be dumped?	a. Open the clamshell or roll the bucket forward and continue until the bucket is empty b. Two bucket lengths before the fill area c. Spin the loader tires for better traction d. In a random pattern
3. Back drag the area _____.	a. in the hold position b. before compaction c. driving forward d. in the float position

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SPREAD MATERIALS

Performance Checklist		
Step	**Yes**	**No**
1. Approached the stockpile?		
2. Dumped the material?		
3. Leveled the area?		
4. Compacted the area?		
5. Leveled the area again?		
6. Back dragged the area?		

FEEDBACK: Trainer should provide both positive and/or negative feedback to the trainee immediately after the task is performed. This will ensure the issue is still fresh in the mind of both the trainee and trainer.

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WHEEL MOUNTED FRONT-END LOADERS

(OPTIONAL)

MODULE 15 **AFQTP UNIT 2**

STOCKPILE MATERIALS (15.2.3.4.)

Notice. This AFQTP is *NOT* intended to replace the applicable technical references nor is it intended to replace hands-on training. It is to be used in conjunction with these for training purposes only.

STOCKPILE MATERIALS

Task Training Guide

STS Reference Number/Title:	15.2.3.4. Stockpile Materials
Training References:	• Specific Operator's Manual • Local Operating Procedures
Prerequisites:	• Possess as a minimum a 3E231 AFSC
Equipment/Tools Required:	• Wheeled Loader. • Personal Safety Equipment
Learning Objective:	• Should learn how to stockpile material using a wheeled loader
Samples of Behavior:	• The trainee will demonstrate the proper procedures in stockpiling material
Notes:	
This area is optional and available to use as a lesson plan when training on this non-core task	

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STOCKPILE MATERIALS

Background: The standard machine for building stockpiles is the front-end loader. The dozer can do the same work, but less efficiently, because it cannot make high piles without walking on them. Stockpiling is best done on areas that are flat, hard, and clear. Avoid low areas where drainage is poor and where a hard rain may fill low spots and wash away needed materials.

You should be aware that different size aggregates, in a material being stockpiled, have a tendency to separate from each other. This is known as segregation. If you work the material too much, segregation takes place with the larger particles rolling to the bottom of the pile. To avoid this, build your stockpile in layers to make sure it maintains a uniform gradation.

To perform this task, follow these steps:

Step 1: Approach the stockpile area

Level the bucket on the ground and proceed forward in low gear until you penetrate the material. Raise the engine speed high enough to push the material ahead without spinning the tires. You should push the material to the pre-determined area and stop.

Step 2: Dump the material

Raise your bucket and dump the material. If trucks are delivering material, have them dump close to the pile. Do not ride up on the pile to stack it higher, the material could sink and the loader could tip to one side or completely over.

Step 3: Clean up the area

After all the material is stockpiled, clean up the area and make the pile uniform.

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Review Questions
for
Stockpile Materials

Question	Answer
1. Segregation is not a common concern while stockpiling.	a. True b. False
2. When pushing up a stockpile, never _____.	a. push a full bucket up the pile b. start with a level bucket c. drive up the pile d. use low gear
3. Cleaning up around the stockpile will _____.	a. make a uniform pile and keep all the material in the pile b. keep traffic out of the area c. cause segregation d. ensure drainage

Notice. This AFQTP is *NOT* intended to replace the applicable technical references nor is it intended to replace hands-on training. It is to be used in conjunction with these for training purposes only.

STOCKPILE MATERIALS

Performance Checklist		
Step	**Yes**	**No**
1. Approached the stockpile?		
2. Loaded material?		
3. Dumped the material?		
4. Cleaned up the area?		

FEEDBACK: Trainer should provide both positive and/or negative feedback to the trainee immediately after the task is performed. This will ensure the issue is still fresh in the mind of both the trainee and trainer.

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WHEEL MOUNTED FRONT-END LOADERS

(OPTIONAL)

MODULE 15 **AFQTP UNIT 2**

BACKFILL (15.2.3.5.)

Notice. This AFQTP is *NOT* intended to replace the applicable technical references nor is it intended to replace hands-on training. It is to be used in conjunction with these for training purposes only.

BACKFILL

Task Training Guide

STS Reference Number/Title:	15.2.3.5. Backfill
Training References:	• Specific Operator's Manual • Local Operating Procedures
Prerequisites:	• Possess as a minimum a 3E231 AFSC
Equipment/Tools Required:	• Wheeled Loader • Personal Safety Equipment
Learning Objective:	• Should learn how to backfill using a wheeled loader
Samples of Behavior:	• The trainee will demonstrate the proper procedures in backfilling
Notes:	
This area is optional and available to use as a lesson plan when training on this non-core task	

Notice. This AFQTP is *NOT* intended to replace the applicable technical references nor is it intended to replace hands-on training. It is to be used in conjunction with these for training purposes only.

BACKFILL

Background: The front-end loader is a handy tool for backfilling ditches or trenches. An advantageous feature is that the unit's rubber tires have a minimum tearing effect when working on a hard surface such as asphalt. By lowering the bucket to grade level, if equipped, opening the clamshell, and the forward movement of the machine will push the stockpiled earth into the trench.

To perform this task, follow these steps:

Step 1: Approach the spoil material area

Level the bucket on the ground and proceed forward in low gear perpendicular to the trench until you penetrate the material. Raise the engine speed high enough to push the material ahead without spinning the tires. You push the material to the pre-determined area and stop. Continue down the trench and leave the spoil a little high.

Step 2: Compact the loose dirt

If the trench is considerably deep, and no utilities will be damaged, drive over the excess spoil to compact it. Some trenches will require additional compaction and sometime in layers.

Step 3: Clean up the area

After the entire trench is backfilled, backdrag the trench parallel to knock down any loose material and clean up the area.

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Review Questions
for
Backfill

Question	Answer
1. Which direction should you backfill a trench?	a. Against the offset path of the loader b. Perpendicular c. Cross gain d. Parallel
2. Compact over utilities if there are no possibilities of damage.	a. True b. False
3. Cleaning up around the stockpile will _____.	a. Enhance the appearance of the job site b. Keep the trench from caving in c. Keep traffic out of the area d. Assist in leveling

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BACKFILL

Performance Checklist		
Step	**Yes**	**No**
1. Approached the spoiled material?		
2. Pushed material in trench?		
3. Compacted the trench?		
4. Cleaned up the area?		

FEEDBACK: Trainer should provide both positive and/or negative feedback to the trainee immediately after the task is performed. This will ensure the issue is still fresh in the mind of both the trainee and trainer.

Notice. This AFQTP is *NOT* intended to replace the applicable technical references nor is it intended to replace hands-on training. It is to be used in conjunction with these for training purposes only.

USE FORKLIFT ATTACHMENT

MODULE 15 **AFQTP UNIT 2**

LOAD/UNLOAD MATERIAL (15.2.4.1.)

TRANSPORT MATERIAL (15.2.4.2.)

Notice. This AFQTP is *NOT* intended to replace the applicable technical references nor is it intended to replace hands-on training. It is to be used in conjunction with these for training purposes only.

LOAD/UNLOAD MATERIAL

TRANSPORT MATERIAL

Task Training Guide

STS Reference Number/Title:	15.2.3.1. Load/Unload Material 15.2.3.2. Transport Material
Training References:	• AFQTP Video PIN # 613940, Front End Loader With Forklift Attachment • Specific Operator's Manual • Local Operating Procedures
Prerequisites:	• Possess as a minimum a 3E231 AFSC
Equipment/Tools Required:	• Wheeled Loader with Forklift Attachment • Personal safety equipment
Learning Objective:	• Should learn how to load/unload, and transport material using a wheeled loader
Samples of Behavior:	• The trainee will demonstrate the proper procedures in load/unload, and transporting material
Notes:	

Notice. This AFQTP is *NOT* intended to replace the applicable technical references nor is it intended to replace hands-on training. It is to be used in conjunction with these for training purposes only.

LOAD/UNLOAD MATERIAL
TRANSPORT MATERIAL

Background: The front-end loader has several attachments that can be used for transporting material. The forklift attachment makes the loader very versatile. When forks are installed on the loader, make sure that you know the rated capacity for the fork tines not just the loader. All forks are rated at a certain distance from the back of the forks. The capacity is not at the very end of the forks. Lifting capacity loads at the front of the forks will break the attachment or destroy a load. Remember a loader with a fork attachment is not a forklift. The loader has a looser suspension than a warehouse forklift and the center of gravity is considerably higher. Loading and unloading material is basically the same task but in reverse order.

To perform this task complete: AFQTP Video PIN # 613940, Front End Loader With Forklift Attachment and follow these steps:

Step 1: Position the forks

To pick up material stacked on a pallet, approach the pallet and check the forks to make sure that they are far enough apart to ensure load stability. Also, make sure the forks are low enough so you don't run them through the load on the pallet. If visibility is limited, have a spotter assist you in the placing and moving of the load. Pull forward and slide the forks under the pallet.

Step 2: Lift the load

After the forks are under the pallet, engage the clutch cutout. Accelerate slightly and pull back on the lift control to raise the load, then pull back on the tilt control to keep the load from tipping. The tilt control lever on the forklift is the same as the bucket control lever on the front-end loader.

Step 3: Transport the load

When transporting a load, raise it 12 to 18 inches off the ground or high enough to clear any obstacles while traveling. To ensure stability, travel slowly, avoid sharp turns, and don't stop suddenly.

Step 4: Place the load

As you approach the trailer, or whatever it is that you are going to place the material on, decrease your speed and begin elevating the load so it is slightly above the trailer. When you have the load over the trailer, tilt the load forward until it becomes level. Slowly lower the load until it rests on the trailer surface. After the load is firmly on the trailer surface, slowly back the forklift away and proceed to the next pallet to be loaded.

Step 5: Download the material

Proceed to the trailer and raise the forks. This usually requires a spotter due to poor visibility.

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Step 6: Lift the load

After the forks are under the pallet, engage the clutch cutout. Accelerate slightly and pull back on the lift control to raise the load, then pull back on the tilt control to keep the load from tipping.

Step 7: Transport the load

Follow step 3.

Step 8: Place the material

Place the material on the ground. Make sure that when you place the material, it has some dunnage under it. This will keep the pallet raised off of the ground and allow the forks to easily back out from underneath the pallet. When moving the load again, you will have easy access to get underneath the pallet.

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Review Questions
for
Load/Unload Material
Transport Material

Question	Answer
1. When a loader is equipped with forks, it is considered to be a forklift.	a. True b. False
2. The maximum load capacity for forks is rated by the _____.	a. maximum load of the fork attachment b. total load at the end of the fork tips c. maximum load of the loader d. maximum load for the tires
3. How should you travel when transporting a load?	a. Make sharp turns to compensate for shifting of the load b. Just high enough to go over obstacles c. 18 to 24 inches off the ground d. As high as possible

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LOAD/UNLOAD MATERIAL

TRANSPORT MATERIAL

Performance Checklist		
Step	**Yes**	**No**
1. Positioned the forks?		
2. Lifted the load?		
3. Transported the load?		
4. Placed the load?		
5. Downloaded the material?		
6. Lifted the load?		
7. Transported the load?		
8. Placed the load?		

FEEDBACK: Trainer should provide both positive and/or negative feedback to the trainee immediately after the task is performed. This will ensure the issue is still fresh in the mind of both the trainee and trainer.

Notice. This AFQTP is *NOT* intended to replace the applicable technical references nor is it intended to replace hands-on training. It is to be used in conjunction with these for training purposes only.

WHEEL MOUNTED FRONT-END LOADERS

(OPTIONAL)

MODULE 15 **AFQTP UNIT 2**

CHANGE ATTACHMENTS ON FRONT-END LOADERS (15.2.6.)

Notice. This AFQTP is *NOT* intended to replace the applicable technical references nor is it intended to replace hands-on training. It is to be used in conjunction with these for training purposes only.

CHANGE ATTACHMENTS ON FRONT-END LOADERS

Task Training Guide

STS Reference Number/Title:	15.2.6. Change Attachments on Front-end Loader
Training References:	• Specific Operator's Manual • Local operating procedures
Prerequisites:	• Possess as a minimum a 3E231 AFSC
Equipment/Tools Required:	• Front-end /forks/boom/plow bucket if on site • Personal Safety Equipment
Learning Objective:	• The trainee should learn how to change attachments on a front-end loader
Samples of Behavior:	• The trainee will demonstrate the proper procedures in changing attachments on a front-end loader
Notes:	
This area is optional and available to use as a lesson plan when training on this non-core task	

Notice. This AFQTP is *NOT* intended to replace the applicable technical references nor is it intended to replace hands-on training. It is to be used in conjunction with these for training purposes only.

CHANGE ATTACHMENTS ON FRONT-END LOADERS

Background: The front-end loader has many different attachments that can be mounted on the front. There are certain procedures for each different loader. The operator's manual will tell you exactly how to use the quick coupler system. Use extreme caution while hooking up attachments. Hoses, or even worse, a person's limbs could be pinched while coupling. This example step will go from a loader with a bucket to hooking up the fork attachment.

To perform this task, follow these steps:

Step 1: Disconnect hydraulic hoses
Turn off the loader. Move the clamshell lever back and forth several times to bleed the pressure off the clamshell hoses. Disconnect hydraulic lines.

SAFETY:
IF YOU DON'T BLEED THE HOSES, THE PRESSURE WILL NOT ALLOW FOR RECONNECTION OF THE NEW ATTACHMENT. REMEMBER THAT WHILE BACKING, YOU STILL MUST LOOK OVER BOTH SHOULDERS FOR OBSTRUCTIONS. USE EXTREME CAUTION!!!

Step 2: Release the bucket retaining pins
Take a few minutes to look at the operator's manual. There should be a switch or lever that will let the bucket pins release. It is better to have the bucket a couple inches of the ground to make sure there is no pressure on the pins.

Step 3: Disconnect the bucket
While backing up, slowly tilt the bucket forward and let the boom fall slowly until the quick coupler is free.

Step 4: Connect forks
Insert the quick coupler into the back of the forks and slowly roll back until the attachment is flush with the frame of the loader. Pick up the attachment and engage the retaining pins. Roll the forks forward until there is pressure. The front tires of the loader should rise almost off the ground. This means the pins have completely engaged.

Step 5: Connect the hydraulic lines
Turn the loader off again and move the clamshell lever to relieve the pressure. Inspect the hydraulic ends for dirt and sand, clean as needed, connect the hydraulic lines; do not hammer the ends to relieve pressure. With the engine off, engage lever to release backpressure. This will prevent damage to the hose connectors.

Step 6: Test the hydraulic connections
Start the loader and move the clamshell hydraulic lever forward under low idle. If the connection seems to be sealed, increase the throttle to full and inspect the connections. Do the same for the reverse position of that lever.

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Review Questions
for
Change Attachments on Front-end Loader

Question	Answer
1. Why should you release the hydraulic pressure before disconnecting the hoses?	a. The seal on the connection will go bad b. The attachment will not reconnect c. The hydraulic filter will explode d. To keep dirt out
2. All loaders change attachments alike.	a. True b. False

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CHANGE ATTACHMENTS ON FRONT-END LOADER

Performance Checklist		
Step	**Yes**	**No**
1. Disconnected hydraulic hoses?		
2. Released the bucket retaining pins?		
3. Disconnected the bucket?		
4. Connected forks?		
5. Connected hydraulic hoses?		
6. Tested hydraulic connections?		

FEEDBACK: Trainer should provide both positive and/or negative feedback to the trainee immediately after the task is performed. This will ensure the issue is still fresh in the mind of both the trainee and trainer.

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TRACTOR-TRAILER COMBINATIONS

MODULE 15 **AFQTP UNIT 4**

PERFORM OPERATIONAL CHECKS (15.4.1.)

PERFORM OPERATORS MAINTENANCE (15.4.2.)

Notice. This AFQTP is *NOT* intended to replace the applicable technical references nor is it intended to replace hands-on training. It is to be used in conjunction with these for training purposes only.

PERFORM OPERATIONAL CHECKS
PERFORM OPERATORS MAINTENANCE

Task Training Guide

Number/Title:	15.4.1. Perform Operational Checks 15.4.2. Perform Operators Maintenance
Training References:	• AFJMAN 24-306 • 36A2, 36A9-2, 36A-12, 36C9, 36C12, 36C15, 36C26, 36Y9 Series • Owner's Manual • Local Procedures
Prerequisites:	• Possess as a minimum a 3E231 AFSC
Equipment/Tools Required:	• Tractor-Trailer • Personal Protective Equipment • General Tool Kit • AF Form 1800
Learning Objective:	• The trainee will be able to properly check out a tractor-trailer and perform operator's maintenance
Samples of Behavior:	• The trainee will check out a tractor-trailer and perform operators' maintenance
Notes:	
• Any safety violation is an automatic failure	

Notice. This AFQTP is *NOT* intended to replace the applicable technical references nor is it intended to replace hands-on training. It is to be used in conjunction with these for training purposes only.

PERFORM OPERATIONAL CHECKS

PERFORM OPERATORS MAINTENANCE

Background: The truck-tractor and semi-trailer are separate units that are joined together by the fifth wheel. The fifth wheel consists of two metal plates, one on the tractor, and one on the semi-trailer. The upper fifth wheel, with its kingpin mounted on the semi-trailer, and the lower fifth wheel, with its locking jaws attached to the tractor, forms a flexible coupling that permits both rotational and vertical movements between the tractor and semi-trailer. When not attached to the tractor, the front-end of the semi-trailer is supported by a retracting landing gear.

Truck-tractors normally range in size from 5 to 20 tons. The size range depends on the size and type of semi-trailers available for use in vehicle operations. Another factor is the normal size and weight of the equipment that is to be handled on or off base. Although the size of the tractors may vary, their operation is basically the same. Each truck tractor has a data plate attached to the dashboard. Refer to this data plate to determine operating range and load capacity of the tractor. Usually, a tractor and semi-trailer are used for general cargo transportation, but some are procured for special purposes, such as recovering wrecked and damaged aircraft. Semi-trailers are procured for both general cargo and heavy machinery. Sometimes a van type of semi-trailer is insulated and equipped with refrigeration equipment. Such a van is used to transport perishables or sensitive instruments.

To perform this task, follow these steps:

Step 1: Utilizing AF Form 1800

Check all the items listed that pertain to the tractor-trailer.

Step 2: Vehicle Exterior

Inspection of the vehicle exterior begins with a 360-degree walk around looking for damage and leaks. Check the tires for wear, lug nut tightness, and correct tire air pressure. Check the mirrors for cleanliness and cracks. Drain any built-up condensation from the air tanks.

> **HINT:**
> Puddles of fluid and dirty areas on the engine or ground normally indicate problem areas and should be investigated and repaired as soon as possible.

Step 3: Drive Engine Compartment

Check the engine oil, coolant, brake, power steering and transmission fluid levels, and fill as needed. Inspect the drive belts for tension and alignment. Ensure the battery connections are secure and free from corrosion.

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Step 4: Tractor Unique Items

The following are items unique to the tractor-trailer and are not listed on the AF Form 1800, but must be checked during the pre-operational inspection. Add them to the AF Form 1800 in the spaces provided for additional items. Check for safety items such as reflective triangles and fire extinguishers. Inspect the fifth wheel, ensuring they are open and adequately greased. Inspect the airlines and electrical jumper cable for signs of abrasion, cracks, or other damage.

Step 6: Trailer Unique Items

Inspect tie-down points for broken welds, bent rods, or rings. Check condition of glad hand rubber seals. Inspect kingpin for damage. Check condition of deck material and landing gear.

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Review Questions
for
Perform Operational Checks
Perform Operators Maintenance

Question	Answer
1. The kingpin is a part of the tractor's fifth wheel assembly.	a. True b. False
2. Which of the following are inspection items for the trailer?	a. Rings b. Bent rods c. Broke welds d. All the above
3. Tractors normally range from the ___ to ___ ton size.	a. 5; 10 b. 5; 15 c. 5; 20 d. 2; 25
4. The Air Force Form _____ is used as a guide for tractor-trailer inspection.	a. 171 b. 373 c. 1800 d. 1806

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PERFORM OPERATIONAL CHECKS
PERFORM OPERATORS MAINTENANCE

Performance Checklist		
Step	**Yes**	**No**
1. Utilized AF Form 1800 as an inspection guide?		
2. Inspected vehicles exterior?		
3. Inspected air and brake lines?		
4. Inspected fifth wheel and kingpin?		

FEEDBACK: Trainer should provide both positive and/or negative feedback to the trainee immediately after the task is performed. This will ensure the issue is still fresh in the mind of both the trainee and trainer.

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OPERATE

MODULE 15 **AFQTP UNIT 4**

COUPLE/UNCOUPLE TRAILER (15.4.3.1.)

Notice. This AFQTP is *NOT* intended to replace the applicable technical references nor is it intended to replace hands-on training. It is to be used in conjunction with these for training purposes only.

COUPLE/UNCOUPLE TRAILER

Task Training Guide

STS Reference Number/Title:	15.4.3.1. Couple/Uncouple Trailer
Training References:	• AFJMAN 24-306 • 36A2, 36A9-2, 36A-12, 36C9, 36C12, 36C15, 36C26, 36Y9 Series • AFQTP Video PIN #613861, Tractor Trailer – Couple and Uncouple Trailer • Owner's Manual • Local Procedures
Prerequisites:	• Possess as a minimum a 3E231 AFSC
Equipment/Tools Required:	• Tractor-Trailer • Personal Protective Equipment • AF Form 1800
Learning Objective:	• The trainee will be able to properly couple/uncouple a tractor-trailer
Samples of Behavior:	• The trainee will properly couple/uncouple a tractor-trailer.
Notes:	
• Any safety violation is an automatic failure	

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COUPLE/UNCOUPLE TRAILER

Background: The normal safety precautions should be followed with both coupled and uncoupled trailers.

Coupling the Semi-trailer

- ***To perform this task complete: Video, PIN # 613861, Tractor Trailer – Couple and Uncouple Trailer and follow these steps:***

Step 1: Block the rear wheels of the semi-trailer

Step 2: Position tractor

Position tractor ahead of and in line with the semi-trailer and back the tractor slowly to the nose of the semi-trailer. Make sure that the kingpin on the semi-trailer is in line with the fifth wheel jaw on the tractor.

Step 3: Check fifth wheel/trailer height

Just before the upper coupler plate (fifth wheel) of the semi-trailer starts to ride on the lower fifth wheel, stop the tractor. Check the height of the semi-trailer fifth wheel plate to assure that it is the proper height to align with the tractor fifth wheel coupler. If not, raise or lower the front of the semi-trailer as needed.

Step 4: Connect tractor-trailer together

Be sure that the lower fifth wheel locking handle is in the OPEN position. Back the tractor until the fifth wheel has picked up the front of the trailer and the landing gear wheels are off the ground. The tractor should now be backed under the trailer with a faster and more forceful motion until the jaws of the lower fifth wheel automatically lock around the kingpin on the trailer. This will throw the lower fifth wheel locking handle into the CLOSED position. Make certain that the coupling is secure by trying to pull the tractor forward with the semi-trailer brakes set and visually check the connection.

Step 5: Connect service line and brake line

Connect the brake lines of the tractor to the semi-trailer. The coupling of the tractor line marked SERVICE must be connected to the coupling bearing a like tag on the semi-trailer. If connected properly, the airlines will be crossed. Then, apply the trailer brakes by pulling down on the steering column brake lever in the tractor cab. Release the tractor and trailer parking brakes. This helps to prevent the trailer from moving when the tractor is backed under it.

Step 6: Connect electrical jumper cable

Operate the lights from the tractor to make certain that all are in working order.

Step 7: Raise landing gear and secure chock blocks

Notice. This AFQTP is *NOT* intended to replace the applicable technical references nor is it intended to replace hands-on training. It is to be used in conjunction with these for training purposes only.

Uncoupling the semi-trailer

To perform this task, follow these steps:

Step 1: Correctly block the wheels on one side of the semi-trailer

Step 2: Lower landing gear

Step 3: Place fifth wheel handle in the open position

Step 4: Uncouple air brake lines and disconnect electrical jumper cable

The semi-trailer brakes automatically set when emergency airline is uncoupled.

Step 5: Pull tractor forward.

Drive the tractor forward until the semi-trailer is free and rests on the landing gear. Pull the tractor out slowly to prevent dropping the weight of the trailer suddenly on the landing gear if the gear is not in full contact with the ground.

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Review Questions
for
Couple/Uncouple Trailer

Question	Answer
1. The airline hoses will be crossed if properly connected.	a. True b. False
2. The first step in coupling is blocking the rear wheels.	a. True b. False
3. If the emergency airline is uncoupled, the trailer brakes are automatically engaged.	a. True b. False

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COUPLE/UNCOUPLE TRAILER

Performance Checklist		
Step	**Yes**	**No**
1. Rear wheels of semi-trailer blocked?		
2. Correctly positioned tractor?		
3. Inspected for trailer fifth wheel/trailer height?		
4. Connected tractor-trailer together?		
5. Connected airlines?		
6. Connected electrical jumper cable?		
7. Raised landing gear and secured chock blocks?		
8. Correctly blocked wheels and lowered landing gear?		
9. Placed fifth wheel in open position?		
10. Disconnected air brakes and electrical jumper cable?		
11. Pulled tractor forward?		

FEEDBACK: Trainer should provide both positive and/or negative feedback to the trainee immediately after the task is performed. This will ensure the issue is still fresh in the mind of both the trainee and trainer.

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OPERATE

MODULE 15 **AFQTP UNIT 4**

LOAD/UNLOAD CONSTRUCTION EQUIPMENT (15.4.3.2.)

LOAD/UNLOAD CONSTRUCTION MATERIALS (15.4.3.3.)

SECURE EQUIPMENT USING CHAINS/ BINDERS (15.4.3.4.1.)

SECURE MATERIALS USING CARGO STRAPS (15.4.3.4.2.)

Notice. This AFQTP is *NOT* intended to replace the applicable technical references nor is it intended to replace hands-on training. It is to be used in conjunction with these for training purposes only.

LOAD/UNLOAD CONSTRUCTION EQUIPMENT

LOAD/UNLOAD CONSTRUCTION MATERIALS

SECURE EQUIPMENT USING CHAINS AND BINDERS

SECURE MATERIALS USING CARGO STRAPS

Task Training Guide

STS Reference Number/Title:	15.4.3.2. Load/Unload Construction Equipment 15.4.3.3. Load/Unload Construction Materials 15.4.3.4.1. Secure Equipment using Chains and Binders 15.4.3.4.2. Secure Material using Cargo Straps
Training References:	• AFJMAN 24-306 • 36A2, 36A9-2, 36A-12, 36C9, 36C12, 36C15, 36C26, 36Y9 Series • Owner's Manual • Local Procedures •
Prerequisites:	• Possess as a minimum a 3E231 AFSC
Equipment/Tools Required:	• Tractor-Trailer • Personal Protective Equipment • Chains, Binders, and Cargo Straps
Learning Objective:	• The trainee will be able to properly secure materials and equipment on a tractor-trailer
Samples of Behavior:	• The trainee will properly secure materials and equipment on a tractor-trailer
Notes:	
• Any safety violation is an automatic failure	

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LOAD/UNLOAD CONSTRUCTION EQUIPMENT

LOAD/UNLOAD CONSTRUCTION MATERIALS

SECURE EQUIPMENT USING CHAINS AND BINDERS

SECURE MATERIALS USING CARGO STRAPS

Background: As a tractor-trailer operator, you must have an understanding of basic procedures and safety rules used when transporting construction materials and equipment. Improper loading of any load can be a danger to you and others. Damage can occur to the tractor-trailer, causing steering problems to the tractor. The operator, whether or not you loaded and secured the load yourself, is responsible to inspect the load, recognize overloads and poorly balanced weight, and to ensure that the load is properly tied, strapped, or chained down and covered, if required to prevent the load from shifting.

Vehicle Weight Definitions: The operator is responsible for knowing how much weight is loaded on the tractor-trailer and knowing the total weight of both the unit and cargo. The terms used for vehicle weights are as follows:

- **Payload allowance or payload** - maximum weight of material that can be transported.
- **Gross vehicle weight (GVW)** - total weight of a single vehicle plus its load.
- **Gross combination weight (GCW)** - total weight of a powered unit including the trailer(s) and cargo.
- **Gross vehicle weight rating (GVWR)** - maximum GCW specified by the manufacturer for a specific combination of vehicles, including the load.
- **Curb weight** - total weight of an empty truck with the fuel tank, cooling system, and crankcase filled. Additionally, it includes the weight of tools, spare tire, and all other equipment specified as standard. However, this weight does not include the weight of the payload and operator.
- **Axle weight** - weight transmitted to the ground by one axle or one set of axles.
- **Tire load** - maximum safe weight a tire can carry at a specified pressure. This rating is stated on the side of each tire.
- **Suspension systems -** have a manufacturer's weight capacity rating.
- **Coupling device capacity** - rated for the maximum weight they can pull and/or carry.

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Operating Conditions: The maximum payload of a truck is determined by subtracting the curb weight and weight of the driver (175 pounds) from the manufacturer's gross vehicle weight rating. The maximum gross vehicle weight rating for a specified operating condition applies only when tires and equipment on the truck are according to the manufacturer's recommendations for the specified operating condition; that is, ideal, moderate, or severe.

- **Ideal condition** - when a truck is operated over improved, level roads, such as asphalt or concrete, at constant, relatively moderate speeds with no adverse weather or road conditions. Under these conditions, recommended payload equals 100 percent of maximum permissible payload.
- **Moderate condition** - when a truck is operated at high speeds over improved highways, such as asphalt or concrete, with or without long steep grades. Moderate conditions also include operating at moderate speeds over semi-improved roads with gravel or equivalent surfacing, in gently rolling country with few steep grades and no adverse weather or road conditions. Under these conditions, recommended payload equals 80 percent of maximum permissible payload.
- **Severe condition** - when the vehicle is operated off the highway, on rough or hilly terrain, over unimproved or pioneer access roads with deep ruts, holes, or steep grades. These conditions also include operating where traffic has created deep holes or ruts in heavy snow, covering normally good city streets or highways. Under these conditions, the recommended payload equals 64 percent of the maximum permissible payload.

Weight Distribution: Distribution of cargo has a definite bearing on the life of tires, axles, frame and other parts of the vehicle. The fact that a truck or trailer is not loaded beyond its gross vehicle weight capacity does not mean that the individual tires and axles may not be overloaded by faulty distribution of the cargo. Additionally, some states have maximums for GVW, GCW, and axle weights. Axle weights prevent the overloading of bridges and roadways. Some examples of proper and improper placement of loads are shown in Figure 1.

To load a tractor-trailer properly, you have to determine the center of the payload. In the unit, the position of the center of the payload is roughly center of the trailer body, because the front wheels of the tractor seldom carry any of the payload. When you are loading, ensure that the maximum capacity of the vehicle is not exceeded over any one axle and, if possible, the load is distributed so there is less than maximum axle loading. Examples of approximate distribution of total weight are shown in Figure 1.

The payload weight must be distributed over the body properly so the percentage of weight carried by the front axle and that carried by the rear axle equals the ratio for which the vehicle was designed, as shown in Figure 1.

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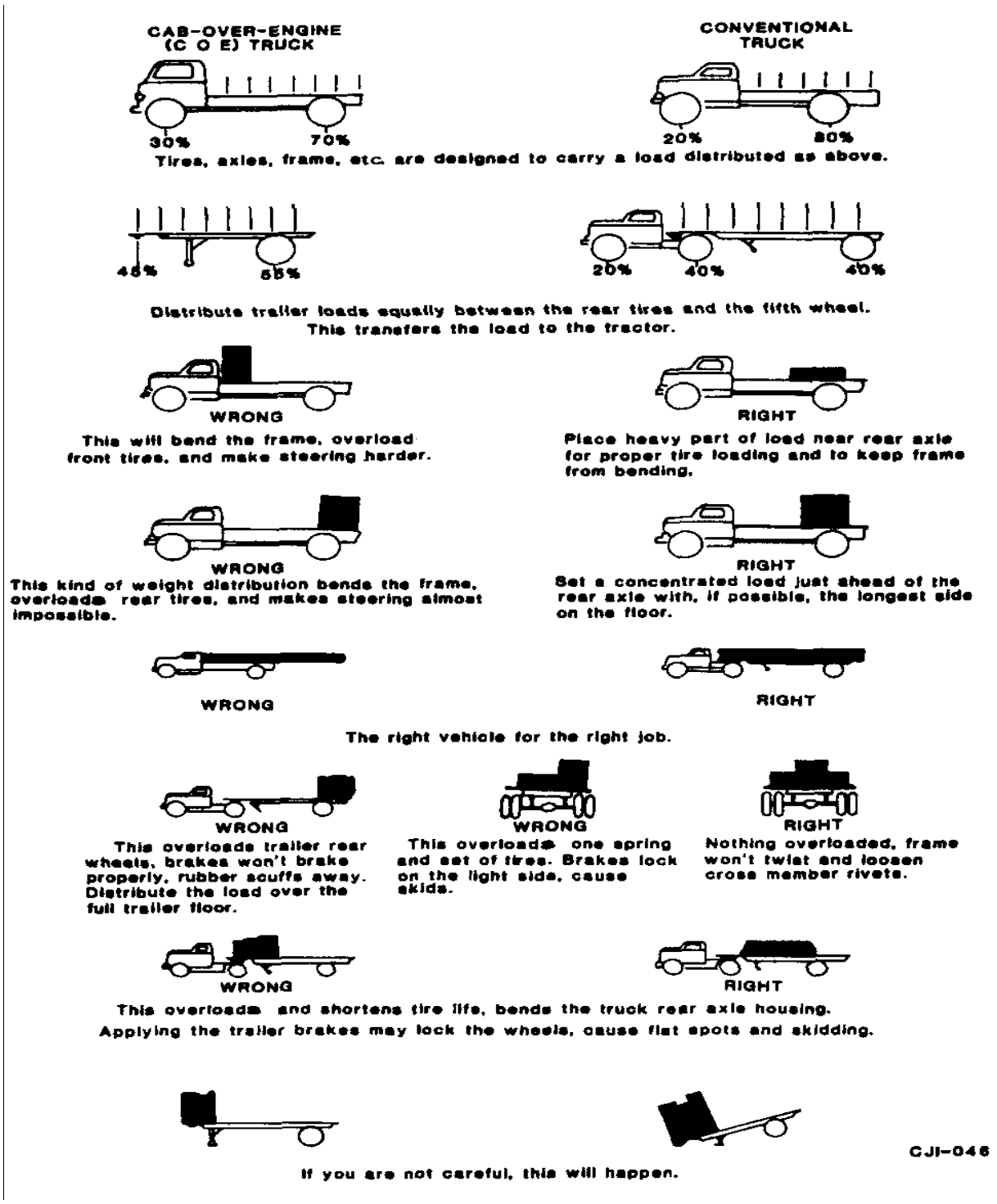

Figure 1, Correct Placement of Payload

Loading Cargo: The tractor-trailer can be adapted to transport various types of materials, such as fragile, bulky, compact, dense, rough and high center-of-gravity items. To accommodate a variety of items, you must plan the load, properly prepare the tractor-trailer, and secure the load to the vehicle. Securing the load by restraining it with proper lines, cargo straps, chains, or fastened by tie-down or binders should keep it from shifting or falling off the vehicle. Should a load fall from a vehicle, it is going to damage the load, and create a hazard, until it is cleaned/. Protect fragile items from damage by chafing (rubbing together) with cardboard, paper, cloth, or other filler material.

Loading Equipment: Loading equipment onto a trailer is dangerous. In most cases, the equipment will be just as wide as the trailer with little room for error. Always use a guide to ensure that the equipment is on the trailer straight and that you do not run it off the trailer.

Regardless of what type of equipment you are loading or what type of trailer you are using, the following general rules apply:

- Have the equipment in line with the trailer and transmission of the equipment you are loading placed in low gear. Increase the throttle of the vehicle just high enough power to load the vehicle on the trailer.
- Watch and follow your spotter.
- Do not steer sharply.
- Do not stop except for an emergency.
- For crawler machines only, move slowly at the top of the ramp or a jarring fall can result when the machine is past the balance point.
- Center equipment on trailer to load the truck-tractor and trailer axles evenly.

Securing Cargo: Regardless of what type of truck you are operating, material you are hauling, or how far you are hauling it, you must secure your load from falling or shifting. When a load shifts, the weight of the load has moved also. This could cause an axle to be overloaded and mechanical failure to occur.

Certain conditions can cause cargo being transported to shift; however, almost all cargo movement can be controlled with the use of proper blocking and bracing. Blocking is used in the front, back, and/or sides of a piece of cargo to keep it from sliding. Blocking should be shaped to
fit snugly against the cargo and should be secured to the deck of the trailer to prevent the cargo from moving. Bracing is also used to prevent movement of the cargo. Bracing is placed from an upper part of the cargo to the floor and/or walls of the cargo compartment.

Because cargo loads have a tendency to shift, a common rule of thumb is to inspect the cargo and the securing devices before departing and within 25 miles after beginning the trip. Always check the cargo and securing devices as often as necessary during a trip to keep the load secured. Inspect the cargo and securing devices after you have driven for three hours or 150 miles and after every break taken during the trip.

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When loading steel, lumber, or anything that must be unloaded with a forklift or crane, you should place 4" by 4" dunage or pallets under the load. This aids in getting forks or cables in and out from under the load.

Loads must be secure enough to prevent movement in any direction, which means movement forward, aft, vertically, and horizontally. When securing loads, place tie-downs in a symmetrical pattern, as shown in Figure 2.

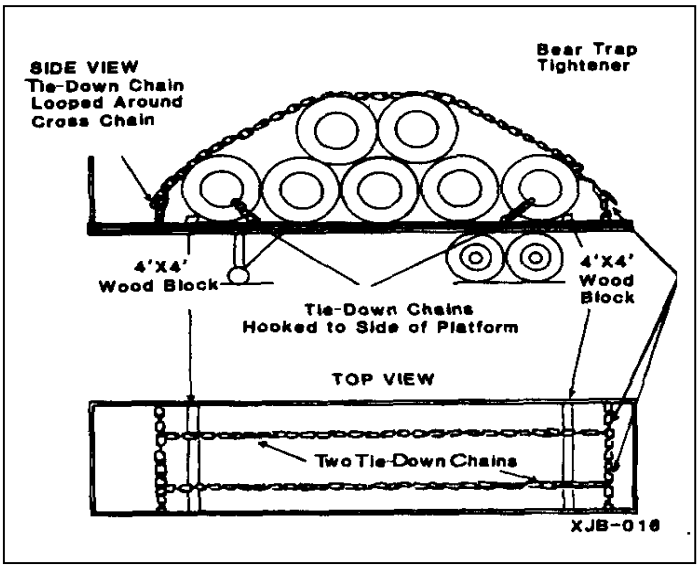

Figure 2, Loading and Securing Drums on Vehicle Bed Diagram.

A tie-down assembly must have a safe working load (SWL) of 1 1/2 times the weight of the load to be restrained. For example, to restrain a crawler tractor weighing 55,000 pounds, you need a tie-down assembly for 82,500 (55,000 X 1.5 = 82,500). This means you need eight 1/2 inch chains with an SWL of 11,000 pounds each and eight binders with 1/2 hooks.

On flatbed or lowboy trailers without sides, cargo must be secured to the trailer to keep it from shifting and falling off. In closed van trailers, tie-downs can also prevent cargo from shifting that may affect the handling of the vehicle. Tie-downs must be proper type and strength. The combined strength of all tie-downs must be strong enough to lift 1 1/2 times the weight of the piece of cargo tied down.

Chains make up most of our tie-down assemblies. The sizes of chain normally used by the Air Force are 3/8 and 1/2 inch. They are made from class A type alloy steel. Know the safe working load of any chain before you use it.

Chains used for restraints should have grab hooks on both ends. Attach hook into the chain as close as possible to the tie-downs on the trailer and on the equipment. This prevents the chain from getting slack once the binder is attached and closed.

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Binders are chain-tightening devices that are made of steel with swivels, chain hooks, and a lever. You hook one of the binder hooks on the chain near the trailer deck and the other higher up the chain near the load. Pulling the lever down tightens the chain. A 3-inch diameter, 3-foot-length pipe, commonly known by the term "cheater bar" is normally used on the lever to provide more leverage when closing the binder.

NOTE:
When you are closing and opening the lever, do not put your head or arm in line with the lever. If you lose your grip, the lever will open and hit you.

Assume equipment has been loaded as described earlier in this chapter. Place your tie-down assemblies to the correct tie-down on the equipment. Be sure you do not put a chain around any hydraulic, fuel, or brake lines, because they will be crushed when the binders are closed. Ensure you secured all movement symmetrically so that the equipment cannot move forward, aft, vertically, or horizontally.

Oversize and overweight loads require special permits. Driving is usually limited to certain times of the day and requires special equipment, such as "wide load" signs, flashing materials, flags, police escort or pilot vehicles bearing warning signs and/or flashing lights.

NOTE:
Weight, height, and width limitations are set forth by each state. Always know the height, weight, and width of the load you are pulling and the regulations for the state(s) you are to operate in.

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Review Questions
For
LOAD/UNLOAD CONSTRUCTION EQUIPMENT
LOAD/UNLOAD CONSTRUCTION MATERIALS
SECURE EQUIPMENT USING CHAINS AND BINDERS
SECURE MATERIAL USING CARGO STRAPS

Question	Answer
1. Cargo shifting can be controlled by _____.	a. building a wooden frame around the load b. the use of proper blocking and bracing c. checking the load every 25 miles, regardless of the length of the trip d. taking smaller loads
2. Chains being used for restraints should not have grab hooks on both ends.	a. True b. False
3. Over weight loads can be hauled by _____.	a. driving slow with your flashers on b. using a police escort c. driving at night when weight stations are closed d. obtaining a special permit
4. Who is responsible for the load on a tractor-trailer?	a. Tractor-Trailer Operator b. Forklift Operator c. Spotter d. Shotgun
5. Which response best describes Gross Combination Weight?	a. Total weight of a single vehicle plus its load b. Maximum weight of material that can be transported c. Total weight of a powered unit including the trailer(s) and cargo d. Total weight of an empty truck with the fuel tank, cooling system, and crankcase filled
6. There are _____ type(s) of specified operating conditions.	a. 4 b. 3 c. 2 d. 1
7. The restraint safe working load for a 55,000-pound crawler tractor is _____ pounds.	a. 75,000 b. 77,500 c. 80,000 d. 82,500

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LOAD/UNLOAD CONSTRUCTION EQUIPMENT
LOAD/UNLOAD CONSTRUCTION MATERIALS
SECURE EQUIPMENT USING CHAINS AND BINDERS
SECURE MATERIAL USING CARGO STRAPS

Performance Checklist		
Step	**Yes**	**No**
1. Inspected the load?		
2. Knew total weight of load?		
3. Properly distributed load?		
4. Properly secured load?		
5. Utilized guide when loading trailer?		
6. Utilized adequate securing devices?		
7. Used securing devices correctly?		

FEEDBACK: Trainer should provide both positive and/or negative feedback to the trainee immediately after the task is performed. This will ensure the issue is still fresh in the mind of both the trainee and trainer.

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OPERATE

MODULE 15 **AFQTP UNIT 4**

BACKING (15.4.3.5.)

OVER THE ROAD (15.4.3.6.)

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BACKING

OVER THE ROAD

Task Training Guide

STS Reference Number/Title:	15.4.3.5. Backing 15.4.3.6. Over the Road
Training References:	• AFJMAN 24-306 • 36A2, 36A9-2, 36A-12, 36C9, 36C12, 36C15, 36C26, 36Y9 Series • Owner's Manual • Local Procedures
Prerequisites:	• Possess as a minimum a 3E231 AFSC
Equipment/Tools Required:	• AF Form 1800 • Tractor-Trailer • Personal Protective Equipment
Learning Objective:	• The trainee will be able to properly back and operate a tractor-trailer over the road
Samples of Behavior:	• The trainee will properly back and operate a tractor-trailer over the road
Notes:	
• Any safety violation is an automatic failure	

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BACKING
OVER THE ROAD

Background: Operation of the tractor and trailer is much more difficult than most other vehicles. Allowances must be made for the added length when turning, backing, and passing other vehicles. Space for maneuvering this large vehicle into position for loading and unloading must be considered.

To perform this task, follow these steps:

Step 1: Backing

When backing a tractor-trailer combination, reverse the procedures that are used to back a straight truck. For example, if you want the trailer to go to the left, turn the steering wheel to the right.

After the trailer is headed in the desired direction, turn the steering wheel slowly to the left. This puts the tractor in the same line of travel as the trailer and prevents the tractor and trailer from jackknifing. The term "jackknife" means a condition where the tractor and trailer become jammed together at an acute angle.

Backing the semi-trailer to the left is known as "sight side" backing and is the method recommended whenever possible. When backing to the left, you have a better view of the area into which you are backing.

Step 2: Steering

When making a turn with the tractor and trailer, you must allow for the overall length of the unit. Keep in mind that this unit is "hinged" in the middle and that the trailer has a tendency to cut the corners rather than follow the tractor. For this reason, it is necessary to make a wider turn than when turning with a straight truck.

However, on a right turn, the unit should be kept close enough to the road edge to eliminate the possibility that a following vehicle might attempt to pass on the right. When preparing for the turn, pull straight ahead into the intersection; continue until the turn can be made without the trailer wheels running over the curb or off the road on the inside corner.

Step 3: Foot Brakes

In normal operation, the foot or service brakes alone are used since they control the tractor and trailer simultaneously. The most efficient braking power is at the point just before the brakes lock up.

The trailer brakes can be controlled independently of the tractor brakes. This is done with a lever usually mounted on the steering column. You must exercise care when applying the trailer brakes so that you do not pull the lever too far and lock the wheels.

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Braking in a emergency or under hazardous road conditions, such as steep grades or slippery surfaces, creates the most difficult situation to maintain control and stopping of your tractor and semi-trailer unit.

Step 4: Hand Brakes

The use of the semi-trailer handbrake or "Johnson Bar" first in these situations is critical, as the operator is not able to judge how much pressure to apply to the handbrake before the wheels of the trailer become locked. The amount of pressure to apply will vary because of road condition and gross vehicle weight. Skidding tires caused by locked trailer brakes will not allow you control of the trailer. The use of the trailer handbrake and the tractor foot brakes simultaneously to align and control both units during emergencies or under hazardous condition requires the touch of an expert operator. The semi-trailer handbrake should never be applied alone to stop the tractor/trailer unit. The best use of the semi-trailer brakes is for coupling and uncoupling, and preventing rollback when stopped on an incline.

Step 5: Jacob's Brake

Some tractors are equipped with an engine brake, also known as the Jacob's or Jake Brake. The engine brake is applied using a switch located on the dashboard. The engine brake is used when driving in mountainous terrain or descending steep grades. The engine brake opens the exhaust valves to the engine, which causes decompression in the engine and slows the vehicle.

Step 6: Parking

When you park a tractor-semi-trailer combination, do not depend solely upon the airbrakes to hold the vehicle. Place chock blocks before or behind the drive wheels, as required, to keep the wheels from rolling if the unit is to be left unattended.

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Review Questions
for
Backing
Over the Road

Question	Answer
1. Allowances must be made for _____ other vehicles.	a. turning b. backing c. passing d. All the above
2. When backing a tractor-trailer combination, reverse the procedures that are used to back a straight truck.	a. True b. False
3. When making turns in tractor-trailer combinations, what must be allowed for?	a. Width b. Height c. Length d. All of the above
4. The engine brake is also referred to as the _____.	a. Semi-trailer handbrake b. Jacob's Brake c. Johnson Bar d. Foot brake

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BACKING AND OVER THE ROAD

Performance Checklist		
Step	**Yes**	**No**
1. Correctly backed a tractor-trailer?		
2. Correctly made right- and left-hand turn?		
3. Utilized service brakes correctly?		
4. Correctly utilized semi-trailer handbrake?		
5. Correctly used "Jacob's Brake" if equipped?		
6. Chocked trailer when parked?		

FEEDBACK: Trainer should provide both positive and/or negative feedback to the trainee immediately after the task is performed. This will ensure the issue is still fresh in the mind of both the trainee and trainer.

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GRADERS

MODULE 15 **AFQTP UNIT 6**

PERFORM OPERATIONAL CHECKS (15.6.1.)

Notice. This AFQTP is *NOT* intended to replace the applicable technical references nor is it intended to replace hands-on training. It is to be used in conjunction with these for training purposes only.

PERFORM OPERATIONAL CHECKS

Task Training Guide

STS Reference Number/Title:	15.6.1. Perform Operational Checks
Training References:	• Local Technical Orders • Local Procedures
Prerequisites:	• Possess as a minimum a 3E231 AFSC
Equipment/Tools Required:	• Grader • Personal safety equipment
Learning Objective:	• The trainee will be able to perform operational checks on a grader
Samples of Behavior:	• The trainee will demonstrate the proper procedures for operational checks
Notes:	

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PERFORM OPERATIONAL CHECKS

Background: There are several types of graders in the Air Force. Specific pre-operational inspection procedures will be found in the owner's manual that accompanied the equipment. It is important to properly check and service the equipment prior to operation.

To perform this task, follow these steps:

Step 1: Utilizing AF Form 1806

Check all the items listed that pertain to the grader.

Step 2: Vehicle Exterior

Inspection of the vehicle exterior begins with a 360-degree walk around looking for damage and leaks. Check the blade assembly for wear.

> **HINT:**
> Puddles of fluid and dirty areas on the engine or ground normally indicate problem areas and should be investigated and repaired as soon as possible.

Step 3: Drive Engine Compartment

Check the engine oil, coolant, transmission fluid levels, and fill as needed. Inspect the drive belts for tension and alignment. Ensure the battery connections are secure and free from corrosion.

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Review Questions
for
Perform Operational Checks

Question	Answer
1. What should you look for on a 360-degree walk around?	a. Leaks or puddles under the equipment. b. Loose lugnuts or flat tires. c. For broken parts. d. All of the above
2. Which of the following items in the drive engine compartment should be checked _____.	a. drive belts b. engine oil c. coolant d. All of the above
3. There are several types of graders in the AF inventory and all should be checked the same way.	a. True b. False

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PERFORM OPERATIONAL CHECKS

Performance Checklist		
Step	**Yes**	**No**
1. Utilized AF Form 1806?		
2. Checked vehicle exterior?		
3. Drive Engine compartment?		

FEEDBACK: Trainer should provide both positive and/or negative feedback to the trainee immediately after the task is performed. This will ensure the issue is still fresh in the mind of both the trainee and trainer.

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GRADERS

MODULE 15 **AFQTP UNIT 6**

PERFORM OPERATORS MAINTENANCE (15.6.2.)

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PERFORM OPERATORS MAINTENANCE

Task Training Guide

STS Reference Number/Title:	15.6.2. Perform Operators Maintenance
Training References:	• Owner's Manual • Local Procedures
Prerequisites:	• Possess as a minimum a 3E231 AFSC
Equipment/Tools Required:	• Grader • Personal safety equipment
Learning Objective:	• To teach trainee exactly what is needed to conduct maintenance on a grader
Samples of Behavior:	• The trainee should demonstrate all steps of this AFQTP with help from instructor only when needed
Notes:	

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PERFORM OPERATORS MAINTENANCE

Background: Grader maintenance, like any other maintenance, is very important. If the machine is not running well, then how is the job going to get done? The more effective maintenance program we have for the equipment, the better our operation will run.

Correct and timely operator maintenance ensures that the equipment will do the job when needed and it will last longer, this saves the Air Force money. A good, money saving operator maintenance program includes inspections to detect and correct minor deficiencies before they develop into major defects that could result in costly repairs. It also includes cleaning and servicing.

To perform this task, follow these steps:

Step 1: Cleaning

Clean the grader. If you have trash or dirt all over your grader, you won't be able to find lubrication points from the lube charts. It will also be hard to inspect the grader for damage or loose bolts.

Step 2: Lubrication

Lubricate the machine according to the intervals listed in the maintenance chart unless operating the machine in severe conditions. Then lubricate the machine more frequently. Be sure to remove all the dirt from the grease fittings before and after lubricating.

Step 3: Refueling

Refueling the grader is easy if it can be driven to the service station. Simply drive to the service station and fill the fuel tank. If your equipment can't be driven to the service station, you must arrange for the fuel truck to come to the job site. You should fuel your grader at the end of each working day to prevent moisture from condensing and forming droplets within the fuel tank.

Step 4: Post Operation Inspection

As stated in operational checks, inspection is the best way to ensure that you give the proper care to your equipment. Air intake breathers are of special importance. There are generally two elements: (1) the primary (outer) element and, (2) the secondary (inner) element. Under dusty operating conditions, clean both elements daily (even more often if working conditions are extremely dusty).

Step 5: Check Cutting Edges

Ensure the cutting edges are in good shape and not loose or worn excessively.

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Review Questions
for
Perform Operators Maintenance

Question	Answer
1. Why is cleaning an important part of vehicle maintenance?	a. To find lubrication points and keep dirt out of the fittings b. It is required by AF Form 1806 c. For lubrication d. It isn't important
2. Lubricate the machine on more frequent intervals during severe weather conditions.	a. True b. False
3. Why should you check the cutting edge?	a. For debris stuck in the cracks b. For excessive wear c. For reversibility d. You shouldn't
4. Ensure both the inner and outer intake breathers are cleaned _____.	a. Bi-monthly b. Weekly c. Daily d. Monthly

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PERFORM OPERATORS MAINTENANCE

Performance Checklist		
Step	**Yes**	**No**
1. Cleaned?		
2. Lubricated?		
3. Refueled?		
4. Post operations inspection?		
5. Inspected and changed cutting edges?		

FEEDBACK: Trainer should provide both positive and/or negative feedback to the trainee immediately after the task is performed. This will ensure the issue is still fresh in the mind of both the trainee and trainer.

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GRADERS

MODULE 15 **AFQTP UNIT 6**

LEVEL MATERIALS (15.6.3.4.)

MAINTAIN UNPAVED SURFACES (15.6.3.5.)

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LEVEL MATERIALS

MAINTAIN UNPAVED SURFACES

Task Training Guide

STS Reference Number/Title:	15.6.3.4. Level Materials 15.6.3.5. Maintain Unpaved Surfaces
Training References:	• AFQTP Video PIN # 613956, Grader – Level Materials and Maintain Unpaved Surfaces • Specific operators manual • Local operating procedures
Prerequisites:	• Possess as a minimum a 3E231 AFSC
Equipment/Tools Required:	• Grader • Personal safety equipment
Learning Objective:	• Should learn how to level material and maintain unpaved surfaces using a grader
Samples of Behavior:	• The trainee will demonstrate the proper procedures in leveling material and maintaining unpaved surfaces
Notes:	

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LEVEL MATERIALS

MAINTAIN UNPAVED SURFACES

Background: Leveling an area and maintaining an unpaved surface is nothing more than cutting high spots and filling the lows spots. When maintaining unpaved surfaces, try to keep the original contours and slopes. With the blade set at an angle, you can use the grader to level off irregular surfaces. You can accomplish this by lowering the blade just enough to cut the high spots. This will in turn leave a sufficient amount of cut material in front of the blade. This cut material can then be used in filling the low spots. The forward and sideward movement of the loosened material will also aid in distributing it effectively. If you leave a windrow at the trailing edge of the blade, you can pick it up on the next pass. A lighter cut can be made on the final pass. On the final pass, lift the trailing edge of the blade high enough to allow the surplus material to go under the blade rather than around it. This will avoid leaving an edge.

You can use this type of leveling to produce a smooth surface under favorable conditions. However, the material used to fill the low areas could settle or be compressed below the cut sections. To reduce the chances of this settling, a series of cuts can be made across the area to reach the bottom of the low spots. You can then take the material from the windrow or loosened material and spread it back evenly over the area. Using this method makes it easier to get a smooth surface. This is because working with a full blade of loosened material will give you a more uniform distribution allowing the surface to remain smooth after settling or rolling. Be sure you do not pile windrows in front of the rear wheels, this will affect traction and grading accuracy.

To perform this task complete: AFQTP Video PIN # 613956, Grader – Level Materials and Maintain Unpaved Surfaces and follow these steps:

Step 1: Have an approved AF Form 103

The first step is to make sure you have an approved AF Form 103 if needed. Let your supervisor know that you cannot start digging until you have one.

Step 2: Assess the job site

Take a few minutes to look at the job and get a mental picture of what you want the project to look like when its finished. Decide where you need to start (usually where the most material is). Look for any hazards in the area, specifically any culverts, cable markers etc. When grading a road it is better to do it in small sections.

Step 3: Cut and fill

Start cutting the high spots out of the area and pushing the material into the low spots. When you are cutting, try to do it in a moderate speed without lugging the engine. This will keep excessive blade movement to a minimum. It is better to level the low spots a little at a time. To do this, pick your blade up slightly, and when there is no more material, go back and get some more and repeat the step. Don't push the material into the bottom of the hole because it is harder to find the final grade.

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Review Questions
for
Level Materials
Maintain Unpaved Surfaces

Question	Answer
1. An AF Form 103 isn't always needed if the job site is far away from the main base.	a. True b. False
2. Define leveling.	a. Cutting low spots and moving it to the high spot b. Cutting high spots and filling low spots c. Keeping the grader level d. Plumbing the job site
3. When windrowing material, keep the material _____.	a. as small as possible because the grader can't push much material b. uniformed under the ripper assembly c. out from under the rear tires d. cast outside of the rear tires
4. When cutting excessive high spots it may be necessary to _____.	a. Cut below the low spot to rough the area up before final grade b. Operate faster to move more material c. Cut really deep on the first pass d. Cut by back-dragging all the excess material

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LEVEL MATERIALS
MAINTAIN UNPAVED SURFACES

Performance Checklist		
Step	**Yes**	**No**
1. Ensured you have AF Form 103?		
2. Assessed the job site?		
3. Cut and filled the area?		

FEEDBACK: Trainer should provide both positive and/or negative feedback to the trainee immediately after the task is performed. This will ensure the issue is still fresh in the mind of both the trainee and trainer.

Notice. This AFQTP is *NOT* intended to replace the applicable technical references nor is it intended to replace hands-on training. It is to be used in conjunction with these for training purposes only.

CRAWLER TRACTOR

MODULE 15 **AFQTP UNIT 8**

PERFORM OPERATIONAL CHECKS (15.8.1.)

Notice. This AFQTP is *NOT* intended to replace the applicable technical references nor is it intended to replace hands-on training. It is to be used in conjunction with these for training purposes only.

PERFORM OPERATIONAL CHECKS

Task Training Guide

STS Reference Number/Title:	15.8.1. Perform Operational Checks
Training References:	• Local technical orders • Local Procedures
Prerequisites:	• Possess as a minimum a 3E231 AFSC
Equipment/Tools Required:	• Crawler tractor • Personal safety equipment
Learning Objective:	• The trainee will be able to perform operational checks on a crawler tractor
Samples of Behavior:	• The trainee will demonstrate the proper procedures for operational checks
Notes:	
• To successfully complete this element the trainee must show the instructor that he/she knows how to completely check out a crawler tractor by his/her self	

Notice. This AFQTP is *NOT* intended to replace the applicable technical references nor is it intended to replace hands-on training. It is to be used in conjunction with these for training purposes only.

PERFORM OPERATIONAL CHECKS

Background: There are several types of crawler tractors in the Air Force. Specific preoperational inspection procedures will be found in the owner's manual that accompanied the equipment. It is important to properly check and service the equipment prior to operation.

To perform this task, follow these steps:

Step 1: Utilizing AF Form 1806

Check all the items listed that pertain to the crawler tractor.

Step 2: Vehicle Exterior

Inspection of the vehicle exterior begins with a 360-degree walk around looking for damage and leaks. Check the tracks for wear.

Step 3: Drive Engine Compartment

Check the engine oil, coolant, transmission fluid levels, and fill as needed. Inspect the drive belts for tension and alignment. Ensure the battery connections are secure and free from corrosion. Check the owner's manual to ensure you have checked all recommended items.

HINT:
Puddles of fluid and dirty areas on the engine or ground normally indicate problem areas and should be investigated and repaired as soon as possible.

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Review Questions
for
Perform Operational Checks

Question	Answer
1. What is the AF Form 1806 used for?	a. Inspecting heavy equipment b. It is not used by the Air Force c. It is used to authorize digging d. Report damage to a facility
2. On a 360-degree walk around look for _____.	a. leaks or puddles under the equipment b. loose lug nuts or flat tires c. broken part d. All of the above
3. Check all of the following items in the engine compartment except the _____.	a. drive belts b. engine oil c. transaxle d. coolant

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PERFORM OPERATIONAL CHECKS

Performance Checklist		
Step	**Yes**	**No**
1. Utilized AF Form 1806?		
2. Checked vehicle exterior?		
3. Drive Engine compartment?		

FEEDBACK: Trainer should provide both positive and/or negative feedback to the trainee immediately after the task is performed. This will ensure the issue is still fresh in the mind of both the trainee and trainer.

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CRAWLER TRACTOR

MODULE 15 **AFQTP UNIT 8**

PERFORM OPERATORS MAINTENANCE (15.8.2.)

Notice. This AFQTP is *NOT* intended to replace the applicable technical references nor is it intended to replace hands-on training. It is to be used in conjunction with these for training purposes only.

PERFORM OPERATORS MAINTENANCE

Task Training Guide

STS Reference Number/Title:	15.8.2. Perform Operators Maintenance
Training References:	• Owner's Manual • Local procedures
Prerequisites:	• Possess as a minimum a 3E231 AFSC
Equipment/Tools Required:	• Crawler tractor • Personal safety equipment
Learning Objective:	• To teach trainee exactly what is needed to conduct maintenance on a crawler tractor
Samples of Behavior:	• The trainee should demonstrate all steps of operators maintenance
Notes:	

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PERFORM OPERATORS MAINTENANCE

Background: Crawler tractor maintenance, like any other maintenance, is very important. If the machine is not running well, then how is the job going to get done? The more effective maintenance program we have for the equipment, the better our operation will run.

Correct and timely operator maintenance ensures that the equipment will do the job when needed, and last longer, saving the Air Force money. A good money saving, operator maintenance program includes inspections to detect and correct minor deficiencies before they develop into major defects that could result in costly repairs. It also includes cleaning and servicing.

To perform this task, follow these steps:

Step 1: Clean

Clean the crawler tractor. To clean the equipment on the job site, use a water truck. If you have trash or dirt all over your crawler tractor, you won't be able to find lubrication points from the lube charts. It will also be hard to inspect the crawler tractor for damage or loose bolts. Another place of importance is the area where the tracks ride over the rollers. This is a good area for rocks and mud to build up covering lube points. Rollers unable to move develop flat spots by the constantly moving tracks and may freeze in place. This area should be checked and cleaned daily. It may be necessary to take a water tanker to the job site; this saves a lot of time compared to loading and hauling your crawler tractor back to the equipment parking area.

Step 2: Lubricate

Lubricate the machine according to the intervals listed in the maintenance chart unless operating the machine in severe conditions. Then lubricate the machine more frequently. Be sure to remove all the dirt from the grease fittings before lubricating.

Step 3: Refuel

Refueling the crawler tractor is easy if it can be driven to the service station. Simply drive to the service station and fill the fuel tank. If your equipment can't be driven to the service station (you can't very well drive a crawler tractor down the street to the service station), you must arrange for the fuel truck to come to the job site. You should fuel your crawler tractor at the end of each working day to prevent moisture from condensing and forming droplets within the fuel tank. Also, this ensures that the equipment will be ready if it is needed in an emergency. Most crawler tractors will have petcocks on the bottom of the fuel tanks. Since water is heavier than diesel it will settle to the bottom. This water should be drained off every 2 or 3 days, —if working in humid areas, daily.

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Step 4: Track Adjustment

To determine proper track tension, position the crawler tractor on a hard flat surface. Then place a straightedge over the front carrier roller and idler with all slack removed from the rest of the track. Track tension should be suitable for the type of area you are working in, such as tighter for rock and looser for sand and snow. However, if the tracks are adjusted too tightly, there will be too much friction between the pins and bushings when the track links swivel as they travel around the sprocket and front idler. This friction causes the pins, bushings, links, sprocket, and idler to wear rapidly. Friction in a tight track also robs the crawler tractor of needed horsepower.

Step 5: Post Operation Inspection

As stated in operational checks, inspection is the best way to ensure that you give the proper care to your equipment. Air intake breathers are of special importance. There are generally two elements: (1) the primary (outer) element and, (2) the secondary (inner) element. Under dusty operating conditions, clean both elements daily (even more often if working conditions are extremely dusty).

Step 6: Inspecting and Changing Cutting Edges

Changing cutting edges on crawler tractors is also a part of operator's maintenance. It is your responsibility to know how to change cutting edges and to ensure that they don't wear down into the blade base. Crawler tractor blade bases cost hundreds of dollars. If worn, they must be rebuilt (built back up by welding) or replaced. Either is less expensive in comparison to replacing with a new cutting edge.

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Review Questions
for
Perform Operators Maintenance

Question	Answer
1. Always use low water pressure while cleaning a crawler tractor.	a. True b. False
2. Daily refueling is required to prevent _____.	a. premature rust on the inside of the fuel tank b. operators from refueling at night while performing stand by calls c. moisture from condensing and forming droplets within the tank d. wasting time each morning checking fuel gauges
3. When tracks are adjusted to tightly, where will excessive wear be found?	a. Pins and bushing b. Links, sprockets, and idler c. Tire and engine gaskets d. Both a and b
4. Who must change the blades when worn out?	a. Private contractor b. Vehicle maintenance technicians c. The operator d. Only experienced NCOs

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PERFORM OPERATORS MAINTENANCE

Performance Checklist		
Step	**Yes**	**No**
1. Cleaned?		
2. Lubricated?		
3. Refueled?		
4. Tracked adjustment?		
5. Post operations inspection?		
6. Inspected and changed cutting edges?		

FEEDBACK: Trainer should provide both positive and/or negative feedback to the trainee immediately after the task is performed. This will ensure the issue is still fresh in the mind of both the trainee and trainer.

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CRAWLER TRACTOR

MODULE 15 **AFQTP UNIT 8**

STOCKPILING (15.8.3.1.)

Notice. This AFQTP is *NOT* intended to replace the applicable technical references nor is it intended to replace hands-on training. It is to be used in conjunction with these for training purposes only.

STOCKPILING

Task Training Guide

STS Reference Number/Title:	15.8.3.1. Stockpiling
Training References:	• AFQTP Video PIN # 613957, Crawler Tractor Stockpiling & Leveling • 5-434, Earth moving Operations, 30 September 1992 • 5-2410-237-10, Tractor, Full Tracked, Low Speed: DED, Medium Drawbar Pull, D7GT, January 1993 • STP 5-62E12-sm-TG, Task: 051-254-1038, Sept 1995
Prerequisites:	• Possess as a minimum a 3E231 AFSC
Equipment/Tools Required:	• Crawler tractor • Personal safety equipment
Learning Objective:	• Should learn how to stockpile material using a crawler tractor
Samples of Behavior:	• The trainee will demonstrate the proper procedures in constructing a stockpile
Notes:	

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STOCKPILING

Background: When the existing ground needs to be removed and hauled away, we use a method of stockpiling to pile up the material to be moved out of the way. We do this sometimes to stockpile topsoil for other jobs.

NOTE: **Be aware of these environmental considerations.**

- While moving in off road terrain, avoid unnecessary damage to waterways or vegetation.
- Dust and exhaust created by the use of equipment also affects the environment, avoid any unnecessary equipment usage.
- Damage is caused by erosion due to rain; this erosion damage can be minimized by dressing off the work area at the end of each day.

To perform this task complete: AFQTP Video PIN # 613957, Crawler Tractor Stockpiling & Leveling and follow these steps:

Step 1: Determine the proper start point and distance from pile.

On the first pass, push the material from a designated start point to a stockpile area. Do not excavate deeper than 6 to 8 inches, while maintaining a smooth cut.

SAFETY:

- **CAUTION:**
  - **THE OPERATOR MUST BE SATISFIED THAT NO ONE WILL BE ENDANGERED BEFORE AND WHILE BACKING THE MACHINE.**
- **WARNING:**
  - **KEEP TRACTOR UNDER CONTROL AT ALL TIMES.**
  - **DO NOT NEUTRALIZE TRANSMISSION TO ALLOW THE MACHINE TO COAST.**
  - **SELECT GEAR RANGE NECESSARY BEFORE STARTING DOWN GRADE.**
  - **DO NOT CHANGE GEARS WHILE GOING DOWNHILL.**
  - **DO NOT STOP THE FORWARD MOTION OR IT WILL CAUSE THE TRACKS TO SPIN WHILE PUSHING MATERIAL**.

Step 2: Begin to build the pile

As you reach the stockpile area, begin to raise the blade one tractor length from the stockpile point letting the material fall under the blade forming a ramp at the completion of your cut.

Step 3: **Continue to push successive layers of material on top**

Push the material on successive cuts, in the same manner, working the crawler tractor from the start point all the way around the work area stockpiling material. Overlay cuts approximately 1/3 blade width to pickup windrows.

Step 4: Level area

When stockpiling, ensure the area that material is being cut from remains.

Step 5: Continue to repeat Step 2 until desired height is accomplished

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Successive cuts are made the same as in Step 2, constructing the stockpile higher on each pass until it reaches the desired height.

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Review Questions
for
Stockpiling

Question	Answer
1. Why would you need to stockpile material?	a. To prepare it for hauling away or to move it out of the way b. To subdivide the job site c. To help with traction d. Drainage
2. Stockpiling should be done _____.	a. in a close proximity to other equipment b. only with large type gravel c. during cool whether d. in layers
3. When pushing material to be stockpiled, you should _____.	a. dig as deep as you can and push to the pile b. back drag as much as possible c. keep the push area level d. push in high gear only

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STOCKPILING

Performance Checklist		
Step	**Yes**	**No**
1. Determined proper start point and distance from pile?		
2. Begin to build the pile?		
3. Continued to push successive layers of material on top?		
4. Leveled the area?		
5. Continued to repeat Step 2 until desired height is accomplished?		

FEEDBACK: Trainer should provide both positive and/or negative feedback to the trainee immediately after the task is performed. This will ensure the issue is still fresh in the mind of both the trainee and trainer.

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CRAWLER TRACTOR

MODULE 15 **AFQTP UNIT 8**

LEVELING (15.8.3.2.)

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LEVELING

Task Training Guide

STS Reference Number/Title:	15.8.3.2. Leveling
Training References:	• AFQTP Video PIN # 613957, Crawler Tractor Stockpiling & Leveling • Specific operators manual • Local operating procedures
Prerequisites:	• Possess as a minimum a 3E231 AFSC
Equipment/Tools Required:	• Crawler tractor • Personal safety equipment
Learning Objective:	• Should learn how to level material using a crawler tractor
Samples of Behavior:	• The trainee will demonstrate the proper procedures in leveling material
Notes:	

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LEVELING

Background: The crawler tractor is used to level large areas with a lot of material that needs to be moved. Leveling simply stated: is pushing high spots into low spots. The dozer blade is controlled hydraulically by a lever, which raises or lowers the blade. When becoming familiar with a new type of dozer, you should raise and lower the blade several times so you can get the feel of the blade control. Practice moving the blade up and down for short distances (1/4 inch to 1 inch). Of course, when the dozer blade is loaded with earth, it will act differently. With the added weight of material, the blade lift control reacts slower when raising the blade.

If you raise and lower the blade as much as 2 or 3 inches at a time while operating, the blade will cut an uneven surface, which the dozer must travel. The uneven surface causes the dozer to nose up and down. This causes the blade to cut more unevenly and increases the up-and-down nose action of the tractor.

To carry the load that you have on the blade, you must anticipate and compensate for the up and down movement of the front of the dozer. When the front of the dozer starts to nose up, move the control lever in the direction that lowers the blade. When the dozer starts to nose down, raise the blade far enough to compensate for the lowering of the front of the tractor. Raise and lower the blade only enough to compensate for the raising and lowering of the front of the dozer, but don't over control.

After you become an experienced operator, you will be able to raise and lower the dozer blade automatically as the front of the tractor moves up and down. You will learn to do this without giving it a great deal of thought or special attention. When you can do this it is called operating by the ***seat of your pants***.

To perform this task complete: AFQTP Video PIN # 613957, Crawler Tractor Stockpiling & Leveling and follow these steps:

Step 1: Ensure you have an AF Form 103

The first step is to make sure you have an approved AF Form 103. Let your supervisor know that you cannot start digging until you have one.

Step 2: Assess the job site

Take a few minutes to look at the job and get a mental picture of what you want the project to look like when its finished. Decide where you need to start (usually where the most material is). Look for any hazards in the area, specifically any culverts, cable markers, grade stakes, etc.

Step 3: Cut and fill the area

Start cutting the high spots out of the area and pushing the material into the low spots. When you are cutting, try to do it in the highest speed possible without lugging the engine. This will keep excessive blade movement to a minimum. It is better to level the low spots a little at a time. To do this, just pick your blade up slightly and when there is no more material go back and get some more and repeat the step. Don't push the material into the bottom of the hole because it is harder to find the final grade.

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Step 4: Back drag the area

Once the cutting and filling is done and you have a lot of loose dirt in the area, back drag the area from the high spots to the low spots. When back dragging, start the tractor in reverse, once it is moving push the blade all the way into float. When you get to the area where the material is needed, pull the blade out of float for one second and start to raise it slightly until it is just a little above the final grade. Remember that the fill area will settle and the cut are will not. Driving over the fill area will help with compaction. Continue until you get the desired result.

SAFETY:
REMEMBER WHILE BACK DRAGGING, YOU STILL MUST LOOK OVER BOTH SHOULDERS FOR OBSTRUCTIONS. ALWAYS USE EXTREME CAUTION!!!

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Review Questions
for
Leveling

Question	Answer
1. An AF Form 103 isn't always needed if the job site is far enough away from the main base?	a. True b. False
2. What does operating by the seat of your pants mean?	a. When you can compensate up and down blade control without giving it much thought b. You have never operated a crawler tractor before c. When the terrain is really rough and bumpy d. It is a term for a hotshot operator
3. Leveling is done by pushing dirt from the low spot onto the high spots of an area.	a. True b. False
4. Avoid back dragging; it could damage the crawler tractor blade.	a. True b. False
5. Never put the blade in float, because it will cause uneven surfaces.	a. True b. False

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LEVELING

Performance Checklist		
Step	**Yes**	**No**
1. Ensured you have an AF Form 103?		
2. Assessed the job site?		
3. Cut and filled the area?		
4. Back dragged the area?		

FEEDBACK: Trainer should provide both positive and/or negative feedback to the trainee immediately after the task is performed. This will ensure the issue is still fresh in the mind of both the trainee and trainer.

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Air Force Civil Engineer

QUALIFICATION TRAINING PACKAGE (QTP)

REVIEW ANSWER KEY

For

PAVEMENTS & CONSTRUCTION EQUIPMENT OPERATOR

(3E2X1)

MODULE 15

MATERIAL HANDLING EQUIPMENT

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PERFORM OPERATIONAL CHECK

(3E2X1-15.1.1.)

Question	Answer
1. Vehicle inspections are only required once a month when the Vehicle NCO provides you with a new 1806.	b. False
2. On a 360-degree walk around, what should you check for?	d. All of the above
3. For best connection, ensure the battery terminals _____.	d. Both a and c

PERFORM OPERATORS MAINTENANCE

(3E2X1-15.1.2.)

Question	Answer
1. Why is cleaning an important part of vehicle maintenance?	c. Enables you to find lubrication points from the lube charts.
2. Ensure the vehicle always has at least ¼ of a tank of gas at the end of the duty day.	a. False

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HAUL MATERIAL

(3E2X1-15.1.3.1.)

Question	Answer
1. During extreme cold conditions, the operator is allowed to remain in the cab while being loaded.	b. False
2. A loaded dump truck needs about the same distance to stop as an empty one.	b. False
3. The loader operator is responsible for any damage caused by a bad load.	b. False

DUMP MATERIAL

(3E2X1-15.1.3.2.)

Question	Answer
1. What is the recommended rpm for dump trucks?	a. As indicated in the operator's manual.
2. If you can reach the tailgate lever from the cab, lean out the window to release it.	b. False
3. Backing up on a pile will cause _____.	a. the mud flaps to be torn off.
4. If the truck has rearview mirrors, a spotter is not needed.	b. False

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SPREAD GRAVEL

(3E2X1-15.1.3.3.1.)

Question	Answer
1. What are the chains on the tailgate used for?	a. To regulate the thickness of the material being dumped
2. You should check the entire area for overhead lines before spread dumping.	a. True

TOW EQUIPMENT

(3E2X1-15.1.3.4.)

Question	Answer
1. Who is responsible for the proper connection?	c. The vehicle operator
2. When should you check the entire connection?	c. Before towing
3. The safety chains are _____.	b. required to be connected if present.

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WHEEL MOUNTED FRONT-END LOADERS

PERFORM OPERATIONAL CHECKS

(3E2X1-15.2.1.)

Question	Answer
1. What is the AF Form 1806 used for?	a. Inspecting heavy equipment
2. On a 360-degree walk around, what needs to be check?	d. All of the above
3. Who is responsible for performing the pre-operational check on the vehicle?	c. The operator getting into the vehicle.

PERFORM OPERATORS MAINTENANCE

(3E2X1-15.2.2.)

Question	Answer
1. Why is cleaning an important part of vehicle maintenance?	a. To find lubrication points and keep dirt out of the fittings
2. When arranging for refueling at the job site, the operator must _____.	b. call base fuels to make a delivery
3. Why should you check the cutting edge?	b. For excessive wear

LOAD GRAVEL

(3E2X1-15.2.3.1.

Question	Answer
1. When approaching the stockpile, _____.	c. have the bucket lowered, level, flat and grounded
2. When entering the stockpile, _____.	c. decrease the throttle
3. When placing material into the dump truck, _____.	c. place the material slowly a little at a time

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LEVEL AREA

(3E2X1-15.2.3.2.)

Question	Answer
1. AF Form 103 permit isn't always needed if the job site is far away from the main base.	b. False
2. Push dirt from the high spots onto the low spots to level an area.	a. True
3. Avoid back dragging; it could damage the wheeled loader bucket.	b. False
4. Never put the bucket in float because it will cause uneven surfaces.	b. False

SPREAD MATERIALS

(3E2X1-15.2.3.3.)

Question	Answer
1. When approaching the stockpile, _____.	c. take about ¼ of the bucket and push through the pile
2. How should the material be dumped?	a. Open the clamshell or roll the bucket forward and continue until the bucket is empty
3. Back drag the area _____.	d. in the float position

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STOCKPILE MATERIALS

(3E2X1-15.2.3.4.)

Question	Answer
1. Segregation is not a common concern while stockpiling.	b. False
2. When pushing up a stockpile, never _____.	c. drive up the pile
3. Cleaning up around the stockpile will _____.	a. make a uniform pile and keep all the material in the pile.

BACKFILL

(3E2X1-15.2.3.5.)

Question	Answer
1. Which direction should you backfill a trench?	b. Perpendicular
2. Compact over utilities if there are no possibilities of damage.	a. True
3. Cleaning up around the stockpile will _____.	a. Enhance the appearance of the job site.

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LOAD/UNLOAD MATERIAL
TRANSPORT MATERIAL

(3E2X1-15.2.4.1. &15.2.4.2.)

Question	Answer
1. When a loader is equipped with forks, it is considered to be a forklift.	b. False
2. The maximum load capacity for forks is rated by the _____.	a. maximum load of the fork attachment
3. How should you travel when transporting a load?	b. Just high enough to get over obstacles

CHANGE ATTACHMENTS ON FRONT-END LOADER

(3E2X1-15.2.6.)

Question	Answer
1. Why should you release the hydraulic pressure before disconnecting the hoses?	a. The seal on the connection will go bad
2. All loaders change attachments alike.	b. False

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TRACTOR-TRAILER

PERFORM OPERATIONAL CHECKS
PERFORM OPERATORS MAINTENANCE

(3E2X1-15.4.1. & 15.4.2.)

Question	Answer
1. The kingpin is a part of the tractor's fifth wheel assembly.	a. True
2. Which of the following are inspection items for the trailer?	d. All of the above
3. Tractors normally range from the _____ to _____ ton size.	c. 5; 20
4. The Air Force Form _____ is used as a guide for tractor-trailer inspections.	c. 1800

COUPLE/UNCOUPLE TRILER

(3E2X1-15.4.3.1.)

Question	Answer
1. The airline hoses will be crossed if properly connected.	a. True
2. The first step in coupling is blocking the rear wheels.	a. True
3. If the emergency airline is uncoupled, the trailer brakes are automatically engaged.	a. True

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LOAD/UNLOAD CONSTRUCTION EQUIPMENT
LOAD/UNLOAD CONSTRUCTION MATERIALS
SECURE EQUIPMENT USING CHAINS & BINDERS
SECURE MATERIALS USING CARGO STRAPS

(3E2X1-15.4.3.2., 15.4.3.3., 15.4.3.4.1., 15.4.3.4.2.)

Question	Answer
1. Cargo shifting can be controlled by _____.	b. the use of proper blocking and bracing
2. Chains being used for restraints should not have grab hooks on both ends.	b. False
3. Over weight loads can be hauled by _____.	d. obtaining a special permit
4. Who is responsible for the load on a tractor-trailer?	a. Tractor-Trailer Operator
5. Which response best describes Gross Combination Weight?	c. Total weight of a powered unit including the trailer(s) and cargo
6. There are _____ type(s) of specified operating conditions.	b. 3
7. The restraint safe working load for a 55,000-pound crawler tractor is _____ pounds.	d. 82,500

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BACKING
OVER THE ROAD

(3E2X1-15.4.3.5. & 15.4.3.6.)

Question	Answer
1. Allowances must be made for _____ other vehicles.	d. All of the above
2. When backing a tractor-trailer combination, reverse the procedures that are used to back a straight truck.	a. True
3. When making turns in tractor-trailer combinations, what must be allowed for?	d. All of the above
4. The engine brake is also referred to as the _____.	b. Jacob's brake

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GRADERS

PERFORM OPERATIONAL CHECKS

(3E2X1-15.6.1)

Question	Answer
1. What should you look for on a 360-degree walk around?	d. All of the above
2. Which of the following items in the drive engine compartment should be checked?	d. All of the above
3. There are several types of graders in the AF inventory and all should be checked the same way.	b. False

PERFORM OPERATORS MAINTENANCE

(3E2X1-15.6.2.)

Question	Answer
1. Why is cleaning an important part of vehicle maintenance?	a. To find lubrication points and keep dirt out of the fittings
2. Lubricate the machine on more frequent intervals during severe weather conditions.	a. True
3. Why should you check the cutting edge?	b. For excessive wear
4. Ensure both the inner and outer intake breathers are cleaned _____.	c. Daily

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LEVEL MATERIALS
MAINTAIN UNPAVED SURFACES

(3E2X1-15.6.2.4. & 15.5.2.5.)

Question	Answer
1. An AF Form 103 isn't always needed if the job site is far away from the main base.	b. False
2. Define leveling.	b. Cutting high spots and filling low spots
3. When windrowing material, keep the material _____.	c. out from under the rear tires
4. When cutting excessive high spots it may be necessary to _____.	a. cut below the low spot to rough the area up before final grade

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CRAWLER TRACTOR

PERFORM OPERATIONAL CHECKS

(3E2X1-15.8.1.)

Question	Answer
1. What is the AF Form 1806 used for?	a. Inspecting heavy equipment
2. On a 360-degree walk around look for _____.	d. All of the above
3. Check all of the following in the engine compartment except _____.	c. transaxle

PERFORM OPERATOR MAINTENANCE

(3E2X1-15.8.2.)

Question	Answer
1. Always use low water pressure while cleaning a crawler tractor.	b. False
2. Daily refueling is required to prevent _____.	c. Moisture from condensing and forming droplets within the tank
3. When tracks are adjusted to tightly, where will excessive wear be found?	d. Both a and b
4. Who must change the blades when worn out?	c. The operator

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STOCKPILING

(3E2X1-15.8.3.1.)

Question	Answer
1. Why would you need to stockpile materials?	a. To prepare it for hauling away or to move it out of the way
2. Stockpiling should be done _____.	d. in layers
3. When pushing material to be stockpiled, you should _____.	c. keep the push area level

LEVELING
(3E2X1-15.8.3.2.)

Question	Answer
1. An AF Form 103 isn't always needed if the job site is far enough away from the main base.	b. False
2. What does operating by the seat of your pants mean?	a. When you can compensate up and down blade control without giving it much thought
3. Leveling is done by pushing dirt from the low spot onto the high spots of an area.	b. False
4. Avoid back dragging; it could damage the crawler tractor blade.	b. False
5. Never put the blade in float, because it will cause uneven surfaces.	b. False

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