

# **TRAINING PROGRAM FOR THE PALLETIZED LOAD SYSTEM**

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**HEADQUARTERS, DEPARTMENT OF THE ARMY**

Training Circular  
No. 21-305-10

Headquarters,  
Department of the Army  
Washington, DC, 20 September 1994

## TRAINING PROGRAM FOR THE PALLETIZED LOAD SYSTEM

### TABLE OF CONTENTS

#### PREFACE

#### CHAPTER 1 RISK MANAGEMENT

#### CHAPTER 2 INSTRUCTIONAL AIDS

#### CHAPTER 3 SAMPLE TRAINING SCHEDULE

#### CHAPTER 4 LESSON OUTLINES FOR TRUCK OPERATIONS

- Describe Vehicles, Components, and Specifications
- Identify Cab Controls, Instruments, and Indicators
- Know Engine Start and Shutdown Procedures
- Operate Engine Brake (Jake Brake)
- Operate the PLS Central Tire Inflation System (CTIS)/Driveline Lockup
- Perform Operator Preventive Maintenance Checks and Services (PMCS)
- Drive the PLS Truck
- Drive the PLS Truck on the Road (Primary and Secondary)
- Change Tire on PLS Truck Using Tire Davit
- Load and Unload PLS Truck in Automatic Mode
- Drive the PLS Truck Off Road
- Operate the PLS Truck at Night

#### CHAPTER 5 LESSON OUTLINES FOR TRAILER OPERATIONS

- Perform Preventive Maintenance Checks and Services (PMCS) on a PLS Trailer
- Couple PLS Trailer (PLST) to PLS Truck
- Uncouple PLS Trailer (PLST) from PLS Truck
- Drive the PLS Truck with Trailer
- Transfer Flatrack onto/from PLS Trailer Using LHS
- Change Tire on PLS Trailer

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**CHAPTER 6 PLS SAMPLE TRAINING AREAS**

**CHAPTER 7 END OF COURSE COMPREHENSIVE TEST (EOCCT)**

**CHAPTER 8 LESSON OUTLINES FOR MATERIAL-HANDLING CRANE  
AND SELF-RECOVERY WINCH OPERATIONS**

Operate an M1074 PLS Crane

Perform Self-Recovery on a PLS Truck Using the Winch

**APPENDIX PAPER TRANSPARENCIES**

**GLOSSARY**

**REFERENCES**

## PREFACE

This training circular (TC) provides a training program for the palletized load system (PLS) operator according to AR 600-55. It provides standardized training and testing in the operation, maintenance, and safety of the PLS. It stresses hands-on training with minimal classroom instruction and does not include any theater-unique requirements.

During the development of this TC, it was assumed that each driver candidate would have a state driver's license and have extensive experience driving a 5-ton or larger tactical cargo truck. Less experienced soldiers will require additional training in the basic skills and knowledge subjects contained in TC 21-305-8, Training Program for Medium Vehicles.

To provide effective training, each instructor should ensure his operators are trained and tested to the standards in this TC. Any deviation from the successful completion of these basic standards will only lessen the soldiers' overall driving effectiveness.

The lesson content for this training program is arranged sequentially and separated into three chapters: Chapters 4, 5, and 8. Chapter 4 contains training for truck operations, Chapter 5 for trailer operations, and Chapter 8 for material-handling crane (MHC) and self-recovery winch (SRW) operations. This allows the commander the flexibility to tailor PLS training based on the unit's equipment.

Testing for PLS operators is in Chapter 7. For those operators trained on truck operations, testing is conducted after the training in Chapter 4. Operators that are trained in trailer operations are tested after receiving all training in Chapters 4 and 5. Only after passing all required testing are operators trained in MHC/SRW operations at Chapter 8.

Graduates of this training program (licensed drivers) should be supervised until they have gained the experience to operate safely. They should not be placed in situations that may be above their skill level. Periodically, the supervisor should ride with each driver to observe safe operating procedures and to determine the need for additional training.

The proponent of this publication is the US Army Transportation School. Submit changes for improving this publication on DA Form 2028 (Recommended Changes to Publications and Blank Forms) and forward it to Commandant, US Army Transportation School, ATSP-TDI-DX, Fort Eustis, Virginia 23604-5389.

Unless this publication states otherwise, masculine nouns and pronouns do not refer exclusively to men.

## CHAPTER 1

### RISK MANAGEMENT

**1-1. BACKGROUND.** Ground vehicle accidents cost the Army about \$100,000,000 each year and significantly reduce mission capabilities. Leaders must develop techniques that will save resources. Because the Army must be prepared to operate worldwide, the training mission has become increasingly demanding and so have the risks inherent in that mission. This increase in risk requires leaders to balance mission needs with hazards involved and make wise risk decisions.

**1-2. DEFINITION.** Risk is the possibility of a loss combined with the probability of an occurrence. The loss can be death, injury, property damage, or mission failure. Risk management identifies risks associated with a particular operation and weighs these risks against the overall training value to be gained. The four rules of risk management are--

- a. Accept no unnecessary risk.
- b. Accept risks when benefits outweigh costs.
- c. Make risk decisions at the right command level.
- d. Manage risk in the concept and planning stages whenever possible.

**1-3. RISK MANAGEMENT PROCESS.** The risk management process uses the following approach:

- a. Identify hazards. Look for hazards in each phase of the training or operation.
- b. Assess the risk. Ask these questions:
  - What type of injury or equipment damage can be expected?
  - What is the probability of an accident happening?

NOTE: A low probability of an accident and an expected minor injury equals low risk. A high probability of an accident and an expected fatality equals high risk.

c. Develop risk control alternatives and make risk decisions. If you cannot eliminate the risk, then you must control it without sacrificing essential mission requirements. You can control some risks by modifying tasks, changing location, increasing supervision, wearing protective clothing, changing time of operation, and so forth. Decisions take several forms:

- Selecting from available controls.
- Modifying the mission because risk is too great.
- Accepting risk because mission benefits outweigh potential loss.

d. Implement risk control measures. You must integrate procedures to control risks into plans, orders, standing operating procedures (SOPs), and training. You must also ensure risk reduction measures are used during actual operations.

e. Supervise the operations. Make sure leaders know what controls are in place and what standards are expected. Then hold those in charge accountable for implementation. This is the point when accident prevention actually happens.

f. Evaluate the results. Include the effectiveness of risk management controls when you assess the operational results. Use lessons learned to modify future missions.

**1-4. RISK ASSESSMENT ELEMENTS.** There are no hard and fast rules for assessing risk. Different training tasks involve different elements that can affect training safety. However, seven elements are central to safely completing most driver training tasks:

- Soldier qualification.
- Vehicle type.
- Weather.
- Terrain.
- Supervision.
- Equipment.
- Time of day.

Using matrices that assign a risk level to each of the elements is one way to quickly appreciate the overall risks. The following matrices are examples of risk assessments for the seven elements common to driver training missions.

NOTE: The factors are arbitrarily weighted. Modify them based on your particular mission and unit.

a. Measure soldier qualification risk by comparing the level of task difficulty to the soldier's military driving experience.

<b>SOLDIER QUALIFICATION RISK VALUE</b>			
<b>DRIVING EXPERIENCE</b>			
TASK	LICENSED OVER 1 YEAR	LICENSED UNDER 1 YEAR	UNLICENSED
COMPLEX	Medium	High	High
ROUTINE	Low	Medium	High
SIMPLE	Low	Low	Medium

EXAMPLE: Unlicensed drivers learning downhill braking techniques in a PLS would be a high-risk situation requiring substantial controls.

b. Measure vehicle type risk by comparing the vehicle configuration to the locations of the training tasks.

<b>VEHICLE TYPE RISK VALUE</b>			
<b>VEHICLE CONFIGURATION</b>			
<b>LOCATION OF TRAINING</b>	<b>SMALL TRUCKS</b>	<b>STRAIGHT TRUCKS</b>	<b>COMBINATION UNITS</b>
<b>ROAD</b>	Medium	High	High
<b>TRAINING AREA</b>	Low	Medium	High
<b>MOTOR POOL</b>	Low	Low	Low

EXAMPLE: Driving a PLS truck with trailer over the road would have a high-risk value.

- c. Measure weather risk by comparing road conditions with visibility.

<b>WEATHER RISK VALUE</b>			
<b>VISIBILITY</b>			
<b>ROAD CONDITIONS</b>	<b>CLEAR</b>	<b>REDUCED</b>	<b>RESTRICTED</b>
<b>UNFAVORABLE</b>	Medium	High	High
<b>ADEQUATE</b>	Low	Medium	High
<b>FAVORABLE</b>	Low	High	High

EXAMPLE: Driving on icy roads in fog would have a high-risk value.

- d. Measure terrain risk by comparing the physical features of the land with the existing road network.

<b>TERRAIN RISK VALUE</b>			
<b>ROAD NETWORK</b>			
<b>TYPE OF TERRAIN</b>	<b>IMPROVED ROADS</b>	<b>SECONDARY ROADS</b>	<b>UNIMPROVED</b>
<b>MOUNTAIN</b>	Medium	High	High
<b>DESERT/JUNGLE</b>	Low	Medium	High
<b>FLAT/ROLLING</b>	Low	Low	Medium

EXAMPLE: Driver training conducted at Fort Bragg over trails would have a medium-risk value.

e. Measure supervision risk by comparing the level of supervision to the task location.

<b>SUPERVISION RISK VALUE</b>			
<b>TASK LOCATION</b>			
<b>LEVEL OF SUPERVISION</b>	<b>MOTOR POOL</b>	<b>TRAINING AREA/ UNCONGESTED ROAD</b>	<b>OFF ROAD/ CONGESTED ROAD</b>
NOT OBSERVING	High	High	High
OBSERVING	Low	Medium	High
IN VEHICLE	Low	Low	Medium

EXAMPLE: A student driving alone, but observed, in a training area would have a medium-risk value.

f. Measure equipment risk by comparing the equipment's age to the time (months) since the last semiannual service. Equipment age is defined as follows: old is 15 or more years old, average is 5 to 15 years old, and new is less than 5 years old.

<b>EQUIPMENT RISK VALUE LAST SEMIANNUAL SERVICE</b>			
<b>EQUIPMENT AGE</b>	<b>0 TO 2 MONTHS</b>	<b>+ 2 TO 4 MONTHS</b>	<b>+ 4 MONTHS</b>
OLD	Medium	Medium	High
AVERAGE	Low	Medium	High
NEW	Low	Low	Medium

EXAMPLE: A two-year-old PLS serviced three months ago would have a low-risk value.

g. Measure time-of-day risk by comparing the level of light to familiarity with the route.

<b>TIME OF DAY RISK VALUE LIGHT LEVEL</b>			
<b>ROUTE FAMILIARITY</b>	<b>DAY</b>	<b>DAWN/DUSK</b>	<b>NIGHT</b>
NEVER DRIVEN ROUTE	Medium	High	High
DRIVEN ROUTE 1-3 TIMES	Low	Medium	High
FAMILIAR ROUTE	Low	Low	Medium

EXAMPLE: A driving task over a familiar route that starts during the day but ends at dusk would have a medium-risk value.

h. After assessing all the risks, determine the overall risk value. This equals the highest risk identified for any one element. Now is the time to focus on high-risk elements and develop controls to reduce risks to an acceptable level. Control examples include conducting training in a different location or at a different time of day, putting an instructor in the vehicle with the student, waiting for better weather, using a different vehicle, and so forth.



**1-5. DECISION AID.** The level of the decision maker should correspond to the level of the risk. The greater the risk, the more senior the final decision maker should be. This matrix is a proposed decision aid to help determine the leadership decision-making level.

DECISION AID	
RISK	DECISION LEVEL
LOW	SENIOR INSTRUCTOR
MEDIUM	COMPANY COMMANDER
HIGH	BATTALION COMMANDER

a. Medium-risk training warrants complete unit command involvement. For example, a medium-risk value in the weather element category indicates the soldiers are more susceptible to cold injuries and require closer supervision or a rescheduling of training. If you cannot reduce the risk level, the company commander should decide to train or defer the mission.

b. Operations with a high-risk value warrant battalion involvement. If you cannot reduce the risk level, the battalion commander should decide to train or defer the mission.

**1-6. RISK CONTROL ALTERNATIVES.** The following options can help control risk:

- a. Eliminate the hazard totally, if possible, or substitute a less hazardous alternative.
- b. Reduce the magnitude of the hazard by changing tasks, locations, times, and so forth.
- c. Modify operational procedures to minimize risk exposure consistent with mission needs.
- d. Train and motivate personnel to perform to standards to avoid hazards.

**1-7. SUPERVISION.** Leaders must monitor the training to ensure risk control measures are followed. Never underestimate subordinates' ability to sidetrack a decision they do not understand or support. You must also monitor the impact of risk reduction procedures when they are implemented to see that they really work. This is especially true of new, untested procedures.

**1-8. PAYOFFS.** Risk management lets you use realistic training scenarios minimizing personnel and equipment losses while training. Risk management is consistent with mission, enemy, terrain, troops, and time available (METT-T) decision processes and can be used in battle to increase mission effectiveness.

**SAMPLE RISK ASSESSMENT WORK SHEET FOR DRIVER TRAINING**

**TRAINING TASK:** \_\_\_\_\_

**RISK LEVEL:** \_\_\_\_\_

\_\_\_\_\_ 1. SOLDIER QUALIFICATION

<b>SOLDIER QUALIFICATION RISK VALUE</b>			
<b>DRIVING EXPERIENCE</b>			
<b>TASK</b>	<b>LICENSED OVER 1 YEAR</b>	<b>LICENSED UNDER 1 YEAR</b>	<b>UNLICENSED</b>
COMPLEX	Medium	High	High
ROUTINE	Low	Medium	High
SIMPLE	Low	Low	Medium

\_\_\_\_\_ 2. VEHICLE TYPE

<b>VEHICLE TYPE RISK VALUE</b>			
<b>VEHICLE CONFIGURATION</b>			
<b>LOCATION OF TRAINING</b>	<b>SMALL TRUCKS</b>	<b>STRAIGHT TRUCKS</b>	<b>COMBINATION UNITS</b>
ROAD	Medium	High	High
TRAINING AREA	Low	Medium	High
MOTOR POOL	Low	Low	Low

\_\_\_\_\_ 3. WEATHER

<b>WEATHER RISK VALUE</b>			
<b>VISIBILITY</b>			
<b>ROAD CONDITIONS</b>	<b>CLEAR</b>	<b>REDUCED</b>	<b>RESTRICTED</b>
UNFAVORABLE	Medium	High	High
ADEQUATE	Low	Medium	High
FAVORABLE	Low	High	High

4. TERRAIN

<b>TERRAIN RISK VALUE ROAD NETWORK</b>			
<b>TYPE OF TERRAIN</b>	<b>IMPROVED ROADS</b>	<b>SECONDARY ROADS</b>	<b>UNIMPROVED</b>
MOUNTAIN	Medium	High	High
DESERT/JUNGLE	Low	Medium	High
FLAT/ROLLING	Low	Low	Medium

5. SUPERVISION

<b>SUPERVISION RISK VALUE</b>			
<b>TASK LOCATION</b>			
<b>LEVEL OF SUPERVISION</b>	<b>MOTOR POOL</b>	<b>TRAINING AREA/ UNCONGESTED ROAD</b>	<b>OFF ROAD/ CONGESTED ROAD</b>
NOT OBSERVING	High	High	High
OBSERVING	Low	Medium	High
IN VEHICLE	Low	Low	Medium

6. EQUIPMENT

<b>EQUIPMENT RISK VALUE LAST SEMIANNUAL SERVICE</b>			
<b>EQUIPMENT AGE</b>	<b>0 TO 2 MONTHS</b>	<b>+ 2 TO 4 MONTHS</b>	<b>+ 4 MONTHS</b>
OLD	Medium	Medium	High
AVERAGE	Low	Medium	High
NEW	Low	Low	Medium

7. TIME OF DAY

<b>TIME OF DAY RISK VALUE LIGHT LEVEL</b>			
<b>ROUTE FAMILIARITY</b>	<b>DAY</b>	<b>DAWN/DUSK</b>	<b>NIGHT</b>
NEVER DRIVEN ROUTE	Medium	High	High
DRIVEN ROUTE 1-3 TIMES	Low	Medium	High
FAMILIAR ROUTE	Low	Low	Medium

\_\_\_\_\_ OVERALL RISK LEVEL

<b>DECISION AID</b>	
<b>RISK</b>	<b>DECISION LEVEL</b>
LOW	SENIOR INSTRUCTOR
MEDIUM	COMPANY COMMANDER
HIGH	BATTALION COMMANDER

APPROVED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

## CHAPTER 2

### INSTRUCTIONAL AIDS

#### 1. Student Requirements:

- a. Vehicles per student:  
Vehicle to student ratio is contained in the instructional material and varies from 1:1 to 1:2.
- b. Forms per student:  
  
DD Form 1970.  
DA Form 2404.
- c. Publications per student:  
  
TM 9-2320-364-10.  
TM 9-2330-385-14.  
TM 9-3990-206-14P.
- d. Nonstandard items:  
  
40 empty petroleum, oils, and lubricants (POL) drums, traffic cones, or locally fabricated standards. Locally constructed anchors for winch operations. Palletized loads of varying weights.

#### 2. Instructor Requirements:

- One each of the above forms.
- One each of the above publications.
- AR 385-55.
- AR 600-55.
- DA Pamphlet 738-750.
- FM 20-22.
- FM 21-305.
- All host-nation or local directives and regulations.

#### 3. Training Facilities:

- Classroom.
- Motor pool.
- Training area(s).
- Suitable road network for driver training (primary, secondary, and off road).

#### 4. Training Aids and Devices:

Overhead projector.

Projection screen.

Transparencies (paper copies included in the appendix).

Television monitor.

Videocassette player.

TVT 55-36, PIN: 710046DA: Part 1, "PLS Truck PMCS"; Part 2, "PLS Driving Techniques"; and Part 3, "PLS Crane Operations."

TVT 55-37, PIN: 710336DA: Part 4, "PLS Load-Handling System" and Part 5, "PLS Winch Operations."

NOTE: The above videotapes are scheduled to be available first quarter FY95 through the local Training Aids Service Center (TASC), US Army Reserve major commands, and state Adjutants General.

## CHAPTER 3

## SAMPLE TRAINING SCHEDULE

<u>WHEN</u>	<u>WHAT</u>	<u>WHERE</u>	<u>TASK NUMBER</u>
<b>TRUCK OPERATIONS</b>			
<b>DAY 1</b>			
0730-0800	Describe Vehicles Components, and Specifications	Classroom	551-721-1352
0800-0900	Identify Cab Controls, Instruments, and Indicators	Classroom	551-721-1352
0900-0930	Know Engine Start and Shutdown Procedures	Classroom	551-721-1366
0930-1000	Operate Engine Brake (Jake Brake)	Classroom	551-721-1366
1000-1030	Operate the PLS Central Tire Inflation System (CTIS)/ Driveline Lockup	Classroom	551-721-3361
1030-1130	Perform Operator PMCS	Classroom/ Motor Pool	551-721-1352
1130-1230	Lunch		
1230-1330	Perform Operator PMCS (Continued)	Motor Pool	551-721-1352
1330-1600	Drive the PLS Truck	Classroom/ Training Area	551-721-1366
1600-1630	Perform After-Operation PMCS	Motor Pool	551-721-1352
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<b>TRUCK OPERATIONS</b>			
<b>DAY 2</b>			
0730-0800	Perform Before- Operation PMCS	Motor Pool	551-721-1352
0800-1130	Drive the PLS Truck (Continued)	Training Area	551-721-1366
1130-1230	Lunch		
1230-1600	Drive the PLS Truck (Continued)	Training Area	551-721-1366
1600-1630	Perform After- Operation PMCS	Motor Pool	551-721-1352
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<b>TRUCK OPERATIONS</b>			
<b>DAY 3</b>			
0730-0830	Drive the PLS Truck on the Road (Primary and Secondary)	Motor Pool	551-721-1366
0830-0900	Perform Before- Operation PMCS	Motor Pool	551-721-1352
0900-1130	Drive the PLS Truck on the Road (Primary and Secondary) (Continued)	Driver Training Route	551-721-1366
1130-1230	Lunch		
1230-1600	Drive the PLS Truck on the Road (Primary and Secondary) (Continued)	Driver Training Route	551-721-1366
1600-1630	Perform After- Operation PMCS	Motor Pool	551-721-1352

<u>WHEN</u>	<u>WHAT</u>	<u>WHERE</u>	<u>TASK NUMBER</u>
<b>TRUCK OPERATIONS</b>			
<b>DAY 4</b>			
0730-0800	Perform Before- Operation PMCS	Motor Pool	551-721-1352
0800-1100	Drive the PLS Truck on the Road (Primary and Secondary) (Continued)	Driver Training Route	551-721-1366
1100-1130	Perform After- Operation PMCS	Motor Pool	551-721-1352
1130-1230	Lunch		
1230-1630	Change Tire on the PLS Truck Using Tire Davit	Motor Pool or Training Area	551-721-3371
<b>TRUCK OPERATIONS</b>			
<b>DAY 5</b>			
0730-0830	Load and Unload PLS Truck in Automatic Mode (LHS)	Classroom	551-721-3364 551-721-3365
0830-0900	Perform Before- Operation PMCS	Motor Pool	551-721-1352
0900-1130	Load and Unload PLS Truck in Automatic Mode (LHS) (Continued)	Training Area	551-721-3364 551-721-3365
1130-1230	Lunch		
1230-1600	Load and Unload PLS Truck in Automatic Mode (LHS) (Continued)	Training Area	551-721-3364 551-721-3365
1600-1630	Perform After- Operation PMCS	Motor Pool	551-721-1352
<b>TRUCK OPERATIONS</b>			
<b>DAY 6</b>			
0730-0830	Drive the PLS Truck Off Road	Classroom	551-721-1360
0830-0900	Perform Before- Operation PMCS	Motor Pool	551-721-1352
0900-1130	Drive the PLS Truck Off Road (Continued)	Off Road Driver Training Area	551-721-1360
1130-1230	Lunch		
1230-1400	Drive the PLS Truck Off Road (Continued)	Off Road Driver Training Area	551-721-1360
1400-1430	Perform After- Operation PMCS	Motor Pool	551-721-1352
1900-1930	Perform Before- Operation PMCS	Motor Pool	551-721-1352
1930-2330	Operate the PLS Truck at Night	Motor Pool/Training Area/Driver Training Route	551-721-1364 551-721-1365 551-721-1366
2330-2400	Perform After- Operation PMCS	Motor Pool	551-721-1352



<u>WHEN</u>	<u>WHAT</u>	<u>WHERE</u>	<u>TASK NUMBER</u>
<b>TRUCK OPERATIONS</b>			
<b>DAY 7</b>			
1230-1300	Perform Before- Operation PMCS	Motor Pool	551-721-1352
1300-1500	Drive the PLS Truck Off Road (Continued)	Off Road Driver Training Area	551-721-1360
1500-1630	Perform After- Operation PMCS	Motor Pool	551-721-1352

**TRUCK OPERATIONS****DAY 8**

NOTE: This test is given at this time for straight truck drivers only. Drivers training for trailer operations will continue to trailer operations day 8 and testing on day 12.

0730-1630	End of Course Comprehensive Test and Perform After- Operation PMCS	Classroom/ Motor Pool/ Test Route Motor Pool	All Tasks  551-721-1352
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**TRAILER OPERATIONS****DAY 8**

NOTE: Days 8 through 12 are scheduled for trailer operations only.

0730-0930	Perform PMCS on the PLS Trailer)	Motor Pool	551-721-1353
0930-1000	Perform Before- Operation PMCS	Motor Pool	551-721-1352 551-721-1353
1000-1130	Couple PLS Trailer to PLS Truck	Training Area	551-721-3362
1130-1230	Lunch		
1230-1330	Couple PLS Trailer to PLS Truck (Continued)	Training Area	551-721-3362
1330-1600	Uncouple PLS Trailer from PLS Truck	Training Area	551-721-3363
1600-1630	Perform After- Operation PMCS	Motor Pool	551-721-1352 551-721-1353

<u>WHEN</u>	<u>WHAT</u>	<u>WHERE</u>	<u>TASK NUMBER</u>
<b>TRAILER OPERATIONS</b>			
<b>DAY 9</b>			
0730-0830	Drive the PLS Truck with Trailer	Motor Pool or Classroom	551-721-1366
0830-0900	Perform Before- Operation PMCS	Motor Pool	551-721-1352 551-721-1353
0900-1130	Drive the PLS Truck with Trailer (Continued)	Training Area/Driver Training Route	551-721-1366
1130-1230	Lunch	Training Area/Driver Training Route	551-721-1366
1230-1600	Drive the PLS Truck with Trailer (Continued)		
1600-1630	Perform After- Operation PMCS	Motor Pool	551-721-1352 551-721-1353
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<b>TRAILER OPERATIONS</b>			
<b>DAY 10</b>			
0730-0800	Transfer Flatrack onto/from PLS Trailer Using LHS	Classroom	551-721-3366 551-721-3367
0800-0830	Perform Before- Operation PMCS	Motor Pool	551-721-1352 551-721-1353
0830-1130	Transfer Flatrack onto/from PLS Trailer Using LHS (Continued)	Training Area	551-721-3366 551-721-3367
1130-1230	Lunch		
1230-1600	Change Tire on the PLS Trailer	Motor Pool or Training Area	551-721-3372
1600-1630	Perform After- Operation PMCS	Motor Pool	551-721-1352 551-721-1353
<hr/>			
<b>TRAILER OPERATIONS</b>			
<b>DAY 11</b>			
0730-0800	Perform Before- Operation PMCS	Motor Pool	551-721-1352 551-721-1353
0800-1130	Transfer Flatrack onto/from PLS Trailer Using LHS (Continued)	Training Area	551-721-3366 551-721-3367
1130-1230	Lunch		
1230-1600	Drive the PLS Truck with Trailer (Continued)	Training Area/Driver Training Route	551-721-1366
1600-1630	Perform After- Operation PMCS	Motor Pool	551-721-1352 551-721-1353

<u>WHEN</u>	<u>WHAT</u>	<u>WHERE</u>	<u>TASK NUMBER</u>
<b>TRAILER OPERATIONS</b>			
<b>DAY 12</b>			
0730-1630	End of Course Comprehensive Test and Perform After- Operation PMCS	Classroom/Test Route/Motor Pool Motor Pool	All Tasks  551-721-1352

**MHC/SRW OPERATIONS****DAY 9 or 13**

NOTE: Days 9 or 13 are scheduled for training when units are assigned PLS trucks equipped with material-handling crane and/or self-recovery winch.

0730-1130	Operate an M1074 PLS Crane	Classroom/Training Area	551-721-1407 551-721-1352
1130-1230	Lunch		
1230-1630	Perform Self-Recovery on a PLS Truck	Classroom/Training Area	551-721-1390 551-721-1352

NOTE: If students have not mastered MHC/SRW operations in the scheduled time, additional time may be added.

**CHAPTER 4****LESSON OUTLINES FOR TRUCK OPERATIONS**

**LESSON TITLE:** DESCRIBE VEHICLES, COMPONENTS, AND SPECIFICATIONS

**TASK NUMBER:** 551-721-1352 (Perform Vehicle Preventive Maintenance Checks and Services [PMCS])

**A. TRAINING OBJECTIVE.**

**TASK:** Describe vehicles, components, and specifications

**CONDITIONS** Given instruction on the PLS truck, trailer, and flatrack and a requirement to describe vehicles, components, and specifications.

**STANDARD:** Correctly describe vehicles, components, and specifications.

**B. INTERMEDIATE TRAINING.** None.

**C. ADMINISTRATIVE INSTRUCTIONS.**

1. Training time: As scheduled.
2. Training location: Scheduled classroom.
3. Training type: Conference.
4. Students: Scheduled personnel.
5. Principal and assistant instructors required: One primary instructor.
6. Training aids and equipment: Overhead projector, transparencies, and screen.
7. Reference: TM 9-2320-364-10.

**D. SEQUENCE OF ACTIVITY.**

1. Introduction:
  - a. Interest device.
  - b. Tie-in.
  - c. Lesson objective (paragraph A).

d. Procedures.

(1) Explanation.

(2) Summary.

2. Explanation:

**NOTE:** This lesson is being presented so the student will become familiar with all PLS configurations and vehicles. The instructor will present vehicle information including vehicle capabilities, limitations, and data plates.

Transparency PLS 1-1

a. PLS truck configurations.

(1) Truck without crane - model M1075.

(2) Truck with crane - model M1074.

b. Description of vehicles.

Transparency PLS 1-2

(1) Components on right side of truck.

(a) Self-recovery winch [1] (optional). Winch can be used to pull vehicle forward or rearward. It is controlled in the cab and at the winch itself with a manual control lever.

(b) Stowage box [2] for BII items.

(c) Hydraulic oil reservoir [3] for the main hydraulics such as load-handling system (LHS) and material-handling crane (MHC) systems.

(d) Muffler [4].

(e) Spare tire [5] with the davit.

(f) Collapsible ladder [6]. Ladder is used by driver to check coolant, check oil, or perform other tasks requiring access to parts of truck out of normal reach.

Transparency PLS 1-3

- (2) Components on left side of truck.
  - (a) Air filter [1] - two-stage.
  - (b) Battery box with removable cover [2]. It houses and protects four batteries.
  - (c) Control box (LHS) [3]. This box contains valves for the LHS.
  - (d) Air dryer system [4]. This system contains two air dryers, a prefilter, and a precooler.
  - (e) Fuel tank [5] with a fuel/water separator mounted in front of the tank. The fuel tank capacity is 100 gallons.
  - (f) Fuel/water separator [6]. It removes water and large solid particles from the fuel.

#### Transparency PLS 1-4

##### c. Trailer (PLST) M1076.

- (1) Two position drawbar [1] that can be changed to shorten the length of trailer to make overall length of truck and trailer legal in certain areas.
- (2) Steering axle [2] (turntable style) that uses a large bearing for rotation.
- (3) Spare tire [3] with winch for dismounting from trailer.
- (4) Stowage box [4] for stowing trailer BII.
- (5) Data plates [5].

#### Transparency PLS 1-5

##### d. Flatrack M1077.

- (1) Storage compartment [1] (one on each side) is used for storing the tie-down straps furnished with the flatrack. The stowage boxes are hinged and have provisions for locking.
- (2) Hook bar [2] couples with the LHS hook arm to lift and pull the flatrack onto the PLS.
- (3) Visual markers [3] are used to align the hook arm.

- (4) Cargo tie-down rings [4] are in 29 locations to secure payloads.
- (5) Pockets [5] for forklift are used to move flatrack when not on truck.
- (6) ISO locks/fittings [6] are at the four corners for 20-foot ISO containers or are secured on any equipment capable of locking down a 20-foot ISO container, including ships and trailers.
- (7) Rollers [7] at the rear are used for loading/unloading flatrack onto the trailer or docks. Rollers are removable and stored on brackets under storage boxes.
- (8) Side boards [8] are an available option for the flatracks.

e. Specifications.

Transparency PLS 1-6

- (1) PLS truck - weights and dimensions. Total curb weight is 51,090 pounds.
  - (a) Total loaded weight is 87,340 pounds. Actual load capacity is 33,000 pounds or 16.5 tons.
  - (b) The front axle loaded weight is 33,290 pounds and the rear group of axles weight is 54,050 pounds. To avoid overloading the truck components, these weights should not be exceeded.
  - (c) Overall height is 157.48 inches at the top of the hook in the stowed position. The cargo will increase this height.
  - (d) Overall width is 96 inches.
  - (e) Overall length is 441.65 inches (with flatrack and ISO container).

Transparency PLS 1-7

- (2) PLS truck and trailer weights and dimensions. Total curb weight is 65,265 pounds.
  - (a) Total loaded weight is 137,715 pounds.
  - (b) Overall length is either 60 or 62 feet, depending on the position of the drawbar.

## Transparency PLS 1-8

## f. Capabilities of truck and trailer.

- (1) Ascend and descend a 30 percent grade.
- (2) Operate on a 20 percent side slope.
- (3) Park on a 30 percent grade.
- (4) Ford to a depth of 48 inches.
- (5) Sustain a speed of 55 MPH.
- (6) Travel approximately 225 miles without refueling.

## Transparency PLS 1-9

## g. Turning capability.

- (1) Proper turning procedure with the trailer is very important.
- (2) To make a turn on a 30-foot roadway, the start of the turn must be as shown. Notice the front wheel is at the start of the intersection.
- (3) If turn is done properly, the actual width of the turn is about 26.5 feet.

**NOTE:** For a complete listing of the PLS specifications, refer to the vehicle operator's manual, TM 9-2320-364-10, paragraph 1-11.

## Transparency PLS 1-10

## h. Description of driveline components and power flow.

- (1) Engine - DD 8V92TA at 500 horsepower.
- (2) Transmission - Allison CLT-755 (5-speed, fully automatic).
- (3) Transfer case - Oshkosh model 55,000 with a planetary differential. Power is applied at all times.
- (4) Axles - all are Rockwell Model 5 MR with planetary hub reduction and differential lockup. Note the front two and rearmost axles steer.



(5) Power flows from engine through transmission, into transfer case, then is split to front and rear. The split at the transfer case is 30 percent torque to the front with 70 percent going to the rear.

i. Location of data plates.

Transparency PLS 1-11

- (1) Front/left data plates.
  - (a) Vehicle data.
  - (b) Shipping data.
  - (c) LHS electrical lowering override.
  - (d) Preoperation maintenance.
  - (e) Cold tire pressure.
  - (f) Parts data.

Transparency PLS 1-12

- (2) Inside cab data plates.
  - (a) Warranty data.
  - (b) Rustproofing data.
  - (c) STE-ICE zero offset.
  - (d) Crane instructions.
  - (e) Caution hydraulic selector.
  - (f) Emergency engine shutdown.
  - (g) Transfer shift pattern.
  - (h) Vehicle data.
  - (i) Circuit breaker identification.
  - (j) Ether cold weather start.

(k) Caution trailer drawbar.

Transparency PLS 1-13

- (3) Left side data plates.
  - (a) LHS manual override.
  - (b) Warning MHC.
  - (c) Warning fan.
  - (d) LHS hydraulic slave.
  - (e) Warning flatrack.
  - (f) Multilift data.
  - (g) Hardlift installation instructions.
  - (h) Emergency trailer air coupling.
  - (i) Service trailer air coupling.

Transparency PLS 1-14

- (4) Right side data plates.
  - (a) MHC remote control.
  - (b) Warning self-recovery winch.
  - (c) Caution crane procedures.
  - (d) Warning outriggers.
  - (e) Danger electrocution.
  - (f) Danger machine familiarization.
  - (g) Caution electronic equipment.

Transparency PLS 1-15

- (5) Superstructure data plates.

- (a) MHC capacity.
- (b) MHC boom angle indicator.
- (c) Warning electrocution hazard.
- (d) Caution outrigger.
- (e) Left side MHC remote control hookup.

Transparency PLS 1-16

- (6) Right side superstructure data plates.
  - (a) Crane stowage procedure.
  - (b) MHC right side remote control hookup.
  - (c) Caution material-handling system (MHS) system (electric) manual override.
  - (d) Caution MHS system (arctic warm-up manual override.
  - (e) High idle, power, and latch switch.

3. Practical exercise: None.

4. Evaluation: Students are evaluated daily during driving tasks and are tested during the end of course comprehensive test (EOCCT).

5. Summary:

- a. Recap main points.
- b. Allow for questions.
- c. Clarify questions.
- d. Give closing statement.

6. Retraining: Training is reinforced during daily driving tasks.

**E. SAFETY RESTRICTIONS.** None.

**F. ADDITIONAL COMMENTS AND INFORMATION.** Recommended instructional time is 0.5 hour conference.

**LESSON TITLE:** IDENTIFY CAB CONTROLS, INSTRUMENTS, AND INDICATORS

**TASK NUMBER:** 551-721-1352 (Perform Vehicle Preventive Maintenance Checks and Services [PMCS])

**A. TRAINING OBJECTIVE.**

**TASK:** Identify cab controls, instruments, and indicators.

**CONDITIONS** Given instruction on the M1074/M1075 PLS truck and a requirement to identify and explain the function of cab controls, instruments, and indicators.

**STANDARD:** Correctly identify and explain the function of the cab controls, instruments, and indicators.

**B. INTERMEDIATE TRAINING.** None.

**C. ADMINISTRATIVE INSTRUCTIONS.**

1. Training time: As scheduled.
2. Training location: Scheduled classroom.
3. Training type: Conference.
4. Students: Scheduled personnel.
5. Principal and assistant instructors required: One primary instructor.
6. Training aids and equipment: Overhead projector, transparencies, and screen.
7. Reference: TM 9-2320-364-10.

**D. SEQUENCE OF ACTIVITY.**

1. Introduction:
  - a. Interest device.
  - b. Tie-in.
  - c. Lesson objective (paragraph A).
  - d. Procedures.

(1) Explanation.

(2) Summary.

2. Explanation:

**NOTES:** The instructor points out the use of international symbols to identify dash components as a way to avoid differences and confusion.

The instructor will emphasize the importance of safety getting into and out of the cab (maintain three points of contact), observing all warnings, and using seat belts.

Transparency PLS 2-1

a. Foot pedals and lower window.

(1) Service brake pedal [1] applies the service brakes. If the truck is properly coupled to a trailer, the trailer service brakes will also operate when the truck service brakes are applied.

(2) Throttle control (accelerator pedal) [2] controls the engine speed.

(3) Floor window [3], for overcrest visibility, enables the driver to see what is on the down side of a crest. Also the metal horizontal bar across the center of the window is 48 inches, the maximum fording depth for the PLS.

Transparency PLS 2-2

b. Steering wheel and adjacent controls.

(1) Emergency flasher control [1] is used to turn hazard warning flashers on and off. To turn on the hazard warning flashers, push button in. To turn the hazard warning flashers off, pull button out.

(2) Steering wheel [2] is used to control the direction of the vehicle. Grasp the steering wheel at the three o'clock and nine o'clock positions with palms facing inward.

(3) Horn button [3] sounds the electric horn when pressed.

(4) Turn signal lever [4] is used to signal turns. Push up to signal a right turn and pull down to signal a left turn. When the turn is completed, the lever will self-cancel (return to the off position).

(5) Trailer hand brake control (johnson bar or trailer hand valve) [5] is used to apply and release the trailer brakes separate from the vehicle service brakes. It should only be used to test the trailer brakes. Using it when driving will cause the trailer to skid. It can be used for coupling and uncoupling trailers without spring brakes.

(6) Dimmer button [6] is located at the end of the turn signal arm. Press the button to raise or lower headlight beams. High beam indicator light will light blue when high beams are on.

#### Transparency PLS 2-3

##### c. Dash indicator lights.

(1) Left turn indicator [1] flashes green when left turn signal is on.

(2) Engine brake [2] indicator lights green when the engine brake on/off switch is in the on position.

(3) High beam indicator [3] lights blue when the vehicle headlights are on high beam.

(4) Trailer flatrack unlocked [4] indicator lights red when the trailer flatrack is not locked (only if load lock status line on trailer is connected to truck).

(5) Engine low oil pressure [5] indicator lights red when the engine oil pressure is below 5 psi.

(6) Transmission check [6] indicator lights yellow when the transmission fluid temperature is above 270°F.

(7) High water temperature [7] indicator lights red when the engine coolant temperature is above 230°F.

#### Transparency PLS 2-4

##### d. Dash indicator lights and gauges.

(1) LHS no transit [1] indicator lights red when the load-handling system is not correctly stowed on the truck.

(2) LHS overload [2] indicator lights yellow to warn operator that the load-handling system is overloaded. Maximum payload is 34,500 to 35,000 pounds.

- (3) LHS [3] indicator lights green when the load-handling system is activated and in automatic, manual hook arm, and manual main frame mode.
- (4) Auxiliary hydraulic [4] indicator lights green when auxiliary hydraulic is in use.
- (5) Hydraulic oil [5] indicator lights red and buzzer sounds when the auxiliary (main) hydraulic fluid level is below 25.75 gallons.
- (6) Emergency steer [6] indicator lights red when emergency steering system is activated.
- (7) Oil pressure gauge [7] shows engine oil pressure (in psi and kPa).
- (8) Water temperature gauge [8] shows engine coolant temperature in degrees Fahrenheit and degrees Celsius.
- (9) Trans. temperature gauge [9] shows transmission fluid temperature in degrees Fahrenheit and degrees Celsius.
- (10) Fuel gauge [10] shows level of fuel in the fuel tank.

Transparency PLS 2-5

e. Dash gauges and buzzers.

- (1) Tachometer/hourmeter [1] shows the engine operating speed (RPM x 100) and total operating time in hours.
- (2) Speedometer/odometer [2] shows vehicle traveling speed in MPH and KMPH and total miles traveled.
- (3) Low air alarm/low hydraulic oil alarm [3] sounds an intermittent buzzer sounds when system air pressure drops below 60 psi or hydraulic oil level is below 25.75 gallons.
- (4) Kilometer/odometer [4] shows total kilometers traveled.
- (5) Oil/water alarm [5] sounds a steady buzzer sounds when engine oil pressure is below 5 psi or when engine coolant temperature is above 230°F.
- (6) Voltmeter (12V) [6] shows state of charge of batteries and voltage level in the 12-volt system. Correct charge is 12-14 volts.

(7) Voltmeter (24V) [7] shows state of charge of batteries and alternator voltage output in the 24-volt system. Correct charge is 24 to 28 volts.

#### Transparency PLS 2-6

##### f. Dash indicator lights and switches.

(1) Engine check [1] indicator lights orange to show engine problem such as low oil pressure or high coolant temperatures.

(2) Drive line lock [2] indicator lights yellow to show drive line lockup when the transfer case is in low range and the CTIS is set at emergency position.

(3) Right turn indicator [3] flashes green when right turn signal is on.

(4) Check gauges [4] light orange when a problem exists in the engine that may cause damage. If the light comes on, check gauges. If gauges read normal, proceed. If gauge readings are abnormal, shut down and check coolant and lubricant levels in the engine.

(5) Low air [5] indicator lights red when system air pressure is below 60 psi.

(6) Parking brake [6] indicator lights red when the parking brake is on.

(7) Rheostat switch [7] controls the brightness/ dimness of the instrument panel lights.

(8) Headlight/clearance light switch [8] turns headlights and clearance lights on and off.

(9) Dome light switch [9] turns the dome light on and off.

#### Transparency PLS 2-7

##### g. Dash switches. These are rocker type with international symbols.

(1) Work light switch [1] turns work light on and off.

(2) Beacon light switch [2] turns beacon light on and off.

(3) Blackout light selector [3] selects between normal and blackout mode for night driving under blackout conditions. It locks out service drive lights and automatically deactivates the vehicle's backup alarm. The



blackout lock selector (at the upper part of this switch) must be pushed down to turn this switch on.

- (4) Blackout drive switch [4] turns blackout drive lights on and off.
- (5) Blackout marker switch [5] turns blackout marker lights on and off.
- (6) Engine brake switch [6] turns on or shuts off electric power to the engine brake. Center position is low and down position is high.
- (7) Windshield washer switch [7] controls spray of cleaning fluid on windshield.
- (8) Windshield wiper switch [8] controls operation of windshield wipers.
- (9) Engine on/off/start switch [9] is straight up for the off position. On position operates electrical system and start position operates engine cranking circuit.
- (10) Ether start button [10] is pressed to supply engine with a measured shot of ether for cold weather starts.

Transparency PLS 2-8

h. CTIS control panel.

(1) Rotary selector switch [1] selects one of four tire pressures for maximum traction and minimum tire wear under various conditions and speed limits. A green LED (light-emitting diode) at each of the four positions will stay lit continuously if the CTIS and drive line lockup are in the proper operating mode. Slow flashing indicates acceptable change. Rapid flashing indicates unacceptable operating parameters and requires corrective action by the operator. Speed limits are as follows:

- (a) Highway - 55 MPH.
- (b) Cross country - 40 MPH.
- (c) Mud, sand, and snow - 12 MPH.
- (d) Emergency - 5 MPH.

(2) Overspeed indicator [2] lights amber when the truck average speed for one minute exceeds the speed limit for the rotary selector switch setting.

(3) Low air indicator [3] lights red to warn of low pressure in the vehicle air system. This condition causes the CTIS to shut down giving the truck brake system priority to the available air pressure. The CTIS will automatically resume operation when the air pressure builds up to about 110 psi.

(4) Start switch [4] is pressed (and held for one second) to start operation of the CTIS.

(5) Shutdown switch [5] is turned to the on position for normal CTIS operation. Drive line function will still operate with switch in the off position. It is also used as emergency shutdown switch, to turn off CTIS if there is an air leak in the CTIS.

#### Transparency PLS 2-9

##### i. Air gauges and brake controls.

(1) Air pressure gauge [1] shows air pressure in psi and kPa in both sections of the air brake system. Green needle shows the front section air reservoir pressure. Red needle shows the rear section air reservoir pressure.

(2) Air filter restriction indicator [2] shows the condition of the air filter. Vacuum inches H<sub>2</sub>O window shows degree of restriction. Indicator should read less than 20 inches for normal operation. If indicator latches at 20 inches during operation, truck may continue to operate until mission is completed. Air filter must be serviced before next mission. Push the button to reset.

(3) Parking brake control [3] is pushed to release the truck brakes and pulled to apply truck brakes. It also automatically applies the parking brakes if air pressure goes below 35 psi (spring brakes).

(4) Trailer air supply control [4] is pushed to supply air to trailer brake system and pulled to shut off and exhaust trailer air.

#### Transparency PLS 2-10

##### j. Transmission shift control.

(1) Use R (reverse) [1] to move truck backwards.

(2) Use N (neutral) [2] to--

(a) Start engine.

- (b) Park vehicle.
  - (c) Shift transfer case.
  - (d) Operate the load-handling system.
  - (e) Operate ancillary equipment (crane and/or winch).
- (3) Use D (drive) [3] to--
- (a) Drive in normal conditions.
  - (b) Move forward from a stop.
  - (c) Shift the transmission up and down automatically.

**NOTE:** Transmission will start in second gear (transfer in low range only) or first gear (transfer in high range only).

- (4) Use 4 or 3 (fourth or third range) [4] to--
- (a) Drive in off-road conditions.
  - (b) Drive in city traffic.
  - (c) Drive in certain conditions. Refer to engine brake operation.
  - (d) Restrict up shifts to no higher than third fourth gear depending on selection.
- (5) Do not shift [5]. Indicator lights red to show operating condition under which shifting would cause damage to the equipment. If in this mode and you shift gears, the transmission will shift to neutral. If this occurs while driving, pull over and stop as soon as it is safe to do so.
- (6) Use 1 (first) when greatest traction and maximum engine braking is needed (also called low gear hold) [6].
- (7) Use 2 (second) gear when pulling through mud or snow and climbing or descending steep grades (also called second gear hold) [7].

Transparency PLS 2-11

- k. STE/ICE-R - transfer shift - LHS.

- (1) STE/ICE-R receptacle [1] is used to connect the simplified test equipment/internal combustion engine-reprogrammable (STE/ICE-R).
- (2) STE/ICE-R zero offset switch [2] is used to reset instrument connected to the STE/ICE-R receptacle switch to zero.
- (3) Transfer case shift lever [3] is used to select high (HI) or low (LO) range. Center position is neutral.

**NOTE:** The trick to shifting the transfer is to stop the truck, take your right hand and apply pressure to the transfer case shift lever, while at the same time pushing N on the transmission range selector with your left hand. Do not force the transfer case shift lever as this will only cause damage to the shift collars. The collars must be aligned before the transfer case will go in gear. If the transfer case shift lever is hard to move, push the D on the transmission range selector, then back to N. If the transfer case will not shift, select R then N and try to shift the transfer case lever again. If the transfer case will still not shift, select D, then back to N.

- (a) Set the transfer case shift lever to high (HI) for highway driving and secondary roads.
- (b) Set the transfer case shift lever to low (LO) for adverse off-road driving and steep grades.
- (4) LHS load/unload joystick [4] is used to control the loading and unloading of flatracks.

Transparency PLS 2-12

1. Hydraulic mode selector.

- (1) LHS mode selector. Use to select mode of operation for load-handling system.

**CAUTION**

During driving operations, LHS mode selector must be placed in the off position or hydraulic system overheating will result.

(2) Modes.

- (a) O = off. LHS is turned off. If not turned off when driving, it will cause the hydraulic oil to heat up and the engine to overheat. The reason for this is that when the LHS mode selector is in the 1 through 3 and 5 positions, the engine fan runs at half speed.

(b) 1 = automatic position. This setting activates the hydraulic circuit. The system will automatically respond to joystick movement by the operator.

(c) 2 = manual hook arm (MAN HA) position. Use this setting when automatic sequencing is not operating. This setting bypasses the automatic sequencing circuit to manually operate the hook arm only.

(d) 3 = manual main frame (MAN MF) position. Use this setting when the automatic sequencing is not operating. It bypasses the automatic sequencing circuit to manually operate the main frame only.

(e) 4 = manual transport (MAN TRANS) position. Use this setting if the automatic sequence has an electrical failure. This position must be selected if truck is to travel with this failure.

(f) 5 = crane/self-recovery winch (SRW). This setting energizes the auxiliary hydraulic circuit for the crane and/or self-recovery winch when the vehicle is equipped with either kit.

#### Transparency PLS 2-13

##### m. Side panel switches.

(1) Engine emergency stop switch [1] is used to shut down the engine only if the ignition switch will not shut off the engine.

(2) SRW/crane switch [2] allows operator to select SRW or crane individually when the vehicle is equipped with both kits.

(3) SRW in/out switch [3] controls self-recovery winch operation when truck is equipped with SRW kit.

(4) Gas particulate filter switch [4] turns gas particulate filter on or off when the truck is so equipped.

(5) Chemical alarm switch [5] activates chemical alarm when the truck is so equipped.

(6) Transfer case lockup indicator [6] lights (amber) when the transfer case is in the locked position.

(7) Transfer case lockup [7] locks or unlocks transfer case.

## Transparency PLS 2-14

## n. Circuit breakers.

- (1) Circuit breakers are manual reset type.
- (2) Each circuit breaker is labeled for its function.

## Transparency PLS 2-15

## o. Heater/defroster controls.

- (1) Air control [1] controls amount of outside air entering cab through fresh air vent.
- (2) Fan control [2] controls speed of heater fan.
- (3) Heat control [3] controls amount of hot air entering cab.
- (4) Defrost control [4] controls amount of air blown on windshield.

## Transparency PLS 2-16

## p. Operator's seat.

- (1) Seat belt/shoulder harness [1] secures personnel in seat.
- (2) Seat connector strap [2] secures seat to cab frame.
- (3) Height adjustment control [3] is used to adjust seat height.
- (4) Forward/backward adjustment control [4] is used to move seat forward or backward on slides.
- (5) Ride adjustment control [5] is used to adjust seat tension and ride firmness.

**NOTE:** Controls on operator's and passenger's seats are the same.

## Transparency PLS 2-17

## q. Rifle stowage mount.

- (1) Lower rifle mount [1] holds the butt of the rifle.

- (2) Rifle mount handle [2] secures upper hand guard of rifle.
- (3) Top rifle mount [3] holds hand guard of rifle.

Transparency PLS 2-18

r. Machine gun mount.

- (1) Machine gun operator platform [1] supports machine gun operator.
- (2) Machine gun mount [2] secures the machine gun to the machine gun ring.
- (3) Machine gun ring [3] allows machine gun to turn 360°.

3. Practical exercise: None.

4. Evaluation: Students are evaluated daily during driving tasks and are tested during the EOCCT.

5. Summary:

- a. Recap main points.
- b. Allow for questions.
- c. Clarify questions.
- d. Give closing statement.

6. Retraining: Training is reinforced during daily driving tasks.

**E. SAFETY RESTRICTIONS.** None.

**F. ADDITIONAL COMMENTS AND INFORMATION.** Recommended instructional time is 1 hour conference.

**LESSON TITLE:** KNOW ENGINE START AND SHUTDOWN PROCEDURES

**TASK NUMBER:** 551-721-1366 (Drive Vehicle with Automatic Transmission)

**A. TRAINING OBJECTIVE.**

<b>TASK:</b>	Know engine start-up and shutdown procedures.
<b>CONDITIONS</b>	Given instruction on the M1074/M1075 PLS truck and a requirement to locate the controls and explain the engine start-up and shutdown procedures.
<b>STANDARD:</b>	Correctly locate the controls and explain the engine start-up and shutdown procedures.

**B. INTERMEDIATE TRAINING.** None.

**C. ADMINISTRATIVE INSTRUCTIONS.**

1. Training time: As scheduled.
2. Training location: Scheduled classroom.
3. Training type: Conference.
4. Students: Scheduled personnel.
5. Principal and assistant instructors required: One primary instructor.
6. Training aids and equipment: Overhead projector, transparencies, and screen.
7. Reference: TM 9-2320-364-10.

**D. SEQUENCE OF ACTIVITY.**

1. Introduction:
  - a. Interest device.
  - b. Tie-in.
  - c. Lesson objective (paragraph A).
  - d. Procedures.



- (1) Explanation.
- (2) Summary.

2. Explanation:

**NOTE:** This lesson will emphasize correct engine start-up and shutdown techniques to be used with the PLS vehicle. The instructor will review special cautions which will increase vehicle and component longevity.

Transparency PLS 3-1

a. Start engine.

- (1) Pull out parking brake control [1].
- (2) Turn engine on/off/start switch [4] to on. When switch is positioned to on, check gauges and check engine indicators will light and warning alarm will sound for about five seconds.
- (3) Set transmission range selector [2] to neutral (N).
- (4) To use the ether push button [3], press for five seconds; wait five seconds more before using it again or turning the engine on/off/start switch [4] to start. If outside temperature is above 45°F, go to step (5). Press ether push button as indicated below:
  - (a) One time for temperatures between +45°F to +10°F.
  - (b) Two times for temperatures between +10°F to -10°F.
  - (c) Three times for temperatures between -10°F to -25°F.

**CAUTION**

Do not press ether start push button more than three times in a single starting attempt. Failure to observe this caution could cause severe engine damage.

**CAUTION**

Do not turn engine start switch to start position while motor is running. Engine damage could result

**NOTE:** Check engine light turns on for failures that are not potentially damaging to the engine. It is used as a warning lamp to tell a driver a problem has occurred. PLS truck should be serviced as soon as possible.

(5) Turn engine on/off/start switch [4] to start for about 15 seconds or until engine starts. If truck fails to start, wait 15 seconds before next attempt to allow starter to cool. Release switch. Switch will spring back to the on position. Low air indicator [13] will light and alarm [6] will sound.

**NOTE:** Repeat steps (4) and (5) up to four times. If the engine fails to start after four tries, refer to Troubleshooting, Chapter 3, TM 9-2320-364-10.

**CAUTION**

If oil pressure gauge does not show engine oil pressure within 10 to 15 seconds after starting engine, shut down immediately. Notify organizational maintenance. Lack of lubrication may damage engine.

**CAUTION**

Do not operate engine above 1,000 RPM during warm-up until oil pressure gauge indicates 25 to 30 psi at 800 to 1,000 RPM. Oil pressure gauge should indicate 50 to 70 psi when engine operates at 1,800 to 2,000 RPM. Lack of lubrication may damage engine.

**NOTE:** Check that oil pressure gauge reads 5 to 10 psi at idle and 40 to 60 psi during normal operation.

Transparency PLS 3-2

(6) Press accelerator pedal [5] until tachometer [7] indicates 800 to 1,000 RPM.

(7) Run engine at 800 to 1,000 RPM for about three minutes.

(8) Check that oil pressure gauge [8] reads 25 to 30 psi at 800 to 1,000 RPM. A cold engine may read above 30 psi, while a hot engine may read as low as 5 psi at idle.

**NOTE:** If red and green needles on air pressure gauge do not read 60 to 125 psi after warm-up, shut off engine. Notify organizational maintenance.

(9) Check that air pressure gauge [14] reads 60 to 125 psi. Low air indicator [13] will light and alarm [6] will sound until both needles reach above 60 psi.

(10) Check that fuel gauge [10] shows enough fuel to complete the mission.

(11) Check that water temperature gauge [9] does not read over 210°F.

**NOTE:** The water temperature gauge may not show a reading until after extensive operation.

(12) Check that 12-volt battery gauge [11] reads between 13 and 14 volts.

(13) Check that 24-volt battery gauge [12] reads between 26 and 28 volts.

(14) Check that air filter restriction indicator reads less than 20 inches H<sub>2</sub>O.

Transparency PLS 3-3

b. Engine shutdown.

(1) Bring vehicle to a complete stop.

(2) Shift transmission to neutral (N) [1].

(3) Apply the parking brake [2]. Pull to apply.

(4) Run engine at 800 to 1,000 RPM for three to five minutes. This continues oil circulation to turbocharger which is turning at about 67,000 RPM.

(5) Idle engine for 30 seconds.

(6) Shut off all accessories.

(7) Turn engine on/off/start (ignition) switch [4] to off position.

3. Practical exercise: None.

4. Evaluation: Students are evaluated daily during driving tasks and are tested during the EOCCT.

5. Summary:

a. Recap main points.

b. Allow for questions.

c. Clarify questions.

d. Give closing statement.

6. Retraining: Training is reinforced during daily driving tasks.

**E. SAFETY RESTRICTIONS.** None.

**F. ADDITIONAL COMMENTS AND INFORMATION.** Recommended instructional time is 0.5 hour conference.

**LESSON TITLE:** OPERATE ENGINE BRAKE (JAKE BRAKE)

**TASK NUMBER:** 551-721-1366 (Drive Vehicle with Automatic Transmission)

**A. TRAINING OBJECTIVE.**

**TASK:** Operate the engine brake.

**CONDITIONS** Given instruction on the M1074/M1075 PLS truck and a requirement to locate the controls and explain the operation of the engine brake.

**STANDARD:** Correctly locate the controls and explain the operation of the engine brake.

**B. INTERMEDIATE TRAINING.** None.

**C. ADMINISTRATIVE INSTRUCTIONS.**

1. Training time: As scheduled.
2. Training location: Scheduled classroom.
3. Training type: Conference.
4. Students: Scheduled personnel.
5. Principal and assistant instructors required: One primary instructor.
6. Training aids and equipment: Overhead projector, transparencies, and screen.
7. Reference: TM 9-2320-364-10.

**D. SEQUENCE OF ACTIVITY.**

1. Introduction:
  - a. Interest device.
  - b. Tie-in.
  - c. Lesson objective (paragraph A).
  - d. Procedures.
    - (1) Explanation.

## (2) Summary.

## 2. Explanation:

## Transparency PLS 4-1

a. How the engine brake (Jake brake) works. The principle behind the engine brake is very simple. It is a hydraulically operated device that converts a power-producing diesel engine into a power-absorbing retarding mechanism. To understand how the engine brake provides its strong retarding power, compare the engine cycles with and without an engine brake. For this purpose, the illustrations pertain to a four-cycle engine. However, the engine brake is effective on both two- and four-cycle diesels.

## (1) During the intake stroke--

(a) Without engine brake [1], the intake valve is opened and air is pulled into the cylinder.

(b) With engine brake [1A], same action occurs as above.

## (2) During the compression stroke--

(a) Without engine brake [2], air is compressed to between 500 and 1,000 psi and heat rises to about 1,000°F. Fuel is injected and combustion occurs, resulting in a pressure rise to some 1,500 psi, with a corresponding increase in temperature.

(b) With engine brake [2A], air is compressed with corresponding increases in pressure and temperature. Near top dead center, the engine brake's slave piston opens the exhaust valve, and the compressed air mass (representing potential energy) is released through the exhaust system. (Note black arrows in illustrations [2A] and [3A]). No combustion occurs since the engine brake operates only when the engine is in a no fuel (foot completely off accelerator) mode.

## (3) During the power stroke--

(a) Without engine brake [3], the high pressures resulting from the combustion of the fuel/air mixture force the piston down, imparting power to the drivetrain.

(b) With engine brake [3A], no positive power is produced since the compressed air mass was released via the exhaust system

during the modified compression stroke. The energy required to return the piston to its bottom position is now derived from the momentum of the vehicle. It is this two-step process, elimination of the compressed air and use of vehicle momentum to move the piston, that develops the engine brake's retarding capabilities.

(4) During the exhaust stroke--

(a) Without engine brake [4], upward motion of the piston forces exhaust gases out of the cylinder.

(b) With engine brake [4A], any remaining air is forced out of the cylinder.

b. How the engine brake is controlled. Discuss the system briefly. DDEC (Detroit Diesel Electronic Control) controls the brake. There are three basic parts:

(1) DDEC control, an electronic sensor that responds to the activation switch to control the exhaust valves.

(2) Engine device that works the exhaust valve.

(3) Three-position activation switch.

Transparency PLS 4-2

c. When and how to use the engine brake.

**NOTE:** The engine must be warmed before using or checking the operation of the engine brake. The engine brake uses engine oil to operate. The oil must be warmed enough to flow through the tiny orifices and valves that cause the engine brake to operate.

(1) Location of control and how to operate.

(a) The engine brake switch has three positions: off (top position), low (center position), and high (bottom position). Set the engine brake switch [1] to low. Indicator light [2] will come on.

(b) Lift foot off throttle treadle (accelerator pedal). Engine brake will automatically slow vehicle.

(c) Optimum braking occurs with engine between 1,650 and 2,100 RPM [3]. Select appropriate transmission range and engine brake

setting to maintain desired effect. Do not over rev engine during braking.

(d) If more braking is required, set the engine brake switch [1] to high.

**WARNING**

Apply engine brake only when vehicle tires have good traction. Use of the engine brake on slick surfaces can cause the vehicle to skid and cause injury or death.

**NOTE:** Service (wheel) brakes must be used in addition to engine brake for maximum braking. The engine brake supplements the service brakes. The engine brake is a vehicle-slowng device, not a vehicle-stopping device.

Transparency PLS 4-3

d. When to use engine brake.

- (1) Do not use the engine brake until the engine has warmed.
- (2) Select proper transmission gear to keep engine speed high, but not beyond governed speed (1,650 to 2,100 RPM).
- (3) Always be aware of control switch position.
- (4) Use proper brake position for existing road condition.
- (5) Get acquainted with braking feel to make best use of the system.
- (6) Note that the gear used going up grade is usually good for going down.
- (7) Always shut off control switch after use.

3. Practical exercise: None.

4. Evaluation: Students are evaluated daily during driving tasks and are tested during the EOCCT.

5. Summary:

- a. Recap main points.
- b. Allow for questions.
- c. Clarify questions.



d. Give closing statement.

6. Retraining: Training is reinforced during daily driving tasks.

**E. SAFETY RESTRICTIONS.** None.

**F. ADDITIONAL COMMENTS AND INFORMATION.** Recommended instructional time is 0.5 hour conference.

## ENGINE BRAKE (JAKE BRAKE) INFORMATION SHEET

1. Each M1074/M1075 PLS truck is equipped with a retarder system that enables the engine to act as a brake. Use the engine brake for descending grades or in any situation where slowing is required. Do not use it on slippery road surfaces (rain, snow, sleet, or ice). Using the engine brake on slippery surfaces can cause the vehicle to skid. The engine brake is most effective between 1,650 to 2,100 RPM.
2. Never allow the engine speed to drop below 1,650 RPM with the engine brake applied. This will cause serious transmission damage.

### CAUTION

The engine brake loses effectiveness in controlling engine RPM and vehicle speed when being pushed by a load down a grade. Use service brakes and manually downshift range selector as necessary on long grades to keep vehicle speed under control and engine RPM at 1,650 to 2,100.

3. Use the following procedures when the vehicle tires have good traction:
  - a. Select a gear that will allow the engine with the engine brake applied to control the truck speed with the engine at or below 2,100 RPM and service brakes not applied. This means as you approach a downgrade, progressively select a gear which when combined with the engine brake will allow you to maintain an engine speed of 1,650 to 2,100 RPM.
  - b. As engine speed exceeds 2,100 RPM, apply the service brakes one time to slow the engine speed, turn off the engine brake, and downshift one gear. (If you are in 4, downshift to 3 and reapply the engine brake.) Repeat this procedure until the engine speed can be maintained between 1,650 to 2,100 RPM.
  - c. If the engine overspeeds (above 2,100 RPM), apply the service brakes one time to slow the vehicle speed and regain control.

### WARNING

Failure to follow the downhill driving procedures may cause you to lose vehicle control and result in severe injury or death to personnel.

### CAUTION

Excessive use of the service brake to control downhill speed will result in the loss of braking power because of heat buildup.

### WARNING

Rapid operation repeatedly of service brakes will consume compressed air supply and cause automatic spring brake application. Failure to follow proper service brake operating procedures may cause serious injury or death to personnel.

4. The instructor must emphasize and reemphasize the importance of the proper downhill braking procedures and the use of the engine brake, especially on slippery surfaces, as outlined above. He must instill in the drivers that if these procedures are not followed, death or serious injury can result.

5. Also, the instructor must explain to the students that braking ability and braking techniques are different when loaded. The driver must think and plan ahead, increasing following distance and reducing speed consistent with road and traffic conditions.

**LESSON TITLE:** OPERATE THE PLS CENTRAL TIRE INFLATION SYSTEM (CTIS)/DRIVELINE LOCKUP

**TASK NUMBER:** 551-721-3361 (Operate the PLS Central Tire Inflation System [CTIS]/Driveline Lockup)

**A. TRAINING OBJECTIVE.**

**TASK:** Operate the PLS central tire inflation system (CTIS)/driveline lockup.

**CONDITIONS** Given instruction on the M1074/M1075 PLS truck and a requirement to locate the controls and explain the operation of the CTIS/driveline lockup.

**STANDARD:** Correctly locate the controls and explain the operation of the PLS central tire inflation system (CTIS)/driveline lockup.

**B. INTERMEDIATE TRAINING.** None.

**C. ADMINISTRATIVE INSTRUCTIONS.**

1. Training time: As scheduled.
2. Training location: Scheduled classroom.
3. Training type: Conference.
4. Students: Scheduled personnel.
5. Principal and assistant instructors required: One primary instructor for the class.
6. Training aids and equipment: Screen, overhead projector, and transparencies.
7. Reference: TM 9-2320-364-10.

**D. SEQUENCE OF ACTIVITY.**

1. Introduction:
  - a. Interest device.
  - b. Tie-in.
  - c. Lesson objective (paragraph A).

d. Procedures.

(1) Explanation.

(2) Summary.

2. Explanation:

a. General. The PLS CTIS is designed to improve traction under different driving conditions and to maximize mobility without sacrificing tire life. It will automatically adjust the pressure in all tires to correspond to the rotary switch position selected and activated by the operator.

Transparency PLS 5-1

b. CTIS and driveline lockup controller.

(1) Rotary selector switch [1] selects one of four tire pressures for maximum traction and minimum tire wear under various conditions and speed limits as follows: highway, 55 MPH; cross-country, 40 MPH; mud, sand, and snow, 12 MPH; emergency, 5 MPH. A green LED at each of the four positions will stay lit continuously if the CTIS is in the proper operating mode. Slow flashing indicates acceptable change. Rapid flashing indicates unacceptable operating parameters and requires corrective action by the operator. In switch position 3 and 4, the switch also changes axle lockup conditions.

**NOTE:** Changing the rotary switch positions engages a new driveline lockup mode; however, it does not activate the CTIS. The operator must always depress the start button on the controller module to initiate a change in CTIS setting.

(2) Overspeed indicator [2] lights (amber) when the vehicle average speed for one minute exceeds the speed limit for the rotary selector switch setting.

(3) Low air indicator [3] lights (red) to warn that air pressure in the vehicle air system is below 90 psi. This condition causes the CTIS to shut down, giving priority to the vehicle brake system for available air pressure. The CTIS will automatically resume operation when the air pressure builds up to about 110 psi.

(4) Start switch [4] is pushed to start operation of the CTIS.

(5) Disable (on/off) switch [5] disables the entire CTIS system. When this toggle switch is moved to the off position, the system is disabled and

tire pressure or CTIS setting cannot be changed until the unit is switched back on. When this switch is off, overspeed protection is also disabled. Driveline function will still operate with the switch in the off position.

#### Transparency PLS 5-2

##### c. Explanation of axle lockup modes.

**NOTE:** The transfer case is not locked up in any of the CTIS modes. This must be done with a separate switch on the side panel.

(1) Highway operation. Limit speed to 55 MPH [1]. Tire pressure is 65 psi front and 75 psi rear. The driveline remains in normal 10-wheel drive (no driveline lockup).

(2) Cross-country. Limit speed to 40 MPH [2]. Tire pressure is 34 psi front and 38 psi rear. The driveline remains in normal 10-wheel drive (no driveline lockup).

(3) Mud, sand, and snow. Limit speed to 12 MPH [3]. Tire pressure is now 20 psi front and 23 psi rear. Interaxle differentials will lock causing axles one and two to turn at the same rate and axles three, four, and five to turn at the same rate. (Tires on each axle may rotate individually.)

(4) Emergency. Limit speed to 5 MPH [4]. Tire pressure is 15 psi front and 18 psi rear. Now interaxle differentials are locked and side-to-side differentials are locked if the transfer case lever is set to low range. (This causes the tires on each axle to rotate at the same rate.)

#### Transparency PLS 5-3

##### **CAUTION**

Do not move the rotary switch to the third or fourth position while the wheels are slipping or vehicle is turning a corner. Damage to the driveline may result.

##### **CAUTION**

Before operating off-road, mud flaps need to be pinned on storage hook located on mud flap bracket. If a steep slope is encountered and mud flaps are not pinned, damage can result

**NOTE:** Select the proper CTIS setting before entering an area where poor traction conditions are likely to occur.

d. Operating procedures. If truck is stopped during CTIS mode change, an increase in engine RPM is required to provide adequate air supply. An increase in RPM is generally not required during normal operation.

- (1) Place on/off switch to the on position [1].
- (2) Set rotary switch [2] on the CTIS for correct driveline lockup and tire pressure to match anticipated driving conditions.

**NOTE:** CTIS may not engage properly if CTIS start button is pressed too quickly.

- (3) Press and hold start button [3] on the controller for about one second to activate the CTIS system.
- (4) Observe green LED lights [4] on controller to check system operation.

**CAUTION**

The rotary switch setting should always correspond to the lighted setting. If the light and switch settings do not match, the operator must change the switch setting to correct the situation.

- (a) A continuous green light indicates the CTIS and driveline lockup are both in proper operating mode and CTIS pressure check/ adjustment cycle has been completed.
- (b) Flashing green light indicates the CTIS is in the process of checking/adjusting the tire pressure.

**CAUTION**

The CTIS increases tire inflation pressure when vehicle speed exceeds the allowable speed for each setting. When an increase in speed is required, maintain the lower speed until the tires are reinflated to the correct pressure.

- (c) A rapidly flashing green light indicates the rotary switch and tire pressure do not match and requires the operator to take corrective action (change the switch setting).
- (5) The amber overspeed [5] light begins to flash when an overspeed condition has been present for one minute and continues to flash along with the green light until the new CTIS setting is reached.
- (6) The red low air light [6] indicates the CTIS has turned off due to a low air pressure in the braking system. Flashing red light indicates a CTIS problem.

**NOTES:** With CTIS manually disabled, the vehicle can still be operated normally (as if the vehicle were not CTIS- equipped) to complete the mission before repairs are made.

Intermittent manual on/off operation of the CTIS system to inflate or deflate tires may still be available to the operator and can be used to complete mission before repairs are made.

If it becomes necessary to disable the CTIS, the tires will have to be manually inflated or deflated.

If a Class III oil leak develops from a wheel valve, turn CTIS on/off switch to off position and complete the mission. Notify organizational maintenance.

- (7) If it becomes necessary to disable the CTIS, turn the on/off switch [1] to off. To start the CTIS, turn on/off switch [1] to on and press start button [3].

#### **CAUTION**

When using emergency position on CTIS, top speed should not exceed 5 MPH and distance traveled should not exceed 5 miles. Care must be exercised as steering response is limited due to full driveline lockup. (The vehicle tries to go straight because of side-to-side lockup.)

- (8) When changing setting from emergency to a lesser degree of driveline lockup, the vehicle must be stopped and driveline torque loading relieved.

- (a) Stop truck.
- (b) Set transmission range selector [7] to neutral.
- (c) Turn CTIS rotary switch [2] to new position.
- (d) Set transmission range selector [7] to reverse.
- (e) Back up about 5 to 10 feet to relieve driveline loading and then bring truck to a stop.
- (f) Press transmission range selector [7] to neutral and then to 3, 2, or 1, depending on ground conditions.

- (9) The chart shows speed limits, lockup mode, and tire pressures for the four rotary switch [2] positions. For example, if the switch is set for cross-country, the speed of the truck should not exceed 40 MPH, no differentials lock up, and the tire pressure will adjust to 34 and 38 psi.



3. Practical exercise: The practical exercise for this lesson is integrated in the driving and off-road driving lessons.

4. Evaluation: Students are evaluated in the driving lessons and tested on the EOCCT.

5. Summary:

a. Recap main points.

b. Allow for questions.

c. Clarify questions.

d. Give closing statement.

6. Retraining: Training is reinforced during daily driving tasks.

**E. SAFETY RESTRICTIONS.** None.

**F. ADDITIONAL COMMENTS AND INFORMATION.** Recommended instructional time is .5 hour conference.

**LESSON TITLE:** PERFORM OPERATOR PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS)

**TASK NUMBER:** 551-721-1352 (Perform Vehicle Preventive Maintenance Checks and Services [PMCS])

**A. TRAINING OBJECTIVE.**

**TASK:** Perform operator PMCS on an M1074/M1075 PLS truck.

**CONDITIONS** Given instruction, DA Form 2404, pencil, TM 9-2320-364-10, equipment records folder, rags, lubricants, coolant, an M1074/1075 PLS truck with BII, and a requirement to inspect the PLS truck according to the PMCS tables listed in TM 9-2320-364-10.

**STANDARD:** Correct all faults within the operator's level of maintenance, and legibly record all others on DA Form 2404. If no faults are found, make necessary entries on DA Form 2404.

**B. INTERMEDIATE TRAINING.** None.

**C. ADMINISTRATIVE INSTRUCTIONS.**

1. Training time: As scheduled.
2. Training location: Classroom and motor pool.
3. Training type: Conference, demonstration, and practical exercise.
4. Students: Scheduled personnel.
5. Principal and assistant instructors required: One primary instructor for the class and one assistant instructor for each two students for the demonstration and practical exercise.
6. Training aids and equipment: Television, VCR, TVT 55-36 (PIN: 710046DA), Part 1, "PLS Truck PMCS," hearing protection, rags, lubricants, and coolant. DA Form 2404, pencil, TM 9-2320-364-10, equipment records folder, and an M1074/M1075 PLS truck with BII for every two students.
7. References: AR 385-55, DA Pamphlet 738-750, and TM 9-2320-364-10.

**D. SEQUENCE OF ACTIVITY.**

1. Introduction:
  - a. Interest device.
  - b. Tie-in.
  - c. Lesson objective (paragraph A).
  - d. Procedures:
    - (1) Explanation.
    - (2) Practical exercise.
    - (3) Summary.
2. Explanation and demonstration:
  - a. Show TVT 55-36, Part 1, "PLS Truck PMCS."
  - b. Demonstrate before-, during-, and after-operation PMCS to students.
3. Practical exercise:
  - a. Assign students to vehicles and issue TM 9-2320-364-10, pencils, DA Form 2404, and equipment records folder. Tell students where rags, lubricants, and coolant are located.
  - b. Students perform PMCS.
4. Evaluation: Check each student's PMCS performance.
5. Summary:
  - a. Recap main points.
  - b. Allow for questions.
  - c. Clarify questions.
  - d. Give closing statement.
6. Retraining: Students perform PMCS daily and are reinforced throughout the course. PMCS is tested on the EOCCT.

**E. SAFETY RESTRICTIONS.**

1. Ensure that all chock blocks are in place when the PLS trucks are parked or maintenance is to be performed.
2. Ensure the transmission is in neutral, the parking brake is set, and the engine is shut off before leaving the truck, when the truck is parked, or maintenance is being performed.
3. Ensure students remove all watches, jewelry, and identification tags before working in or around the PLS truck.
4. Ensure all personnel pay particular attention to the cautions and warnings listed in the operator's manual.
5. Ensure ground guide(s) are used when backing.
6. Ensure all personnel wear hearing protection when working in or around a running PLS truck.
7. Ensure all occupants wear seat belts while the truck is in operation.
8. Ensure the driver and ground guides know and understand the hand and arm signals as outlined in FM 21-305.
9. Ensure all backing is conducted at a speed of 5 MPH or less.
10. Ensure personnel maintain at least three points of contact to mount or dismount the PLS truck (to include performing PMCS).
11. Use the PLS ladder when performing maintenance. Install the two hooks on the ladder in the holes located on top of the fender before use. Using the ladder for other applications could result in serious injury to personnel.
12. Ensure all personnel are clear of truck before engine start is attempted. Operator must visually check to see that all areas of the truck are clear of personnel before attempting to start the engine. Failure to do so could result in serious injury or death to personnel.

**F. ADDITIONAL COMMENTS AND INFORMATION.** Recommended instructional time is 2.0 hours (.25 conference, .75 demonstration, and 1.0 practical exercise). The remaining PMCS is performed throughout the course in conjunction with driving tasks.

**LESSON TITLE:** DRIVE THE PLS TRUCK

**TASK NUMBER:** 551-721- 1366 (Drive Vehicle with Automatic Transmission)

**A. TRAINING OBJECTIVE.**

**TASK:** Drive an M1074/M1075 PLS truck.

**CONDITIONS** Given instruction, DD Form 1970, DA Form 2404, pencil, TM 9 2320-364-10, equipment records folder, rags, lubricants, coolant, a suitable driver training area, an M1074/M1075 truck with BII, and a requirement to operate the PLS truck, start the truck, put the truck in motion, read gauges, upshift and downshift the transmission, manipulate the controls, use correct braking procedures, perform basic driving maneuvers to include backing using ground guides, and shut down the engine.

**STANDARD:** Drive the truck correctly and safely without accident or injury.

**B. INTERMEDIATE TRAINING.** None.

**C. ADMINISTRATIVE INSTRUCTIONS.**

1. Training time: As scheduled.
2. Training location: Classroom, motor pool, and training area as scheduled.
3. Training type: Conference, demonstration, and practical exercise.
4. Students: Scheduled personnel.
5. Principal and assistant instructors required: One primary instructor for the conference, one assistant instructor for the demonstration, and one assistant instructor for each student for the practical exercise.
6. Training aids and equipment: Television, VCR, videotape TVT 55-36 (PIN: 710046DA), Part 2, "PLS Driving Techniques," hearing protection, rags, lubricants, coolant, and 40 traffic cones or empty POL drums. DA Form 2404, DD Form 1970, pencil, TM 9-2320-364-10, equipment records folder, and an M1074/M1075 truck with BII for each student.
7. References: AR 385-55, DA Pamphlet 738-750, TM 9-2320-364-10, and FM 21-305.

**D. SEQUENCE OF ACTIVITY.**

## 1. Introduction:

- a. Interest device.
- b. Tie-in.
- c. Lesson objective (paragraph A).
- d. Procedures.
  - (1) Explanation.
  - (2) Practical exercise.
  - (3) Summary.

## 2. Explanation and demonstration:

**NOTE:** An instructor will be in the cab whenever a student is driving the PLS truck.

- a. Show videotape TVT 55-36, Part 2, "PLS Driving Techniques."
- b. Place vehicle in motion.
  - (1) Perform before-operation PMCS.
  - (2) Remove and stow wheel chocks in stowage box.
  - (3) Ensure MHC and outriggers are secured in their stowed position (M1074 only).
  - (4) Adjust each rearview mirror so back of truck and view of road can be seen.
  - (5) Adjust foot rest if required.
  - (6) Adjust seat as needed.
  - (7) Adjust seat belt as needed.



**WARNING**

Ensure all personnel are clear of truck before engine start is attempted. Operator must visually check to see that all areas of the truck are clear of personnel before attempting to start the engine. Failure to do so could result in serious injury or death to personnel.

- (8) Start engine and allow it to warm up.

**CAUTION**

Hydraulic selector switch must be in off position before driving or hydraulic system could overheat causing damage to equipment

- (9) Ensure hydraulic (LHS mode) selector switch is in the off position.
- (10) Push CTIS on/off switch to the on position.
- (11) Check all gauges and instruments. Ensure all are registering normal readings.
- (12) Turn on lights as appropriate.
- (13) Set the transfer case shift lever to the appropriate range.
- (14) Set the CTIS rotary selector switch to the appropriate position. Press and hold CTIS start switch for about one second.
- (15) Apply the service brake and press the transmission range selector button to the appropriate range.
- (16) Push in the parking brake control to release the brakes.
- (17) Release the service brake pedal and slowly press the accelerator pedal until the truck reaches the desired speed.
- (18) Accelerate, brake, and steer as required.

**CAUTION**

Do not hold steering wheel at full left or right position for longer than 10 seconds. Oil overheating and pump damage can result.

- (19) Manually downshift the transmission range selector to match driving conditions.

c. Stop the truck.

- (1) Release the accelerator pedal.

- (2) Depress the brake pedal.

**WARNING**

Apply brakes gradually when stopping. A panic stop will cause the vehicle wheels to lock, engine to stall, and power steering to fail. Failure to do this will result in injury or death.

**WARNING**

Repeated rapid operation of service brakes will consume compressed air supply and cause automatic spring brake application. Failure to follow proper service brake operating procedures may cause serious injury or death to personnel.

- (3) As the vehicle begins to reduce speed, decrease brake pedal pressure.
- (4) Stop smoothly by releasing the brake pedal pressure gradually as the stopping rate increases.
- (5) After stopping, apply the brake just enough to keep the truck stopped.

d. Avoid backing the truck. Since the driver cannot see directly behind his vehicle, backing is always a dangerous maneuver. Common sense therefore dictates that backing be avoided whenever possible. For example, if the vehicle must be parked, the driver parks so that he will be able to pull forward when leaving. Though planning ahead can reduce the need to back, almost everyone who drives will have to back on occasion. These four simple rules will help to back safely:

- (1) Inspect your intended path.
- (2) Back and turn toward the driver's side.
- (3) Use four-way flashers and horn (backup alarm is activated whenever the transmission is in reverse and blackout lights are turned off).
- (4) Use ground guide(s).



**WARNING**

When backing up or going forward, ground guides should never stand directly in the vehicle's path. Keep 10 yards between the vehicle and ground guides at the front or rear and at the corners of the vehicle (never directly behind the vehicle). Ground guides must not position themselves between the vehicle being guided and another object where an inadvertent engine surge or momentary loss of vehicle control could cause injury. The vehicle driver will immediately stop the vehicle if he loses sight of ground guides or notes that the guide is dangerously positioned between the vehicle and another object. In such cases, the vehicle driver will secure his vehicle, dismount, and make an on-the-spot correction before commencing operations.

- e. Park the truck and shut down the engine.

**WARNING**

Do not park the truck on a steep grade. Serious injury to personnel could result.

- (1) Align the front tires in a straight ahead position.
- (2) Pull out the parking brake control.
- (3) Press transmission range selector button to neutral.
- (4) Chock wheels.
- (5) Increase engine speed to 800 to 1,000 RPM and continue to run engine for three to five minutes.
- (6) Release the accelerator pedal.
- (7) Turn engine switch to off.
- (8) Perform after-operation PMCS.

- f. Demonstrate hand and arm signals required for this exercise.

- g. Demonstrate driving within the training area.

3. Practical exercise:

- a. Assign students to vehicles and issue TM 9-2320-364-10, pencil, DA Form 2404, DD Form 1970, and equipment records folder. Tell students where rags, lubricants, and coolant are located.

- b. Students perform before-operation PMCS.

- c. Students practice maneuvering the PLS truck through the courses laid out in the training area(s). Sample training areas are in Chapter 6 (Figures 6-1 through 6-5). During-operation PMCS is also conducted at this time.

**NOTE:** As each student practices driving, an assistant instructor rides in the right seat. The assistant instructor explains driving techniques, ensures the driver is aware of driving situations, and conducts after-action reviews with each driver. Now is the time to pass on valuable experience and correct any bad driving habits.

- d. Students perform after-operation PMCS and ensure all operator entries required on DA Form 2404 and DD Form 1970 are accurate, complete, and legible.

- 4. Evaluation: Check each student's performance of PMCS and driving.

- 5. Summary:

- a. Recap main points.
- b. Allow for questions.
- c. Clarify questions.
- d. Give closing statement.

6. Retraining: Retrain No-Gos and slow learners. This can be accomplished using the videotape TVT 55-36, Part 2, "PLS Driving Techniques." Students perform driving tasks daily and are tested on the EOCCT.

## **E. SAFETY RESTRICTIONS.**

- 1. Ensure that all chock blocks are in place when the PLS trucks are parked or maintenance is to be performed.
- 2. Ensure the transmission is in neutral, the parking brake is set, and the engine is shut off before leaving the truck, when the truck is parked, or maintenance is being performed.
- 3. Ensure students remove all watches, jewelry, and identification tags before working in or around the PLS truck.
- 4. Ensure all personnel pay particular attention to the cautions and warnings listed in the operator's manual.
- 5. Ensure ground guide(s) are used when backing.

6. Ensure all personnel wear hearing protection when working in or around a running PLS truck.
7. Ensure all occupants wear seat belts while the truck is in operation.
8. Ensure the driver and ground guides know and understand the hand and arm signals as outlined in FM 21-305.
9. Ensure all backing is conducted at a speed of 5 MPH or less.
10. Ensure personnel maintain at least three points of contact to mount or dismount the PLS truck (to include performing PMCS).
11. Use the PLS ladder when performing maintenance. Install the two hooks on the ladder in the holes on top of the fender before use. Using the ladder for other applications could result in serious injury to personnel.
12. Ensure all personnel are clear of truck before engine start is attempted. Operator must visually check to see that all areas of the truck are clear of personnel before attempting to start the engine. Failure to do so could result in serious injury or death to personnel.
13. Apply brakes gradually when stopping. A panic stop will cause the vehicle wheels to lock, engine to stall, and power steering to fail. Failure to do this will result in injury or death.
14. Repeated rapid operation of service brakes will consume compressed air supply and cause automatic spring brake application. Failure to follow proper service brake operating procedures may cause serious injury or death to personnel.
15. Do not park the truck on a steep grade. Serious injury to personnel could result.

**F. ADDITIONAL COMMENTS AND INFORMATION.** Recommended instructional time is 11 hours (.5 conference, .5 demonstration, and 10.0 practical exercise including 1.5 PMCS).

**LESSON TITLE:** DRIVE THE PLS TRUCK ON THE ROAD (PRIMARY AND SECONDARY)

**TASK NUMBER:** 551-721-1366 (Drive Vehicle with Automatic Transmission)

**A. TRAINING OBJECTIVE.**

**TASK:** Drive a loaded and empty PLS truck on the road (primary and secondary).

**CONDITIONS** Given instruction, DD Form 1970, DA Form 2404, pencil, TM 9-2320-364-10, equipment records folder, rags, lubricants, coolant, designated driving route (improved surfaced and secondary roads), an M1074 or M1075 truck with BII, an M1077 flatrack with securely tied down palletized load, and a requirement to drive a designated route (to include make right and left turns, make gradual steering corrections, signal intentions in advance, pass oncoming vehicles, maintain vehicle interval, obey highway warning and regulatory signs, operate the lights as required, monitor gauges and indicator lights, upshift/ downshift the transmission through all gear ranges, manipulate the controls, and perform basic driving maneuvers to include downhill braking [using the engine brake] and backing using ground guides).

**STANDARD:** Operate the truck correctly and safely without accident or injury.

**B. INTERMEDIATE TRAINING.** None.

**C. ADMINISTRATIVE INSTRUCTIONS.**

1. Training time: As scheduled.
2. Training location: Motor pool and driver training route (built up and rural areas) as scheduled.
3. Training type: Conference and practical exercise.
4. Students: Scheduled personnel.
5. Principal and assistant instructors required: One primary instructor for the conference and one assistant instructor for each student for the practical exercise.
6. Training aids and equipment: Rags, lubricants, coolant, DA Form 2404, DD Form 1970, pencil, TM 9-2320-364-10, equipment records folder, an M1074/M1075 PLS truck with

BII for each student, and one M1077 flatrack with securely tied down palletized load for each two trucks.

7. References: AR 385-55, DA Pamphlet 738-750, TM 9-2320-364-10, and FM 21-305.

**D. SEQUENCE OF ACTIVITY.**

1. Introduction:

- a. Interest device.
- b. Tie-in.
- c. Lesson objective (paragraph A).
- d. Procedures.
  - (1) Explanation.
  - (2) Practical exercise.
  - (3) Summary.

2. Explanation and demonstration:

**NOTES:** An instructor will be in the cab whenever a student is driving the PLS truck.

The students will be required to drive the truck loaded and empty. If two trucks are used, one truck should be loaded with the PLS flatrack (load should be as close to 16.5 tons as possible) and the other should be empty.

To prevent loss of cargo or shifting en route, check cargo tie-downs or ISO locks for security before operation and repeatedly during operation.

- a. Explain putting the vehicle in motion--
  - (1) On flat roadways.
  - (2) On upgrades.
  - (3) On downgrades.
  - (4) In sand and snow, and on ice.
- b. Explain the procedures for braking--
  - (1) Using the engine brake (Jake brake).

**NOTE:** For detailed information on the use of the engine brake refer to the lesson outline, Operate Engine Brake (Jake Brake).

- (2) Using the service brakes (foot brake).
- (3) Driving on flat roadways.
- (4) Driving on sand, snow, ice, and wet surfaces.
- (5) Using emergency braking procedures.
- (6) Downshifting the transmission.

c. Explain procedures for hill climbing:

- (1) The engine works hardest when moving a loaded truck up a grade. Proper use of gear ranges will shorten the time on hills.
- (2) Unless the hill is extreme, begin in gear range D (drive), and depress the accelerator pedal all the way downward. Keep it there as the truck moves up the grade. If there is enough power to maintain a satisfactory road speed, remain in this gear range and allow the transmission to upshift and downshift automatically.
- (3) As you progress up the hill count the number of downshifts.

**NOTE:** The automatic transmission is equipped with a lockup clutch that automatically engages after the load is rolling and torque demand is low. This provides increased fuel economy at highway cruising speeds. It automatically releases at lower vehicle speeds. Lockup engagement, like range shifts, may be felt under some conditions and you may hear a slight change in engine sound as RPM drop. A little driving experience will enable you to tell the difference between gear range changes and lockup engagement/disengagement.

- (4) When you reach the top of the hill, manually downshift the transmission to the gear that the transmission is in (this was the reason for counting the number of downshifts). This is normally the gear the truck should be in to descend the other side of the hill.
- (5) For starting on maximum grades with maximum load (such as truck fully loaded), stop the truck and shift the transfer to low. Start in gear range 2, depress accelerator pedal to the floor, and manually upshift the lever one range at a time, shifting when engine speed approaches 2,000 RPM.

d. Explain procedures for downhill driving:

- (1) Manually downshift the transmission into a lower gear before starting downgrade. (The general rule is to use the same gear to descend the grade that would be needed to climb the grade.)
- (2) Check brakes before starting the downgrade.
- (3) Set the engine brake switch to low. If more braking is needed, set the switch to high.

**NOTE:** For detailed information on the use of the engine brake, refer to the lesson outline, Operate Engine Brake (Jake Brake).

- (4) Pay attention to signs indicating location of escape ramps.
- (5) Use steady brake applications as required to slow vehicle speed.
- (6) If braking power diminishes, use pull off and allow brakes to cool.

**CAUTION**

Excessive use of the service brake to control downhill speed will result in the loss of braking power because of heat buildup.

**WARNING**

Repeated rapid operation of service brakes will consume compressed air supply and cause automatic spring brake application. Failure to follow proper service brake operating procedures may cause serious injury or death to personnel.

e. Explain following distances:

- (1) Maintain one second for each 10 feet of vehicle length (40 MPH and less). The PLS truck is 36 feet long, so at speeds up to 40 MPH, allow four seconds following distance.
- (2) Increase by one second for speeds over 40 MPH. At 45 MPH, with the PLS truck, allow five seconds following distance.
- (3) Increase by several seconds for rain, fog, and winter conditions.

f. Explain maneuvering the vehicle--

- (1) In curves.

- (2) Through a constant curve.
- (3) Through a U-turn.
- (4) At intersections.
- (5) At turns.
  - (a) Start to turn before reaching the intersection.
  - (b) Observe the rear of the truck through the mirrors. (Normally, the PLS will follow the front wheels with minimal off-tracking.)
- (6) When steering the vehicle.

**NOTE:** When driving the PLS truck at highway speeds, new drivers tend to hug the edge of the road and oversteer. The rear axle of the truck is a steering axle and generally drivers tend to work the steering wheel too much. This causes the truck to constantly wander or sway. To correct this, check the position of the truck in the rearview mirrors, keep the truck centered in its lane, and make minor steering corrections.

- (7) When making gradual steering corrections.
- (8) To avoid abrupt steering movements.
- (9) When passing stationary and moving vehicles.

g. Explain lane changing:

- (1) Signal intentions.
- (2) Check mirrors.

h. Give safety briefing.

i. Explain ground guide safety precautions for backing the truck.

3. Practical exercise:

- a. Assign students to vehicles and issue TM 9-2320-364-10, pencils, DA Form 2404, DD Form 1970, and equipment records folder. Instruct students on the location of rags, lubricants, and coolant.
- b. Students perform before-operation PMCS.
- c. Students practice driving the vehicle on the road (primary and secondary). During-operation PMCS is also conducted at this time.



**NOTE:** As each student practices driving, an assistant instructor rides in the right seat. The assistant instructor explains driving techniques, ensures the driver is aware of driving situations, and conducts after-action reviews with each driver. Now is the time to pass on valuable experience and correct any bad driving habits.

d. Students perform after-operation PMCS and ensure all operator entries required on DA Form 2404 and DD Form 1970 are accurate, complete, and legible.

4. Evaluation: Check each student's performance of PMCS and driving.

5. Summary:

a. Recap main points.

b. Allow for questions.

c. Clarify questions.

d. Give closing statement.

6. Retraining: Retrain No-Gos and slow learners. Students perform driving tasks daily and are tested on the EOCCT.

## **E. SAFETY RESTRICTIONS.**

1. Ensure that all chock blocks are in place when the PLS trucks are parked or maintenance is to be performed.

2. Ensure the transmission is in neutral, the parking brake is set, and the engine is shut off before leaving the truck, when the truck is parked, or when maintenance is being performed.

3. Ensure students remove all watches, jewelry, and identification tags before working in or around the PLS truck.

4. Ensure all personnel pay particular attention to the cautions and warnings listed in the operator's manual.

5. Ensure ground guide(s) are used when backing.

6. Ensure all personnel wear hearing protection when working in or around a running PLS truck.

7. Ensure all occupants wear seat belts while the truck is in operation.

8. Ensure the driver and ground guides know and understand the hand and arm signals as outlined in FM 21-305.

9. Ensure all backing is conducted at a speed of 5 MPH or less.

10. Ensure personnel maintain at least three points of contact to mount or dismount the PLS truck (to include performing PMCS).

11. Use the PLS ladder when performing maintenance. Install the two hooks on the ladder in the holes located on top of the fender before use. Using the ladder for other applications could result in serious injury to personnel.

12. Ensure all personnel are clear of truck before engine start is attempted. Operator must visually check to see that all areas of the truck are clear of personnel before attempting to start the engine. Failure to do so could result in serious injury or death to personnel.

13. During driving operations, hydraulic selector switch must be placed in the off position or hydraulic system overheating will result.

14. Do not hold steering wheel at full left or right position for longer than 10 seconds. Oil overheating and pump damage can result.

15. Apply brakes gradually when stopping. A panic stop will cause the vehicle wheels to lock, engine to stall, and power steering to fail. Failure to do this will result in injury or death.

16. Repeated rapid operation of service brakes will consume compressed air supply and cause automatic spring brake application. Failure to follow proper service brake operating procedures may cause serious injury or death to personnel.

17. Excessive use of the service brake to control downhill speed will result in the loss of braking power because of heat buildup.

18. Do not park the truck on a steep grade. Serious injury to personnel could result.

19. Apply engine brake only when truck tires have good traction. Use of engine brake on slippery surfaces can cause the truck to skid and cause injury to personnel.

20. If emergency steer light illuminates when driving, immediately pull the truck over to the side of the road and stop or serious injury or death could result.

**F. ADDITIONAL COMMENTS AND INFORMATION.** Recommended instructional time is 12 hours (1.0 conference and 11.0 practical exercise, including 2.0 PMCS).

**LESSON TITLE:** CHANGE TIRE ON PLS TRUCK USING TIRE DAVIT

**TASK NUMBER:** 551-721-3371 (Change Tire on PLS Truck Using Tire Davit)

**A. TRAINING OBJECTIVE.**

**TASK:** Change a tire on the PLS truck using the tire davit.

**CONDITIONS** Given instruction, TM 9-2320-364-10, rags, heavy work gloves, hearing protection, an M1074 or M1075 truck with BII, and a requirement to change a simulated flat tire on the truck.

**STANDARD:** Perform task in the correct sequence according to TM 9-2320-364-10 and without damage to equipment or injury to personnel. Students will be graded on a Go/No-Go basis.

**B. INTERMEDIATE TRAINING.** None.

**C. ADMINISTRATIVE INSTRUCTIONS.**

1. Training time: As scheduled.
2. Training location: Training area or motor pool as scheduled.
3. Training type: Demonstration and practical exercise.
4. Students: Scheduled personnel.
5. Principal and assistant instructors required: One primary instructor for the class, one assistant instructor for every six students for the demonstration and one assistant instructor for every two students for the practical exercise.
6. Training aids and equipment: Rags, heavy work gloves, TM 9-2320-364-10, and an M1074 or M1075 truck with BII for every two students. Hearing protection is required for all personnel.
7. References: TM 9-2320-364-10.

**D. SEQUENCE OF ACTIVITY.**

1. Introduction:
  - a. Interest device.
  - b. Tie-in.

- c. Lesson objective (paragraph A).
- d. Procedures.

- (1) Explanation.
- (2) Practical exercise.
- (3) Summary.

2. Explanation and demonstration:

**NOTE:** Changing a tire on the PLS truck is a two-soldier task. One soldier cannot safely do this task.

- a. Review safety warnings.
- b. Park the truck.
  - (1) Park the truck in a safe area, out of traffic, where there is no traffic danger to personnel changing the tire. Also, the truck must be parked on hard, level ground.
  - (2) Set the parking brake, press the transmission range selector button to neutral, turn the CTIS on/off switch to off, and shut off the engine.
  - (3) Turn on emergency flashers as dictated by traffic hazards.
  - (4) Position emergency reflective triangles as dictated by traffic hazards.
  - (5) Chock the wheels. It is best to chock a front wheel on the opposite side of the truck. For example, if the right front tire of axle one were flat, chock the left front tire of axle two, front and rear of the tire, to prevent movement in either direction.
- c. Tools. Remove all necessary tools from truck stowage boxes (jack, jack handle extension, jack plate, winch handle, 7/8-inch by 3/4-inch open end wrench, 3/4-inch tube wrench, 8-inch adjustable wrench, air hose, air impact wrench, cargo strap, 33-mm socket, and 1 1/2-inch socket [extension wrench and sliding handle may be used in place of air impact wrench]).

**NOTE:** If an air impact wrench is not available, a slide handle with extension handle can be used.

- d. Remove spare tire and jack up truck.

- (1) Install the winch handle to spare tire winch and turn counterclockwise about three turns (or until there is enough slack in winch cable to remove the hook).
- (2) Remove hook from spare tire winch.
- (3) Turn the winch handle counterclockwise until the winch cable hook touches the ground.
- (4) Position the vehicle ladder on the left side of the truck, climb the ladder, and get in position by the tire davit.

**WARNING**

Do not touch hot exhaust system with bare hands; injury to personnel will result.

**NOTE:** There is a second hole drilled in the extension arm to allow the pin to be reinserted and lock the extension arm in the extended position.

- (5) Remove the safety pin and pin from the tire davit extension arm and extend the extension arm to the second alignment hole. Install the pin and safety pin in the second alignment hole.
- (6) Remove the safety pin and pin from the hoist (this allows the spare tire and davit to swivel, which will be accomplished later in this procedure).

**WARNING**

Ensure all personnel wear protective gloves at all times during this procedure when handling the cable. The cable may fray and injury to personnel may result.

- (7) Route the hook and cable through the mounting plate and around the spare tire. Be careful that the cable does not damage the CTIS fittings on the spare tire.
- (8) Attach the hook to the cable above the spare tire ensuring that the hook is connected at a point where the rubber casing covers the cable. If the hook is attached to the bare cable, damage to the cable will result.
- (9) Move the access ladder to the right side of the truck.
- (10) Turn the spare tire winch handle clockwise to place tension on the cable.
- (11) Connect the air hose to truck air coupling and connect the air impact wrench to the other end of the air hose.

**NOTE:** Perform steps (12) and (13) if the flat tire is on axle three. The reason for doing these two steps is to relieve pressure on the air bags on axle three. If the pressure is not relieved, in some terrain situations the jack will not fit under the axle beam.

(12) Close the ball valve located on top of the crossmember behind the transfer case by turning the lever.

(13) Open the air tank drain valve petcocks on both sides of the truck (rear tanks). This isolates the system so that no air goes to the air bags and the vehicle still has three remaining air tanks to provide air for the air impact wrench.

**NOTE:** Jack position will vary depending on location of flat tire.

(14) Position the jack base plate, jack, and handle under the truck axle beam nearest the flat tire. Unscrew the jack extension until it touches the truck axle beam.

(15) Raise the jack until the flat tire is slightly off the ground.

(16) Start the truck and build up the air pressure to above 120 psi. Air pressure must be maintained above 120 psi while using the air impact wrench.

**WARNING**

Wear hearing protection during the tire-changing procedure while using the air impact wrench. Failure to do so may result in injury to personnel.

(17) Using the air impact wrench and 1 1/2-inch socket, remove the two nuts and plate from the spare tire mounting plate.

(18) Disconnect the ratchet strap from the spare tire hold-down strap.

**WARNING**

Stand clear of tire when raising or lowering. Do not let the tire hang in midair for a long period of time. Place tire on carrier or on ground as soon as possible. Tire is very heavy (about 500 pounds) and could cause serious injury or death if it falls.

(19) Hook the cargo strap to the rim and move the access ladder out of the way.

(20) Turn the spare tire winch handle clockwise to lift the spare tire just above the carrier.

(21) Pull on the cargo strap so the spare tire swings clear of the truck.

(22) Turn the winch handle counterclockwise to lower the spare tire to the ground.

(23) Remove the cargo strap and winch cable from the spare tire. With the aid of an assistant, rotate the spare tire so that the mounting plate is facing away from the truck and lean the spare tire against the truck, out of the way.

**WARNING**

While changing tires or while performing tire maintenance, stay out of the trajectory of the wheel. The wheel trajectory area is the rim on both sides of the wheel. Under some circumstances, the trajectory may deviate from its expected path. Failure to follow proper procedures may result in injury or death to personnel.

**CAUTION**

Be careful not to twist the CTIS plug tethering cables. Failure to comply may result in damage to equipment

(24) Using 7/8-inch by 3/4-inch open end wrench, remove the two plugs from the CTIS valves. Save these plugs to install in the CTIS valves in the flat tire.

(25) With the aid of an assistant, rotate the tire, remove the three nuts from the mount plate, and retain for later use (when the flat is mounted in place of the spare tire).

(26) Remove the mount plate from the spare tire. Remember the position of the mount plate, so that when the flat tire is mounted, the plate will be in the same relative position to the CTIS valve.

e. Remove flat tire.

(1) Using air impact wrench and 33-mm socket, remove four wheel cover nuts from the studs and remove the wheel cover from the rim of the flat tire.

**NOTE:** Note the location of the CTIS holes in the tire rim to aid in the installation of the spare tire.

(2) Using 8-inch adjustable wrench, 3/4-inch tube wrench, and 7/8-inch by 3/4-inch open end wrench, loosen two nuts and remove the two CTIS hoses from the flat tire.

- (3) Install the two CTIS hoses removed from the flat tire on the spare tire CTIS wheel valve and tighten the nuts finger tight.

**WARNING**

Crew member should steady the tire during removal. Falling tire may cause injury to personnel.

**WARNING**

Do not loosen outer bolt circle nuts on wheel. Outer bolt circle holds wheel assembly together. Tire is under pressure and loosening these nuts can cause the tire to blow apart. Severe injury or death can occur.

- (4) Studs and lug nuts on both sides of the truck have right-hand threads. Using air impact wrench and 1 1/2-inch socket, rotate the lug nuts counterclockwise to loosen and remove the 10 lug nuts.

**WARNING**

Keep hands away from the inside of the rim while removing the tire or injury to personnel may result.

**CAUTION**

Tire should be kept upright during removal. Damage to the CTIS may result if the tire falls on the CTIS valve.

- (5) With the aid of an assistant, remove the flat tire from the hub and lean the tire against the truck. Jack handle extension may be used under the tire to assist sliding or creeping wheel away from the hub.

- f. Install spare tire and wheel.

- (1) Roll the spare tire up to axle where flat tire was removed.

**NOTE:** Make sure deep side of spare tire wheel dish is in the same position as the flat tire wheel dish when flat tire was removed.

- (2) Line up the CTIS holes in spare tire with CTIS fittings in hub.

**WARNING**

Tire assembly is very heavy (500 pounds). Do not try to lift or catch tire assembly. Injury to personnel could result.



- (3) Lean top of spare tire against the studs and hub.

**WARNING**

Jack is under heavy pressure. Keep hand, arm, and head clear while slowly raising or lowering the jack to avoid injury to personnel. Do not lower the jack too quickly as tire could fall causing serious injury or death.

**CAUTION**

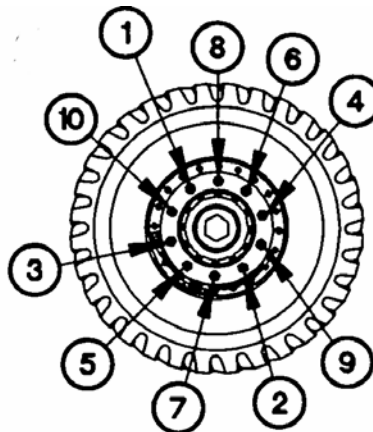
If the jack must be raised or lowered, shut off the truck before moving under the truck.

- (4) Slide the spare tire onto the hub and studs. The jack may have to be raised slightly to accommodate the spare tire. The jack extension handle may be placed near the bottom of the tire to either side and raised up to move the tire forward on the hub and studs.

- (5) Studs and lug nuts on both sides of the truck have right-hand threads. Rotate the lug nuts clockwise to tighten. Install the 10 lug nuts finger tight on the studs.

- (6) If the truck was shut off, start the engine and build up air pressure to above 120 psi. Air pressure must be maintained above 120 psi while using the air impact wrench.

- (7) Using the air impact wrench and 1 1/2-inch socket, tighten the 10 lug nuts using the sequence as shown.



- (8) Allow the air pressure in the truck to reach 120 psi and repeat tightening of the 10 lug nuts using the same sequence.

- (9) Install the two CTIS hoses to the CTIS fittings in the hub and tighten finger tight.

**CAUTION**

When tightening the CTIS hose, be careful not to twist hoses. Use the adjustable wrench to hold the hose fitting in place.

(10) Using the 7/8-inch by 3/4-inch open end wrench and 3/4-inch tube wrench, tighten the two CTIS hose fittings.

(11) Install the wheel cover, ensuring that the hole in the wheel cover is aligned with the tire valve. Install the four wheel cover nuts and tighten finger tight.

**CAUTION**

When using the air impact wrench to tighten the wheel cover nuts, be careful not to overtorque the nuts. Damage to the nuts and studs may occur if wheel cover nuts are overtightened.

(12) Tighten the four wheel cover nuts using the air impact wrench and 33-mm socket.

g. Stow tire using the tire davit.

**NOTE:** Ensure the pointed end of the mounting plate is pointed to the third hole (left or right side) from the center of the wheel valve to prevent damage to the valve from the cable.

(1) Using air impact wrench and socket, install the mount plate and three nuts on the flat tire.

**CAUTION**

Be careful not to twist the CTIS plug tethering cables. Failure to comply may result in damage to equipment.

(2) Install the two plugs to the CTIS valve using 7/8-inch by 3/4-inch open end wrench.

(3) Roll flat tire under hoist arm so deep side of wheel dish is facing out and away from truck.

**NOTE:** Cable is routed through the smaller square hole in mount plate with single mounting stud facing up.

(4) Pull the cable and hook through small square hole in mount plate and around flat tire.



**CAUTION**

Ensure the cable is connected at a point where the rubber casing covers the cable or damage to the cable could result.

- (5) Attach the hook to the cable above the flat tire.

**WARNING**

Stand clear of tire when raising or lowering. Do not let the tire hang in midair for a long period of time. Place tire on carrier or on ground as soon as possible. Tire is very heavy (about 500 pounds) and could cause serious injury or death if it falls.

- (6) Turn the hand crank clockwise to raise the flat tire just above the carrier.

**NOTE:** Use the ladder to push the tire over the carrier.

**NOTE:** If the tire will not move or is too hard to move, install ladder to the left side of truck and pull the hoist in.

- (7) Swing the hoist arm so the flat tire is over the carrier and aligned with studs.

- (8) Install the ladder to the right side of the truck.

- (9) Turn the hand crank counterclockwise to lower the flat tire into the carrier.

**CAUTION**

Before installing the plate, ensure that the CTIS plug tether cables are clear of the spare tire mounting surface to prevent damage to the CTIS tether cables.

- (10) Install the plate with two nuts. Tighten the nuts using the air impact wrench and socket.

- (11) Connect the ratchet strap to the hold-down strap and tighten securely.

- (12) Shut off the truck.

h. Stow tire davit.

- (1) Turn the hand crank three times counterclockwise to loosen the cable.

- (2) Install the ladder to the left side of the truck.

- (3) Remove the hook from the lift cable.
- (4) Remove the lift cable from around the tire.
- (5) Remove the safety pin and pin from the extension arm, second alignment hole.
- (6) Push the extension arm in and reinstall the pin and safety pin in the first alignment hole.

**WARNING**

Do not touch the hot exhaust system with bare hands; injury to personnel will result

- (7) Install pin and safety pin in hoist.
  - (8) Attach cable hook to winch and wind up the cable.
- i. Prepare truck for driving.

**WARNING**

Jack is under heavy pressure. Keep hand, arm, and head clear while lowering jack slowly to avoid injury to personnel.

- (1) Slowly lower truck to the ground.
- (2) Remove jack, jack handle, and base plate from under the truck.

**NOTE:** Perform steps (3) and (4) if the flat tire was on axle three, ball valve was closed, and air tank drain valves were opened. If steps (3) and (4) are not performed, air system pressure will not be adequate for CTIS and braking.

- (3) Close the air tank drain valve petcocks on both sides of the truck (rear tanks).
- (4) Open the ball valve located on top of the crossmember behind the transfer case by turning the lever.
- (5) Disconnect air hose from the truck air coupler.
- (6) Stow ladder.
- (7) Return all tools and wheel chocks to stowage boxes.
- (8) Stow highway safety markers in stowage boxes.

(9) Start truck, turn on CTIS, and continue with the mission.

(10) At the earliest opportunity, have unit maintenance torque all nuts/bolts that were loosened during the tire-changing procedure and repair/replace spare tire.

3. Practical exercise:

a. Assign two students to each truck and issue TM 9-2320-364-10.

b. Students practice changing simulated flat tires.

4. Evaluation: Check each student's performance.

5. Summary:

a. Recap main points.

b. Allow for questions.

c. Clarify questions.

d. Give closing statement.

6. Retraining: Retrain slow learners.

#### **E. SAFETY RESTRICTIONS.**

1. Ensure that all chock blocks are in place when the PLS trucks are parked or maintenance is to be performed.

2. Ensure the transmission is in neutral, the parking brake is set, and the engine is shut off before leaving the truck, when the truck is parked, or maintenance is being performed.

3. Ensure students remove all watches, jewelry, and identification tags before working in or around the PLS truck.

4. Ensure all personnel pay particular attention to the cautions and warnings listed in the operator's manual.

5. Ensure ground guide(s) are used when backing.

6. Ensure all personnel wear hearing protection when working in or around a running PLS truck.

7. Ensure all occupants wear seat belts while the truck is in operation.

8. Ensure the driver and ground guides know and understand the hand and arm signals as outlined in FM 21-305.

9. Ensure all backing is conducted at a speed of 5 MPH or less.

10. Ensure personnel maintain at least three points of contact to mount or dismount the PLS truck (to include performing PMCS).

11. Use the PLS ladder when performing maintenance. Install the two hooks on the ladder in the holes located on top of the fender before use. Using the ladder for other applications could result in serious injury to personnel.

12. Ensure all personnel are clear of truck before engine start is attempted. Operator must visually check to see that all areas of the truck are clear of personnel before attempting to start the engine. Failure to do so could result in serious injury or death to personnel.

13. Stand clear of tire when raising or lowering. Do not let the tire hang in midair for a long period of time. Place tire on carrier or on ground as soon as possible. Tire is very heavy (about 500 pounds) and could cause serious injury or death if it falls.

14. Tire assembly is very heavy (500 pounds). Do not try to lift or catch tire assembly. Injury to personnel could result.

15. Crew member should steady the tire during removal. Falling tire may cause injury to personnel.

16. Do not loosen outer bolt circle nuts on wheel. Outer bolt circle holds wheel assembly together. Tire is under pressure and loosening these nuts can cause the tire to blow apart. Severe injury or death can occur.

17. Keep hands away from the inside of the rim while removing the tire or injury to personnel may result.

18. Ensure all personnel wear protective gloves at all times when handling the spare tire winch cable. The cable may fray and injury to personnel may result.

19. Wear hearing protection during the tire-changing procedure while using the air impact wrench. Failure to do so may result in injury to personnel.

20. Jack is under heavy pressure. Keep hand, arm, and head clear while slowly raising or lowering jack to avoid injury to personnel. Do not lower jack too quickly as tire could fall, causing serious injury or death.

21. If the jack must be raised or lowered, shut off the truck before moving under the truck.

22. Do not touch the hot exhaust system with bare hands; injury to personnel will result.

23. While changing tires or while performing tire maintenance, stay out of the trajectory of the wheel. The wheel trajectory area is the rim on both sides of the wheel. Under some circumstances, the trajectory may deviate from its expected path. Failure to follow proper procedures may result in injury or death to personnel.

**F. ADDITIONAL COMMENTS AND INFORMATION.** Recommended instructional time is 4.0 hours (1.0 demonstration and 3.0 practical exercise).

**LESSON TITLE:** LOAD AND UNLOAD PLS TRUCK IN AUTOMATIC MODE

**TASK NUMBER:** 551-721-3364 (Load Truck in Automatic Mode) and 551-721-3365 (Unload Truck in Automatic Mode)

**A. TRAINING OBJECTIVE.**

**TASK:** Load and unload the PLS truck in the automatic mode.

**CONDITIONS** Given instruction, DA Form 2404, DD Form 1970, pencil, TM 9-2320-364-10, equipment records folder, rags, lubricants, coolant, an M1074/M1075 truck with BII, an M1077 flatrack with securely tied down palletized load, and a requirement to load/unload the flatrack onto/off the PLS truck.

**STANDARD:** Perform task in the correct sequence according to TM 9-2320-364-10 and without damage to equipment or injury to personnel. Students will be graded on a Go/No-Go basis. See enclosed training evaluation checklists.

**B. INTERMEDIATE TRAINING.** None.

**C. ADMINISTRATIVE INSTRUCTIONS.**

1. Training time: As scheduled.
2. Training location: Classroom, motor pool, and training area as scheduled.
3. Training type: Conference, demonstration, and practical exercise.
4. Students: Scheduled personnel.
5. Principal and assistant instructors required: One primary instructor for the conference and one assistant instructor for every two students for the demonstration and practical exercise.
6. Training aids and equipment: Television, VCR, screen, overhead projector, transparencies, videotape TVT 55-37 (PIN: 710336DA), Part 4, "PLS Load-Handling System," rags, lubricants, and coolant. DA Form 2404, DD Form 1970, pen or pencil, TM 9-2320-364-10, equipment records folder, an M1074/M1075 truck with BII, and an M1077 flatrack with securely tied down palletized load for every two students.
7. References: AR 385-55, DA Pamphlet 738-750, and TM 9-2320-364-10.

**D. SEQUENCE OF ACTIVITY.**

1. Introduction:



- a. Interest device.
- b. Tie-in.
- c. Lesson objective (paragraph A).
- d. Procedures.
  - (1) Explanation.
  - (2) Practical exercise.
  - (3) Summary.

2. Explanation and demonstration:

- a. Review safety warnings. Because we are dealing with heavy loads and much of the operation is not fully visible to the operator, it is important to review warnings that pertain to the load-handling system (LHS).

**WARNING**

Check for overhead power lines or other obstructions before attempting LHS operation. LHS reaches a height of 17 feet 2 inches (5.22 meters) with ISO container. Serious injury or death could result from contact with electrical power lines.

**WARNING**

Check ground conditions for firmness and extreme sideways inclination before picking up or off-loading a flatrack. Any ground instability beneath road wheels could cause serious injury or death to personnel.

**WARNING**

Before and during any load or unload cycle, all personnel should stay clear of LHS and flatrack or serious injury or death could result to personnel.

**WARNING**

Ensure that flatrack runners contact LHS rear rollers correctly. Failure to contact flatrack runners correctly could result in serious injury or death to personnel and damage to equipment.

**WARNING**

When loading or unloading flatracks on uneven ground (side slope or downgrades up to 10 degrees), it may be necessary to apply truck service brakes to prevent truck roll away or severe injury or death could result.

**WARNING**

Never drive with the LHS no transit light illuminated. An illuminated light means load locks are not engaged and LHS is not fully stowed.

- b. Review slides of operating controls and techniques.

## Transparency PLS 6-1

- (1) Hydraulic mode selector control. Go through each mode briefly.
- (a) 0 = off position. Joystick is not operational; there are no hydraulics. Use for transit mode.
  - (b) 1 = automatic position. This setting is used for normal pickup and off-loading sequence of the flatrack.
  - (c) 2 = manual hook arm (MAN HA) position. This setting is used for picking up and off-loading on trailers and docks and in the event of failure of automatic hook arm electronic circuits.
  - (d) 3 = Manual main frame (MAN MF) position. This setting is used for picking up and off-loading on trailers and docks and in the event of failure of automatic main frame electronic circuits.
  - (e) 4 = Manual transit (MAN TRANS) position. This setting is used when automatic circuits have failed and MAN HA and MAN MF are operated. This position must be selected if truck is to travel.
  - (f) 5 = Crane or self-recovery winch (CRANE/SRW). This setting is used to switch hydraulic power to either crane or winch. In this position, the LHS free flow valve is closed and the LHS section of the hydraulic system is isolated.

## Transparency PLS 6-2

- (2) LHS warning lights.
- (a) LHS no transit [1] illuminates when LHS is not correctly stowed in transport position.

(b) LHS overload [2] light (yellow) is located on the driver's dash panel and illuminates whenever the main hydraulic relief valve is opened during loading or unloading. When the light illuminates, the driver will be warned that LHS has reached an overload condition or that hydraulic system is lifting very near maximum capacity. The LHS overload light will come on any time the main relief valve is cracked open. Load or unload operation may not come to a complete stop, but light will come on momentarily. This situation would indicate that the system is lifting near maximum capacity. If the load is overweight by 10 percent or greater, the light illuminates and the system is automatically blocked out. Stop operation and redistribute weight or reduce payload before attempting to load or unload.

**NOTE:** To reset LHS overload, return the load to start position and release the joystick switch.

**CAUTION**

Overload protection system on PLS protects LHS and flatrack from structural damage during loading or unloading. This system does not protect truck chassis from being overloaded by means of a crane, forklift, or excessively loaded flatracks. Truck chassis is designed to carry an evenly distributed 16.5 tons payload. The operator is responsible to know what the payload weighs.

(c) "LHS" [3] illuminates when rotary hydraulic selection switch is in positions AUTO, MAN HA, or MAN MF.

(d) Flatrack [4] illuminates red when flatrack on trailer is not locked and trailer status line is connected to the truck.

Transparency PLS 6-3

(3) LHS joystick.

(a) The joystick controls the operation of loading and unloading of flatracks.

(b) The joystick has movement in only two directions: forward for (LOAD) and rearward for (UNLOAD).

Transparency PLS 6-4

(4) Alignment with flatrack. Stress the importance of proper alignment.

- (a) Before starting any LHS operations, adjust extension mirror on driver's side to monitor LHS operations.
- (b) Back into flatrack as straight as possible to assure the flatrack comes onto truck rollers properly and then sets in place on the truck.
- (c) Slight misalignment (up to 10 percent) will not prevent the hook from attaching to the flatrack. If slightly misaligned, attach hook and lift 6 to 12 inches and attempt to drag flatrack forward until aligned with truck. If flatrack does not move freely, do not attempt to drag any further.

### Transparency PLS 6-5

#### (5) Hook positions. Explain the hooking procedure.

- (a) When backing into the flatrack loop, adjust the hook so it will contact in the area shown.
  - (b) Monitor the hook and loop in the extension mirror and back slowly until hook and loop contact. Hook will catch the loop as it is raised.
  - (c) Do not use reverse (R) to back up the truck while the hook arm is attached to the flatrack or damage to LHS will occur.
- c. Review operating procedures. Show TVT 55-37, Part 4, "PLS Load-Handling System."
- d. Demonstrate loading and unloading the flatrack onto and off the PLS truck using the LHS automatic mode.

#### 3. Practical exercise:

- a. Assign students to vehicles and issue TM 9-2320-364-10, pencils, DA Form 2404, DD Form 1970, and equipment records folder. Instruct students on the location of rags, lubricants, and coolant.
- b. Students perform before-operation PMCS.
- c. Students practice loading/unloading in the training area(s). During-operation PMCS is also conducted at this time.

- d. Students perform after-operation PMCS and ensure that all operator entries required on DA Form 2404 and DD Form 1970 are accurate, complete, and legible.
4. Evaluation: Check each student's performance on loading/unloading and PMCS.
5. Summary:
  - a. Recap main points.
  - b. Allow for questions.
  - c. Clarify questions.
  - d. Give closing statement.
6. Retraining: Retrain slow learners. LHS operation can be reinforced daily throughout the course. Students are tested on the EOCCT.

#### **E. SAFETY RESTRICTIONS.**

1. Ensure that all chock blocks are in place when the PLS trucks are parked or maintenance is to be performed.
2. Ensure the transmission is in neutral, the parking brake is set, and the engine is shut off before leaving the truck, when the truck is parked, or maintenance is being performed.
3. Ensure students remove all watches, jewelry, and identification tags before working in or around the PLS truck.
4. Ensure all personnel pay particular attention to the cautions and warnings listed in the operator's manual.
5. Ensure ground guide(s) are used when backing.
6. Ensure all personnel wear hearing protection when working in or around a running PLS truck.
7. Ensure all occupants wear seat belts while the truck is in operation.
8. Ensure the driver and ground guides know and understand the hand and arm signals as outlined in FM 21-305.
9. Ensure all backing is conducted at a speed of 5 MPH or less.

10. Ensure personnel maintain at least three points of contact to mount or dismount the PLS truck (to include performing PMCS).
11. Use the PLS ladder when performing maintenance. Install the two hooks on the ladder in the holes on top of the fender before use. Using the ladder for other applications could result in serious injury to personnel.
12. Ensure all personnel are clear of truck before engine start is attempted. The operator must visually check to see that all areas of the truck are clear of personnel before attempting to start the engine. Failure to do so could result in serious injury or death to personnel.
13. Check for overhead power lines or other obstructions before attempting LHS operation. LHS reaches a height of 17 feet 2 inches (5.22 meters) with ISO container. Serious injury or death could result from contact with electrical power lines.
14. Check ground conditions for firmness and extreme sideways inclination before picking up or off-loading a flatrack. Any ground instability beneath road wheels could cause serious injury or death to personnel.
15. Before and during any load or unload cycle, all personnel should stay clear of LHS and flatrack or serious injury or death could result to personnel.
16. Ensure that flatrack runners contact LHS rear rollers correctly. Failure to contact flatrack runners correctly could result in serious injury or death to personnel and damage to equipment.
17. When loading or unloading flatracks on uneven ground (side slope or downgrades up to 10 degrees), it may be necessary to apply truck service brakes to prevent truck roll away or severe injury or death could result.
18. Never drive with LHS no transit light illuminated. An illuminated light means load locks are not engaged and LHS is not fully stowed.
19. Overload protection system on PLS protects LHS and flatrack from structural damage during loading or unloading. This system does not protect truck chassis from being overloaded by means of a crane, forklift, or excessively loaded flatracks. Truck chassis is designed to carry an evenly distributed 16.5 tons payload. Operator is responsible to know what the payload weighs.
20. Before starting any LHS operations, adjust extension mirror to monitor LHS operations or damage to equipment may result.
21. If terrain is deeply rutted, soft soil, and so forth, mud flaps must be pinned before beginning LHS operations or damage to mud flaps may result.

22. Engine speed must be at idle before using hydraulic selector switch, or damage to equipment may result.

23. Do not use reverse to back up truck while hook arm is attached to flatrack or damage to LHS will occur.

24. If LHS overload lamp illuminates but loading operation continues, operator is cautioned that LHS is nearing maximum capacity. In this situation, the operator should determine if the payload is evenly distributed on the flatrack or if the flatrack load exceeds 16.5 tons. If any of these conditions exist, the operator must redistribute or reduce the payload or damage to equipment may result.

25. Load must be evenly distributed on the pallet and flatrack. Uneven load distribution may cause LHS overload indicator to give false signals and cause LHS to operate incorrectly.

26. If LHS overload lamp illuminates and normal operation has stopped, return the load to original position and redistribute or reduce payload weight or equipment damage may occur.

27. Before starting load sequence, ensure that parking brake is not applied or damage to equipment may occur.

28. Reduce engine speed to idle before flatrack main rails contact rear rollers or damage to flatrack may result.

29. Hydraulic selector switch must be in off position before driving or hydraulic system could overheat.

30. Ensure parking brake is not applied during unload sequence or damage to equipment may result.

31. Ensure rail transport locking pins are disengaged before unloading flatrack. Rail transport locking pins are used for rail transport only. Failure to comply may result in damage to equipment.

32. Once truck's rear suspension has been relieved of flatrack load, do not continue in unload position as possibility of jacking up rear of truck with hook arm may occur and damage to equipment may result.

**F. ADDITIONAL COMMENTS AND INFORMATION.** Recommended instructional time is 8 hours (1.0 conference, .5 demonstration, and 6.5 practical exercise including 1.0 PMCS).





**STEPS**

14. SETS THE TRANSMISSION RANGE SELECTOR TO NEUTRAL AND RELEASES SERVICE BRAKE PEDAL.
15. MOVES JOYSTICK TO LOAD, INCREASES ENGINE SPEED TO ABOUT 1,500 RPM, AND ALLOWS TRUCK TO BE PULLED UNDER FLATRACK.
16. ADJUSTS STEERING WHEEL AS NECESSARY TO ENSURE FLATRACK RUNNERS CONTACT REAR ROLLERS.
17. BEFORE FLATRACK RUNNERS CONTACT REAR ROLLERS, REDUCES ENGINE SPEED AND APPLIES SERVICE BRAKE PEDAL.
18. IF FLATRACK IS BEING LOADED IN SOFT SOIL CONDITIONS, RELEASES JOYSTICK AND SETS HYDRAULIC SELECTOR SWITCH TO MAN HA, MOVES JOYSTICK TO LOAD UNTIL FLATRACK IS ABOUT 2 FEET OFF THE GROUND, AND RELEASES JOYSTICK. SETS HYDRAULIC SELECTOR SWITCH TO AUTO AND RESUMES NORMAL AUTO OPERATIONS.
19. AFTER FLATRACK CONTACTS REAR ROLLERS, INCREASES ENGINE SPEED TO ABOUT 1,500 RPM UNTIL FLATRACK IS NEARLY LOADED.
20. REDUCES ENGINE SPEED TO IDLE, CONTINUES LOADING UNTIL FLATRACK IS FULLY LOADED AND LHS NO TRANSIT LAMP EXTINGUISHES.
21. RELEASES JOYSTICK AND APPLIES PARKING BRAKE.
22. TURNS HYDRAULIC SELECTOR SWITCH TO OFF.
23. INSPECTS THAT BOTH LOAD LOCKS HAVE ENGAGED AND FLATRACK IS COMPLETELY DOWN ON TRUCK.

GO	NO-GO

**TRAINING EVALUATION**

**UNLOAD THE FLATRACK FROM THE PLS TRUCK IN AUTOMATIC MODE**

**NAME** \_\_\_\_\_ **RANK** \_\_\_\_\_ **UNIT** \_\_\_\_\_

**EVALUATOR** \_\_\_\_\_ **DATE** \_\_\_\_\_

<u><b>STEPS</b></u>	<b>GO</b>	<b>NO-GO</b>
1. CHECKS FOR OVERHEAD OBSTRUCTIONS AND GROUND FIRMNESS.		
2. STARTS AND POSITIONS TRUCK AT UNLOADING SITE.		
3. SETS TRANSMISSION RANGE SELECTOR TO NEUTRAL AND APPLIES PARKING BRAKE.		
4. IF FLATRACK IS LOADED WITH CARGO, CHECKS ISO LOCKS OR CARGO TIE-DOWNS FOR SECURITY.		
5. CHECKS AREA FOR SUFFICIENT OPERATING ROOM AT FRONT AND REAR OF TRUCK.		
6. RELEASES PARKING BRAKE AND APPLIES SERVICE BRAKE PEDAL.		
7. WITH ENGINE SPEED AT IDLE, TURNS HYDRAULIC SELECTOR SWITCH TO AUTO.		
8. ADJUSTS EXTENSION MIRROR TO MONITOR LHS OPERATIONS.		
9. MOVES JOYSTICK TO UNLOAD AND MAINTAINS ENGINE SPEED AT IDLE UNTIL FRONT OF FLATRACK RAISES ABOUT 1 FOOT.		
10. INCREASES ENGINE SPEED TO ABOUT 1,500 RPM AND CONTINUES TO UNLOAD UNTIL REAR SUSPENSION STARTS TO LIFT AND BACK EDGE OF FLATRACK TOUCHES GROUND.		
11. RELEASES SERVICE BRAKE PEDAL AND ALLOWS GROUNDED FLATRACK TO PUSH THE TRUCK STRAIGHT FORWARD FROM UNDER THE FLATRACK.		
12. AS FRONT OF FLATRACK APPROACHES WITHIN ABOUT 8 INCHES OF GROUND, DECREASES ENGINE SPEED TO IDLE AND APPLIES SERVICE BRAKE PEDAL.		

**STEPS**

13. CONTINUES OFF-LOADING UNTIL FLATRACK RUNNERS ARE ON GROUND AND REAR SUSPENSION IS UNLOADED.
14. RELEASES JOYSTICK WHEN FLATRACK RUNNERS ARE RESTING ON GROUND.
15. SETS THE TRANSMISSION RANGE SELECTOR TO DRIVE AND RELEASES SERVICE BRAKE PEDAL.
16. MOVES JOYSTICK TO LOAD MOMENTARILY AND THEN TO UNLOAD TO LET LIFTHOOK DISENGAGE FROM HOOK BAR. REPEATS UNTIL HOOK DISENGAGES.
17. MOVES TRUCK FORWARD ABOUT 5 FEET.
18. STOPS TRUCK AND SETS TRANSMISSION RANGE SELECTOR TO NEUTRAL.
19. MOVES JOYSTICK TO LOAD UNTIL LHS IS IN TRANSIT POSITION AND LHS NO TRANSIT LAMP EXTINGUISHES.
20. RELEASES JOYSTICK AND APPLIES PARKING BRAKE.
21. TURNS HYDRAULIC SELECTOR SWITCH TO OFF.

GO	NO-GO

**LESSON TITLE:** DRIVE THE PLS TRUCK OFF ROAD

**TASK NUMBER:** 551-721-1360 (Drive Cargo Vehicle on Side Roads and Unimproved Roads)

**A. TRAINING OBJECTIVE.**

**TASK:** Drive the PLS truck off road.

**CONDITIONS** Given instruction, DD Form 1970, DA Form 2404, pencil, TM 9-2320-364-10, equipment records folder, rags, lubricants, coolant, a suitable training area, an M1074/M1075 PLS truck with BII and a requirement to operate the truck off road (to include ditches, marshes, gullies, ravines, steep grades, woods, mud, rocky terrain, and shallow streams [48 inches or less]) during daylight hours.

**STANDARD:** Operate the vehicle safely at reduced speeds and over rough terrain without damaging the truck.

**B. INTERMEDIATE TRAINING.** None.

**C. ADMINISTRATIVE INSTRUCTIONS.**

1. Training time: As scheduled.
2. Training location: Classroom, motor pool, and off-road driver training area as scheduled.
3. Training type: Conference and practical exercise.
4. Students: Scheduled personnel.
5. Principal and assistant instructors required: One primary instructor for the conference and one assistant instructor for each student for the practical exercise.
6. Training aids and equipment: Television, VCR, videotape TVT 55-36 (PIN: 710046DA), Part 2, "PLS Driving Techniques." Rags, lubricants, coolant, DA Form 2404, DD Form 1970, pencil, TM 9-2320-364-10, equipment records folder, and an M1074/M1075 PLS truck with BII for each student.
7. References: AR 385-55, DA Pamphlet 738-750, TM 9-2320-364-10, and FM 21-305.

**D. SEQUENCE OF ACTIVITY.**

1. Introduction:

- a. Interest device.
- b. Tie-in.
- c. Lesson objective (paragraph A).
- d. Procedures.
  - (1) Explanation.
  - (2) Practical exercise.
  - (3) Summary.

2. Explanation and demonstration:

**NOTE:** An instructor will be in the cab whenever a student is driving the PLS truck.

- a. As an option, show videotape TVT 55-36, Part 2, "PLS Driving Techniques," to reinforce driving tasks. This step may be deleted because the students should have viewed this tape in earlier lessons.
- b. Driving off road or over rough terrain basically requires good driving sense. Experience is the best teacher, but there are a few good rules to keep in mind when driving under these conditions.
  - (1) Before operating off road, mud flaps need to be pinned on the storage hook on the mud flap bracket. If a steep slope is encountered and mud flaps are not pinned, damage can result.
  - (2) Anticipate terrain and, before negotiating, take positive action to match CTIS, driveline lockup, engine brake selection, and gear selection to terrain features.
  - (3) Do not shift into any lower gear than is necessary to maintain headway.
  - (4) Do not shift the transmission into first gear or the transfer case while the truck is moving. Severe damage to the driveline will result.
  - (5) Allow CTIS ample time to adjust before encountering adverse terrain.
  - (6) Check for obstructions and clearances to include underneath and overhead.

(7) Preset the CTIS selector switch to the cross- country position for off-road driving. Remember to press and hold the CTIS start button for about one second. When encountering more difficult terrain, the CTIS setting/driveline lockup can be changed.

(8) Attempt to keep the vehicle's wheels from spinning. If the wheels start to spin, stop the truck and change the CTIS setting/driveline lockup. Lockup makes the vehicle drive train more vulnerable to damage. This is especially true when the wheels are slipping (100 percent of available torque could flow to the wheels that are not spinning).

(9) Drive slowly enough to prevent--

(a) Truck damage.

(b) Cargo from coming loose or shifting.

(c) Occupants from being injured (injuries associated with hard or excessive jolts).

**CAUTION**

Do not engage the transfer case lockup while wheels are spinning or when turning a corner. Damage to the driveline may result.

c. Driving up steep grades requires these techniques:

(1) Ensure the CTIS rotary switch setting and transfer case shift lever settings match the terrain conditions.

(2) Engage the transfer case lockup (this is only required if the grade is steep or slippery) on approaching the grade and decelerate for about two seconds to allow transfer case lockup to engage.

**CAUTION**

Do not move the transfer case shift lever when the truck is moving or when the transmission is in gear. Severe damage to the driveline may result.

(3) If operating the truck with a heavy load, stop the truck and shift the transfer case shift lever to low.

**CAUTION**

Do not shift the transmission into first gear while the truck is moving. Severe damage to the driveline will result.

(4) Apply the service brake pedal and place the transmission selector in first gear if encountering an extreme grade (greater than 25 percent). If grades are less than 25 percent, all other gear selections are acceptable while climbing.

**CAUTION**

Excessive wheel slippage while travelling up a steep upgrade could cause driveline damage. When wheel slippage is detected, immediately stop the truck.

(5) Proceed up the grade by releasing the service brake pedal and gradually applying the throttle as traction allows. If wheels start to slip, stop the truck and change the CTIS setting to a greater degree of driveline lockup.

**CAUTION**

When the using emergency position on CTIS, top speed should not exceed 5 MPH and distance traveled should not exceed 5 miles. Care must be exercised as steering response is limited due to full driveline lockup or damage to equipment may result.

(6) If wheels are still slipping, stop the truck and turn the CTIS rotary selector switch to the emergency position. Do not press the start button. Pressing the start button will lower the tire air pressure. In this position, with the transfer case in low range, side-to-side axles are also locked up.

(7) Release the service brake pedal and gradually apply the throttle as traction improves.

(8) After reaching the top of the grade, stop the truck and unlock the transfer case. Select the appropriate transmission gear and CTIS setting for the terrain. (Remember, when changing CTIS setting from emergency to a lesser degree of driveline lockup, the vehicle must be stopped and driveline torque loading relieved.)

d. Driving down steep grades requires these methods:

(1) Ensure the CTIS rotary switch setting matches the terrain conditions.

(2) If operating the truck with a heavy load or the grade is steep, stop the truck and shift the transfer case shift lever to low.



**CAUTION**

The engine brake operates best when the engine speed is between 1,650 and 2,100 RPM. Transmission torque converter lockup will disengage below 1,650 RPM resulting in loss of engine braking.

**WARNING**

Apply engine brake only when vehicle tires have good traction. Use of the engine brake on slick surfaces can cause the vehicle to skid and cause injury or death.

- (3) Set the engine brake switch to low or high depending on the amount of braking required.

**NOTE:** Service (wheel) brakes must be used in addition to engine brake for maximum braking. The engine brake supplements the service brakes. The engine brake is a vehicle-slowng device, not a vehicle-stopping device.

- (4) Adjust the transmission range selector to a gear that will allow the engine with the engine brake applied to control the truck speed with the engine at or below 2,100 RPM and service brakes not applied.

**WARNING**

Repeated rapid operation of service brakes will consume compressed air supply and cause automatic spring brake application. Failure to follow proper service brake operating procedures may cause serious injury or death to personnel.

**CAUTION**

Excessive use of the service brake to control downhill speed will result in the loss of braking power because of heat buildup.

- (5) Use the service brakes as needed to control truck speed.

e. Crossing shallow ditches requires the following driving techniques:

- (1) Stop the truck.
- (2) Check the terrain for obstacles.
- (3) Ensure the CTIS rotary switch setting matches the terrain conditions, and shift the transfer case shift lever as required.
- (4) Adjust the transmission range selector as required (normally, first through third gear).
- (5) Slowly approach the ditch at an angle.



(6) Steer the truck toward the ditch so that one wheel on an axle will leave the ditch as the other wheel on the same axle enters it.

f. Crossing deep ditches requires the following driving techniques:

(1) Stop the truck.

(2) Check the terrain for obstacles.

(3) Cut away both sides of the ditch if necessary.

(4) Ensure the CTIS rotary switch setting matches the terrain conditions, and shift the transfer case shift lever as required.

(5) Adjust the transmission range selector as required (normally, first or second gear).

(6) If necessary, engage the transfer case lockup and decelerate for about two seconds to allow transfer case lockup to engage.

(7) Slowly approach the ditch at an angle.

(8) Steer the truck toward the ditch so that one wheel on an axle will leave the ditch as the other wheel on the same axle enters it.

(9) Accelerate the truck enough to keep it rolling as it goes up the other side.

g. Crossing gullies and ravines requires these driving techniques:

(1) Stop the truck.

(2) Check the terrain for obstacles.

(3) Ensure the CTIS rotary switch setting matches the terrain conditions, and shift the transfer case shift lever as required.

(4) Set the transmission range selector to 1.

(5) If necessary, engage the transfer case lockup and decelerate for about two seconds to allow transfer case lockup to engage.

(6) Ease the front wheels over the edge and into the ravine or gully.

(7) Steer a straight course so both front wheels strike the bottom at the same time.

(8) Accelerate enough so that the truck can climb up the opposite bank.

h. Wooded area driving techniques include the following:

(1) Stop the truck.

(2) Check the terrain for obstructions.

(3) Ensure the CTIS rotary switch setting matches the terrain conditions, and shift the transfer case shift lever as required.

(4) Set the transmission range selector to 3, 2, or 1, depending on the condition of the ground.

(5) If necessary, engage the transfer case lockup and decelerate for approximately two seconds to allow transfer case lockup to engage.

(6) Maneuver around obstructions.

i. Rocky terrain requires these driving techniques:

(1) Stop the truck.

(2) Check the terrain for obstructions.

(3) Ensure the CTIS rotary switch setting matches the terrain conditions, and shift the transfer case shift lever as required.

(4) Set the transmission range selector to 3, 2, or 1, depending on the condition of the ground.

(5) If necessary, engage the transfer case lockup and decelerate for about two seconds to allow transfer case lockup to engage.

(6) Drive slowly, maneuver around large boulders, and choose route while under way.

j. Forging streams calls for these handling techniques:

(1) Ensure depth of fording site is not more than 4 feet and the water flow of the stream is not too swift.



**WARNING**

Do not ford water unless depth is known. Water deeper than 4 feet may enter truck causing personnel injury or death.

- (2) Ensure the bottom at the fording site is firm enough that 4 feet maximum fording depth will not be exceeded and truck will not become mired.
- (3) Secure loose objects in the cab of the truck and check load security (past accidents have involved soldiers drowning because they were trapped by materials such as camouflage nets).
- (4) Stop the truck at the edge of the water.
- (5) If the brakes have been used heavily and are hot, allow drums and shoes to cool before entering the water if possible.
- (6) Ensure the engine is operating correctly before entering the water.
- (7) Set the transfer case shift lever to low.
- (8) Set the CTIS rotary selector switch to the emergency position.
- (9) Set the transmission range selector to 1.
- (10) Drive truck slowly into water.
- (11) If the engine stops, immediately attempt to restart the engine. If the truck will not start, tow or winch the truck from the water with another truck as soon as possible.
- (12) Drive the truck at 3 to 4 MPH or less through water.
- (13) Unless absolutely necessary, do not stop while in water.
- (14) If the truck accidentally enters water deeper than 4 feet do the following (remember the height of the metal horizontal bar across the center of the floor window is 4 feet):
  - (a) Press on the service brake pedal and hold to stop the truck.
  - (b) Set the transmission range selector to reverse (R).
  - (c) Let up on the service brake pedal.
  - (d) Slowly back the truck out of deep water.

(15) After leaving the water, press the service brake pedal lightly and hold while driving slowly to dry out brake linings.

(16) When clear of the fording area, stop the truck, apply and release the parking brake several times to remove water from the brake components.

(17) Remove water and clean deposits from all truck parts as soon as possible.

(18) Lubricate and perform PMCS as soon as possible.

k. Mud and swamps require these driving techniques:

(1) Stop the truck and check the terrain for obstructions.

(2) Ensure the CTIS rotary switch setting matches the terrain conditions, and shift the transfer case shift lever as required.

(3) Set the transmission range selector to 3, 2, or 1, depending on the condition of the ground.

(4) If necessary, engage the transfer case lockup and decelerate for about two seconds to allow transfer case lockup to engage.

(5) Drive through area maintaining a steady speed.

l. Clean mud from wheels, brakes, axles, universal joints, steering mechanism, and radiator as soon as possible.

m. Give safety briefing, to include reinforcing ground guide safety precautions for backing the truck.

3. Practical exercise:

a. Assign students to vehicles and issue TM 9-2320-364-10, pencils, DA Form 2404, DD Form 1970, and equipment records folder. Instruct students on the location of rags, lubricants, and coolant.

b. Students perform before-operation PMCS.

c. Students practice driving the PLS truck off road. During-operation PMCS is also conducted at this time.

**NOTE:** As each student practices driving, an assistant instructor rides in the right seat. The assistant instructor explains driving techniques, ensures the driver is aware of driving

## **TC 21-305-10**

situations, and conducts after-action reviews with each driver. Now is the time to pass on valuable experience and correct any bad driving habits.

- d. Students perform after-operation PMCS and ensure all operator entries required on DA Form 2404 and DD Form 1970 are accurate, complete, and legible.
4. Evaluation: Check each student's performance of PMCS and off-road driving.
  5. Summary:
    - a. Recap main points.
    - b. Allow for questions.
    - c. Clarify questions.
    - d. Give closing statement.
  6. Retraining: Retrain No-Gos and slow learners. This can be accomplished using the videotape TVT 55-36, "PLS Driving Techniques," and reinforced throughout the course. Students perform driving tasks daily and are tested on the EOCCT.

### **E. SAFETY RESTRICTIONS.**

1. Ensure that all chock blocks are in place when the PLS trucks are parked or maintenance is to be performed.
2. Ensure the transmission is in neutral, the parking brake is set, and the engine is shut off before leaving the truck, when the truck is parked, or maintenance is being performed.
3. Ensure students remove all watches, jewelry, and identification tags before working in or around the PLS truck.
4. Ensure all personnel pay particular attention to the cautions and warnings listed in the operator's manual.
5. Ensure ground guide(s) are used when backing.
6. Ensure all personnel wear hearing protection when working in or around a running PLS truck.
7. Ensure all occupants wear seat belts while the truck is in operation.
8. Ensure the driver and ground guides know and understand the hand and arm signals as outlined in FM 21-305.

9. Ensure all backing is conducted at a speed of 5 MPH or less.
10. Ensure personnel maintain at least three points of contact to mount or dismount the PLS truck (to include performing PMCS).
11. Use the PLS ladder when performing maintenance. Install the two hooks on the ladder in the holes located on top of the fender before use. Using the ladder for other applications could result in serious injury to personnel.
12. Ensure all personnel are clear of truck before engine start is attempted. Operator must visually check to see that all areas of the truck are clear of personnel before attempting to start the engine. Failure to do so could result in serious injury or death to personnel.
13. During driving operations, hydraulic selector switch must be placed in the off position or hydraulic system overheating will result.
14. Do not hold steering wheel at full left or right position for longer than 10 seconds. Oil overheating and pump damage can result.
15. Apply brakes gradually when stopping. A panic stop will cause the vehicle wheels to lock, engine to stall, and power steering failure. Failure to do this will result in injury or death.
16. Repeated rapid operation of service brakes will consume compressed air supply and cause automatic spring brake application. Failure to follow proper service brake operating procedures may cause serious injury or death to personnel.
17. Do not park the truck on a steep grade. Serious injury to personnel could result.
18. Apply engine brake only when truck tires have good traction. Use of engine brake on slippery surfaces can cause the truck to skid and cause injury to personnel.
19. If emergency steer light illuminates when driving, immediately pull the truck over to the side of the road (trail) and stop or serious injury or death could result.

**F. ADDITIONAL COMMENTS AND INFORMATION.** Recommended instructional time is 10 hours (1.0 conference and 9.0 practical exercise, including 3.0 PMCS).

**LESSON TITLE:** OPERATE THE PLS TRUCK AT NIGHT

**TASK NUMBER:** 551-721-1366 (Drive Vehicle with Automatic Transmission), 551-721-3364 (Load Truck in Automatic Mode), and 551-721-3365 (Unload Truck in Automatic Mode)

**A. TRAINING OBJECTIVE.**

**TASK:** Operate the PLS truck at night.

**CONDITIONS** Given instruction, DD Form 1970, DA Form 2404, pencil, TM 9-2320-364-10, equipment records folder, rags, lubricants, coolant, designated driving route (improved surfaced and secondary roads), an M1074/M1075 truck with BII, an M1077 flatrack with securely tied down palletized load, and a requirement to operate the PLS truck during the hours of darkness, drive a designated route and load and unload the flatrack onto and off the PLS truck.

**STANDARD:** Operate the PLS truck safely without accident, injury, or damage to equipment according to TM 9-2320-364-10.

**B. INTERMEDIATE TRAINING.** None.

**C. ADMINISTRATIVE INSTRUCTIONS.**

1. Training time: As scheduled.
2. Training location: Motor pool, training area, and driver training route (built-up and rural areas) as scheduled.
3. Training type: Conference and practical exercise.
4. Students: Scheduled personnel.
5. Principal and assistant instructors required: One primary instructor for the conference and one assistant instructor for each student for the practical exercise.
6. Training aids and equipment: Rags, lubricants, coolant, DA Form 2404, DD Form 1970, pencil, TM 9-2320-364-10, equipment records folder, an M1074/M1075 PLS truck with BII for each student, and one M1077 flatrack with securely tied down palletized load for each truck.
7. References: AR 385-55, DA Pamphlet 738-750, TM 9-2320-364-10, and FM 21-305.

**D. SEQUENCE OF ACTIVITY.**

1. Introduction:
  - a. Interest device.
  - b. Tie-in.
  - c. Lesson objective (paragraph A).
  - d. Procedures.
    - (1) Explanation.
    - (2) Practical exercise.
    - (3) Summary.

2. Explanation and demonstration:

**NOTE:** Students practiced these lesson objectives during daylight and should be familiar with all operations.

**NOTE:** An instructor will be in the cab whenever a student is driving the PLS truck.

**NOTE:** Each student will be required to drive the designated route and load and unload the flatrack in the automatic mode onto and off the PLS truck.

- a. Discuss the LHS operation.
  - (1) Stress the importance of alignment of truck to flatrack.
  - (2) Discuss the mode selections of the hydraulic selector switch.
  - (3) Explain the use of the work lights, required for night LHS operations. (One driver must act as assistant driver and hold the work lights so the driver can see the load, hook arm, and to position the truck.)
- b. Discuss driving the truck at night.
  - (1) Point out the extra care that must be taken for night operation.
  - (2) Visibility is poorer, instruments and gauges are harder to read, and more attention must be given to driving.



c. Give safety briefing with emphasis on safety precautions for night operations. Stress that assistant driver must stay out of the path of the truck at all times, even while holding the work lights.

3. Practical exercise:

a. Assign students to vehicles and issue TM 9-2320-364-10, pencils, DA Form 2404, DD Form 1970, and equipment records folder. Instruct students on the location of rags, lubricants, and coolant.

b. Students perform before-operation PMCS.

**NOTE:** This exercise can be conducted in a round robin. One truck is used for driving and one for LHS operations. An instructor must be at the LHS station to enforce standards, with another instructor in the cab of the other PLS for driving operations.

c. Students practice driving the vehicle on the road and LHS operations. During-operation PMCS is also conducted at this time.

**NOTE:** As each student practices driving, an assistant instructor rides in the right seat. The assistant instructor explains driving techniques, ensures the driver is aware of driving situations, and conducts after-action reviews with each driver. Now is the time to pass on valuable experience and correct any bad driving habits.

d. Students perform after-operation PMCS and ensure all operator entries required on DA Form 2404 and DD Form 1970 are accurate, complete, and legible.

4. Evaluation: Check each student's performance of PMCS, night driving, and LHS night operations.

5. Summary:

a. Recap main points.

b. Allow for questions.

c. Clarify questions.

d. Give closing statement.

6. Retraining: Retrain No-Gos and slow learners. Students are tested on the EOCCT.

**E. SAFETY RESTRICTIONS.**

1. Ensure that all chock blocks are in place when the PLS trucks are parked or maintenance is to be performed.
2. Ensure the transmission is in neutral, the parking brake is set, and the engine is shut off before leaving the truck, when the truck is parked, or maintenance is being performed.
3. Ensure students remove all watches, jewelry, and identification tags before working in or around the PLS truck.
4. Ensure all personnel pay particular attention to the cautions and warnings listed in the operator's manual.
5. Ensure ground guide(s) are used when backing.
6. Ensure all personnel wear hearing protection when working in or around a running PLS truck.
7. Ensure all occupants wear seat belts while the truck is in operation.
8. Ensure the driver and ground guides know and understand the hand and arm signals as outlined in FM 21-305.
9. Ensure all backing is conducted at a speed of 5 MPH or less.
10. Ensure personnel maintain at least three points of contact to mount or dismount the PLS truck (to include performing PMCS).
11. Use the PLS ladder when performing maintenance. Install the two hooks on the ladder in the holes located on top of the fender before use. Using the ladder for other applications could result in serious injury to personnel.
12. Ensure all personnel are clear of truck before engine start is attempted. Operator must visually check to see that all areas of the truck are clear of personnel before attempting to start the engine. Failure to do so could result in serious injury or death to personnel.
13. Check for overhead power lines or other obstructions before attempting LHS operation. LHS reaches a height of 17 feet 2 inches (5.22 meters) with ISO container. Serious injury or death could result from contact with electrical power lines.
14. Check ground conditions for firmness and extreme sideways inclination before picking up or off-loading a flatrack. Any ground instability beneath road wheels could cause serious injury or death to personnel.
15. Before and during any load or unload cycle, all personnel should stay clear of LHS and flatrack or serious injury or death could result to personnel.

16. Ensure that flatrack runners contact LHS rear rollers correctly. Failure to contact flatrack runners correctly could result in serious injury or death to personnel and damage to equipment.

17. When loading or unloading flatracks on uneven ground (side slope or downgrades up to 10 degrees), it may be necessary to apply truck service brakes to prevent truck roll away or severe injury or death could result.

18. Never drive with LHS no transit light illuminated. An illuminated light means load locks are not engaged and LHS is not fully stowed.

19. Overload protection system on PLS protects LHS and flatrack from structural damage during loading or unloading. This system does not protect truck chassis from being overloaded by means of a crane, forklift, or excessively loaded flatracks. Truck chassis is designed to carry an evenly distributed 16.5 tons payload. Operator is responsible to know what payload weighs.

20. Before starting any LHS operations, adjust extension mirror to monitor LHS operations or damage to equipment may result.

21. If terrain is deeply rutted, soft soil, and so forth, mud flaps must be pinned before beginning LHS operations or damage to mud flaps may result.

22. Engine speed must be at idle before using hydraulic selector switch or damage to equipment may result.

23. Do not use reverse to back up truck while hook arm is attached to flatrack or damage to LHS will occur.

24. If LHS overload lamp illuminates but loading operation continues, operator is cautioned that LHS is nearing maximum capacity. In this situation, operator should determine if payload is evenly distributed on flatrack or if flatrack load exceeds 16.5 tons. If any of these conditions exist, operator must redistribute or reduce the payload or damage to equipment may result.

25. Load must be evenly distributed on the pallet. Uneven load distribution may cause LHS overload indicator to give false signals and cause LHS to operate incorrectly. Damage to equipment may result.

26. If LHS overload lamp illuminates and normal operation has stopped, return load to original position and redistribute or reduce payload weight or equipment damage may occur.

27. Ensure that parking brake is not applied before starting load sequence or damage to equipment may occur.

28. Reduce engine speed to idle before flatrack main rails contact rear rollers or damage to flatrack may result.

29. Hydraulic selector switch must be in off position before driving or hydraulic system could overheat.

30. Ensure parking brake is not applied during unload sequence or damage to equipment may result.

31. Ensure rail transport locking pins are disengaged before unloading flatrack. Rail transport locking pins are used for rail transport only. Failure to comply may result in damage to equipment.

32. Once truck's rear suspension has been relieved of flatrack load, do not continue in unload position as possibility of jacking up rear of truck with hook arm may occur and damage to equipment may result.

33. Do not hold steering wheel at full left or right position for longer than 10 seconds. Oil overheating and pump damage can result.

34. Apply brakes gradually when stopping. A panic stop will cause the vehicle wheels to lock, engine to stall, and power steering failure. Failure to do this will result in injury or death.

35. Rapid operation repeatedly of service brakes will consume compressed air supply and cause automatic spring brake application. Failure to follow proper service brake operating procedures may cause serious injury or death to personnel.

36. Excessive use of the service brake to control downhill speed will result in the loss of braking power because of heat buildup.

37. Do not park the truck on a steep grade. Serious injury to personnel could result.

38. Apply engine brake only when truck tires have good traction. Use of engine brake on slippery surfaces can cause the truck to skid and cause injury to personnel.

39. If emergency steer light illuminates when driving, immediately pull the truck over to the side of the road and stop, or serious injury or death could result.

**F. ADDITIONAL COMMENTS AND INFORMATION.** Recommended instructional time is 5 hours (.5 conference and 4.5 practical exercise, including 1.0 PMCS).

**LESSON TITLE:** LOAD AND UNLOAD PLS TRUCK IN AUTOMATIC MODE

**TASK NUMBER:** 551-721-3364 (Load Truck in Automatic Mode) and 551-721-3365 (Unload Truck in Automatic Mode)

**A. TRAINING OBJECTIVE.**

**TASK:** Load and unload the PLS truck in the automatic mode.

**CONDITIONS** Given instruction, DA Form 2404, DD Form 1970, pencil, TM 9-2320-364-10, equipment records folder, rags, lubricants, coolant, an M1074/M1075 truck with BII, an M1077 flatrack with securely tied down palletized load, and a requirement to load/unload the flatrack onto/off the PLS truck.

**STANDARD:** Perform task in the correct sequence according to TM 9-2320-364-10 and without damage to equipment or injury to personnel. Students will be graded on a Go/No-Go basis. See enclosed training evaluation checklists.

**B. INTERMEDIATE TRAINING.** None.

**C. ADMINISTRATIVE INSTRUCTIONS.**

1. Training time: As scheduled.
2. Training location: : Classroom, motor pool, and training area as scheduled.
3. Training type: Conference, demonstration, and practical exercise.
4. Students: Scheduled personnel.
5. Principal and assistant instructors required: One primary instructor for the conference and one assistant instructor for every two students for the demonstration and practical exercise.
6. Training aids and equipment: Television, VCR, screen, overhead projector, transparencies, videotape TVT 55-37 (PIN: 710336DA), Part 4, "PLS Load-Handling System," rags, lubricants, and coolant. DA Form 2404, DD Form 1970, pen or pencil, TM 9-2320-364-10, equipment records folder, an M1074/M1075 truck with BII, and an M1077 flatrack with securely tied down palletized load for every two students.
7. References: AR 385-55, DA Pamphlet 738-750, and TM 9-2320-364-10.

**D. SEQUENCE OF ACTIVITY.**

1. Introduction:

- a. Interest device.
- b. Tie-in.
- c. Lesson objective (paragraph A).
- d. Procedures.
  - (1) Explanation.
  - (2) Practical exercise.
  - (3) Summary.

2. Explanation and demonstration:

- a. Review safety warnings. Because we are dealing with heavy loads and much of the operation is not fully visible to the operator, it is important to review warnings that pertain to the load-handling system (LHS).

**WARNING**

Check for overhead power lines or other obstructions before attempting LHS operation. LHS reaches a height of 17 feet 2 inches (5.22 meters) with ISO container. Serious injury or death could result from contact with electrical power lines.

**WARNING**

Check ground conditions for firmness and extreme sideways inclination before picking up or off-loading a flatrack. Any ground instability beneath road wheels could cause serious injury or death to personnel.

**WARNING**

Before and during any load or unload cycle, all personnel should stay clear of LHS and flatrack or serious injury or death could result to personnel.

**WARNING**

Ensure that flatrack runners contact LHS rear rollers correctly. Failure to contact flatrack runners correctly could result in serious injury or death to personnel and damage to equipment.

**WARNING**

When loading or unloading flatracks on uneven ground (side slope or downgrades up to 10 degrees), it may be necessary to apply truck service brakes to prevent truck roll away or severe injury or death could result.

**WARNING**

Never drive with the LHS no transit light illuminated. An illuminated light means load locks are not engaged and LHS is not fully stowed.

- b. Review slides of operating controls and techniques.

Transparency PLS 6-1

- (1) Hydraulic mode selector control. Go through each mode briefly.
  - (a) 0 = off position. Joystick is not operational; there are no hydraulics. Use for transit mode.
  - (b) 1 = automatic position. This setting is used for normal pickup and off-loading sequence of the flatrack.
  - (c) 2 = manual hook arm (MAN HA) position. This setting is used for picking up and off-loading on trailers and docks and in the event of failure of automatic hook arm electronic circuits.
  - (d) 3 = Manual main frame (MAN MF) position. This setting is used for picking up and off-loading on trailers and docks and in the event of failure of automatic main frame electronic circuits.
  - (e) 4 = Manual transit (MAN TRANS) position. This setting is used when automatic circuits have failed and MAN HA and MAN MF are operated. This position must be selected if truck is to travel.
  - (f) 5 = Crane or self-recovery winch (CRANE/SRW). This setting is used to switch hydraulic power to either crane or winch. In this position, the LHS free flow valve is closed and the LHS section of the hydraulic system is isolated.

Transparency PLS 6-2

- (2) LHS warning lights.
  - (a) LHS no transit [1] illuminates when LHS is not correctly stowed in transport position.

(b) LHS overload [2] light (yellow) is located on the driver's dash panel and illuminates whenever the main hydraulic relief valve is opened during loading or unloading. When the light illuminates, the driver will be warned that LHS has reached an overload condition or that hydraulic system is lifting very near maximum capacity. The LHS overload light will come on any time the main relief valve is cracked open. Load or unload operation may not come to a complete stop, but light will come on momentarily. This situation would indicate that the system is lifting near maximum capacity. If the load is overweight by 10 percent or greater, the light illuminates and the system is automatically blocked out. Stop operation and redistribute weight or reduce payload before attempting to load or unload.

**NOTE:** To reset LHS overload, return the load to start position and release the joystick switch.

**CAUTION**

Overload protection system on PLS protects LHS and flatrack from structural damage during loading or unloading. This system does not protect truck chassis from being overloaded by means of a crane, forklift, or excessively loaded flatracks. Truck chassis is designed to carry an evenly distributed 16.5 tons payload. The operator is responsible to know what the payload weighs.

(c) "LHS" [3] illuminates when rotary hydraulic selection switch is in positions AUTO, MAN HA, or MAN MF.

(d) Flatrack [4] illuminates red when flatrack on trailer is not locked and trailer status line is connected to the truck.

Transparency PLS 6-3

(3) LHS joystick.

(a) The joystick controls the operation of loading and unloading of flatracks.

(b) The joystick has movement in only two directions: forward for (LOAD) and rearward for (UNLOAD).

Transparency PLS 6-4

(4) Alignment with flatrack. Stress the importance of proper alignment.



- (a) Before starting any LHS operations, adjust extension mirror on driver's side to monitor LHS operations.
- (b) Back into flatrack as straight as possible to assure the flatrack comes onto truck rollers properly and then sets in place on the truck.
- (c) Slight misalignment (up to 10 percent) will not prevent the hook from attaching to the flatrack. If slightly misaligned, attach hook and lift 6 to 12 inches and attempt to drag flatrack forward until aligned with truck. If flatrack does not move freely, do not attempt to drag any further.

Transparency PLS 6-5

(5) Hook positions. Explain the hooking procedure.

- (a) When backing into the flatrack loop, adjust the hook so it will contact in the area shown.
  - (b) Monitor the hook and loop in the extension mirror and back slowly until hook and loop contact. Hook will catch the loop as it is raised.
  - (c) Do not use reverse (R) to back up the truck while the hook arm is attached to the flatrack or damage to LHS will occur.
- c. Review operating procedures. Show TVT 55-37, Part 4, "PLS Load-Handling System."
- d. Demonstrate loading and unloading the flatrack onto and off the PLS truck using the LHS automatic mode.

3. Practical exercise:

- a. Assign students to vehicles and issue TM 9-2320-364-10, pencils, DA Form 2404, DD Form 1970, and equipment records folder. Instruct students on the location of rags, lubricants, and coolant.
- b. Students perform before-operation PMCS.
- c. Students practice loading/unloading in the training area(s). During-operation PMCS is also conducted at this time.

- d. Students perform after-operation PMCS and ensure that all operator entries required on DA Form 2404 and DD Form 1970 are accurate, complete, and legible.
4. Evaluation: Check each student's performance on loading/unloading and PMCS.
5. Summary:
  - a. Recap main points.
  - b. Allow for questions.
  - c. Clarify questions.
  - d. Give closing statement.
6. Retraining: Retrain slow learners. LHS operation can be reinforced daily throughout the course. Students are tested on the EOCCT.

#### **E. SAFETY RESTRICTIONS.**

1. Ensure that all chock blocks are in place when the PLS trucks are parked or maintenance is to be performed.
2. Ensure the transmission is in neutral, the parking brake is set, and the engine is shut off before leaving the truck, when the truck is parked, or maintenance is being performed.
3. Ensure students remove all watches, jewelry, and identification tags before working in or around the PLS truck.
4. Ensure all personnel pay particular attention to the cautions and warnings listed in the operator's manual.
5. Ensure ground guide(s) are used when backing.
6. Ensure all personnel wear hearing protection when working in or around a running PLS truck.
7. Ensure all occupants wear seat belts while the truck is in operation.
8. Ensure the driver and ground guides know and understand the hand and arm signals as outlined in FM 21-305.
9. Ensure all backing is conducted at a speed of 5 MPH or less.

10. Ensure personnel maintain at least three points of contact to mount or dismount the PLS truck (to include performing PMCS).
11. Use the PLS ladder when performing maintenance. Install the two hooks on the ladder in the holes on top of the fender before use. Using the ladder for other applications could result in serious injury to personnel.
12. Ensure all personnel are clear of truck before engine start is attempted. The operator must visually check to see that all areas of the truck are clear of personnel before attempting to start the engine. Failure to do so could result in serious injury or death to personnel.
13. Check for overhead power lines or other obstructions before attempting LHS operation. LHS reaches a height of 17 feet 2 inches (5.22 meters) with ISO container. Serious injury or death could result from contact with electrical power lines.
14. Check ground conditions for firmness and extreme sideways inclination before picking up or off-loading a flatrack. Any ground instability beneath road wheels could cause serious injury or death to personnel.
15. Before and during any load or unload cycle, all personnel should stay clear of LHS and flatrack or serious injury or death could result to personnel.
16. Ensure that flatrack runners contact LHS rear rollers correctly. Failure to contact flatrack runners correctly could result in serious injury or death to personnel and damage to equipment.
17. When loading or unloading flatracks on uneven ground (side slope or downgrades up to 10 degrees), it may be necessary to apply truck service brakes to prevent truck roll away or severe injury or death could result.
18. Never drive with LHS no transit light illuminated. An illuminated light means load locks are not engaged and LHS is not fully stowed.
19. Overload protection system on PLS protects LHS and flatrack from structural damage during loading or unloading. This system does not protect truck chassis from being overloaded by means of a crane, forklift, or excessively loaded flatracks. Truck chassis is designed to carry an evenly distributed 16.5 tons payload. Operator is responsible to know what the payload weighs.
20. Before starting any LHS operations, adjust extension mirror to monitor LHS operations or damage to equipment may result.
21. If terrain is deeply rutted, soft soil, and so forth, mud flaps must be pinned before beginning LHS operations or damage to mud flaps may result.

22. Engine speed must be at idle before using hydraulic selector switch, or damage to equipment may result.

23. Do not use reverse to back up truck while hook arm is attached to flatrack or damage to LHS will occur.

24. If LHS overload lamp illuminates but loading operation continues, operator is cautioned that LHS is nearing maximum capacity. In this situation, the operator should determine if the payload is evenly distributed on the flatrack or if the flatrack load exceeds 16.5 tons. If any of these conditions exist, the operator must redistribute or reduce the payload or damage to equipment may result.

25. Load must be evenly distributed on the pallet and flatrack. Uneven load distribution may cause LHS overload indicator to give false signals and cause LHS to operate incorrectly.

26. If LHS overload lamp illuminates and normal operation has stopped, return the load to original position and redistribute or reduce payload weight or equipment damage may occur.

27. Before starting load sequence, ensure that parking brake is not applied or damage to equipment may occur.

28. Reduce engine speed to idle before flatrack main rails contact rear rollers or damage to flatrack may result.

29. Hydraulic selector switch must be in off position before driving or hydraulic system could overheat.

30. Ensure parking brake is not applied during unload sequence or damage to equipment may result.

31. Ensure rail transport locking pins are disengaged before unloading flatrack. Rail transport locking pins are used for rail transport only. Failure to comply may result in damage to equipment.

32. Once truck's rear suspension has been relieved of flatrack load, do not continue in unload position as possibility of jacking up rear of truck with hook arm may occur and damage to equipment may result.

**F. ADDITIONAL COMMENTS AND INFORMATION.** Recommended instructional time is 8 hours (1.0 conference, .5 demonstration, and 6.5 practical exercise including 1.0 PMCS).

**TRAINING EVALUATION**

**LOAD THE FLATRACK ONTO THE PLS TRUCK IN AUTOMATIC MODE**

NAME \_\_\_\_\_ RANK \_\_\_\_\_ UNIT \_\_\_\_\_

EVALUATOR \_\_\_\_\_ DATE \_\_\_\_\_

<u>STEPS</u>	<b>GO</b>	<b>NO-GO</b>
1. CHECKS FOR OVERHEAD OBSTRUCTIONS AND GROUND FIRMNESS.		
2. IF FLATRACK IS LOADED WITH CARGO, CHECKS ISO LOCKS OR CARGO TIE-DOWNS FOR SECURITY.		
3. STARTS TRUCK.		
4. BACKS TRUCK UP TO FLATRACK AND STOPS ABOUT 5 FEET FROM HOOK BAR.		
5. APPLIES SERVICE BRAKE PEDAL AND SETS TRANSMISSION RANGE SELECTOR TO NEUTRAL.		
6. WITH ENGINE SPEED AT IDLE, TURNS HYDRAULIC SELECTOR SWITCH TO AUTO.		
7. ADJUSTS EXTENSION MIRROR TO MONITOR LHS OPERATIONS.		
8. MOVES JOYSTICK TO UNLOAD AND INCREASES ENGINE SPEED TO ABOUT 1,500 RPM.		
9. CONTINUES TO UNLOAD UNTIL LIFT HOOK HAS MOVED TO BELOW LEVEL OF FLATRACK HOOK BAR.		
10. RELEASES JOYSTICK.		
11. SETS THE TRANSMISSION RANGE SELECTOR TO REVERSE AND BACKS TRUCK UP TO FLATRACK, ALIGNING TRUCK AND FLATRACK AS STRAIGHT AS POSSIBLE WITH LIFT HOOK TO MIDDLE OF HOOK BAR UNTIL LIFT HOOK CONTACTS HOOK BAR.		
12. ENSURES LIFT HOOK TIP IS POSITIONED BELOW BOTTOM OF HOOK BAR.		
13. MOVES THE JOYSTICK TO LOAD TO RAISE LIFT HOOK AND ENGAGE HOOK BAR.		
14. SETS THE TRANSMISSION RANGE SELECTOR TO NEUTRAL AND RELEASES SERVICE BRAKE PEDAL.		

**STEPS**

**GO NO-GO**

- 15. MOVES JOYSTICK TO LOAD, INCREASES ENGINE SPEED TO ABOUT 1,500 RPM, AND ALLOWS TRUCK TO BE PULLED UNDER FLATRACK.
- 16. ADJUSTS STEERING WHEEL AS NECESSARY TO ENSURE FLATRACK RUNNERS CONTACT REAR ROLLERS.
- 17. BEFORE FLATRACK RUNNERS CONTACT REAR ROLLERS, REDUCES ENGINE SPEED AND APPLIES SERVICE BRAKE PEDAL.
- 18. IF FLATRACK IS BEING LOADED IN SOFT SOIL CONDITIONS, RELEASES JOYSTICK AND SETS HYDRAULIC SELECTOR SWITCH TO MAN HA, MOVES JOYSTICK TO LOAD UNTIL FLATRACK IS ABOUT 2 FEET OFF THE GROUND, AND RELEASES JOYSTICK. SETS HYDRAULIC SELECTOR SWITCH TO AUTO AND RESUMES NORMAL AUTO OPERATIONS.
- 19. AFTER FLATRACK CONTACTS REAR ROLLERS, INCREASES ENGINE SPEED TO ABOUT 1,500 RPM UNTIL FLATRACK IS NEARLY LOADED.
- 20. REDUCES ENGINE SPEED TO IDLE, CONTINUES LOADING UNTIL FLATRACK IS FULLY LOADED AND LHS NO TRANSIT LAMP EXTINGUISHES.
- 21. RELEASES JOYSTICK AND APPLIES PARKING BRAKE.
- 22. TURNS HYDRAULIC SELECTOR SWITCH TO OFF.
- 23. INSPECTS THAT BOTH LOAD LOCKS HAVE ENGAGED AND FLATRACK IS COMPLETELY DOWN ON TRUCK.

GO	NO-GO

**TRAINING EVALUATION**

**UNLOAD THE FLATRACK FROM THE PLS TRUCK IN AUTOMATIC MODE**

**NAME** \_\_\_\_\_ **RANK** \_\_\_\_\_ **UNIT** \_\_\_\_\_

**EVALUATOR** \_\_\_\_\_ **DATE** \_\_\_\_\_

<u>STEPS</u>	<b>GO</b>	<b>NO-GO</b>
1. CHECKS FOR OVERHEAD OBSTRUCTIONS AND GROUND FIRMNESS.		
2. STARTS AND POSITIONS TRUCK AT UNLOADING SITE.		
3. SETS TRANSMISSION RANGE SELECTOR TO NEUTRAL AND APPLIES PARKING BRAKE.		
4. IF FLATRACK IS LOADED WITH CARGO, CHECKS ISO LOCKS OR CARGO TIE-DOWNS FOR SECURITY.		
5. CHECKS AREA FOR SUFFICIENT OPERATING ROOM AT FRONT AND REAR OF TRUCK.		
6. RELEASES PARKING BRAKE AND APPLIES SERVICE BRAKE PEDAL.		
7. WITH ENGINE SPEED AT IDLE, TURNS HYDRAULIC SELECTOR SWITCH TO AUTO.		
8. ADJUSTS EXTENSION MIRROR TO MONITOR LHS OPERATIONS.		
9. MOVES JOYSTICK TO UNLOAD AND MAINTAINS ENGINE SPEED AT IDLE UNTIL FRONT OF FLATRACK RAISES ABOUT 1 FOOT.		
10. INCREASES ENGINE SPEED TO ABOUT 1,500 RPM AND CONTINUES TO UNLOAD UNTIL REAR SUSPENSION STARTS TO LIFT AND BACK EDGE OF FLATRACK TOUCHES GROUND.		
11. RELEASES SERVICE BRAKE PEDAL AND ALLOWS GROUNDED FLATRACK TO PUSH THE TRUCK STRAIGHT FORWARD FROM UNDER THE FLATRACK.		
12. AS FRONT OF FLATRACK APPROACHES WITHIN ABOUT 8 INCHES OF GROUND, DECREASES ENGINE SPEED TO IDLE AND APPLIES SERVICE BRAKE PEDAL.		
13. CONTINUES OFF-LOADING UNTIL FLATRACK RUNNERS ARE ON GROUND AND REAR SUSPENSION IS UNLOADED.		

**STEPS**

14. RELEASES JOYSTICK WHEN FLATRACK RUNNERS ARE RESTING ON GROUND.
15. SETS THE TRANSMISSION RANGE SELECTOR TO DRIVE AND RELEASES SERVICE BRAKE PEDAL.
16. MOVES JOYSTICK TO LOAD MOMENTARILY AND THEN TO UNLOAD TO LET LIFTHOOK DISENGAGE FROM HOOK BAR. REPEATS UNTIL HOOK DISENGAGES.
17. MOVES TRUCK FORWARD ABOUT 5 FEET.
18. STOPS TRUCK AND SETS TRANSMISSION RANGE SELECTOR TO NEUTRAL.
19. MOVES JOYSTICK TO LOAD UNTIL LHS IS IN TRANSIT POSITION AND LHS NO TRANSIT LAMP EXTINGUISHES.
20. RELEASES JOYSTICK AND APPLIES PARKING BRAKE.
21. TURNS HYDRAULIC SELECTOR SWITCH TO OFF.

**GO NO-GO**

GO	NO-GO



**LESSON TITLE:** DRIVE THE PLS TRUCK OFF ROAD

**TASK NUMBER:** 551-721-1360 (Drive Cargo Vehicle on Side Roads and Unimproved Roads)

**A. TRAINING OBJECTIVE.**

**TASK:** Drive the PLS truck off road.

**CONDITIONS** Given instruction, DD Form 1970, DA Form 2404, pencil, TM 9-2320-364-10, equipment records folder, rags, lubricants, coolant, a suitable training area, an M1074/M1075 PLS truck with BII and a requirement to operate the truck off road (to include ditches, marshes, gullies, ravines, steep grades, woods, mud, rocky terrain, and shallow streams [48 inches or less]) during daylight hours.

**STANDARD:** Operate the vehicle safely at reduced speeds and over rough terrain without damaging the truck.

**B. INTERMEDIATE TRAINING.** None.

**C. ADMINISTRATIVE INSTRUCTIONS.**

1. Training time: As scheduled.
2. Training location: Classroom, motor pool, and off-road driver training area as scheduled.
3. Training type: Conference and practical exercise.
4. Students: Scheduled personnel.
5. Principal and assistant instructors required: One primary instructor for the conference and one assistant instructor for each student for the practical exercise.
6. Training aids and equipment: Television, VCR, videotape TVT 55-36 (PIN: 710046DA), Part 2, "PLS Driving Techniques." Rags, lubricants, coolant, DA Form 2404, DD Form 1970, pencil, TM 9-2320-364-10, equipment records folder, and an M1074/M1075 PLS truck with BII for each student.
7. References: AR 385-55, DA Pamphlet 738-750, TM 9-2320-364-10, and FM 21-305.

**D. SEQUENCE OF ACTIVITY.**

1. Introduction:
  - a. Interest device.
  - b. Tie-in.
  - c. Lesson objective (paragraph A).
  - d. Procedures.
    - (1) Explanation.
    - (2) Practical exercise.
    - (3) Summary.

2. Explanation and demonstration:

**NOTE:** An instructor will be in the cab whenever a student is driving the PLS truck.

- a. As an option, show videotape TVT 55-36, Part 2, "PLS Driving Techniques," to reinforce driving tasks. This step may be deleted because the students should have viewed this tape in earlier lessons.
- b. Driving off road or over rough terrain basically requires good driving sense. Experience is the best teacher, but there are a few good rules to keep in mind when driving under these conditions.
  - (1) Before operating off road, mud flaps need to be pinned on the storage hook on the mud flap bracket. If a steep slope is encountered and mud flaps are not pinned, damage can result.
  - (2) Anticipate terrain and, before negotiating, take positive action to match CTIS, driveline lockup, engine brake selection, and gear selection to terrain features.
  - (3) Do not shift into any lower gear than is necessary to maintain headway.
  - (4) Do not shift the transmission into first gear or the transfer case while the truck is moving. Severe damage to the driveline will result.
  - (5) Allow CTIS ample time to adjust before encountering adverse terrain.
  - (6) Check for obstructions and clearances to include underneath and overhead.

(7) Preset the CTIS selector switch to the cross- country position for off-road driving. Remember to press and hold the CTIS start button for about one second. When encountering more difficult terrain, the CTIS setting/driveline lockup can be changed.

(8) Attempt to keep the vehicle's wheels from spinning. If the wheels start to spin, stop the truck and change the CTIS setting/driveline lockup. Lockup makes the vehicle drive train more vulnerable to damage. This is especially true when the wheels are slipping (100 percent of available torque could flow to the wheels that are not spinning).

(9) Drive slowly enough to prevent--

(a) Truck damage.

(b) Cargo from coming loose or shifting.

(c) Occupants from being injured (injuries associated with hard or excessive jolts).

**CAUTION**

Do not engage the transfer case lockup while wheels are spinning or when turning a corner. Damage to the driveline may result.

c. Driving up steep grades requires these techniques:

(1) Ensure the CTIS rotary switch setting and transfer case shift lever settings match the terrain conditions.

(2) Engage the transfer case lockup (this is only required if the grade is steep or slippery) on approaching the grade and decelerate for about two seconds to allow transfer case lockup to engage.

**CAUTION**

Do not move the transfer case shift lever when the truck is moving or when the transmission is in gear. Severe damage to the driveline may result.

(3) If operating the truck with a heavy load, stop the truck and shift the transfer case shift lever to low.

**CAUTION**

Do not shift the transmission into first gear while the truck is moving. Severe damage to the driveline will result.

(4) Apply the service brake pedal and place the transmission selector in first gear if encountering an extreme grade (greater than 25 percent). If grades are less than 25 percent, all other gear selections are acceptable while climbing.

**CAUTION**

Excessive wheel slippage while travelling up a steep upgrade could cause driveline damage. When wheel slippage is detected, immediately stop the truck.

(5) Proceed up the grade by releasing the service brake pedal and gradually applying the throttle as traction allows. If wheels start to slip, stop the truck and change the CTIS setting to a greater degree of driveline lockup.

**CAUTION**

When the using emergency position on CTIS, top speed should not exceed 5 MPH and distance traveled should not exceed 5 miles. Care must be exercised as steering response is limited due to full driveline lockup or damage to equipment may result.

(6) If wheels are still slipping, stop the truck and turn the CTIS rotary selector switch to the emergency position. Do not press the start button. Pressing the start button will lower the tire air pressure. In this position, with the transfer case in low range, side-to-side axles are also locked up.

(7) Release the service brake pedal and gradually apply the throttle as traction improves.

(8) After reaching the top of the grade, stop the truck and unlock the transfer case. Select the appropriate transmission gear and CTIS setting for the terrain. (Remember, when changing CTIS setting from emergency to a lesser degree of driveline lockup, the vehicle must be stopped and driveline torque loading relieved.)

d. Driving down steep grades requires these methods:

(1) Ensure the CTIS rotary switch setting matches the terrain conditions.

(2) If operating the truck with a heavy load or the grade is steep, stop the truck and shift the transfer case shift lever to low.

**CAUTION**

The engine brake operates best when the engine speed is between 1,650 and 2,100 RPM. Transmission torque converter lockup will disengage below 1,650 RPM resulting in loss of engine braking.

**WARNING**

Apply engine brake only when vehicle tires have good traction. Use of the engine brake on slick surfaces can cause the vehicle to skid and cause injury or death.

- (3) Set the engine brake switch to low or high depending on the amount of braking required.

**NOTE:** Service (wheel) brakes must be used in addition to engine brake for maximum braking. The engine brake supplements the service brakes. The engine brake is a vehicle-slowng device, not a vehicle-stopping device.

- (4) Adjust the transmission range selector to a gear that will allow the engine with the engine brake applied to control the truck speed with the engine at or below 2,100 RPM and service brakes not applied.

**WARNING**

Repeated rapid operation of service brakes will consume compressed air supply and cause automatic spring brake application. Failure to follow proper service brake operating procedures may cause serious injury or death to personnel.

**CAUTION**

Excessive use of the service brake to control downhill speed will result in the loss of braking power because of heat buildup.

- (5) Use the service brakes as needed to control truck speed.

e. Crossing shallow ditches requires the following driving techniques:

- (1) Stop the truck.
- (2) Check the terrain for obstacles.
- (3) Ensure the CTIS rotary switch setting matches the terrain conditions, and shift the transfer case shift lever as required.
- (4) Adjust the transmission range selector as required (normally, first through third gear).
- (5) Slowly approach the ditch at an angle.

(6) Steer the truck toward the ditch so that one wheel on an axle will leave the ditch as the other wheel on the same axle enters it.

f. Crossing deep ditches requires the following driving techniques:

(1) Stop the truck.

(2) Check the terrain for obstacles.

(3) Cut away both sides of the ditch if necessary.

(4) Ensure the CTIS rotary switch setting matches the terrain conditions, and shift the transfer case shift lever as required.

(5) Adjust the transmission range selector as required (normally, first or second gear).

(6) If necessary, engage the transfer case lockup and decelerate for about two seconds to allow transfer case lockup to engage.

(7) Slowly approach the ditch at an angle.

(8) Steer the truck toward the ditch so that one wheel on an axle will leave the ditch as the other wheel on the same axle enters it.

(9) Accelerate the truck enough to keep it rolling as it goes up the other side.

g. Crossing gullies and ravines requires these driving techniques:

(1) Stop the truck.

(2) Check the terrain for obstacles.

(3) Ensure the CTIS rotary switch setting matches the terrain conditions, and shift the transfer case shift lever as required.

(4) Set the transmission range selector to 1.

(5) If necessary, engage the transfer case lockup and decelerate for about two seconds to allow transfer case lockup to engage.

(6) Ease the front wheels over the edge and into the ravine or gully.

(7) Steer a straight course so both front wheels strike the bottom at the same time.

(8) Accelerate enough so that the truck can climb up the opposite bank.

h. Wooded area driving techniques include the following:

(1) Stop the truck.

(2) Check the terrain for obstructions.

(3) Ensure the CTIS rotary switch setting matches the terrain conditions, and shift the transfer case shift lever as required.

(4) Set the transmission range selector to 3, 2, or 1, depending on the condition of the ground.

(5) If necessary, engage the transfer case lockup and decelerate for approximately two seconds to allow transfer case lockup to engage.

(6) Maneuver around obstructions.

i. Rocky terrain requires these driving techniques:

(1) Stop the truck.

(2) Check the terrain for obstructions.

(3) Ensure the CTIS rotary switch setting matches the terrain conditions, and shift the transfer case shift lever as required.

(4) Set the transmission range selector to 3, 2, or 1, depending on the condition of the ground.

(5) If necessary, engage the transfer case lockup and decelerate for about two seconds to allow transfer case lockup to engage.

(6) Drive slowly, maneuver around large boulders, and choose route while under way.

j. Forging streams calls for these handling techniques:

(1) Ensure depth of fording site is not more than 4 feet and the water flow of the stream is not too swift.

**WARNING**

Do not ford water unless depth is known. Water deeper than 4 feet may enter truck causing personnel injury or death.

- (2) Ensure the bottom at the fording site is firm enough that 4 feet maximum fording depth will not be exceeded and truck will not become mired.
- (3) Secure loose objects in the cab of the truck and check load security (past accidents have involved soldiers drowning because they were trapped by materials such as camouflage nets).
- (4) Stop the truck at the edge of the water.
- (5) If the brakes have been used heavily and are hot, allow drums and shoes to cool before entering the water if possible.
- (6) Ensure the engine is operating correctly before entering the water.
- (7) Set the transfer case shift lever to low.
- (8) Set the CTIS rotary selector switch to the emergency position.
- (9) Set the transmission range selector to 1.
- (10) Drive truck slowly into water.
- (11) If the engine stops, immediately attempt to restart the engine. If the truck will not start, tow or winch the truck from the water with another truck as soon as possible.
- (12) Drive the truck at 3 to 4 MPH or less through water.
- (13) Unless absolutely necessary, do not stop while in water.
- (14) If the truck accidentally enters water deeper than 4 feet do the following (remember the height of the metal horizontal bar across the center of the floor window is 4 feet):
  - (a) Press on the service brake pedal and hold to stop the truck.
  - (b) Set the transmission range selector to reverse (R).
  - (c) Let up on the service brake pedal.
  - (d) Slowly back the truck out of deep water.



(15) After leaving the water, press the service brake pedal lightly and hold while driving slowly to dry out brake linings.

(16) When clear of the fording area, stop the truck, apply and release the parking brake several times to remove water from the brake components.

(17) Remove water and clean deposits from all truck parts as soon as possible.

(18) Lubricate and perform PMCS as soon as possible.

k. Mud and swamps require these driving techniques:

(1) Stop the truck and check the terrain for obstructions.

(2) Ensure the CTIS rotary switch setting matches the terrain conditions, and shift the transfer case shift lever as required.

(3) Set the transmission range selector to 3, 2, or 1, depending on the condition of the ground.

(4) If necessary, engage the transfer case lockup and decelerate for about two seconds to allow transfer case lockup to engage.

(5) Drive through area maintaining a steady speed.

l. Clean mud from wheels, brakes, axles, universal joints, steering mechanism, and radiator as soon as possible.

m. Give safety briefing, to include reinforcing ground guide safety precautions for backing the truck.

3. Practical exercise:

a. Assign students to vehicles and issue TM 9-2320-364-10, pencils, DA Form 2404, DD Form 1970, and equipment records folder. Instruct students on the location of rags, lubricants, and coolant.

b. Students perform before-operation PMCS.

c. Students practice driving the PLS truck off road. During-operation PMCS is also conducted at this time.

**NOTE:** As each student practices driving, an assistant instructor rides in the right seat. The assistant instructor explains driving techniques, ensures the driver is aware of driving

situations, and conducts after-action reviews with each driver. Now is the time to pass on valuable experience and correct any bad driving habits.

- d. Students perform after-operation PMCS and ensure all operator entries required on DA Form 2404 and DD Form 1970 are accurate, complete, and legible.
4. Evaluation: Check each student's performance of PMCS and off-road driving.
  5. Summary:
    - a. Recap main points.
    - b. Allow for questions.
    - c. Clarify questions.
    - d. Give closing statement.
  6. Retraining: Retrain No-Gos and slow learners. This can be accomplished using the videotape TVT 55-36, "PLS Driving Techniques," and reinforced throughout the course. Students perform driving tasks daily and are tested on the EOCCT.

#### **E. SAFETY RESTRICTIONS.**

1. Ensure that all chock blocks are in place when the PLS trucks are parked or maintenance is to be performed.
2. Ensure the transmission is in neutral, the parking brake is set, and the engine is shut off before leaving the truck, when the truck is parked, or maintenance is being performed.
3. Ensure students remove all watches, jewelry, and identification tags before working in or around the PLS truck.
4. Ensure all personnel pay particular attention to the cautions and warnings listed in the operator's manual.
5. Ensure ground guide(s) are used when backing.
6. Ensure all personnel wear hearing protection when working in or around a running PLS truck.
7. Ensure all occupants wear seat belts while the truck is in operation.
8. Ensure the driver and ground guides know and understand the hand and arm signals as outlined in FM 21-305.

9. Ensure all backing is conducted at a speed of 5 MPH or less.
10. Ensure personnel maintain at least three points of contact to mount or dismount the PLS truck (to include performing PMCS).
11. Use the PLS ladder when performing maintenance. Install the two hooks on the ladder in the holes located on top of the fender before use. Using the ladder for other applications could result in serious injury to personnel.
12. Ensure all personnel are clear of truck before engine start is attempted. Operator must visually check to see that all areas of the truck are clear of personnel before attempting to start the engine. Failure to do so could result in serious injury or death to personnel.
13. During driving operations, hydraulic selector switch must be placed in the off position or hydraulic system overheating will result.
14. Do not hold steering wheel at full left or right position for longer than 10 seconds. Oil overheating and pump damage can result.
15. Apply brakes gradually when stopping. A panic stop will cause the vehicle wheels to lock, engine to stall, and power steering failure. Failure to do this will result in injury or death.
16. Repeated rapid operation of service brakes will consume compressed air supply and cause automatic spring brake application. Failure to follow proper service brake operating procedures may cause serious injury or death to personnel.
17. Do not park the truck on a steep grade. Serious injury to personnel could result.
18. Apply engine brake only when truck tires have good traction. Use of engine brake on slippery surfaces can cause the truck to skid and cause injury to personnel.
19. If emergency steer light illuminates when driving, immediately pull the truck over to the side of the road (trail) and stop or serious injury or death could result.

**F. ADDITIONAL COMMENTS AND INFORMATION.** Recommended instructional time is 10 hours (1.0 conference and 9.0 practical exercise, including 3.0 PMCS).

**LESSON TITLE:** OPERATE THE PLS TRUCK AT NIGHT

**TASK NUMBER:** 551-721-1366 (Drive Vehicle with Automatic Transmission), 551-721-3364 (Load Truck in Automatic Mode), and 551-721-3365 (Unload Truck in Automatic Mode)

**A. TRAINING OBJECTIVE.**

**TASK:** Operate the PLS truck at night.

**CONDITIONS** Given instruction, DD Form 1970, DA Form 2404, pencil, TM 9-2320-364-10, equipment records folder, rags, lubricants, coolant, designated driving route (improved surfaced and secondary roads), an M1074/M1075 truck with BII, an M1077 flatrack with securely tied down palletized load, and a requirement to operate the PLS truck during the hours of darkness, drive a designated route and load and unload the flatrack onto and off the PLS truck.

**STANDARD:** Operate the PLS truck safely without accident, injury, or damage to equipment according to TM 9-2320-364-10.

**B. INTERMEDIATE TRAINING.** None.

**C. ADMINISTRATIVE INSTRUCTIONS.**

1. Training time: As scheduled.
2. Training location: Motor pool, training area, and driver training route (built-up and rural areas) as scheduled.
3. Training type: Conference and practical exercise.
4. Students: Scheduled personnel.
5. Principal and assistant instructors required: One primary instructor for the conference and one assistant instructor for each student for the practical exercise.
6. Training aids and equipment: Rags, lubricants, coolant, DA Form 2404, DD Form 1970, pencil, TM 9-2320-364-10, equipment records folder, an M1074/M1075 PLS truck with BII for each student, and one M1077 flatrack with securely tied down palletized load for each truck.
7. References: AR 385-55, DA Pamphlet 738-750, TM 9-2320-364-10, and FM 21-305.

**D. SEQUENCE OF ACTIVITY.**

1. Introduction:

- a. Interest device.
- b. Tie-in.
- c. Lesson objective (paragraph A).
- d. Procedures.
  - (1) Explanation.
  - (2) Practical exercise.
  - (3) Summary.

2. Explanation and demonstration:

**NOTE:** Students practiced these lesson objectives during daylight and should be familiar with all operations.

**NOTE:** An instructor will be in the cab whenever a student is driving the PLS truck.

**NOTE:** Each student will be required to drive the designated route and load and unload the flatrack in the automatic mode onto and off the PLS truck.

- a. Discuss the LHS operation.
  - (1) Stress the importance of alignment of truck to flatrack.
  - (2) Discuss the mode selections of the hydraulic selector switch.
  - (3) Explain the use of the work lights, required for night LHS operations. (One driver must act as assistant driver and hold the work lights so the driver can see the load, hook arm, and to position the truck.)
- b. Discuss driving the truck at night.
  - (1) Point out the extra care that must be taken for night operation.
  - (2) Visibility is poorer, instruments and gauges are harder to read, and more attention must be given to driving.

- c. Give safety briefing with emphasis on safety precautions for night operations. Stress that assistant driver must stay out of the path of the truck at all times, even while holding the work lights.

3. Practical exercise:

- a. Assign students to vehicles and issue TM 9-2320-364-10, pencils, DA Form 2404, DD Form 1970, and equipment records folder. Instruct students on the location of rags, lubricants, and coolant.
- b. Students perform before-operation PMCS.

**NOTE:** This exercise can be conducted in a round robin. One truck is used for driving and one for LHS operations. An instructor must be at the LHS station to enforce standards, with another instructor in the cab of the other PLS for driving operations.

- c. Students practice driving the vehicle on the road and LHS operations. During-operation PMCS is also conducted at this time.

**NOTE:** As each student practices driving, an assistant instructor rides in the right seat. The assistant instructor explains driving techniques, ensures the driver is aware of driving situations, and conducts after-action reviews with each driver. Now is the time to pass on valuable experience and correct any bad driving habits.

- d. Students perform after-operation PMCS and ensure all operator entries required on DA Form 2404 and DD Form 1970 are accurate, complete, and legible.

4. Evaluation: Check each student's performance of PMCS, night driving, and LHS night operations.

5. Summary:

- a. Recap main points.
- b. Allow for questions.
- c. Clarify questions.
- d. Give closing statement.

6. Retraining: Retrain No-Gos and slow learners. Students are tested on the EOCCT.

**E. SAFETY RESTRICTIONS.**

1. Ensure that all chock blocks are in place when the PLS trucks are parked or maintenance is to be performed.
2. Ensure the transmission is in neutral, the parking brake is set, and the engine is shut off before leaving the truck, when the truck is parked, or maintenance is being performed.
3. Ensure students remove all watches, jewelry, and identification tags before working in or around the PLS truck.
4. Ensure all personnel pay particular attention to the cautions and warnings listed in the operator's manual.
5. Ensure ground guide(s) are used when backing.
6. Ensure all personnel wear hearing protection when working in or around a running PLS truck.
7. Ensure all occupants wear seat belts while the truck is in operation.
8. Ensure the driver and ground guides know and understand the hand and arm signals as outlined in FM 21-305.
9. Ensure all backing is conducted at a speed of 5 MPH or less.
10. Ensure personnel maintain at least three points of contact to mount or dismount the PLS truck (to include performing PMCS).
11. Use the PLS ladder when performing maintenance. Install the two hooks on the ladder in the holes located on top of the fender before use. Using the ladder for other applications could result in serious injury to personnel.
12. Ensure all personnel are clear of truck before engine start is attempted. Operator must visually check to see that all areas of the truck are clear of personnel before attempting to start the engine. Failure to do so could result in serious injury or death to personnel.
13. Check for overhead power lines or other obstructions before attempting LHS operation. LHS reaches a height of 17 feet 2 inches (5.22 meters) with ISO container. Serious injury or death could result from contact with electrical power lines.
14. Check ground conditions for firmness and extreme sideways inclination before picking up or off-loading a flatrack. Any ground instability beneath road wheels could cause serious injury or death to personnel.

15. Before and during any load or unload cycle, all personnel should stay clear of LHS and flatrack or serious injury or death could result to personnel.
16. Ensure that flatrack runners contact LHS rear rollers correctly. Failure to contact flatrack runners correctly could result in serious injury or death to personnel and damage to equipment.
17. When loading or unloading flatracks on uneven ground (side slope or downgrades up to 10 degrees), it may be necessary to apply truck service brakes to prevent truck roll away or severe injury or death could result.
18. Never drive with LHS no transit light illuminated. An illuminated light means load locks are not engaged and LHS is not fully stowed.
19. Overload protection system on PLS protects LHS and flatrack from structural damage during loading or unloading. This system does not protect truck chassis from being overloaded by means of a crane, forklift, or excessively loaded flatracks. Truck chassis is designed to carry an evenly distributed 16.5 tons payload. Operator is responsible to know what payload weighs.
20. Before starting any LHS operations, adjust extension mirror to monitor LHS operations or damage to equipment may result.
21. If terrain is deeply rutted, soft soil, and so forth, mud flaps must be pinned before beginning LHS operations or damage to mud flaps may result.
22. Engine speed must be at idle before using hydraulic selector switch or damage to equipment may result.
23. Do not use reverse to back up truck while hook arm is attached to flatrack or damage to LHS will occur.
24. If LHS overload lamp illuminates but loading operation continues, operator is cautioned that LHS is nearing maximum capacity. In this situation, operator should determine if payload is evenly distributed on flatrack or if flatrack load exceeds 16.5 tons. If any of these conditions exist, operator must redistribute or reduce the payload or damage to equipment may result.
25. Load must be evenly distributed on the pallet. Uneven load distribution may cause LHS overload indicator to give false signals and cause LHS to operate incorrectly. Damage to equipment may result.
26. If LHS overload lamp illuminates and normal operation has stopped, return load to original position and redistribute or reduce payload weight or equipment damage may occur.



## TC 21-305-10

27. Ensure that parking brake is not applied before starting load sequence or damage to equipment may occur.
28. Reduce engine speed to idle before flatrack main rails contact rear rollers or damage to flatrack may result.
29. Hydraulic selector switch must be in off position before driving or hydraulic system could overheat.
30. Ensure parking brake is not applied during unload sequence or damage to equipment may result.
31. Ensure rail transport locking pins are disengaged before unloading flatrack. Rail transport locking pins are used for rail transport only. Failure to comply may result in damage to equipment.
32. Once truck's rear suspension has been relieved of flatrack load, do not continue in unload position as possibility of jacking up rear of truck with hook arm may occur and damage to equipment may result.
33. Do not hold steering wheel at full left or right position for longer than 10 seconds. Oil overheating and pump damage can result.
34. Apply brakes gradually when stopping. A panic stop will cause the vehicle wheels to lock, engine to stall, and power steering failure. Failure to do this will result in injury or death.
35. Rapid operation repeatedly of service brakes will consume compressed air supply and cause automatic spring brake application. Failure to follow proper service brake operating procedures may cause serious injury or death to personnel.
36. Excessive use of the service brake to control downhill speed will result in the loss of braking power because of heat buildup.
37. Do not park the truck on a steep grade. Serious injury to personnel could result.
38. Apply engine brake only when truck tires have good traction. Use of engine brake on slippery surfaces can cause the truck to skid and cause injury to personnel.
39. If emergency steer light illuminates when driving, immediately pull the truck over to the side of the road and stop, or serious injury or death could result.

**F. ADDITIONAL COMMENTS AND INFORMATION.** Recommended instructional time is 5 hours (.5 conference and 4.5 practical exercise, including 1.0 PMCS).

**CHAPTER 5****LESSON OUTLINES FOR TRAILER OPERATIONS**

**LESSON TITLE:** PERFORM PREVENTIVE MAINTENANCE CHECKS AND SERVICES (PMCS) ON A PLS TRAILER

**TASK NUMBER:** 551-721-1353 (Perform Preventive Maintenance Checks and Services [PMCS] on a Trailer)

**A. TRAINING OBJECTIVE.**

**TASK:** Perform PMCS on a PLS trailer.

**CONDITIONS** Given instruction, DA Form 2404, pencil, TM 9-2330-385-14, equipment records folder, rags, lubricants, an M1076 PLS trailer coupled to an M1074/M1075 PLS truck, and a requirement to inspect the trailer according to the PMCS tables listed in TM 9-2330-385-14.

**STANDARD:** Correct all faults within the operator's level of maintenance, and legibly record all others on DA Form 2404. If no faults are found, make necessary entries on DA Form 2404.

**B. INTERMEDIATE TRAINING.** None.

**C. ADMINISTRATIVE INSTRUCTIONS.**

1. Training time: As scheduled.
2. Training location: Motor pool.
3. Training type: Demonstration and practical exercise.
4. Students: Scheduled personnel.
5. Principal and assistant instructors required: One primary instructor for the class and one assistant instructor for every two students for the demonstration and practical exercise.
6. Training aids and equipment: Hearing protection, rags, and lubricants. DA Form 2404, pencil, TM 9-2330-385-14, equipment records folder, and an M1076 PLS trailer coupled to an M1074/M1075 PLS truck for every two students.
7. References: AR 385-55, DA Pamphlet 738-750, and TM 9-2330-385-14.

**D. SEQUENCE OF ACTIVITY.**

1. Introduction:
  - a. Interest device.
  - b. Tie-in.
  - c. Lesson objective (paragraph A).
  - d. Procedures.
    - (1) Explanation.
    - (2) Practical exercise.
    - (3) Summary.
2. Explanation and demonstration: Demonstrate before-, during-, after-, weekly-, and monthly-operation PMCS to the students.
3. Practical exercise:
  - a. Assign students to trucks/trailers and issue TM 9-2330-385-14, pencils, DA Form 2404, and equipment records folder. Tell students where rags and lubricants are located.
  - b. Students perform PMCS.
4. Evaluation: Check each student's PMCS performance.
5. Summary:
  - a. Recap main points.
  - b. Allow for questions.
  - c. Clarify questions.
  - d. Give closing statement.
6. Retraining:
  - a. Students perform PMCS daily and PMCS is reinforced throughout the course.

b. Trailer PMCS is included in the videotape TVT 55-36, Part 2, "PLS Driving Techniques." As an option, instructors can reshoot this videotape.

c. Trailer PMCS is tested on the EOCCT.

#### **E. SAFETY RESTRICTIONS.**

1. Ensure that all chock blocks are in place when PLS trucks and/or trailers are parked or maintenance is to be performed.

2. Ensure the transmission is in neutral, the parking brake is set, and the engine is shut off before leaving the truck, when the truck is parked, or maintenance is being performed.

3. Ensure students remove all watches, jewelry, and identification tags before working in or around the PLS truck or trailer.

4. Ensure all personnel pay particular attention to the cautions and warnings listed in the operator's manuals.

5. Ensure ground guide(s) are used when backing.

6. Ensure all personnel wear hearing protection when working in or around a running PLS truck.

7. Ensure all occupants wear seat belts while the truck is in operation.

8. Ensure the driver and ground guides know and understand the hand and arm signals as outlined in FM 21-305.

9. Ensure all backing is conducted at a speed of 5 MPH or less.

10. Ensure personnel maintain at least three points of contact to mount or dismount the PLS truck or trailer (to include performing PMCS).

11. Use the PLS ladder when performing maintenance. Install the two hooks on the ladder in the holes located on top of the fender before use. Using the ladder for other applications could result in serious injury to personnel.

12. Ensure all personnel are clear of truck before engine start is attempted. Operator must visually check to see that all areas of the truck are clear of personnel before attempting to start the engine. Failure to do so could result in serious injury or death to personnel.

**F. ADDITIONAL COMMENTS AND INFORMATION.** Recommended instructional time is 2 hours (.75 demonstration and 1.25 practical exercise). The remaining PMCS is performed throughout the course in conjunction with driving tasks.

**LESSON TITLE:** COUPLE PLS TRAILER (PLST) TO PLS TRUCK

**TASK NUMBER:** 551-721-3362 (Couple PLS Trailer to PLS Truck)

**A. TRAINING OBJECTIVE.**

**TASK:** Couple the M1076 PLS trailer (PLST) to the M1074/M1075 PLS truck.

**CONDITIONS** Given instruction, DA Form 2404, DD Form 1970, pencil, TM 9-2320-364-10, TM 9-2330-385-14, equipment records folder, rags, lubricants, coolant, an M1074/M1075 truck with BII, an M1076 trailer, and a requirement to couple the PLST.

**STANDARD:** Without damage to equipment or injury to personnel, couple the PLST in the correct sequence. Students will be graded on a Go/No-Go basis. See enclosed training evaluation checklist.

**B. INTERMEDIATE TRAINING.** None.

**C. ADMINISTRATIVE INSTRUCTIONS.**

1. Training time: As scheduled.
2. Training location: Motor pool and training area as scheduled.
3. Training type: Demonstration and practical exercise.
4. Students: Scheduled personnel.
5. Principal and assistant instructors required: One primary instructor for the class and one assistant instructor for every two students for the demonstration and practical exercise.
6. Training aids and equipment: Rags, lubricants, and coolant, DA Form 2404, DD Form 1970, pencil, TM 9-2320-364-10, TM 9-2330-385-14, equipment records folder, an M1074/M1075 truck with BII, and an M1076 trailer for every two students.
7. References: AR 385-55, DA Pamphlet 738-750, TM 9-2320-364-10, and TM 9-2330-385-14.

**D. SEQUENCE OF ACTIVITY.**

1. Introduction:
  - a. Interest device.

- b. Tie-in.
- c. Lesson objective (paragraph A).
- d. Procedures.
  - (1) Explanation.
  - (2) Practical exercise.
  - (3) Summary.

2. Explanation and demonstration: Demonstrate coupling procedures.

**WARNING**

Do not stand between trailer drawbar and truck coupler during hookup procedures to prevent being pinned between truck and trailer. Failure to comply could result in serious injury or death to personnel.

- a. Position the truck directly in front of the trailer, in line, with sufficient space (about 3 feet) between the truck and trailer to perform the coupling.
- b. Check that chock blocks are properly in place at trailer wheels. If chock blocks are not in place, place them between the tires of axles two and three (in front of the tire on axle three on one side and behind the tire on axle two on the other side of the trailer).
- c. Ensure that trailer parking brake knob on front of trailer is pulled out. Do not push it in. Pushing it in will release the trailer brakes.
- d. If needed, extend or retract the trailer drawbar. For normal on-road driving, the drawbar should be extended. The drawbar must be extended for all off-road driving and when transporting an ISO container on the truck. In areas having regulations that limit the overall length of the truck and trailer, the drawbar is retracted.
  - (1) It may be necessary to charge the trailer air bag with air. To charge the trailer air bag--
    - (a) Remove the dummy coupling from the truck emergency air gladhand.
    - (b) Remove the air bag charging hose from the stowage box and connect this hose gladhand to the truck emergency air gladhand.

(c) Remove the covers from the air bag charging hose connector and the trailer quick disconnect.

(d) Connect the air bag charging hose connector to the trailer quick disconnect.

(e) Get in the truck and push in the trailer supply valve on the dash to charge the trailer air bag system.

(f) After the trailer air bag system is charged, pull out the trailer supply valve.

(g) Disconnect the air bag charging hose connector from the trailer quick disconnect.

(h) Install the covers on the air bag charging hose connector and the trailer quick disconnect.

(i) Remove the air bag charging hose gladhand from the truck emergency air gladhand.

(j) Install the dummy coupling on the truck emergency air gladhand.

(k) Place the air bag charging hose in the stowage box.

(2) To retract the trailer drawbar--

(a) Move the air assist lever on the trailer to the up position and raise the drawbar to level position (horizontal).

(b) Place air assist lever in neutral position.

(c) Lift the locking gate and remove the locking pin from the drawbar structure.

(d) Push the tube assembly completely into the drawbar structure.

(e) Align the holes in the tube assembly and the drawbar structure and install the locking pin into the drawbar structure.

(f) Close the locking gate over the locking pin on the drawbar structure.

(3) To extend the trailer drawbar--

- (a) Move the air assist lever on the trailer to the up position and raise the drawbar to level position (horizontal).
  - (b) Place air assist lever in neutral position.
  - (c) Lift the locking gate and remove the locking pin from the drawbar structure.
  - (d) Pull the tube assembly completely out of the drawbar structure to the stop.
  - (e) Align the holes in the tube assembly and the drawbar structure and install the locking pin into the drawbar structure.
  - (f) Close the locking gate over the locking pin on the drawbar structure.
- e. Lock in the coupler rotation lockpin on the truck coupler. The coupler rotation lockpin must be in the locked (up and in) position to prevent coupler rotation during the hookup.
- f. Lift up the locking gate on the truck coupler.
- g. Pull the locking lever out and the release lever back at the same time to open the truck coupler jaw. The coupler jaw will drop open.
- h. Move the air assist lever on the trailer to the up position and raise the drawbar to the level of the truck coupler. If the air assist lever does not operate, the trailer air bag must be charged.
- i. After the drawbar is level with the truck coupler, place the air assist lever on the trailer in the neutral position.

**WARNING**

Personnel must keep hands and body away from drawbar when connecting to truck or injury may result.

- j. Start vehicle and back up slowly. Keep the truck straight with the trailer and continue backing until the drawbar makes contact with the coupler. Coupler jaw will close when the drawbar makes contact.
- k. To ensure the coupler has latched onto the drawbar, nudge the vehicle forward slightly and shut off the vehicle.
- l. Release air pressure on the drawbar by moving the air assist lever down.



- m. Close the locking gate on the truck coupler.
- n. Unlock the rotation lockpin and check the truck coupler for rotation. It should rotate.
- o. Remove the truck receptacle cap and connect the load lock status line to the truck receptacle.

**CAUTION**

Both the 12-volt and 24-volt cables must not be connected at the same time. Only one cable can be hooked up during operation or damage to equipment will result.

- p. Remove the appropriate electrical cable from the stowage box. The 12-volt cable is standard for this vehicle. Use the 24-volt cable when blackout lights are required.
  - q. Connect the appropriate electrical cable to the trailer and truck.
  - r. Remove the two dummy covers from the air couplings on the truck.
  - s. Install the service air gladhand to the service air coupling and the emergency air gladhand to its air coupling.
  - t. Unhook the two safety chains from the trailer and attach them to the vehicle clevises.
  - u. Remove and stow the trailer wheel chocks.
  - v. Enter the cab and start the vehicle. Push in on the trailer air supply control knob and check the operation of the trailer brakes and lights. Also perform the remaining before-operation PMCS on the trailer.
3. Practical exercise:
- a. Students perform before-operation PMCS.
  - b. Students practice coupling in the training area(s). During-operation PMCS is also conducted at this time.
4. Evaluation: Check each student's performance on coupling and PMCS.
5. Summary:
- a. Recap main points.
  - b. Allow for questions.

- c. Clarify questions.
  - d. Give closing statement.
6. Retraining:
- a. Coupling procedures are included in the videotape TVT 55-36, Part 2, "PLS Driving Techniques." As an option, instructors can reshow this videotape.
  - b. Coupling procedures can be reinforced daily throughout the course.
  - c. Students are tested on the EOCCT.

### **E. SAFETY RESTRICTIONS.**

1. Ensure that all chock blocks are in place when the PLS trucks and/or trailers are parked or maintenance is to be performed.
2. Ensure the transmission is in neutral, the parking brake is set, and the engine is shut off before leaving the truck, when the truck is parked, or maintenance is being performed.
3. Ensure students remove all watches, jewelry, and identification tags before working in or around the PLS truck or trailer.
4. Ensure all personnel pay particular attention to the cautions and warnings listed in the operator's manuals.
5. Ensure ground guide(s) are used when backing.
6. Ensure all personnel wear hearing protection when working in or around a running PLS truck.
7. Ensure all occupants wear seat belts while the truck is in operation.
8. Ensure the driver and ground guides know and understand the hand and arm signals as outlined in FM 21-305.
9. Ensure all backing is conducted at a speed of 5 MPH or less.
10. Ensure personnel maintain at least three points of contact to mount or dismount the PLS truck or trailer (to include performing PMCS).
11. Use the PLS ladder when performing maintenance. Install the two hooks on the ladder in the holes located on top of the fender before use. Using the ladder for other applications could result in serious injury to personnel.

12. Ensure all personnel are clear of truck before engine start is attempted. Operator must visually check to see that all areas of the truck are clear of personnel before attempting to start the engine. Failure to do so could result in serious injury or death to personnel.

13. Ensure personnel keep hands, feet, and body away from drawbar when connecting to truck or injury may result.

14. Chock trailer wheels or connect drawbar to truck before coupling trailer gladhands to truck or serious injury or death could result to personnel.

15. Ensure personnel do not stand between trailer drawbar and truck coupler during hookup procedures to prevent being pinned between truck and trailer. Failure to comply could result in serious injury or death to personnel.

**F. ADDITIONAL COMMENTS AND INFORMATION.** Recommended instructional time is 3.0 hours (.5 demonstration and 2.5 practical exercise including .5 PMCS).

**TRAINING EVALUATION**

**COUPLE THE PLS TRAILER TO THE PLS TRUCK**

**NAME** \_\_\_\_\_ **RANK** \_\_\_\_\_ **UNIT** \_\_\_\_\_

**EVALUATOR** \_\_\_\_\_ **DATE** \_\_\_\_\_

<u>STEPS</u>	<b>GO</b>	<b>NO-GO</b>
1. POSITIONS THE TRUCK DIRECTLY IN FRONT OF THE TRAILER, WITH SUFFICIENT SPACE TO PERFORM THE COUPLING.		
2. CHECKS THAT CHOCK BLOCKS ARE PROPERLY IN PLACE AT TRAILER WHEELS.		
3. ENSURES THAT TRAILER PARKING BRAKE KNOB ON FRONT OF TRAILER IS PULLED OUT.		
4. IF NEEDED, EXTENDS OR RETRACTS THE TRAILER DRAWBAR. IT MAY BE NECESSARY TO CHARGE THE TRAILER AIR BAG WITH AIR.		
5. LOCKS IN THE COUPLER ROTATION LOCKPIN ON THE TRUCK COUPLER.		
6. OPENS THE TRUCK COUPLER JAW.		
7. RAISES THE DRAWBAR TO THE LEVEL OF THE TRUCK COUPLER. IF NOT DONE DURING STEP 4, IT MAY BE NECESSARY TO CHARGE THE TRAILER AIR BAG WITH AIR.		
8. STARTS VEHICLE AND BACKS UP SLOWLY UNTIL THE DRAWBAR MAKES CONTACT WITH THE COUPLER.		
9. TESTS THE COUPLING BY NUDGING THE VEHICLE FORWARD SLIGHTLY; THEN SHUTS OFF THE ENGINE.		
10. RELEASES AIR PRESSURE ON THE DRAWBAR.		
11. CLOSES THE LOCKING GATE ON THE TRUCK COUPLER		
12. UNLOCKS THE ROTATION LOCKPIN AND CHECKS THE TRUCK COUPLER FOR ROTATION.		
13. CONNECTS THE LOAD LOCK STATUS LINE TO THE TRUCK RECEPTACLE.		
14. CONNECTS THE APPROPRIATE ELECTRICAL CABLE TO THE TRAILER AND TRUCK.		

**STEPS**

15. INSTALLS THE SERVICE AIR GLADHAND TO THE SERVICE AIR COUPLER AND THE EMERGENCY AIR GLADHAND TO ITS AIR COUPLING
16. ATTACHES THE TWO SAFETY CHAINS FROM THE TRAILER TO THE VEHICLE CLEVISES.
17. REMOVES AND STOWS THE TRAILER WHEEL CHOCKS.
18. ENTERS THE CAB AND STARTS THE VEHICLE. PUSHES IN ON THE TRAILER AIR SUPPLY CONTROL KNOB AND CHECKS THE OPERATION OF THE TRAILER BRAKES AND LIGHTS.
19. PERFORMS THE REMAINING BEFORE-OPERATION PMCS ON THE TRAILER.

<b>GO</b>	<b>NO-GO</b>

**LESSON TITLE:** UNCOUPLE PLS TRAILER (PLST) FROM PLS TRUCK

**TASK NUMBER:** 551-721-3363 (Uncouple PLS Trailer from PLS Truck)

**A. TRAINING OBJECTIVE.**

**TASK:** Uncouple the M1076 PLS trailer (PLST) from the M1074/M1075 PLS truck.

**CONDITIONS** Given instruction, DA Form 2404, DD Form 1970, pencil, TM 9-2320-364-10 and TM 9-2330-385-14, equipment records folder, rags, lubricants, coolant, an M1074/M1075 truck with BII, an M1076 trailer, and a requirement to uncouple the PLST.

**STANDARD:** Without damage to equipment or injury to personnel, uncouple the PLST in the correct sequence. Students will be graded on a Go/No-Go basis. See enclosed training evaluation checklist.

**B. INTERMEDIATE TRAINING.** None.

**C. ADMINISTRATIVE INSTRUCTIONS.**

1. Training time: As scheduled.
2. Training location: Training area as scheduled.
3. Training type: Demonstration and practical exercise.
4. Students: Scheduled personnel.
5. Principal and assistant instructors required: One primary instructor for the class and one assistant instructor for every two students for the demonstration and practical exercise.
6. Training aids and equipment: Rags, lubricants, and coolant, DA Form 2404, DD Form 1970, pencil, TM 9-2320-364-10, TM 9-2330-385-14, equipment records folder, an M1074/M1075 truck with BII, and an M1076 trailer for every two students.
7. References: AR 385-55, DA Pamphlet 738-750, TM 9-2320-364-10, and TM 9-2330-385-14.

**D. SEQUENCE OF ACTIVITY.**

1. Introduction:
  - a. Interest device.

- b. Tie-in.
- c. Lesson objective (paragraph A).
- d. Procedures.
  - (1) Explanation.
  - (2) Practical exercise.
  - (3) Summary.

2. Explanation and demonstration: Demonstrate uncoupling procedures.

- a. Shift the transmission range selector into neutral, apply the parking brakes, and shut off the engine.
- b. Chock trailer wheels. Place chock blocks between the tires of axles two and three (in front of the tire on axle three on one side and behind the tire on axle two on the other side of the trailer).
- c. Unhook the two safety chains from the truck and attach them to the trailer drawbar on the stowage rings.
- d. Remove the emergency air gladhand from the air coupler and stow on the trailer gladhand bracket.
- e. Remove the service air gladhand from the air coupler and stow on the trailer gladhand bracket.
- f. Install the two dummy covers on the air couplings.
- g. Remove the electrical cable from the truck and trailer, close receptacle cover on truck, install receptacle cover on trailer, and place the cable in the stowage box.
- h. Remove the load lock status line from the truck receptacle, close the receptacle covers, and place on stowage hook on trailer.
- i. Lock rotation locking pin and check coupler to ensure it will not rotate.

**NOTE:** It may be necessary to move truck backwards slightly to relieve tension on coupler.

- j. Lift up the locking gate on the coupler and open the coupler jaw by pulling the locking lever out and pulling the release lever back at the same time.

**WARNING**

Drawbar weighs 425 pounds. Drawbar may raise quickly or drop suddenly to the ground when released from coupler. Do not allow feet or body to get under drawbar. Serious injury to personnel may result.

- k. Use air assist lever to apply air pressure to hold the drawbar from falling when released from the truck coupler.
- l. Start the vehicle and slowly pull the vehicle forward until the drawbar releases from the coupler.
- m. Shift the transmission range selector into neutral, apply the parking brakes, and shut off the engine.

**WARNING**

Do not leave drawbar in elevated position after disconnecting from the truck. Drawbar could fall causing serious injury or death.

- n. Use air assist lever to release air pressure and allow drawbar to be lowered to the ground.
  - o. Push up on the truck coupler jaw to close it and close the locking gate on the coupler.
  - p. Perform after-operation PMCS on the trailer.
3. Practical exercise:
- a. Assign students to vehicles.
  - b. Students practice uncoupling in the training area(s).
  - c. Students perform after-operation PMCS and ensure that all operator entries required on DA Form 2404 and DD Form 1970 are accurate, complete, and legible.
4. Evaluation: Check each student's performance on uncoupling and PMCS.
5. Summary:
- a. Recap main points.
  - b. Allow for questions.
  - c. Clarify questions.



d. Give closing statement.

6. Retraining:

a. Uncoupling procedures are included in the videotape TVT 55-36, Part 2, "PLS Driving Techniques." As an option, instructors can reshow this videotape.

b. Uncoupling procedures can be reinforced daily throughout the course.

c. Students are tested on the EOCCT.

## **E. SAFETY RESTRICTIONS.**

1. Ensure that all chock blocks are in place when PLS trucks and/or trailers are parked or maintenance is to be performed.

2. Ensure the transmission is in neutral, the parking brake is set, and the engine is shut off before leaving the truck, when the truck is parked, or maintenance is being performed.

3. Ensure students remove all watches, jewelry, and identification tags before working in or around the PLS truck or trailer.

4. Ensure all personnel pay particular attention to the cautions and warnings listed in the operator's manuals.

5. Ensure ground guide(s) are used when backing.

6. Ensure all personnel wear hearing protection when working in or around a running PLS truck.

7. Ensure all occupants wear seat belts while the truck is in operation.

8. Ensure the driver and ground guides know and understand the hand and arm signals as outlined in FM 21-305.

9. Ensure all backing is conducted at a speed of 5 MPH or less.

10. Ensure personnel maintain at least three points of contact to mount or dismount the PLS truck or trailer (to include performing PMCS).

11. Use the PLS ladder when performing maintenance. Install the two hooks on the ladder in the holes located on top of the fender before use. Using the ladder for other applications could result in serious injury to personnel.

12. Ensure all personnel are clear of truck before engine start is attempted. Operator must visually check to see that all areas of the truck are clear of personnel before attempting to start the engine. Failure to do so could result in serious injury or death to personnel.

13. Ensure personnel keep hands, feet, and body away from drawbar when disconnecting from truck or severe injury to personnel may result.

14. Do not allow feet or body to get under drawbar. Drawbar may drop to the ground when released from coupler. Serious injury to personnel may result.

**F. ADDITIONAL COMMENTS AND INFORMATION.** Recommended instructional time is 3.0 hours (.5 demonstration and 2.5 practical exercise including .5 PMCS).

**TRAINING EVALUATION**

**UNCOUPLE THE PLS TRAILER FROM THE PLS TRUCK**

**NAME** \_\_\_\_\_ **RANK** \_\_\_\_\_ **UNIT** \_\_\_\_\_

**EVALUATOR** \_\_\_\_\_ **DATE** \_\_\_\_\_

<u>STEPS</u>	<b>GO</b>	<b>NO-GO</b>
1. SHIFTS THE TRANSMISSION RANGE SELECTOR INTO NEUTRAL, APPLIES THE PARKING BRAKES, AND SHUTS OFF THE ENGINE.		
2. CHOCKS TRAILER WHEELS.		
3. UNHOOKS THE TWO SAFETY CHAINS FROM THE TRUCK AND ATTACHES THEM TO THE STOWAGE RINGS ON THE TRAILER DRAWBAR.		
4. REMOVES THE EMERGENCY AND SERVICE AIR GLADHANDS FROM THE AIR COUPLERS AND STOWS ON THE TRAILER GLADHAND BRACKETS.		
5. INSTALLS THE TWO DUMMY COVERS ON THE AIR COUPLINGS.		
6. REMOVES THE ELECTRICAL CABLE FROM THE TRUCK AND TRAILER, CLOSES RECEPTACLE COVER ON THE TRUCK, INSTALLS RECEPTACLE COVER ON TRAILER, AND PLACES CABLE IN THE STOWAGE BOX.		
7. REMOVES THE LOAD LOCK STATUS LINE, CLOSES THE RECEPTACLE COVERS, AND PLACES ON STOWAGE HOOK ON TRAILER.		
8. LOCKS ROTATION LOCKPIN AND CHECKS COUPLER TO ENSURE IT WILL NOT ROTATE.		
9. OPENS THE COUPLER JAW.		
10. APPLIES AIR PRESSURE TO HOLD THE DRAWBAR FROM FALLING WHEN RELEASED FROM THE TRUCK COUPLER.		
11. STARTS THE VEHICLE AND SLOWLY PULLS FORWARD UNTIL THE DRAWBAR RELEASES FROM THE COUPLER.		
12. SHIFTS THE TRANSMISSION INTO NEUTRAL, APPLIES THE PARKING BRAKES, AND SHUTS OFF THE ENGINE.		

**STEPS**

- 13. RELEASES AIR PRESSURE AND ALLOWS DRAWBAR TO BE LOWERED FULLY TO THE GROUND.
- 14. CLOSES THE TRUCK COUPLER JAW AND THE LOCKING GATE ON THE COUPLER.
- 15. PERFORMS AFTER-OPERATION PMCS ON THE TRAILER.

**GO NO-GO**

GO	NO-GO

**LESSON TITLE:** DRIVE THE PLS TRUCK WITH TRAILER

**TASK NUMBER:** 551-721-1366 (Drive Vehicle with Automatic Transmission)

**A. TRAINING OBJECTIVE.**

**TASK:** Drive the PLS truck with trailer (PLST).

**CONDITIONS** Given instruction, DD Form 1970, DA Form 2404, pencil, TM 9-2320-364-10, TM 9-2330-385-14, equipment records folder, rags, lubricants, coolant, designated driving route (improved surfaced and secondary roads), an M1074/M1075 truck with BII, an M1076 PLST, two M1077 flatracks with securely tied down palletized loads, and a requirement to drive a designated route (to include making right and left turns, making gradual steering corrections, signaling intentions in advance, passing oncoming vehicles, maintaining vehicle interval, operating the lights as required, obeying highway warning and regulatory signs, monitoring gauges and indicator lights, upshifting/downshifting the transmission through all gear ranges, manipulating the controls, and performing basic driving maneuvers to include downhill braking [using the engine brake] and straight line backing using ground guides).

**STANDARD:** Operate the truck with trailer safely without accident or injury.

**B. INTERMEDIATE TRAINING.** None.

**C. ADMINISTRATIVE INSTRUCTIONS.**

1. Training time: As scheduled.
2. Training location: Motor pool, training area, and driver training route (built up and rural areas) as scheduled. A classroom is required if optional videotape is shown.
3. Training type: Conference and practical exercise.
4. Students: Scheduled personnel.
5. Principal and assistant instructors required: One primary instructor for the conference and one assistant instructor for each student for the practical exercise.

6. Training aids and equipment: Television, VCR, videotape TVT 55-36 (PIN: 710046DA), Part 2, "PLS Driving Techniques," hearing protection, rags, lubricants, coolant, and 40 traffic cones or empty POL drums. DA Form 2404, DD Form 1970, pencil, TM 9-2320-364-10, TM 9-2330-385-14, equipment records folder, an M1074/M1075 PLS truck with BII, and M1076 PLST for each student.

7. References: AR 385-55, DA Pamphlet 738-750, FM 21-305, TM 9-2320-364-10, and TM 9-2330-385-14.

#### **D. SEQUENCE OF ACTIVITY.**

##### 1. Introduction:

- a. Interest device.
- b. Tie-in.
- c. Lesson objective (paragraph A).
- d. Procedures.
  - (1) Explanation.
  - (2) Practical exercise.
  - (3) Summary.

##### 2. Explanation and demonstration:

**NOTE:** An instructor will be in the cab whenever a student is driving the PLS truck.

**NOTE:** The students will be required to drive the truck/trailer loaded and empty. If two trucks and trailers are used, one truck/trailer should be loaded with the PLS flatracks (each flatrack load should be as close to 16.5 tons as possible) and the other truck/trailer should be empty.

- a. Videotape. As an option, reshow videotape TVT 55-36, Part 2, "PLS Driving Techniques," to reinforce driving tasks. This step may be deleted because the students should have viewed this tape in earlier lessons.
- b. Trailer coupling safety. Ensure proper coupling of trailer to include the pintle hook being properly closed.
- c. Lights. Check all lights to ensure they work.

d. Brake operation. Test the trailer brakes by pulling forward slowly and applying the trailer hand brake control (Johnson bar or trailer hand valve). Remember the trailer hand brake control is used to test the trailer brakes. Using it when driving will cause the trailer to skid.

e. Speed restrictions. Reduce speed for road, weather, and visibility and before entering curves. When operating with a trailer with steering axle and a high center of gravity, it is important to operate at slower speeds (to avoid rollovers, jackknives, and so forth).

f. Operation on downgrades. Take care with braking, especially on down grades, due to the effects of the steering axle on the trailer.

g. Highway driving. When driving the PLS truck at highway speeds (above 40 MPH), new drivers tend to hug the edge of the road and oversteer. The rear axle of the truck is a steering axle and generally drivers tend to work the steering wheel too much. When pulling a trailer, this effect is worsened by the steering action of the trailer turntable. This causes the truck and trailer to constantly wander or sway. To correct this, check the position of the truck and trailer in the rearview mirrors, keep the truck centered in its lane, and make minor steering corrections.

h. Turning procedures. Use proper turn procedures and be aware of the trailer at all times. Making turns with the trailer are the same as with the truck. Observe the trailer through the mirrors. (Normally, the trailer will follow the truck with minimal off-tracking.)

i. Following distances.

(1) Maintain one second for each 10 feet of truck and trailer length (40 MPH and less). The PLS truck with trailer is 60 feet long (62 feet with drawbar extended), so at speeds up to 40 MPH, allow seven seconds following distance.

(2) Increase by one second for speeds over 40 MPH. At 45 MPH, with the PLS truck and trailer, allow eight seconds following distance.

(3) Increase by several seconds for rain, fog, and winter conditions.

j. Backing limitations. Backing is limited due to the steering arrangement on the trailer and rear steering axle on the truck. The turntable must be pinned before backing and unpinned before going forward. Back in a straight line only.

k. Off-road driving. Driving off road towing the trailer is more restrictive than driving the truck. Grade and side slope capabilities with the trailer are significantly reduced, as is backing. Before going off road it, is best to check the

terrain, making sure that slopes are not too steep and that there is sufficient space to turn the vehicle without backing.

l. Give safety briefing.

m. Explain ground guide safety precautions for backing the truck and trailer.

3. Practical exercise:

a. Assign students to vehicles and issue TM 9-2320-364-10, pencils, DA Form 2404, DD Form 1970, and equipment records folder. Instruct students on the location of rags, lubricants, and coolant.

b. Students perform before-operation PMCS.

c. Students practice maneuvering the PLS truck through the courses laid out in the training area(s). Sample training areas are in Chapter 6 (Figures 6-3, 6-4, and 6-6). During-operation PMCS is also conducted at this time.

**NOTE:** As each student practices driving, an assistant instructor rides in the right seat. The assistant instructor explains driving techniques, ensures the driver is aware of driving situations, and conducts after-action reviews with each driver. Now is the time to pass on valuable experience and correct any bad driving habits.

d. After students have mastered driving in the training area, they will practice driving the truck/trailer on primary and secondary roads and limited off road.

e. Students perform after-operation PMCS and ensure all operator entries required on DA Form 2404 and DD Form 1970 are accurate, complete, and legible.

4. Evaluate: Check each student's performance of PMCS and driving.

5. Summary:

a. Recap main points.

b. Allow for questions.

c. Clarify questions.

d. Give closing statement.

6. Retraining: Retrain No-Gos and slow learners. Students perform driving tasks daily and are tested on the EOCCT.



**E. SAFETY RESTRICTIONS.**

1. Ensure that all chock blocks are in place when PLS trucks and/or trailers are parked or maintenance is to be performed.
2. Ensure the transmission is in neutral, the parking brake is set, and the engine is shut off before leaving the truck, when the truck is parked, or maintenance is being performed.
3. Ensure students remove all watches, jewelry, and identification tags before working in or around the PLS truck or trailer.
4. Ensure all personnel pay particular attention to the cautions and warnings listed in the operator's manuals.
5. Ensure ground guide(s) are used when backing.
6. Ensure all personnel wear hearing protection when working in or around a running PLS truck.
7. Ensure all occupants wear seat belts while the truck is in operation.
8. Ensure the driver and ground guides know and understand the hand and arm signals as outlined in FM 21-305.
9. Ensure all backing is conducted at a speed of 5 MPH or less.
10. Ensure personnel maintain at least three points of contact to mount or dismount the PLS truck or trailer (to include performing PMCS).
11. Use the PLS ladder when performing maintenance. Install the two hooks on the ladder in the holes located on top of the fender before use. Using the ladder for other applications could result in serious injury to personnel.
12. Ensure all personnel are clear of truck before engine start is attempted. Operator must visually check to see that all areas of the truck are clear of personnel before attempting to start the engine. Failure to do so could result in serious injury or death to personnel.
13. During driving operations, place hydraulic selector switch in the off position or hydraulic system overheating will result.
14. Do not hold steering wheel at full left or right position for longer than 10 seconds. Oil overheating and pump damage can result.
15. Apply brakes gradually when stopping. A panic stop will cause the vehicle wheels to lock, engine to stall, and power steering to fail. Failure to do this will result in injury or death.

16. Repeated rapid operation of service brakes will consume compressed air supply and cause automatic spring brake application. Failure to follow proper service brake operating procedures may cause serious injury or death to personnel.

17. Excessive use of the service brake to control downhill speed will result in the loss of braking power because of heat buildup.

18. Do not park the truck on a steep grade. Serious injury to personnel could result.

19. Apply engine brake only when truck tires have good traction. Use of engine brake on slippery surfaces can cause the truck to skid and cause injury to personnel.

20. If emergency steer light illuminates when driving, immediately pull the truck over to the side of the road and stop, or serious injury or death could result.

**F. ADDITIONAL COMMENTS AND INFORMATION.** Recommended instructional time is 12 hours (1.0 conference and 11.0 practical exercise, including 1.5 PMCS).

**LESSON TITLE:** TRANSFER FLATRACK ONTO/FROM PLS TRAILER USING LHS

**TASK NUMBER:** 551-721-3366 (Load Flatrack onto PLS Trailer Using LHS) and 551-721-3367 (Unload Flatrack from PLS Trailer Using LHS)

**A. TRAINING OBJECTIVE.**

**TASK:** Transfer flatrack onto/from PLS trailer (PLST) using LHS.

**CONDITIONS** Given instruction, DA Form 2404, DD Form 1970, pencil, TM 9-2320-364-10, TM 9-2330-385-14, equipment records folder, rags, lubricants, coolant, an M1074/M1075 truck with BII, an M1076 PLST, an M1077 flatrack with securely tied down palletized load, and a requirement to transfer a flatrack onto/from a PLS trailer.

**STANDARD:** Perform task in the correct sequence according to TM 9-2320-364-10 and without damage to equipment or injury to personnel. Students will be graded on a Go/No-Go basis. See enclosed training evaluation checklists.

**B. INTERMEDIATE TRAINING.** None.

**C. ADMINISTRATIVE INSTRUCTIONS.**

1. Training time: As scheduled.
2. Training location: Classroom, motor pool, and training area as scheduled.
3. Training type: Conference, demonstration, and practical exercise.
4. Students: Scheduled personnel.
5. Principal and assistant instructors required: One primary instructor for the conference and one assistant instructor for every two students for the demonstration and practical exercise.
6. Training aids and equipment: Television, VCR, screen, overhead projector, transparencies, videotape TVT 55-37 (PIN: 710336DA), Part 4, "PLS Load-Handling System," rags, lubricants, coolant, DA Form 2404, DD Form 1970, pencil, TM 9-2320-364-10, TM 9-2330-385-14, equipment records folder, an M1074/M1075 truck with BII, an M1076 PLST, and an M1077 flatrack with securely tied down palletized load for every two students.
7. References: AR 385-55, DA Pamphlet 738-750, TM 9-2320-364-10, and TM 9-2330-385-14.

**D. SEQUENCE OF ACTIVITY.**

## 1. Introduction:

- a. Interest device.
- b. Tie-in.
- c. Lesson objective (paragraph A).
- d. Procedures.
  - (1) Explanation.
  - (2) Practical exercise.
  - (3) Summary.

## 2. Explanation and demonstration:

- a. Review safety warnings. Because we are dealing with heavy loads, and much of the operation is not fully visible to the operator, it is important to review warnings that pertain to the load-handling system (LHS).

**NOTE:** Some of these safety warnings were taught in the earlier LHS truck lesson. It is a good safety practice to repeat all these important warnings.

**WARNING**

Check for overhead power lines or other obstructions before attempting LHS operation. LHS reaches a height of 17 feet 2 inches (5.22 meters ) with ISO container. Serious injury or death could result from contact with electrical power lines.

**WARNING**

Check ground conditions for firmness and extreme sideways inclination before picking up or off-loading a flatrack. Any ground instability beneath road wheels could cause serious injury or death to personnel.

**WARNING**

Before and during any load or unload cycle, all personnel should stay clear of LHS and flatrack or serious injury or death could result to personnel.

**WARNING**

Ensure that flatrack runners contact LHS rear rollers correctly. Failure to contact flatrack runners correctly could result in serious injury or death to personnel and damage to equipment.

**WARNING**

When loading or unloading flatracks on uneven ground (side slope or downgrades up to 10 degrees), it may be necessary to apply truck service brakes to prevent truck roll away or severe injury or death could result.

**WARNING**

Never drive with LHS no transit light illuminated. An illuminated light means load locks are not engaged and LHS is not fully stowed.

**WARNING**

Trailer wheels must be chocked during transfer operations or serious injury or death could result.

**WARNING**

When operating the PLS truck with PLS trailer, the heaviest loaded flatrack must always be placed on the truck; otherwise, adverse handling and/or braking may result, which could cause serious injury or death to personnel.

**WARNING**

Ensure trailer air system is charged before beginning transfer, or flatrack locks may not properly engage/disengage. Serious injury or death to personnel could result.

- b. Review trailer transfer slides.

Transparency PLS 7-1

- (1) View of truck and trailer to show importance of proper position for load transfer.
  - (a) Proper alignment of the truck and trailer is very important to successfully transferring the flatrack onto the trailer. When backing towards the trailer, align truck tires with trailer tires.

(b) Looking at highlighted side view, notice the drawbar is in the down position (either extended or retracted) and the truck bumper plate contacts the nose of trailer. Also, air lines and electrical cables must be properly stowed to prevent damage.

#### Transparency PLS 7-2

(2) Transfer of flatrack onto trailer. Stress the following items:

(a) Align truck and trailer as described above.

(b) Use proper sequence of LHS operation as described in the operator's manual.

(c) Position flatrack back to rear stops of trailer to assure locks will close.

(d) Avoid damage to the arm or hook arm cylinder by not pushing the flatrack with the hook arm. The hook arm is not a tow bar or a bumper bar.

#### Transparency PLS 7-3

(3) Flatrack locking system.

(a) Flatrack locks should be released prior to loading/unloading procedures. The flatrack lock indicating pins should be extended out when the flatrack locks are locked. There is one indicating pin on each side of the trailer.

(b) If the flatrack locks will not release because of insufficient air pressure, it will be necessary to charge the trailer's air system.

(c) If the flatrack locks will not release because they are jammed, it is necessary to use the retracting tools (trailer BII) to force the locks free. Thread the tools into the access holes in the trailer frame. Turn the tools clockwise using the adjustable wrench from the trailer BII until the flatracks locks are disengaged.

(d) After flatrack is in place, automatically engage flatrack locks (if locks were manually released, they must be manually engaged). Pull flatrack locking knob at rear of trailer to engage flatrack locks. Visually check indicating pins on each side of trailer to ensure pins are protruding through the trailer frame.

- c. Review operating procedures. Show TVT 55-37, Part 4, "PLS Load-Handling System."
  - d. Demonstrate transferring the flatrack onto and off of the trailer.
3. Practical exercise:
  - a. Assign students to vehicles and issue TM 9-2320-364-10, pencil, DA Form 2404, DD Form 1970, and equipment records folder. Tell students where rags, lubricants, and coolant are located.
  - b. Students perform before-operation PMCS.
  - c. Students practice transfer operations in the training area(s). During-operation PMCS is also conducted at this time.
4. Evaluation: Check each student's performance on trailer transfer operations and PMCS.
5. Summary:
  - a. Recap main points.
  - b. Allow for questions.
  - c. Clarify questions.
  - d. Give closing statement.
6. Retraining: Retrain slow learners.

## **E. SAFETY RESTRICTIONS.**

1. Ensure that all chock blocks are in place when PLS trucks and/or trailers are parked or maintenance is to be performed.
2. Ensure the transmission is in neutral, the parking brake is set, and the engine is shut off before leaving the truck, when the truck is parked, or maintenance is being performed.
3. Ensure students remove all watches, jewelry, and identification tags before working in or around the PLS truck or trailer.
4. Ensure all personnel pay particular attention to the cautions and warnings listed in the operator's manuals.
5. Ensure ground guide(s) are used when backing.

6. Ensure all personnel wear hearing protection when working in or around a running PLS truck.
7. Ensure all occupants wear seat belts while the truck is in operation.
8. Ensure the driver and ground guides know and understand the hand and arm signals as outlined in FM 21-305.
9. Ensure all backing is conducted at a speed of 5 MPH or less.
10. Ensure personnel maintain at least three points of contact to mount or dismount the PLS truck or trailer (to include performing PMCS).
11. Use the PLS ladder when performing maintenance. Install the two hooks on the ladder in the holes located on top of the fender before to use. Using the ladder for other applications could result in serious injury to personnel.
12. Ensure all personnel are clear of truck before engine start is attempted. Operator must visually check to see that all areas of the truck are clear of personnel before attempting to start the engine. Failure to do so could result in serious injury or death to personnel.
13. Check for overhead power lines or other obstructions before attempting LHS operation. LHS reaches a height of 17 feet 2 inches (5.22 meters) with ISO container. Serious injury or death could result from contact with electrical power lines.
14. Check ground conditions for firmness and extreme sideways inclination before picking up or off-loading a flatrack. Any ground instability beneath road wheels could cause serious injury or death to personnel.
15. Before and during any load or unload cycle, all personnel should stay clear of LHS and flatrack or serious injury or death could result to personnel.
16. Ensure that flatrack runners contact LHS rear rollers correctly. Failure to contact flatrack runners correctly could result in serious injury or death to personnel and damage to equipment.
17. When loading or unloading flatracks on uneven ground (side slope or downgrades up to 10 degrees), it may be necessary to apply truck service brakes to prevent truck roll away or severe injury or death could result.
18. Never drive with LHS no transit light illuminated. An illuminated light means load locks are not engaged and LHS is not fully stowed.
19. Overload protection system on PLS protects LHS and flatrack from structural damage during loading or unloading. This system does not protect truck chassis from being



overloaded by means of a crane, forklift, or excessively loaded flatracks. Truck chassis is designed to carry an evenly distributed 16.5 tons payload. Operator is responsible to know what payload weighs.

20. Before starting any LHS operations, adjust extension mirror to monitor LHS operations or damage to equipment may result.

21. If terrain is deeply rutted, soft soil, and so forth, mud flaps must be pinned before beginning LHS operations or damage to mud flaps may result.

22. Engine speed must be at idle before using hydraulic selector switch, or damage to equipment may result.

23. Do not use reverse to back up truck while hook arm is attached to flatrack or damage to LHS will occur.

24. If LHS overload lamp illuminates but loading operation continues, operator is cautioned that LHS is nearing maximum capacity. In this situation, operator should determine if payload is evenly distributed on flatrack or if flatrack load exceeds 16.5 tons. If any of these conditions exist, operator must redistribute or reduce the payload or damage to equipment may result.

25. Load must be evenly distributed on the pallet and flatrack. Uneven load distribution may cause LHS overload indicator to give false signals and cause LHS to operate incorrectly.

26. If LHS overload lamp illuminates and normal operation has stopped, return load to original position and redistribute or reduce payload weight or equipment damage may occur.

27. Ensure that parking brake is not applied before starting load sequence or damage to equipment may occur. (This does not apply when transferring to or from trailer.)

28. Reduce engine speed to idle before flatrack main rails contact rear rollers or damage to flatrack may result.

29. Hydraulic selector switch must be in off position before driving or hydraulic system could overheat.

30. Ensure parking brake is not applied during unload (when unloading to the ground) sequence or damage to equipment may result. (This does not apply when transferring to or from trailer.)

31. Ensure rail transport locking pins are disengaged before unloading flatrack. Rail transport locking pins are used for rail transport only. Failure to comply may result in damage to equipment.

32. Once truck's rear suspension has been relieved of flatrack load, do not continue in unload position as possibility of jacking up rear of truck with hook arm may occur and damage to equipment may result.

33. Trailer wheels must be chocked during transfer operations or serious injury or death could result.

34. When operating the PLS truck with PLS trailer, the heaviest loaded flatrack must always be placed on the truck; otherwise, adverse handling and/or braking may result, which could cause serious injury or death to personnel.

35. Ensure trailer air system is charged before beginning transfer, or flatrack locks may not properly engage/disengage. Serious injury or death to personnel could result.

36. When attempting to load/unload flatrack onto/off the trailer, there must be sufficient air pressure in the trailer air system to retract flatrack locks or damage to flatrack locks can occur. If not, use the truck to charge trailer air system using trailer air charging hose. If air system cannot retract flatrack locks, use manual flatrack unlock procedure.

37. Ensure that the trailer drawbar is down against the ground during transfer operations or damage to equipment may result.

38. Both of the trailer bumper points must be under the truck bumper stop flange and at least one of the bumper points must contact the bumper stop. The trailer bumper point not contacting the truck bumper stop cannot exceed 1/2 inch (12.7 mm) or flatrack will miss main rail guides and equipment damage may result.

**F. ADDITIONAL COMMENTS AND INFORMATION.** Recommended instructional time is 8.0 hours (.5 conference, .5 demonstration, and 7.0 practical exercise including 1.0 PMCS).

**TRAINING EVALUATION**

**TRANSFERRING FLATRACK (FR) ONTO PLS TRAILER FROM TRUCK**

NAME \_\_\_\_\_ RANK \_\_\_\_\_ UNIT \_\_\_\_\_

EVALUATOR \_\_\_\_\_ DATE \_\_\_\_\_

<u>STEPS</u>	GO	NO-GO
1. CHECKS FOR OVERHEAD OBSTRUCTIONS.		
2. IF FR IS LOADED WITH CARGO, CHECKS ISO LOCKS OR CARGO TIE-DOWNS FOR SECURITY.		
3. CHOCKS TRAILER WHEELS. CHECKS CONTROL KNOB POSITION (TRAILER BRAKES SHOULD ALREADY BE SET).		
4. ENSURES BOTH TRAILER FLATRACK LOCKS ARE RELEASED.		
5. LOWERS TRAILER DRAWBAR FULLY.		
6. BACKS TRUCK IN LINE WITH THE TRAILER. TRAILER BUMPER SHOULD BE SQUARE WITH TRUCK BUMPER AND IN FULL CONTACT.		
7. SETS PARKING BRAKE ON TRUCK.		
8. SETS HYDRAULIC SELECTOR LEVER TO AUTOMATIC (AUTO) POSITION. MOVES JOYSTICK TO "UNLOAD" UNTIL FR IS DOWN ONTO TRAILER. (IF DONE BY ONE PERSON, GETS OUT OF THE TRUCK AND CHECKS FR ROLLERS AT FIRST CONTACT TO ENSURE THEY ARE RUNNING PROPERLY ON THE TRAILER TRACK).		
9. SETS HYDRAULIC SELECTOR TO MANUAL HOOK ARM (MAN HA) POSITION AND MOVES JOYSTICK TO "LOAD" UNTIL THE FRONT OF FR IS RAISED ABOUT 12 TO 18 INCHES ABOVE TRAILER DECK HEIGHT.		
10. SETS HYDRAULIC SELECTOR TO MANUAL MAIN FRAME (MAN MF) AND MOVES JOYSTICK TO "UNLOAD" UNTIL FR ROLLERS CONTACT STOPS AT BACK OF TRAILER OR UNTIL TRUCK SUSPENSION IS FULLY UNLOADED. (THE CONTACT WITH THE STOP CAN BE SENSED IN THE TRUCK, BUT VISUAL INSPECTION IS REQUIRED.) DOES NOT CONTINUE UNLOADING AFTER FR CONTACTS THE STOPS. IF FR IS NOT AT THE STOPS, REPEATS STEPS 9 AND 10.		

**STEPS**

**GO NO-GO**

11. RELEASES TRUCK PARKING BRAKES AND MOVES JOYSTICK TO "UNLOAD" MOMENTARILY (TO MOVE TRUCK AHEAD SO FR RESTS FULLY ON TRAILER).
12. TO RELEASE LHS HOOK, PUTS TRUCK IN DRIVE, MOVES JOYSTICK TO LOAD MOMENTARILY, THEN TO UNLOAD AS TRUCK IS INCHED FORWARD (NO MORE THAN 2 TO 3 INCHES).
13. SETS PARKING BRAKES ON TRUCK.
14. SECURES FR LOCKS ON TRAILER BY PULLING LOAD LOCK CONTROL KNOB.
15. MOVES THE TRUCK FORWARD ABOUT 5 FEET.
16. SETS SELECTOR LEVER TO AUTOMATIC (AUTO) POSITION AND MOVES JOYSTICK TO "LOAD" UNTIL LHS IS FULLY BACK ON TRUCK (LHS NO TRANSIT LIGHT IS EXTINGUISHED).
17. SETS SELECTOR LEVER TO "OFF" POSITION FOR DRIVING VEHICLE. (IT IS IMPORTANT TO SET LEVER TO OFF TO AVOID OVERHEATING OF HYDRAULIC SYSTEM.)

**TRAINING EVALUATION**

**TRANSFERRING FLATRACK (FR) FROM TRAILER TO TRUCK**

NAME \_\_\_\_\_ RANK \_\_\_\_\_ UNIT \_\_\_\_\_

EVALUATOR \_\_\_\_\_ DATE \_\_\_\_\_

<u>STEPS</u>	<b>GO</b>	<b>NO-GO</b>
1. CHECKS FOR OVERHEAD OBSTRUCTIONS.		
2. BACKS TRUCK IN LINE WITH TRAILER. STOPS 4 TO 5 FEET AWAY FROM TRAILER.		
3. GOES TO TRAILER, CHECKS TO ENSURE TRAILER PARKING BRAKE IS SET AND WHEELS ARE CHOCKED. LOWERS THE DRAWBAR FULLY TO THE GROUND AND UNLOCKS FR LOCKS ON TRAILER. PHYSICALLY CHECKS LOCKS TO ASSURE THEY ARE UNLOCKED. (THIS "UNLOCKING" IS VERY IMPORTANT TO AVOID JAMMING OF FR OR DAMAGE WHEN LOADING.)		
4. IF FR IS LOADED WITH CARGO, CHECKS ISO LOCKS OR CARGO TIE-DOWNS FOR SECURITY.		
5. SETS HYDRAULIC SELECTOR LEVER TO AUTOMATIC (AUTO), THEN MOVES JOYSTICK TO "UNLOAD" AND POSITIONS HOOK AT PROPER HEIGHT TO PICK UP FR LOOP.		
6. BACKS SLOWLY UNTIL HOOK CONTACTS FR LOOP. SOME HEIGHT ADJUSTMENT OF HOOK AND ALIGNMENT OF TRUCK MAY BE NECESSARY. TRAILER BUMPER SHOULD BE SQUARE WITH TRUCK BUMPER AND IN FULL CONTACT.		
7. MOVES JOYSTICK TO "LOAD" (HOOK ENGAGES LOOP TO PULL FR ONTO TRUCK). WITH TRANSMISSION IN NEUTRAL AND TRUCK PARKING BRAKES APPLIED, CONTINUES LOADING FR ONTO TRUCK.		
8. TURNS HYDRAULIC SELECTOR TO "OFF" POSITION WHEN FR IS DOWN PROPERLY ON TRUCK (LHS NO TRANSIT LIGHT IS EXTINGUISHED). (IT IS IMPORTANT TO SET HYDRAULIC SELECTOR TO "OFF" POSITION TO AVOID OVERHEATING OF THE HYDRAULIC SYSTEM.)		
9. WITH TRANSMISSION IN NEUTRAL AND TRUCK PARKING BRAKES APPLIED, INSPECTS THAT THE LOAD LOCKS ARE ENGAGED AND FR IS COMPLETELY DOWN ON TRUCK.		

**LESSON TITLE:** CHANGE TIRE ON PLS TRAILER

**TASK NUMBER:** 551-721-3372 (Change Tire on PLS Trailer)

**A. TRAINING OBJECTIVE.**

**TASK:** Change a tire on the PLS trailer (PLST).

**CONDITIONS** Given instruction, TM 9-2320-364-10, TM 9-2330-385-14, rags, heavy work gloves, hearing and eye protection, an M1074/M1075 truck with BII, an M1076 PLST, and a requirement to change a simulated flat tire on the PLST.

**STANDARD:** Perform task in the correct sequence according to TM 9-2330-385-14 and without damage to equipment or injury to personnel. Students will be graded on a Go/No-Go basis.

**B. INTERMEDIATE TRAINING.** None.

**C. ADMINISTRATIVE INSTRUCTIONS.**

1. Training time: As scheduled.
2. Training location: Training area or motor pool as scheduled.
3. Training type: Demonstration and practical exercise.
4. Students: Scheduled personnel.
5. Principal and assistant instructors required: One primary instructor for the class, one assistant instructor for every six students for the demonstration and one assistant instructor for every two students for the practical exercise.
6. Training aids and equipment: Rags, heavy work gloves, TM 9-2320-364-10, TM 9-2330-385-14, an M1074/M1075 truck with BII, and an M1076 PLST for every two students. Hearing and eye protection are required for all personnel.
7. References: AR 385-55, DA Pamphlet 738-750, TM 9-2320-364-10, and TM 9-2330-385-14.

**D. SEQUENCE OF ACTIVITY.**

1. Introduction:
  - a. Interest device.

- b. Tie-in.
- c. Lesson objective (paragraph A).
- d. Procedures.
  - (1) Explanation.
  - (2) Practical exercise.
  - (3) Summary.

2. Explanation and demonstration:

**NOTE:** Changing a tire on the PLST is a two-soldier task. One soldier cannot safely perform this task.

- a. Review safety warnings.
- b. Park the truck/trailer.
  - (1) Park the truck/trailer in a safe area, out of traffic, where there is no traffic danger to personnel changing the tire. Also, the trailer must be parked on hard, level ground.
  - (2) Set the parking brake, press the transmission range selector button to neutral, turn the CTIS on/off switch to off, and shut off the engine.
  - (3) Turn on emergency flashers as dictated by traffic hazards.
  - (4) Position emergency reflective triangles as dictated by traffic hazards.
  - (5) Chock the trailer wheels. It is best to chock the wheels between axles two and three, on the opposite side of the trailer from the flat tire. Chock the front and back of the wheels to prevent movement in either direction.
- c. Remove all necessary tools from truck stowage boxes (chock block, jack, jack handle, air hose, air impact wrench, and 1 1/2-inch socket [extension wrench and sliding handle may be used in place of air impact wrench]).
- d. Remove spare tire.

**NOTE:** The air impact wrench from the PLS truck is used in this procedure. The sliding handle and extension wrench may be used in place of the air impact wrench. The 1 1/2-inch socket must be used with either wrench.

(1) Ensure safety latch handle on the spare tire carrier is in the locked position.

(2) Connect the air hose to truck air coupling and connect the air impact wrench to the other end of the air hose.

(3) Start the truck and build up the air pressure to above 120 psi. Air pressure must be maintained above 120 psi while using the air impact wrench.

**WARNING**

Ensure all personnel wear suitable eye protection while lowering the spare tire. Failure to comply may result in injury to personnel.

**WARNING**

Ensure personnel are positioned under trailer only far enough to remove the three nuts securing the spare tire to the carrier. Do not position entire body under the tire. Failure to comply may result in injury or death to personnel.

**WARNING**

Wear hearing protection during the tire changing procedure while using the air impact wrench. Failure to do so may result in injury to personnel.

(4) Using the air impact wrench and 1 1/2-inch socket, carefully remove the three nuts securing the spare tire to the carrier.

**CAUTION**

Ensure the safety latch is held in release position until the spare tire is lowered to the ground. If the safety latch is not held in release position, the spare tire will not lower to the ground.

**WARNING**

Ensure the slide handle or air impact wrench and socket are held securely in place while lowering the spare tire. Failure to comply may result in injury to personnel and/or damage to equipment.

**NOTE:** Ensure the air impact wrench is set to the counterclockwise position.

(5) Pull the safety latch cable to the unlock position and, turning the winch bolt assembly counterclockwise, lower the spare tire about 4 inches from the spare tire bracket.



**WARNING**

Ensure all personnel wear protective gloves at all times during this procedure when handling the cable. The cable may fray and injury to personnel may result.

- (6) Release the safety latch cable.
- (7) Lower the spare tire to the ground by turning the winch bolt assembly counterclockwise.
- (8) Remove the lift assembly from the spare tire.
- (9) Install the lift assembly hook in the spare tire stud hole that is nearest to the pulley assembly.
- (10) Remove the safety clip and pin from the pulley assembly.
- (11) Extend the pulley assembly until the second hole lines up with the hole in the pulley support.
- (12) Install the pin and safety clip in the second hole of the pulley assembly.
- (13) Turn the winch bolt assembly counterclockwise to pay out 10 feet of cable from the winch assembly.
- (14) Install the cable on the pulley assembly.

**CAUTION**

To prevent knotting and binding, ensure there is tension on the cable when reeling it in. Failure to comply may result in damage to equipment.

- (15) Turn the winch bolt assembly clockwise to remove the spare tire from under the trailer.

**WARNING**

Tire assembly weighs 425 pounds. Do not try to lift or catch the tire assembly at any time during the tire changing procedure. Keep all personnel clear from under tire. Failure to comply may result in serious injury to personnel.

- (16) Turn the winch bolt assembly clockwise to raise spare tire to the upward position.
- (17) With the aid of an assistant, support the spare tire and remove the lift assembly from the spare tire stud hole.

- (18) With the aid of an assistant, position the spare tire against the trailer.
- (19) Remove the cable from the pulley assembly.
- (20) Remove the safety clip and pin from the pulley assembly.
- (21) Retract the pulley assembly to the stow position in the pulley support and install the pin and safety clip in the pulley assembly.

e. Remove tire (simulated flat).

**WARNING**

Never crawl under the trailer at any time during the tire-changing procedure unless the trailer is securely blocked. The trailer may fall causing serious injury or death to personnel.

- (1) Position the jack on wheel chock and install under the axle to be raised. Raise the jack until the tire clears the ground.

**WARNING**

Crew member should steady the tire during removal. Falling tire may cause injury to personnel.

- (2) Using the air impact wrench and 1 1/2-inch socket, loosen and remove the 10 lug nuts from the wheel studs on the flat tire.
- (3) With the aid of an assistant, remove the flat tire from the wheel hub and lean the tire against the trailer. Jack handle extension may be used under the tire to assist in sliding or creeping wheel away from hub.

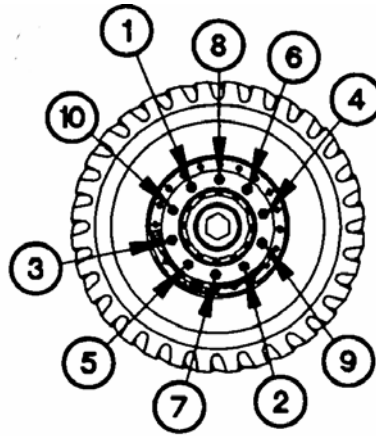
f. Install tire.

- (1) Position the serviceable tire (spare) on the wheel hub.

**WARNING**

Ensure the studs are fully seated in the slots of the tire rim before tightening nuts, or the wheel could come off during operation of the trailer, resulting in injury or death of personnel.

- (2) Install the 10 lug nuts finger tight on the studs.
- (3) If the truck was shut off, start the engine and build up air pressure to above 120 psi.
- (4) Using the air impact wrench and 1 1/2-inch socket, tighten the 10 lug nuts using the sequence as shown.



**WARNING**

Jack is under heavy pressure. Keep hand, arm, and head clear while lowering jack slowly to avoid injury to personnel.

(5) Lower and remove the jack and wheel chock from the axle.

g. Stow defective tire in tire carrier.

(1) Position the flat (or defective) tire on a flat surface with inside of rim facing upward as close as possible to the spare tire carrier.

(2) Install the lift assembly hook in the stud hole of the flat tire closest to the spare tire carrier.

(3) Using the air impact wrench and 1 1/2-inch socket, turn winch bolt assembly clockwise to slide the flat tire under the spare tire bracket on the trailer.

(4) Turn the winch bolt assembly counterclockwise to loosen the cable.

**CAUTION**

Ensure the lift assembly does not enter the stud holes in the rim of the flat tire or the flat tire will not be installed properly on the spare tire bracket.

(5) Install the lift assembly to the flat tire.

**CAUTION**

Ensure the studs are aligned with the stud holes before positioning the tire on the spare tire bracket. Failure to comply may cause damage to the equipment.

(6) Turn the winch bolt assembly clockwise and raise the flat tire and position until the studs and the stud holes are aligned.

(7) Tighten the winch bolt assembly until the flat tire contacts both the tire stops.

(8) Ensure safety latch cable handle is in the locked position.

**WARNING**

Ensure personnel are positioned under the trailer only far enough to install the three nuts to secure the flat tire to the carrier. Do not position entire body under the tire. Failure to comply may result in injury or death to personnel.

(9) Install the three nuts on the spare tire carrier studs. Tighten the nuts securely using the air impact wrench.

h. Prepare the truck and trailer for driving.

(1) Disconnect air hose from the truck air coupler.

(2) Return all tools and wheel chocks to stowage boxes.

(3) Stow highway safety markers in stowage boxes.

(4) Start truck, turn on CTIS, and continue with the mission.

(5) At the earliest opportunity, have unit maintenance torque all nuts that were loosened during the tire-changing procedure and repair/replace flat tire.

3. Practical exercise:

a. Assign two students to each truck/trailer and issue TM 9-2320-364-10 and TM 9-2330-385-14.

b. Students practice changing simulated flat tires.

c. Students perform after-operation PMCS. Ensure all operator entries required on DA Form 2404 and DD Form 1970 are accurate, complete, and legible.

4. Evaluation: Check each student's performance.

5. Summary:

a. Recap main points.

b. Allow for questions.

c. Clarify questions.

d. Give closing statement.

6. Retraining: Retrain slow learners.

### **E. SAFETY RESTRICTIONS.**

1. Ensure that all chock blocks are in place when PLS trucks and/or trailers are parked or maintenance is to be performed.

2. Ensure the transmission is in neutral, the parking brake is set, and the engine is shut off before leaving the truck, when the truck is parked, or maintenance is being performed.

3. Ensure students remove all watches, jewelry, and identification tags before working in or around the PLS truck or trailer.

4. Ensure all personnel pay particular attention to the cautions and warnings listed in the operator's manuals.

5. Ensure ground guide(s) are used when backing.

6. Ensure all personnel wear hearing protection when working in or around a running PLS truck.

7. Ensure all occupants wear seat belts while the truck is in operation.

8. Ensure the driver and ground guides know and understand the hand and arm signals as outlined in FM 21-305.

9. Ensure all backing is conducted at a speed of 5 MPH or less.

10. Ensure personnel maintain at least three points of contact to mount or dismount the PLS truck or trailer (to include performing PMCS).

11. Use the PLS ladder when performing maintenance. Install the two hooks on the ladder in the holes located on top of the fender before to use. Using the ladder for other applications could result in serious injury to personnel.

12. Ensure all personnel are clear of truck before engine start is attempted. Operator must visually check to see that all areas of the truck are clear of personnel before attempting to start the engine. Failure to do so could result in serious injury or death to personnel.

13. Ensure all personnel wear suitable eye protection while lowering the spare tire. Failure to comply may result in injury to personnel.

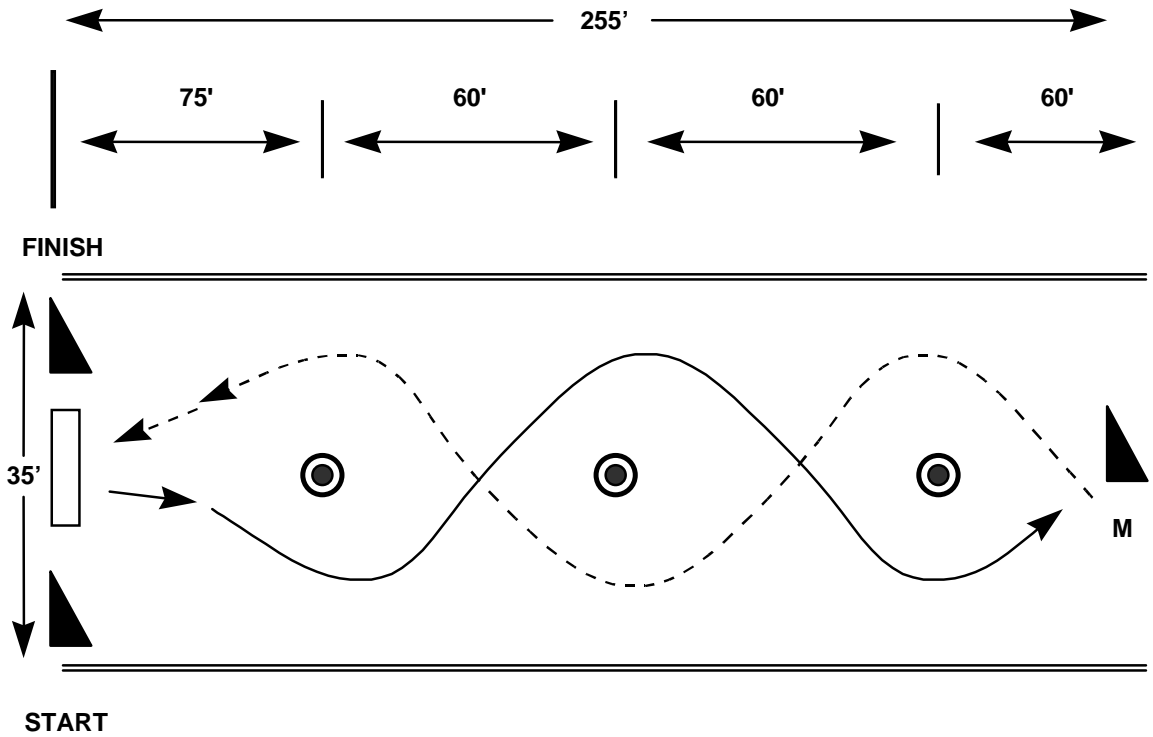
14. Wear hearing protection during the tire-changing procedure while using the air impact wrench or injury to personnel may result.
15. Ensure all personnel wear protective gloves at all times when handling cable. The cable may fray and injury to personnel may result.
16. If the jack must be raised or lowered, shut off the truck before moving under the trailer.
17. Jack is under heavy pressure. Keep hand, arm, and head clear while slowly raising or lowering jack to avoid injury to personnel. Do not lower jack too quickly as tire could fall causing serious injury or death.
18. Tire assembly weighs 425 pounds. Do not try to lift or catch the tire assembly at any time during the tire-changing procedure. Keep all personnel clear from under the tire. Failure to comply may result in serious injury to personnel.
19. Crew member should steady the tire during removal. Falling tire may cause injury to personnel.
20. Never crawl under the trailer at any time during the tire-changing procedure unless the trailer is securely blocked. The trailer may fall causing serious injury or death to personnel.
21. Ensure personnel are positioned under trailer only far enough to remove the three nuts securing the spare tire to the carrier or to install the three nuts to secure the spare tire to the carrier. Do not position entire body under the tire. Failure to comply may result in injury or death to personnel.
22. Ensure the slide handle or air impact wrench and socket are held securely in place while lowering the spare tire. Failure to comply may result in injury to personnel and/or damage to equipment.
23. Ensure the studs are fully seated in the slots of the tire rim before tightening nuts or the wheel could come off during operation of the trailer, resulting in injury or death of personnel.

**F. ADDITIONAL COMMENTS AND INFORMATION.** Recommended instructional time is 4 hours (1.0 demonstration and 3.0 practical exercise including .5 PMCS).

## **CHAPTER 6**

# **PLS SAMPLE TRAINING AREAS**

## PLS TRUCK SERPENTINE COURSE



**NOTES:**

EMPTY POL DRUMS = FIXED BOUNDARIES =

STANDARD = (WIDTH BETWEEN STANDARDS IS 16')

FORWARD = BACKING =

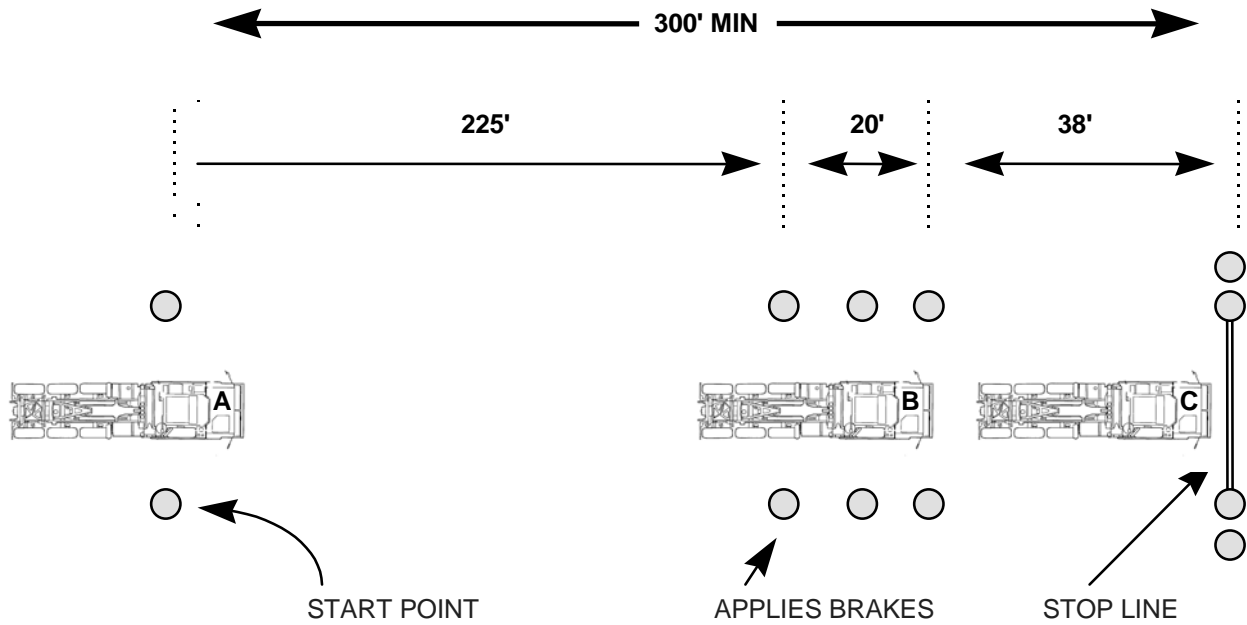
START AND FINISH = MIDPOINT = **M**

MINIMUM SIZE OF AREA IS 255' LONG AND 35' WIDE.

**FIGURE 6-1**



# STOPPING WITHIN PRESCRIBED LIMITS



**NOTES:**

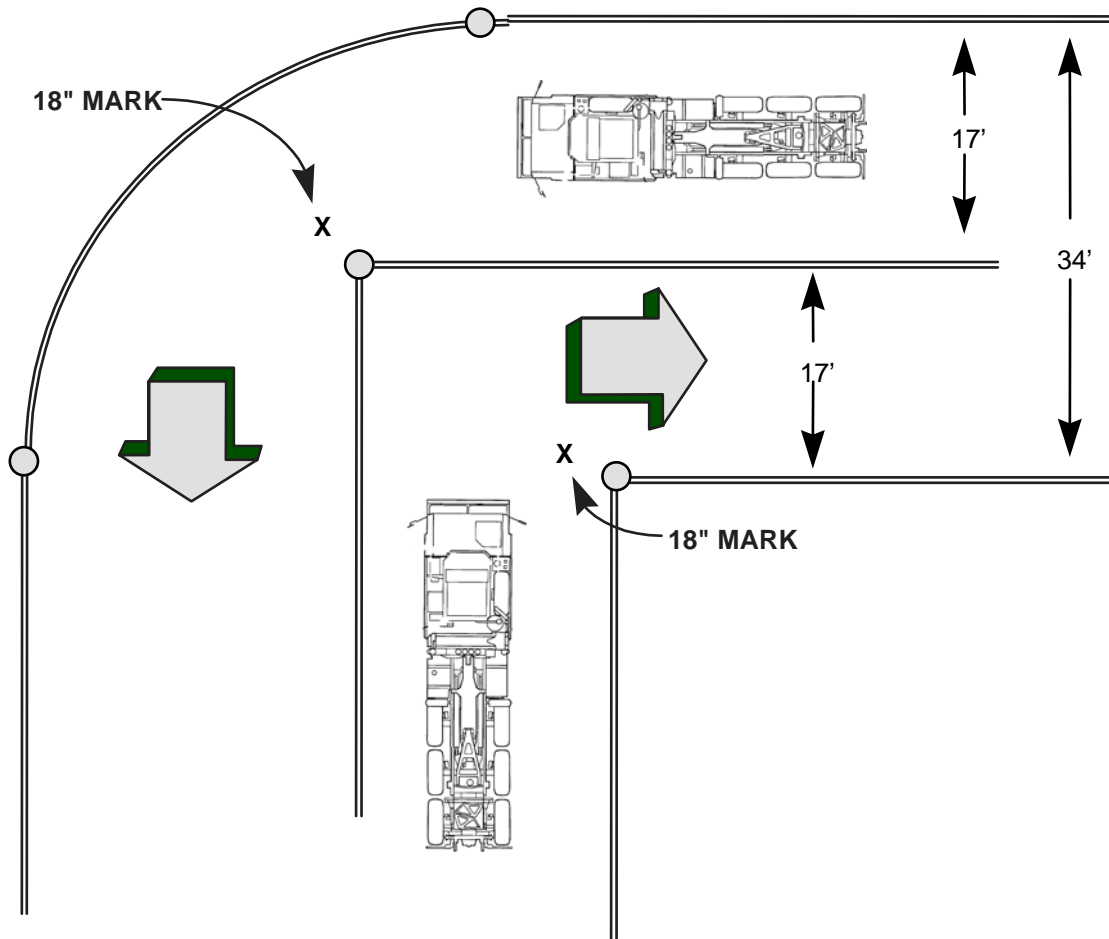
TRAFFIC CONES = ○ STOP LINE = ════════

THE DISTANCE (WIDTH) BETWEEN TRAFFIC CONES IS 12 FEET.

THE DRIVER PULLS OUT AT POINT A. HIS SPEED AT POINT B SHOULD BE 10 MPH WITH TRUCK LOADED AND 20 MPH WITH TRUCK EMPTY. HE APPLIES HIS BRAKES AT POINT B AND MUST STOP BEFORE REACHING POINT C.

**FIGURE 6-2**

# PLS TRUCK/TRAILER LEFT AND RIGHT TURNS



**NOTES:**

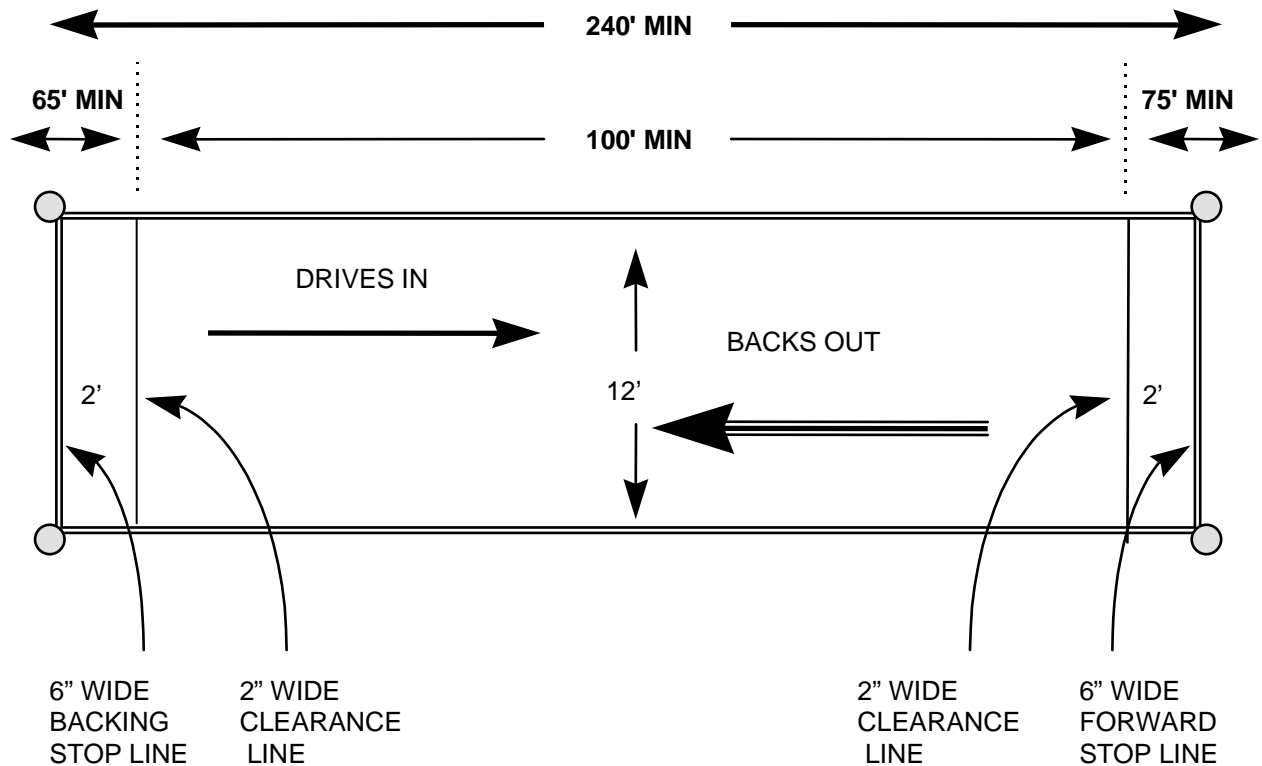
TRAFFIC CONES = ○ FIXED BOUNDARIES = ════════

ONE TRAINING AREA CAN BE USED FOR BOTH MANEUVERS, BUT THE MANEUVERS MUST BE DONE SEPARATELY, SUCH AS ALL STUDENTS DOING THE RIGHT TURN FIRST, THEN THE LEFT TURN.

THE ACCEPTABLE STANDARD IS, THE REAR WHEELS OF THE TRUCK OR TRAILER MUST BE WITHIN 18" OF THE CONE, WITHOUT HITTING THE CONE OR GOING OVER ANY BOUNDARIES.

**FIGURE 6-3**

# PLS FORWARD STOP/STRAIGHT LINE BACKING



## **NOTES:**

TRAFFIC CONES = ○ FIXED BOUNDARIES = ════════

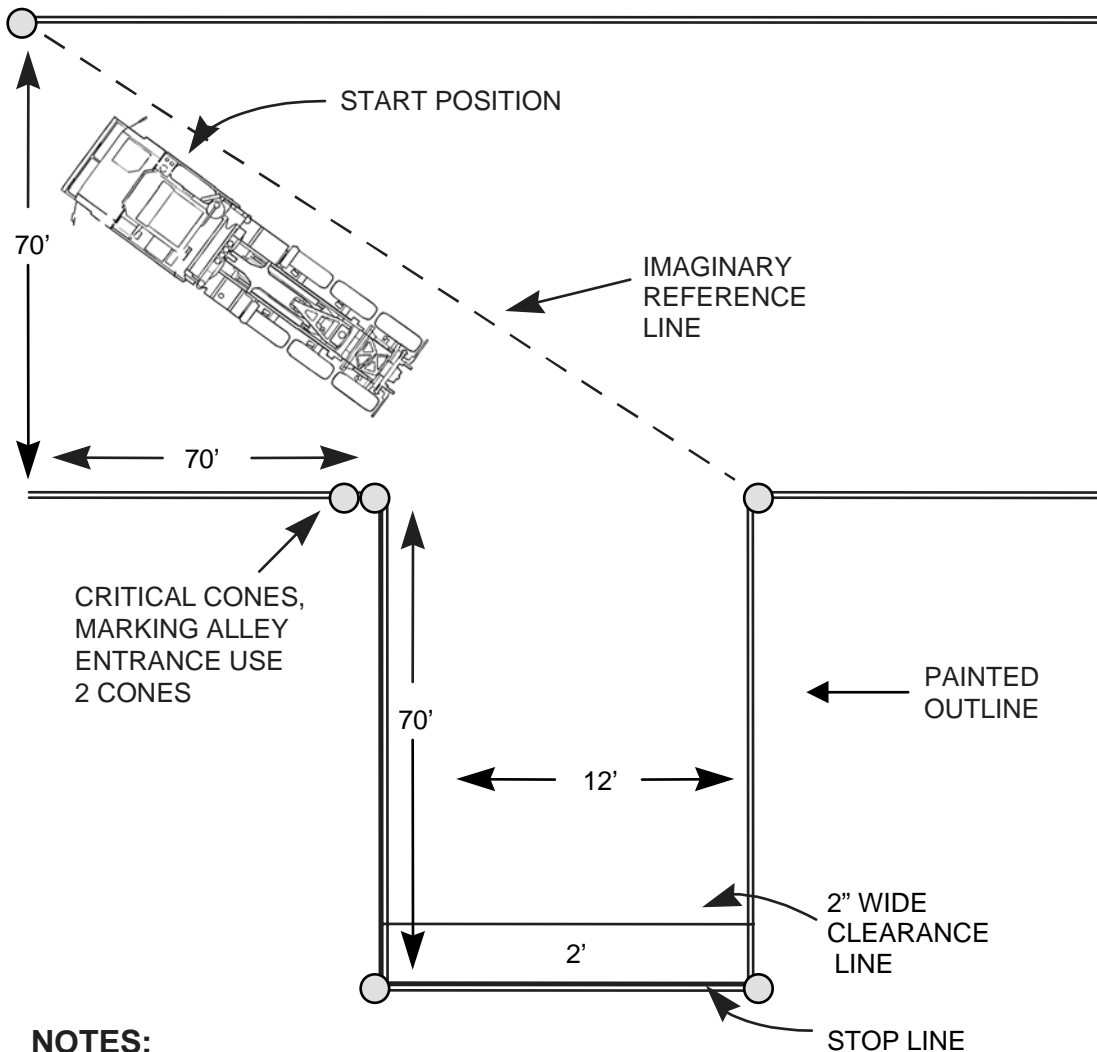
SCORING STANDARD FOR THE FORWARD STOP IS THE DRIVER DRIVES THROUGH THE ALLEY AND STOPS SO THAT THE FRONT OF THE TRUCK IS BETWEEN THE CLEARANCE LINE AND THE STOP LINE, WITHOUT HITTING ANY CONES OR TOUCHING THE BOUNDARIES.

SCORING STANDARD FOR THE STRAIGHT LINE BACKING IS THE DRIVER BACKS HIS VEHICLE COMPLETELY OUT OF THE ALLEY AND STOPS WHEN THE FRONT OF THE TRUCK IS BETWEEN THE STOP LINE AND THE CLEARANCE LINE WITHOUT HITTING ANY CONES OR TOUCHING ANY BOUNDARIES.

PLS TRAILER TURNTABLE MUST BE PINNED BEFORE BACKING.

**FIGURE 6-4**

# PLS ALLEY DOCK



**NOTES:**

TRAFFIC CONES = ○ FIXED BOUNDARIES = ════════

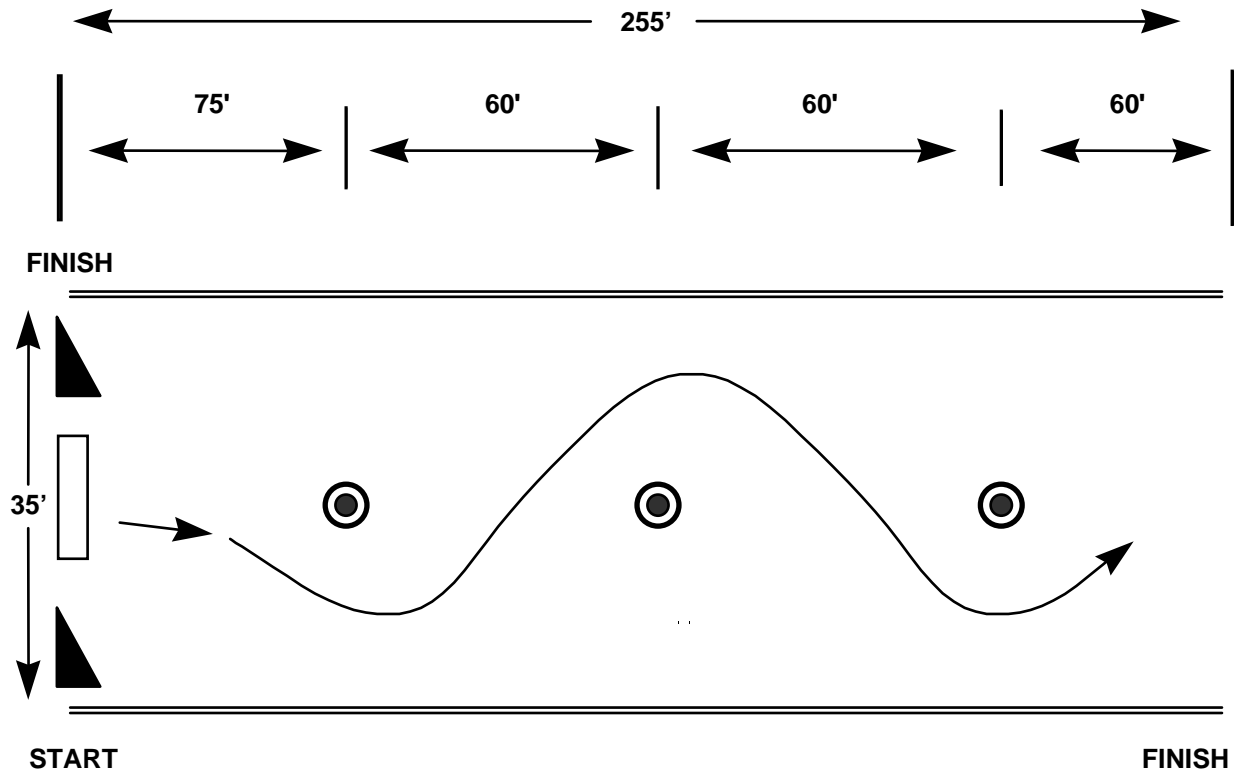
THE DRIVER WILL DRIVE FORWARD TO THE LEFT SIDE OF THE REFERENCE CONE, WITHOUT GOING PAST THE OUTER BOUNDARIES, KEEPING THE ALLEY ENTRANCE ON HIS LEFT SIDE. HE WILL THEN BACK IN A CURVED PATH INTO THE ALLEY.

THE SCORING STANDARD IS TO BACK INTO THE ALLEY, WITHOUT HITTING ANY CONES OR TOUCHING ANY BOUNDARIES, AND STOP WITH THE REAR OF THE TRUCK BETWEEN THE STOP AND CLEARANCE LINES, WITH NO MORE THAN 2 PULL-UPS.

THIS EXERCISE CAN NOT BE PERFORMED WITH THE TRAILER.

**FIGURE 6-5**

# PLS TRAILER SERPENTINE COURSE



**NOTES:**

EMPTY POL DRUMS = FIXED BOUNDARIES =

STANDARD = (WIDTH BETWEEN STANDARDS IS 16')

FORWARD =

START

MINIMUM SIZE OF AREA IS 255' LONG AND 35' WIDE.

NOTE: THE PLS TRAILER IS NOT BACKED ON THIS COURSE.

**FIGURE 6-6**

**CHAPTER 7****END OF COURSE COMPREHENSIVE TEST (EOCCT)**

LESSON TITLE: END OF COURSE COMPREHENSIVE TEST (EOCCT)

TASK NUMBER: All previously taught tasks.

**A. TRAINING OBJECTIVE.**

**TASK:** Pass the end of course comprehensive test (EOCCT).

**CONDITIONS** Given an examination booklet, pencil, DD Form 1970, DA Form 2404, TM 9-2320-364-10, equipment records folder, rags, lubricants, coolant, an M1074/M1075 truck with BII, an M1077 flatrack with securely tied down palletized load, road test route, and suitable training area(s). When testing for trailer operations, additional requirements are examination booklet, TM 9-2330-385-14, an M1076 trailer with BII, and another M1077 flatrack with securely tied down palletized load.

**STANDARD:** Pass all required written and performance tests.

**B. INTERMEDIATE TRAINING.**

## Intermediate Training Objective 1A (Truck Operations)

**TASK:** Pass a written examination.

**CONDITIONS:** Given an examination booklet and pencil.

**STANDARD:** Answer correctly 21 of 30 questions within 40 minutes. Use either the primary written test or the alternate written test.

## Intermediate Training Objective 1B (Trailer Operations)

**TASK:** Pass a written examination.

**CONDITIONS:** Given an examination booklet and pencil.

**STANDARD:** Students testing for trailer operations must answer correctly 7 of 10 questions within 15 minutes. Use either the primary written test or the alternate written test.

Intermediate Training Objective 2A

- TASK:** Load and unload the PLS truck in the automatic mode.
- CONDITIONS:** Given an M1074/M1075 truck with BII, an M1077 flatrack with securely tied down palletized load, and a requirement to load and unload the flatrack onto and off of a PLS truck.
- STANDARD:** Without damage to equipment or injury to personnel and receive all Gos on the performance test checklists.

Intermediate Training Objective 2B

- TASK:** Transfer flatrack onto and from the PLS trailer (PLST) using the LHS.
- CONDITIONS:** Given an M1074/M1075 truck, an M1076 PLST, all required BII, an M1077 flatrack with securely tied down palletized load, and a requirement to transfer a flatrack onto and off of a PLS trailer.
- STANDARD:** Without damage to equipment or injury to personnel. Students testing for trailer operations must receive all Gos on the performance test checklists.

Intermediate Training Objective 3

- TASK:** Pass the driver's road test.
- CONDITIONS:** Given DD Form 1970, DA Form 2404, pencil, TM 9-2320-364-10, equipment records folder, rags, lubricants, coolant, road test route, an M1074/M1075 truck with BII, and an M1077 flatrack with securely tied down palletized load. When testing for trailer operations, additional requirements are TM 9-2330-385-14, an M1076 PLST, and another M1077 flatrack with securely tied down palletized load.
- STANDARD:** Achieve a score of 75 or higher. Use the driver's performance test (road test) instructions and the driver's road test score sheet (DA Form 6125-R).

Intermediate Training Objective 4

- TASK:** Drive the PLS truck off road.
- CONDITIONS:** Given DD Form 1970, DA Form 2404, pencil, TM 9-2320-364-10, equipment records folder, rags, lubricants, coolant, a suitable

off-road training area, an M1074/M1075 PLS truck with BII, and a requirement to operate the truck off road (to include ditches, marshes, gullies, ravines, steep grades, woods, mud, rocky terrain, and shallow streams [48 inches or less]) during daylight hours.

**STANDARD:** Operate the vehicle safely at reduced speeds, taking precautions not to damage the truck while driving over rough terrain and receive all Gos on the performance test checklist.

#### Intermediate Training Objective 1B (Trailer Operations)

**TASK:** Couple and uncouple the M1076 PLS trailer (PLST) to and from the M1074/M1075 PLS truck.

**CONDITIONS:** Given an M1074/M1075 truck, an M1076 trailer, all required BII, and a requirement to couple and uncouple the PLST.

**STANDARD:** Without damage to equipment or injury to personnel, couple and uncouple the PLST in the correct sequence. Students testing for trailer operations must receive all Gos on the performance test checklists.

#### C. ADMINISTRATIVE INSTRUCTIONS.

1. Training time: As scheduled.
2. Training location: Classroom, motor pool, road test route, and training area(s) as scheduled.
3. Training type: Performance evaluation.
4. Students: Scheduled personnel.
5. Principal and assistant instructors required: One primary instructor for the class for the written tests and one assistant instructor for every student for the performance tests.
6. Training aids and equipment: Rags, lubricants, and coolant. Examination booklet, pencil, DD Form 1970, DA Form 2404, TM 9-2320-364-10, equipment records folder, an M1074/M1075 truck with BII, and an M1077 flatrack with securely tied down palletized load for every student. When testing for trailer operations, additional requirements are examination booklet, TM 9-2330-385-14, an M1076 trailer with BII, and another M1077 flatrack with securely tied down palletized load for every student.
7. References: AR 385-55, AR 600-55, DA Pamphlet 738-750, FM 21-305, TM 9-2320-364-10, and TM 9-2330-385-14.



D. SEQUENCE OF ACTIVITY.

1. Introduction:

- a. Interest device.
- b. Tie-in.
- c. Lesson objective (paragraph A).
- d. Procedures.
  - (1) Performance testing.
  - (2) Evaluation.
  - (3) Summary.

2. Performance testing:

NOTE: The driver will test in the order listed below and will not do the next test until he successfully passes the previous test.

a. Testing for truck operations:

- (1) Intermediate training objective 1A (written test for truck).
- (2) Intermediate training objective 2A (LHS for truck).
- (3) Intermediate training objective 3 (road test).
- (4) Intermediate training objective 4 (off-road driving).

b. Testing for trailer operations:

- (1) Intermediate training objective 1A (written test for truck).
- (2) Intermediate training objective 1B (written test for trailer).
- (3) Intermediate training objective 2A (LHS for truck).
- (4) Intermediate training objective 2B (LHS for trailer).
- (5) Intermediate training objectives 3 and 5 (3 is the road test and 5 is coupling and uncoupling).

NOTE: Intermediate training objective 5 is conducted in conjunction with intermediate training objective 3 (alley dock exercise). The trailer must be uncoupled before doing the alley dock and coupled after the exercise.

(6) Intermediate training objective 4 (off-road driving).

3. Evaluation: Check written test results, road test score sheets, and performance test checklists.

4. Summary:

- a. Recap main points.
- b. Allow for questions.
- c. Clarify questions.
- d. Give closing statement.

5. Retraining: Retrain and retest No-Gos.

#### E. SAFETY RESTRICTIONS.

1. Ensure that all chock blocks are in place when PLS trucks and/or trailers are parked or maintenance is to be performed.

2. Ensure the transmission is in neutral, the parking brake is set, and the engine is shut off before leaving the truck, when the truck is parked, or maintenance is being performed.

3. Ensure students remove all watches, jewelry, and identification tags before working in or around the PLS truck or trailer.

4. Ensure all personnel pay particular attention to the cautions and warnings listed in the operator's manuals.

5. Ensure ground guide(s) are used when backing.

6. Ensure all personnel wear hearing protection when working in or around a running PLS truck.

7. Ensure all occupants wear seat belts while the truck is in operation.

8. Ensure the driver and ground guides know and understand the hand and arm signals as outlined in FM 21-305.

9. Ensure all backing is conducted at a speed of 5 MPH or less.

10. Ensure personnel maintain at least three points of contact to mount or dismount the PLS truck or trailer (to include performing PMCS).

11. Use the PLS ladder when performing maintenance. Install the two hooks on the ladder in the holes located on top of the fender before use. Using the ladder for other applications could result in serious injury to personnel.

12. Ensure all personnel are clear of truck before engine start is attempted. Operator must visually check to see that all areas of the truck are clear of personnel before attempting to start the engine. Failure to do so could result in serious injury or death to personnel.

13. During driving operations, place the hydraulic selector switch in the off position or hydraulic system overheating will result.

14. Do not hold steering wheel at full left or right position for longer than 10 seconds. Oil overheating and pump damage can result.

15. Apply brakes gradually when stopping. A panic stop will cause the vehicle wheels to lock, engine to stall, and power steering to fail. Failure to do this will result in injury or death.

16. Repeated rapid operation of service brakes will consume compressed air supply and cause automatic spring brake application. Failure to follow proper service brake operating procedures may cause serious injury or death to personnel.

17. Excessive use of the service brake to control downhill speed will result in the loss of braking power because of heat buildup.

18. Do not park the truck on a steep grade. Serious injury to personnel could result.

19. Apply engine brake only when truck tires have good traction. Use of engine brake on slippery surfaces can cause the truck to skid and cause injury to personnel.

20. If emergency steer light illuminates when driving, immediately pull the truck over to the side of the road or trail and stop or serious injury or death could result.

21. Check for overhead power lines or other obstructions before attempting LHS operation. LHS reaches a height of 17 feet 2 inches (5.22 meters) with ISO container. Serious injury or death could result from contact with electrical power lines.

22. Check ground conditions for firmness and extreme sideways inclination before picking up or off-loading a flatrack. Any ground instability beneath road wheels could cause serious injury or death to personnel.

23. Before and during any load or unload cycle, all personnel should stay clear of LHS and flatrack or serious injury or death could result to personnel.

24. Ensure that flatrack runners contact LHS rear rollers correctly. Failure to contact flatrack runners correctly could result in serious injury or death to personnel and damage to equipment.

25. When loading or unloading flatracks on uneven ground (side slope or downgrades up to 10 degrees), it may be necessary to apply truck service brakes to prevent truck roll away or severe injury or death could result.

26. Trailer wheels must be chocked during transfer operations or serious injury or death could result.

27. When operating the PLS truck with PLS trailer, the heaviest loaded flatrack must always be placed on the truck; otherwise adverse handling and/or braking may result, which could cause serious injury or death to personnel.

28. Ensure trailer air system is charged before beginning transfer or flatrack locks may not properly engage/disengage. Failure to comply could result in serious injury or death to personnel.

29. Personnel must keep hands, feet, and body away from drawbar when connecting/disconnecting to/from truck or injury may result.

30. Trailer wheels must be chocked or drawbar connected to truck before coupling trailer gladhands to truck or serious injury or death could result to personnel.

31. Personnel will not stand between trailer drawbar and truck coupler during hook-up procedures. Personnel could be pinned between truck and trailer resulting in serious injury or death.

32. Do not allow feet or body to get under drawbar. Drawbar may drop to the ground when released from coupler and serious injury to personnel may result.

F. ADDITIONAL COMMENTS AND INFORMATION. Recommended testing time is 8.0 hours.

**INTERMEDIATE TRAINING OBJECTIVE 1A**

**WRITTEN TEST (PRIMARY)**

**NAME** \_\_\_\_\_ **RANK** \_\_\_\_\_ **DATE** \_\_\_\_\_

Instructions for Test

- A. This test is administered to all PLS drivers. It consists of 30 multiple-choice questions.
- B. Read all questions and answers carefully; then write the answer that is MOST correct on the blank line to the left.
- C. Any unanswered questions will be scored as incorrect responses.

- \_\_\_\_\_ 1. Engine coolant temperature should not exceed--
  - a. 200°F.
  - b. 210°F.
  - c. 225°F.
  - d. 240°F.
- \_\_\_\_\_ 2. If red needle on air gauge drops, while green needle does not--
  - a. This is no immediate problem.
  - b. This means there is a failure in the rear section of the dual air brake system.
  - c. It means CTIS is working.
  - d. Both b and c.
- \_\_\_\_\_ 3. To activate either of the two blackout switches, you must--
  - a. First turn off headlights.
  - b. Push on top part of either blackout switch.
  - c. Press unlock tab and push top part of blackout selector switch.
  - d. Both b and c.
- \_\_\_\_\_ 4. If CTIS is set in emergency position, maximum speed should be 5 MPH because--
  - a. You could overspeed the engine.
  - b. It is important to go slowly in an emergency.
  - c. Steering response is limited due to full driveline lockup.
  - d. To drive faster would put the CTIS into an overspeed condition.

- \_\_\_\_\_ 5. When starting the engine, you should depress the throttle--
- Halfway down.
  - Not at all.
  - Just a little to set the throttle.
  - All the way down.
- \_\_\_\_\_ 6. If the engine does not start after cranking for a while--
- Pump throttle pedal.
  - Wait at least 15 seconds before next attempt.
  - Hold ether button for one minute.
  - Check the emergency engine shutdown.
- \_\_\_\_\_ 7. The "check engine" light tells the operator--
- To shut down the engine immediately.
  - The coolant temperature is too high.
  - The oil pressure is too low.
  - Some engine item needs attention soon, but will not cause serious damage.
- \_\_\_\_\_ 8. The "low air" warning alarm will stop sounding when the air pressure gets above--
- 40 PSI.
  - 50 PSI.
  - 60 PSI.
  - 80 PSI.
- \_\_\_\_\_ 9. For normal driving conditions, use which transmission gear range?
- One, then two, three, four, and drive (D).
  - One to get started, then to drive (D).
  - Neutral, then drive (D).
  - Drive (D).
- \_\_\_\_\_ 10. You must always stop and put transmission in neutral to shift the transfer case because--
- Only one shift can be made at a time.
  - There is a large shift step between direct and low range that makes a large speed change.
  - The transmission is shifted electrically and the transfer case is shifted manually.
  - The transfer case will not shift with transmission in gear, and attempting to

shift could cause damage.

- \_\_\_\_\_ 11. The engine brake should be used to--
- Help slow the vehicle on grades.
  - Brake the vehicle as a substitute for the service brakes.
  - Stop and hold the vehicle.
  - Help improve traction in rough terrain.
- \_\_\_\_\_ 12. Why should the engine be warm before using the engine brake?
- The brakes work better when everything is warm.
  - The engine is less likely to run erratically when warm.
  - The engine brake works best when the engine oil is warm and flows easily.
  - Nothing works well when it is cold.
- \_\_\_\_\_ 13. Shift the transfer case to low range when--
- It is slippery.
  - Going into adverse off-road conditions or on steep grades.
  - Starting a heavy load; then shift back to high range.
  - It is necessary to engage front axles.
- \_\_\_\_\_ 14. The transfer case differential should be locked up--
- Just after the wheels start slipping.
  - At all times when operating the truck just to be safe.
  - Just before entering a poor traction condition or steep grade.
  - Only on the highway.
- \_\_\_\_\_ 15. The central tire inflation system (CTIS) controls--
- Axle lockup and tire pressure.
  - The vehicle's road speed.
  - Truck air system.
  - Only tire pressure.
- \_\_\_\_\_ 16. When using the CTIS, the overspeed indicator illuminates when--
- Vehicle speed exceeds 55 MPH.
  - Vehicle speed is too great for conditions.
  - The vehicle's average speed for one minute exceeds the speed limit for the CTIS selector switch setting.
  - The start switch is depressed.

- \_\_\_\_\_ 17. The CTIS start switch is used to--
- Start a change in the vehicle's ride with soft tires.
  - Change the tire pressure up or down.
  - Change axle lockup condition.
  - Initiate a change in the CTIS, and, in some cases, the axle lockup condition.
- \_\_\_\_\_ 18. The recommended method of braking a heavy truck with air brakes is--
- Continuously apply and release the brake pedal-- pump the brakes.
  - Apply steady pressure with the pedal in relation to conditions and stopping requirements.
  - Push pedal down hard until the tires just start to slide.
  - Deploy the parachute.
- \_\_\_\_\_ 19. If the "Do Not Shift" button on the transmission shift selector lights up while driving--
- Pull over and stop as soon as possible.
  - Do not make a gear shift selection, but keep going.
  - Shift to neutral, then back to drive, and continue with the mission.
  - The engine will stop and cannot be started again until the transmission problem is cured.
- \_\_\_\_\_ 20. The maximum water fording capability of the PLS truck is--
- 28 inches.
  - 48 inches.
  - 36 inches.
  - 60 inches.
- \_\_\_\_\_ 21. To go down a steep grade with a loaded truck on a road with good traction--
- Apply the brakes and turn on engine brake only after it feels like you are going too fast.
  - Turn on engine brake, then apply wheel brakes if vehicle is going too fast for engine brake to hold.
  - Shift to a lower gear, turn engine brake on high, and start down under control, also using wheel brakes as required.
  - Use the "emergency" CTIS setting.



- \_\_\_\_\_ 22. The Allison CLT-755 transmission, as used in the PLS truck, has--
- a. Converter lockup in fourth gear only.
  - b. Converter lockup in all gear ranges.
  - c. No converter lockup.
  - d. Electric overair shifting.
- \_\_\_\_\_ 23. The PLS air system will--
- a. Lock up parking brakes if all tanks are drained.
  - b. Provide automatic braking if the driver forgets to apply treadle valve.
  - c. Provide the driver with 12 to 15 applications of the pedal if rear system fails.
  - d. Provide emergency brakes only when button is pulled.
- \_\_\_\_\_ 24. When the LHS overload light comes on and LHS system stops, the operator should--
- a. Check to determine if truck brakes are applied.
  - b. Ignore the light because it is only a temporary signal.
  - c. Stop loading, go to unload, and try again or reposition the load.
  - d. Report the problem to Unit Maintenance.
- \_\_\_\_\_ 25. When doing PMCS--
- a. Use your TM and follow instructions carefully.
  - b. Do only what is necessary for a quick check.
  - c. Ignore checking engine and transmission fluid levels because these components have electronic signaling devices.
  - d. Have your buddy check the messy items.
- \_\_\_\_\_ 26. At what interval must the air tanks be drained?
- a. Monthly operation.
  - b. Weekly operation.
  - c. After daily operation.
  - d. During daily operation.
- \_\_\_\_\_ 27. If there is an electrical failure--
- a. Check to see if a fuse is blown.
  - b. Check to see if a circuit breaker is tripped.
  - c. Turn ignition off and on to recycle electronic system.
  - d. Look for smoke.
- \_\_\_\_\_ 28. When there is a loss of air in the truck brake system--

- a. Warnings will come on.
- b. The spring brakes will apply around 45 PSI.
- c. CTIS low air light will come on.
- d. All of the above.

\_\_\_\_\_ 29. If the air cleaner restriction indicator shows yellow halfway up (15 inches or less), it means--

- a. The vehicle is getting the best fuel economy.
- b. The engine was overloaded.
- c. The air filter needs to be checked and cleaned.
- d. The air filter is OK to operate engine.

\_\_\_\_\_ 30. When loading the flatrack, it is--

- a. Not necessary to be concerned with load placement.
- b. Important to load heavily towards the front near the hook loop.
- c. Important to load evenly, front to back, so the LHS will not overload.
- d. Important to load heavily towards the rear of the flatrack.

**INTERMEDIATE TRAINING OBJECTIVE 1A**

**WRITTEN TEST ANSWER SHEET (PRIMARY)**

1.	B	11.	A	21.	C
2.	B	12.	C	22.	B
3.	C	13.	B	23.	A
4.	C	14.	C	24.	C
5.	B	15.	A	25.	A
6.	B	16.	C	26.	C
7.	D	17.	B	27.	B
8.	C	18.	B	28.	D
9.	D	19.	A	29.	D
10.	D	20.	B	30.	C

## INTERMEDIATE TRAINING OBJECTIVE 1A

### WRITTEN TEST (ALTERNATE)

NAME \_\_\_\_\_ RANK \_\_\_\_\_ DATE \_\_\_\_\_

#### Instructions for Test

- A. This test is administered to all PLS drivers. It consists of 30 multiple-choice questions.
- B. Read all questions and answers carefully; then write the answer that is MOST correct on the blank line to the left.
- C. Any unanswered questions will be scored as incorrect responses.

- \_\_\_\_\_ 1. Why should the engine be warm before using the engine brake?
- a. The brakes work better when everything is warm.
  - b. The engine is less likely to run erratically when warm.
  - c. The engine brake works best when the engine oil is warm and flows easily.
  - d. Nothing works well when it is cold.
- \_\_\_\_\_ 2. If CTIS is set in emergency position, maximum speed should be 5 MPH because--
- a. Steering response is limited due to full driveline lockup.
  - b. It is important to go slowly in an emergency.
  - c. You could overspeed the engine.
  - d. To drive faster would put the CTIS into an overspeed condition.
- \_\_\_\_\_ 3. If the air cleaner restriction indicator shows yellow halfway up (15 inches or less), it means--
- a. The vehicle is getting the best fuel economy.
  - b. The engine was overloaded.
  - c. The air filter needs to be checked and cleaned.
  - d. The air filter is okay to operate engine.
- \_\_\_\_\_ 4. When there is a loss of air in the truck brake system--
- a. Warnings will come on.
  - b. The spring brakes will apply around 45 PSI.
  - c. CTIS low air light will come on.

- d. All of the above.
- \_\_\_\_\_ 5. When loading the flatrack, it is--
- a. Not necessary to be concerned with load placement.
  - b. Important to load heavily towards the front near the hook loop.
  - c. Important to load evenly, front to back, so the LHS will not overload.
  - d. Important to load heavily towards the rear of the flatrack.
- \_\_\_\_\_ 6. You must always stop and put transmission in neutral to shift the transfer case because--
- a. Only one shift can be made at a time.
  - b. There is a large shift step between direct and low range that makes a large speed change.
  - c. The transmission is shifted electrically and the transfer case is shifted manually.
  - d. The transfer case will not shift with transmission in gear, and attempting to shift could cause damage.
- \_\_\_\_\_ 7. The engine brake should be used to--
- a. Help slow the vehicle on grades.
  - b. Brake the vehicle as a substitute for the service brakes.
  - c. Stop and hold the vehicle.
  - d. Help improve traction in rough terrain.
- \_\_\_\_\_ 8. At what interval must the air tanks be drained?
- a. Monthly operation.
  - b. Weekly operation.
  - c. After daily operation.
  - d. During daily operation.
- \_\_\_\_\_ 9. Engine coolant temperature should not exceed--
- a. 200°F
  - b. 210°F
  - c. 225°F
  - d. 240°F
- \_\_\_\_\_ 10. When starting the engine, you should depress the throttle--
- a. Halfway down.
  - b. Not at all.
  - c. Just a little to set the throttle.

- d. All the way down.
- \_\_\_\_\_ 11. The "low air" warning alarm will stop sounding when the air pressure gets above--
- a. 40 PSI
  - b. 50 PSI
  - c. 60 PSI
  - d. 80 PSI
- \_\_\_\_\_ 12. To activate either of the two blackout switches, you must--
- a. First turn off headlights.
  - b. Push on top part of either blackout switch.
  - c. Press unlock tab and push top part of blackout selector switch.
  - d. Both b and c.
- \_\_\_\_\_ 13. The "check engine" light tells the operator--
- a. To shut down the engine immediately.
  - b. The coolant temperature is too high.
  - c. The oil pressure is too low.
  - d. Some engine item needs attention soon, but will not cause serious damage.
- \_\_\_\_\_ 14. If the engine does not start after cranking for a while--
- a. Wait at least 15 seconds before next attempt.
  - b. Pump throttle pedal.
  - c. Hold ether button for one minute.
  - d. Check the emergency engine shutdown.
- \_\_\_\_\_ 15. To go down a steep grade with a loaded truck on a road with good traction--
- a. Apply the brakes and turn on engine brake only after it feels like you are going too fast.
  - b. Turn on engine brake; then apply wheel brakes if vehicle is going too fast for engine brake to hold.
  - c. Use the "emergency" CTIS setting.
  - d. Shift to a lower gear, turn engine brake on high, and start down under control, also using wheel brakes as required.
- \_\_\_\_\_ 16. If red needle on air gauge drops, while green needle does not--
- a. This is no immediate problem.
  - b. This means there is a failure in the rear section of the dual air brake system.
  - c. It means CTIS is working.

d. Both b and c.

\_\_\_\_\_ 17. For normal driving conditions, use which transmission gear range?

- a. One, then two, three, four, and drive (D).
- b. One to get started, then to drive (D).
- c. Neutral, then drive (D).
- d. Drive (D).

\_\_\_\_\_ 18. If the "Do Not Shift" button on the transmission shift selector lights up while driving--

- a. Pull over and stop as soon as possible.
- b. Do not make a gear shift selection, but keep going.
- c. Shift to neutral, then back to drive, and continue with the mission.
- d. The engine will stop and cannot be started again until the transmission problem is cured.

\_\_\_\_\_ 19. When using the CTIS, the overspeed indicator illuminates when--

- a. Vehicle speed exceeds 55 MPH.
- b. Vehicle speed is too great for conditions.
- c. The vehicle's average speed for one minute exceeds the speed limit for the CTIS selector switch setting.
- d. The start switch is depressed.

\_\_\_\_\_ 20. Shift the transfer case to low range when--

- a. It is slippery.
- b. Going into adverse off road conditions or on steep grades.
- c. Starting a heavy load; then shift back to high range.
- d. It is necessary to engage front axles.

\_\_\_\_\_ 21. The CTIS start switch is used to--

- a. Start a change in the vehicle's ride with soft tires.
- b. Change the tire pressure up or down.
- c. Change axle lockup condition.
- d. Initiate a change in the CTIS, and, in some cases, the axle lockup condition.

- \_\_\_\_\_ 22. When the LHS overload light comes on and LHS system stops, the operator should--
- Check to determine if truck brakes are applied.
  - Ignore the light because it is only a temporary signal.
  - Stop loading, go to unload, and try again or reposition the load.
  - Report the problem to Unit Maintenance.
- \_\_\_\_\_ 23. The recommended method of braking a heavy truck with air brakes is--
- Apply steady pressure with the pedal in relation to conditions and stopping requirements.
  - Continuously apply and release the brake pedal-- pump the brakes.
  - Push pedal down hard until the tires just start to slide.
  - Deploy the parachute.
- \_\_\_\_\_ 24. The maximum water fording capability of the PLS truck is--
- 28 inches.
  - 48 inches.
  - 36 inches.
  - 60 inches.
- \_\_\_\_\_ 25. The Allison CLT-755 transmission, as used in the PLS truck, has--
- Electric overair shifting.
  - No converter lockup.
  - Converter lockup in fourth gear only.
  - Converter lockup in all gear ranges.
- \_\_\_\_\_ 26. The PLS air system will--
- Lock up parking brakes if all tanks are drained.
  - Provide automatic braking if the driver forgets to apply treadle valve.
  - Provide the driver with 12 to 15 applications of the pedal if rear system fails.
  - Provide emergency brakes only when button is pulled.
- \_\_\_\_\_ 27. The transfer case differential should be locked up--
- Just after the wheels start slipping.
  - At all times when operating the truck just to be safe.
  - Just before entering a poor traction condition or steep grade.
  - Only on the highway.
- \_\_\_\_\_ 28. When doing PMCS--



- a. Use your TM and follow instructions carefully.
- b. Do only what is necessary for a quick check.
- c. Ignore checking engine and transmission fluid levels because these components have electronic signaling devices.
- d. Have your buddy check the messy items.

\_\_\_\_\_ 29. If there is an electrical failure--

- a. Check to see if a fuse is blown.
- b. Check to see if a circuit breaker is tripped.
- c. Turn ignition off and on to recycle electronic system.
- d. Look for smoke.

\_\_\_\_\_ 30. The central tire inflation system (CTIS) controls--

- a. Axle lockup and tire pressure.
- b. The vehicle's road speed.
- c. Truck air system.
- d. Only tire pressure.

**INTERMEDIATE TRAINING OBJECTIVE 1A**

**WRITTEN TEST ANSWER SHEET (ALTERNATE)**

1.	C	11.	C	21.	B
2.	A	12.	C	22.	C
3.	D	13.	D	23.	A
4.	D	14.	A	24.	B
5.	C	15.	D	25.	D
6.	D	16.	B	26.	A
7.	A	17.	D	27.	C
8.	C	18.	A	28.	A
9.	B	19.	C	29.	B
10.	B	20.	B	30.	A

**INTERMEDIATE TRAINING OBJECTIVE 1B**

**WRITTEN TEST FOR TRAILER OPERATIONS (PRIMARY)**

**NAME** \_\_\_\_\_ **RANK** \_\_\_\_\_ **DATE** \_\_\_\_\_

Instructions for Test

- A. A. This test is administered for trailer operations only. It consists of 10 multiple choice questions.
- B. Read all questions and answers carefully; then write the answer that is MOST correct on the blank line to the left.
- C. Any unanswered questions will be scored as incorrect responses.

TAKE THIS TEST ONLY IF YOU HAVE BEEN TRAINED IN PLS TRAILER OPERATIONS.

- \_\_\_\_\_ 1. When stopped, you can check the trailer brakes by--
  - a. Checking trailer stop light.
  - b. Listening for air going through trailer brake hoses.
  - c. Moving the truck forward slowly and applying the trailer hand brake control.
  - d. Disconnecting the trailer and watching to see if it rolls slightly.
  
- \_\_\_\_\_ 2. It is possible to make a left turn with the trailer, on an intersection of 30 foot roads, if--
  - a. You turn after going halfway into the intersection.
  - b. You stop about halfway into the turn and carefully back 20 feet and then turn again.
  - c. You turn sharply just after starting into the intersection.
  - d. You watch your ground guide.
  
- \_\_\_\_\_ 3. With the truck and trailer fully loaded, the maximum grade capability is--
  - a. 30 percent.
  - b. 25 percent.
  - c. 45 percent.
  - d. 60 percent.
  
- \_\_\_\_\_ 4. When coupling the trailer, care in aligning the truck with the drawbar is not too

important because the drawbar can be extended or retracted and moved around for coupling.

- a. True.
- b. False

\_\_\_\_\_ 5. When transferring the flatrack onto the trailer, three modes are used on the LHS hydraulic selector because--

- a. It takes one mode to transfer the flatrack from the truck, and the other two for transferring the hook back onto the truck.
- b. It takes one mode to transfer the flatrack to the trailer; then the other two for positioning the flatrack properly back to the stops.
- c. It takes one mode to attach the hook, the second to transfer the flatrack from the truck, and the third to position the flatrack on the trailer.
- d. Three modes are better than two.

\_\_\_\_\_ 6. Backing the PLS with trailer--

- a. Should never be done.
- b. Can be done for a short distance or if the drawbar is pinned.
- c. Is not difficult if you always steer with the rear steer axle in sight.
- d. Is the least liked task on the PLS.

\_\_\_\_\_ 7. The drawbar on the PLS trailer must be extended--

- a. For normal on road driving.
- b. For all off-road driving.
- c. When transporting an ISO container on the truck.
- d. All of the above.

\_\_\_\_\_ 8. The correct method to charge the PLS trailer air bag is to use--

- a. The air bag charging hose.
- b. The trailer emergency air hose.
- c. The trailer service air hose.
- d. All of the above.

\_\_\_\_\_ 9. To change a flat tire on the PLS trailer, you must use the following PLS truck basic issue item (BII)--

- a. The air impact wrench.
- b. The ladder.
- c. The 33-mm socket.
- d. The 1 1/2-inch socket.

\_\_\_\_\_ 10. After uncoupling from the PLS trailer, use the air assist lever to--

- a. Apply air pressure to hold the drawbar from falling.
- b. Raise the drawbar to the horizontal position.
- c. Release air pressure to lower the trailer drawbar to the ground.
- d. Raise the drawbar above the level of the truck coupler.

**INTERMEDIATE TRAINING OBJECTIVE 1B**

**WRITTEN TEST ANSWER SHEET FOR TRAILER OPERATIONS (PRIMARY)**

- |     |   |
|-----|---|
| 1.  | C |
| 2.  | C |
| 3.  | A |
| 4.  | B |
| 5.  | B |
| 6.  | B |
| 7.  | D |
| 8.  | A |
| 9.  | D |
| 10. | C |

**INTERMEDIATE TRAINING OBJECTIVE 1B**

**WRITTEN TEST FOR TRAILER OPERATIONS (ALTERNATE)**

NAME \_\_\_\_\_ RANK \_\_\_\_\_ DATE \_\_\_\_\_

Instructions for Test

- A. A. This test is administered for trailer operations only. It consists of 10 multiple choice questions.
- B. Read all questions and answers carefully; then write the answer that is MOST correct on the blank line to the left.
- C. Any unanswered questions will be scored as incorrect responses.

TAKE THIS TEST ONLY IF YOU HAVE BEEN TRAINED IN PLS TRAILER OPERATIONS.

- \_\_\_\_\_ 1. The correct method to charge the PLS trailer air bag is to use--
  - a. The air bag charging hose.
  - b. The trailer emergency air hose.
  - c. The trailer service air hose.
  - d. All of the above.
  
- \_\_\_\_\_ 2. With the truck and trailer fully loaded, the maximum grade capability is--
  - a. 30 percent.
  - b. 25 percent.
  - c. 45 percent.
  - d. 60 percent.
  
- \_\_\_\_\_ 3. After uncoupling from the PLS trailer, use the air assist lever to--
  - a. Apply air pressure to hold the drawbar from falling.
  - b. Raise the drawbar to the horizontal position.
  - c. Release air pressure to lower the trailer drawbar to the ground.
  - d. Raise the drawbar above the level of the truck coupler.
  
- \_\_\_\_\_ 4. The drawbar on the PLS trailer must be extended--

- a. For normal on-road driving.
  - b. For all off-road driving.
  - c. When transporting an ISO container on the truck.
  - d. All of the above.
- \_\_\_\_\_ 5. When stopped, you can check the trailer brakes by--
- a. Checking trailer stop light.
  - b. Listening for air going through trailer brake hoses.
  - c. Moving the truck forward slowly and applying the trailer hand brake control.
  - d. Disconnecting the trailer and watching to see if it rolls slightly.
- \_\_\_\_\_ 6. Backing the PLS with trailer--
- a. Should never be done.
  - b. Can be done for a short distance or if the drawbar is pinned.
  - c. Is not difficult if you always steer with the rear steer axle in sight.
  - d. Is the least liked task on the PLS.
- \_\_\_\_\_ 7. It is possible to make a left turn with the trailer, on an intersection of 30 foot roads, if--
- a. You turn after going halfway into the intersection.
  - b. You stop about halfway into the turn and carefully back 20 feet and then turn again.
  - c. You turn sharply just after starting into the intersection.
  - d. You watch your ground guide.
- \_\_\_\_\_ 8. To change a flat tire on the PLS trailer, you must use the following PLS truck basic issue item (BII)--
- a. The air impact wrench.
  - b. The ladder.
  - c. The 33-mm socket.
  - d. The 1 1/2-inch socket.
- \_\_\_\_\_ 9. When transferring the flatrack onto the trailer, three modes are used on the LHS hydraulic selector because--



- a. It takes one mode to transfer the flatrack from the truck and the other two for transferring the hook back onto the truck.
- b. It takes one mode to transfer the flatrack to the trailer, then the other two for positioning the flatrack properly back to the stops.
- c. It takes one mode to attach the hook, the second to transfer the flatrack from the truck, and the third to position the flatrack on the trailer.
- d. Three modes are better than two.

\_\_\_\_\_ 10. When coupling the trailer, care in aligning the truck with the drawbar is not too important because the drawbar can be extended or retracted and moved around for coupling.

- a. True.
- b. False

**INTERMEDIATE TRAINING OBJECTIVE 1B**

**WRITTEN TEST ANSWER SHEET FOR TRAILER OPERATIONS (ALTERNATE)**

1. A
2. A
3. C
4. D
5. C
6. B
7. C
8. D
9. B
10. B

**INTERMEDIATE TRAINING OBJECTIVE 2A**

**PERFORMANCE TEST**

**LOAD THE FLATRACK ONTO THE PLS TRUCK IN AUTOMATIC MODE**

NAME \_\_\_\_\_ RANK \_\_\_\_\_ UNIT \_\_\_\_\_

EVALUATOR \_\_\_\_\_ DATE \_\_\_\_\_

<u>STEPS</u>	<b>GO</b>	<b>NO-GO</b>
1. CHECKS FOR OVERHEAD OBSTRUCTIONS AND GROUND FIRMNESS.		
2. IF FLATRACK IS LOADED WITH CARGO, CHECKS ISO LOCKS OR CARGO TIE-DOWNS FOR SECURITY.		
3. STARTS TRUCK.		
4. BACKS TRUCK UP TO FLATRACK AND STOPS ABOUT 5 FEET FROM HOOK BAR.		
5. APPLIES SERVICE BRAKE PEDAL AND SETS TRANSMISSION RANGE SELECTOR TO NEUTRAL.		
6. WITH ENGINE SPEED AT IDLE, TURNS HYDRAULIC SELECTOR SWITCH TO AUTO.		
7. ADJUSTS EXTENSION MIRROR TO MONITOR LHS OPERATIONS.		
8. MOVES JOYSTICK TO UNLOAD AND INCREASES ENGINE SPEED TO ABOUT 1,500 RPM.		
9. CONTINUES TO UNLOAD UNTIL LIFT HOOK HAS MOVED TO BELOW LEVEL OF FLATRACK HOOK BAR.		
10. RELEASES JOYSTICK.		
11. SETS THE TRANSMISSION RANGE SELECTOR TO REVERSE AND BACKS TRUCK UP TO FLATRACK, ALIGNING TRUCK AND FLATRACK AS STRAIGHT AS POSSIBLE WITH LIFT HOOK TO MIDDLE OF HOOK BAR UNTIL LIFT HOOK CONTACTS HOOK BAR.		
12. ENSURES LIFT HOOK TIP IS POSITIONED BELOW BOTTOM OF HOOK BAR.		
13. MOVES THE JOYSTICK TO LOAD TO RAISE LIFT HOOK AND ENGAGE HOOK BAR.		
14. SETS THE TRANSMISSION RANGE SELECTOR TO NEUTRAL AND RELEASES SERVICE BRAKE PEDAL.		

**STEPS**

**GO NO-GO**

15. MOVES JOYSTICK TO LOAD, INCREASES ENGINE SPEED TO ABOUT 1,500 RPM, AND ALLOWS TRUCK TO BE PULLED UNDER FLATRACK.
16. ADJUSTS STEERING WHEEL AS NECESSARY TO ENSURE FLATRACK RUNNERS CONTACT REAR ROLLERS.
17. BEFORE FLATRACK RUNNERS CONTACT REAR ROLLERS, REDUCES ENGINE SPEED AND APPLIES SERVICE BRAKE PEDAL.
18. IF FLATRACK IS BEING LOADED IN SOFT SOIL CONDITIONS, RELEASES JOYSTICK AND SETS HYDRAULIC SELECTOR SWITCH TO MAN HA, MOVES JOYSTICK TO LOAD UNTIL FLATRACK IS ABOUT 2 FEET OFF THE GROUND, AND RELEASES JOYSTICK. SETS HYDRAULIC SELECTOR SWITCH TO AUTO AND RESUMES NORMAL AUTO OPERATIONS.
19. AFTER FLATRACK CONTACTS REAR ROLLERS, INCREASES ENGINE SPEED TO ABOUT 1,500 RPM UNTIL FLATRACK IS NEARLY LOADED.
20. REDUCES ENGINE SPEED TO IDLE, CONTINUES LOADING UNTIL FLATRACK IS FULLY LOADED AND LHS NO TRANSIT LAMP EXTINGUISHES.
21. RELEASES JOYSTICK AND APPLIES PARKING BRAKE.
22. TURNS HYDRAULIC SELECTOR SWITCH TO OFF.
23. INSPECTS THAT BOTH LOAD LOCKS HAVE ENGAGED AND FLATRACK IS COMPLETELY DOWN ON TRUCK.

GO	NO-GO

**INTERMEDIATE TRAINING OBJECTIVE 2A**

**PERFORMANCE TEST**

**UNLOAD THE FLATRACK FROM THE PLS TRUCK IN AUTOMATIC MODE**

NAME \_\_\_\_\_ RANK \_\_\_\_\_ UNIT \_\_\_\_\_

EVALUATOR \_\_\_\_\_ DATE \_\_\_\_\_

<u>STEPS</u>	GO	NO-GO
1. CHECKS FOR OVERHEAD OBSTRUCTIONS AND GROUND FIRMNESS.		
2. STARTS AND POSITIONS TRUCK AT UNLOADING SITE.		
3. SETS TRANSMISSION RANGE SELECTOR TO NEUTRAL AND APPLIES PARKING BRAKE.		
4. IF FLATRACK IS LOADED WITH CARGO, CHECKS ISO LOCKS OR CARGO TIE-DOWNS FOR SECURITY.		
5. CHECKS AREA FOR SUFFICIENT OPERATING ROOM AT FRONT AND REAR OF TRUCK.		
6. RELEASES PARKING BRAKE AND APPLIES SERVICE BRAKE PEDAL.		
7. WITH ENGINE SPEED AT IDLE, TURNS HYDRAULIC SELECTOR SWITCH TO AUTO.		
8. ADJUSTS EXTENSION MIRROR TO MONITOR LHS OPERATIONS.		
9. MOVES JOYSTICK TO UNLOAD AND MAINTAINS ENGINE SPEED AT IDLE UNTIL FRONT OF FLATRACK RAISES ABOUT 1 FOOT.		
10. INCREASES ENGINE SPEED TO ABOUT 1,500 RPM AND CONTINUES TO UNLOAD UNTIL REAR SUSPENSION STARTS TO LIFT AND BACK EDGE OF FLATRACK TOUCHES GROUND.		
11. RELEASES SERVICE BRAKE PEDAL AND ALLOWS GROUNDED FLATRACK TO PUSH THE TRUCK STRAIGHT FORWARD FROM UNDER THE FLATRACK.		
12. AS FRONT OF FLATRACK APPROACHES WITHIN ABOUT 8 INCHES OF GROUND, DECREASES ENGINE SPEED TO IDLE AND APPLIES SERVICE BRAKE PEDAL.		
13. CONTINUES OFF-LOADING UNTIL FLATRACK RUNNERS ARE ON GROUND AND REAR SUSPENSION IS UNLOADED.		

**STEPS**

14. RELEASES JOYSTICK WHEN FLATRACK RUNNERS ARE RESTING ON GROUND.
15. SETS THE TRANSMISSION RANGE SELECTOR TO DRIVE AND RELEASES SERVICE BRAKE PEDAL.
16. MOVES JOYSTICK TO LOAD MOMENTARILY AND THEN TO UNLOAD TO LET LIFTHOOK DISENGAGE FROM HOOK BAR. REPEATS UNTIL HOOK DISENGAGES.
17. MOVES TRUCK FORWARD ABOUT 5 FEET.
18. STOPS TRUCK AND SETS TRANSMISSION RANGE SELECTOR TO NEUTRAL.
19. MOVES JOYSTICK TO LOAD UNTIL LHS IS IN TRANSIT POSITION AND LHS NO TRANSIT LAMP EXTINGUISHES.
20. RELEASES JOYSTICK AND APPLIES PARKING BRAKE.
21. TURNS HYDRAULIC SELECTOR SWITCH TO OFF.

**GO NO-GO**

**INTERMEDIATE TRAINING OBJECTIVE 2B**

**PERFORMANCE TEST**

**TRANSFERRING FLATRACK (FR) ONTO PLS TRAILER FROM TRUCK**

NAME \_\_\_\_\_ RANK \_\_\_\_\_ UNIT \_\_\_\_\_

EVALUATOR \_\_\_\_\_ DATE \_\_\_\_\_

<u>STEPS</u>	GO	NO-GO
1. CHECKS FOR OVERHEAD OBSTRUCTIONS.		
2. IF FR IS LOADED WITH CARGO, CHECKS ISO LOCKS OR CARGO TIE-DOWNS FOR SECURITY.		
3. CHOCKS TRAILER WHEELS. CHECKS CONTROL KNOB POSITION (TRAILER BRAKES SHOULD ALREADY BE SET).		
4. ENSURES BOTH TRAILER FLATRACK LOCKS ARE RELEASED.		
5. LOWERS TRAILER DRAWBAR FULLY.		
6. BACKS TRUCK IN LINE WITH THE TRAILER. TRAILER BUMPER SHOULD BE SQUARE WITH TRUCK BUMPER AND IN FULL CONTACT.		
7. SETS PARKING BRAKE ON TRUCK.		
8. SETS HYDRAULIC SELECTOR LEVER TO AUTOMATIC (AUTO) POSITION. MOVES JOYSTICK TO "UNLOAD" UNTIL FR IS DOWN ONTO TRAILER. (IF DONE BY ONE PERSON, GETS OUT OF THE TRUCK AND CHECKS FR ROLLERS AT FIRST CONTACT TO ENSURE THEY ARE RUNNING PROPERLY ON THE TRAILER TRACK).		
9. SETS HYDRAULIC SELECTOR TO MANUAL HOOK ARM (MAN HA) POSITION AND MOVES JOYSTICK TO "LOAD" UNTIL THE FRONT OF FR IS RAISED ABOUT 12 TO 18 INCHES ABOVE TRAILER DECK HEIGHT.		
10. SETS HYDRAULIC SELECTOR TO MANUAL MAIN FRAME (MAN MF) AND MOVES JOYSTICK TO "UNLOAD" UNTIL FR ROLLERS CONTACT STOPS AT BACK OF TRAILER OR UNTIL TRUCK SUSPENSION IS FULLY UNLOADED. (THE CONTACT WITH THE STOP CAN BE SENSED IN THE TRUCK, BUT VISUAL INSPECTION IS REQUIRED.) DOES NOT CONTINUE UNLOADING AFTER FR CONTACTS THE STOPS. IF FR IS NOT AT THE STOPS, REPEATS STEPS 9 AND 10.		

**STEPS**

**GO NO-GO**

11. RELEASES TRUCK PARKING BRAKES AND MOVES JOYSTICK TO "UNLOAD" MOMENTARILY (TO MOVE TRUCK AHEAD SO FR RESTS FULLY ON TRAILER).
12. TO RELEASE LHS HOOK, PUTS TRUCK IN DRIVE, MOVES JOYSTICK TO LOAD MOMENTARILY, THEN TO UNLOAD AS TRUCK IS INCHED FORWARD (NO MORE THAN 2 TO 3 INCHES).
13. SETS PARKING BRAKES ON TRUCK.
14. SECURES FR LOCKS ON TRAILER BY PULLING LOAD LOCK CONTROL KNOB.
15. MOVES THE TRUCK FORWARD ABOUT 5 FEET.
16. SETS SELECTOR LEVER TO AUTOMATIC (AUTO) POSITION AND MOVES JOYSTICK TO "LOAD" UNTIL LHS IS FULLY BACK ON TRUCK (LHS NO TRANSIT LIGHT IS EXTINGUISHED).
17. SETS SELECTOR LEVER TO "OFF" POSITION FOR DRIVING VEHICLE. (IT IS IMPORTANT TO SET LEVER TO OFF TO AVOID OVERHEATING OF HYDRAULIC SYSTEM.)

GO	NO-GO



**INTERMEDIATE TRAINING OBJECTIVE 2B**

**PERFORMANCE TEST**

**TRANSFERRING FLATRACK (FR) FROM TRAILER TO TRUCK**

**NAME** \_\_\_\_\_ **RANK** \_\_\_\_\_ **UNIT** \_\_\_\_\_

**EVALUATOR** \_\_\_\_\_ **DATE** \_\_\_\_\_

<u>STEPS</u>	<b>GO</b>	<b>NO-GO</b>
1. CHECKS FOR OVERHEAD OBSTRUCTIONS.		
2. BACKS TRUCK IN LINE WITH TRAILER. STOPS 4 TO 5 FEET AWAY FROM TRAILER.		
3. GOES TO TRAILER, CHECKS TO ENSURE TRAILER PARKING BRAKE IS SET AND WHEELS ARE CHOCKED. LOWERS THE DRAWBAR FULLY TO THE GROUND AND UNLOCKS FR LOCKS ON TRAILER. PHYSICALLY CHECKS LOCKS TO ASSURE THEY ARE UNLOCKED. (THIS "UNLOCKING" IS VERY IMPORTANT TO AVOID JAMMING OF FR OR DAMAGE WHEN LOADING.)		
4. IF FR IS LOADED WITH CARGO, CHECKS ISO LOCKS OR CARGO TIE-DOWNS FOR SECURITY.		
5. SETS HYDRAULIC SELECTOR LEVER TO AUTOMATIC (AUTO), THEN MOVES JOYSTICK TO "UNLOAD" AND POSITIONS HOOK AT PROPER HEIGHT TO PICK UP FR LOOP.		
6. BACKS SLOWLY UNTIL HOOK CONTACTS FR LOOP. SOME HEIGHT ADJUSTMENT OF HOOK AND ALIGNMENT OF TRUCK MAY BE NECESSARY. TRAILER BUMPER SHOULD BE SQUARE WITH TRUCK BUMPER AND IN FULL CONTACT.		
7. MOVES JOYSTICK TO "LOAD" (HOOK ENGAGES LOOP TO PULL FR ONTO TRUCK). WITH TRANSMISSION IN NEUTRAL AND TRUCK PARKING BRAKES APPLIED, CONTINUES LOADING FR ONTO TRUCK.		
8. TURNS HYDRAULIC SELECTOR TO "OFF" POSITION WHEN FR IS DOWN PROPERLY ON TRUCK (LHS NO TRANSIT LIGHT IS EXTINGUISHED). (IT IS IMPORTANT TO SET HYDRAULIC SELECTOR TO "OFF" POSITION TO AVOID OVERHEATING OF THE HYDRAULIC SYSTEM.)		
9. WITH TRANSMISSION IN NEUTRAL AND TRUCK PARKING BRAKES APPLIED, INSPECTS THAT THE LOAD LOCKS ARE ENGAGED AND FR IS COMPLETELY DOWN ON TRUCK.		

## INTERMEDIATE TRAINING OBJECTIVE 3

### DRIVER'S PERFORMANCE TEST (ROAD TEST) INSTRUCTIONS

#### 1. GENERAL.

- a. This test is to be conducted according to the guidelines set forth in AR 600-55, The Army Driver and Operator Standardization Program. In addition, the specific directions for this test are to be followed without deviation. No omissions or changes in the wording of these directions are permitted.
- b. The purpose of the road test is to evaluate the driver's ability to drive safely in most on-the-road situations. It serves as the basis for the issuance of an operator's permit and provides a means for instructional reinforcement and counseling. Driving weaknesses that surface as a result of the test should be called to the attention of the examinee so that specific steps can be taken to eliminate these weaknesses.
- c. Final evaluations will be recorded on DA Form 348 or on an equivalent official form. Once this transfer of information has been accomplished, the completed DA Form 6125-R, Road Test Score Sheet, will be destroyed.
- d. The examiner will be a thoroughly qualified operator of the PLS. Furthermore, he will be familiar with the road test route and the testing procedures, as set forth in AR 600-55 and this TC. Before administering the test to any examinees, he must practice administering the test to a regular licensed driver qualified on the PLS. This practice administration will help him become acquainted with the test route and testing procedures.
- e. The road test will consist of three scored phases: the preventive maintenance checks and services test, the vehicle control test, and the on-the-road driving test. The driver will be tested on these phases in the order listed and will not move on to the next phase until successfully passing the previous phase. If the driver fails any phase of the test, the entire road test will be terminated at that point and the examiner will annotate the DA Form 6125-R and conduct an after-action review with the driver. This procedure will help to ensure that only safe and proficient drivers get behind the wheel of the PLS.

**2. SETTING UP THE ROAD TEST.** For the road test the driver drives a predetermined route. To set up the test, the examiner must plan the route to be used. Once a route is established (in a given locality) it should be used for all examinees who are to be tested in the PLS. Should it prove necessary to vary the route, care should be taken that the different kinds of route requirements, as well as the number of requirements, remain the same. Every road test route will meet the following requirements (to the extent possible):

- a. An area to conduct PMCS.

- (1) The site should be a flat parking area suitable for heavy vehicles.
- (2) There should be at least 8 feet of open space around the vehicle. This will give the driver room to conduct the inspection and the examiner room to observe the driver's inspection performance.
- (3) The site should be quiet enough that the examiner can hear the driver explain what he is doing during the inspection.
- (4) Avoid using a parking space on a street or any place where traffic is passing close by.

b. A vehicle control test area with the following maneuvers:

- (1) Forward stop (Figure 6-4). Pull vehicle forward through a straight alley and then stop the vehicle so that the frontmost part of the vehicle is within 2 feet of the forward stop line.
- (2) Straight line backing (Figure 6-4). Back the vehicle through a straight alley and then stop the vehicle so that the frontmost part of the vehicle is within 2 feet of the stop line. To straight line back the PLS with trailer, the drawbar must be pinned.
- (3) Right turn (Figure 6-3). Drive the vehicle forward about 30 to 50 feet, and then turn the vehicle right around a cone or other point. Bring the rear tires of the vehicle (truck or trailer) within 18 inches from the cone without touching it.
- (4) Alley dock (Figure 6-5). If testing is conducted with the PLS trailer, the trailer must be uncoupled and this exercise conducted with the PLS truck only. Backing with the trailer is limited to straight line only. Pull the vehicle forward past the alley, keeping the alley entrance on the left. Back in a curved path into the alley without touching the sides, and stop the rear of the vehicle within 2 feet of the stop line at the rear of the alley.

c. On-the-road driving test with the following maneuvers:

- (1) Eight left and eight right turns. Include turns at traffic lights, stop signs, and uncontrolled intersections. The turns should range from easy to somewhat difficult for a heavy vehicle. Get a mixture of types of intersections so that they vary in complexity.
- (2) A straight section of urban business streets. The section should be 1 to 2 miles long with moderate traffic density. It should contain through intersections and intersections with traffic lights. Try to get a section where the driver can make lane changes somewhere along the route. The section should be one that lets the examiner see how the driver copes with traffic in a typical business area.

- (3) Two through intersections and two intersections where a stop has to be made. If possible, these intersections should be included in the urban section.
- (4) Two railway crossings. Try to get at least one uncontrolled crossing. The crossing should have enough sight distance for the examiner to see if the driver makes head search movements when approaching each crossing. The driver's attempt to look left and right down the track will often be the only way to tell if the driver noticed the crossing. If the area does not have any railway crossings, simulate this exercise.
- (5) Two curves, one to the left and one to the right. Try to get curves tight enough to produce noticeable off-tracking.
- (6) A two-lane rural or semirural road. This section should be about 2 miles long. If there is no rural road near the motor pool, an industrial street with few entrances and a higher speed limit is a good substitute. An undeveloped suburban road is another good substitute. In general, use any road that has characteristics similar to a rural road.
- (7) A section of expressway. The section should start with a conventional ramp entrance and end with a conventional ramp exit. The section should be long enough for the PLS to make two lane changes. A section of four-lane highway can be used if there is no expressway available.
- (8) A downgrade. The grade should be steep enough and long enough to require gearing down and braking. A steep short hill is the next best choice if a long grade cannot be found. If the local area does not have any steep grades, simulate this exercise.
- (9) An upgrade. The grade should be steep enough and long enough to require gear changing to maintain speed. A steep short hill is the next best choice if a long grade cannot be found. If it is hard to find steep grades in the local area, use the same grade for both the downgrade and the upgrade.
- (10) A downgrade for stopping. This is a grade where a vehicle can safely stop (or pull off) and park for a minute or so. The grade needs only to be steep enough to cause a vehicle to roll if the driver does not park properly. If the local area does not have any steep grades, simulate this exercise.
- (11) An upgrade for stopping. This is another grade where a vehicle can safely stop and park for a minute or so. If needed, use the same grade as was used for the downgrade stop.
- (12) One underpass or low clearance and one bridge. The underpass should have a posted clearance height. The bridge should have a posted weight limit. If the

local area does not have underpasses or bridges with posted limits, use ones that do not have posted limits. If needed, substitute a bridge for an underpass or an underpass for a bridge. If the local area does not have any low clearances or bridges, look for places that have signs a PLS driver should see. Examples of such signs are "No Commercial Vehicles after 11:00 PM" or "Bridge with 10 Ton Weight Limit in 2 Miles."

d. Route design.

(1) When designing a route, try to include all of the specified maneuvers. If there is not an ideal example for a maneuver, find the closest substitute. Do not drop a maneuver because there is not ideal example of it. The important thing is to have a route that tests the driver in as wide a variety of situations as possible.

(2) There is no minimum length for a route and no minimum amount of time that a route must take. A route is acceptable whenever it has all the specified maneuvers. It is a good idea to have at least two routes available so that there is an alternate route if construction or traffic prevents using the primary route.

### **3. ADMINISTERING THE ROAD TEST.**

a. Preventing accidents.

(1) Road tests should normally NOT be given if road or weather conditions present a hazard such as ice, snow, rain, or blowing dust. The exception is when testing is specifically for driving under such conditions.

(2) The examiner must always watch traffic conditions and warn the examinee of dangers which he may not see. If the driver becomes involved in a dangerous or unlawful moving traffic incident or an accident, terminate the test immediately. The examiner will drive the vehicle back to the start point once on-scene responsibilities are fulfilled.

b. Beginning the road test.

(1) Fill in the driver's name and your (examiner's) name on the front of the Road Test Score Sheet. (Figure 7-1 is a sample completed DA Form 6125-R. Reproducible DA Form 6125-R is located at the back of AR 600-55.) Read the following instructions to the driver at the beginning of the test:

**DURING THE ROAD TEST, I WILL GIVE YOU DIRECTIONS AS WE GO ALONG.**

**I WILL ALWAYS GIVE DIRECTIONS FOR TURNS AND SO ON AS FAR IN ADVANCE AS POSSIBLE.**

**THERE WILL BE NO TRICK DIRECTIONS TO GET YOU TO DO SOMETHING ILLEGAL OR UNSAFE.**

**KEEP IN MIND THAT YOU ARE ALWAYS IN CHARGE OF THE VEHICLE. DON'T FOLLOW A DIRECTION IF IT TURNS OUT AT THE LAST MINUTE TO LEAD TO AN UNSAFE ACT.**

**AS WE GO ALONG, I WILL BE MAKING VARIOUS MARKS ON THE SCORING FORM. WHEN YOU SEE THIS, IT DOESN'T NECESSARILY MEAN YOU HAVE DONE ANYTHING WRONG. IT IS BEST FOR YOU TO CONCENTRATE ON DRIVING AND NOT WORRY ABOUT WHAT I AM DOING.**

**YOUR SCORED TEST BEGINS WITH BEFORE-OPERATIONS PREVENTIVE MAINTENANCE CHECKS AND SERVICES. IF YOU ARE SUCCESSFUL IN THAT PORTION OF THE TEST, YOU WILL PROCEED TO THE VEHICLE CONTROL TEST AND FINALLY TO THE ON-THE-ROAD DRIVING TEST. ARE THERE ANY QUESTIONS?**

ROAD TEST SCORE SHEET				DATE	
For use of this form, see AR 600-55; the proponent agency is OCSA				22 Feb 94	
NAME OF DRIVER <i>O'Brien, Mexie Zip</i>			NAME OF EXAMINER <i>Hall, Rogue S.</i>		
SSAN <i>000-00-0000</i>		SCORE <i>-18</i>	ROUTE <i>Primary</i>		
STOP/START ON GRADE			EXPRESSWAY		
<u>Approach</u>			<u>Merge On</u>		
	Up	Down			
Traffic check . . . . .	0	0	Traffic check . . . . .	0	
Signal On . . . . .	0	0	Signal On . . . . .	0	
Moves to proper lane . . . . .	0	0	Maintains spacing . . . . .	0	
Smooth deceleration . . . . .	0	0	Avoids stopping . . . . .	<input checked="" type="checkbox"/>	
Does not coast to stop . . . . .	0	0	Smooth merge . . . . .	0	
			Cancel signal . . . . .	0	
<u>Stop</u>			<u>Lane Changes</u>		
				Left	Right
Vehicle parallel to curb . . . . .	0	0	Traffic check . . . . .	0	0
Vehicle does not roll . . . . .	0	0	Signal on . . . . .	0	0
Signal off/4-ways on . . . . .	0	0	Adequate spacing . . . . .	0	0
Parking brake on . . . . .	0	0	Smooth lane change . . . . .	0	0
			Cancel signal . . . . .	0	<input checked="" type="checkbox"/>
<u>Resume</u>			<u>Exit</u>		
Traffic check . . . . .	0	0	Traffic check . . . . .	0	
4-ways off/signal on . . . . .	0	0	Signal on . . . . .	0	
Release parking brake . . . . .	0	0	Smooth merge to exit lane . . . . .	<input checked="" type="checkbox"/>	
Did not stall engine . . . . .	0	0	Decelerate in exit lane . . . . .	<input checked="" type="checkbox"/>	
Traffic check . . . . .	0	0	Adequate spacing . . . . .	0	
Accelerate to traffic flow . . . . .	0	0	Correct ramp speed . . . . .	0	
			Cancel signal . . . . .	0	
SEARCH . . . . .	0	0	SEARCH . . . . .	0	
DIRECTION . . . . .	0	0	DIRECTION . . . . .	0	
SPEED . . . . .	0	0	SPEED . . . . .	0	
No errors . . . . .	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	No errors . . . . .	-	
DRIVING UP GRADE			GENERAL DRIVING BEHAVIOR		
In proper gear . . . . .	<input checked="" type="checkbox"/>		Use clutch properly (to shift, double clutched, didn't ride) . . . . .	0	
Stays in right lane . . . . .	0		Used gears properly (not over-rev/lug engine, clash gears, coast) . . . . .	0	
Uses 4-ways if slow . . . . .	0		Used brakes properly (no hard braking, no riding or pumping brake) . . . . .	0	
Traffic check . . . . .	0		Proper steering (both hands on wheel, not over/under steer) . . . . .	0	
SEARCH . . . . .	0		Obedyed all traffic signs and signals . . . . .	0	
DIRECTION . . . . .	0		Drove without an accident . . . . .	0	
SPEED . . . . .	0		Never put vehicle over sidewalks, lane markings, stop lines, etc. . . . .	0	
No errors . . . . .	-		Examiner was never thrown to left, right, or forward . . . . .	0	
DRIVING DOWN GRADE			Driver was never forced to take evasive action . . . . .		
Clear brakes . . . . .	0		Wore seat belt . . . . .	0	
In proper gear . . . . .	0		Yielded right of way to pedestrians . . . . .	0	
Steady braking on grade . . . . .	0		Yielded right of way to other vehicles, as appropriate . . . . .	0	
Does not ride clutch . . . . .	0		No errors . . . . .	-	
Maintain steady speed . . . . .	0				
Traffic check . . . . .	0		NOTES	<i>Before-operation PMCS satisfactory. Vehicle control test satisfactory.</i>	
SEARCH . . . . .	0				
DIRECTION . . . . .	0				
SPEED . . . . .	0				
No errors . . . . .	<input checked="" type="checkbox"/>				

Figure 7-1. Road Test Score Sheet (Front).

<p><b>LEFT TURNS</b></p> <p style="text-align: center;"><u>Approach</u></p> <table style="width:100%; border-collapse: collapse;"> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td></td></tr> <tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>Traffic check.....</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>Signal on.....</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>Smooth deceleration...</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>Did not coast to start of turn.....</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>Correct lane to begin turn.....</td></tr> </table> <p style="text-align: center;"><u>If Vehicle Stops</u></p> <table style="width:100%; border-collapse: collapse;"> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td></td></tr> <tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>Gap to vehicle in front..</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>Not over stop line.....</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>Came to full stop.....</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>Wheels straight ahead..</td></tr> <tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>Stop was necessary...</td></tr> </table> <p style="text-align: center;"><u>Turning</u></p> <table style="width:100%; 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REVERSE OF DA FORM 6125-R, AUG 93

Figure 7-1. Road Test Score Sheet (Back).



(2) The road test actually begins when the driver starts his before-operations preventive maintenance checks and services. If the driver performs the PMCS to appropriate standards, the examiner will annotate in the Notes section of the DA Form 6125-R "Before-operations PMCS satisfactory." If he does not perform PMCS to the examiner's satisfaction, the examiner will stop the road test at that point and fail the driver. In this situation, the examiner will annotate "Before-operations PMCS unsatisfactory" in the Notes section, list specific deficiencies if possible, and refer the driver for further training. The examiner will follow the same procedures for grading during- and after-operations PMCS.

(3) If the driver successfully completes the before- operations PMCS, he will proceed to the vehicle control test. It is important to ensure that the driver is proficient in basic vehicle control skills before taking him on the road with other traffic.

(a) Upon arrival at the vehicle control test site, give the driver an overview of all four exercises (forward stop, straight line backing, right turn, alley dock). Use a diagram of the site to show the driver what to do, and explain he will get detailed instructions for each exercise as it comes up. When he is ready, the driver gets into the vehicle and proceeds to the first exercise for instructions.

(b) The examiner will evaluate the exercises from the ground and observe the driver's ability to control the vehicle during each maneuver. If the driver demonstrates satisfactory vehicle control skills, the examiner will indicate in the Notes section "Vehicle control test satisfactory." If the driver is unable to satisfactorily negotiate the course, the examiner will stop the road test and fail the driver at that point. The examiner will indicate in the Notes section "Vehicle control test unsatisfactory," indicate specific weaknesses if possible, and refer the driver for further training.

(4) If the driver satisfactorily completes the vehicle control test, he will proceed to the driving portion of the road test. When the driver is ready, get into the vehicle with the driver and start giving directions for following the road test route. Give the directions in the form: At the (location), make (maneuver). For example, "At the next intersection, turn right," or "At the stop sign, turn left."

(5) If necessary, give combined directions. For example, "Immediately after you complete your right turn, you will have to turn left into that road over there."

(6) Avoid using commercial signs or buildings as landmarks for directions unless there is no alternative. Do not assume that the driver is familiar enough with the area that he knows such landmarks.

(7) Give directions well before the maneuver is to be performed. Always give a direction at a point where the driver can see where he will do the maneuver.

However, give the directions close enough to the location so the driver can be sure of where to do the maneuver. For example, do not tell the driver to turn at the next intersection if there is another intersection before the one where you want the driver to turn.

(8) In addition to directions for getting the driver around the route, there are some directions to give for the expressway, urban straight, and rural sections.

(a) At the beginning of the expressway section say, "We will be driving along this expressway for about (two or however many) miles. When it is safe to do so, make a lane change to the left. Then when it is safe to do so, make a lane change to the right."

(b) At the beginning of the urban straight section, say, "We will be driving along this street for about (two or however many) miles. When it is safe to do so, make a lane change to the left. Then when it is safe to do so, make a lane change back to the right. When we get near the end of this section, I will tell you what to do next."

(c) At the beginning of the rural section, say, "We will be driving along this road for about (two or however many) miles. When we get near the end, I will tell you what to do next."

(9) In general, give all directions in a way that avoids distracting the driver. Also, avoid unnecessary conversation.

#### **4. SCORING THE ROAD TEST.**

a. The scoring form for the road test is DA Form 6125-R, a two-sided single sheet. (Figure 7-1 is a sample completed DA Form 6125-R. Reproducible DA Form 6125-R is located at the back of AR 600-55). The main headings in the boxes give the names of the different maneuvers. Each maneuver has a list of driver behaviors to be scored. Beside each behavior is a letter "O" used for marking the driver for the behavior. In cases where a maneuver is done several times on the route, there is a column of O's for each time the maneuver appears on the route.

b. To score a behavior, draw a stroke through the O whenever the driver's performance is unsatisfactory. Make no mark if the driver performs the behavior correctly. For each maneuver, there is a "No Errors" category at the bottom of the list of behaviors. There is a space beside "No Errors" where you can put a check mark if the driver is satisfactory on all behaviors. These check marks will show that you scored the driver even if the driver made no errors.

c. The only other marking that needs to be done on the test is to indicate maneuvers that were not done. A maneuver might not be done because you missed it for some reason or because there was no opportunity for it on the route. To show that a maneuver was not

performed, draw a vertical line down through the entire column of O's used for marking that maneuver.

d. To score the maneuver, follow these steps:

- (1) Find the maneuver on the score sheet and be ready to mark it.
- (2) Check the driver and the traffic. When the driver can pay attention, give the directions for the next maneuver.
- (3) Watch the driver perform the maneuver.
- (4) Mark the score sheet.

e. Mark the driver's score sheet immediately after each maneuver. Do not try to remember what the driver does and mark the sheet later on in the route or back at the office.

f. The following paragraphs describe how to mark the score sheet for each type of maneuver:

(1) Stop/start on a grade. There are two columns of O's to mark: one for the upgrade stop and one for the downgrade stop. The columns are labeled "Up" and "Down." The behaviors are organized in three groups: approach, stop, and resume. Score each group separately as the driver does them. Score the approach as soon as the driver comes to a stop. Then check the stop behaviors and score them before telling the driver to continue. After the driver pulls away, score the rest of the behaviors.

(2) Expressway. Score the expressway section in three phases: merge on, lane changes, and exit. Mark each phase as the driver completes it. There are two columns of O's for the lane changes. Mark the one labeled "Left" for the lane change to the left. Mark the one labeled "Right" for the lane change to the right.

(3) Driving upgrade and driving downgrade. Driving up a grade and driving down a grade are scored separately. Observe how the driver handles the grade, and score the behaviors listed. It is especially important that the driver use the proper gear and appropriate signals and speed on grades because these can affect other traffic.

(4) General driving behavior. General behaviors such as gear changing should be marked at the end of the test. Specific actions such as traffic violations can be marked when they happen. There is also space to write notes. Use this space to make notes of things that do not fit into any scoring categories or to record any unusual events during the test. Remember to draw a vertical line through behaviors that are not graded, such as use of clutch when grading on the PLS.

(5) Turns. There are eight columns of O's on the left of the box; eight columns of O's on the right (Figure 7-1). The columns on the left are for left turns. The ones on the right are for right turns. The columns are numbered according to the order in which the turns occur on the route. Column 1 of the left turn columns is for the first left turn on the route, Column 2 is for the second turn, and so on. The first few times an examiner uses a route, it is a good idea to write the names of the locations of the turns at the tops of the columns. This will help keep track of the turns until the route is completely memorized.

(a) Mark a turn in four steps: "Approach," "If Vehicle Stops," "Turning," and "Completes Turn." Mark the "If Vehicle Stops" section only if the driver has to make a legal stop before starting the turn, such as at a traffic light, a stop sign, or yield sign. Do not mark this section if the driver stops for some other reason, such as being blocked by other vehicles part way around the turn.

(b) It is important to observe whether the driver is aware of his vehicle position throughout the turn, especially for the PLS truck when towing the PLS trailer, because it can affect other traffic. If there is more than one left turn lane, the driver should start his turn from the rightmost turn lane.

(6) Railway crossing. This section has three columns for scoring. The ones labeled "1" and "2" are for actual railway crossings on the route. The one labeled "S" is for the simulated crossing. Vehicles hauling hazardous cargo are required by law to stop between 15 and 50 feet from the nearest rail and take whatever actions are necessary to look and listen for trains; for example, open window.

(7) Bridge/underpass. There is one space for marking a bridge and one for marking an underpass.

(8) Curves. There are two columns for scoring curves. The one labeled "Left" is for a curve that turns to the left. The column labeled "Right" is for a curve that turns to the right. Drivers should reduce to a safe speed before entering the curve, then maintain that speed during the curve.

(9) Urban/rural straight sections. This section has two columns. Use the one labeled "Urban" for the urban section. Use the one labeled "Rural" for the rural section. In most cases, you will mark the driver when he gets to the end of the section. However, if you see the driver make an error while driving along the section, such as driving in the wrong lane, mark the error as soon as you see it. The driver should drive in the right lane if it is clear or in the center lane if the right lane is blocked or has a large volume of merging traffic.

(10) Lane changes. The column labeled "Left" is for a lane change to the left. The column labeled "Right" is for a lane change to the right. The lane changes

are part of the urban section (in addition to the expressway section). Mark each lane change as soon as the driver makes it.

(11) Intersections. There are four columns for marking the driver on intersections. Columns 1 and 2 are for intersections where the driver has to make a legal stop; for example, at a traffic light or a stop sign. Columns 3 and 4 are for marking intersections that the driver goes straight through. There are two phases to marking a stop intersection: stopping and driving through. For a stop intersection, driving through items cover the time from when the driver starts off from the stop to when the driver resumes normal traffic speed. For a driving through intersection, you only mark columns 3 and 4. The urban straight section normally has more than enough intersections to score. Start scoring the intersections as soon as the examinee begins driving along the section. Score stop and through intersections in whatever order they come up in. It does not matter if an intersection with traffic lights is sometimes scored as a stop intersection and sometimes scored as a through intersection.

(12) Search, direction, and speed. Most of the grading blocks discussed above have areas for grading search, direction, and speed in addition to the other behaviors listed. These are general categories which the examiner should be monitoring through each exercise.

(a) Search. At all times during the road test, the driver must be constantly checking the front, sides, and rear of his vehicle for traffic, pedestrians, obstructions, emergencies, and so forth. During each maneuver, the examiner must observe whether the driver is checking around him and yields right of way to other road users when appropriate.

(b) Direction. The driver must be aware of the position of his vehicle at all times. During each maneuver, the examiner must observe the vehicle position in the lane, whether the vehicle is in the correct lane, and whether the driver maintains the appropriate distance from traffic, stop lines, and so on.

(c) Speed. The driver must be aware not only of his speed in comparison with the speed limit, but how his speed affects other traffic. During each maneuver, the examiner must watch to see that the driver maintains posted speed limits, accelerates and decelerates smoothly, uses the proper gear for his speed, and blends in with the traffic flow. The examiner must also observe that the driver does not lug or race the engine, coast the vehicle, change gears or brake on tracks or in the middle of intersections, stall the engine, and so forth.

(13) Driver errors at nonmarking locations. Since the examiner scores at predetermined locations, there will be occasions when the driver makes an error at some place other than one of these locations. Score the error in the General

Driving Behavior section of the form if appropriate. Otherwise, ignore the error. If the route has a lot of places where the examiner cannot score the driver, the route is probably inefficient. If the driver makes errors in places where the examiner does not score, the driver will likely make errors in places where scoring can be done. Do not decide where to score a driver based on when the driver makes an error. Stick to scoring at the predetermined locations.

## 5. COMPUTING THE DRIVER'S SCORE.

a. Road test score sheet. At the end of the test, make sure all driver and examiner information is completed. Check that everything is marked clearly and correctly. Be sure to cross out maneuvers that were not done on the test. Review the scored maneuvers for repeated errors and score errors in the general driving behavior. Carefully add the number of marked letter O's and write the total in the "Score" space on the front of the form. A passing score is 25 errors or less. The driver fails the road test if he makes 26 or more errors (errors accumulated on the vehicle control test DO NOT count toward the score on the driving portion of the road test). If the score is close to a failing score, double-check that you have added correctly.

b. Failures. Annotate reason for failure in the Notes section; for example, "Examinee exhibited undue nervousness." The following are some reasons for failures:

- (1) Any unsafe driving act.
- (2) Failure to properly perform PMCS.
- (3) Not knowing location and function of gauges and controls.
- (4) Unsatisfactory performance on vehicle control test.
- (5) Undue nervousness.
- (6) Failure to achieve minimum passing score.

**NOTE:** If the individual scores 25 errors or less, but the examiner feels that the individual needs additional training, the examiner has the right not to issue a license.

c. After-action review (AAR). Whether the driver passes or fails, the examiner will review the results of the road test with him and bring to his attention any weaknesses that require further practice or training. If the driver failed, tell him what caused him to fail. Advise him that an Army Standard OF 346 cannot be issued and he will have to retake the entire performance test at a later date. Pass or fail, the results must be recorded on the DA 6125-R.

**INTERMEDIATE TRAINING OBJECTIVE 4**

**PERFORMANCE TEST**

**OFF ROAD DRIVING**

**NAME** \_\_\_\_\_ **RANK** \_\_\_\_\_ **UNIT** \_\_\_\_\_

**EVALUATOR** \_\_\_\_\_ **DATE** \_\_\_\_\_

<u><b>STEPS</b></u>	<b>GO</b>	<b>NO-GO</b>
1. PINS MUD FLAPS BEFORE OPERATING OFF-ROAD.		
2. PLACES THE CTIS ON/OFF SWITCH TO THE ON POSITION.		
3. PRESETS THE CTIS SELECTOR SWITCH TO THE CROSS-COUNTRY POSITION FOR OFF-ROAD DRIVING.		
4. PRESSES AND HOLDS THE CTIS START BUTTON TO ACTIVATE THE CTIS.		
5. ANTICIPATES TERRAIN AND, BEFORE NEGOTIATING, TAKES POSITIVE ACTION TO MATCH CTIS, DRIVE LINE LOCKUP, ENGINE BRAKE SELECTION, AND GEAR SELECTION TO TERRAIN FEATURES.		
6. ALLOWS CTIS AMPLE TIME TO ADJUST BEFORE ENCOUNTERING ADVERSE TERRAIN.		
7. DOES NOT EXCEED SPEED LIMIT OF CHOSEN CTIS SETTING.		
8. CHECKS CTIS FOR PROPER OPERATION AND SETTING.		
9. CHECKS OPERATION OF TWO-SPEED TRANSFER CASE SHIFTER.		
10. DOES NOT SHIFT INTO ANY LOWER GEAR THAN IS NECESSARY TO MAINTAIN HEADWAY.		
11. DOES NOT SHIFT THE TRANSMISSION INTO FIRST GEAR OR THE TRANSFER CASE WHILE THE TRUCK IS MOVING.		
12. CHECKS FOR OBSTRUCTIONS/CLEARANCES AND CHOOSES BEST ROUTE OF TRAVEL TO AVOID OBSTACLES.		
13. MAINTAINS CONTROL OF VEHICLE.		
14. ATTEMPTS TO KEEP THE VEHICLE'S WHEELS FROM SPINNING. IF THE WHEELS START TO SPIN, STOPS THE TRUCK AND CHANGES THE CTIS SETTING/DRIVELINE LOCKUP.		

**STEPS**

- 15. DRIVES SLOWLY ENOUGH TO PREVENT TRUCK DAMAGE, LOOSE OR SHIFTING CARGO, AND INJURY TO VEHICLE OCCUPANTS.
- 16. MANUALLY DOWNSHIFTS/UPSHIFTS TRANSMISSION PROPERLY WHEN NECESSARY, SUCH AS ON GRADES.
- 17. CHECKS OPERATION OF JACOBS ENGINE BRAKE SYSTEM ON GRADES.
- 18. OPERATES TRANSFER CASE LOCKUP PROPERLY.
- 19. IF CHANGES FROM EMERGENCY TO ANY OTHER CTIS SETTING; RELIEVES DRIVE LINE LOADING.
- 20. ASCENDS/DESCENDS HILLS IN A STRAIGHT APPROACH.
- 21. CROSSES RAVINES AND DITCHES PROPERLY.
- 22. MANEUVERS AROUND OBSTACLES.
- 23. DOES NOT EXCEED FORDING DEPTH/SPEED.

GO	NO-GO



**INTERMEDIATE TRAINING OBJECTIVE 5**

**PERFORMANCE TEST**

**COUPLE THE PLS TRAILER TO THE PLS TRUCK**

**NAME** \_\_\_\_\_ **RANK** \_\_\_\_\_ **UNIT** \_\_\_\_\_

**EVALUATOR** \_\_\_\_\_ **DATE** \_\_\_\_\_

<u>STEPS</u>	<b>GO</b>	<b>NO-GO</b>
1. POSITIONS THE TRUCK DIRECTLY IN FRONT OF THE TRAILER, WITH SUFFICIENT SPACE TO PERFORM THE COUPLING.		
2. CHECKS THAT CHOCK BLOCKS ARE PROPERLY IN PLACE AT TRAILER WHEELS.		
3. ENSURES THAT TRAILER PARKING BRAKE KNOB ON FRONT OF TRAILER IS PULLED OUT.		
4. IF NEEDED, EXTENDS OR RETRACTS THE TRAILER DRAWBAR. IT MAY BE NECESSARY TO CHARGE THE TRAILER AIR BAG WITH AIR.		
5. LOCKS IN THE COUPLER ROTATION LOCKPIN ON THE TRUCK COUPLER.		
6. OPENS THE TRUCK COUPLER JAW.		
7. RAISES THE DRAWBAR TO THE LEVEL OF THE TRUCK COUPLER. IF NOT DONE DURING STEP 4, IT MAY BE NECESSARY TO CHARGE THE TRAILER AIR BAG WITH AIR.		
8. STARTS VEHICLE AND BACKS UP SLOWLY UNTIL THE DRAWBAR MAKES CONTACT WITH THE COUPLER.		
9. TESTS THE COUPLING BY NUDGING THE VEHICLE FORWARD SLIGHTLY; THEN SHUTS OFF THE ENGINE.		
10. RELEASES AIR PRESSURE ON THE DRAWBAR.		
11. CLOSES THE LOCKING GATE ON THE TRUCK COUPLER		
12. UNLOCKS THE ROTATION LOCKPIN AND CHECKS THE TRUCK COUPLER FOR ROTATION.		
13. CONNECTS THE LOAD LOCK STATUS LINE TO THE TRUCK RECEPTACLE.		
14. CONNECTS THE APPROPRIATE ELECTRICAL CABLE TO THE TRAILER AND TRUCK.		

**STEPS**

15. INSTALLS THE SERVICE AIR GLADHAND TO THE SERVICE AIR COUPLER AND THE EMERGENCY AIR GLADHAND TO ITS AIR COUPLING
16. ATTACHES THE TWO SAFETY CHAINS FROM THE TRAILER TO THE VEHICLE CLEVISES.
17. REMOVES AND STOWS THE TRAILER WHEEL CHOCKS.
18. ENTERS THE CAB AND STARTS THE VEHICLE. PUSHES IN ON THE TRAILER AIR SUPPLY CONTROL KNOB AND CHECKS THE OPERATION OF THE TRAILER BRAKES AND LIGHTS.
19. PERFORMS THE REMAINING BEFORE-OPERATION PMCS ON THE TRAILER.

<b>GO</b>	<b>NO-GO</b>

**INTERMEDIATE TRAINING OBJECTIVE 5**

**PERFORMANCE TEST**

**UNCOUPLE THE PLS TRAILER FROM THE PLS TRUCK**

NAME \_\_\_\_\_ RANK \_\_\_\_\_ UNIT \_\_\_\_\_

EVALUATOR \_\_\_\_\_ DATE \_\_\_\_\_

<u>STEPS</u>	GO	NO-GO
1. SHIFTS THE TRANSMISSION RANGE SELECTOR INTO NEUTRAL, APPLIES THE PARKING BRAKES, AND SHUTS OFF THE ENGINE.		
2. CHOCKS TRAILER WHEELS.		
3. UNHOOKS THE TWO SAFETY CHAINS FROM THE TRUCK AND ATTACHES THEM TO THE STOWAGE RINGS ON THE TRAILER DRAWBAR.		
4. REMOVES THE EMERGENCY AND SERVICE AIR GLADHANDS FROM THE AIR COUPLERS AND STOWS ON THE TRAILER GLADHAND BRACKETS.		
5. INSTALLS THE TWO DUMMY COVERS ON THE AIR COUPLINGS.		
6. REMOVES THE ELECTRICAL CABLE FROM THE TRUCK AND TRAILER, CLOSES RECEPTACLE COVER ON THE TRUCK, INSTALLS RECEPTACLE COVER ON TRAILER, AND PLACES CABLE IN THE STOWAGE BOX.		
7. REMOVES THE LOAD LOCK STATUS LINE, CLOSES THE RECEPTACLE COVERS, AND PLACES ON STOWAGE HOOK ON TRAILER.		
8. LOCKS ROTATION LOCKPIN AND CHECKS COUPLER TO ENSURE IT WILL NOT ROTATE.		
9. OPENS THE COUPLER JAW.		
10. APPLIES AIR PRESSURE TO HOLD THE DRAWBAR FROM FALLING WHEN RELEASED FROM THE TRUCK COUPLER.		
11. STARTS THE VEHICLE AND SLOWLY PULLS FORWARD UNTIL THE DRAWBAR RELEASES FROM THE COUPLER.		
12. SHIFTS THE TRANSMISSION INTO NEUTRAL, APPLIES THE PARKING BRAKES, AND SHUTS OFF THE ENGINE.		

**STEPS**

- 13. RELEASES AIR PRESSURE AND ALLOWS DRAWBAR TO BE LOWERED FULLY TO THE GROUND.
- 14. CLOSES THE TRUCK COUPLER JAW AND THE LOCKING GATE ON THE COUPLER.
- 15. PERFORMS AFTER-OPERATION PMCS ON THE TRAILER.

**GO NO-GO**


**CHAPTER 8****LESSON OUTLINES FOR MATERIAL-HANDLING CRANE AND SELF-RECOVERY WINCH OPERATIONS****LESSON TITLE:** OPERATE AN M1074 PLS CRANE**TASK NUMBER:** 551-721-1407 (Operate an M1074 PLS Crane) and 551-721-1352 (Perform Vehicle Preventive Maintenance Checks and Services [PMCS])**A. TRAINING OBJECTIVE.****TASK:** Operate and perform operator preventive maintenance checks and services (PMCS) on the M1074 PLS crane.**CONDITIONS** Given instruction, a suitable training area, an M1074 PLS truck with BII, an M1077 flatrack, several palletized loads of differing weights, DA Form 2404, pencil, TM 9-2320-364-10, equipment records folder, rags, and a requirement to inspect the truck crane components according to the PMCS tables in TM 9-2320-364-10 and to operate the crane using both manual and remote controls; prepare the crane for use, set up the outriggers, raise the boom to its operating position, rotate and telescope the boom, load/off-load palletized cargo to/from a flatrack, shut down the crane, and stow the outriggers.**STANDARD:** Without causing damage to the truck and flatrack or injury to personnel, operate the crane in the correct sequence according to TM 9-2320-364-10. Correct all faults within the operator's level of maintenance, and record all others legibly on DA Form 2404. If no faults are found, make necessary entries on DA Form 2404. Students will be graded on a Go/No-Go basis. See enclosed training evaluation checklist.**B. INTERMEDIATE TRAINING.****Intermediate Training Objective 1****TASK:** Operate the crane on the M1074 PLS truck.**CONDITIONS:** Given instruction, a suitable training area, an M1074 PLS truck with BII, an M1077 flatrack, several palletized loads of differing weights, and a requirement to operate the crane using both manual and remote controls; prepare the crane for use, set up the outriggers, raise the boom to its operating position, rotate and telescope the boom, load/off-load palletized cargo to/from a flatrack, shut down the crane, and stow the outriggers.

**STANDARD:** Without causing damage to the truck and flatrack or injury to personnel, operate the crane in the correct sequence according to TM 9-2320-364-10. Students will be graded on a Go/No-Go basis.

### **Intermediate Training Objective 2**

**TASK:** Perform operator preventive maintenance checks and services (PMCS) on the M1074 PLS crane.

**CONDITIONS:** Given instruction, DA Form 2404, pencil, TM 9-2320-364-10, equipment records folder, rags, an M1074 PLS truck with BII, and a requirement to inspect the truck crane components according to the PMCS tables in TM 9-2320-364-10.

**STANDARD:** Correct all faults within the operator's level of maintenance, and record all others legibly on DA Form 2404. If no faults are found, make necessary entries on DA Form 2404.

### **C. ADMINISTRATIVE INSTRUCTIONS.**

1. Training time: As scheduled.
2. Training location: Classroom and training area as scheduled.
3. Training type: Conference, demonstration, and practical exercise.
4. Students: Scheduled personnel.
5. Principal and assistant instructors required: One primary instructor for the conference and one assistant instructor for each two students for the demonstration and practical exercise.
6. Training aids and equipment: Television, VCR, and videotape TVT 55-36 (PIN: 710046DA), Part 3, "PLS Crane Operations." Hearing protection and work gloves are required for all personnel. DA Form 2404, pencil, rags, TM 9-2320-364-10, equipment records folder, an M1074 PLS truck with BII, an M1077 flatrack, and several palletized loads of differing weights for every two students.
7. References: AR 385-55, DA Pamphlet 738-750, and TM 9-2320-364-10.

### **D. SEQUENCE OF ACTIVITY.**

1. Introduction:
  - a. Interest device.
  - b. Tie-in.

c. Lesson objective (paragraph A).

d. Procedures:

- (1) Explanation and demonstration.
- (2) Practical exercise.
- (3) Summary.

2. Explanation and demonstration:

<b>NOTE</b>	The classroom must be near the training area where crane operations are to be practiced. This allows the student to view the videotape and put into practical application these operational procedures with a minimum loss of learned skills. Explain safety precautions and warnings, followed by the videotape, and then demonstrate PMCS, loading, and off-loading. PMCS on the crane is performed in conjunction with monthly crane operation.
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a. Explain all safety precautions for this exercise and review warnings. Attention should be drawn to all warnings in vehicle operator's manual with particular attention given the warnings and note below.

<b>WARNING</b>	
Do not operate crane unless outriggers are set up. Vehicle could turn over causing serious injury or death.	

<b>NOTE</b>	If outrigger pads do not stay in firm contact with ground, crane functions will not operate. During operation, if controls do not work, check outriggers. Outriggers must take some load off the truck, even if outrigger pads sink into the ground.
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<b>WARNING</b>	
Do not raise vehicle tires off ground with outrigger jack cylinders. Vehicle could roll causing serious injury or death.	

<b>WARNING</b>	
Keep boom clear of all electrical lines and other obstacles while operating crane. Serious injury or death could result upon contact.	

<b>WARNING</b>	
Be sure that area is clear of personnel before moving swing control lever. Boom should be	

swung slowly enough so crane operator has complete control. If operator cannot see load during operation, operate crane from remote control unit. Failure to control the boom could cause serious injury or death.

**WARNING**

Operator must keep control of load at all times. If necessary, attach cargo tie-downs to load for use as a control tether. Failure to control load while it is moving could cause serious injury or death. Make sure remote control/emergency stop/on/off power switch is in off position and switch guard closed before connecting remote control unit. Crane moving out of control could cause serious injury or death.

- b. Show videotape TVT 55-36, Part 3, "PLS Crane Operations."
- c. Demonstrate crane PMCS and loading/off-loading the load from a flatrack using PLS crane with both manual and remote controls.

<b>NOTE</b>	The flatrack must be unloaded from the truck using the LHS and the truck positioned so that all loading and off-loading can be accomplished without further moving the truck. This is the only safe method to load and off-load the flatrack. Do not try to load or off-load with a flatrack on the truck.
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3. Practical exercise:

- a. Assign students to vehicles and crane operation area. Issue work gloves, TM 9-2320-364-10, pencils, DA Form 2404, and equipment records folder. Tell students where rags are located.
- b. Students practice operating the crane to load/off-load palletized cargo to/from the flatrack. PMCS of the crane is also performed at this time.

<b>NOTE</b>	Do not allow the students to perform any unsafe acts. Crane operations must be closely supervised because of the potential for injury or death.
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4. Evaluate: Check each student's performance of crane operations to include PMCS.

5. Summary:

- a. Recap main points.
- b. Allow for questions.
- c. Clarify questions.
- d. Give closing statement.



6. Retraining: Retrain No-Gos and slow learners. All students must receive a Go in all areas of the attached training evaluation checklist.

#### **E. SAFETY RESTRICTIONS.**

1. Ensure that all chock blocks are in place when PLS trucks are parked or maintenance is to be performed.

2. Ensure the transmission is in neutral, the parking brake is set, and the engine is shut off before leaving the truck, when the truck is parked, or maintenance is being performed.

3. Ensure students remove all watches, jewelry, and identification tags before working in or around the PLS truck.

4. Ensure all personnel pay particular attention to the cautions and warnings listed in the operator's manuals.

5. Ensure ground guide(s) are used when backing.

6. Ensure all personnel wear hearing protection when working in or around a running PLS truck.

7. Ensure all occupants wear seat belts while the truck is in motion.

8. Ensure the driver and ground guides know and understand the hand and arm signals as outlined in FM 21-305.

9. Ensure all backing is conducted at a speed of 5 MPH or less.

10. Ensure personnel maintain at least three points of contact to mount or dismount the PLS truck (to include performing PMCS).

11. Use the PLS ladder when performing maintenance. Install the two hooks on the ladder in the holes located on top of the fender before use. Using the ladder for other applications could result in serious injury to personnel.

12. Ensure all personnel are clear of truck before engine start is attempted. Operator must visually check to see that all areas of the truck are clear of personnel before attempting to start the engine. Failure to do so could result in serious injury or death to personnel.

13. Always place transmission in neutral and set parking brake before operating crane.

14. Always wear heavy work gloves when handling cable. Never let cable run through your hands. A frayed cable may cut you severely.

15. Position the truck on level ground if possible. If the ground is not level, the outriggers can be used to level the truck from side to side on up to a 7 degree side slope. If outrigger pads do not stay in firm contact with the ground, crane functions will not operate.
16. Be careful when handling outrigger pads. Sharp edges can injure hands.
17. Always use outrigger control valve on the same side of the truck as the outrigger being extended or serious personal injury or death may result.
18. Keep hands and feet away from outrigger jack cylinders and outrigger pads while operating levers to avoid injury.
19. Outrigger cylinders must be extended to remove enough weight from the suspension so that the tires do not bulge, or truck could roll over, causing serious injury or death.
20. Do not operate crane unless both outriggers are set up. Truck could turn over causing serious injury or death.
21. Do not raise truck tires off ground with outrigger jack cylinders. Truck could roll causing serious injury or death.
22. Keep boom clear of all electrical lines and other obstacles while operating crane. Serious injury or death could result upon contact.
23. Operator should be stationed to be able to see load at all times during crane operation. Operate crane from left-hand or right-hand remote control station if load is not visible from main crane control panel. Failure to control boom and load could cause serious injury or death.
24. Operator must keep control of load at all times. If necessary, attach cargo tie-downs to load for use as a control tether. Failure to control load could cause serious injury or death.
25. Be sure area is clear of personnel before moving swing control lever. Boom should be swung slow enough so crane operator has complete control. If operator cannot see load during operation, operate crane from remote control unit. Failure to control boom could cause serious injury or death.
26. When operating two control levers at the same time, if one function is held wide open and "dead-headed," that is, cylinder is fully extended, and another function is operated, the second function can operate at a greater than normal speed, which can cause loss of control and serious injury or death to personnel.
27. Be sure there are at least two wraps of cable on hoist drum at all times. Serious injury or death could result if cable comes off hoist drum while lifting load.

28. Make sure remote control/emergency stop/on/off power switch is in the off position before connecting remote control unit. Failure to control crane could cause serious injury or death.

29. If electrical power fails during crane operation, move switch on remote control unit to shutdown position. Serious injury could result from uncontrolled moving parts.

**F. ADDITIONAL COMMENTS AND INFORMATION.** Recommended instructional time is 4 hours (.5 conference, .5 demonstration, and 3 hours practical exercise [PMCS is integrated]).









**STEPS**

- 60. STOWS OUTRIGGER PADS ON CRANE SUBFRAME STUDS.
- 61. INSTALLS SAFETY PINS THROUGH CRANE SUBFRAME STUDS.
- 62. PUSHES ENGINE HIGH IDLE LATCH SWITCH TO UNLATCH POSITION AND RELEASES.
- 63. TURNS CRANE MAIN POWER SWITCH TO OFF POSITION.
- 64. SETS HYDRAULIC SELECTION SWITCH TO OFF POSITION.
- 65. CONTINUES WITH MISSION.

<b>GO</b>	<b>NO-GO</b>



**LESSON TITLE:** PERFORM SELF-RECOVERY ON A PLS TRUCK USING THE WINCH

**TASK NUMBER:** 551-721-1390 (Perform Self-Recovery on a HEMTT Using a Winch) and 551-721-1352 (Perform Vehicle Preventive Maintenance Checks and Services [PMCS])

#### A. TRAINING OBJECTIVE.

**TASK:** Perform self recovery on a PLS truck using the winch and operator preventive maintenance checks and services (PMCS) on the winch.

**CONDITIONS** Given instruction, suitable training area, suitable anchor, a PLS truck with operational winch and BII, DA Form 2404, pencil, TM 9-2320-364-10, equipment records folder, rags, and a requirement to inspect the truck winch according to the PMCS tables in TM 9-2320-364-10, and a requirement to and recover the truck.

**STANDARD:** Recover the truck in the correct sequence so that it is free to move under its own power without causing damage to the vehicle or injury to personnel. Correct all faults within the operator's level of maintenance, and record all others legibly on DA Form 2404. If no faults are found, make necessary entries on DA Form 2404. You must perform this task as both the driver and assistant driver. Students will be graded on a Go/No-Go basis. See enclosed training evaluation checklist.

#### B. INTERMEDIATE TRAINING.

##### Intermediate Training Objective 1

**TASK:** Perform self-recovery on a PLS truck using the winch.

**CONDITIONS:** Given instruction, suitable training area, suitable anchor, a PLS truck with operational winch and BII, and a requirement to recover the truck.

**STANDARD:** Recover the truck in the correct sequence so that it is free to move under its own power without causing damage to the vehicle or injury to personnel. You must perform this task as both the driver and assistant driver. Students will be graded on a Go/No-Go basis. See enclosed training evaluation checklist.

##### Intermediate Training Objective 2

**TASK:** Perform operator preventive maintenance checks and services

(PMCS) on the PLS winch.

**CONDITIONS:** Given instruction, DA Form 2404, pencil, TM 9-2320-364-10, equipment records folder, rags, a PLS truck with BII, and a requirement to inspect the truck winch according to the PMCS tables in TM 9-2320-364-10.

**STANDARD:** Correct all faults within the operator's level of maintenance, and record all others legibly on DA Form 2404. If no faults are found, make necessary entries on DA Form 2404.

### C. ADMINISTRATIVE INSTRUCTIONS.

1. Training time: As scheduled.
2. Training location: Classroom and training area as scheduled.
3. Training type: Conference, demonstration, and practical exercise.
4. Students: Scheduled personnel.
5. Principal and assistant instructors required: One primary instructor for the conference, one assistant instructor for each six students for the demonstration, and one assistant instructor for each two students for the practical exercise.
6. Training aids and equipment: Television, VCR, and videotape TVT 55-37 (PIN: 710336DA), Part 5, "PLS Winch Operations." Hearing protection and work gloves are required for all personnel. DA Form 2404, pencil, rags, TM 9-2320-364-10, equipment records folder, and a winch equipped PLS truck with BII and anchor for every two students.
7. References: AR 385-55, DA Pamphlet 738-750, FM 21-305, FM 20-22, and TM 9-2320-364-10.

### D. SEQUENCE OF ACTIVITY.

1. Introduction:
  - a. Interest device.
  - b. Tie-in.
  - c. Lesson objective (paragraph A).
  - d. Procedures:
    - (1) Explanation.

(2) Practical exercise.

(3) Summary.

2. Explanation and demonstration:

<b>NOTE</b>	The classroom must be near the training area where recovery operations are to be practiced. This allows the student to view the tape and apply the self-recovery procedures with a minimum loss of learned skills. Explain safety precautions and warnings, followed by the videotape, and then demonstrate PMCS of the winch and self-recovery. PMCS on the winch is performed in conjunction with monthly winch operation.
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- a. Explain all safety precautions for this exercise and review warnings. Attention should be drawn to all warnings in vehicle operator's manual with particular attention given the warnings below.

<b>WARNING</b>
Always wear heavy gloves when handling cables. Never let cable run through hands; frayed cables can cut. Never operate winch with less than five wraps of cable on winch drum. Serious injury or death could result if cable comes off drum while winching.

<b>WARNING</b>
Avoid quick, jerking winch operation. Keep other personnel well away from truck involved in winching operation. A snapped cable or shifting load can cause serious injury or death.

<b>WARNING</b>
Do not operate winch while personnel are working on or around cable guides. Severe injury to arms, hands, and fingers may result if cable moves while working with cable and cable guides.

<b>WARNING</b>
Keep all personnel clear of area near cable when tension is on cable. If cable breaks, it can cause severe injury or death.

<b>WARNING</b>
Do not use winch to reel clevis end of cable through roller guides. Clevis may catch on roller guide and cause cable or roller guide to break. Broken cables or roller guides can cause serious injury or death.

**WARNING**

Keep all personnel clear of winch area when winch is reeling in cable. If hands are caught in winch or cable or if cable breaks under tension, severe injury or death could occur.

**WARNING**

Never let moving cable slide through hands, even when wearing gloves. A broken cable could cut through glove and cut hand.

**WARNING**

Do not reel in cable too tightly. Injury to personnel may occur if too much tension is applied to eyelet.

- b. Show videotape TVT 55-37, Part 5, "PLS Winch Operations."
- c. Demonstrate hand and arm signals required for this exercise.
- d. Demonstrate self-recovery of a PLS to include winch PMCS.

**NOTE**

The PLS will be winched forward for this exercise. The students will also winch the vehicle forward. Winching the PLS rearward is similar.

3. Practical exercise:

- a. Assign students to vehicles and recovery location. Issue work gloves to each student.
- b. Students practice self-recovery of the PLS and winch PMCS. Ensure the students practice as both the driver and the assistant driver.

**NOTE**

Do not allow the students to perform any unsafe acts. Recovery operations must be closely supervised because of the potential for injury or death.

4. Evaluate: Check each student's performance of self-recovery and winch PMCS as both the driver and assistant driver.

5. Summary:

- a. Recap main points.
- b. Allow for questions.
- c. Clarify questions.

d. Give closing statement.

6. Retraining: Retrain No-Gos and slow learners. All students must receive a Go in all areas of the attached training evaluation checklist.

## **E. SAFETY RESTRICTIONS.**

1. Ensure that all chock blocks are in place when PLS trucks are parked or maintenance is to be performed.

2. Ensure the transmission is in neutral, the parking brake is set, and the engine is shut off before leaving the truck, when the truck is parked, or maintenance is being performed.

3. Ensure students remove all watches, jewelry, and identification tags before working in or around the PLS truck.

4. Ensure all personnel pay particular attention to the cautions and warnings listed in the operator's manuals.

5. Ensure ground guide(s) are used when backing.

6. Ensure all personnel wear hearing protection when working in or around a running PLS truck.

7. Ensure all occupants wear seat belts while the truck is in operation.

8. Ensure the driver and ground guides know and understand the hand and arm signals as outlined in FM 21-305. Winching hand and arm signals are contained in FM 20-22.

9. Ensure all backing is conducted at a speed of 5 MPH or less.

10. Ensure personnel maintain at least three points of contact to mount or dismount the PLS truck (to include performing PMCS).

11. Use the PLS ladder when performing maintenance. Install the two hooks on the ladder in the holes located on top of the fender before use. Using the ladder for other applications could result in serious injury to personnel.

12. Ensure all personnel are clear of truck before engine start is attempted. Operator must visually check to see that all areas of the truck are clear of personnel before attempting to start the engine. Failure to do so could result in serious injury or death to personnel.

13. Always wear heavy leather-palmed work gloves when handling winch cable. Never let cable slide through hands, even when wearing gloves. Winch cable can become frayed or contain broken wires. Frayed or broken wires can cut through gloves and cut hands.

14. Never walk between the vehicle and anchor.
15. The driver must have a clear view of the assistant driver at all times.
16. Do not operate winch while personnel are working on or around cable guides or tensioning device. Severe injury to arms, hands, and fingers may result if cable moves while working with the cable and the cable guides or tensioning device.
17. Do not bend winch cable at sharp angles.
18. Keep all personnel clear of winch area when winch is reeling in cable. If hands are caught in winch or cable or if cable breaks under tension, severe injury or death could occur.
19. Keep all personnel clear of area near cable when tension is on cable (at least one cable length away from and opposite the angle of pull). If cable breaks, it can cause severe injury or death.
20. Never operate winch with less than five wraps of cable on winch drum. If load is applied with less than five wraps of cable on winch, cable may come loose on drum.
21. The winch is equipped with an overload protection relief valve which prevents the winch from pulling beyond 110 percent of the rated pull.
22. When attaching self-recovery winch cable to another truck, that truck must be used only as an anchor point or damage to equipment may result.
23. Self-recovery winch is not designed to winch mired truck by itself. Truck drive system power must always be used with winch to self-recover truck or damage to equipment can result.
24. If winch does not move the truck, stop using winch. Overheat damage may occur.
25. Keep winch cable tight at all times so cable does not get tangled with truck.
26. Do not use winch to reel clevis end of winch cable through roller guides. Clevis may catch on roller guides and cause cable or roller guides to break. Broken cables or roller guides can cause serious injury or death.
27. Do not reel in winch cable too tightly or injury to personnel may occur if too much tension is applied to cable retainer.

**F. ADDITIONAL COMMENTS AND INFORMATION.** Recommended instructional time is 4 hours (.5 conference, .5 demonstration, and 3 hours practical exercise [PMCS is integrated]).

**TRAINING EVALUATION**

**PERFORM SELF-RECOVERY ON A PLS, USING TRUCK-MOUNTED WINCH (FORWARD)**

NAME \_\_\_\_\_ RANK \_\_\_\_\_ UNIT \_\_\_\_\_

EVALUATOR \_\_\_\_\_ DATE \_\_\_\_\_

**AS DRIVER**

**AS ASSISTANT DRIVER**

<u>STEPS</u>	<u>STEPS</u>	GO	NO-GO
1. SETS PARKING BRAKE	NA		
2. PUTS TRANSMISSION RANGE SELECTOR IN NEUTRAL	NA		
3. SETS TRANSFER CASE SHIFT LEVER TO LOW RANGE	NA		
4. SETS CTIS TO EMERGENCY POSITION	NA		
5. NA	ADJUSTS PASSENGER MIRROR SO DRIVER CAN SEE PASSENGER AT REAR OF TRUCK		
6. SETS SRW/CRANE SWITCH TO SRW (if equipped with crane)	NA		
7. SETS HYDRAULIC SELECTOR SWITCH TO CRANE/SRW	NA		
8. NA	MOVES FREE SPOOL LEVER TO ENGAGE POSITION		
9. NA	PUSHES WINCH CONTROL LEVER FORWARD TO PAY OUT SMALL AMOUNT OF CABLE		
10. NA	RELEASES WINCH CONTROL LEVER		

<b>AS DRIVER</b>		<b>AS ASSISTANT DRIVER</b>	
<u>STEPS</u>	<u>STEPS</u>	<b>GO</b>	<b>NO-GO</b>
11. NA	REMOVES COTTER PIN AND CLEVIS PIN FROM CLEVIS		
12. NA	REMOVES CLEVIS FROM STOWAGE RETAINER EYELET		
13. NA	PLACES FREE SPOOL LEVER IN DISENGAGE POSITION TO PULL CABLE BY HAND		
14. NA	PULLS WINCH CABLE OVER TOP OF WINCH AND UP ALONG FRONT FACE OF WINCH TOWARD FRONT OF TRUCK		
15. NA	ROUTES CABLE THROUGH NOTCH IN FENDER		
16. NA	ROUTES CABLE ABOVE TENSIONING DEVICE PULLEYS		
17. NA	AT CABLE GUIDE, MOVES SHEAVE TOWARDS TRUCK FRAME AND HOLDS IN POSITION. ROUTES WINCH CABLE THROUGH CABLE GUIDE. CABLE MUST BE BETWEEN TWO ROLLERS. ALLOWS SHEAVE TO MOVE BACK TOWARDS WINCH CABLE. LIFTS UP ON WINCH CABLE AND PLACES IN GROOVE OF SHEAVE		
18. NA	ROUTES WINCH CABLE OVER FIRST AXLE AND 1 FOOT PAST FRONT ROLLER GUIDE ASSEMBLY		
19. NA	REMOVES THE QUICK RELEASE PIN AND BRACKET. MOVES CABLE GUIDE BRACKETS APART		



<b>AS DRIVER</b>	<b>AS ASSISTANT DRIVER</b>	<b>GO</b>	<b>NO-GO</b>
<b><u>STEPS</u></b>	<b><u>STEPS</u></b>		
20. NA	PLACES THE WINCH CABLE AGAINST BOTTOM OF SHEAVE. ROUTES WINCH CABLE UNDER SHEAVE. MOVES CABLE GUIDE BRACKETS TOGETHER. INSTALLS BRACKET AND QUICK RELEASE PIN		
21. NA	USES FREEWHEELING FEATURE OF WINCH AND PAYS OUT WINCH CABLE UNTIL CABLE REACHES TREE, ANOTHER HEAVY TRUCK, OR STATIONARY HEAVY OBJECT		
22. NA	ATTACHES CABLE TO ANCHOR POINT (tree)		
23. NA	CHECKS CABLE FOR BROKEN WIRES AND KINKS		
24. NA	PULLS BACK AND HOLDS THE TENSION PULLEY LEVER ON CABLE GUIDE. PUTS THE WINCH CABLE BETWEEN TENSIONING DEVICE PULLEYS. RELEASES THE TENSION PULLEY LEVER		
25. NA	CHECKS THAT THE WINCH CABLE RESTS INSIDE GROOVES OF TENSIONING DEVICE PULLEYS AND SHEAVE		
26. NA	CHECKS FOR AT LEAST FIVE WRAPS OF CABLE LEFT ON WINCH DRUM		
27. NA	CHECKS THAT WINCH CABLE IS NOT CAUGHT ON TRUCK OR ANY OTHER OBJECTS		
28. NA	MOVES FREE SPOOL LEVER TO THE ENGAGED POSITION		

<b>AS DRIVER</b>	<b>AS ASSISTANT DRIVER</b>		
<b><u>STEPS</u></b>	<b><u>STEPS</u></b>	<b>GO</b>	<b>NO-GO</b>
29. NA	PUSHES WINCH CONTROL LEVER REARWARD TO PAY IN CABLE UNTIL SLACK IS OUT OF CABLE. RELEASES WINCH CONTROL LEVER		
30. ENSURES THAT PERSONNEL ARE CLEAR OF WINCH AND WINCH CABLE	TAKES COVER IN A PROTECTED AREA AWAY FROM WINCH AND WINCH CABLE		
31. PRESSES SERVICE BRAKE PEDAL	NA		
32. SETS TRANSMISSION RANGE SELECTOR TO 1	NA		
33. RELEASES PARKING BRAKE	NA		
34. RELEASES SERVICE BRAKE PEDAL	NA		
35. PUSHES SRW IN/OUT SWITCH TO IN AND APPLIES SLIGHT PRESSURE TO THROTTLE CONTROL	NA		
36. ADJUSTS POSITION OF THROTTLE CONTROL TO CHANGE ENGINE SPEED AS NEEDED TO KEEP WINCH CABLE TIGHT AND TRUCK MOVING	NA		
37. WHEN TRUCK IS ON SOLID GROUND, RELEASES SRW IN/OUT SWITCH, SETS PARKING BRAKE, AND PLACES TRANSMISSION RANGE SELECTOR TO NEUTRAL	NA		
38. PUSHES SRW IN/OUT SWITCH TO OUT AND PAYS OUT WINCH CABLE UNTIL ALL TENSION IS OFF WINCH CABLE	NA		

<b>AS DRIVER</b>	<b>AS ASSISTANT DRIVER</b>	<b>GO</b>	<b>NO-GO</b>
<b><u>STEPS</u></b>	<b><u>STEPS</u></b>		
39. WHEN ALL TENSION IS OFF WINCH CABLE, RELEASES SRW IN/OUT SWITCH	NA		
40. NA	ENSURES THERE IS ENOUGH SLACK IN WINCH CABLE AND DISCONNECTS WINCH CABLE FROM ANCHOR POINT (tree)		
41. NA	PUSHES WINCH CONTROL LEVER REARWARD		
42. NA	REELS IN WINCH CABLE. USES JACK EXTENSION HANDLE TO GUIDE WINCH CABLE ONTO WINCH SO CABLE WRAPS ARE LEVEL ACROSS FACE OF WINCH		
43. NA	WHEN END OF WINCH CABLE IS NEAR FRONT OF TRUCK, RELEASES WINCH CONTROL LEVER		
44. NA	REMOVES QUICK RELEASE PIN AND GUIDE BRACKET. MOVES CABLE GUIDE BRACKET APART SO WINCH CABLE CAN BE REMOVED. REMOVES WINCH CABLE BY HAND		
45. NA	MOVES CABLE GUIDE BRACKETS TOGETHER. INSTALLS GUIDE BRACKET AND QUICK RELEASE PIN		
46. NA	PUSHES WINCH CONTROL LEVER REARWARD		
47. NA	REELS IN WINCH CABLE. USES JACK EXTENSION HANDLE TO GUIDE WINCH CABLE ONTO WINCH SO CABLE WRAPS ARE LEVEL ACROSS FACE OF WINCH		

<b>AS DRIVER</b>	<b>AS ASSISTANT DRIVER</b>		
<b><u>STEPS</u></b>	<b><u>STEPS</u></b>	<b>GO</b>	<b>NO-GO</b>
48. NA	WHEN END OF WINCH CABLE IS ABOUT 1 FOOT FROM TENSIONING DEVICE, RELEASES WINCH CONTROL LEVER		
49. NA	PULLS BACK AND HOLDS TENSION PULLEY LEVER		
50. NA	LIFTS WINCH CABLE OUT OF GROOVES OF TENSIONING DEVICE PULLEYS AND OFF OF SHEAVE		
51. NA	RELEASES TENSION PULLEY LEVER		
52. NA	PHYSICALLY (BY HAND) PULLS WINCH CABLE BACK AND OUT OF CABLE GUIDE		
53. NA	PUSHES WINCH CONTROL LEVER REARWARD AND REELS IN WINCH CABLE BEING CAREFUL THAT END OF CABLE DOES NOT GET CAUGHT ON NOTCH IN FENDER		
54. NA	WHEN THE CLEVIS IS ABOUT 1 FOOT FROM WINCH, RELEASES WINCH CONTROL LEVER		
55. NA	INSTALLS CLEVIS TO RETAINER EYELET		
56. NA	INSTALLS THE CLEVIS PIN AND COTTER PIN THROUGH CLEVIS AND EYELET		
57. NA	STANDS CLEAR OF IMMEDIATE AREA NEAR WINCH		

**AS DRIVER**

**AS ASSISTANT DRIVER**

**STEPS**

**STEPS**

58. NA

PUSHES THE WINCH  
CONTROL LEVER  
REARWARD AND TAKES OUT  
SLACK IN WINCH CABLE

59. NA

WHEN SLACK IS REMOVED,  
RELEASES WINCH CONTROL  
LEVER

60. SETS THE HYDRAULIC  
SELECTOR SWITCH TO OFF

STOWS ALL BII ITEMS USED  
DURING WINCHING

61. ADJUSTS MIRROR FOR  
DRIVING

ADJUSTS MIRROR FOR  
DRIVING

GO	NO-GO

# **APPENDIX**

## **PAPER TRANSPARENCIES**

**THESE PAPER TRANSPARENCIES ARE TO BE REPLICATED AS PLASTIC TRANSPARENCIES FOR USE WITH AN OVERHEAD PROJECTION SYSTEM.**

**EACH TRANSPARENCY IS NUMBERED AT THE TOP. THAT NUMBER IS IDENTIFIED IN THE BODY OF THE LESSON OUTLINE. FOR EXAMPLE, PLS 1-1 THROUGH PLS 1-15 ARE REQUIRED FOR THE FIRST LESSON OUTLINE.**

## GLOSSARY

AAR	after-action review
AR	Army regulation
ATEC	Allison Transmission Electronic Control
AUTO	automatic
aux	auxiliary
BII	basic issue items
C	centigrade
CCW	counterclockwise
CTIS	central tire inflation system
CW	clockwise
D	drive
DA	Department of the Army
DD	Department of Defense
DDEC	Detroit Diesel Electronic Control
emerg	emergency
EOCCT	end of course comprehensive test
F	Fahrenheit
FM	field manual
FR	flattrack
FY	fiscal year
HI	high
HP	horsepower
ISO	International Standards Organization
Jake brake	engine brake
KMPH	kilometers per hour
kPa	kilopascal
LH	left-hand
LHS	load-handling system
lb	pound
LO	low
MACOM	major Army command
MAN HA	manual hook arm
MAN MF	manual main frame
MAN TRANS	manual transit
METT-T	mission, enemy, terrain, troops, and time available
MHC	material-handling crane
MHS	material-handling system
mm	millimeter
MPH	miles per hour
N	neutral
NA	not applicable
PIN	production identification number
PLS	palletized load system
PLST	palletized load system trailer

PMCS	preventive maintenance checks and services
POL	petroleum, oils, and lubricants
press	pressure
psi	pound-force per square inch
qtr	quarter
R	reverse gear
RH	right-hand
RPM	revolutions per minute
SOP	standing operating procedure
SRW	self-recovery winch
STE/ICE	simplified test equipment/internal combustion engine
STE/ICE-R	simplified test equipment/internal combustion engine-reprogrammable
TASC	Training and Audiovisual Support Center
TC	training circular
temp	temperature
TM	technical manual
TVT	training videotape
USAR	United States Army Reserve
V	volt



## REFERENCES

### SOURCES USED

These are the sources quoted or paraphrased in this publication.

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### DOCUMENTS NEEDED

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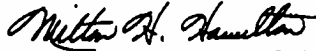
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\*This source was also used to develop this publication.

\*\*These publications are scheduled to be available first quarter FY 95 through the Pinpoint Publications Distribution System.

By Order of the Secretary of the Army:

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**PIN: 072985-000**