TC 21-305-9

TRAINING PROGRAM FOR THE HEAVY EQUIPMENT TRANSPORTER SYSTEM

HEADQUARTERS, DEPARTMENT OF THE ARMY

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TRAINING PROGRAM
FOR
THE HEAVY EQUIPMENT TRANSPORTER SYSTEM

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PREFACE

This TC provides a training program for the HETS in accordance with AR 600-55. It provides standardized training and testing in the operation, maintenance, and safety of the HETS. It stresses more hands-on training and less classroom instruction. It 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. The driver should also have extensive experience driving a 5-ton tractor and semitrailer or larger combination vehicle.

To provide effective training, each instructor should ensure 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 soldier's overall driving effectiveness.

The lesson content for this training program is arranged sequentially and separated into two chapters. Chapter 4 contains training for truck operations and Chapter 5 contains training for trailer operations.

Graduates of this training program (licensed drivers) should be supervised until they have gained the experience to operate the HETS 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 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, ATTN: ATSP-TDX,
Fort Eustis, VA 23604-5389.

The US Army's environmental strategy into the 21st century defines the Army's leadership commitment and philosophy for meeting present and future environmental challenges. It provides a framework to ensure that environmental stewardship ethic governs all Army activities. The Army's environmental vision is to be a national leader in environmental and natural resource stewardship for present and future generations, as an integral part of all Army missions. The Army's environmental vision statement communicates the Army's commitment to the environment.

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 millions of dollars 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:

- Accept no unnecessary risk.
- Accept risks when benefits outweigh costs.
- Make risk decisions at the right command level.
- 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 the following questions when assessing the risk.

- 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 extremely 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 on. Risk decision making depends on the following:

- 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, 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, what standards are expected, and then hold those in charge accountable for implementation. This is the point when accident prevention actually happens.

1-4. RISK ASSESSMENT ELEMENTS. There are no hard and fast rules for assessing a risk. Different training tasks involve different elements that can affect training safety. However, the following 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 (Tables 1-1 through 1-7) are examples of risk assessments for the seven elements common to driver training missions. A sample risk assessment work sheet for driving training is included in this chapter (pages 1-7 through 1-9).

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

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

Table 1-1. Soldier qualification risk value matrix

SOLDIER QUALIFICATION RISK VALUE			
TASK	DRIVING EXPERIENCE		
	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 the HETS would be a high risk situation requiring substantial controls.

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

Table 1-2. Vehicle type risk value matrix

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

EXAMPLE: Driving the HETS over the road would have a high risk value.

c. **Weather.** Measure weather risk by comparing road conditions with visibility.

Table 1-3. Weather risk value matrix

WEATHER RISK VALUE			
ROAD CONDITIONS	VISIBILITY		
	CLEAR	REDUCED	RESTRICTED
UNFAVORABLE	Medium	High	High
ADEQUATE	Low	Medium	High
FAVORABLE	Low	High	High

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

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

Table 1-4. Terrain risk value matrix

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

EXAMPLE: Driver training over rough terrain conducted at Fort Hood, TX would have a high risk value.

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

Table 1-5. Supervision risk value matrix

SUPERVISION RISK VALUE			
	TASK LOCATION		
LEVEL OF SUPERVISION	MOTOR POOL	TRAINING AREA/ UNCONGESTED ROAD	OFF ROAD/ CONGESTED ROAD
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. **Equipment.** Measure equipment risk by comparing the equipment's age to the time (months) since the last semiannual service. Equipment age is defined as; old is 7 or more years old, average is 3 to 7 years old, and new is 3 or less years old.

Table 1-6. Equipment risk value matrix

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

EXAMPLE: A one-year-old M1070 HET or M1000 semitrailer serviced three months ago would have a low risk value.

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

Table 1-7. Time of day risk value matrix

TIME OF DAY RISK VALUE			
	LIGHT LEVEL		
ROUTE FAMILIARITY	DAY	DAWN/DUSK	NIGHT
NEVER DRIVEN ROUTE	High	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. **Overall Risk Level.** After assessing all the risks, the overall risk value 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 may 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 on.

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. The matrix shown in Table 1-8 is a proposed decision aid to help determine the leadership decision making level. Some installation commanders require high risk decisions be elevated to installation level.

Table 1-8. Decision aid matrix

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:

- Eliminate the hazard totally, if possible, or substitute a less hazardous alternative.
- Reduce the magnitude of the hazard by changing tasks, locations, times, and so forth.
- Modify operational procedures to reduce risk exposure consistent with mission needs.
- 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 reducing personnel and equipment losses while training. Risk management is consistent with 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

TASK	DRIVING EXPERIENCE		
	LICENSED OVER 1 YEAR	LICENSED UNDER 1 YEAR	UNLICENSED
COMPLEX	Medium	High	High
ROUTINE	Low	Medium	High
SIMPLE	Low	Low	Medium

_____2. VEHICLE TYPE

LOCATION OF TRAINING	VEHICLE CONFIGURATION		
	SMALL TRUCKS	STRAIGHT TRUCKS	COMBINATION UNITS
ROAD	Medium	High	High
TRAINING AREA	Low	Medium	High
MOTOR POOL	Low	Low	Low

_____3. WEATHER

ROAD CONDITIONS	VISIBILITY		
	CLEAR	REDUCED	RESTRICTED
UNFAVORABLE	Medium	High	High
ADEQUATE	Low	Medium	High
FAVORABLE	Low	High	High

_____4. TERRAIN

TYPE OF TERRAIN	ROAD NETWORK		
	IMPROVED ROADS	SECONDARY ROADS	UNIMPROVED
MOUNTAIN	Medium	High	High
DESERT/JUNGLE	Low	Medium	High
FLAT/ROLLING	Low	Low	Medium

_____5. SUPERVISION

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

_____ 6. EQUIPMENT

EQUIPMENT AGE	LAST SEMIANNUAL SERVICE		
	0 TO 2 MONTHS	+ 2 TO 4 MONTHS	+ 4 MONTHS
OLD	Medium	Medium	High
AVERAGE	Low	Medium	High
NEW	Low	Low	Medium

_____7. TIME OF DAY

ROUTE FAMILIARITY	LIGHT LEVEL		
	DAY	DAWN/DUSK	NIGHT
NEVER DRIVEN ROUTE	High	High	High
DRIVEN ROUTE 1-3 TIMES	Low	Medium	High
FAMILIAR ROUTE	Low	Low	Medium

_____OVERALL RISK LEVEL

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

APPROVED BY:_____ DATE:_____

CHAPTER 2

INSTRUCTIONAL AIDS

2-1. STUDENT REQUIREMENTS.

a. **Vehicles Per Student**. Vehicle to student ratio is contained in the instructional material and varies from 1:1 to 1:3 (M1070 HET, M1000 semitrailer, and M-1 main battle tank).

b. **Forms Per Student**:

DD Form 1970 (or ULLS generated DA Form 5987-E).
DA Form 348 (or ULLS generated DA Form 348-E).
DA Form 2404 (or ULLS generated DA Form 5988-E).
DA Form 6125-R.
OF 346 (or ULLS generated OF 346E).

c. **Publications Per Student**:

TM 9-2320-360-10.
TM 9-2330-381-14.

d. **Nonstandard Items**: Forty empty POL drums, traffic cones, or locally fabricated standards.

2-2. 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 9-43-2.
FM 21-305.
TM 55-2350-255-14.
All HN or local directives and regulations.

2-3. TRAINING FACILITIES.

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

2-4. TRAINING AIDS AND DEVICES.

Overhead projector.
Projection screen.
Transparencies (paper copies are included in the appendix of this TC).
Television monitor.
Videocassette player.
TVT 55-48, PIN: 710750 DA: Part 1 “HET Tractor PMCS”.
TVT 55-49, PIN: 710751 DA: Part 2 “Couple/Uncouple”.
TVT 55-50, PIN: 710752 DA: Part 3 “Load/Unload”.

NOTE: The above videotapes are scheduled to be available 1st quarter FY 98 through the local TASC, USAR MACOMs, and state Adjutants General.

CHAPTER 3

SAMPLE TRAINING SCHEDULE

WHEN	WHAT	WHERE	TASK NUMBER
TRUCK OPERATIONS DAY 1			
0730-0830	Describe Vehicles, Components, and Specifications	Classroom	551-721-1352
0830-0930	Identify Cab Controls, Instruments, and Indicators	Classroom	551-721-1352
0930-1000	Know Engine Start and Shutdown Procedures	Classroom	551-721-3337
1000-1030	Operate Engine Brake (Jake Brake)	Classroom	551-721-3337
1030-1100	Operate the HET CTIS and Driveline Lockup	Classroom	551-721-1368
1100-1130	Perform Operator PMCS	Classroom	551-721-1352
1130-1230	Lunch		
1230-1630	Perform Operator PMCS (continued)	Motor Pool	551-721-1352
TRUCK OPERATIONS DAY 2			
0730-0800	Drive the HET on Improved Roads	Classroom	551-721-3337
0800-0830	Perform Before- Operation PMCS	Motor Pool	551-721-1352
0830-1130	Drive the HET on Improved Roads (continued)	Training Area/ Driver Training Route	551-721-3337
1130-1230	Lunch		
1230-1600	Drive the HET on Improved Roads (continued)	Training Area/ Driver Training Route	551-721-3337
1600-1630	Perform After-Operation PMCS	Motor Pool	551-721-1352
TRUCK OPERATIONS DAY 3			
0730-0800	Perform Before- Operation PMCS	Motor Pool	551-721-1352
0800-1130	Drive the HET on Improved Roads	Training Area/ Driver Training Route	551-721-3337
1130-1230	Lunch		
1230-1600	Drive the HET on Improved Roads (continued)	Training Area/ Driver Training Route	551-721-3337
1600-1630	Perform After-Operation PMCS	Motor Pool	551-721-1352

WHEN	WHAT	WHERE	TASK NUMBER
TRUCK OPERATIONS			
DAY 4			
0730-0800	Perform Before-Operation PMCS	Motor Pool	551-721-1352
0800-1100	Drive the HET on Improved Roads	Training Area/ Driver Training Route	551-721-3337
1100-1130	Perform After-Operation PMCS	Motor Pool	551-721-1352
1130-1230	Lunch		
1230-1630	Change Tire on HET Using Tire Davit	Motor Pool	551-721-1352
TRAILER OPERATIONS			
DAY 5			
0730-0830	Describe M1000 Capabilities, Specifications, and Components	Classroom	551-721-1353
0830-0900	Identify M1000 Semitrailer Instruments, Controls, and Indicators	Classroom	551-721-1353
0900-1100	Operate APU on the M1000 Semitrailer	Motor Pool or Training Area	551-721-3378
1100-1130	Adjust the Gooseneck on the M1000 Semitrailer	Motor Pool or Training Area	551-721-3379
1130-1230	Lunch		
1230-1330	Adjust the Gooseneck on the M1000 Semitrailer (continued)	Motor Pool or Training Area	551-721-3379
1330-1500	Adjust Platform Height on the M1000 Semitrailer	Motor Pool or Training Area	551-721-3380
1500-1630	Manual Steer the M1000 Semitrailer	Motor Pool or Training Area	551-721-3382
TRAILER OPERATIONS			
DAY 6			
0730-1030	Perform Operator PMCS on an M1000 Semitrailer	Motor Pool	551-721-1353
1030-1130	Couple and Uncouple an M1070 HET to/from an M1000 Semitrailer	Classroom and Motor Pool or Training Area	551-721-3385 551-721-3386
1130-1230	Lunch		
1230-1630	Couple and Uncouple an M1070 HET to/from an M1000 Semitrailer (continued)	Motor Pool or Training Area	551-721-3385 551-721-3386
TRAILER OPERATIONS			
DAY 7			
0730-1130	Change Tire on the M1000 Semitrailer	Motor Pool or Training Area	551-721-3383 551-721-3384
1130-1230	Lunch		

WHEN	WHAT	WHERE	TASK NUMBER
TRAILER OPERATIONS			
DAY 7 (continued)			
1230-1300	Perform Before-Operation PMCS	Motor Pool	551-721-1352 551-721-1353
1300-1600	Drive an M1070 HET/ M1000 Semitrailer Combination on the Road	Motor Pool/ Training Area	551-721-3337
1600-1630	Perform After-Operation PMCS	Motor Pool	551-721-1352 551-721-1353
TRAILER OPERATIONS			
DAY 8			
0730-1130	Load Disabled M-1 Tank Onto An M1070 HET/M1000 Semitrailer Combination Using Dual Winches	Classroom and Training Area	551-721-3387
1130-1230	Lunch		
1230-1630	Load Disabled M-1 Tank Onto an M1070 HET/M1000 Semitrailer Combination Using Dual Winches (continued)	Training Area	551-721-3387
TRAILER OPERATIONS			
DAY 9			
0730-0800	Perform Before- Operation PMCS	Motor Pool	551-721-1352 551-721-1353
0800-1130	Drive an M1070 HET/ M1000 Semitrailer Combination on the Road	Motor Pool/ Training Area	551-721-3337
1130-1230	Lunch		
1230-1600	Drive an M1070 HET/ M1000 Semitrailer Combination on the Road (continued)	Motor Pool/ Training Area	551-721-3337
1600-1630	Perform After-Operation PMCS	Motor Pool	551-721-1352 551-721-1353
TRAILER OPERATIONS			
DAY 10			
0730-0800	Perform Before Operation PMCS	Motor Pool	551-721-1352 551-721-1353
0800-1130	Drive an M1070 HET/ M1000 Semitrailer Combination on the Road	Motor Pool/ Training Area	551-721-3337
1130-1230	Lunch		
1230-1600	Drive an M1070 HET/ M1000 Semitrailer Combination on the Road (continued)	Motor Pool/ Training Area	551-721-3337
1600-1630	Perform After-Operation PMCS	Motor Pool	551-721-1352 551-721-1353

WHEN	WHAT	WHERE	TASK NUMBER
TRAILER OPERATIONS DAY 11			
0730-1130	Unload Disabled M-1 Tank from an M1070 HET/M1000 Semitrailer Combination Using Dual Winches	Classroom and Training Area	551-721-3388
1130-1230	Lunch		
1230-1430	Unload Disabled M-1 Tank from an M1070 HET/M1000 Semitrailer Combination Using Dual Winches (continued)	Classroom and Training Area	551-721-3388
1430-1530	Perform Before-Operation PMCS	Motor Pool	551-721-1352 551-721-1353
1900-2330	Drive an M1070 HET/ M1000 Semitrailer Combination on the Road at Night	Driver Training Route	551-721-3337
2330-2400	Perform After-Operation PMCS	Motor Pool	551-721-1352 551-721-1353
TRAILER OPERATIONS DAY 12			
1230-1330	Drive the HETS Off Road	Classroom	551-721-1360
1330-1400	Perform Before-Operation PMCS	Motor Pool	551-721-1352 551-721-1353
1400-1600	Drive the HETS Off Road (continued)	Off Road Driver Training Area	551-721-1360
1600-1630	Perform After-Operation PMCS	Motor Pool	551-721-1352 551-721-1353
TRAILER OPERATIONS DAY 13			
0730-0800	Perform Before-Operation PMCS	Motor Pool	551-721-1352 551-721-1353
0800-1130	Drive the HETS Off Road	Off Road Driver Training Area	551-721-1360
1130-1230	Lunch		
1230-1630	Perform After-Operation PMCS	Motor Pool	551-721-1352 551-721-1353

WHEN	WHAT	WHERE	TASK NUMBER
TRAILER OPERATIONS DAY 14			
0730-1630	End of Course Comprehensive Test	Classroom/ Motor Pool/ Test Route/ Training Area	All Tasks
	and		
	Perform Required Maintenance PMCS	Motor Pool	551-721-1352 551-721-1353

CHAPTER 4

LESSON OUTLINES FOR TRUCK OPERATIONS

LESSON TITLE: DESCRIBE VEHICLE, COMPONENTS, AND SPECIFICATIONS

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

A. TRAINING OBJECTIVE.

TASK: Describe vehicle, components, and specifications.

CONDITIONS Given instruction on the M1070 HET and a requirement to describe vehicle, components, and specifications.

STANDARD: Correctly describe vehicle, 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. References: TM 9-2320-360-10.

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 the M1070 HET. The instructor will present vehicle information including vehicle capabilities, limitations, data plates, and BII.

Transparency HETS 4-1

a. M1070 HET. The M1070 HET represents the most advanced generation of heavy equipment transporters available.

b. Left Front View and Right Rear View. Shown are the left front view and the right rear view of the HET.

Transparency HETS 4-2

c. Front Side View.

(1) Hood [1].

(2) Personnel cab [2] provides protection from weather for crew and contains controls, gauges, and indicators.

(3) Number 1 driving axle [3] controls direction of HET when in motion. When needed, transmits power to hub to turn wheels.

(4) Gladhands [4] couples air supply from another vehicle during towing operations.

(5) Electrical connector [5] is a 12-volt (7-pin) connector that receives power from towing vehicle electrical system through intervehicular cable.

(6) Tow eyes [6] are attachment points for towing operations.

(7) Quick-disconnect coupling [7] is used to connect air hose from BII to vehicle air system. The hose is used to manually inflate tires or power air wrench.

Transparency HETS 4-3

d. Left Side View.

(1) The hydraulic oil reservoir [1] stores, cools, and filters oil used to operate main and auxiliary winches.

(2) The two main winches [2] operates independently of each other to recover, load, and unload heavy tracked and wheeled vehicles.

(3) The auxiliary winch [3] pulls the main winch cables out to payload.

(4) The fifth wheel access [4] allows safe access to fifth wheel platform.

(5) The battery box [5] contains four batteries and protects them from inclement weather. The box pulls out for easier access to batteries.

(6) The air reservoirs [6] stores compressed air for operation of brake, suspension, and central tire inflation systems.

(7) The number 1 fuel tank [7] is a 150-gallon tank which stores fuel used to operate the engine. It is connected to fuel tank number 2 with a hose and shutoff valve.

(8) The stowage box [8] is used to stow BII, COEI, and AAL items.

(9) The fuel/water separator [9] removes water and contaminants from fuel before it enters the fuel pump.

(10) The slave receptacle [10] is a 24-volt receptacle used to slave start the HET.

(11) The toolbox [11] is used to stow BII, COEI, and AAL items.

Transparency HETS 4-4

e. Right Side View.

(1) Trailer electrical connectors [1] (24-volt/12-pin and 12-volt/7-pin) supply power to trailer electrical system through intervehicular cable.

(2) The trailer gladhands [2] couples air supply to trailer.
(3) The chock blocks stowage boxes [3] are used to stow wheel chocks.

(4) The personnel ladder [4] provides access to engine compartment when servicing engine and accessories. It mounts in holes in right or left side

fenders when in use. When not being used, it is folded and mounted on exhaust stack for storage.

(5) The tire davit [5] is used to raise and lower the spare tire.

(6) The quick-disconnect coupling [6] is used to connect to air hose from BII to vehicle air system. It is used to manually inflate tires or power air wrench.

(7) The number 2 fuel tank [7] is a 100-gallon tank that stores diesel engine operating fuel.

(8) The spare tire [8] is used to replace a damaged tire.

(9) The number 2 axle [9] supports weight of HET and transmits power to hubs to turn rear wheels.

(10) The number 3 axle [10] supports weight of HET and transmits power to hubs to turn rear wheels.

(11) The number 4 axle [11] supports weight of HET and assists number 1 axle in steering when in motion. Transmits power to hubs to turn rear wheel.

(12) The tow eyes [12] are attachment points for towing operations.

(13) The electrical connector [13] is a 12-volt (7-pin) connector that supplies power to trailer or to towed vehicle electrical system through intervehicular cable.

(14) The pintle hook [14] hitch is used for towing trailer.

(15) The gladhands [15] couples air supply to another vehicle or trailer during towing or trailer operations.

(16) The approach ramps [16] raise the front end of trailer to guide kingpin into fifth wheel.

(17) The fifth wheel [17] couples the trailer to HET.

Transparency HETS 4-5

f. HET Dimensions and Weights.

(1) Overall height is 140.1 inches at the top of ventilator hood to the ground.

(2) Overall width is 102 inches.

(3) Overall length is 361.6 inches.

(4) Wheelbase is 215 inches.

(5) Fifth wheel height is 64 inches.

(6) HET curb weight is 40,900 pounds.

(7) GVW is 86,000 pounds.

(8) GCW is 231,400 pounds.

Transparency HETS 4-6

g. M1070 HET Tractor/M1000 Semitrailer Capabilities. HET performance specifications are as follows:

(1) Maximum speed (cross-country at GCW) is 30 MPH.

(2) Maximum grade at GCWR is 15 percent.

(3) Maximum highway speed at GCWR is 45 MPH.

(4) Cruising range at GCWR is 325 miles.

(5) Maximum fording depth is 28 inches.

(6) Maximum towed speed is 5 MPH.

Transparency HETS 4-7

h. M1070 HET Tractor/M1000 Semitrailer Turning Capabilities.

(1) Proper turning procedure with the HET is very important.

(2) To make a turn on a 30 foot roadway, the start of the turn must be as shown. Turn the steering wheel when the front wheels are at the start of the intersection.

WARNING

The HETS does not track in the same way as conventional tractor-trailer combinations. Operators must know and understand this prior to operating HETS on public access roads. Wide, conventional tractor-trailer turns may result in personnel injury or damage to equipment.

When making sharp turns, the trailer may swing beyond normal turning radius. Failure to observe this warning may result in personal injury or damage to equipment.

(3) If turn is done properly, the actual width of the turn is 30 feet.

(4) With the HETS, turning the HET causes the semitrailer wheels to also turn. The trailer may swing out into the lane of on-coming traffic. Operator must ensure the lane is clear prior to making turn. Left and right turns should be made tighter than conventional tractor-trailer turns.

NOTE: For a complete listing of the HET specifications, refer to the vehicle operator's manual (TM 9-2320-360-10, paragraph 1-11).

Transparency HETS 4-8

i. Driveline Components. The following is a description of the driveline components and power flow.

(1) Engine - DD 8V92TA @ 500hp.

(2) Transmission - Allison CLT 754 (5 speed, fully automatic).

(3) Transfer case - Oshkosh model 55,000 with a 2 speed Helicar Gear.

(4) Axles - all are Rockwell Model 5 MR with planetary hub reduction and differential lockup.

(5) Power flows from engine through the transmission, then into transfer case; then is split to front and rear propeller shafts.

Transparency HETS 4-9

j. Storage and Sign Guide (Left Side of Vehicle).

(1) "Lift" stencil.

(2) "U.S. Army" stencil.

(3) “Tie down” stencil.

(4) Shipping date plate.

(5) Stowage box.

(6) Fuel tank warning and data plate.

(7) Hearing protection data plate.

(8) Welding data plate.

(9) Winch data plate.

(10) Rear suspension serial number plate.

(11) Winch warning decal.

(12) Chock blocks stowage box.

(13) Stowage box.

(14) Hydraulic oil level site glass.

Transparency HETS 4-10

k. Storage and Sign Guide (Right Side of Vehicle).

(1) Rear “tie down” stencil.

(2) Winch lubrication plate.

(3) Fuel tank warning and data plate.

(4) Arctic kit circulation pump data plate.

(5) Winch data plate.

(6) Registration number stencil.

(7) Front cab lifts.

(8) Ladder stowage.

(9) Tire davit.

(10) Rear cab lift.

(11) Winch warning decal.

(12) Winch operating instruction plates (3).

(13) Winch warning decal.

Transparency HETS 4-11

l. Engine and Driveline.

(1) Engine serial number.

(2) Transmission serial number.

(3) Transfer case serial number.

Transparency HETS 4-12

m. Engine Compartment (Under Hood Data Plates).

(1) Hot coolant warning.

(2) Automatic fan drive clutch warning.

(3) Hood lock caution.

Transparency HETS 4-13

n. Interior (Inside Cab Data Plates).

(1) “CARC” stencil.

(2) Warranty data plate.

(3) Rustproofing data plate.

(4) Noise exemption decal.

(5) Ignition switch data.

(6) Ether start data.

(7) Gas particulate filter, chemical alarm, PTO switch data.

(8) Driveline control data.

(9) STE/ICE-R zero offset switch data.

(10) Glove box.

(11) Doghouse.

(12) Seat belt warning plates.

(13) Transfer case control data.

(14) Seat height adjustment decal.

(15) Parts data plate.

(16) Vehicle lubrication data plate.

(17) Tire inflation warranty data plate.

(18) Manufacturer's certification data plate.

Transparency HETS 4-14

b. Interior (Rear Seat Area).

(1) Stowage areas.

(2) Rear seat.

3. Practical Exercise. None.

4. Evaluate. 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 1.0 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 M1070 HET and a requirement to identify and explain the function of cab controls, instruments, and indicators.

STANDARD: Correctly identify and explain the function of the 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. References: TM 9-2320-360-10.

D. SEQUENCE OF ACTIVITY.

1. Introduction.
    a. Interest Device.
    b. Tie-in.
    c. Lesson Objective (Paragraph A).
    d. Procedures.

(1) Explanation.

(2) Summary.

NOTE: The instructor points out the use of international symbols to identify instrument panel 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.

2. Explanation. Location, description, and use of the controls (instruments, indicators, and equipment). In the operator's TM and during this class, left indicates the driver's side of the vehicle; right, the passenger's side.

Transparency HETS 4-15

a. Main Instrument Panel.

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

(2) High beam indicator [2] lights blue when headlights are on high beam.

(3) PTO indicator [3] lights green when PTO control switch is on.

(4) Low air indicator [4] lights red and remains lit until air system pressure is greater than 60 psi (414 kPa). Warning alarm sounds at the same time indicator is lit.

(5) Water temperature gauge [5] shows engine coolant temperature in degrees Fahrenheit and degrees Celsius.

(6) Oil pressure gauge [6] shows engine oil pressure in psi and kPa.

(7) Transmission temperature gauge [7] shows transmission oil temperature in degrees Fahrenheit and degrees Celsius.

(8) Transfer case temperature gauge [8] shows transfer case oil temperature in degrees Fahrenheit and degrees Celsius.

(9) Start switch [9] is pressed (and held for one second) to start operation of the CTIS.

(10) CTIS rotary selector switch [10] is a four-position switch used to select one of four tire pressures for maximum traction and minimum tire wear under various conditions and speed limits. 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.

(11) CTIS ON/OFF switch [11]. When switch is in ON position, CTIS will operate. Positioning switch to OFF will shut down CTIS.

(12) Tire pressure indicator lights [12]. Light indicates terrain condition selected by CTIS rotary selector switch. A maximum speed is associated with each terrain condition. Lights are labeled as follows:

(a) Highway - maximum speed is 45 MPH (72 km/hr). Tire pressure is 75 psi (517 kPa).

(b) Cross-country - maximum speed is 30 MPH (32 km/hr). Tire pressure is 55 psi (379 kPa).

(c) Mud, sand, and snow - maximum speed is 15 MPH (24 km/hr). Tire pressure is 40 psi (276 kPa).

(d) Emergency - maximum speed is 5 MPH (8 km/hr). Tire pressure is 30 psi (207 kPa).

(13) Low air indicator [13] lights red to warn of low pressure in HET air system. This condition causes CTIS to shut down, giving HET brake system priority for available air pressure. The CTIS will automatically resume operation when air pressure builds up to about 110 psi (758 kPa).

(14) Overspeed indicator [14] flashes amber when the vehicle average speed for one minute exceeds the speed limit for the rotary selector switch setting.

Transparency HETS 4-16

b. Main Instrument Panel (continued).

(1) Check gauges indicator [15]. Lights amber when engine oil pressure is too low or when engine coolant temperature is too high. Warning alarm sounds at the same time indicator is lit.

(2) Check engine indicator [16]. Lights amber 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.

(3) Tachograph [17]. Includes a speedometer, tachometer, odometer, and clock. Unit keeps a continuous record of HET traveling speeds and engine rpm versus time of day. Speedometer shows HET speed in MPH and km/hr. Tachometer shows engine rpm x 100. Rpm warning indicator lights when engine exceeds 2,250 rpm. Odometer records total distance HET has traveled in miles. A 12-hour clock gives current time of day. A key enables removal and replacement of graph cards.

(4) Battery gauge [18] (12-volt system) shows state of charge of batteries and alternator voltage output. The correct charge is 12 to 14 volts.

(5) Battery gauge [19] (24-volt system) shows state of charge of batteries and alternator voltage output. The correct charge is 26 to 30 volts.

(6) All wheel drive indicator [20] lights green when driveline control is in LOCK position or when transfer case control is in low.

(7) Right turn indicator [21] flashes green when right turn signal is on.

(8) Beacon light switch [22] is a two-position switch used to control rotating beacon light.

(9) Work light switch [23] is a two-position switch used to control work lights.

(10) Dome light switch [24] is a two-position switch used to control dome light.

(11) Headlight switch [25] is a three-position switch used to control headlights, clearance lights, and parking lights. Blackout light switch must be in the OFF position before these lights will operate.

(12) Instrument panel light control [26] is used to control brightness of instrument panel lights.

(13) Windshield wiper switch [27] is a three-position switch used to operate and control speed of windshield wipers.

(14) Windshield washer switch [28] is a momentary switch used to control windshield washer.

(15) Blackout marker switch [29] is a two-position switch used to control blackout marker lights. Blackout light switch must be in the ON position before blackout marker lights will operate.

(16) Blackout drive switch [30] is a two-position switch used to control blackout lights. Blackout light switch must be in the ON position before blackout driving lights will operate.

(17) Blackout light switch [31] is a two-position switch used to control blackout drive and blackout marker switches. When turned on, 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.

Transparency HETS 4-17

c. Main Instrument Panel (continued).

(1) Fuel gauge [32] indicates fuel level for both tanks.

(2) Warning alarm (engine oil) [33] sounds when engine oil pressure is below 40 psi (276 kPa), at or above 1,200 rpm, or when it exceeds 205 to 215 degrees F (96 to 102 degrees C).

(3) Warning alarm (air) [34] sounds when air system pressure is below 60 psi (414 kPa).

Transparency HETS 4-18

d. Air Gauges and Brake Controls.

(1) Air pressure gauge [1] shows air pressure (in psi and kPa) in reservoirs available to operate air system components. Green needle indicates air pressure to operate service brakes on front axle, parking brakes on rear tridem axles, transfer case and inter-axle lockups, winch tensioners and kickouts, windshield washers, and horn. Red needle indicates air pressure to operate service and parking brakes on rear tridem axles, CTIS pressure transducer, and rear suspension system. Normal operating range for the air pressure gauge is 60 to 120 psi (414 to 827 kPa).

(2) Air cleaner restriction indicator [2] indicates when air cleaner filter is restricted. Yellow diaphragm enters red zone when air cleaner is clogged and needs service. Yellow reset button on face of gauge is used to reset gauge after air cleaner has been serviced.

(3) Parking brake control [3] is used to apply and release HET parking brakes and trailer parking brakes if equipped.

(4) Trailer air supply control [4] is used to control air supply to trailer.

Transparency HETS 4-19

e. Center Panel Controls.

(1) Gas particulate filter switch [1] is a two-position switch used to operate and control gas particulate filter unit.

(2) Chemical alarm switch [2] is a two-position switch used to control chemical alarm kit.

(3) PTO control switch [3] is a two-position switch used to control power takeoff. PTO indicator will light green when PTO is engaged.

(4) Driveline control [4] is used to control drive train operation. The driveline control has two functions depending on the transfer case shift lever position. The control either activates the front axle lock-up or the axle differential interaxle power dividers.

(5) Ether start control [5] is used to inject ether into the engine air intake adapter for cold weather starting. Use ether start only if outside temperature is below 45 degrees F (7 degrees C). Press ether start control to inject ether.

(6) DEF/CAB control [6] is used to control cab air. When control is in DEF position, air defrosts windshield. When control is in CAB position, air heats cab interior. When control is between CAB and DEF, air defrosts windshield and heats cab interior.

(7) RECIRC/F/A [7] is used to control outside air flow to cab. When control is in RECIRC position, cab air recirculates. When control is in F/A position, fresh air is vented into cab.

(8) OFF/HEAT control [8] is used to control temperature of air that heats cab interior and defrosts windshield.

(9) Front fan switch [9] is a four-position switch used to control operation and speed of front heater fan.

(10) Rear fan switch [10] is a four-position switch used to control operation and speed of rear heater fan.

Transparency 4-20

f. HET Driveline Modes. Table 4-1 shows the HET driveline control positions.

(1) When control is in the UNLOCK position, with the transfer case in HI range, the transfer case drives the rear axles only. When the control is in the LOCK position, with the transfer case in HI range, the transfer case also drives the front axle. All wheel drive indicator lights green when driveline control is in the LOCK position or when transfer case control is in low.

(2) When the control is in the UNLOCK position, with the transfer case in LO range, the interaxle differential are unlocked allowing them to turn at different speeds.

(3) When the control is in the LOCK position, with the transfer case in LO range, the interaxle differentials lock causing all differentials to turn at the same rate, thus further increasing traction.

Table 4-1. HET driveline control positions

TRANSFER CASE SHIFT LEVER POSITION	DRIVELINE CONTROL POSITION	DRIVING FRONT AXLE	INTERAXLE LOCKUP ENGAGED
HI	UNLOCK	NO	NO
HI	LOCK	YES	NO
LO	UNLOCK	YES	NO
LO	LOCK	YES	YES

Transparency HETS 4-21

g. Tunnel Panel Controls (Driver's Side).

(1) Engine switch [1] is a three-position switch (OFF, ON, START). When switch is in ON position, electrical system will operate. START position operates engine cranking circuit. When switch is released after engine starts, switch will return to ON position. Positioning switch to OFF will shutdown engine and turn off electrical system.

(2) Utility outlet [2] is used to connect operating power to portable work light.

(3) Transmission range selector [3] is used to select transmission range.

(a) R (reverse). Permits the vehicle to be operated in reverse.

(b) N (neutral). The transmission drive gears are disengaged. The N position is used for starting, parking, and performing winch operations. Always apply the parking brakes when performing these functions.

(c) 2-5 (drive). Used to move forward from a stop. Drive in normal conditions (approximately 45 MPH [72 km/h]) over hard, smooth surfaces that provide high wheel traction and little or no wheel slippage.

(d) 2-4 (fourth range). Used to move forward from a stop. Drive in normal conditions (approximately 32 MPH [51 km/h]).

(e) 2-3 (third range). Used to move forward from a stop, drive down moderate grades, in off-road conditions, and in city traffic (approximately 22 MPH [35 km/h]). Also used in climbing hills and engine braking to slow the HET when descending steep hills.

(f) 2 (second range). Used to move forward from a stop. Driving down moderate grades (approximately 14 MPH [23 km/h]). Also used in climbing hills and engine braking to slow the HET when descending steep hills.

(g) 1 (first range). Used to move forward from a stop. Driving through mud, sand, or snow. Used for driving up or down steep grades (approximately 4 to 9 MPH [6 to 14 km/h]). Provides maximum vehicle speed control.

(4) Circuit breaker panel [4] opens automatically to protect HET from electrical overload. Push in circuit breaker buttons to reset.

(5) Transfer case shift lever [5] is used to select high or low range or neutral. The driveline lockup light lights green when driveline control is in LOCK position or when transfer case shift lever is in LO position.

(6) Engine brake retarder HI/LO switch [6] is used to control high or low mode of engine brake retarder. Switch in up position is LO and switch in down position is HI. Engine brake retarder ON/OFF switch must be ON for HI/LO switch to function.

(7) Engine brake retarder ON/OFF switch [7] is a two-position switch used to turn engine brake retarder on or off. Switch in up position is OFF and switch in down position is ON. Switch locks in the OFF position.

Transparency HETS 4-22

h. Cab Mounted Foot Controls.

(1) Accelerator pedal [1] is used to control engine speed.

(2) Brake pedal (air brake) [2] applies service brakes when pressed. Also applies trailer service brakes when HET is coupled to trailer.

Transparency HETS 4-23

i. Steering Column Mounted Controls.

(1) Headlight dimmer switch [1]. This button is located at the end of the turn signal arm. Press the button to raise or lower headlight beams. High beam indicator light illuminates blue when high beams are on.

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

(3) Trailer hand brake control [3] (Johnny bar or trailer hand valve) is used to apply and release trailer brakes without engaging HET service brakes. The trailer hand brake control applies brake to trailer only. Do not use during normal operations because it will cause the trailer to skid. Do not apply trailer hand brake control as a parking brake. Trailer brakes may not hold vehicle and trailer on a grade. A runaway vehicle may cause severe personal injury or death. The trailer hand brake is ONLY used to test the coupling of the HET to the semitrailer.

(4) Emergency flasher control [4] is a two-position, push/pull switch used to control emergency flashers. Blackout light switch must be in OFF position before emergency flashers will operate. Push in switch to activate emergency flashers. Left and right turn indicators flash green when emergency flashers are engaged.

(5) Horn button [5] sounds horn when pressed. Horn is for use in populated areas, if not restricted by local laws.

(6) Turn signal lever [6] is used to operate turn signals. Push lever up to signal right turn or pull lever down to signal left turn. Automatically returns to OFF position when steering wheel is returned to the straight position. Left or right turn indicator flashes when the turn signal is engaged.

(7) Steering column lock [7] is used to lock steering when vehicle is not in use.

Transparency HETS 4-24

j. Cab Mounted Hand Controls.

(1) Cab door window glass regulator [1] is located on each door. Raises or lowers window glass when handle is turned.

(2) Cab door latch [2] is located on inside and outside of each door. Opens cab door from inside and outside when pulled.

(3) Map light switches [3] are located behind each door above seat belt mount. Two-position switches are used to control map lights.

(4) Air horn chain [4] sounds horn when pulled. Horn is for use in unpopulated areas, if not restricted by local laws.

(5) Cab door handle [5] is located on each door. Closes cab door from inside when pulled.

Transparency HETS 4-25

k. Tunnel Panel Controls (Passenger's Side).

(1) STE/ICE zero offset switch [1] is used to reset instruments connected STE/ICE receptacle to zero.

(2) STE/ICE receptacle [2] is used to connect STE/ICE.

Transparency HETS 4-26

l. Front Seat Adjustment Controls.

(1) Seat belt/shoulder harness [1] is used to secure personnel in seat.

(2) Height adjustment control [2] is used to adjust seat height.

(3) Forward/backward adjustment control [3] is used to move seat forward or backward.

(4) Ride adjustment control [4] is used to adjust seat tension and ride firmness.

(5) Seat lift controls (passenger seat only) [5] is used to lift and move seat forward to allow access to rear seat.

Transparency HETS 4-27

m. Winch Station Controls.

(1) Personnel guard [1] is a two-position guard that protects operator during winch operation.

(2) Auxiliary winch manual kickout lever [2] is used to engage and disengage auxiliary winch. Lift and rotate control 180 degrees counterclockwise to disengage kickout. When disengaged, winch drum will spool freely and cable can be payed out by hand. Return control to LOCK position to engage kickout. When engaged, winch operation is controlled from auxiliary winch control.

(3) Hydraulic oil sampling valve [3] is used to take sample of hydraulic oil for AOAP.

(4) Oil level sight glass [4] indicates full or low level of hydraulic oil in reservoir. Fluid level should be between top (full) and bottom (low) of two sight glasses.

(5) Driver side winch control [5] is used to pay out and reel in driver's side winch cable when driver side winch kickout is engaged.

(6) Auxiliary winch control [6] is used to pay out and reel in auxiliary winch cable when auxiliary winch manual kickout is engaged.

(7) Passenger side winch control [7] is used to pay out and reel in passenger's side winch cable when passenger side winch kickout is engaged.

(8) Cable hold down control [8] is used to engage and disengage cable tensioner on main winches. Control is off when paying out winch cable with auxiliary winch. Control is on when reeling in winch cable to ensure cable spools properly onto drum.

(9) Passenger side winch kickout control [9] is used to engage and disengage passenger side winch kickout. When disengaged, winch drum will spool freely and cable can be payed out using auxiliary winch. When engaged, winch operation is controlled from passenger side winch control.

(10) Engine speed control switches [10] are used to control speed of the engine during winch operations. When left switch is at low engine idle, engine operates at low rpm. When left switch is at high engine idle and push to lock engine at high idle switch is pressed, engine operates at high rpm.

(11) Winch speed control switch [11] is a two-position switch used to control pay out/reel in speed of main winches.

(12) Driver side winch kickout control [12] is used to engage and disengage driver side winch kickout. When disengaged, winch drum will spool freely and cable can be payed out using auxiliary winch. When engaged, winch operation is controlled from driver side winch control.

Transparency HETS 4-28

n. Fifth Wheel Controls.

(1) Primary lock release handle [1] is used to open fifth wheel coupler jaws. Jaws open when handle is pulled.

(2) Secondary lock release handle [2] is used to unlock fifth wheel coupler jaws and allows them to be opened with primary lock release handle. Coupler jaws unlock when handle is pulled.

Transparency HETS 4-29

o. Exterior Mounted Controls/Indicators (Driver's Side).

(1) Engine oil sampling valve [1] is used to take sample engine oil for AOAP.

(2) Engine oil dipstick [2] indicates engine oil level. Turn dipstick handle counterclockwise to release from tube and obtain measurement. Fully insert dipstick into tube and turn handle clockwise to secure.

(3) Transmission oil sampling valve [3] is used to take sample of transmission oil for AOAP.

(4) Transmission oil dipstick [4] indicates transmission oil level. Turn dipstick handle counterclockwise to release from tube and obtain measurement. Fully insert dipstick into tube and turn handle clockwise to secure.

(5) Fuel primer pump [5] supplies fuel to fuel lines. Hand pump is used after fuel system maintenance and to drain water from fuel/water separator.

(6) Fuel shutoff valve [6] isolates left and right fuel tanks. The valve should be closed during side slope operation when left side of HET is higher than right. The valve should be open all other times.

Transparency HETS 4-30

p. Exterior Mounted Controls/Indicators (Passenger's Side).

(1) Power steering oil dipstick [1] indicates power steering oil level. Turn dipstick handle counterclockwise to release from tube and obtain measurement. Fully insert dipstick into tube and turn handle clockwise to secure.

(2) Arctic kit pump switch [2], when installed, is a two-position switch used to control coolant pump operation.

(3) Right fuel shutoff valve [3] isolates left and right fuel tanks. Should be closed when required by maintenance procedures. Should be open all other times.

Transparency HETS 4-31

q. Extend Footrest.

(1) Install footrest.

(a) Remove the two lockpins [1] from the two forward lockpin holes [2].

(b) Pull footrest [3] toward seat [4] so the two rear lockpin holes [5] are aligned.

(c) Install the two lockpins [1] in the two rear lockpin holes [5].

(2) Stow footrest.

(a) Remove the two lockpins [1] from the two rear lockpin holes [5].

(b) Push footrest [3] forward under floorbox [6] until the forward lockpin holes [2] are aligned.

(c) Install the two lockpins [1] in the forward lockpin holes [2].

Transparency HETS 4-32

r. Rifle Stowage.

(1) Stow rifle in stowage mount.

(a) Position rifle butt [1] in lower mount [2] with trigger guard [3] toward rear.

(b) Pull rifle mount handle [4] of top mount [5] out and toward middle of cab.

(c) Place rifle heat guard [6] in top mount [5].

(d) Push rifle mount handle [4] across rifle heat guard [6].

(e) Ensure rifle is held tightly in mount.

(2) Remove rifle from stowage mount.

(a) Pull rifle mount handle [4] of top mount [5] out and toward outside of cab.

(b) Remove rifle heat guard [6] from top mount [5].

(c) Remove rifle butt [1] from lower mount [2].

Transparency HETS 4-33

s. Rear Seat/Bed Conversion.

NOTE: Assistant is required in subparagraph (1) (a), (b), and (c) and subparagraph (2) (a), (b), and (c).

(1) Change rear seat to beds.

(a) Pull up and hold lever [1], while assistant pulls up and holds lever [2].

(b) Raise back of seat [3], with aid of assistant, until it is in a horizontal position.

(c) Attach the two cables [4], with aid of assistant, to the two cab ceiling hooks [5].

(2) Change beds to rear seat.

(a) Remove the two cables [4] from the two cab ceiling hooks [5] with aid of assistant.

(b) Lower back of seat [3] until it is in a vertical position.

(c) Pull up and hold lever [1], while assistant pulls up and holds lever [2].

(d) Push in back of seat [3]. Release levers [1 and 2]. Ensure that back of seat [3] is locked in place.

Transparency HETS 4-34

t. Operate Gas Particulate Filter Unit.

WARNING

After NBC exposure of HET, handle all air filters with extreme caution. Only trained personnel should handle contaminated filters. Unprotected personnel may experience injury or death if residual toxic agents or radioactive materials are present. Wear protective mask, hood, protective outer-garments, chemical protective gloves, and boots in NBC environment. Protective mask and filter unit will not protect against carbon monoxide.

NOTE: The GPFU is designed to operate with the M25A1 or M42 protection mask.

NOTE: Do subparagraphs t., u., and v. (Operate Gas Particulate Filter Unit) only when under NBC attack or when ordered to do so. Refer to TM 3-4240-280-10 for detailed information on the protective mask.

(1) Remove protective mask [1] and canister [2] from pouch [3].

(2) Put on protective mask [1].

(3) Clear and seal protective mask [1].

Transparency HETS 4-35

u. Operate Gas Particulate Filter Unit (continued).

WARNING

Spring clip on filter assembly air intake must be pulled so intake holes are open for gas particulate filter system to work. Clip is repositioned through bottom of bracket. Failure to pull out clip may result in death to personnel.

(1) Pull up on spring clip [4] to uncover intake holes [5].

(2) Press gas particulate filter switch [6] to ON position.

Transparency HETS 4-36

v. Operate Gas Particulate Filter Unit (continued).

NOTE: Three hoses are located on left cab wall behind the driver seat. Two hoses are located on right cab wall behind passenger seat.

(1) Disconnect air duct hose breakaway socket [7] from mount [8].

(2) Connect air duct hose breakaway socket [7] to canister [9] of protective mask [10] and breathe through mask.

Transparency HETS 4-37

w. Gas Particulate Filter Hose Removal/Stowage.

NOTE: To remove and stow the gas mask and related equipment, perform subparagraphs w. and x. (Gas Particulate Filter Hose Removal/Stowage) only when NBC attack is over or when ordered to do so.

(1) When protective mask [1] is no longer needed, disconnect air duct hose breakaway socket [2] from canister [3].

(2) Remove protective mask [1] and place in pouch [4].

(3) Press GAS PARTICULATE FILTER switch [5] to OFF position.

Transparency HETS 4-38

x. Gas Particulate Filter Hose Removal/Stowage (continued).

(1) Push in on clip [6] to cover intake holes [7].

(2) Connect air duct hose breakaway socket [8] to mount [9].

3. Practical exercise. None

4. Evaluate. 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 1.0 hour conference.

LESSON TITLE: KNOW ENGINE START AND SHUTDOWN PROCEDURES

TASK NUMBER: 551-721-3337 (Drive a Heavy-Equipment Transporter [HET] on Improved Roads)

A. TRAINING OBJECTIVE.

TASK: Know engine start up and shutdown procedures.

CONDITIONS Given instruction on the M1070 HET and a requirement to locate the controls and explain the engine start up and shutdown procedures.

STANDARD: 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. References: TM 9-2320-360-10.

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 M1070 HET. The instructor will review special cautions which will increase vehicle and component longevity.

NOTE: An instructor will be inside the cab whenever a student is driving the HET.

WARNING

Before starting and moving the HET, the operator must visually check to see that all areas of the vehicle are clear of personnel before attempting to start the engine. Failure to comply could result in serious injury or death to personnel.

Transparency HETS 4-39

a. Warm Engine Start-up.

(1) Pull out PARKING BRAKE control [1].

(2) Set transmission range selector [2] to N.

CAUTIONS

Check gauges indicator lights up amber to warn the driver of a potential engine failure (such as low oil pressure, low coolant, coolant overheating, and so on) has occurred. If light comes on, shut down engine immediately and notify unit maintenance.

Check engine indicator lights up amber to warn the driver of failures that will not critically damage engine. HET should be serviced as soon as possible.

Check gauges and check engine indicators will light and warning alarm will sound for approximately 5 seconds when engine switch is positioned to ON. Do not attempt to start engine if the check gauges or check engine indicators remain lit after approximately 5 seconds.

(3) Turn engine switch [3] to ON. When switch is positioned to ON, the check gauges indicator [4] and check engine indicator [5] will light and warning alarm will sound for approximately five seconds. Refer to TM 9-2320-360-10, Table 3-1 (Troubleshooting), if the check gauges or check engine indicators remain lit after approximately 5 seconds.

Transparency 4-40

b. Warm Engine Start-up (continued).

(1) Turn engine switch [6] to START for about 15 seconds or until engine starts. If HET fails to start, wait 15 seconds before next attempt to allow starter to cool. Release switch. Switch will spring back to the ON position.

NOTE: If engine fails to start after three attempts, refer to TM 9-2320-360-10, Table 3-1 (Troubleshooting).

(2) Low air indicator [7] will light red and warning alarm [8] will sound until air pressure is greater than 60 psi (414 kPa).

CAUTIONS

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

Do not operate engine above 1,000 rpm during warm up until oil pressure gauge indicates 25 to 30 psi (172 to 207 kPa) at 800 to 1,000 rpm.

NOTE: At idle, oil pressure can go as low as 5 psi (34 kPa). At temperatures between -26 degrees F (-14 degrees C) and -50 degrees F (-28 degrees C), run engine at 1,200 to 1,500 rpm for an additional 10 minutes. If winches are going to be used immediately, only run engine at 1,200 to 1,500 rpm for 5 minutes before performing winch warm-up (see TM 9-2320-360-10, paragraph 2-25aa).

Transparency HETS 4-41

c. Warm Engine Start-up (continued). Oil pressure gauge [9] should indicate 50 to 70 psi (345 to 483 kPa) when engine operates at 1,800 to 2,100 rpm. Lack of lubrication may damage engine.

Transparency HETS 4-42

d. Warm Engine Start-up (continued).

NOTE: If red and green needles on air pressure gauge do not read 60 to 120 psi (414 to 827 kPa) after warm up, shut off engine. Notify unit maintenance.

(1) Check that air pressure gauge [10] reads 60 to 120 psi (414 to 861 kPa). Low air indicator [11] lights (red) and warning alarm [12] will sound until both needles reach 60 to 75 psi (414 to 517 kPa).

(2) Check that fuel gauge [13] shows enough fuel to complete the mission.

(3) Check that the water temperature gauge [14] does not read over 210 degrees F (100 degrees C).

(4) Check that battery gauge (24-volt system) [15] reads between 26 and 30 volts.

(5) Check that battery gauge (12-volt system) [16] reads between 13 and 15 volts.

Transparency HETS 4-43

e. Warm Engine Start-up (continued). Check that air cleaner restriction indicator [17] reads less than 15 inches H_2O (in green area).

Transparency HETS 4-44

a. Cold Engine Start-up.

(1) Pull out PARKING BRAKE control [1].

(2) Set transmission range selector [2] to N.

CAUTIONS

Check gauges indicator lights up amber to warn the driver of a potential engine failure (such as low oil pressure, low coolant, coolant overheating, and so on) has occurred. If light comes on, shut down engine immediately and notify unit maintenance.

Check engine indicator lights up amber to warn the driver of failures that will not critically damage engine. HET should be serviced as soon as possible.

Check gauges and check engine indicators will light and warning alarm will sound for approximately 5 seconds when engine switch is positioned to ON. Do not attempt to start engine if the check gauges or check engine indicators remain lit after approximately 5 seconds.

(3) Turn engine switch [3] to ON. When switch is positioned to ON, the check gauges indicator [4] and check engine indicator [5] will light and warning alarm will sound for approximately five seconds. Refer to TM 9-2320-360-10, Table 3-1 (Troubleshooting), if the check gauges or check engine indicators remain lit after approximately 5 seconds.

CAUTIONS

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

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

(4) Press ether start control button [6], for five seconds; wait five seconds more before using it again or turning the engine switch [3] to start. Press ether start control button as indicated below:

(a) One time for temperatures between +45 degrees F to +10 degrees F.

(b) Two times for temperatures between +10 degrees F to -10 degrees F.

(c) Three times for temperatures between -10 degrees F to -25 degrees F.

(5) Turn engine switch [3] to START for about 15 seconds or until engine starts. If HET fails to start, wait 15 seconds before next attempt to allow starter to cool. Release switch. Switch will spring back to the ON position.

NOTE: If engine fails to start after three attempts, refer to TM 9-2320-360-10, Table 3-1 (Troubleshooting).

CAUTIONS

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

Do not operate engine above 1,000 rpm during warm up until oil pressure gauge indicates 25 to 30 psi (172 to 207 kPa) at 800 to 1,000 rpm.

Transparency HETS 4-45

a. Engine Shutdown.

WARNING

Do not park HET on a steep grade. Injury to personnel or damage to equipment may result if vehicle breaks away. If HET must be parked on a grade, wheels must be chocked. If parked on a paved road, wheels must be turned towards the shoulder if facing down hill and away from shoulder if facing uphill.

(1) Bring vehicle to a complete stop.

(2) Shift transmission range selector [1] to the N position.

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

CAUTION

Before shutting down engine, run at reduced speed (800 to 1,000 rpm) under no-load conditions for 3 to 5 minutes to allow turbocharger to slow down and cool off. Failure to comply may result in damage to turbocharger.

Transparency HETS 4-46

b. Engine Shutdown (continued).

(1) Run engine at 800 to 1,000 rpm (see tachometer) [3] for 3 to 5 minutes. This continues oil circulation to turbocharger which is turning at about 67,000 rpm.

(2) Release accelerator pedal [4].

(3) Shut off all accessories.

(4) Turn engine switch [5] to OFF position.

(5) Chock the front and rear of any wheel on the HET tractor if parked on a level surface.

3. Practical exercise. None.

4. Evaluate. 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: 551-721-3337 (Drive a Heavy-Equipment Transporter [HET] on Improved Roads)

A. TRAINING OBJECTIVE.

TASK: Operate the engine brake retarder.

CONDITIONS Given instruction on the M1070 HET 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. References: TM 9-2320-360-10.

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 HETS 4-47

a. HETS Engine Brake Operation. The principle behind the engine brake is very simple. It is a hydraulic-operated device that converts a power-producing diesel engine into a power absorbing retarding mechanism. In order to understand how the engine brake provides its strong retarding power, compare the engine cycles with and without the 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 as above.

(2) During the compression stroke:

(a) Without engine brake [2]: Air is compressed to between 500 and 1,000 psi; heat rises to about 1,000 degrees 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 forces 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, which 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.

(5) Discuss the system briefly. Explain that DDEC controls the brake. There are three basic parts:

- Engine device that works the exhaust valve.
- DDEC control.
- Three-position activation switch.

Transparency HETS 4-48

b. How to Operate Engine Brake Controls. The following lists and describes how to operate the engine brake controls.

NOTE: The engine must be warmed prior to using or checking the operation of the engine brake. The reason for this is that the engine brake uses engine oil to operate. The oil must be warm enough to flow through the tiny openings and valves that cause the engine brake to operate.

WARNING

Do not use engine brake retarder in wet, slick, or icy road conditions. Failure to comply may result in loss of vehicle control. Personal injury or death may result.

CAUTION

Use engine brake only when additional braking is required (for example, descending grades). Continuous use of engine brake may cause increased fuel consumption or driveline damage.

(1) The engine brake switch has two positions: OFF (up position) and ON (down position). Switch locks in the OFF position.

(2) The engine brake retarder switch has two positions: HI (down position) and LOW (up position). Engine brake retarder on/off switch must be on for high\low switch to function.

NOTE: Locking tab on switch must be pressed down to permit switch to be pressed on.

(3) Press engine brake retarder on/off switch [1] to ON.

(4) Press engine brake retarder HIGH/LOW switch [2] to LOW.

(5) Lift foot off the throttle treadle [3] (accelerator pedal). Engine brake will automatically slow vehicle.

(6) Optimum braking occurs with engine between 1,650 and 2,100 rpm (see tachometer [4]. Select the appropriate transmission range and engine brake setting to maintain desired effect. Do not over "rev" engine during braking.

(7) If more braking is required, set the engine brake switch 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 brakes for maximum braking. The engine brake is a supplement to the service brakes. The engine brake is a vehicle-slowing device, not a vehicle-stopping device.

Transparency HETS 4-49

c. Engine Brake Operation Guidelines.

(1) Do not use engine brake until 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 system.

(6) 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. Evaluate. 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 RETARDER (JACOBS BRAKE) INFORMATION SHEET

1. The M1070 HET is equipped with a retarder system that enables the engine to act as a brake. The engine brake should be used for descending grades or in any situation where slowing is required except on slippery road surfaces such as rain, snow, sleet, or ice. Using the engine brake on slippery surfaces can cause the vehicle to skid. Optimum braking occurs with engine operating 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 speed between 1,650 and 2,100 rpm.

3. The following procedures should be followed when the vehicle tires have good traction:

a. Select a gear that will allow the engine (with the engine brake applied) to control the HET 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, downshift one gear (if you are in 2-4 you would downshift to 2-3 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 over speeds (above 2,100 rpm) apply the service brakes one time to slow the vehicle speed and regain control.

WARNINGS

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

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

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

5. The instructors must also explain to the students that braking ability and braking techniques are different with a loaded vehicle and the driver must think and plan ahead. The driver must increase his following distance and reduce his speed consistent with road and traffic conditions.

LESSON TITLE: OPERATE THE HET CTIS AND DRIVELINE LOCKUP

TASK NUMBER: 551-721-1368 (Drive Vehicle with Semitrailer on Side Roads and Unimproved Roads)

A. TRAINING OBJECTIVE.

TASK: Operate the HET CTIS and driveline lockup.

CONDITIONS Given instruction on the M1070 HET and a requirement to locate the controls and explain the operation of the CTIS and driveline lockup.

STANDARD: Correctly locate the controls and explain the operation of the HET CTIS and driveline lockup.

B. INTERMEDIATE TRAINING. None.

C. ADMINISTRATIVE INSTRUCTIONS.

1. Training time: As scheduled.
2. Training location: Classroom as scheduled.
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. References: TM 9-2320-360-10.

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 HET 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. The driveline control is used to control the drivetrain operation (lockup).

Transparency HETS 4-50

b. CTIS 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, 45 MPH; cross-country, 30 MPH; mud, sand, and snow, 15 MPH; and 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.

NOTE: The operator must always depress the start button on the controller module to initiate a change in CTlS setting.

(2) Overspeed indicator [2] lights up 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 up red to warn that air pressure in the vehicle air system is below 85 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 (CTIS) switch [4] is pushed to start operation of the CTIS.

(5) CTIS 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.

Transparency HETS 4-51

c. CTIS Speed Limits and Tire Pressures. The cold tire pressure chart shows speed limits and tire pressures for the four rotary switch positions. For example, if the switch is set for cross-country, the speed of the HET should not exceed 30 MPH and the tire pressure will automatically adjust. The following shows the speed limit and the tire pressure for each mode selected.

(1) Highway operation. Limit speed to 45 MPH. Tire pressure is 75 psi in all tires.

(2) Cross-country. Limit speed to 30 MPH. Tire pressure in all tires is 55 psi.

(3) Mud, sand, and snow. Limit speed to 15 MPH. Tire pressure in all tires is 40 psi.

(4) Emergency. Limit speed to 5 MPH. Tire pressure in all tires is 30 psi.

Transparency HETS 4-52

d. CTIS Operating Procedures. If the HET 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) Ensure CTIS ON/OFF switch [1] is to the ON position.

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

(2) Set rotary selector switch [2] on the CTIS for correct tire pressure to match anticipated driving conditions.

(3) Press the accelerator and hold the start CTIS switch [3] on the controller for one second to activate the CTIS system.

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

(4) Observe green LED lights on controller to check system operation.

CAUTION

The rotary selector 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 the correct situation.

(a) A continuous green light indicates the CTIS 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. This requires the operator to take corrective action (change the switch setting).

(5) The amber overspeed light begins to flash when an overspeed condition has been present for one minute. It continues to flash along with the green light until the new CTIS setting is reached.

(6) The red low air light indicates the CTIS has turned off due to a low air pressure in the braking system. Flashing red light indicates a CTIS problem.

NOTE: 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.

NOTE: 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 to off. To start the CTIS, turn on/off switch to on and press the start button.

CAUTION

When using emergency position on CTIS, top speed should not exceed 5 MPH and distance traveled should not exceed 15 miles.

Transparency HETS 4-53

e. HET Driveline Modes.

NOTE: The driveline is not locked in any of the CTIS modes. This must be done by moving the positions of the driveline control switch on the center panel and the transfer case lever.

(1) Driveline control. Used to control drive train operation. It has two functions depending on the transfer case shift lever position. The control either activates the front axle lock-up or the axle differential interaxle power dividers.

(2) Operation.

(a) When the driveline control is in the UNLOCK position and the transfer case in high range, the transfer case drives the rear axles only.

(b) When the driveline control is in the LOCK position and the transfer case in high range, the transfer case also drives the front axle.

(c) When the driveline control is in the UNLOCK position and the transfer case in low range, the interaxle differentials are unlocked allowing them to turn at different speeds.

(d) When the driveline control is in the LOCK position and the transfer case in low range, the interaxle differentials lock causing all differentials to turn at the same rate, thus further increasing traction.

3. Practical Exercise. The practical exercise for this lesson is integrated in the on 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 PMCS

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

A. TRAINING OBJECTIVE.

TASK: Perform operator PMCS on an M1070 HET.

CONDITIONS Given instruction, DA Form 2404 (or ULLS generated DA Form 5988-E), pencil, TM 9-2320-360-10, equipment records folder, rags, lubricants, coolant, an M1070 HET with BII, and a requirement to inspect the HET according to the PMCS tables listed in TM 9-2330-360-10.

STANDARD: Correct all faults within the operator's level of maintenance and legibly record all others on DA Form 2404 (or ULLS generated DA Form 5988-E). If no faults are found, make necessary entries on DA Form 2404 (or ULLS generated DA Form 5988-E).

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 every three students for the demonstration and practical exercise.

6. Training aids and equipment: Television, VCR, TVT 55-48 (PIN: 710750DA), "HET Tractor PMCS", rags, lubricants, and coolant. DA Form 2404 (or ULLS generated DA Form 5988-E), pencil, TM 9-2320-360-10, equipment records folder, and an M1070 HET with BII for every three students.

7. References: AR 385-55, DA Pamphlet 738-750, and TM 9-2320-360-10.

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 55-48, “HET Tractor PMCS”.

b. Demonstrate before-, during-, and after-operation PMCS to the students.

3. Practical exercise.

a. Assign students to vehicles and issue TM 9-2320-360-10, pencil, DA Form 2404 (or ULLS generated DA Form 5988-E), and equipment records folder. Inform students on the location of rags, lubricants, and coolant.

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. Students are tested on PMCS during the EOCCT.

E. SAFETY RESTRICTIONS.

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

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

3. Ensure students remove all jewelry and identification tags before performing PMCS.

4. Ensure all personnel wear hearing protection when the engine is running.

5. Ensure students pay particular attention to the cautions and warnings listed in the operator's manual.

6. Ensure all personnel wear seat belts when the vehicle is in motion.

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

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

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

10. Ensure all personnel maintain at least three points of contact when mounting or dismounting the HET (to include performing PMCS).

11. The HET ladder must be used when performing maintenance. The two hooks on the ladder must be installed in the holes located on top of the fender prior to use. Using the ladder for other applications could result in serious injury to personnel.

12. Ensure all personnel are clear of vehicle before engine start is attempted. Operator must visually check to see that all areas of the vehicle 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 4.5 hours (.5 conference, 1.5 demonstration, and 2.5 practical exercise). The remaining PMCS is performed throughout the course in conjunction with driving tasks.

LESSON TITLE: DRIVE THE M1070 HET ON IMPROVED ROADS

TASK NUMBER: 551-721-3337 (Drive a Heavy-Equipment Transporter [HET] on Improved Roads)

A. TRAINING OBJECTIVE.

TASK: Drive the M1070 HET on improved roads.

CONDITIONS Given instruction, DD Form 1970 (or ULLS generated DA Form 5987-E), DA Form 2404 (or ULLS generated DA Form 5988-E), pencils, TM 9-2320-360-10, equipment records folder, rags, lubricants, coolant, a suitable driver training area, wide load ahead and wide load follows signs for each HET, escort/control vehicles (minimum of 2 vehicles required), an M1070 HET with BII, and a requirement to operate the HET (start the vehicle, put the vehicle 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 an M1070 HET 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, training area, and driver training route (built up and rural routes) 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 three students for the demonstration and practical exercise.

6. Training aids and equipment: Television, VCR, TVT 55-51 (PIN: 710753DA), "HETS Driving Techniques", rags, lubricants, coolant, traffic cones, or barricades. DD Form 1970 (or ULLS generated DA Form 5987-E), DA Form 2404 (or ULLS generated DA Form 5988-E), pencils, TM 9-2320-360-10, equipment record folder, and an M1070 HET with BII for every three students. Wide load ahead and wide load follows signs are needed for each vehicle.

Escort/control vehicles are required (minimum of 2 vehicles required). A sample escort/controller's brief sheet is located at the end of this lesson for guidance. Recommend a communication system for the control vehicles. A sample escort/controller's briefing sheet is located at the end of this lesson for guidance.

7. References: AR 385-55, DA Pamphlet 738-750, FM 21-305, and TM 9-2320-360-10.

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: An instructor will be inside the cab whenever a student is driving the HET.

    a. Show TVT 55-51, (PIN: 710753DA), "HETS Driving Techniques".

    b. Place vehicle in motion.

        (1) Perform before-operation PMCS.

        (2) Remove and stow wheel chocks.

        (3) Adjust seat as needed.

        (4) Adjust foot rest if required.

        (5) Adjust each rear view mirror so back of HET and view of the road can be seen.

WARNING

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

(6) Adjust seat belt as needed.

(7) Start engine and allow it to warm up.

CAUTION

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

(8) Check all gauges and instruments. Ensure all are registering normal reading.

(9) Turn on lights as appropriate.

(10) Set the CTIS rotary selector switch to the appropriate position. Press and hold CTIS start switch for approximately two seconds.

(11) Set the transfer case shift lever to the appropriate range.

(12) Push down on service brake pedal to apply the brakes and push in the parking brake control to release the parking brake.

(13) Shift the transmission range selector to the appropriate range.

(14) Release the service brake pedal and slowly press the accelerator pedal until the HET reaches the desired speed.

(15) 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.

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

c. Explain hill climbing.

(1) The engine works hardest when moving a loaded vehicle up a grade. Proper use of gear ranges will shorten the time on hills.

(2) Unless the hill is extreme, begin in gear range 2-5, and depress the accelerator pedal all the way downward. Keep it there as the HET 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.

CAUTIONS

If transmission is being operated near the shift point of the next higher gear range and is continuously shifting up and down, shift to next lower gear range. Failure to comply may damage equipment.

If transmission or transfer case temperature exceeds 250 degrees F (121 degrees C), shift to next lower gear range. Failure to comply may damage equipment.

(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 will 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 HET should be in to descend the other side of the hill.

(5) Use 1 (first range) when driving up or down steep grades.

(6) Set transfer case shift lever to low on any terrain when climbing extended grades greater then 5 percent at GCWR.

CAUTION

When using 1 (first gear) with transfer case in high, stop and shift transfer into low if transmission temperature exceeds 250 degrees F (121 degrees C) or if vehicle cannot maintain 4 MPH. Failure to comply will result in transmission overheating.

d. Explain procedures for downhill driving.

(1) Select a "safe" speed that is not too fast for the:

- Total weight of the vehicle and cargo.
- Length of the grade.
- Steepness of the grade.
- Road conditions.
- Weather conditions.

(2) 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).

(3) Check brakes before starting the downgrade.

(4) 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).

(5) Pay attention to signs indicating location of escape ramps.

(6) When vehicle speed reaches the maximum "safe" speed, apply brakes just hard enough to feel a definite slowdown.

(7) When the vehicle speed has been reduced to approximately 5 MPH below the "safe" speed, release the brakes. (This brake application should last for about 3 seconds).

(8) When vehicle speed has increased to the "safe" speed, repeat subparagraph (6) and (7) above.

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 application of the brake pedal will deplete air supply and service brakes will not work until air pressure builds up again. Serious personal injury or death may result from loss of service brakes.

e. Explain maneuvering the vehicle.

(1) Right turn.

(2) Left turn.

(3) Right and left curves.

(4) At intersections.

(5) When steering.

(6) Through U-turn.

f. Explain following distance.

(1) Maintain one second for each 10 feet of vehicle length at speeds below 40 MPH. The M1070 HET is 30 feet long, so at speeds up to 40 MPH, allow three seconds following distance.

(2) Increase distance by one second for speeds over 40 MPH. At 45 MPH with the M1070 HET, allow four seconds following distance.

(3) Increase by several seconds for rain, fog, and winter conditions.

g. Explain steering.

(1) When making gradual steering corrections.

(2) Avoid abrupt steering movements.

(3) When passing stationary and moving vehicles.

h. Explain lane changing.

(1) Signal intentions.

(2) Check mirrors.

i. 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).

WARNING

Repeated application of the brake pedal will deplete air supply and service brakes will not work until air pressure builds up again. Serious personal injury or death may result from loss of service brakes.

NOTE: The heavier the vehicle, the more work the brakes must do to stop it, and the more the heat they absorb. The brakes, tires, springs, and shock absorbers on heavy vehicles are designed to work best when the vehicle is fully loaded. An empty HETS or a bobtail HET requires greater stopping distance because of smaller tire foot print which results in less traction.

(2) Using the service brakes.

(3) Driving on flat roadways.

(4) Driving down hills.

(5) Driving on sand, snow, ice, and wet surfaces.

(6) Using emergency braking procedures.

(7) Downshifting the transmission.

j. Explain procedures for backing.

(1) 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.

(2) If the vehicle must be parked, the driver parks so he will be able to pull forward when leaving.

(3) Though planning ahead can reduce the need to back, almost everyone who drives will have to back on occasion.

(4) These four simple rules will help to back safely:

(a) Inspect your intended path.

(b) Back and turn toward the driver's side.

(c) Use four-way flashers and horn.

(d) Use ground guide(s).

WARNING

Ensure the position of the ground guide(s) is known at all times. Failure to observe this warning may result in personal injury or death.

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 and 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.

k. Park the HET and shut down the engine.

(1) Align the front tires in a straight-ahead position (unless parking on a grade with a curb). If parked on a paved road with a curb, wheels must be turned towards the curb if facing downhill and away from the curb if facing uphill.

(2) Bring vehicle to a complete stop.

(3) Shift transmission range selector to N position.

(4) Pull parking brake control out to apply the parking brakes.

CAUTION

Before shutting down engine, run at reduced speed (800 to 1,000 rpm) under no-load conditions for 3 to 5 minutes to allow turbocharger to slow down and cool off. Failure to comply may result in damage to turbocharger.

(5) Increase accelerator pedal pressure until tachometer indicates 800 to 1,000 rpm.

(6) Run engine for 3 to 5 minutes.

(7) Turn off lights and electrical accessories.

(8) Turn ignition switch to OFF position.

(9) Chock wheels on HET. When parked on a level surface, place the chocks to the front and rear of the front tire on the driver's side. If it is necessary to park on a grade, when parking downhill, place the chocks in

front of the front tires on both sides of the HET. When parking uphill, place the chocks behind both front tires.

(10) Perform after-operation PMCS.

l. Give safety briefing.

m. Explain ground guide safety precautions for backing the HET.

n. Demonstrate hand and arm signals required for this exercise.

o. Demonstrate driving within the training area.

3. Practical exercise.

a. Assign students to vehicles and issue TM 9-2320-360-10, pencils, DD Form 1970 (or ULLS generated DA Form 5987-E), DA Form 2404 (or ULLS generated DA Form 5988-E), and equipment records folder. Tell students where rags, coolant, and lubricants are located.

b. Students perform before-operation PMCS on their assigned vehicle.

c. Students practice maneuvering the M1070 HET through the courses laid out in the training area (see Chapter 6). During-operation PMCS is also conducted at this time.

NOTE: As each student practices driving, an assistant instructor rides in the right front seat, the other two student drivers ride in the rear seat and rotate driving duties. 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 habits.

d. After the students have mastered driving the vehicle in the training area, they will then practice driving on the road.

4. Evaluate. Check every student's PMCS performance and driving to include backing.

5. Summary.

a. Recap main point.

b. Allow for questions.

c. Clarify questions.

d. Give closing statement.

6. Retraining. Retrain NO-GOs and slow leaners. 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 vehicle is parked.

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

3. Ensure that students remove all jewelry and identification tags before performing PMCS.

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

5. Ensure that ground guides are always used when backing the M1070 HET.

6. Maintain a safe following distance and speed limit when driving in the training area (as determined by the local command).

7. Do not shift the differential lock/unlock lever to the LOCK position while the vehicle is moving.

8. Ensure that all personnel wear seat belts when the vehicle is in motion.

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

10. Ensure personnel maintain at least three points of contact when mounting or dismounting the HET (to include performing PMCS).

11. The HET ladder must be used when performing maintenance. The two hooks on the ladder must be installed in the holes located on top of the fender prior to use. Using the ladder for other applications could result in serious injury or death to personnel.

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

13. 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.

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

F. ADDITIONAL COMMENTS AND INFORMATION. Recommended instructional time is 20 hours (.5 conference, .5 demonstration, and 18.5 practical exercise including 3.0 PMCS).

SAMPLE ESCORT/CONTROLLER'S BRIEFING SHEET

1. Always follow civilian/military police instructions when given.

2. On controlled access highways, use truck parking areas only.

3. Make only emergency halts on the roadside of controlled access highways.

4. Do not stand on the traffic side of a vehicle during halts on conventional highways.

5. Perform vehicle operation maintenance and check cargo security at every halt.

6. Move vehicles off the highway (to an area that can support its weight) before beginning maintenance.

7. Have reflectors and warning devices in place before beginning maintenance.

8. Use warning lights during periods of darkness or reduced visibility.

9. Begin movement only at the escort/controllers signal.

10. Observe vehicle speed restrictions: _____ as determined by the local commander or civil authorities.

11. Observe vehicle intervals (minimum of three seconds required under 40 MPH).

12. Use the acceleration lane, when available, to reach highway speed.

13. Gradually attain proper vehicle interval once on the main route.

14. Operate vehicle with headlights on at all times.

15. Use warning devices correctly.

16. Remember the following: Because of the weight of this vehicle, roadways and curbs may give way, causing the vehicle to turn over. When approaching oncoming traffic on a narrow road-

- Signal your intentions.
- Move to the right of the roadway only as far as you safely can and stop.
- Wait until the other vehicles have passed and resume travel on the most solid part of the road.

17. Add any additional comments as local conditions warrant.

LESSON TITLE: CHANGE TIRE ON HET USING TIRE DAVIT

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

A. TRAINING OBJECTIVE.

TASK: Change a tire on the HET using spare tire davit.

CONDITIONS Given instruction, TM 9-2320-360-10, rags, heavy work gloves, hearing protection, an M1070 HET with BII, and a requirement to change a simulated flat tire on the HET.

STANDARD: Perform task in the correct sequence according to TM 9-2320-360-10 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 and one assistant instructor for every three students for the demonstration and practical exercise.

6. Training aids and equipment: Rags, heavy work gloves, TM 9-2320-360-10, an M1070 HET with BII for every three students. Hearing protection is required for all personnel.

7. References: TM 9-2320-360-10.

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 HET is a two-soldier task. One soldier cannot safely do this task.

a. Review safety warnings.

b. Park the HET.

(1) Park the HET in a safe area, out of traffic, where there is no traffic danger to personnel changing the tire. The HET must also be parked on hard, level ground.

(2) Set the parking brakes, move the transmission range selector to neutral, turn the CTIS on/off switch to OFF, and shut off the engine.

(3) Turn on the emergency flashers as dictated by traffic hazards.

c. Tools. Remove all necessary tools from HET stowage boxes (jack, 2 each; jack handle extension; 40-inch handle extension; jack plate; rags; gloves; 3/4-inch tube wrench; 8-inch adjustable wrench; air hose; air impact wrench; 7/8 inch by 3/4 inch open end wrench; 33 mm socket; 1 1/2-inch socket; warning device kit; wheel chocks, 2 each; jack adapter; jack adapter pins, 2 each; extension wrench, 13 inch; and adapter.

NOTE: If an air impact wrench is not available, the sliding handle with the extension wrench can be used.

d. Prepare HET for spare tire removal.

(1) Position emergency reflective triangles as dictated by traffic hazards.

WARNING

Tire assembly is very heavy. Do not try to catch or lift tire assembly. Injury or death to personnel may result.

(2) Chock the HET tires by placing chock blocks in front and behind the tire on the opposite side of the flat tire.

(3) Remove the boot from the davit winch.

(4) Remove the rubber strap from the handcrank.

(5) Remove the T-handle and the tire lift arm from the mounting bracket.

(6) Remove the safety pin from the tire lift arm retaining pin. Remove this retaining pin from the tire lift arm.

(7) Install the tire lift arm in the mount and align the holes.

(8) Insert the retaining pin through the holes. Insert safety pin through retaining pin.

WARNING

Always wear heavy work gloves when handling winch cable. Never let cable run through bare hands. Frayed cable can cut hands severely.

e. Spare tire removal.

(1) Turn the winch handcrank counterclockwise of tire davit to pay out cable. Route the cable around the pulley.

(2) Continue paying out cable to route the cable through the spare tire assembly.

(3) Route the hook and cable through the spare tire assembly.

(4) Wrap the cable once around the spare tire and secure the hook to the cable, centered and at the top of the spare tire.

(5) Turn the winch handcrank clockwise to put light tension on the cable.

NOTE: If air powered wrench is used, HET air system will be depleted. Engine must be running to provide air to components. If air powered wrench is used, do subparagraphs (6) and (7) below. If air powered wrench is not used, go to subparagraph (8).

NOTE: If engine is started during tire changing, CTIS ON/OFF switch must be in the OFF position.

(6) Install the air hose to the air supply coupling.

(7) Install the air hose to the air wrench.

WARNING

Cable must be secure and taut around wheel before removing screws. Failure to comply may result in tire falling, causing injury to personnel.

(8) Remove the three screws from the wheel assembly and bracket of spare tire.

WARNINGS

Tire is very heavy weighing approximately 523 pounds. Place tire on ground as soon as possible. Personal injury may result if tire falls.

Always wear heavy work gloves when handling winch cable. Never let cable run through bare hands. Frayed cable can cut hands severely.

CAUTION

Use care when lowering tire to prevent damage to CTIS wheel valve.

(9) Turn the winch handcrank clockwise to lift the spare tire assembly off the tire bracket.

(10) The operator turns the winch handcrank counterclockwise to lower the spare tire assembly to the ground while the assistant pulls the spare tire assembly away from the HET.

WARNING

Do not remove cable at this time. Failure to comply may result in tire falling over causing serious injury or death to personnel.

(11) With the aid of the assistant, lean the spare tire assembly against the HET.

f. Positioning the jack under the front axle. If changing a tire on one of the rear axles, start at subparagraph g.

WARNINGS

Never go under equipment when supported only by a jack. Keep clear of equipment when raising or lowering. Equipment may fall and cause serious injury or death to personnel.

Never go under HET with engine running. Vehicle may move unexpectedly and cause serious injury or death to personnel.

(1) Position jack plate under spring saddle so that both jacks can be placed on jack plate.

NOTE: Jack number 1 should be positioned approximately 2 inches in front of spring saddle. Ensure jack cylinder is completely compressed.

(2) Position jack number 1 on jack plate, under spring, and in front of spring saddle.

(3) Unscrew jack extension ram of jack number 1 until it touches spring.

(4) Unscrew jack extension ram of jack number 2 approximately 3 inches.

NOTE: Adapter must be centered on jack.

(5) Install adapter on jack extension ram on jack number 2 with two locking pins and position jack on jack plate.

(6) Raise jack number 1 to its maximum height.

WARNING

Jack must be positioned using only the 40-inch jack extension handle. Do not attempt to crawl under the vehicle to position the jack. Failure to comply may result in injury or death to personnel.

(7) Move jack number 2 directly under spring saddle.

(8) Raise jack number 2 up until jack number 1 can be removed.

(9) Remove jack number 1 clear of the spring saddle and spring and proceed to subparagraph h.

g. Positioning jack under any rear axle.

WARNINGS

Never go under equipment when supported only by a jack. Keep clear of equipment when raising or lowering. Equipment may fall and cause serious injury or death to personnel.

Never go under HET with engine running. Vehicle may move unexpectedly and cause serious injury or death to personnel.

(1) Position jack plate under axle housing and trailing arm so that both jacks can be placed on jack plate.

(2) Install adapter on ram extension of jack number 1 with two locking pins and position jack plate under axle housing.

(3) Position jack number 2 on jack plate.

(4) Unscrew ram of jack number 1 until adapter touches axle housing.

(5) Raise jack number 1 to its maximum height.

(6) Move jack number 2 under trailing arm and raise until jack number 1 can be removed.

(7) Remove jack number 1.

h. Tire removal. Wheel and tire assemblies are removed from front and rear axles the same way.

(1) If HET 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.

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

CAUTION

Keep hoses clean and dry when removing from CTIS wheel valve. Failure to comply may result in damage to CTIS wheel valve.

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

WARNING

Do not loosen or remove the 12 smaller nuts around the outside edge of the rim. The tire assembly could pop off or the rim could separate causing serious injury or death.

(4) Studs and lug nuts on both sides of the HET have right-hand threads. Using air impact wrench and 1 1/2 inch socket, rotate the lug nuts counterclockwise to loosen the 10 lug nuts on the flat tire assembly. Do not remove the lug nuts.

(5) Raise the jack until the flat tire assembly is off the ground.

WARNINGS

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

Wheel assembly weighs approximately 523 pounds. Use caution when handling wheel assembly to keep it from tipping over. Failure to comply may result in serious injury or death to personnel.

CAUTION

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

WARNING

Always wear heavy work gloves when handling flat tire assembly to avoid injury.

(6) Remove the 10 lug nuts from the studs while the assistant holds the flat tire assembly.

CAUTION

Use care when removing flat tire assembly. Dragging tire assembly across studs may result in damage to studs.

(7) With the aid of an assistant, remove the flat tire from the hub and lean the tire against the HET. The jack handle extension may be used under the tire to assist walking or creeping the wheel away from the hub.

i. Install spare tire and wheel.

WARNING

Always wear heavy work gloves when handling winch cable. Never let cable run through bare hands. Frayed cable can cut hands severely.

(1) Remove the cable from the spare tire assembly with the aid of assistant.

(2) With the aid of assistant, roll the spare tire up to the axle where the flat tire was removed.

CAUTION

Position spare tire assembly so that two larger holes in spare tire assembly are aligned with CTIS fittings. Damage to CTIS fittings and wheel may result if spare tire assembly is not correctly installed.

(3) Line up the two CTIS holes in spare tire with CTIS fittings in hub with aid from assistant.

WARNING

Tire assembly is very heavy, weighing 523 pounds. Do not try to lift or catch tire assembly. Injury or death to personnel could result.

NOTE: Spare tire assembly should have CTIS valve facing out.

(4) Line up the 10 holes in the spare tire assembly with the studs on the hub with aid of assistant.

(5) Lean the top of the spare tire assembly against the hub and axle with aid of assistant.

WARNINGS

Use caution when operating jack. Personal injury or death may result if jack slips out from under HET.

Never go under HET with engine running. Vehicle may move unexpectedly and cause serious injury or death to personnel.

CAUTION

Use care when installing spare tire assembly and nuts. Dragging tire assembly across studs or cross-threading nuts may result in damage to studs.

(6) Slide the spare tire assembly onto the hub and studs. The jack may have to be raised slightly to accommodate the spare tire. The 40-inch 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.

(7) If HET 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.

(8) Studs and lug nuts on both sides of the HET have right-hand threads. Install and tighten the 10 lug nuts until the spare tire is seated.

(9) Lower the HET with the jack until the spare tire assembly just touches the ground.

(10) Using the air impact wrench and 1 1/2 inch socket, repeat tightening of the 10 lug nuts, as tight as possible, using the sequence as shown in TM 9-2320-360-10.

(11) Turn off the HET.

WARNING

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

(12) Lower the HET with the jack all the way down to the ground.

(13) Remove the jack and jack plate from under the saddle or the trailing arm.

(14) Remove the CTIS plugs from the spare tire assembly and install in the flat tire assembly.

CAUTIONS

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

Keep hoses clean and dry when removed from CTIS wheel valve. Failure to comply may result in damage to CTIS wheel valve.

(15) Install the two CTIS hoses removed from the flat tire assembly onto the spare tire CTIS wheel valve and tighten the nuts finger tight.

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

(17) Start the HET.

(18) Turn the CTIS switch to on and push the start switch.

(19) Check the two hoses for leaks.

(20) Install the wheel cover, ensuring that the hole in the wheel cover is aligned with the tire valve on the spare tire. 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 over-torque the nuts. Damage to the nuts and studs may occur if wheel cover nuts are over tightened.

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

(22) Remove the two nuts from the spare tire assembly and install in the flat tire assembly.

j. Stow the flat tire assembly using the tire davit.

WARNING

Always wear heavy work gloves when handling winch cable. Never let cable run through bare hands. Frayed cable can cut hands severely.

(1) Roll the flat tire under the tire davit so the valve stem is down and the deep side of the wheel is facing out from the HET.

(2) Turn the winch handcrank counterclockwise to let the cable out.

(3) Pull the cable with the hook through the flat tire assembly and attach the hook to the cable, centered above the flat tire assembly.

WARNING

Tire assembly is very heavy weighing approximately 523 pounds. Place tire on bracket as soon as possible. Personal injury or death may result if tire falls.

CAUTIONS

Use care when raising tire to prevent damage to CTIS wheel valve.

Do not attempt to mount spare tire with CTIS wheel valve on top. Failure to comply will result in damage to CTIS wheel valve.

(4) Turn handcrank clockwise to raise the flat tire assembly while assistant pulls tire assembly away from spare tire bracket. Continue to raise the tire assembly up until the tire assembly is just above the bracket.

(5) Lower the tire assembly by turning handcrank counterclockwise while the assistant guides the tire assembly onto the tire bracket.

(6) With aid of assistant, install the three screws through the wheel assembly to secure the tire assembly to the tire bracket.

(7) Secure tire assembly to spare tire bracket using air impact wrench, socket, and extension.

(8) Remove hook and cable from flat tire assembly and pulley.

(9) Turn winch handcrank clockwise to store cable.

k. Stow tire davit.

(1) Remove the safety pin from the tire lift arm retaining pin. Remove this retaining pin from the tire lift arm and mount.

(2) Remove the tire lift arm from the mount.

(3) Install the tire lift arm on the stud with the T-handle.

(4) Insert the retaining pin through the holes in the tire lift arm and insert the safety pin through the retaining pin.

(5) Hook the rubber strap on the handcrank.

(6) Install the boot on the davit winch.

l. Prepare HET for Driving.

(1) Carefully disconnect the air hose from the HET air coupler. The air hose is under extreme pressure so use both hands when disconnecting air hose.

(2) Return all tools and wheel chocks to stowage boxes.

(3) Stow highway safety markers in HET stowage box.

(4) Start HET, turn on CTIS, and continue with the mission.

(5) At the earliest opportunity, notify unit maintenance to torque all nuts that were loosened during the tire changing procedures.

(6) Notify unit maintenance to repair flat tire assembly as soon as possible.

3. Practical exercise.

a. Assign two students to each HET and issue TM 9-2320-360-10.

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 HET is 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 HET, when the HET is parked, or maintenance is being performed.

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

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

5. Ensure all personnel maintain at least three points of contact when mounting or dismounting the HET (to include performing PMCS).

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

7. Stand clear of tire when raising or lowering. Do not let 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 (approximately 523 pounds) and could cause serious injury or death to personnel if it falls.

8. Tire assembly is very heavy. Do not try to lift or catch tire assembly. Injury or death to personnel could result.

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

10. 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 to personnel may result.

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

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

13. Wear hearing protection while working in or around a running HET, especially while using the air impact wrench. Failure to do so may result in injury to personnel.

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

15. If the jack must be raised or lowered, shut off the engine prior to moving under the HET.

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

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

CHAPTER 5

LESSON OUTLINES FOR TRAILER OPERATIONS

LESSON TITLE: DESCRIBE M1000 CAPABILITIES, SPECIFICATIONS, AND COMPONENTS

TASK NUMBER: 551-721-1353 (Perform Preventive Maintenance Checks and Services [PMCS] on a Trailer)

A. TRAINING OBJECTIVE.

TASK: Describe M1000 capabilities, specifications, and components.

CONDITIONS Given instruction on the M1000 semitrailer and a requirement to describe capabilities, specifications, and components.

STANDARD: Correctly describe M1000 capabilities, specifications, and components.

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 conference for every 20 students.

6. Training aids and equipment: Overhead projector, transparencies, and screen.

7. References: TM 9-2330-381-14.

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 presented so that the students will become familiar with the heavy equipment transporter semitrailer. The instructor will present vehicle information including vehicle capabilities, limitations, and data plates. In the operator's manual and during this class, the term "streetside" of the semitrailer indicates the left side and the term "curbside" of the semitrailer indicates the right side of the vehicle.

Transparency HETS 5-1

a. M1000 semitrailer capabilities.

(1) The M1000 semitrailer represents the most advanced generation of heavy equipment transporter semitrailer available.

(2) The M1000 semitrailer is designed to transport tracked and wheeled vehicles, even disabled vehicles, up to 70 tons.

(3) The M1000 heavy equipment transporter semitrailer is a flat bed trailer supported by five rows of axles. Each row consists of two axle units (bogies) with inner and outer dual tires mounted to each bogie.

(4) Each of the bogies move up and down, independently on hydraulic suspension cylinders. They can be individually isolated allowing access for tire changes or for movement of the semitrailer with a disabled bogie.

(5) The semitrailer prime mover is the US Army M1070 and M911 tractors. The adjustable gooseneck enables the semitrailer to operate with the US Marine MK48/16, the US Army M746, and the German FAUN SLT 50-2 tractors.

(6) The semitrailer is steered in response to the turning of the towing vehicle. When in tow, the semitrailer can negotiate a 90 degree turn in one continuous motion at an intersection from one 30-foot wide road to another 30-foot wide road.

(7) Towing vehicles provide electrical power and pneumatic pressure to the semitrailer through standard intervehicular connections. The

semitrailer can convert the military 24-volt supply to 12 volts for clearance lights, turn signals, and brake lights. The blackout lights operate only with the military 24 volt supply.

(8) The APU provides hydraulic power to manually raise or lower the suspension, gooseneck, and operate the steering system in the manual non-run mode.

(9) Fully loaded, the HETS can operate either going up or down a 15 percent grade.

(10) Fully loaded, the HETS can operate on a 20 percent side slope grade without the tires coming off the ground or over extending the suspension.

Transparency HETS 5-2

(11) Fully loaded, the HETS can ford water at a maximum depth of 28 inches, including wave height, without any additional maintenance procedures being performed.

Transparency HETS 5-3

b. M1000 semitrailer specifications.

(1) M1000 semitrailer weights and dimensions**.**

(a) Total curb weight is 50,400 pounds.

(b) Total loaded weight is 190,400 pounds. Actual load capacity is 140,000 pounds or 70 tons.

(c) Normal running height is 43 inches at the top of the platform to the ground, 123 inches with loading ramps up.

(d) Overall width is 144 inches.

(e) Length (with loading ramps up) is 622 inches.

(f) Ground clearance is 15.5 inches.

(2) Gooseneck**.**

(a) Overall length is 12.5 feet.

(b) Overall width is 4 feet.

(c) Overall steering angle of number five bogie is 45 degrees left or right.

(3) Platform.

(a) Overall length is 34.7 feet.

(b) Overall width is 10 feet.

(c) Normal running height is 43 inches.

(d) Maximum height is 4.4 feet.

(e) Minimum height is 2.8 feet.

(4) Loading ramps.

(a) Overall width is 2 feet.

(b) Overall length is 7.8 feet.

(c) Span width:

- Maximum (outer edges) are 11.3 feet.
- Minimum (inner edges) are 4.1 feet.

(5) APU.

(a) Fuel capacity is 1.27 gallons.

(b) Oil capacity is 1.4 quarts.

(c) Coolant capacity is 1.3 quarts.

(6) Hydraulic system**.**

(a) System pressure is 3,900 psi.

(b) Fluid capacity:

- Reservoir is 16.5 gallons.
- System is 27.0 gallons.

c. Description of major components on the M1000 semitrailer.

Transparency HETS 5-4

a. Gooseneck Assembly.

(1) Gooseneck assembly [1]. It is the forward part of the semitrailer that allows hookup to the towing vehicle.

(2) Electrical connectors [2]. One connector (12 volt) and one military (24 volt) connector provides the electrical connection between the semitrailer and towing vehicle.

(3) Gladhand connectors [3]. They provide the service and emergency pneumatic air supply for the semitrailer brakes.

(4) Grab handle [4]. It is located at the front streetside of the gooseneck and is used for access to back of HET when making intervehicular connections and when working with HET winch cables.

(5) Kingpin (3.5 inches in diameter) [5]. It is located under the front of the gooseneck and is the mechanical connection between the HET and semitrailer.

(6) Steering wedge [6]. It is located behind the kingpin and it provides the automatic steering, with the APU off, for the semitrailer when connected to the towing vehicle.

(7) Steering console [7]. It is located within the gooseneck assembly. It consists of a steering arm, a pivoted steering console, and two master steering hydraulic cylinders.

(8) Coupling decal [8]. It is located on the left front corner of the gooseneck and it provides general data information required for coupling/uncoupling the semitrailer and towing vehicle.

(9) Data and lube plates [9]. These are located on the left front side of the gooseneck and they descriptively identify the semitrailer and provide quick reference for lubrication.

(10) Wheel chocks [10]. Two are on each side of the gooseneck and are used to chock the number one bogie outer wheels.

(11) APU [11]. It is located beneath the gooseneck steps. It is a liquid-cooled, fuel-injected, electrically-started, single-cylinder diesel engine used to drive a hydraulic pump which powers the hydraulic system during manual operation.

(12) Cable sheave [12]. It is located on the gooseneck left side pivot pin and it is used for winching off disabled payloads.

(13) Gooseneck hydraulic cylinders [13]. Two gooseneck cylinders provide adjustability for gooseneck height (only in adjust mode) when connecting/disconnecting the M1000 semitrailer and HET. It also works with the six front bogie suspensions to provide proper weight distribution when the semitrailer is being towed in the run mode.

(14) Cable guides [14]. Two cable guides are mounted on the gooseneck. They are used with the towing vehicles winching capabilities to load/unload the semitrailer's payload.

Transparency HETS 5-5

(15) Gooseneck safety rail [1]. Two gooseneck safety rails are located on each side of the handrails. These allow the operator to safely connect and disconnect the winch cables from the payload while on the gooseneck. When in use, the safety rails are extended rearward toward the semitrailer platform.

NOTE: Safety rails must be retracted during operation to prevent interference with the payload during gooseneck movement.

(16) Gooseneck safety rail clamp [2]. The gooseneck safety rails are held in the retracted position by the clamp located on each safety rail just behind the cable guides [3].

(17) APU control box [4]. The APU control box is located on the right side of the gooseneck and it has a start control switch, push/pull throttle, glow plug, and oil pressure indicator lights.

(18) Stairs [5]. The stairs are mounted on the rear of the gooseneck allowing access to the APU, the davit, and the spare tires.

(19) Handrails [6]. These are mounted on top of the gooseneck and they provide a safe handgrip while on top of the gooseneck.

(20) Spare tires [7]. The spare tires are mounted on top of the gooseneck assembly.

(21) Davit [8]. Is located on top of the gooseneck and it is used for lowering spare tires when ever a tire change is required.

Transparency HETS 5-6

(22) APU auxiliary start cables [9], safety circuit module [10], and stowage bag [11]. A set of auxiliary start cables and a safety circuit module are together referred to as the jump start system and are used to supply 12 Vdc battery power from the HET batteries to the APU when the APU battery does not contain sufficient charge to start the APU. The cables when not in use, are stored in a bag which is stowed under the platform steps. The safety circuit module contains a switch, relay, and voltage sensor which permits a maximum of 12 Vdc to be applied to the APU electrical system.

Transparency HETS 5-7

b. Platform Assembly.

(1) Platform assembly [1]. The platform assembly is a flatbed structure with a beavertail (slanted portion of platform at rear of semitrailer). The rear of the semitrailer is slanted to simplify loading/unloading procedures.

(2) Payload tiedown rings [2]. There are six payload tiedown rings at various points on the semitrailer that are used for payload tie down.

(3) ISO container locks and brackets [3]. There are 8 ISO container brackets and 12 ISO container locks stored in the storage compartment. They are used to secure ISO containers during transport.

(4) Transport/cargo tiedown rings [4]. There are 34 tiedown rings that are used to tie down the payload or to tiedown the semitrailer during transport.

(5) Lifting eyes [5]. There are four lifting eyes, two on the front and two on the outside rear of the platform, that are used to lift the semitrailer.

(6) Support legs [6]. Four hand actuated support legs are at each corner of the platform assembly. The front legs help support the platform during loading and unloading operations.

(7) Gooseneck cylinder air reservoir [7]. This reservoir is located under the platform, in front of the storage compartment and is connected to the left (streetside) gooseneck cylinder. The reservoir holds air that is expelled or retracted from the cylinder allowing the cylinder to move with gooseneck movement.

(8) Storage compartment [8]. The storage compartment is located on the left front side of the platform and is used for storing the BII.

(9) Brake release valve [9]. This valve is used to engage and release the parking brakes (only when the service and emergency brakes are applied on the HET).

(10) Suspension isolation valves [10]. There are ten suspension isolation valves, one for each bogie. They are located on the main longitudinal beam under the platform. These valves are used to isolate a suspension cylinder from the hydraulic system.

Transparency HETS 5-8

(11) Track curb guides [11]. There are 12 track curb guides used to aid in loading/unloading of tracked vehicles. The guides also aid in preventing payloads from shifting during transport.

(12) Payload chocks [12]. There are four adjustable payload chocks, two at each corner of the platform to provide stability for payload vehicles.

(13) Hydraulic control module [13]. This module is located on the forward right side of the platform assembly and is used with the APU for manual hydraulic operations of the semitrailer.

(14) Hydraulic gauge panel cover [14]. This cover protects the hydraulic gauge panel and controls.

(15) Hydraulic gauge panel [15]. This panel is located on the right forward section of the control panel and registers hydraulic pressure during operation. There are three suspension gauges: a system pressure gauge, a hydraulic filter flow indicator, and the low steering pressure indicator light.

(16) Bogie assembly [16]. The ten bogie assemblies support the platform assembly and form part of the suspension, braking, and steering systems. Two sets of dual tires, mounted on each axle, provide stability and even weight displacement.

(17) Axle assembly [17]. Each bogie assembly has an axle which contains an air brake assembly, two hub and drum assemblies, and two sets of dual tires [18].

(18) Hydraulic suspension cylinder [19]. Each bogie assembly has a hydraulic suspension cylinder mounted between the upper and lower suspension arm. The cylinder enables each bogie to act as a shock absorber that provides stability and manual adjustability for each axle assembly.

Transparency HETS 5-9

(19) Snatch block [20]. The snatch block is recessed in the rear center of the platform or beavertail and is used for winching disabled payloads off the semitrailer.

Transparency HETS 5-10

(20) Loading ramps [21]. Two loading ramps are located at the rear of the platform. They are manually raised and lowered with the aid of a large ramp spring and can be manually adjusted to match the span widths of different vehicles.

(21) Safety chains [22]. Two safety chains with load binders secure the loading ramps in an upright position during transport.

(22) Towing shackles [23]. Two towing shackles are located on rear recovery eyes that allow the semitrailer to be recovered from the rear.

(23) Crowbar and isolation valve handle extension [24]. This is mounted on the rear of the semitrailer. It is used to adjust ramp span width or check platform height and operate the under deck mounted suspension isolation valves. The crowbar has three permanently marked dimension lines used to check platform height.

(24) Beacon warning light [25]. This light is mounted on the rear streetside platform lug weldment and is on whenever the trailer is operational.

3. Practical exercise. None.

4. Evaluate. 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 1.0 hour conference.

LESSON TITLE: IDENTIFY M1000 SEMITRAILER CONTROLS, INSTRUMENTS, AND INDICATORS

TASK NUMBER: 551-721-1353 (Perform Preventive Maintenance Checks and Services [PMCS] on a Trailer)

A. TRAINING OBJECTIVE.

TASK: Identify M1000 semitrailer instruments, controls, and indicators.

CONDITIONS Given instruction on an M1000 semitrailer, and a requirement to identify and explain the functions of semitrailer instruments, controls, and indicators.

STANDARD: Correctly identify and explain the function of the M1000 semitrailer instruments, controls, 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 for the conference for every 20 students.

6. Training aids and equipment: Transparencies, overhead projector, and screen.

7. References: TM 9-2330-381-14.

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: The instructor will explain location, description, and use of the instruments, controls, and indicators. In the operator's manual and during this class, the term "streetside" indicates the left side of the semitrailer and the term "curbside" indicates the right side of the semitrailer.

Transparency HETS 5-11

a. APU controls and indicators.

(1) The fuel tank sight indicator [1] is a clear tube used to determine the amount of fuel in the fuel tank.

(2) The fuel petcock valve [2] is a two-position valve. In the OPEN position, it allows fuel to flow to the fuel system. In the CLOSED position, it prevents fuel from entering the fuel system.

(3) The fuel filter [3] is a filtering element used to filter fuel to the APU. The clear casing enables you to check the filter for particles and contaminates trapped within the filter element.

(4) An oil level dipstick [4] is used to measure the oil level in the APU crankcase. Two marks on the dipstick indicates the proper oil level.

(5) The speed control lever (throttle) [5] is used to control the rpm of the APU. The rpm can be manually controlled by moving the lever to the left or right until the desired rpm has been obtained. To shut down the APU, push the lever to far right stop.

(6) The jet start plunger [6] is a piston pump which, when pumped, injects fuel into the air intake of the APU. The jet start plunger is primarily a cold weather starting aid.

(7) The jet start cock [7] is a needle valve that controls the fuel flow for the jet start plunger. When the jet start cock is threaded inward (clockwise), fuel is not allowed into the jet start system. Turning the jet start cock counterclockwise allows fuel from the jet start plunger to be injected into the air intake for cold weather starts.

(8) The drain valve [8] is used to remove coolant from the motor and radiator.

(9) The decompression valve [9] is used to assist the operator in starting the APU in cold weather conditions. The decompression valve partially opens the exhaust valve of the APU to release some back pressure built up during the cranking operation.

Transparency HETS 5-12

b. APU Control Box.

(1) The APU starter switch [1] is a three-position GLOW/OFF/START switch used to apply DC voltage for electrically starting the APU or igniting the glow plug. In the GLOW position, the glow plug is warmed. Turning the switch to the START position engages the starter which starts the engine. In the OFF position, the starting circuit is disabled. However, if the APU is running, placing the switch in the OFF position will not shut off the APU (see throttle cable controller).

(2) The glow plug indicator [2] illuminates when the glow plug has reached operating temperature. At this time, the starter switch can be placed in the START position to start the APU.

(3) The throttle cable controller [3] is a push/pull cable that manually adjusts the rpm of the APU. To increase APU rpm, pull outward on the throttle. To decrease rpm, push in on the throttle. The throttle is used to shut off the APU by pushing inward until it bottoms out, which restricts fuel to the engine.

(4) The oil pressure indicator light [4] illuminates when the APU oil pressure has not reached normal operating pressure. Once the proper oil pressure has been reached, the oil pressure indicator light will turn off.

Transparency HETS 5-13

c. Hydraulic oil tank indicator.

(1) A clear sight tube [1] gives visual indication of the hydraulic oil level.

(2) A hydraulic oil tank valve [2] is a ball type valve used to cut off the supply of hydraulic fluid from the hydraulic tank to the hydraulic pump. Normal position for this valve is open (the valve handle is in line with the valve body).

CAUTION
This valve must be in the open position before running the APU or damage to the hydraulic pump will occur.

Transparency HETS 5-14

d. Hydraulic pressure gauge.

(1) The system pressure gauge [1] reads from 0 to 6,000 psi. It measures the system pressure for the overall hydraulic operating system.

(2) The front curbside suspension gauge [2] reads from 0 to 6,000 psi. It measures the hydraulic pressure applied to the front three curbside bogies.

(3) The front streetside suspension gauge [3] reads from 0 to 6,000 psi. It measures the hydraulic pressure applied to the front three streetside bogies.

(4) The rear suspension gauge [4] reads from 0 to 6,000 psi. It measures the hydraulic pressure applied to the two left rear and two right rear bogies.

(5) The hydraulic filter gauge [5] will tell the operator the condition of the filter. Green is good, yellow or red will represent a dirty filter. In the red area, the filter has the ability to bypass fluid if it is extremely clogged.

(6) The steering pressure indicator light [6] illuminates when the hydraulic pressure, for steering, drops below 68 psi. The pressure indicator light goes out when the steering pressure rises above 85 psi.

Transparency HETS 5-15

e. Hydraulic control levers.

NOTE: Each of the hydraulic control valves are a three-position control that is spring loaded to the center (neutral) position.

(1) The steering valve [1] is used to provide manual steering to the steerable bogies. When the lever is pulled up, the bogies are turned to the right. When the lever is pushed down, the bogies are turned to the left.

(2) The front curbside valve [2] applies hydraulic pressure to the three right front bogies to raise or lower the right front corner of the platform. Pulling the lever up, raises the right front corner. Pushing the lever down, lowers the right front corner.

(3) The front streetside valve [3] applies hydraulic pressure to the three left front bogies to raise or lower the left front corner of the platform. Pulling the lever up, raises the left front corner. Pushing the lever down, lowers the left front corner.

(4) The rear valve [4] applies hydraulic pressure to the two right rear and two left rear bogies simultaneously. This allows the rear of the platform to raise or lower. Pulling the lever up, raises the rear of the platform and pushing the lever down, lowers the rear of the platform.

Transparency HETS 5-16

(5) The gooseneck valve lever [5]. This lever controls the raising or lowering of the gooseneck. The gooseneck valve lever is pulled up to raise the gooseneck or pushed down to lower the gooseneck.

(6) The suspension shut-off valve lever [6]. A series of ball valves which are used to shut-off hydraulic power to the semitrailer suspension. There are two positions for this valve handle; pushed inward is shut-off and pulled outward is adjust.

(7) The gooseneck isolation valve lever [7]. A series of ball valves which are used to isolate the gooseneck hydraulic cylinders from the suspension equalization system. When the gooseneck needs adjusting or the semitrailer is being uncoupled from the HET, the gooseneck isolation valve handle must be pulled outward (adjust) to prevent the gooseneck from falling and damaging any equipment. When the gooseneck height needs adjusting (only when disconnected from the prime mover) the gooseneck isolation valve must be in the ADJUST (outboard) position.

Transparency HETS 5-17

f. Suspension isolation valve. The suspension isolation valve [1] is used to isolate a suspension cylinder of an affected bogie from the hydraulic system. There are ten suspension isolation valve assemblies on the semitrailer, one for each bogie unit. Normal position for this valve is open with the valve handle facing forward toward the front of the semitrailer.

Transparency HETS 5-18

g. Bed height indicators. There are three bed height indicators [1] used for adjusting the platform height to 43 inches. One is located on the front curbside and one on the front streetside number one bogie. The third one is located on the number five rear curbside bogie.

Transparency HETS 5-19

h. Crowbar. The crowbar [1] has three permanently marked lines to measure platform heights from the ground to the top of the platform. The bottom mark is for the rear platform loading position of 34 inches. The center mark is for normal height of 43 inches. The top mark is for the front platform loading position of 50 inches. The crowbar when not in use is stowed on the rear of the semitrailer below the loading ramps.

Transparency HETS 5-20

i. Parking Brake Control. The parking brake control [1] is a two-position hostler valve used to release or apply the parking brakes on the M1000. This valve works with the service and emergency brakes on the HET and are only operated if the HET brakes are applied.

Transparency HETS 5-21

j. Air tank drain valves.

(1) There are five air tank drain valves [1], one on each air tank. They are used to drain condensation or air pressure from the tank.

(2) Three are located on the curbside (number two, three, and four bogies) and two are located on the streetside (number two and four bogies).

Transparency HETS 5-22

k. Front support legs. The front support legs [1] are used to support the front of the HETS when disconnected from the prime mover.

Transparency HETS 5-23

l. Rear support legs. The rear support legs each contain an adjusting nut [1]. A ratchet and socket is required to lower or raise the support leg lower tube and foot. When parking the M1000 semitrailer longer than four hours (such as overnight) be sure both rear support legs are lowered and are supporting the platform. The support legs are manually raised and lowered.

Transparency HETS 5-24

m. Winch hand crank (or davit). The winch hand crank [1] is primarily used for lowering and raising the spare tires. The hand crank is a ratchet type to prevent excess cable being reeled out by accident. The davit can also be used during certain maintenance tasks on the gooseneck components.

Transparency HETS 5-25

n. APU auxiliary starting system. This system consists of APU auxiliary start cables [1], a safety circuit module [2], and a stowage bag [3].

(1) The APU auxiliary starting system is used with the prime movers battery system to aid the APU in starting. Use this system when the APU battery is dead.

(2) Though the APU is a 12 volt system and the prime mover is a 24 volt system, the auxiliary starting system reduces the voltage so damage to the APU will not occur. If the positive cable is connected to the 24 volt point on the battery, the APU starting system will not engage. Once proper connection has been made, the operator will press the button on the APU starting system box and an audible click will be heard. The APU will also be able to start if properly connected.

3. Practical exercise. None.

4. Evaluate. 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 .5 hour conference.

LESSON TITLE: OPERATE APU ON THE M1000 SEMITRAILER

TASK NUMBER: 551-721-3378 (Operate Auxiliary Power Unit [APU] on the M1000 Semitrailer)

A. TRAINING OBJECTIVE.

TASK: Operate the APU.

CONDITIONS Given instructions and a coupled or uncoupled M1000 semitrailer.

STANDARD: Correctly and safely operate the APU according to TM 9-2330-381-14 without causing damage to equipment or injury to personnel.

B. INTERMEDIATE TRAINING. None.

C. ADMINISTRATIVE INSTRUCTIONS.

1. Training time: As scheduled.

2. Training location: Motor pool or training area.

3. Training type: Demonstration and practical exercise.

4. Students: Scheduled personnel.

5. Principal and assistant required: One primary instructor for the class and one assistant instructor for every three students for the demonstration and practical exercise.

6. Training aids and equipment: Hearing protection, rags, TM 9-2330-381-14, and an M1000 semitrailer with BII for every three students.

7. References: TM 9-2330-381-14.

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: This lesson will emphasize correct operating procedures for the APU. The instructor will review special cautions which will increase vehicle and components longevity.

NOTE: At this time, separate the class into groups of three. Assign each group to a semitrailer and ensure each group has an assistant instructor.

a. Starting and operating the APU. Perform the following when starting and operating the APU.

NOTE: When the temperature is below -25 degrees F refer to arctic weather APU starting in the operator's manual.

(1) Ensure the M1000 semitrailer is parked on level ground.

(2) When the HET and semitrailer are coupled, apply the semitrailer parking brakes.

(3) Remove the four chock blocks from the gooseneck. Chock both curbside and streetside number 1 bogies in front and rear of each outer dual tire.

(4) At the rear of the gooseneck, gain access to the APU by unhooking the step retainer hook and raise the step assembly up and forward. Secure the steps by hooking retainer hook to the strap on the step section.

CAUTION

The hydraulic tank oil valve must be open prior to starting the APU or serious damage to the hydraulic pump will result.

(5) Open the hydraulic tank oil valve (the handle should be in line with the valve body).

(6) Ensure the fuel petcock is in the OPEN position (handle in line with the filter body).

NOTE: Do subparagraphs (7) and (8) when ambient temperatures range from 40 degrees F to -25 degrees F. Subparagraph (7) may have to be repeated if APU fails to start.

(7) Turn jet start petcock counterclockwise to open. Pump the jet start valve three to five times to prime APU (only when ambient temperatures range from 40 degrees F to -25 degrees F).

(8) Turn jet start petcock clockwise to close (only when ambient temperatures range from 40 degrees F to -25 degrees F).

(9) Unhook the strap and lower the step section to the normal position. Secure in place by hooking the step retainer to catch on the fixed bottom step section.

WARNING

Hearing protection is required within 10 feet of the APU while APU is running or personal injury may result.

(10) Open and lower APU control panel cover. Press knob and pull out the throttle control fully.

CAUTION

Oil pressure light must go out within 15 seconds. If oil pressure light stays lit, shut down APU immediately or damage to equipment may result.

(11) Turn the start switch counterclockwise to GLOW position and hold. Observe when the glow plug indicator begins to glow. In about 15 to 20 seconds, depending upon outside ambient temperature, the glow plug will glow brightly.

CAUTIONS

If the APU fails to start within 15 seconds, release the switch from the START position to prevent overheating of the starter motor. Allow the starter motor to cool 1 or 2 minutes before trying again. If the APU fails to start after four tries, notify unit maintenance.

Do not rotate start switch to the START position while the starter motor is still turning from the previous try. This could result in serious damage to the starter motor and engine fly wheel ring gear.

After APU has started, release the start switch to return to the OFF position or damage to equipment may result.

(12) Turn start switch clockwise to START position and hold for 15 seconds or until APU has started.

(a) Once APU has started, immediately release the start switch, it should return (spring back) to the OFF position.

(b) If APU fires but does not start, release the start switch, wait for the engine to stop turning, and try again.

(c) If APU fails to start after four attempts, release the start switch to the OFF position and notify unit maintenance.

(13) After APU starts, check the oil pressure indicator light. If oil pressure indicator light does not go out after APU starts and runs for 15 seconds, shut down the APU by pushing the throttle control in all the way. Notify unit maintenance. If oil pressure indicator light does go out, proceed with subparagraph (14).

CAUTION

Do not subject the APU to any load until it has warmed up properly or premature failure may occur and life of the engine may be shortened.

(14) Allow the APU to run at least 3 to 5 minutes so that it will warm up properly.

(15) Reduce the engine speed to idle by pushing in the throttle control. APU is ready for normal operations.

(16) Whenever operations permit, allow the APU to run continuously for at least 30 minutes to recharge the APU battery. For example, when the APU is started for PMCS, let it run until all PMCS tasks are completed. This is especially important if:

- The semitrailer has been stored and the APU has not been started for several days.
- The weather is cold.

b. Shutting down the APU. Perform the following when shutting down the APU.

(1) Depress center knob in, then push throttle control in completely to stop the APU.

(2) Ensure low oil pressure indicator light and glow plug are not lit. Close and secure the APU control cover.

NOTE: Subparagraphs (3), (4), and (5) applies if semitrailer is to be placed in extended (short or long term) storage.

(3) At rear of gooseneck, unhook step retainer hook, raise steps up and forward. Secure steps by hooking step retainer hook to retainer hook top of gooseneck.

(4) Turn fuel petcock counterclockwise to the CLOSED position.

(5) Unhook step retainer hook from top step of gooseneck. Lower step section and secure retainer hook to gooseneck retainer hook.

3. Practical exercise. Students practice operating the APU.

4. Evaluation. Check each student's performance of operating the APU.

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. Operating the APU is performed daily in conjunction with PMCS and reinforced throughout the course. Students are tested on PMCS (operating the APU) during the EOCCT.

E. SAFETY RESTRICTIONS.

1. Ensure that number one bogies are chocked when the M1000 semitrailer is parked.

2. Ensure that students remove all jewelry and identification tags before performing PMCS.

3. Ensure that all personnel wear hearing protection within 10 feet of the APU when the APU is running. Use eye and ear protection and protective work gloves when inspecting the APU while it is running, or injury could result from moving parts, excessive noise level, and engine heat.

4. Give the systems time to cool before attempting to make any fluid checks. When checking for leaks, never open any type of fluid holding tanks while the APU is hot or severe burns from the spraying of hot fluids may result.

5. Do not wear watches, rings, or other jewelry which could short out battery terminals while servicing the battery. Do not smoke or use open flame around batteries (the battery may

explode). Battery acid is harmful to the skin and eyes. Wear protective goggles to prevent injury while working with batteries.

6. Ensure that students pay particular attention to the cautions and warnings listed in the operator's manual.

7. Ensure all personnel maintain at least three points of contact when mounting or dismounting the M1000 semitrailer (to include performing PMCS).

F. ADDITIONAL COMMENTS AND INFORMATION. Recommended instructional time is 2 hours (.75 demonstration and 1.25 hours practical exercise).

LESSON TITLE: ADJUST THE GOOSENECK ON THE M1000 SEMITRAILER

TASK NUMBER: 551-721-3379 (Adjust the Gooseneck on the M1000 Semitrailer)

A. TRAINING OBJECTIVE.

TASK:	Adjust the gooseneck on the M1000 semitrailer.
CONDITIONS	Given an uncoupled M1000 semitrailer and a requirement to adjust the gooseneck to the highest and lowest positions.
STANDARD:	Operator must safely and correctly adjust the gooseneck to the highest and lowest positions without causing damage to equipment or injury to personnel.

B. INTERMEDIATE TRAINING. None.

C. ADMINISTRATIVE INSTRUCTIONS.

1. Training time: As scheduled.

2. Training location: Scheduled motor pool or training area.

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 three students for the demonstration and practical exercise.

6. Training aids and equipment: Hearing protection, rags, TM 9-2330-381-14, and an M1000 semitrailer with BII for every three students.

7. References: TM 9-2330-381-14.

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: At this time separate the class into groups of three. Assign each group to a semitrailer and ensure each group has an assistant instructor and TM 9-2330-381-14.

CAUTION
If the semitrailer is coupled to the HET, do not attempt to adjust the gooseneck or damage to equipment may result.

a. Ensure streetside and curbside number one bogies are chocked in front and behind each outer dual tire.

WARNING
Hearing protection is required within 10 feet of the APU while APU is running or personal injury may result.

CAUTION
Do not subject the APU to any load until it has warmed up properly or premature failure may occur and life of the engine may be shortened.

b. Start the APU and run at full throttle.

WARNING
If the gooseneck needs adjusting, verify that the front support legs are lowered and supporting the platform or injury to personnel may result.

c. Ensure the front and rear support legs are lowered and supporting the platform.

WARNING
Prior to adjusting gooseneck height, ensure that both gooseneck isolation and suspension shut-off valve handles have been pulled outward to the adjust position or injury to personnel from unexpected movement or damage to equipment may result.

d. Pull the gooseneck isolation valve handle and suspension shut-off valve handle outward to the ADJUST position.

e. Pull the gooseneck valve handle up to raise the gooseneck. Once the gooseneck reaches the highest position and stops, then release the valve handle.

f. Push the gooseneck valve handle down to lower the gooseneck. Once the gooseneck reaches the lowest position and stops, release the valve handle.

NOTE: When the gooseneck is raised to an intermediate height, it may travel one to three inches upward after the handle is released. This is caused by air trapped in the cylinder and can be stopped immediately by momentarily moving the handle to the DOWN position. If this occurs, it may be minimized by operating the gooseneck full up and full down for two full cycles.

g. Raise or lower the gooseneck to any desired height.

h. If semitrailer is going to be parked, lower the gooseneck by pushing the handle of the gooseneck valve until the gooseneck reaches the lowest position and stops; then release the valve handle.

i. Once gooseneck adjustments are completed, push the gooseneck isolation valve handle in to the RUN position and suspension shut-off valve handle to the SHUT-OFF position.

j. Close and secure hydraulic control panel.

k. Shut down the APU.

l. Close and secure the APU control panel cover.

3. Practical exercise. Students practice adjusting the gooseneck.

4. Evaluation. Check each student's performance of adjusting the gooseneck.

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. Gooseneck adjustment is performed in conjunction with coupling and uncoupling the semitrailer. Students are tested during the EOCCT.

E. SAFETY RESTRICTIONS.

1. Ensure that number one bogies are chocked when the M1000 semitrailer is parked.

2. Ensure that all personnel wear hearing protection within 10 feet of the APU when the APU is running. Use eye and ear protection and protective work gloves when inspecting the APU while it is running or injury could result from moving parts, excessive noise level, and engine heat.

3. Give the systems time to cool before attempting to make any fluid checks. When checking for leaks, never open any type of fluid holding tanks while APU is hot or severe burns from the spraying of hot fluids may result.

4. Do not wear watches, rings, or other jewelry which could short out battery terminals while servicing the battery. Do not smoke or use open flame around batteries (the battery may explode). Battery acid is harmful to the skin and eyes. Wear protective goggles to prevent injury while working with batteries.

5. Ensure that students pay particular attention to the cautions and warnings listed in the operator's manual.

6. Ensure all personnel maintain at least three points of contact to when mounting or dismounting the M1000 semitrailer (to include performing PMCS).

7. If the gooseneck needs adjusting, verify that the front support legs are lowered and supporting the platform or injury to personnel may result.

8. Prior to adjusting gooseneck height, ensure that both gooseneck isolation and suspension shut-off valve handles have been pulled outward to the ADJUST position or injury to personnel from unexpected movement or damage to equipment may result.

F. ADDITIONAL COMMENTS AND INFORMATION. Recommended instructional time is 1.5 hours (.5 demonstration and 1.0 practical exercise).

LESSON TITLE: ADJUST PLATFORM HEIGHT ON THE M1000 SEMITRAILER

TASK NUMBER: 551-721-3380 (Adjust Platform Height on the M1000 Semitrailer)

A. TRAINING OBJECTIVE.

TASK:	Adjust platform height on the M1000 semitrailer (coupled or uncoupled).
CONDITIONS	Given TM 9-2330-381-14, hearing protection, and a coupled or uncoupled M1000 semitrailer with BII.
STANDARD:	Perform task in the correct sequence according to TM 9-2330-381-14 and without damage to equipment or injury to personnel.

B. INTERMEDIATE TRAINING. None.

C. ADMINISTRATIVE INSTRUCTIONS.

1. Training time: As scheduled.

2. Training location: Scheduled motor pool or training area.

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 three students for the demonstration and practical exercise.

6. Training aids and equipment: Rags, TM 9-2330-381-14, hearing protection, and an M1000 semitrailer with BII for every three students.

7. References: TM 9-2330-381-14.

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: At this time, separate the class into groups of three. Assign each group to a semitrailer and ensure each group has an assistant instructor.

CAUTIONS

If the semitrailer is loaded, do not make any platform adjustments while uncoupled or severe damage to equipment may result.

Do not subject the APU to any load until it has warmed up properly or premature failure may occur and life of the engine may be shortened.

a. Start and run the APU at full throttle.

WARNING

Hearing protection is required within 10 feet of the APU while APU is running or personal injury may result.

CAUTION

The suspension shut-off valve handle must be pulled outward to the ADJUST position prior to operating any platform/gooseneck valve handles. The suspension shut-off valve isolates the suspension and prevents operation. If the valve handle is not properly positioned for intended operation, severe damage to equipment may result.

b. Open hydraulic control panel.

c. Pull suspension shut-off valve handle out to the ADJUST position.

WARNING

Ensure both streetside and curbside number one bogies are chocked. After the parking brakes are released, the semitrailer may roll uncontrolled and cause injury to personnel or damage to equipment may result.

NOTE: The brakes on the semitrailer should be released when making platform adjustments. If the parking brakes are not released, platform adjustment will be much slower and harder to accomplish.

d. If the semitrailer is coupled, release the semitrailer parking brakes. If the semitrailer is uncoupled and the semitrailer air tanks contain sufficient air, push in the knob of the brake release valve to release the brakes.

WARNING

If semitrailer is coupled to the HET, the gooseneck isolation valve handle must be in the RUN position (handle pushed inward). If semitrailer is uncoupled and gooseneck needs adjusting, verify that front support legs are lowered and supporting the platform and all personnel are clear of gooseneck before operating gooseneck isolation valve or injury to personnel may result.

e. If the semitrailer is uncoupled and gooseneck needs to be raised, ensure gooseneck isolation valve is in the ADJUST position (handle pulled outward). If the semitrailer is coupled, ensure gooseneck isolation valve is in the RUN position (handle pushed inward).

CAUTION

Wheel chocks must be moved away from tires prior to adjusting platform height or damage to wheel chocks or tires may result.

f. Move all four wheel chocks approximately six inches away from the streetside and curbside number one bogies prior to adjusting the platform.

CAUTIONS

Do not leave semitrailer unattended with suspension raised to highest position. Outside temperatures can cause thermal expansion of the hydraulic fluid and create unwanted pressure build up without means to relieve pressure. Thermal expansion can cause premature failure or severe damage to equipment.

Do not move semitrailer with suspension raised to its highest position. Individual bogies may sustain excess load which may result in premature cylinder failure or severe damage to equipment.

NOTE: If the platform becomes uneven during adjustment, release the valve handle for platform area that is leading the adjustment while holding the other two valve handles. Once the platform evens out, continue to operate all three valve handles to adjust the platform.

g. To raise the platform, simultaneously pull up and hold front curbside, front streetside, and rear suspension valve handles. Once platform reaches highest position and stops, APU rpm will decrease, then release all three valve handles.

CAUTION

Do not allow suspension to completely bottom out in the lowest position (unless otherwise directed by specific operation or maintenance procedures) or individual bogies may sustain excess load and result in premature cylinder failure or severe damage to equipment. To ensure proper suspension pressure equalization, lower platform until the shortest (compression) suspension cylinder piston still has 1 inch of polished chrome exposed.

h. To lower the platform, push down and hold rear suspension valve handle. Once the rear of platform starts to lower, push and hold down front curbside and front streetside suspension valve handles. Once platform reaches lowest suggested height, release all three suspension valve handles.

i. If semitrailer is uncoupled, difficulty in lowering the rear of platform may be experienced due to offset weight of gooseneck. If this problem occurs, proceed as follows:

(1) Raise platform to normal running height of 43 inches and lower both front support legs to support platform at normal running height.

(2) Push down and hold rear valve handle. As the rear of platform starts to lower, push down handles for front curbside and front streetside suspension valves.

(3) As the front support legs contact the ground, continue to hold all three valve handles down as the rear of platform goes down.

(4) Pull up handles for the front curbside and front streetside suspension valves to raise the front of platform.

(5) When front of platform is high enough to stow the front support legs, release both suspension valve handles.

(6) Raise and secure both front support legs.

(7) Push down and hold all three valve handles for the front curbside, front streetside, and rear valves until the platform reaches the recommended lowest height.

(8) After lowering of platform is complete, evenly raise and lower platform.

j. Assistant operator removes crowbar stowed below the loading ramps.

k. Operator and assistant operator check platform height as needed to level platform to normal road height of 43 inches, using crowbar for height adjustments.

l. Lower front and rear support legs to support the platform.

m. Lower the platform until both front and rear support legs are supporting the platform.

n. After all platform adjustments are completed, proceed as follows:

(1) If semitrailer is to be parked uncoupled, lower the gooseneck to the lowest position.

(2) Push the handles of the suspension shut-off valve handle gooseneck isolation valves as far as they will go to the SHUT-OFF and RUN positions.

(3) Close and secure the cover to the hydraulic control panel.

(4) Shut down the APU.

WARNING

With semitrailer uncoupled and gladhand dummy couplings installed, parking brakes cannot be applied with brake release valve. The dummy coupling must be removed from the emergency (red) gladhand prior to applying parking brakes or injury to personnel may result.

(5) If the semitrailer is uncoupled, remove the dummy coupling from emergency (red) gladhand. Pull out the brake release valve, located above the streetside number one bogie, to apply the semitrailer brakes.

(6) Move the wheel chocks back into place in front and behind the outer set of number one bogies.

3. Practical exercise. Students practice making platform adjustments with the M1000 semitrailer from the highest, to the lowest, and to normal platform height. Students will use the crowbar to check the bed height indicators when applicable.

4. Evaluate. Check each student’s performance adjusting the platform height.

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.

E. SAFETY RESTRICTIONS.

1. Ensure that number one bogies are chocked when the M1000 semitrailer is parked.

2. Ensure that students remove all jewelry and identification tags before working on or around the semitrailer or HET.

3. Ensure that all personnel wear hearing protection within 10 feet of the APU when the APU is running. Use eye and ear protection and protective work gloves when inspecting the APU while it is running or injury could result from moving parts, excessive noise level, and engine heat.

4. Give the systems time to cool before attempting to make any fluid checks. When checking for leaks, never open any type of fluid holding tanks while APU is hot or severe burns from the spraying of hot fluids may result.

5. Do not wear watches, rings, or other jewelry which could short out battery terminals while servicing the battery. Do not smoke or use open flame around batteries (the battery may explode). Battery acid is harmful to the skin and eyes. Wear protective goggles to prevent injury while working with batteries.

6. Ensure that students pay particular attention to the cautions and warnings listed in the operator's manual.

7. Ensure all personnel maintain at least three points of contact when mounting or dismounting the M1000 semitrailer (to include performing PMCS).

8. With semitrailer uncoupled and gladhand dummy couplings installed, parking brakes cannot be applied with brake release valve. The dummy coupling must be removed from the emergency (red) gladhand prior to applying parking brakes or injury to personnel may result.

9. If semitrailer is coupled to the HET, the gooseneck isolation valve handle must be in the RUN position (handle pushed inward). If semitrailer is uncoupled and gooseneck needs adjusting, verify that front support legs are lowered and supporting the platform and all personnel are clear of gooseneck before operating gooseneck isolation valve or injury to personnel may result.

F. ADDITIONAL COMMENTS AND INFORMATION. Recommended instructional time is 1.5 hours (.5 hours demonstration and 1.0 hours practical exercise).

LESSON TITLE: MANUAL STEER THE M1000 SEMITRAILER

TASK NUMBER: 551-721-3382 (Manual Steer the M1000 Semitrailer)

A. TRAINING OBJECTIVE.

TASK:	Manually steer the M1000 semitrailer.
CONDITIONS	Given instructions and an M1000 semitrailer with BII.
STANDARD:	Correctly and safely manually steer the M1000 semitrailer according to TM 9-2330-381-14 without causing damage to equipment or injury to personnel.

B. INTERMEDIATE TRAINING. None.

C. ADMINISTRATIVE INSTRUCTIONS.

1. Training time: As scheduled.

2. Training location: Scheduled motor pool or training area.

3. Training type: Demonstration and practical exercise.

4. Students: Scheduled personnel.

5. Principal and assistant instructor required: One primary instructor for the class and one assistant instructor for every three students for the demonstration and practical exercise.

6. Training aids and equipment: Hearing protection, rags, and one M1000 semitrailer with BII for every three students.

7. References: TM 9-2330-381-14.

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: At this time, separate the class into groups of three. Assign each group to a semitrailer and ensure each group has an assistant instructor.

CAUTION
Do not subject the APU to any load until it has warmed up properly, or premature failure may occur and life of the engine may be shortened.

a. Start and run the APU at full throttle.

WARNING
Hearing protection is required within 10 feet of the APU while APU is running or personal injury may result.

CAUTION
The suspension shut-off valve handle must be pulled outward to the ADJUST position prior to operating any valve handles. If the suspension shut-off valve handle is not properly positioned for intended operation, severe damage to equipment may result.

b. Open hydraulic control panel.

c. Pull the suspension shut-off valve handle out to the ADJUST position.

NOTE: The brakes on the semitrailer should be released when making steering adjustments. If the brakes are not released, steering adjustments will be much slower and harder to accomplish.

d. Release the parking brakes by one of the following methods:

(1) With HET/semitrailer coupled, apply HET parking brake and push in knob of brake release valve to release semitrailer parking brake.

(2) If uncoupled, push in knob of brake release valve located above number one bogie.

CAUTION

If the semitrailer is uncoupled, manual steering may be used only to move the steering wedge; however, manual steering of the wheels must not be attempted. Manual steering without being coupled may cause the steering arm to move to an extreme overcenter position, which can be extremely difficult to recover, and can cause damage to equipment.

e. Ensure that semitrailer is coupled to HET and steering wedge is secured and tight in HET fifth wheel vee entry.

CAUTION

Wheel chocks must be moved away from tires prior to adjusting steering or damage to wheel chocks or tires may result.

f. Move all four wheel chocks approximately 6 inches away from tires prior to adjusting steering.

g. Push down the handle of the steering valve to turn the steering bogies to the left. Once the bogies turn completely left and stop, release the steering valve.

h. Pull up the handle of the steering valve to turn the steering bogies to the right. Once the bogies turn completely right and stop, release the steering valve.

i. Operate the steering valve and return steering bogies to approximately straight position (in line with kingpin, facing forward).

j. If no other adjustments are required, proceed as follows:

(1) Apply brakes on semitrailer.

- If coupled, apply semitrailer parking brakes using semitrailer brake release valve.

WARNING

With semitrailer uncoupled and gladhand dummy couplings installed, parking brakes cannot be applied with brake release valve. The dummy coupling must be removed from the emergency (red) gladhand prior to applying parking brakes or injury to personnel may result.

- If semitrailer is uncoupled, remove dummy coupling from emergency (red) gladhand. Apply brakes on semitrailer by pulling knob on brake release valve. If no other braking applications are required, install dummy coupling onto emergency gladhand.

(2) Move wheel chocks back into place under tires to chock wheels.

(3) Push in handle of suspension shut-off valve to the SHUT-OFF position.

(4) Close and secure cover on hydraulic control panel.

(5) Shut down the APU.

3. Practical exercise. Students practice making manual steering adjustments on M1000 semitrailer from the left back to the right, and align the steering straight with the kingpin.

4. Evaluate. Check each students performance making manual steering adjustments.

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.

E. SAFETY RESTRICTIONS.

1. Ensure that number one bogies are chocked when the M1000 semitrailer is parked.

2. Ensure that students remove all jewelry and identification tags before working on or around the semitrailer or HET.

3. Ensure that all personnel wear hearing protection within 10 feet of the APU when the APU is running. Use eye and ear protection and protective work gloves when inspecting the APU while it is running or injury could result from moving parts, excessive noise level, and engine heat.

4. Give the systems time to cool before attempting to make any fluid checks. When checking for leaks, never open any type of fluid holding tanks while APU is hot or severe burns from the spraying of hot fluids may result.

5. Do not wear watches, rings, or other jewelry which could short out battery terminals while servicing the battery. Do not smoke or use open flame around batteries (the battery may

explode). Battery acid is harmful to the skin and eyes. Wear protective goggles to prevent injury while working with batteries.

6. Ensure that students pay particular attention to the cautions and warnings listed in the operator's manual.

7. Ensure all personnel maintain at least three points of contact when mounting or dismounting the M1000 semitrailer (to include performing PMCS).

8. With semitrailer uncoupled and gladhand dummy couplings installed, parking brakes cannot be applied with brake release valve. The dummy coupling must be removed from the emergency (red) gladhand prior to applying parking brakes or injury to personnel may result.

F. ADDITIONAL COMMENTS AND INFORMATION. Recommended instructional time is 1.5 hours (.5 demonstration and 1.0 practical exercise).

LESSON TITLE: PERFORM OPERATOR PMCS ON AN M1000 SEMITRAILER

TASK NUMBER: 551-721-1353 (Perform Preventive Maintenance Checks and Services [PMCS] on a Trailer)

A. TRAINING OBJECTIVE.

TASK: Perform operator PMCS on an M1000 semitrailer.

CONDITIONS Given instruction, DA Form 2404 (or ULLS generated DA Form 5988-E), pencil, TM 9-2330-381-14, equipment records folder, rags, lubricants, coolant, an M1000 semitrailer coupled to an M1070 HET, all required BII, and a requirement to inspect the semitrailer according to the PMCS tables listed in TM 9-2330-381-14.

STANDARD: Correct all faults within the operator's level of maintenance and legibly record all others on DA Form 2404 (or ULLS generated DA Form 5988-E). If no faults are found, make necessary entries on DA Form 2404 (or ULLS generated DA Form 5988-E).

B. INTERMEDIATE TRAINING. None.

C. ADMINISTRATIVE INSTRUCTIONS.

1. Training time: As scheduled.

2. Training location: 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 and one assistant instructor for every three students for the demonstration and practical exercise.

6. Training aids and equipment: Hearing protection, rags, lubricants, and coolant. DA Form 2404 (or ULLS generated DA Form 5988-E), pencils, TM 9-2330-381-14, equipment records folder, an M1000 semitrailer coupled to an M1070 HET, and all required BII for every three students.

7. References: AR 385-55, DA Pamphlet 738-750, and TM 9-2330-381-14.

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-, and weekly-operation PMCS to the students.

NOTE: At this time, separate the class into groups of three. Assign each group to a HETS and ensure each has an assistant instructor.

3. Practical exercise.

a. Issue TM 9-2330-381-14, pencils, DA Form 2404 (or ULLS generated DA Form 5988-E), and equipment records folder. Inform students on the location of rags, lubricants, and coolant.

b. Students perform PMCS.

4. Evaluation. Check each student's performance of 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. PMCS is performed daily in conjunction with driving tasks and reinforced throughout the course. Students are tested on

PMCS during the EOCCT. As an option, instructors can reshow the videotape TVT 55-48 “HET PMCS” (semitrailer PMCS is included in this videotape).

E. SAFETY RESTRICTIONS.

1. Ensure that number one bogies are chocked when the M1000 semitrailer is parked.

2. Ensure that students remove all jewelry and identification tags before performing PMCS.

3. Ensure that all personnel wear hearing protection within 10 feet of the APU when the APU is running. Use eye and ear protection and protective work gloves when inspecting the APU while it is running or injury could result from moving parts, excessive noise level, and engine heat.

4. Give the systems time to cool before attempting to make any fluid checks. When checking for leaks, never open any type of fluid holding tanks while APU is hot or severe burns from the spraying of hot fluids may result.

5. Do not wear watches, rings, or other jewelry which could short out battery terminals while servicing the battery. Do not smoke or use open flame around batteries (the battery may explode). Battery acid is harmful to the skin and eyes. Wear protective goggles to prevent injury while working with batteries.

6. Ensure that students pay particular attention to the cautions and warnings listed in the operator’s manual.

7. Prior to inspection, if the platform was raised, no one will go under the semitrailer unless all support legs have been lowered and are supporting the platform or serious injury to personnel may result.

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

9. Ensure all personnel maintain at least three points of contact when mounting or dismounting the M1000 semitrailer (to include performing PMCS).

10. Before performing any maintenance on the platform, lower the front and rear supporting legs.

11. When lowering the support legs, make sure that feet and hands are clear of the support leg foot as it nears the ground.

12. When lowering or raising the front support legs, always install the retaining pins.

F. ADDITIONAL COMMENTS AND INFORMATION. Recommended instructional time is 3 hours (1.0 demonstration and 2.0 hours practical exercise). The remaining PMCS is performed throughout the course in conjunction with driving tasks.

LESSON TITLE: COUPLE AND UNCOUPLE M1070 HET TO/FROM AN M1000 SEMITRAILER

TASK NUMBER: 551-721-3385 (Couple M1070 Tractor to an M1000 Semitrailer) and 551-721-3386 (Uncouple M1070 Tractor from an M1000 Semitrailer)

A. TRAINING OBJECTIVE.

TASK: Couple and uncouple an M1070 HET to/from an M1000 semitrailer.

CONDITIONS Given instruction, DA Form 2404 (or ULLS generated DA Form 5988-E), DD Form 1970 (or ULLS generated DA Form 5987-E), pencil, TM 9-2320-360-10, TM 9-2330-381-14, equipment records folder, rags, lubricants, coolant, an M1070 HET, an M1000 semitrailer, and all required BII.

STANDARD: Couple and uncouple the M1070 HET to/from an M1000 semitrailer in the correct sequence without causing damage to the equipment or injury to personnel. Students will be graded on a GO/NO-GO basis. See training evaluation checklists located at the end of this lesson.

B. INTERMEDIATE TRAINING.

Intermediate Training Objective 1

TASK: Couple the M1070 HET to an M1000 semitrailer.

CONDITIONS: Given instruction, DA Form 2404 (or ULLS generated DA Form 5988-E), DD Form 1970 (or ULLS generated DA Form 5987-E), pencil, TM 9-2320-360-10, TM 9-2330-381-14, equipment records folder, rags, lubricants, coolant, an M1070 HET, an uncoupled M1000 semitrailer, and all required BII.

STANDARD: Couple the M1070 HET to an M1000 semitrailer in the correct sequence without causing damage to the equipment or injury to personnel. Students will be graded on a GO/NO-GO basis. See training evaluation checklist (pages 5-50 through 5-52).

Intermediate Training Objective 2

TASK: Uncouple the M1070 HET from an M1000 semitrailer.

CONDITIONS: Given instruction, DA Form 2404 (or ULLS generated DA Form 5988-E), DD Form 1970 (or ULLS generated DA Form 5987-E), pencil, TM 9-2320-360-10, TM 9-2330-381-14, equipment records folder, rags, lubricants, coolant, an M1070 HET, a coupled M1000 semitrailer, and all required BII.

STANDARD: Uncouple the M1070 HET from an M1000 semitrailer in the correct sequence without causing damage to the equipment or injury to personnel. Students will be graded on a GO/NO-GO basis. See training evaluation checklist (pages 5-53 and 5-54).

C. ADMINISTRATIVE INSTRUCTIONS.

1. Training time: As scheduled.

2. Training locations: Classroom, motor pool, or 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 three students for the demonstration and practical exercise.

6. Training aids and equipment: Television; VCR; videotape TVT 55-49 (PIN: 710751DA), Part II, "HETS Couple/Uncouple"; hearing protection; rags; lubricants; and coolant. DA Form 2404 (or ULLS generated DA Form 5988-E), DD Form 1970 (or ULLS generated DA Form 5987-E), pencils, TM 9-2320-360-10, TM 9-2330-381-14, equipment records folder, an M1070 HET, an M1000 semitrailer, and all required BII for every three students.

7. References: AR 385-55, DA Pamphlet 738-750, TM 9-2320-360-10, and TM 9-2330-381-14.

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: The classroom must be near the training area where coupling/uncoupling operations are to be practiced. This allows the student to view the videotape and put into practical application these procedures with a minimum loss of learned skills. Explain safety precautions and warnings, followed by the videotape, and then demonstrate coupling and uncoupling.

a. Explain all safety precautions for this exercise and review warnings. Attention should be drawn to all warnings in the vehicle operator's manuals with particular attention given the following:

CAUTION

HET fifth wheel side-to-side oscillation lockouts must be disengaged for all HET/semitrailer operations or severe damage to equipment may result.

WARNINGS

Prior to adjusting gooseneck height, pull both suspension shut-off and gooseneck isolation valve handle out to the ADJUST position or injury to personnel from unexpected movement and damage to equipment may result.

Two personnel are required for coupling. During coupling, the operator must know the position of the ground guides at all times or injury to personnel may result.

CAUTIONS

HET and trailer coupling should be done with the HET and trailer straight in line, not an angle. If the wedge of the trailer is not aligned with the fifth wheel, operate trailer to align them. Fifth wheel or steering wedge may be damaged if coupled at an angle greater than 45 degrees.

If HET has been coupled to an offset angle, manually steer wheels to the appropriate direction or damage to equipment may occur.

Do not allow the kingpin to miss and/or overrun the fifth wheel or severe damage to the HET and semitrailer may result.

Due to characteristics of air spring suspensions, approximately 5 minutes must be allowed for the HET suspension to compensate for the added load. Failure to comply may result in damage to suspension.

WARNINGS

Make sure the person adjusting the steering wedge adjusting nut is clear when the steering wedge is cycling back and forth or injury to personnel may result.

Do not uncouple HET from semitrailer if HET has less than normal air pressure, approximately 100 to 120 psi, or semitrailer will not have sufficient air pressure to apply or release brakes. Injury to personnel and damage to equipment may result.

Do not uncouple a loaded semitrailer from the HET for purposes of performing maintenance tasks on the semitrailer or injury to personnel and damage to equipment may result.

CAUTION

Make sure that the trailer hand brake control (Johnny Bar) is completely released prior to applying the HET parking brakes or loss of semitrailer reserve air supply may occur.

WARNINGS

The front support legs must be lowered to support the platform before operating the gooseneck isolation valve or injury to personnel (from unwanted gooseneck/suspension movement) and damage to equipment may result.

Prior to moving the HET from under gooseneck, place the gooseneck isolation valve handle in the ADJUST position (handle pulled outward) or personal injury and damage to equipment may result.

All spotters and ground personnel around the HET/semitrailer must stand clear of the vehicles during uncoupling or injury to personnel may result.

b. Show videotape TVT 55-49, Part II, “HETS Couple/Uncouple”.

c. Separate the class into groups of three. Assign each group to a HET and semitrailer and ensure each group has an assistant instructor.

d. Remove all necessary tools from the semitrailer stowage box (3/4-inch ratchet, 3/4-inch extension, 1 7/8-inch socket [for steering wedge], 1 5/8-inch socket [for rear support legs], 1/2-inch speed wrench, and a 1/2-inch to 3/4-inch adapter).

e. Demonstrate coupling and uncoupling procedures.

3. Practical exercise. Students practice coupling/uncoupling the M1070 HET to/from the M1000 semitrailer in the training area. PMCS is also performed at this time.

4. Evaluate. Check every student's performance of coupling and uncoupling to include PMCS.

5. Summary.

a. Recap main points.

b. Allow for questions.

c. Clarify questions.

d. Give closing statement.

6. Retraining. Retrain and retest NO-GOs. NO-GOs will be retrained after normal duty hours. Students are tested on the EOCCT.

E. SAFETY RESTRICTIONS.

1. Ensure that number one bogies are chocked when the M1000 semitrailer is parked.

2. Ensure that students remove all jewelry and identification tags before working on or around the semitrailer or HET.

3. Ensure that all personnel wear hearing protection within 10 feet of the APU when the APU is running. Use eye and ear protection and protective work gloves when inspecting the APU while it is running or injury could result from moving parts, excessive noise level, and engine heat.

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

5. Ensure all personnel maintain at least three points of contact when mounting or dismounting the M1070 HET and the M1000 semitrailer (to include performing PMCS).

6. With semitrailer uncoupled and gladhand dummy couplings installed, parking brakes cannot be applied with brake release valve. The dummy coupling must be removed from the emergency (red) gladhand prior to applying parking brakes or injury to personnel may result.

7. If semitrailer is coupled to the HET, the gooseneck isolation valve handle must be in the RUN position (handle pushed inward). If semitrailer is uncoupled and gooseneck needs adjusting, verify that front support legs are lowered and supporting the platform and all personnel are clear of gooseneck before operating gooseneck isolation valve or injury to personnel may result.

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

9. Never back at a speed over 5 MPH.

10. Ensure that personnel wear seat belts when the vehicle is in motion.

11. Prior to adjusting gooseneck height, pull both suspension shut-off and gooseneck isolation valve handles out to the ADJUST position or injury to personnel (from unexpected movement) and damage to equipment may result.

12. Two personnel are required for coupling. During coupling, the operator must know the position of the ground guides at all times or injury to personnel may result.

13. Make sure the person adjusting the steering wedge adjusting nut is clear when the steering wedge is cycling back and forth or injury to personnel may result.

14. Do not uncouple HET from semitrailer if HET has less than normal air pressure, approximately 100 to 120 psi, or semitrailer will not have sufficient air pressure to apply or release brakes. Injury to personnel and damage to equipment may result.

15. Do not uncouple a loaded semitrailer from the HET for purposes of performing maintenance tasks on the semitrailer or injury to personnel and damage to equipment may result.

16. The front support legs must be lowered to support the platform before operating the gooseneck isolation valve or injury to personnel (from unwanted gooseneck/suspension movement) and damage to equipment may result.

17. Prior to moving the HET from under gooseneck, place the gooseneck isolation valve handle in the ADJUST position (handle pulled outward) or personal injury and damage to equipment may result.

18. All spotters and ground personnel around the HET/semitrailer must stand clear of the vehicles during uncoupling or injury to personnel may result.

F. ADDITIONAL COMMENTS AND INFORMATION. Recommended instructional time is 5.0 hours (.5 for conference, 1.0 for demonstration, and 3.5 practical exercise [PMCS is integrated]).

INTERMEDIATE TRAINING OBJECTIVE 1

TRAINING EVALUATION

COUPLE THE M1070 HET TO AN M1000 SEMITRAILER

NAME_____ **RANK**_____ **UNIT**_____

EVALUATOR_____ **DATE**_____

STEPS	**GO**	**NO-GO**
1. POSITIONS THE HET DIRECTLY IN FRONT OF THE SEMITRAILER, WITH SUFFICIENT SPACE TO PERFORM THE COUPLING.		
2. CHECKS THAT CHOCK BLOCKS ARE PROPERLY IN PLACE, IN FRONT AND BEHIND STREETSIDE AND CURBSIDE NUMBER 1 BOGIES.		
3. ENSURES GREASE IS APPLIED TO CONTACT AREAS OF PICKUP PLATE, KINGPIN, STEERING WEDGE, VEE ENTRY RAMPS, AND FIFTH WHEEL.		
4. CHECKS FIFTH WHEEL IS IN FULL OSCILLATING MODE (LOCKOUTS DISENGAGED).		
5. CHECKS SECONDARY LOCK RELEASE HANDLE IS HOOKED IN THE OUT POSITION.		
6. CHECKS PRIMARY LOCK RELEASE HANDLE IS HOOKED IN THE OUT POSITION.		
7. PUSHES FIFTH WHEEL DOWN UNTIL IT RESTS ON STOP AND IS BELOW GUIDE RAMPS.		
8. STARTS AND RUNS APU.		
9. ENSURES FRONT AND REAR SUPPORT LEGS ARE LOWERED AND SUPPORTING THE PLATFORM.		
10. ENSURES GOOSENECK ISOLATION VALVE AND SUSPENSION SHUT-OFF VALVE HANDLES ARE PULLED OUT TO THE ADJUST POSITION.		
11. ENSURES SEMITRAILER KINGPIN IS THE SAME HEIGHT AS THE HET FIFTH WHEEL.		
12. LOOSENS STEERING WEDGE ADJUSTING NUT THE APPROPRIATE AMOUNT OF TURNS.		

STEPS	GO	NO-GO
13. CHECKS STEERING WEDGE ALIGNMENT WITH FIFTH WHEEL VEE ENTRY.		
14. BACKS HET APPROXIMATELY TWO INCHES FROM GOOSENECK PICKUP PLATE AND STOPS.		
15. LOWERS THE GOOSENECK APPROXIMATELY ONE TO TWO INCHES LOWER THAN THE HET FIFTH WHEEL.		
16. SPOTTER MAKES FINAL ADJUSTMENTS TO STEERING WEDGE ALIGNMENT WITH HET FIFTH WHEEL VEE ENTRY BY OPERATING STEERING VALVE.		
17. BACKS SLOWLY UNTIL KINGPIN HAS LOCKED INTO HET FIFTH WHEEL COUPLING JAWS. SPOTTER CONFIRMS THAT KINGPIN IS SEATED AND BOTH FIFTH WHEEL LOCKS ARE PROPERLY ENGAGED.		
18. TESTS THE COUPLING BY NUDGING THE HET FORWARD SLIGHTLY TO ENSURE KINGPIN IS LOCKED.		
19. STOPS HET, SHIFTS TRANSMISSION RANGE SELECTOR TO NEUTRAL, AND APPLIES VEHICLE PARKING BRAKES.		
20. CHOCKS HET FRONT WHEEL IN FRONT AND BEHIND TIRE ON DRIVER'S SIDE.		
21. VISUALLY CHECKS THAT SECONDARY AND PRIMARY RELEASE HANDLES ARE IN LOCKED POSITION.		
22. VISUALLY CHECKS COUPLING JAWS ARE LOCKED AROUND KINGPIN.		
23. VISUALLY CHECKS TO ENSURE KINGPIN DID NOT RIDE OVER TOP OF HET FIFTH WHEEL.		
24. REMOVES EMERGENCY AND SERVICE DUMMY COUPLINGS FROM SEMITRAILER.		
25. CONNECTS THE SERVICE AIR GLADHAND TO THE SERVICE AIR COUPLING AND THE EMERGENCY AIR GLADHAND TO EMERGENCY AIR COUPLING.		
26. CONNECTS INTERVEHICULAR CABLE TO THE HET AND SEMITRAILER.		
27. TIGHTENS AND SECURES STEERING WEDGE ADJUSTING NUT INTO HET FIFTH WHEEL.		
28. ENTERS CAB, PUSHES TRAILER AIR SUPPLY VALVE KNOB IN TO CHARGE THE SEMITRAILER BRAKES.		

STEPS	GO	NO-GO
29. ALLOWS AMPLE TIME FOR AIR TANKS TO CHARGE. CHECKS AIR PRESSURE GAUGE, GAUGE SHOULD READ APPROXIMATELY 100 TO 120 PSI.		
30. APPLIES BRAKES TO ENSURE THAT BRAKES ARE OPERATING CORRECTLY. PULLS OUT ON HET PARKING BRAKE CONTROL (TO APPLY HET AND SEMITRAILER PARKING BRAKES).		
31. RAISES AND SECURES BOTH FRONT AND REAR SUPPORT LEGS.		
32. PUSHES GOOSENECK ISOLATION VALVE HANDLE IN TO THE RUN POSITION.		
33. MAKES MINOR PLATFORM HEIGHT ADJUSTMENTS.		
34. PUSHES SUSPENSION SHUT-OFF VALVE HANDLE IN TO THE SHUT-OFF POSITION.		
35. REMOVES AND STOWS HET AND SEMITRAILER CHOCK BLOCKS.		
36. PUSHES IN ON PARKING BRAKE CONTROL AND TRAILER AIR SUPPLY CONTROL (TO RELEASE HET PARKING BRAKES AND SEMITRAILER BRAKES).		
37. ATTEMPTS TO NUDGE FORWARD WITH SEMITRAILER BRAKES SET (JOHNNY BAR) TO ENSURE STEERING WEDGE IS SET INTO HET FIFTH WHEEL AND ADJUSTING NUT IS SECURE.		
38. DRIVES HET AND SEMITRAILER FORWARD APPROXIMATELY 60 FEET TO CHECK SEMITRAILER TRACKING. ADJUSTS THE TRACKING, IF NECESSARY, USING THE MANUAL STEERING VALVE.		
39. CLOSES HYDRAULIC CONTROL PANEL.		
40. SHUT DOWNS APU AND CLOSES CONTROL PANEL.		
41. PERFORMS PMCS ON HET AND SEMITRAILER.		

INTERMEDIATE TRAINING OBJECTIVE 2

TRAINING EVALUATION

UNCOUPLE THE M1070 HET FROM AN M1000 SEMITRAILER

NAME_____ **RANK**_____ **UNIT**_____

EVALUATOR_____ **DATE**_____

STEPS	**GO**	**NO-GO**
1. SHIFTS THE TRANSMISSION RANGE SELECTOR TO NEUTRAL AND PULLS OUT PARKING BRAKE CONTROL.		
2. CHOCKS STREETSIDE AND CURBSIDE NUMBER 1 BOGIES OUTER DUAL WHEELS ON SEMITRAILER.		
3. LOWERS BOTH FRONT AND REAR SUPPORT LEGS.		
4. LOOSENS STEERING WEDGE ADJUSTING NUT ONE FULL TURN COUNTERCLOCKWISE.		
5. PULLS PRIMARY AND SECONDARY LOCK RELEASE HANDLES OUT AND HOOKS IN THE OUT POSITION.		
6. STARTS APU.		
7. PULLS SUSPENSION SHUT-OFF VALVE OUT TO THE ADJUST POSITION.		
8. PULLS GOOSENECK ISOLATION VALVE HANDLE OUT TO THE ADJUST POSITION.		
9. PUSHES IN PARKING BRAKE CONTROL.		
10. PULLS OUT TRAILER AIR SUPPLY BUTTON.		
11. DRIVES HET FORWARD APPROXIMATELY ONE FOOT OR UNTIL KINGPIN IS IN THE VEE ENTRY OF THE FIFTH WHEEL AND STOPS.		
12. SHIFTS TRANSMISSION RANGE SELECTOR TO NEUTRAL POSITION AND PULLS OUT PARKING BRAKE CONTROL.		
13. ASSISTANT OPERATOR RAISES GOOSENECK (APPROXIMATELY 3 INCHES ABOVE HET FIFTH WHEEL).		
14. REMOVES THE ELECTRICAL CABLE FROM THE HET AND TRAILER, CLOSES RECEPTACLE COVER ON HET AND TRAILER, AND STOWS CABLE IN STOWAGE BOX ON HET.		

STEPS	GO	NO-GO
15. DISCONNECTS THE EMERGENCY AND SERVICE AIR GLADHANDS FROM AIR COUPLERS ON THE SEMITRAILER.		
16. CONNECTS THE EMERGENCY AND SERVICE AIR COUPLINGS TO THE POGO STICK DUMMY CONNECTORS ON HET.		
17. PUSHES IN PARKING BRAKE CONTROL, MOVES TRANSMISSION RANGE SELECTOR INTO 2-5 RANGE, AND DRIVES HET FORWARD UNTIL IT CLEARS THE GOOSENECK AND STOPS.		
18. OPERATOR SHIFTS THE TRANSMISSION RANGE SELECTOR INTO NEUTRAL, APPLIES HET PARKING BRAKES.		
19. ASSISTANT OPERATOR LOWERS THE GOOSENECK TO THE LOWEST POSITION.		
20. ASSISTANT OPERATOR PUSHES IN GOOSENECK ISOLATION VALVE HANDLE .		
21. ASSISTANT OPERATOR PUSHES SUSPENSION SHUT-OFF VALVE IN TO SHUT-OFF POSITION.		
22. CLOSES AND SECURES HYDRAULIC CONTROL PANEL.		
23. SHUTS DOWN APU AND CLOSES CONTROL PANEL.		
24. PERFORMS AFTER-OPERATION PMCS ON HET AND SEMITRAILER.		

LESSON TITLE: CHANGE TIRE ON M1000 SEMITRAILER USING TIRE DAVIT

TASK NUMBER: 551-721-3383 (Remove Unserviceable Wheel Assembly from an M1000 Semitrailer) and 551-721-3384 (Install a Serviceable Wheel Assembly on an M1000 Semitrailer)

A. TRAINING OBJECTIVE.

TASK: Change a tire on the M1000 semitrailer using tire davit.

CONDITIONS Given instruction, rags, heavy work gloves, hearing protection, an M1070 HET, an M1000 semitrailer, all required BII, and a requirement to change a simulated flat tire on the M1000 semitrailer.

STANDARD: Perform task in the correct sequence according to TM 9-2330-381-14 and without damage to equipment or injury to personnel.

B. INTERMEDIATE TRAINING. None.

C. ADMINISTRATIVE INSTRUCTIONS.

1. Training time: As scheduled.

2. Training location: Motor pool or 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 three students for the demonstration and practical exercise.

6. Training aids and equipment: Rags, leather work gloves, and hearing protection. TM 9-2330-381-14, an M1000 semitrailer, an M1070 HET, and all required BII for every three students.

7. References: TM 9-2330-381-14.

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: At this time, separate the class into groups of three. Assign each group to a vehicle (HET and semitrailer) and ensure each group has an assistant instructor and TM 9-2330-381-14.

NOTE: Changing a tire on the M1000 semitrailer is a two-soldier task. One soldier cannot safely do this task.

a. Review safety warnings.

b. Park the M1070 HET and M1000 semitrailer.

(1) Park in a safe area and out of traffic, where there is no traffic danger to personnel changing the tire. Ensure the system is parked on as level ground as possible.

(2) Move the transmission range selector to neutral, set the parking brake, 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) Make sure the platform is at normal running height of 43 inches.

(6) If uncoupled, ensure the gooseneck is lowered to the lowest position.

(7) Chock both curbside and streetside number one bogies in front and behind each outer dual tire to prevent movement in either direction.

c. Remove all necessary tools from semitrailer stowage compartment: socket wrench handle (ratchet) 3/4-inch drive; 8-inch extension x 3/4-inch drive; socket (lug) 1 1/2-inch hex and 13/16-inch square nut x 3/4-inch drive; socket 1 1/8-inch

x 3/4-inch drive; adjustable open end wrench, 10-inch; suspension chain; and metallic tube.

d. Demonstrate to the students tire changing procedures on the M1000 semitrailer according to TM 9-2330-381-14.

3. Practical exercise. Students practice changing simulated flat tires to include the four separate procedures for wheel removal/installation.

4. Evaluation. Check each student's performance. Ensure each student has practiced the four separate procedures for wheel removal/installation.

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 number one bogies are chocked when the M1000 semitrailer is parked or maintenance is being performed.

2. Ensure that students remove all jewelry and identification tags before working on or around the semitrailer or HET.

3. Ensure that all personnel within 10 feet of the APU wear hearing protection when it is running.

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

5. Ensure all personnel maintain at least three points of contact when mounting or dismounting the M1000 semitrailer (to include performing PMCS).

6. Stand clear when raising or lowering the tire. Do not let the tire hang in mid air for a long period of time. Place tire in the carrier or on the ground as soon as possible. The tire is very heavy and could cause serious injury or death if it falls.

7. When on top of the gooseneck, when removing or installing the spare tire, always hold onto handrail or davit with one hand to avoid falling and causing injury to personnel.

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

9. Make sure the suspension isolation valve at the affected bogie is closed (handle facing outboard) prior to adjusting the platform height or the suspension chain can break and cause injury to personnel and damage to equipment.

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

LESSON TITLE: DRIVE THE M1070 HET AND M1000 SEMITRAILER ON THE ROAD (PRIMARY AND SECONDARY)

TASK NUMBER: 551-721-3337 (Drive a Heavy-Equipment Transporter [HET] on Improved Roads)

A. TRAINING OBJECTIVE.

TASK: Drive an M1070 HET and M1000 semitrailer combination on primary and secondary roads.

CONDITIONS Given instruction, DD Form 1970 (or ULLS generated DA Form 5987-E), DA Form 2404 (or ULLS generated DA Form 5988-E), pencil, TM 9-2320-360-10, TM 9-2330-381-14, equipment records folder, rags, lubricants, coolant, designated driving route (improved surfaced and secondary roads), wide load ahead and wide load follows signs for each unit, escort/control vehicles (minimum of two vehicles required), an M1070 HET, an M1000 semitrailer with a loaded and secured M-1 tank, an empty M1000 semitrailer, all required BII, and a requirement to drive a designated route (to include making right and left hand turns, making gradual steering corrections, signaling intentions in advance, passing oncoming vehicles, maintaining vehicle internal, obeying highway warning and regulatory signs, operating the lights as required, monitoring gauges and indicator lights, upshifting/downshifting the transmission through all gears ranges, manipulating the controls, and performing basic driving maneuvers to include downhill braking (using the engine brake) and backing (using ground guides).

STANDARD: Operate the combination unit correctly and 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 every three students for the practical exercise.

6. Training aids and equipment: Rags, lubricants, coolant, hearing protection, work gloves, 40 traffic cones or empty POL drums, designated driving route (improved surfaced and secondary roads), wide load ahead and wide load follows signs for each unit, and escort/control vehicles (minimum of two vehicles required). A sample escort/controller's briefing sheet is located at the end of this lesson. DD Form 1970 (or ULLS generated DA Form 5987-E), DA Form 2404 (or ULLS generated DA Form 5988-E), pencil, TM 9-2320-360-10, TM 9-2330-381-14, equipment records folder, an M1070 HET, an empty M1000 semitrailer, an M1000 semitrailer with a loaded and secured M-1 tank, and all required BII for each three students. Recommend a communication system for the control vehicles. Television, VCR, and TVT 55-51, (PIN: 710753DA), Part IV, "HET Driving", are required if the videotape is reshown to the students.

7. References: AR 385-55, DA Pamphlet 738-750, FM 21-305, TM 9-2320-360-10, TM 9-2330-381-14, and TM 55-2350-255-14.

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.

NOTE: A qualified instructor will be in the cab whenever a student is driving.

NOTE: The students will be required to drive the M1070 HET/M1000 semitrailer loaded and empty. If two combination units are used, one could be empty and the other loaded. The students could rotate driving the vehicles so they get the "feel" of the vehicles empty and loaded.

a. Videotape. As an option, reshow TVT 55-51, (PIN: 710753DA), Part IV, "HET Driving" to reinforce driving tasks. This step may be deleted because the students should have viewed this videotape in earlier lessons.

WARNING

All safety requirements such as hazard flags, road permits, flashing warning lights, escort vehicles, and wide load signs must be met. Failure to comply could result in injury to personnel or damage to equipment.

b. Trailer coupling safety. Ensure proper coupling of semitrailer to include the security of the load (to prevent movement).

c. Lights. Check all lights to ensure they work.

WARNING

The trailer hand brake control is only used for testing the semitrailer brakes. Using it when driving will cause the semitrailer to skid. Using the semitrailer hand control to park can cause all the air to leak out of the brake system.

d. Brake operation.

(1) Test the trailer brakes by pulling forward slowly and applying the trailer hand brake control (Johnny 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.

(2) During normal operation, the brakes of the HET and semitrailer both function when brake pedal is applied. Brake pressure must be applied gradually and smoothly, keeping in mind that stopping distance will increase when a trailer is being towed.

(3) The parking brake control will apply brakes to both the HET and semitrailer. The trailer hand brake control (Johnny bar) apply brakes to the trailer only. Do not apply the trailer hand control when parking.

NOTE: If a hissing sound is heard from the HET parking brake control after the parking brakes are applied, brake pedal must be released and trailer air supply control in HET must be released and then reapplied.

e. Speed restrictions. Reduce speed for road, weather, and visibility and before entering curves. When operating with a semitrailer with steering axles and a high center of gravity, it is important to operate at slower speeds to avoid rollovers, jackknifes, and so forth.

f. Operation on downgrades. Take care with braking, especially on downgrades, due to the effects of the steering axles on the trailer.

g. Highway driving. When towing a trailer, overall length of HET/semitrailer must be kept in mind when passing other vehicles. During trailer operations, acceleration rate is reduced and stopping distance increases. Precautions must also be exercised to ensure that all bridges and overpasses can be negotiated.

h. Steering. The semitrailer is automatically steered in response to turning of the HET. When in tow, the semitrailer can negotiate a 90-degree turn in one continuous motion, at an intersection from one 30-foot wide road to another 30-foot wide road.

WARNINGS

Unlike conventional semitrailers, this semitrailer tracks the same turning radius as the HET and does not cut the inside turning radius when making turns. The operator needs to make tighter turns to keep the semitrailer from hitting the outer curb.

The HET semitrailer combination does not track in the same way as standard or conventional tractor-trailer combinations. Operators must know and understand this prior to operating HETS on public access roads. Wide, conventional tractor-trailer turns may result in personal injury or damage to equipment.

When making sharp turns, the trailer may swing beyond normal turning radius. Failure to observe this warning may result in personal injury or damage to equipment.

i. Turning procedures. Use proper turn procedures and be aware of the trailer at all times. With the HET/M1000 semitrailer combination, turning the M1070 HET causes the M1000 semitrailer wheels to also turn. The trailer may swing out into the lane of oncoming traffic. The operator must ensure the lane is clear prior to making a turn. Left and right turns should be made tighter than conventional tractor-trailer turns.

NOTE: Allow adequate amount of clearance on both sides and rear of the M1000 semitrailer while negotiating a turn.

(1) To make a right turn-

- Keep the rear of the trailer close to the curb.
- Pull up to the middle of the intersection and turn hard right.
- Watch for oncoming traffic. The trailer will swing out (rear of trailer swings left) approximately four feet while negotiating a turn.
- Observe the rear of the semitrailer through the mirrors.
- Finish the turn in the right lane.

(2) To make a left turn-

- If there are two turn lanes, take the right hand lane. Being as far right as practical before the turn allows making the turn without obstructing traffic intersecting from the left.
- Ensure there is an adequate gap to make a turn in front of traffic that is intersecting from the left.
- Pull up to the middle of the intersection and turn hard left. The trailer will swing out (rear of trailer swings right) approximately four feet while negotiating a turn.
- Watch the mirrors during the turn and turn the steering wheel back to the right to straighten the wheels. If applicable, watch for oncoming traffic.

j. Following distances.

(1) Maintain one second for each 10 feet of vehicle length (40 MPH and less). The M1070 HET and M1000 semitrailer combination is approximately 72 feet long, so at speeds up to 40 MPH, allow eight seconds following distance.

(2) Increase by one second for speeds over 40 MPH. At 45 MPH, with the HET and semitrailer, allow nine seconds following distance.

(3) Increase by several seconds for rain, fog, and winter conditions.

k. Backing procedures.

WARNING

In some cases when trailer is backed up, wheels on trailer will not be straight when the HET/semitrailer is stopped and then driven forward. Rear of trailer will swing wide right or left and may cause injury to bystanders.

(1) Align vehicle to gain the best possible angle of approach.

(2) Adjust mirrors for best visibility.

WARNINGS

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 and 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.

Ensure the position of the ground guide(s) is known at all times. Failure to observe this warning may result in personal injury or death.

(3) Use a ground guide when backing. Ground guide must be visible to operator at all times.

(4) Turn on flashers and sound horn.

(5) Back up slowly and pay close attention to location and signals of ground guide.

(6) When backing, rear of trailer will always move in direction opposite of front wheels on HET. Trailer will turn quickly. When trailer has turned, and backing in a straight line is required, turn the HET wheels in the direction the trailer is moving. This will bring HET and semitrailer in a straight line.

(7) If necessary, have the assistant operator use manual steering to assist the operator in backing.

WARNING

When manually steering semitrailer, make many starts and stops to give assistant operator time to adjust steering. The HET operator should allow even space on both sides of the HET so that assistant operator steering the semitrailer has room to make adjustments or injury to personnel and damage to equipment may result.

l. Hand and arm signals. Demonstrate hand and arm signals required for this exercise.

m. Ground guide precautions. Explain ground guide safety precautions for backing the HET and semitrailer.

n. Briefing. Give safety briefing.

3. Practical exercise.

a. Separate the class into groups of three. Assign each group to a HET and semitrailer and ensure each group has an assistant instructor and issue TM 9-2320- 360-10, TM 9-2330-381-14, pencils, DD Form 1970 (or ULLS generated DA Form 5987-E), DA Form 2404 (or ULLS generated DA Form 5988-E), 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 HET/semitrailer through the courses laid out in the training area(s). Sample training areas are in Chapter 6.

NOTE: As each student practices driving, an assistant instructor rides in the right front seat. The other two student drivers ride in the rear seat and rotate driving duties. 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 habits.

d. After students have mastered driving in the training area, they will practice driving on the road (primary and secondary roads). During-operation PMCS is also conducted at this time.

e. Students perform after-operation PMCS and ensure all operator entries required on DD Form 1970 (or ULLS generated DA Form 5987-E) and DA Form 2404 (or ULLS generated DA Form 5988-E) are accurate, complete, and legible.

4. Evaluate. Check every 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 all chock blocks are in place when vehicles are parked.

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

3. Ensure students remove all watches, jewelry, and identification tags before working in or around the HET and/or semitrailer.

4. Ensure that students pay particular attention to the cautions and warnings listed in the operator's manuals.

5. Ensure all personnel wear hearing protection when working in or around a running HET.

6. Maintain a safe following distance and speed limit when driving (as determined by the local law or command).

7. Ensure that ground guides are always used when backing the HET and semitrailer.

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

9. Do not shift the differential lock/unlock lever to the LOCK position while the vehicle is moving.

10. Ensure that all personnel wear seat belts when the vehicle is in motion.

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

12. Ensure personnel maintain at least three points of contact when mounting or dismounting the HET and semitrailer (to include performing PMCS).

13. The HET ladder must be used when performing maintenance. The two hooks on the ladder must be installed in the holes located on top of the fender prior to use. Using the ladder for other applications could result in serious injury or death to personnel.

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

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

16. 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.

17. 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.

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

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

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

21. All safety requirements such as hazard flags, road permits, flashing warning lights, escort vehicles, and wide load signs must be met. Failure to comply could result in injury to personnel or damage to equipment.

22. The trailer hand brake control is only used for testing the semitrailer brakes. Using it when driving will cause the semitrailer to skid. Using the semitrailer hand control to park can cause all the air to leak out of the brake system.

23. Unlike conventional semitrailers, the M1000 semitrailer tracks the same turning radius as the HET and does not cut the inside turning radius when making turns. The operator needs to make tighter turns to keep the semitrailer from hitting the outer curb.

24. The HET semitrailer combination does not track in the same way as standard or conventional tractor-trailer combinations. Operators must know and understand this prior to operating HETS on public access roads. Wide, conventional tractor-trailer turns may result in personal injury or damage to equipment.

25. When making sharp turns, the trailer may swing beyond normal turning radius. Failure to observe this warning may result in personal injury or damage to equipment.

26. In some cases when trailer is backed up, wheels on trailer will not be straight when the HET/semitrailer is stopped and then driven forward. Rear of trailer will swing wide right or left and may cause injury to bystanders.

27. 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 and 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 guide(s) 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.

28. Ensure the position of the ground guide(s) is known at all times. Failure to observe this warning may result in personal injury or death.

29. When manually steering the semitrailer, make many starts and stops to give assistant operator time to adjust steering. The HET operator should allow even space on both sides of the HET so that the assistant operator steering the semitrailer has room to make adjustments or injury to personnel and damage to equipment may result.

F. ADDITIONAL COMMENTS AND INFORMATION. Recommended instructional time is 20 hours (1.0 conference and 19.0 practical exercise, including 3.0 PMCS).

SAMPLE ESCORT/CONTROLLER'S BRIEFING SHEET

1. Always follow civilian/military police instructions when given.

2. On controlled access highways, use truck parking areas only.

3. Make only emergency halts on the roadside of controlled access highways.

4. Do not stand on the traffic side of a vehicle during halts on conventional highways.

5. Perform vehicle operation maintenance and check cargo security at every halt.

6. Move vehicles off the highway (to an area that can support its weight) before beginning maintenance.

7. Have reflectors and warning devices in place before beginning maintenance.

8. Use warning lights during periods of darkness or reduced visibility.

9. Begin movement only at the escort/controllers signal.

10. Observe vehicle speed restrictions:_____ as determined by the local commander or civil authorities.

11. Observe vehicle intervals (minimum of eight seconds required under 40 MPH).

12. Use the acceleration lane, when available, to reach highway speed.

13. Gradually attain proper vehicle interval once on the main route.

14. Operate vehicle with headlights on at all times.

15. Use warning devices correctly.

16. Remember the following: Because of the weight of this vehicle, roadways and curbs may give way causing the vehicle to turn over. When approaching oncoming traffic on a narrow road-

- Signal your intentions.
- Move to the right of the roadway only as far as you safely can and stop.
- Wait until the other vehicles have passed and resume travel on the most solid part of the road.

17. Add any additional comments as local conditions warrant.

LESSON TITLE: LOAD DISABLED M-1 TANK ONTO AN M1000 SEMITRAILER USING DUAL WINCHES

TASK NUMBER: 551-721-3387 (Load Disabled M-1 Tank onto an M1070 HET/M1000 Semitrailer Combination Using Dual Winches)

A. TRAINING OBJECTIVE.

TASK: Load a disabled M-1 tank (can be simulated) onto an M1000 semitrailer using dual winches.

CONDITIONS Given instruction, DD Form 1970 (or ULLS generated DA Form 5987-E), DA Form 2404 (or ULLS generated DA Form 5988-E), pencil, TM 9-2320-360-10, TM 9-2330-381-14, equipment records folder, rags, lubricants, coolant, an M1070 HET, an M1000 semitrailer, all required BII, a disabled M-1 tank (can be simulated), and a suitable training area.

STANDARD: Without damage to equipment or injury to personnel, correctly and safely load and tie down a disabled M-1 tank. Students will be graded on a GO/NO-GO basis. See training evaluation sheet located at the end of this lesson.

B. INTERMEDIATE TRAINING. None.

C. ADMINISTRATIVE INSTRUCTIONS.

1. Training time: As scheduled.

2. Training location: Classroom and training area.

3. Training type: Conference and practical exercise.

4. Students: Personnel as scheduled.

5. Principal and assistant instructor required: One primary instructor for the conference and one assistant instructor for every three students for the practical exercise.

6. Training aids and equipment: Television; VCR; videotape TVT 55-50 (PIN: 710752DA), “HET, Part III, Load/Unload”; hearing protection; leather work gloves; rags; lubricants; and coolant. DD Form 1970 (or ULLS generated DA Form 5987-E), DA Form 2404 (or ULLS generated DA Form 5988-E), pencil, TM 9-2320-360-10, TM 9-2330-381-14, equipment record folder, a disabled M-1 tank (can be simulated), an M1070 HET, an M1000 semitrailer, and all required BII for every three students.

7. References: AR 385-55, DA Pamphlet 738-750, FM 9-43-2, FM 21-305, FM 21-60, TB 43-0142, TM 9-2320-360-10, TM 9-2330-381-14, and TM 55-2350-255-14.

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.

NOTE: The classroom must be near the training area where loading operations are to be practiced. This allows the student to view the videotape and put into practical application these procedures with a minimum loss of learned skills. Explain safety precautions and warnings, followed by the videotape, and then the practical exercise.

a. Explain all safety precautions for this exercise and review warnings. Attention should be drawn to all warnings in the vehicle operator's manuals with particular attention given the following:

CAUTION

Beacon light must be lowered prior to adjusting or lowering loading ramps or damage to equipment will occur.

WARNINGS

Load semitrailer on level ground whenever possible. In adverse conditions, loading can be done on grades up to 10 percent. Due to the possibility of winch cables piling up against the end flanges of the cable drums and causing injury to personnel and damage to equipment, the offset limits between the M1070 HET and semitrailer is 10 degrees left and 4 degrees right.

Provide ample clear space behind the disabled payload during loading to protect personnel and prevent damage to equipment should cables break while payload is being loaded.

Make sure winch cables are not kinked, clevises are secure to winch cables, and snatch blocks and shackles are in good condition and properly secured or injury to personnel may result.

Make sure winch cables are inspected IAW TB 43-0142 or injury to personnel may result.

Extreme caution should be exercised during any operation on a slope.

The winch operator is responsible for posting crew member guides (one on each side of the M1000 semitrailer). The winch operator must obey hand and arm signals from the primary ground guide (curbside of the M1000 semitrailer). The guide on the streetside relays signals to the guide on the curbside of the M1000 semitrailer unless in an emergency situation. The ground guides will keep visual contact with each other and with the winch operator at all times and will observe cable, snatch blocks, shackles, and payload position during loading. Failure to comply may result in injury to personnel.

Do not over load HET winches. Know the ratings of the winches being used and any protection devices (such as shear pins) or injury to personnel may result.

All ground personnel must stand clear of winch cables except when handling or injury to personnel may result.

WARNINGS

During winch-on operations on a downgrade, the payload must be restrained from the rear with some other vehicle to prevent possible loss of control of the payload which can cause injury to personnel and damage to equipment.

At no time during the loading operations, while the payload is being pulled on with winches, should personnel be on the semitrailer platform or injury to personnel may result.

Always wear leather work gloves when handling winch cables or manila rope. Never allow the cable or rope to run through bare hands. Frayed cable can cut severely.

Hearing protection must be worn when near winching station or operating winches or injury to personnel may result.

Do not allow auxiliary winch cable to cross itself or knot up on winch or injury to personnel may occur.

CAUTIONS

Winch speed control must be placed in low for maximum pull when loading payloads or damage to equipment may result.

Winch operator must maintain even tension on both winch cables to keep payload centered with semitrailer as payload is being loaded or damage to equipment may result.

WARNINGS

Prior to removing winch cable from payload, winch operator must be sure cable sags to top of HET tires to relieve cable twist or injury to personnel may result.

Failure to extend safety rail while attaching or removing payload winch cable(s) may cause injury to personnel.

CAUTION

Failure to retract and latch gooseneck safety rail before operating HET/trailer will result in damage to equipment.

WARNING

Do not allow hands to get between clevis and winch or injury to personnel may result.

CAUTION
Do not attempt to engage PTO with engine in high idle. Failure to comply may result in damage to PTO.

WARNING
Hearing protection is required within 10 feet of the APU when the APU is running or injury to personnel may result.

CAUTION
The streetside rear angle payload tie down chain must cross over top of the curbside rear payload tie down chain or the chains will interfere with each other and damage to equipment may occur.

WARNING
The spring assisted ramps, when raised from the lowered positioned, are under extreme tension and rise very quickly. When raising ramps, do not stand on the beavertail or in the path where any portion of the ramp will travel during upward travel.

CAUTION
Beacon warning light must be raised after raising or adjusting loading ramps or damage to equipment will occur.

b. Instruct operators as follows:

(1) Only one winch can be operated at a time in high speed.

(2) Both winches can be operated at the same time with full load in low speed.

(3) Winches will operate in the same direction or opposite directions at the same time in low speed.

c. Show videotape TVT 55-50 (PIN: 710752DA), “HET, Part III, Load/Unload”.

d. Separate the class into groups of three. Assign each group to a HET and semitrailer and ensure each group has an assistant instructor and issue TM 9-2330- 360-10, TM 9-2330-381-14, pencils, DD Form 1970 (or ULLS generated DA Form 5987-E), DA Form 2404 (or ULLS generated DA Form 5988-E), and equipment records folder. Instruct students on the location of rags, lubricants, and coolant.

3. Practical exercise. Assistant instructor talks students through practice loading a disabled M-1 tank (can be simulated) onto an M1070 HET/M1000 semitrailer combination using dual winches. During-operation PMCS is also conducted at this time.

4. Evaluate. Check every student's performance of loading.

5. Summary.

a. Recap main points.

b. Allow for questions.

c. Clarify questions.

d. Give closing statement.

6. Retraining. Retrain and retest NO-GOs. Students are tested on the EOCCT.

E. SAFETY RESTRICTIONS.

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

2. Ensure that all HET and semitrailer chock blocks are in place when the vehicle is parked.

3. While loading the disabled M-1 tank onto the M1000 semitrailer, ensure the main gun tube faces the rear of the disabled M-1 tank and M1000 semitrailer. The turret traverse and the gun-elevating mechanism must be in the travel position and locked to prevent rotation. If this is not done, it will create an unsafe condition.

4. Direct personnel not to walk behind tank during loading operations. Load may roll back causing serious injury or death.

5. Ensure that students remove all jewelry and identification tags before working on or around the HET or semitrailer.

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

7. Ensure all personnel maintain at least three points of contact when mounting or dismounting the M1070 HET and the M1000 semitrailer (to include performing PMCS).

8. Ensure ground guides are always used when backing the vehicle and backing is conducted at a speed of 5 MPH or less.

9. Ensure all personnel, not involved in the winching operation, stand clear of the winch cables and disabled M-1 tank (approximately double the distance of the payed out cables).

10. If the disabled M-1 tank engine has been running, warn personnel of extreme heat from the exhaust system. It can cause severe burns.

11. Ensure that the winch operator and ground guides know the correct hand and arm signals used in the winching operations as defined in FM 21-60 and the driver and ground guides know and understand the hand and arm signals as outlined in FM 21-305.

12. Never operate a winch at high speed when there is a load on the winch cable. High speed is intended for no-load operation only. Failure to follow this caution can result in equipment damage.

13. Never operate either winch with less than five wraps of cable on the drum.

14. Load semitrailer on level ground whenever possible. In adverse conditions, loading can be done on grades up to 10 percent. Due to the possibility of winch cables piling up against the end flanges of the cable drums and causing injury to personnel and damage to equipment, the offset limits between the M1070 HET and semitrailer is 10 left and 4 right.

15. Provide ample clear space behind the disabled payload during loading to protect personnel and prevent damage to equipment should cables break while payload is being loaded.

16. Make sure winch cables are not kinked, clevises are secure to winch cables, and snatch blocks and shackles are in good condition and properly secured or injury to personnel may result.

17. Make sure winch cables are inspected in accordance with TB 43-0142 or injury to personnel may result.

18. Extreme caution should be exercised during any operation on a slope.

19. The winch operator is responsible for posting crew members to act as ground guides (one on each side of the M1000 semitrailer). The winch operator must obey hand and arm signals from the primary ground guide (curbside of the M1000 semitrailer). The guide on the streetside relays signals to the guide on the curbside of the M1000 semitrailer unless in an emergency situation. The ground guides will keep visual contact with each other and with the winch operator at all times and will observe cable, snatch blocks, shackles, and payload position during loading. Failure to comply may result in injury to personnel.

20. Do not over load HET winches. Know the ratings of the winches being used and any protection devices (such as shear pins) or injury to personnel may result.

21. All ground personnel must stand clear of winch cables except when handling or injury to personnel may result.

22. During winch-on operations on a downgrade, the payload must be restrained from the rear with some other vehicle to prevent possible loss of control of the payload which can cause injury to personnel and damage to equipment.

23. At no time during the loading operations, while the payload is being pulled on with winches, should personnel be on the semitrailer platform or injury to personnel may result.

24. Always wear leather work gloves when handling winch cables or manila rope. Never allow the cable or rope to run through bare hands. Frayed cable can cut severely.

25. Hearing protection must be worn when near winching station or operating winches or injury to personnel may result.

26. Do not allow auxiliary winch cable to cross itself or knot up on winch or injury to personnel may occur.

27. Prior to removing winch cable from payload, winch operator must be sure cable sags to top of HET tires to relieve cable twist or injury to personnel may result.

28. Failure to extend safety rail while attaching or removing payload winch cable(s) may cause injury to personnel.

29. Do not allow hands to get between clevis and winch or injury to personnel may result.

30. Hearing protection is required within 10 feet of the APU when the APU is running or injury to personnel may result.

31. The spring assisted ramps, when raised from the lowered positioned, are under extreme tension and rise very quickly. When raising ramps, do not stand on the beavertail or in the path where any portion of the ramp will travel during upward travel.

F. ADDITIONAL COMMENTS AND INFORMATION. Recommended instructional time is 8.0 hours (.5 conference and 7.5 practical exercise [PMCS is integrated]).

TRAINING EVALUATION

LOAD A DISABLED M-1 TANK ONTO AN M1000 SEMITRAILER

NAME_____ **RANK**_____ **UNIT**_____

EVALUATOR_____ **DATE**_____

STEPS	**GO**	**NO-GO**
1. PREPARATION OF M1070 HET BY THE OPERATOR:		
A. ENSURES CTIS ROTARY SWITCH IS AT THE APPROPRIATE SETTING.		
B. ALIGNS M1070 HET AND M1000 SEMITRAILER AS CLOSE AS POSSIBLE TO THE DISABLED M-1 TANK (APPROXIMATELY 15 FEET) ON AS LEVEL GROUND AS POSSIBLE.		
C. ASSISTANT OPERATOR VISUALLY CHECKS THE HET AND SEMITRAILER OFFSET ANGLE. ADJUSTS ANGLE AS NECESSARY.		
D. MOVES TRANSMISSION RANGE SELECTOR TO “N” NEUTRAL POSITION.		
E. APPLIES HET PARKING BRAKES.		
F. TURNS PTO SWITCH ON.		
G. TURNS BEACON LIGHT SWITCH ON.		
H. CHOCKS M1070 FRONT (1ST) AXLE IN FRONT AND BEHIND EACH TIRE.		
2. PREPARATION OF M1000 SEMITRAILER BY OPERATOR AND CREW MEMBERS:		
A. REMOVES MANILA ROPE FROM SEMITRAILER STOWAGE COMPARTMENT.		
B. UNWINDS MANILA ROPE AND POSITIONS ON SEMITRAILER.		
C. POSITIONS FRONT STREETSIDE PAYLOAD CHOCK APPROXIMATELY 10 INCHES FROM FORWARD EDGE OF PLATFORM.		

STEPS	GO	NO-GO
D. POSITIONS FRONT CURBSIDE PAYLOAD CHOCK APPROXIMATELY 14 INCHES FROM FORWARD EDGE OF PLATFORM.		
E. ALIGNS STREETSIDE AND CURBSIDE FRONT PAYLOAD CHOCK WITH FOURTH HOLE ON OUTBOARD PAYLOAD CHOCK MOUNTING BRACKETS ON PLATFORM.		
F. SECURES BOTH PAYLOAD CHOCKS WITH CAPSCREWS, WASHERS, AND NUTS.		
G. ALIGNS CURBSIDE REAR PAYLOAD CHOCK ON STREETSIDE FRONT EDGE ABOVE BOGIE #1.		
H. POSITIONS STREETSIDE PAYLOAD CHOCK NEXT TO BOGIE #4 REAR OF SEMITRAILER.		
I. REMOVES FRONT AND REAR CURB GUIDES STOWAGE BRACKETS FROM PLATFORM AREA.		
J. REMOVES ALL 12 CURB GUIDES FROM PLATFORM RECESSED STOWAGE AREA.		
K. ALIGNS AND INSTALLS 10 CURB GUIDES INTO SECOND HOLE INBOARD FROM PLATFORM EDGE WITH PIN FACING OUTWARD. SETS REMAINING TWO CURB GUIDES ASIDE.		
L. INVENTORIES AND REMOVES ALL TIEDOWN CHAINS, LOAD BINDERS, AND SHACKLES FROM SEMITRAILER STOWAGE COMPARTMENT.		
M. POSITIONS TWO FRONT TIEDOWN CHAINS THROUGH TWO FRONT TIEDOWN RINGS RECESSED IN PLATFORM.		
N. EXTENDS FOUR LOAD BINDERS TO SHOW 6 1/2 INCHES OF THREAD ON BOTH ENDS. POSITIONS TWO LARGE SHACKLES AND LOAD BINDERS NEAR REAR PAYLOAD TIEDOWN RINGS.		
O. USING TWO SHACKLES, SECURES EACH SET OF LOAD BINDERS WITH SMALL PEAR END FACING TOWARD LOAD BINDER TO EACH REAR PAYLOAD TIEDOWN RING.		
P. ADJUSTS EACH SET OF LOAD BINDERS BY PLACING ONE LOAD BINDER PARALLEL WITH EDGE OF PLATFORM AND ONE ANGLED TOWARD CENTER OF PLATFORM. POSITIONS HANDLES INBOARD.		
Q. LAYS OUT STREETSIDE PARALLEL TIEDOWN CHAIN(S).		

STEPS	GO	NO-GO
R. LAYS OUT CURBSIDE PARALLEL TIEDOWN CHAIN(S).		
S. LAYS OUT CURBSIDE ANGLED REAR PAYLOAD TIEDOWN CHAIN(S).		
T. LAYS OUT STREETSIDE ANGLED REAR PAYLOAD TIEDOWN CHAIN(S).		
U. LOWERS WARNING LIGHT ON STREETSIDE OF PLATFORM.		
3. ADJUST LOADING RAMPS:		
A. OPENS LOAD BINDER ON STREETSIDE AND REMOVES RAMP STOW CHAIN HOOK FROM SLOTTED HOLE IN PLATFORM.		
B. CONNECTS RAMP STOW CHAIN HOOK TO FORWARD (LARGE) MOUNTING HOLE ON ISO CONTAINER BRACKET AND CLOSES LOAD BINDER.		
C. REMOVES HITCH PIN AND CROWBAR FROM REAR OF PLATFORM BELOW LOADING RAMPS. REINSTALLS HITCH PIN TO SECURE ISOLATION VALVE HANDLE.		
D. OPERATOR INSERTS SMALL END OF CROWBAR THROUGH HOLE IN STREETSIDE RAMP LIFT LEVER AND INTO BAR STRIP.		
E. ASSISTANT OPERATOR STANDS ON BEAVERTAIL SECTION, PUSHES RAMP REARWARD AGAINST RAMP STOW CHAIN UNTIL RAMP IS PERPENDICULAR TO PLATFORM.		
F. OPERATOR PUSHES OR PULLS ON CROWBAR IN DIRECTION REQUIRED TO SLIDE RAMP OUTBOARD FROM CENTER.		
G. CONTINUES TO PLACE CROWBAR INTO BAR STRIP HOLES UNTIL RAMP IS AT FURTHEST OUTBOARD POSITION.		
H. REPEAT ABOVE STEPS TO ADJUST CURBSIDE LOADING RAMP.		
4. LOWER RAMPS:		
A. OPENS LOAD BINDER ON STREETSIDE AND REMOVES RAMP STOW CHAIN HOOK FROM PLATFORM AND ATTACHES HOOK INTO RAMP LEVER. CLOSES LOAD BINDER.		

STEPS	GO	NO-GO
B. STANDING BETWEEN BOTH RAMPS, GRASPS LOWER HANDLE ON STREETSIDE LOADING RAMP AND PULLS DOWNWARD. AS RAMP SWINGS DOWNWARD, TRANSITIONS TO UPPER HANDLE AND APPLIES PRESSURE UNTIL RAMP IS BELOW HORIZONTAL POSITION AND THEN PULLS DOWN UNTIL RAMP IS ON THE GROUND.		
C. REPEAT ABOVE STEPS TO LOWER THE CURBSIDE LOADING RAMP.		
5. OPERATOR AND CREW MEMBERS ADJUST PLATFORM HEIGHT:		
A. OPERATOR STARTS AND RUNS APU.		
B. OPENS HYDRAULIC CONTROL PANEL AND PULLS SUSPENSION SHUT-OFF VALVE HANDLE OUTWARD TO ADJUST POSITION.		
C. RELEASES SEMITRAILER PARK BRAKES.		
D. OPERATOR AND CREW MEMBERS ADJUST PLATFORM HEIGHT TO PRELOADING POSITION, LOWERS REAR SUPPORT LEGS AND LOADING RAMPS.		
E. APPLIES SEMITRAILER PARKING BRAKES.		
F. ALIGNS AND INSTALLS TWO CURB GUIDES ON REAR OF PLATFORM.		
6. START WINCHING OPERATIONS:		
A. RAISES AND SECURES WINCH GUARD.		
B. RELEASES AUXILIARY WINCH KICKOUT LEVER COUNTERCLOCKWISE.		
C. REMOVES TWO LARGE SHACKLES FROM REAR PAYLOAD TIEDOWN RINGS.		
D. CREW MEMBERS UNHOOK AUXILIARY WINCH CABLE FROM STOWAGE POINT, PULLS CABLE REARWARD TO FRONT OF DISABLED M-1 TANK.		
E. ATTACHES AND SECURES TWO LARGE SHACKLES TO BOTH UPPER RECOVERY EYES ON DISABLED M-1 TANK.		
F. ATTACHES AUXILIARY SNATCH BLOCK TO UPPER LEFT RECOVERY EYE ON DISABLED M-1 TANK.		

STEPS	GO	NO-GO
G. CREW MEMBER OPENS AUXILIARY SNATCH BLOCK AND PASSES AUXILIARY WINCH CABLE THROUGH SNATCH BLOCK AND CLOSES AUXILIARY SNATCH BLOCK. TIGHTENS RETAINING BOLT TO SECURE SIDE HOUSING IN THE CLOSED POSITION.		
H. PULLS AUXILIARY WINCH CABLE FORWARD ALONG CURBSIDE OF GOOSENECK TO PASSENGER SIDE WINCH CABLE.		
I. OPERATOR PAYS OUT PASSENGER SIDE WINCH CABLE, CREW MEMBERS PULL CABLE OUT AND ATTACHES PASSENGER SIDE WINCH CABLE CLEVIS TO AUXILIARY WINCH CABLE CLEVIS.		
J. OPERATOR PAYS IN AUXILIARY WINCH CABLE AND PAYS OUT PASSENGER SIDE WINCH CABLE TO PULL PASSENGER SIDE WINCH CABLE REARWARD TO AUXILIARY SNATCH BLOCK.		
K. CREW MEMBER CONTINUES TO PULL PASSENGER SIDE CABLE OUT UNTIL WINCH CABLE TOUCHES THE GROUND.		
L. DISCONNECTS PASSENGER SIDE WINCH CABLE FROM AUXILIARY WINCH CABLE AND LAYS CABLE ON GROUND IN FRONT OF DISABLED M-1 TANK.		
M. CREW MEMBERS PULL AUXILIARY WINCH CABLE FORWARD OVER PLATFORM UNTIL CABLE REACHES FRONT OF PLATFORM AND TOWARD DRIVERS SIDE WINCH CABLE AND STOPS.		
N. OPERATOR PAYS OUT DRIVERS SIDE WINCH CABLE AND DISCONNECTS FROM STORAGE POINT.		
O. CREW MEMBERS ATTACH AUXILIARY WINCH CABLE TO DRIVERS SIDE WINCH CABLE.		
P. OPERATOR PAYS IN AUXILIARY WINCH CABLE TO PULL DRIVERS SIDE WINCH CABLE BACK TO AUXILIARY SNATCH BLOCK.		
Q. CREW MEMBER ROUTES DRIVERS SIDE WINCH CABLE THROUGH GOOSENECK CABLE GUIDE.		
R. OPERATOR CONTINUES TO PAY IN AUXILIARY WINCH CABLE TO PULL DRIVERS SIDE WINCH CABLE REARWARD TO AUXILIARY SNATCH BLOCK AND STOPS APPROXIMATELY 12 INCHES FROM SNATCH BLOCK.		

STEPS	GO	NO-GO
S. CREW MEMBER PULLS ADDITIONAL CABLE OUT UNTIL DRIVERS SIDE WINCH CABLE TOUCHES THE GROUND AND STOPS.		
T. CREW MEMBERS DISCONNECT DRIVERS SIDE WINCH CABLE FROM AUXILIARY WINCH CABLE, LAYS CABLE ON THE GROUND, AND INSTALLS SHOULDERED PINS AND COTTER PINS TO BOTH CLEVISES.		
7. STOW SNATCH BLOCK AND AUXILIARY WINCH CABLE:		
A. UNSCREW RETAINING BOLT AND ROTATES SIDE HOUSING ON AUXILIARY SNATCH BLOCK TO OPEN SNATCH BLOCK.		
B. REMOVES AUXILIARY WINCH CABLE FROM THE AUXILIARY SNATCH BLOCK AND ROTATES SIDE HOUSING TO CLOSE. TIGHTENS RETAINING BOLT TO SECURE SIDE HOUSING IN CLOSED POSITION.		
C. REMOVES AUXILIARY SNATCH BLOCK FROM SHACKLE AND PLACES BACK INTO STORAGE ON HET.		
D. OPERATOR PUSHES DOWNWARD ON AUXILIARY WINCH CABLE WHILE A CREW MEMBER MAINTAINS TENSION ON THE AUXILIARY WINCH CABLE AND RESTOWS ON STOW HOOK.		
8. CONTINUE WINCHING OPERATIONS:		
A. CREW MEMBERS ATTACH AND SECURE BOTH DRIVERS SIDE AND PASSENGER SIDE WINCH CABLES TO DISABLED M-1 TANK UPPER RECOVERY EYES.		
B. OPERATOR DIRECTS CREW MEMBERS TO STAND ON EACH SIDE OF THE PAYLOAD TO PROVIDE DIRECTIONAL CONTROL (CURBSIDE AND STREETSIDE).		
C. OPERATOR CLEARS THE AREA OF ALL NONESSENTIAL PERSONNEL.		
D. OPERATOR PAYS IN DRIVERS SIDE AND PASSENGER SIDE WINCH CABLES TO REMOVE ALL SLACK IN CABLES.		
E. CONTINUES TO WINCH DISABLED M-1 TANK UP THE RAMPS AND ON THE SEMITRAILER UNTIL STREETSIDE TRACK MAKES CONTACT WITH CURBSIDE FRONT PAYLOAD CHOCK.		
F. OPERATOR STOPS WINCHING OPERATION.		

STEPS	GO	NO-GO
G. CREW MEMBER CHOCKS REAR STREETSIDE OF DISABLED M-1 TANK WITH PAYLOAD CHOCK.		
9. ADJUST PLATFORM HEIGHT:		
A. STARTS AND RUNS APU AT FULL THROTTLE.		
B. RELEASES SEMITRAILER PARKING BRAKES.		
C. OPERATOR AND CREW MEMBERS ADJUST PLATFORM TO NORMAL RUNNING HEIGHT.		
D. APPLIES SEMITRAILER PARKING BRAKES.		
10. SECURE DISABLED TANK TO PLATFORM:		
A. ATTACHES AND SECURES TWO FRONT TIEDOWN CHAINS TO FRONT OF DISABLED M-1 TANK.		
B. CREW MEMBER REMOVES TWO SHACKLES FROM SEMITRAILER STOWAGE COMPARTMENT AND ATTACHES SHACKLES TO LOWER TOWING LUGS ON FRONT OF DISABLED M-1 TANK.		
C. CREW MEMBER REMOVES CURBSIDE REAR PAYLOAD CHOCK FROM FRONT STREETSIDE OF PLATFORM.		
D. OPERATOR CONTINUES TO PAY IN DRIVERS SIDE AND PASSENGER SIDE WINCH CABLES UNTIL CREW MEMBERS SIGNAL THAT BOTH FRONT TIEDOWN CHAINS ARE TIGHT AND FRONT ROAD WHEELS ARE FIRMLY ON TOP OF FRONT PAYLOAD CHOCKS.		
E. CREW MEMBERS CHOCK REAR OF DISABLED M-1 TANK WITH TWO REAR PAYLOAD CHOCKS FIRMLY UNDER TRACKS.		
F. OPERATOR PAYS OUT BOTH DRIVERS SIDE AND PASSENGER SIDE WINCH CABLES UNTIL CABLES TOUCH TOP OF HET TIRES.		
G. CREW MEMBERS CHECK BOTH DRIVERS SIDE AND PASSENGER SIDE WINCH CABLES FOR TWIST.		
H. CREW MEMBERS SLOWLY AND CAREFULLY REMOVE COTTER PINS AND SHOULDERED PINS FROM CLEVISES FROM DRIVERS SIDE AND PASSENGER SIDE WINCH CABLES.		
I. REMOVES TWO LARGE SHACKLES FROM BOTH UPPER RECOVERY EYES ON DISABLED M-1 TANK.		

STEPS	GO	NO-GO
J. INSTALLS TWO LARGE SHACKLES AND FOUR LOAD BINDERS ON REAR PAYLOAD TIEDOWN RINGS.		
K. REMOVES TWO SHACKLES FROM SEMITRAILER STOWAGE COMPARTMENT.		
L. ATTACHES STREETSIDE PARALLEL CHAIN AND CURBSIDE REAR ANGLED TIEDOWN CHAIN TO STREETSIDE TOWING LUG USING SHACKLE.		
M. ATTACHES CURBSIDE PARALLEL TIEDOWN CHAIN AND STREETSIDE REAR ANGLED TIEDOWN CHAIN TO CURBSIDE REAR TOWING LUG USING SHACKLE.		
N. ATTACHES BOTH PARALLEL CHAINS TO EACH PARALLEL LOAD BINDERS.		
O. TIGHTENS EACH LOAD BINDER AS TIGHT AS POSSIBLE.		
P. ATTACHES BOTH CURBSIDE AND STREETSIDE REAR ANGLED TIEDOWN CHAINS TO ANGLED LOAD BINDERS AS FOLLOWS:		
(1) ATTACHES FREE END OF CURBSIDE REAR ANGLED TIEDOWN CHAIN TO CURBSIDE REAR ANGLED LOAD BINDER.		
(2) PASSES FREE END OF STREETSIDE REAR ANGLED TIEDOWN CHAIN OVER TOP OF CURBSIDE REAR ANGLED TIEDOWN CHAIN AND ATTACHES TO STREETSIDE REAR ANGLED LOAD BINDER.		
(3) TIGHTENS EACH LOAD BINDER AS TIGHT AS POSSIBLE AND ENSURES DISABLED M-1 TANK IS SECURELY AGAINST REAR PAYLOAD CHOCKS.		
(4) PASSES TWO UTILITY CHAINS THROUGH TWO TIEDOWN RINGS IN FRONT OF EACH PAYLOAD CHOCK AND CONNECTS CHAINS TO THEMSELVES.		
(5) PASSES FREE END OF BOTH CHAINS THROUGH HANDLES OF TWO REAR PAYLOAD CHOCKS LAY ENDS IN CENTER OF PLATFORM.		
(6) CHECKS THAT SMALL LOAD BINDER IS ATTACHED TO TWO UTILITY CHAINS AND CLOSES LOAD BINDER.		
11. OPERATOR AND CREW MEMBERS PREPARE HETS FOR TRANSPORT:		

STEPS	GO	NO-GO
A. CHECKS THAT SHOULDERED PINS AND COTTER PINS ARE INSTALLED TO EACH CLEVIS ON BOTH WINCH CABLES.		
B. REMOVES BOTH WINCH CABLES FROM GOOSENECK CABLE GUIDES.		
C. OPERATOR PAYS IN DRIVERS SIDE WINCH CABLE WHILE CREW MEMBERS KEEP TENSION ON WINCH CABLE.		
D. OPERATOR PAYS IN PASSENGER SIDE WINCH CABLE WHILE CREW MEMBERS KEEP TENSION ON WINCH CABLE.		
E. CREW MEMBERS ENSURE CABLES ARE WRAPPED EVENLY ON DRUMS WITHOUT TANGLES, KINKS, OR TWIST. CABLE COILS SHOULD BE TIGHT AND CLOSE TOGETHER.		
F. CREW MEMBERS ATTACH CABLE CLEVIS TO HET STOWAGE POINT AND SIGNALS OPERATOR TO TAKE UP SLACK AND WATCH TO PREVENT CABLES FROM WINDING OVER THE DRUM FLANGES.		
G. OPERATOR DISENGAGES ENGINE SPEED CONTROL SWITCH TO LOW IDLE.		
H. OPERATOR LOWERS WINCH GUARD AND LOCKS IN PLACE.		
I. REMOVES AND SECURES SIX CURB GUIDES IN PLATFORM RECESS AREA.		
J. RAISE AND ADJUST RAMPS SPAN WIDTH TO FURTHEST INBOARD POSITION AND STOW LOADING RAMPS FOR TRANSPORT:		
(1) GRASPS UPPER HANDLE ON RAMP AND PULL UPWARD. RELEASES UPPER HANDLE AS RAMP PASSES HORIZONTAL POSITION. GRASPS LOWER HANDLE AND APPLIES PRESSURE UNTIL RAMP IS FIRMLY AGAINST BEAVERTAIL.		
(2) OPENS LOAD BINDER AND UNHOOKS RAMP CHAIN HOOK AT RAMP LIFTING LEVER.		
(3) CONNECTS RAMP CHAIN HOOK TO FRONTMOST (LARGE) MOUNTING HOLE ON ISO CONTAINER MOUNTING BRACKET. CLOSES LOAD BINDER.		
(4) OPERATOR INSERTS SMALL END OF CROWBAR THROUGH HOLE IN STREETSIDE RAMP LIFT LEVER AND INTO BAR STRIP.		

STEPS	GO	NO-GO
(5) POSITIONS ASSISTANT OPERATOR ON BEAVERTAIL SECTION OF PLATFORM TO PUSH STREETSIDE LOADING RAMP REARWARD UNTIL RAMP IS PERPENDICULAR TO PLATFORM. OPERATOR MUST PUSH OR PULL ON CROWBAR IN DIRECTION REQUIRED TO SLIDE RAMP INBOARD.		
(6) CONTINUES TO PLACE CROWBAR INTO HOLES ALONG BAR STRIP AND MOVES RAMP TO FURTHEST INBOARD POSITION.		
(7) REPEAT ABOVE STEPS TO ADJUST CURBSIDE LOADING RAMP.		
(8) OPENS LOAD BINDERS, REMOVES RAMP CHAIN HOOKS FROM ISO CONTAINER BRACKET HOLES, AND CONNECTS HOOKS IN CENTER OF PLATFORM. CLOSES LOAD BINDERS.		
(9) REMOVES HITCH PIN AND REINSTALLS CROWBAR BELOW LOADING RAMPS, THEN REINSTALLS HITCH PIN.		
K. RAISES BEACON WARNING LIGHT.		
L. OPERATOR PUSHES SUSPENSION SHUT-OFF VALVE HANDLE INWARD TO THE SHUT-OFF POSITION.		
M. SHUTS DOWN APU, THEN CLOSES AND SECURES CONTROL PANEL.		
N. RAISES AND SECURES BOTH REAR SUPPORT LEGS.		
O. CHECKS THAT ALL BII IS STOWED IN SEMITRAILER STOWAGE COMPARTMENT.		
P. REMOVES AND STOWS ALL CHOCK BLOCKS.		
Q. TURNS PTO SWITCH OFF.		
R. MOVES TRANSMISSION RANGE SELECTOR TO THE APPROPRIATE RANGE.		
S. RELEASES HET PARKING BRAKES.		

LESSON TITLE: UNLOAD DISABLED M-1 TANK FROM AN M1000 SEMITRAILER USING DUAL WINCHES

TASK NUMBER: 551-721-3388 (Unload Disabled M-1 Tank from an M1070 HET/M1000 Semitrailer Combination Using Dual Winches)

A. TRAINING OBJECTIVE.

TASK: Unload a disabled M-1 tank (can be simulated) from an M1000 semitrailer using dual winches.

CONDITIONS Given instruction, DD Form 1970 (or ULLS generated DA Form 5987-E), DA Form 2404 (or ULLS generated DA Form 5988-E), pencil, TM 9-2320-360-10, TM 9-2330-381-14, equipment records folder, rags, lubricants, coolant, an M1070 HET, an M1000 semitrailer, all required BII, a disabled M-1 tank (can be simulated), and a suitable training area.

STANDARD: Without damage to equipment or injury to personnel, correctly and safely unload a disabled M-1 tank. Students will be graded on a GO/NO-GO basis. See training evaluation sheet located at the end of this lesson.

B. INTERMEDIATE TRAINING. None.

C. ADMINISTRATIVE INSTRUCTIONS.

1. Training time: As scheduled.

2. Training location: Classroom and training area.

3. Training type: Conference and practical exercise.

4. Students: Personnel as scheduled.

5. Principal and assistant instructor required: One primary instructor for the conference and one assistant instructor for every three students for the practical exercise.

6. Training aids and equipment: Television; VCR; videotape TVT 55-50 (PIN: 710752DA), "HET, Part III, Load/Unload"; hearing protection; leather work gloves; rags; lubricants; and coolant. DD Form 1970 (or ULLS generated DA Form 5987-E), DA Form 2404 (or ULLS generated DA Form 5988-E), pencil, TM 9-2320-360-10, TM 9-2330-381-14, equipment records folder, a disabled M-1 tank (can be simulated), an M1070 HET, an M1000 semitrailer, and all required BII for every three students.

7. References: AR 385-55, DA Pamphlet 738-750, FM 9-43-2, FM 21-305, FM 21-60, TB 43-0142, TM 9-2320-360-10, TM 9-2330-381-14, and TM 55-2350-255-14.

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.

NOTE: The classroom must be near the training area where loading operations are to be practiced. This allows the student to view the videotape and put into practical application these procedures with a minimum loss of learned skills. Explain safety precautions and warnings, followed by the videotape, and then the practical exercise.

a. Explain all safety precautions for this exercise and review warnings. Attention should be drawn to all warnings in the vehicle operator's manuals with particular attention given the following:

WARNINGS

When ramp chains are disconnected from the platform, do not stand behind the ramps or near the path the ramps can travel when being lowered or raised or serious injury to personnel may result.

Unload semitrailer on level ground whenever possible. In adverse conditions, unloading can be done on grades up to 10 percent with a maximum offset angle of 10 degrees between HET and semitrailer. Avoid exceeding this limitation to prevent payload from rolling off semitrailer and causing injury to personnel and damage to equipment.

WARNINGS

Provide ample clear space behind the disabled payload during unloading to protect personnel and prevent damage to equipment should cables break while payload is being unloaded.

All ground personnel must stand clear of winch cables except when handling or injury to personnel may result.

Extreme caution should be exercised during any operation on a slope.

Make sure winch cables are not kinked, clevises are secure to winch cables, and snatch blocks and shackles are in good condition and properly secured or injury to personnel may result.

Make sure winch cables are inspected IAW TB 43-0142 or injury to personnel may result.

The winch operator is responsible for posting crew members as guides (one on each side of the M1000 semitrailer). The winch operator must obey hand and arm signals from the primary ground guide (curbside of the M1000 semitrailer). The guide on the streetside relays signals to the guide on the curbside of the M1000 semitrailer unless in an emergency situation. The ground guides will keep visual contact with each other and with the winch operator at all times and will observe cable, snatch blocks, shackles, and payload position during unloading. Failure to comply may result in injury to personnel.

Do not over load HET winches. Know the ratings of the winches being used and any protection devices (such as shear pins) or injury to personnel may result.

At no time during the unloading operations, while the payload is being pulled off with winches, should personnel be on the semitrailer platform or injury to personnel may result.

WARNINGS

Always wear leather gloves when handling winch cables or manila rope. Never allow the cable or rope to run through bare hands. Frayed cable can cut severely.

Hearing protection must be worn when near winching station or operating winches or injury to personnel may result.

Do not allow auxiliary winch cable to cross itself or knot up on winch or injury to personnel may occur.

Prior to disconnecting any winch cables, be sure each cable is not twisted. A twisted winch cable, when operated, can develop extreme tension, which may cause injury to personnel when cable clevis is removed.

Failure to extend safety rail while attaching or removing payload winch cable(s) may cause injury to personnel.

CAUTION

Failure to retract and latch gooseneck safety rail before operating HET/trailer will result in damage to equipment.

WARNINGS

The driver's side winch cable will be used to pull back the disabled M-1 tank and the passenger side winch cable will be used to restrain the disabled M-1 tank. Do not allow the driver's side winch cable to pull excessively against the passenger side winch cable or the winch cables may snap or separate and serious injury to personnel may result.

Prior to removing the winch cable from the disabled M-1 tank, winch operator must be sure each cable sags and touches the platform to relieve cable torque or injury to personnel may result.

WARNING

Extreme caution must be used when removing winch cables from disabled M-1 tank. Cable may be under tension or be twisted. If winch cable has tension, remove slowly and carefully, using both hands by rotating cable to relieve tension. Do not allow cable to twist or whip freely or serious injury to personnel may result.

CAUTION

Always connect winch cables to the center most point on the continuous portion of the Y-chain, not the wrap around portion that has the hook on the end or the hook may disconnect under load and cause damage to equipment.

WARNINGS

Use extreme caution when removing the rear payload chocks from the disabled M-1 tank or injury to personnel may result.

Winch operator and crew members must read paragraph 2-27b, step (52) through (56) in TM 9-2330-381-14 and be completely familiar with the sequence of steps prior to using winches or injury to personnel and damage to equipment may result.

Personnel must not be on the platform during the winching operation. The winch operator must off load the disabled M-1 tank slowly or injury to personnel and damage to equipment may result.

Winch operator must maintain even tension on both winch cables during entire off loading procedure. Payload adjustments, side to side (turning), must be kept to a minimum or injury to personnel and damage to equipment may result. Crew member must signal winch operator of any required payload adjustments while unloading.

CAUTIONS

Crew member must signal winch operator when driver's side winch cable clevis is directly over snatch block so that the winch operator can change the direction of winch controls as payload continues to off load.

Ground guide must ensure that driver's side winch cable clevis does not interfere with snatch block or damage to equipment may result.

Winch operator must, when given signal by crew member, pull up on both driver and passenger side winch levers and start paying out both winch cables to disabled M-1 tank or a winch cable can snap or damage to equipment may result.

WARNINGS

Prior to removing the winch cable from the disabled M-1 tank, winch operator must be sure the winch cables have enough slack to relieve tension in the cable or injury to personnel may result.

Do not allow hands to get between clevis and winch or injury to personnel may result.

CAUTIONS

Beacon warning light must be lowered prior to adjusting or lowering loading ramps or damage to equipment will occur.

Do not attempt to engage PTO with engine in high idle. Failure to comply may result in damage to PTO.

WARNINGS

Hearing protection is required within 10 feet of the APU when the APU is running or injury to personnel may result.

The spring assisted ramps, when raised from the lowered positioned, are under extreme tension and rise very quickly. When raising ramps, do not stand on the beavertail or in the path where any portion of the ramp will travel during upward travel.

CAUTIONS

Beacon warning light must be raised after raising or adjusting loading ramps or damage to equipment will occur.

Never operate a winch at high speed when there is a load on the winch cable. High speed is intended for no-load operation only. Failure to follow this caution can result in equipment damage.

Never operate either winch with less than five wraps of cable on the drum.

Do not subject the APU to any load until it has warmed up properly, or premature failure may occur and life of the engine may be shortened.

The suspension shut-off valve handle must be pulled out to the adjust position prior to operating any platform/gooseneck valve handles. The suspension shut-off valve isolates the suspension and prevents operation. If the valve handle is not properly positioned for intended operation, severe damage to equipment may result.

WARNINGS

Direct personnel not to walk behind the tank during the unloading operations. Load may roll back causing serious injury or death.

Make sure winch cables are disconnected from both upper and lower Y-chains before moving HET/semitrailer combination or as the combination is moved. Winch cables can stretch and/or break which may result in injury to personnel.

b. Instruct operators as follows:

(1) Only one winch can be operated at a time in high speed.

(2) Both winches can be operated at the same time with full load in low speed.

(3) Winches will operate in the same direction or opposite directions at the same time in low speed.

c. Show videotape TVT 55-50 (PIN: 710752DA), “HET, Part III, Load/Unload”. (This is a reshowing from a previous class on loading.)

d. Separate the class into groups of three. Assign each group to a HET and semitrailer and ensure each group has an assistant instructor and issue TM 9-2320-360-10, TM 9-2330-381-14, pencils, DD Form 1970 (or ULLS generated DA Form 5987-E), DA Form 2404 (or ULLS generated DA Form 5988-E), and equipment records folder. Instruct students on the location of rags, lubricants, and coolant.

3. Practical exercise. Assistant instructor talks students through the practice exercise of unloading a disabled M-1 tank (can be simulated) from an M1070 HET/M1000 semitrailer combination using dual winches. During-operation PMCS is also conducted at this time.

4. Evaluate. Check every student’s performance of unloading.

5. Summary.

a. Recap main points.

b. Allow for questions.

c. Clarify questions.

d. Give closing statement.

6. Retraining. Retrain and retest NO-GOs. Students are tested on the EOCCT.

E. SAFETY RESTRICTIONS.

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

2. Ensure that all HET and semitrailer chock blocks are in place when the vehicle is parked.

3. Ensure that students remove all jewelry and identification tags before working on or around the semitrailer or HET.

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

5. Ensure all personnel maintain at least three points of contact when mounting or dismounting the M1070 HET and the M1000 semitrailer (to include performing PMCS).

6. Ensure ground guides are always used when backing the vehicle and backing is conducted at a speed of 5 MPH or less.

7. Ensure all personnel, not involved in the winching operation, stand clear of the winch cables and disabled M-1 tank (approximately double the distance of the payed out cables).

8. If the disabled M-1 tank engine has been running, warn personnel of extreme heat from the exhaust system. It can cause severe burns.

9. Ensure that the winch operator and ground guides know the correct hand and arm signals used in the winching operations as defined in FM 21-60 and the driver and ground guides know and understand the hand and arm signals as outlined in FM 21-305.

10. When ramp chains are disconnected from the platform, do not stand behind the ramps or near the path the ramps can travel when being lowered or raised or serious injury to personnel may result.

11. Unload semitrailer on level ground whenever possible. In adverse conditions, unloading can be done on grades up to 10 percent with a maximum offset angle of 10 between HET and semitrailer. Avoid exceeding this limitation to prevent payload from rolling off semitrailer and causing injury to personnel and damage to equipment.

12. Provide ample clear space behind the disabled payload during unloading to protect personnel and prevent damage to equipment should cables break while payload is being unloaded.

13. All ground personnel must stand clear of winch cables except when handling or injury to personnel may result.

14. Extreme caution should be exercised during any operation on a slope.

15. Make sure winch cables are not kinked, clevises are secure to winch cables, and snatch blocks and shackles are in good condition and properly secured or injury to personnel may result.

16. Make sure winch cables are inspected in accordance with TB 43-0142 or injury to personnel may result.

17. The winch operator is responsible for posting crew members as guides (one on each side of the M1000 semitrailer). The winch operator must obey hand and arm signals from the primary ground guide (curbside of the M1000 semitrailer). The guide on the streetside relays signals to the guide on the curbside of the M1000 semitrailer unless in an emergency situation. The ground guides will keep visual contact with each other and with the winch operator at all times and will observe cable, snatch blocks, shackles, and payload position during unloading. Failure to comply may result in injury to personnel.

18. Do not over load HET winches. Know the ratings of the winches being used and any protection devices (such as shear pins) or injury to personnel may result.

19. At no time during the unloading operations, while the payload is being pulled off with winches, should personnel be on the semitrailer platform or injury to personnel may result.

20. Always wear leather work gloves when handling winch cables or manila rope. Never allow the cable or rope to run through bare hands. Frayed cable can cut severely.

21. Hearing protection must be worn when near winching station or operating winches or injury to personnel may result.

22. Do not allow auxiliary winch cable to cross itself or knot up on winch or injury to personnel may occur.

23. Prior to disconnecting any winch cables, be sure each cable is not twisted. A twisted winch cable, when operated, can develop extreme tension, which may cause injury to personnel when cable clevis is removed.

24. Failure to extend safety rail while attaching or removing payload winch cable(s) may cause injury to personnel.

25. The driver’s side winch cable will be used to pull back the disabled M-1 tank and the passenger side winch cable will be used to restrain the disabled M-1 tank. Do not allow the driver’s side winch cable to pull excessively against the passenger side winch cable or the winch cables may snap and serious injury to personnel may result.

26. Prior to removing the winch cable from the disabled M-1 tank, winch operator must be sure each cable sags and touches the platform to relieve cable torque or injury to personnel may result.

27. Extreme caution must be used when removing winch cables from disabled M-1 tank. Cable may be under tension or be twisted. If winch cable has tension when removed, slowly and carefully (using both hands) rotate cable to relieve tension. Do not allow cable to twist or whip freely or serious injury to personnel may result.

28. Use extreme caution when removing the rear payload chocks from the disabled M-1 tank or injury to personnel may result.

29. Winch operator and crew members must read paragraph 2-27 b, steps (52) through (56) in TM 9-2330-381-14 and be completely familiar with the sequence of steps prior to using winches or injury to personnel and damage to equipment may result.

30. Personnel must not be on the platform during the winching operation. The winch operator must off load the disabled M-1 tank slowly or injury to personnel and damage to equipment may result.

31. Winch operator must maintain even tension on both winch cables during entire off loading procedure. Payload adjustments, side to side (turning), must be kept to a minimum or injury to personnel and damage to equipment may result. Crew member must signal winch operator of any required payload adjustments while unloading.

32. Prior to removing the winch cable from the disabled M-1 tank, winch operator must be sure the winch cables have enough slack to relieve tension in the cable or injury to personnel may result.

33. Do not allow hands to get between clevis and winch or injury to personnel may result.

34. Hearing protection is required within 10 feet of the APU when the APU is running or injury to personnel may result.

35. The spring assisted ramps, when raised from the lowered positioned, are under extreme tension and rise very quickly. When raising ramps, do not stand on the beavertail or in the path where any portion of the ramp will travel during upward travel.

36. Direct personnel not to walk behind the tank during the unloading operations. Load may roll back causing serious injury or death.

37. Make sure winch cables are disconnected from both upper and lower Y-chains before moving HET/semitrailer combination or as the combination is moved. Winch cables can stretch and/or break which may result in injury to personnel.

F. ADDITIONAL COMMENTS AND INFORMATION. Recommended instructional time is 6.0 hours (.5 conference and 5.5 practical exercise [PMCS is integrated]).

TRAINING EVALUATION

UNLOAD A DISABLED M-1 TANK FROM AN M1000 SEMITRAILER

NAME_____ **RANK**_____ **UNIT**_____

EVALUATOR_____ **DATE**_____

STEPS	**GO**	**NO-GO**
1. PREPARATION OF HET BY THE OPERATOR:		
A. CHECKS ALIGNMENT OF THE HET AND SEMITRAILER FOR A STRAIGHT PULL OFF.		
B. ASSISTANT OPERATOR VISUALLY CHECKS THE HET AND SEMITRAILER OFFSET ANGLE.		
C. MOVES TRANSMISSION RANGE SELECTOR TO “N” NEUTRAL POSITION.		
D. APPLIES HET PARKING BRAKES.		
E. TURNS PTO SWITCH ON.		
F. ENSURES BEACON LIGHT IS ON.		
G. CHOCKS M1070 HET FRONT (1ST) AXLE IN FRONT AND BEHIND EACH TIRE.		
H. REMOVES CROWBAR FROM STOWAGE POSITION.		
I. LOWERS BEACON WARNING LIGHT.		
J. ADJUSTS RAMP SPAN WIDTH TO MATCH PAYLOAD TRACK WIDTH.		
K. REMOVES SIX CURB GUIDES FROM REAR RECESSED AREA.		
L. POSITIONS FOUR CURB GUIDES ON PLATFORM WITH PIN FACING OUTBOARD. SETS REMAINING TWO CURB GUIDES ASIDE.		
2. PREPARES M1000 SEMITRAILER FOR OFF LOADING:		
A. REMOVES MANILA ROPE FROM SEMITRAILER STOWAGE COMPARTMENT.		
B. UNWINDS MANILA ROPE AND POSITIONS ON SEMITRAILER. TIES BOTH ENDS OF MANILA ROPE TO FRONT LIFTING EYES ON PLATFORM.		

STEPS	GO	NO-GO
C. LOOSENS HANDLE ON REAR SNATCH BLOCK STOW CLAMP ON PLATFORM AND REMOVES FROM STOWED POSITION.		
D. OPERATOR RAISES AND SECURES WINCH GUARD IN FULL UPRIGHT POSITION.		
E. OPERATOR RELEASES AUXILIARY WINCH KICKOUT LEVER AND ROTATES COUNTERCLOCKWISE.		
F. UNTIES MANILA ROPE FROM CURBSIDE FRONT LIFTING EYE ON PLATFORM AND MOVES END OF ROPE TO STREETSIDE FRONT LIFTING EYE.		
G. UNHOOKS AUXILIARY WINCH CABLE FROM STOW HOOK. PULLS AUXILIARY WINCH CABLE TO FREE END OF MANILA ROPE AND TIES ROPE TO AUXILIARY WINCH CABLE CLEVIS.		
H. UNTIES END OF MANILA ROPE FROM STREETSIDE FRONT LIFTING EYE OF PLATFORM AND USES MANILA ROPE TO PULL AUXILIARY WINCH CABLE REARWARD UNDER PAYLOAD TO REAR SNATCH BLOCK.		
I. CREW MEMBER REMOVES LINCH PIN AND KEEPER PIN, OPENS REAR SNATCH BLOCK AND PASSES AUXILIARY WINCH CABLE THROUGH. THEN, CLOSES REAR SNATCH BLOCK, INSTALLS KEEPER PIN AND SECURES WITH LINCH PIN.		
J. OPERATOR CONTINUES TO PULL MANILA ROPE FORWARD UNTIL AUXILIARY WINCH CABLE CLEVIS REACHES CLEVIS ON DRIVERS SIDE WINCH CABLE.		
K. UNTIES MANILA ROPE FROM AUXILIARY WINCH CABLE CLEVIS.		
L. OPERATOR ENGAGES BOTH DRIVERS SIDE AND PASSENGER SIDE WINCH KICKOUT LEVERS.		
M. OPERATOR ENGAGES CABLE HOLD DOWN LEVER.		
N. OPERATOR PAYS OUT DRIVERS SIDE WINCH CABLE UNTIL THERE IS ENOUGH SLACK TO REMOVE FROM STOW HOOK.		
O. OPERATOR CONTINUES TO PAY OUT DRIVERS SIDE WINCH CABLE UNTIL CREW MEMBERS CAN REACH CLEVIS AND STOPS.		

STEPS	GO	NO-GO
P. ATTACHES AUXILIARY WINCH CABLE CLEVIS TO DRIVERS SIDE WINCH CABLE CLEVIS.		
Q. OPERATOR ENGAGES AUXILIARY WINCH CABLE KICKOUT LEVER AND ROTATES CLOCKWISE. DISENGAGES DRIVERS SIDE WINCH KICKOUT SWITCH.		
R. OPERATOR PAYS IN AUXILIARY WINCH CABLE TO PULL DRIVERS SIDE WINCH CABLE TO REAR SNATCH BLOCK AND STOPS.		
S. IF AUXILIARY WINCH CABLE DOES NOT PULL DRIVERS SIDE WINCH CABLE REARWARD, PUSHES ENGINE SPEED CONTROL SWITCH FORWARD TO HIGH IDLE.		
T. OPERATOR CONTINUES PAYING OUT DRIVERS SIDE WINCH CABLE UNTIL CABLE HAS REACHED REAR SNATCH BLOCK AND CREW MEMBERS SIGNAL OPERATOR TO STOP. RELEASES LEVER.		
U. CREW MEMBER MUST PULL ADDITIONAL CABLE OUT SO THAT CABLE CAN BE PASSED THROUGH REAR SNATCH BLOCK.		
V. CREW MEMBERS UNFASTEN LINCH PIN FROM KEEPER PIN, REMOVES FROM SNATCH BLOCK, LIFTS AND OPENS SNATCH BLOCK, AND PASSES DRIVERS SIDE WINCH CABLE THROUGH SNATCH BLOCK.		
W. CREW MEMBERS CLOSE SNATCH BLOCK AND REINSTALL KEEPER PIN. SECURES KEEPER TO SNATCH BLOCK BY INSTALLING LINCH PIN.		
X. OPERATOR CONTINUES TO PAY IN AUXILIARY WINCH CABLE TO PULL DRIVERS SIDE WINCH CABLE FORWARD TO STREETSIDE OF PAYLOAD.		
Y. OPERATOR RELEASES AUXILIARY WINCH LEVER WHEN DRIVERS SIDE WINCH CABLE IS APPROXIMATELY 12 INCHES PAST STREETSIDE FRONT OF PLATFORM.		
Z. CREW MEMBER DISCONNECTS DRIVERS SIDE WINCH CABLE FROM AUXILIARY WINCH CLEVIS.		
AA. RETRACTS AUXILIARY WINCH CABLE AND RESTOWS ON STOW HOOK.		
BB. CREW MEMBERS PULL DRIVERS SIDE WINCH CABLE TO CURBSIDE OF PLATFORM AND ROUTES OVER BOTH FRONT TIEDOWN CHAINS.		

STEPS	GO	NO-GO
CC. CREW MEMBER ATTACHES DRIVERS SIDE WINCH CABLE CLEVIS TO PEAR RING ON FRONT CURBSIDE TIEDOWN CHAIN NEXT TO SHACKLE ON CURBSIDE FRONT TOWING LUG.		
DD. SECURES WINCH CABLE WITH SHOULDERED PIN AND COTTER PIN.		
EE. CREW MEMBER ROUTES DRIVERS SIDE WINCH CABLE THROUGH STREETSIDE GOOSENECK CABLE GUIDE AND AROUND PIVOT PIN SHEAVE.		
FF. OPERATOR PAYS OUT PASSENGER SIDE WINCH CABLE TO DISCONNECT CABLE FROM STOWAGE POINT ON HET. CONTINUES TO PAY OUT CABLE APPROXIMATELY 24 INCHES.		
GG. OPERATOR DISENGAGES PASSENGER SIDE WINCH KICKOUT SWITCH.		
HH. REMOVES COTTER PIN AND SHOULDERED PIN FROM CLEVIS ON PASSENGER SIDE WINCH CABLE.		
3. OPERATOR AND CREW MEMBERS DISCONNECT REAR TIEDOWN CHAINS AND REPOSITION REAR PAYLOAD CHOCK BLOCKS:		
A. CREW MEMBER OPENS SMALL LOAD BINDER AND CREW MEMBERS REMOVE TWO UTILITY CHAINS FROM REAR PLATFORM TIEDOWN RINGS. MOVES TWO UTILITY CHAINS AND LOAD BINDER OUT OF THE WAY.		
B. LOOSENS TWO ANGLED LOAD BINDERS AND DISCONNECTS TWO REAR ANGLE TIEDOWN CHAINS.		
C. PAYLOAD OPERATOR RELEASES M-1 TANK BRAKES.		
D. OPERATE TWO PARALLEL LOAD BINDERS TO TIGHTEN BOTH CURBSIDE AND STREETSIDE TIEDOWN CHAINS.		
E. CONTINUE TO TIGHTEN EACH LOAD BINDER AS TIGHTLY AS POSSIBLE TO MOVE M-1 TANK OFF OF REAR PAYLOAD CHOCKS, OR AT LEAST TO REDUCE PRESSURE OFF THE REAR CHOCKS.		
F. PAYLOAD OPERATOR MUST APPLY M-1 TANK BRAKES.		
G. IF NECESSARY, CREW MEMBERS USING THE CROWBAR, MOVE REAR PAYLOAD CHOCKS BACK APPROXI-MATELY 6 INCHES.		

STEPS	GO	NO-GO
H. OPERATE TWO PARALLEL LOAD BINDERS TO LOOSEN BOTH CURBSIDE AND STREETSIDE PARALLEL TIEDOWN CHAINS. DISCONNECTS PARALLEL CHAINS FROM PARALLEL LOAD BINDERS.		
I. POSITIONS ALL TIEDOWN CHAINS AND LOAD BINDERS IN CENTER OF PLATFORM.		
J. OPERATOR PULLS WINCH SPEED CONTROL SWITCH TO LOW. PUSHES ENGINE SPEED CONTROL SWITCH TO HIGH ENGINE IDLE, THEN PUSHES ENGINE SPEED CONTROL SWITCH FORWARD TO LOCK ENGINE SPEED TO HIGH IDLE (APPROXI-MATELY 1,500 RPM) THEN RELEASES SWITCH.		
K. CREW MEMBERS REMOVE TWO LARGE SHACKLES FROM REAR LOAD BINDERS.		
L. UNLATCHES AND EXTENDS GOOSENECK SAFETY RAIL.		
M. ATTACHES AND SECURES TWO LARGE SHACKLES TO BOTH UPPER RECOVERY EYES ON DISABLED M-1 TANK.		
N. CREW MEMBERS ATTACH PASSENGER SIDE WINCH CABLE TO UPPER RIGHT RECOVERY EYE ON DISABLED M-1 TANK.		
O. RETRACTS AND LATCHES GOOSENECK SAFETY RAIL.		
P. ROUTES PASSENGER SIDE WINCH CABLE THROUGH GOOSENECK CABLE GUIDE.		
Q. ENGAGES PASSENGER SIDE WINCH KICKOUT.		
R. OPERATOR PAYS IN PASSENGER SIDE WINCH CABLE UNTIL CABLE IS TIGHT.		
4. OPERATOR AND CREW MEMBERS WINCH OFF DISABLED M-1 TANK:		
A. CREW MEMBERS MOVE STREETSIDE REAR PAYLOAD CHOCK ABOVE #4 BOGIE.		
B. POSITIONS CURBSIDE PAYLOAD CHOCK ON THE GROUND NEXT TO #1 BOGIE.		
C. OPERATOR ENGAGES DRIVERS SIDE WINCH KICKOUT SWITCH. PAYS IN DRIVER SIDE WINCH CABLE TO PULL DISABLED M-1 TANK BACK TO STREETSIDE PAYLOAD CHOCK AND STOPS.		
D. CREW MEMBER CHOCKS FRONT OF DISABLED M-1 TANK WITH CURBSIDE PAYLOAD CHOCK.		

STEPS	GO	NO-GO
E. OPERATOR PAYS OUT BOTH DRIVERS SIDE AND PASSENGER SIDE WINCH CABLES UNTIL CABLES TOUCH TOP OF PLATFORM.		
F. CREW MEMBERS CHECK FOR TWIST IN DRIVERS SIDE WINCH CABLE AND DISCONNECT WINCH CABLE FROM PEAR RING ON CURBSIDE FRONT TIEDOWN CHAIN.		
G. DISCONNECTS CURBSIDE TIEDOWN CHAIN FROM DISABLED TANK AND PLATFORM.		
H. DISCONNECTS STREETSIDE TIEDOWN CHAIN FROM PLATFORM ONLY AND LEAVES CONNECTED TO TANK.		
I. CREW MEMBERS CHECK FOR TWIST IN PASSENGER SIDE WINCH CABLE AND DISCONNECTS WINCH CABLE FROM SHACKLE ON DISABLED TANK UPPER RIGHT RECOVERY EYE.		
J. ATTACHES SHACKLE AND STREETSIDE TIEDOWN CHAIN TO DISABLED M-1 TANK LOWER TIEDOWN LUGS. ALLOWS SLACK IN CHAIN TO FORM THE LOWER Y-CHAIN (TO BE USED TO CONTROL PAYLOAD DURING OFFLOAD).		
K. ATTACHES AND SECURES TWO SHACKLES AND CURBSIDE TIEDOWN CHAIN TO DISABLED TANK UPPER RECOVERY EYES. ALLOWS SLACK IN CHAIN TO FORM THE UPPER Y-CHAIN (TO BE USED TO CONTROL PAYLOAD DURING OFFLOAD).		
L. CREW MEMBERS ATTACH DRIVERS SIDE WINCH CABLE TO CENTER OF LOWER Y-CHAIN USING SHACKLE.		
M. CREW MEMBERS ATTACH PASSENGER SIDE WINCH CABLE TO CENTER OF UPPER Y-CHAIN USING SHACKLE.		
N. OPERATOR PAYS IN BOTH DRIVERS SIDE AND PASSENGER SIDE WINCH CABLES UNTIL CABLES BECOME TIGHT.		
5. OPERATOR AND CREW MEMBERS ADJUST PLATFORM HEIGHT, LOWER REAR SUPPORT LEGS, LOWER BOTH LOADING RAMPS, AND POSITION CURB GUIDES FOR OFF LOADING OF DISABLED M-1 TANK:		
A. ENSURES APU IS RUNNING AT FULL THROTTLE.		
B. PULLS SUSPENSION SHUT-OFF VALVE HANDLE OUTWARD TO ADJUST POSITION.		
C. RELEASES SEMITRAILER PARKING BRAKES.		

STEPS	GO	NO-GO
D. ADJUSTS PLATFORM HEIGHT, LOWERS BOTH REAR SUPPORT LEGS, AND LOWERS BOTH LOADING RAMPS.		
E. APPLIES SEMITRAILER PARKING BRAKES.		
F. INSTALLS TWO CURB GUIDES AT BEAVERTAIL JUST IN FRONT OF EACH LOADING RAMP.		
G. REMOVES REAR PAYLOAD CHOCKS.		
6. CONTINUE TO WINCH OFF DISABLED M-1 TANK:		
A. OPERATOR POSITIONS CREW MEMBERS ON EACH SIDE OF PLATFORM FOR DIRECTIONAL CONTROL.		
B. ENGAGES WINCH SPEED CONTROL SWITCH TO LOW AND ENGINE SPEED CONTROL SWITCH TO HIGH ENGINE IDLE.		
C. OPERATOR PAYS OUT PASSENGER SIDE WINCH CABLE TO RESTRAIN PAYLOAD AND PAYS IN DRIVERS SIDE WINCH CABLE TO TAKE UP SLACK.		
D. GROUND GUIDE SIGNALS OPERATOR WHEN CLEVIS ON DRIVERS SIDE WINCH CABLE IS OVER REAR SNATCH BLOCK.		
E. OPERATOR THEN PAYS OUT BOTH DRIVERS SIDE AND PASSENGER SIDE WINCH CABLES AT SAME TIME TO ALLOW DISABLED M-1 TANK TO ROLL DOWN LOADING RAMPS.		
7. IF DISABLED M-1 TANK CLEARS BOTH LOADING RAMPS, PROCEED TO STEP 8. IF TANK DOES NOT CLEAR BOTH LOADING RAMPS PROCEED AS FOLLOWS:		
A. OPERATOR RELEASES BOTH WINCH LEVERS.		
B. CREW MEMBERS RAISE BOTH REAR SUPPORT LEGS.		
C. OPERATOR PAYS OUT BOTH WINCH CABLES UNTIL CABLES TOUCH TOP OF PLATFORM.		
D. CREW MEMBERS CHECK FOR TWIST IN BOTH WINCH CABLES BEFORE DISCONNECTING FROM DISABLED M-1 TANK.		
E. CREW MEMBERS PLACE BOTH REAR PAYLOAD CHOCKS UPSIDE DOWN, APPROXIMATELY 24 INCHES TO REAR OF DISABLED M-1 TANK.		
F. OPERATOR AND CREW MEMBERS ADJUST PLATFORM TO NORMAL RUNNING HEIGHT.		

STEPS	GO	NO-GO
G. CREW MEMBERS CHECK THAT DISABLED M-1 TANK HAS ROLLED OFF BOTH LOADING RAMPS, IF NOT, LOWER PLATFORM TO ITS LOWEST HEIGHT.		
H. REMOVES AND RESTOWS FOUR HET WHEEL CHOCKS.		
I. ENTERS CAB, TURNS PTO OFF, RELEASES HET PARKING BRAKES, AND DRIVES HET FORWARD UNTIL CREW MEMBERS SIGNAL THAT DISABLED M-1 TANK HAS CLEARED BOTH LOADING RAMPS AND STOPS.		
J. MOVES TRANSMISSION RANGE SELECTOR INTO NEUTRAL, APPLIES HET PARKING BRAKES AND TURNS PTO SWITCH ON.		
K. CHOCKS HET TIRES.		
8. CONTINUE TO UNLOAD THE DISABLED M-1 TANK:		
A. OPERATOR PAYS OUT BOTH DRIVERS AND PASSENGER SIDE WINCH CABLES UNTIL CABLES TOUCH TOP OF PLATFORM AND RELEASES BOTH LEVERS.		
B. CREW MEMBERS CHECK FOR TWIST IN BOTH WINCH CABLES BEFORE DISCONNECTING FROM DISABLED M-1.		
C. REMOVES UPPER Y-CHAIN AND TWO SHACKLES FROM UPPER RECOVERY EYES.		
D. REMOVES LOWER Y-CHAIN AND TWO SHACKLES FROM LOWER TOWING LUGS.		
E. OPERATOR PUSHES ENGINE SPEED CONTROL SWITCH TO HIGH ENGINE IDLE.		
F. CREW MEMBERS OPEN REAR SNATCH BLOCK, REMOVE DRIVERS SIDE WINCH CABLE, CLOSE REAR SNATCH BLOCK, AND INSTALL KEEPER PIN AND SECURE WITH LINCH PIN.		
G. PLACES SNATCH BLOCK IN STOW POSITION WITH CLAMP AND TIGHTENS CLAMP.		
H. REMOVES DRIVERS SIDE WINCH CABLE FROM PIVOT PIN SHEAVE AND GOOSENECK CABLE GUIDE. LAYS CABLE ON PLATFORM.		
I. REMOVES PASSENGER SIDE WINCH CABLE FROM GOOSENECK CABLE GUIDE. LAYS CABLE ON PLATFORM.		
J. OPERATOR PAYS IN DRIVERS SIDE WINCH CABLE AND DIRECTS CREW MEMBERS TO MAINTAIN TENSION ON CABLE. STOWS WINCH CABLE ONTO STOW HOOK.		

STEPS	GO	NO-GO
K. OPERATOR PAYS IN PASSENGER SIDE WINCH CABLE AND DIRECTS CREW MEMBERS TO MAINTAIN TENSION ON CABLE.		
L. OPERATOR DISENGAGES ALL WINCH CONTROLS. LOWERS GUARD AND LOCKS IN PLACE.		
9. OPERATOR AND CREW MEMBERS PREPARE THE HET AND M1000 SEMITRAILER FOR TRAVEL:		
A. REMOVES ALL TIEDOWN CHAINS, LOAD BINDERS, AND SHACKLES AND RESTOWS IN SEMITRAILER STOWAGE COMPARTMENT.		
B. SECURES ALL 12 CURB GUIDES IN PLATFORM FRONT AND REAR RECESSED AREAS.		
C. DISASSEMBLES TWO REAR PAYLOAD CHOCKS.		
D. SECURES TWO REAR PAYLOAD CHOCKS ON TOP OF TWO FRONT PAYLOAD CHOCKS.		
E. RUNS APU AT FULL THROTTLE.		
F. RELEASES SEMITRAILER PARKING BRAKES.		
G. ADJUSTS PLATFORM TO NORMAL RUNNING HEIGHT.		
H. APPLIES SEMITRAILER PARKING BRAKES.		
I. ENSURES SUSPENSION SHUT-OFF VALVE IS PUSHED INWARD TO THE SHUT-OFF POSITION.		
J. RAISES AND SECURES BOTH REAR SUPPORT LEGS.		
K. RAISES AND ADJUSTS STREETSIDE AND CURBSIDE LOADING RAMPS.		
L. RAISES BEACON WARNING LIGHT.		
M. OPERATOR SHUTS DOWN APU AND CLOSES CONTROL PANEL.		
N. STOWS CROWBAR AT BACK OF PLATFORM AND CHECKS THAT ALL TOOLS AND EQUIPMENT ARE SECURED INTO PLATFORM STOWAGE COMPARTMENT.		
O. REMOVES AND RESTOWS HET CHOCK BLOCKS.		
P. TURNS PTO SWITCH TO OFF.		
Q. RELEASES HET PARKING BRAKES.		
R. MOVES TRANSMISSION RANGE SELECTOR TO APPROPRIATE RANGE.		

LESSON TITLE: DRIVE THE M1070 HET AND M1000 SEMITRAILER ON THE ROAD AT NIGHT

TASK NUMBER: 551-721-3337 (Drive a Heavy-Equipment Transporter [HET] on Improved Roads)

A. TRAINING OBJECTIVE.

TASK: Drive an M1070 HET/M1000 semitrailer combination on the road at night.

CONDITIONS Given instruction, DD Form 1970 (or ULLS generated DA Form 5987-E), DA Form 2404 (or ULLS generated DA Form 5988-E), pencil, TM 9-2320-360-10, TM 9-2330-381-14, equipment records folder, rags, lubricants, coolant, designated driving route, wide load ahead and wide load follows signs for each unit, escort/control vehicles (minimum of 2 vehicles required), an M1070 HET, an M1000 semitrailer, all required BII, and a requirement to drive a designated route during the hours of darkness with headlights (to include making right and left hand turns, making gradual steering corrections, signaling intentions in advance, passing oncoming vehicles, maintaining vehicle internal, obeying highway warning and regulatory signs, operating the lights, monitoring gauges and indicator lights, upshifting/downshifting the transmission through all gears ranges, manipulating the controls, performing basic driving maneuvers to include downhill braking [using the engine brake], and backing using ground guides).

STANDARD: Operate the combination unit 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: Practical exercise.

4. Students: Scheduled personnel.

5. Principal and assistant instructors required: One primary instructor for the class and one assistant instructor for every three students for the practical exercise.

6. Training aids and equipment: Rags, lubricants, coolant, hearing protection, designated driving route, wide load ahead and wide load follows signs for each unit, and escort/control vehicles (minimum of 2 vehicles required). A sample escort/controller's briefing sheet is located at the end of this lesson. DD Form 1970 (or ULLS generated DA Form 5987-E), DA Form 2404 (or ULLS generated DA Form 5988-E), pencil, TM 9-2320-360-10, TM 9-2330-381-14, equipment records folder, an M1070 HET, an M1000 semitrailer, and all required BII for each three students. Recommend a communication system for the control vehicles.

7. References: AR 385-55, DA Pamphlet 738-750, FM 21-305, TM 9-2320-360-10, and TM 9-2330-381-14.

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.

NOTE: An instructor will be in the cab whenever a student is driving the HETS.

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

NOTE: Students are licensed on other military vehicles and should not require any training on night factors and procedures.

    a. Discuss driving the HETS 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.

3. Practical exercise.

a. Separate the class into groups of three. Assign each group to a HET and semitrailer and ensure each group has an assistant instructor. Issue TM 9-2320-360-10, TM 9-2330-381-14, pencils, DD Form 1970 (or ULLS generated DA Form 5987-E), DA Form 2404 (or ULLS generated DA Form 5988-E), and equipment records folder. Instruct students on the location of rags, lubricants, and coolant.

b. Students perform before-operation PMCS. Ensure all lights, glass, and mirrors are clean and serviceable (not scratched, cracked, or missing). Check all lights for proper operation.

c. Students drive the designated route and conduct during-operation PMCS.

NOTE: As each student practices driving, an assistant instructor rides in the right front seat, the other two student drivers ride in the rear seat and rotate driving duties. 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 habits.

d. Students perform after-operation PMCS and ensure all operator entries required on DD Form 1970 (or ULLS generated DA Form 5987-E) and DA Form 2404 (or ULLS generated DA Form 5988-E) are accurate, complete, and legible.

4. Evaluate. Check every 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.

E. SAFETY RESTRICTIONS.

1. Ensure all chock blocks are in place when vehicles are parked.

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

3. Ensure students remove all watches, jewelry, and identification tags before working in or around the HET and/or semitrailer.

4. Ensure that students pay particular attention to the cautions and warnings listed in the operator's manuals.

5. Ensure all personnel wear hearing protection when working in or around a running HET.

6. Ensure a safe following distance and speed are maintained when driving on the designated route (as determined by the local command or civil authorities).

7. Ensure that ground guide(s) are always used when backing the HET and semitrailer.

8. Ensure the driver and ground guide(s) know and understand the hand and arm signals as outlined in FM 21-305.

9. Ensure that all personnel wear seat belts when the vehicle is in motion.

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

11. Ensure the position of the ground guide(s) is known at all times. Failure to observe this warning may result in personal injury or death.

12. Ensure personnel maintain at least three points of contact when mounting or dismounting the HET and semitrailer (to include performing PMCS).

13. The HET ladder must be used when performing maintenance. The two hooks on the ladder must be installed in the holes located on top of the fender prior to use. Using the ladder for other applications could result in serious injury or death to personnel.

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

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

16. 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 could result in injury or death.

17. 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.

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

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

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

21. All safety requirements such as hazard flags, road permits, flashing warning lights, escort vehicles, and wide load signs must be met. Failure to comply could result in injury to personnel or damage to equipment.

22. The trailer hand brake control is only used for testing the semitrailer brakes. Using it when driving will cause the semitrailer to skid. Using the semitrailer hand brake control to park can cause all the air to leak out of the brake system.

23. Unlike conventional semitrailers, the M1000 semitrailer tracks the same turning radius as the HET and does not cut the inside-turning radius when making turns. The operator needs to make tighter turns to keep the semitrailer from hitting the outer curb.

24. The HET semitrailer combination does not track in the same way as standard or conventional tractor-trailer combinations. Operators must know and understand this prior to operating HETS on public access roads. Wide, conventional tractor-trailer turns may result in personal injury or damage to equipment.

25. When making sharp turns, the trailer may swing beyond normal turning radius. Failure to observe this warning may result in personal injury or damage to equipment.

26. In some cases when trailer is backed up, wheels on trailer will not be straight when the HET/semitrailer is stopped and then driven forward. Rear of trailer will swing wide right or left and may cause injury to bystanders.

27. 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 and 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.

28. When manually steering the semitrailer, make many starts and stops to give assistant operator time to adjust steering. The HET operator should allow even space on both sides of the HET so that the assistant operator steering the semitrailer has room to make adjustments or injury to personnel and damage to equipment may result.

F. ADDITIONAL COMMENTS AND INFORMATION. Recommended instructional time is 6 hours practical exercise, including 1.5 PMCS.

SAMPLE ESCORT/CONTROLLER'S BRIEFING SHEET

1. Always follow civilian/military police instructions when given.

2. On controlled access highways, use truck-parking areas only.

3. Make only emergency halts on the roadside of controlled access highways.

4. Do not stand on the traffic side of a vehicle during halts on conventional highways.

5. Perform vehicle operation maintenance and check cargo security at every halt.

6. Move vehicles off the highway (to an area that can support its weight) before beginning maintenance.

7. Have reflectors and warning devices in place before beginning maintenance.

8. Use warning lights during periods of darkness or reduced visibility.

9. Begin movement only at the escort/controllers signal.

10. Observe vehicle speed restrictions:_____ as determined by the local commander or civil authorities.

11. Observe vehicle intervals (minimum of eight seconds required under 40 MPH).

12. Use the acceleration lane, when available, to reach highway speed.

13. Gradually attain proper vehicle interval once on the main route.

14. Operate vehicle with headlights on at all times.

15. Use warning devices correctly.

16. Remember the following: Because of the weight of this vehicle, roadways and curbs may give way causing the vehicle to turn over. When approaching oncoming traffic on a narrow road-

- Signal your intentions.
- Move to the right of the roadway only as far as you safely can and stop.
- Wait until the other vehicles have passed and resume travel on the most solid part of the road.

17. Add any additional comments as local conditions warrant.

LESSON TITLE: DRIVE THE HETS OFF ROAD

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

A. TRAINING OBJECTIVE.

TASK: Drive the HETS off road.

CONDITIONS Given instructions, DD Form 1970 (or ULLS generated DA Form 5987-E), DA Form 2404 (or ULLS generated DA Form 5988-E), pencil, TM 9-2320-360-10, TM 9-2330-381-14, equipment records folder, rags, lubricants, coolant, a suitable training area, an M1070 HET, an M1000 semitrailer, all required BII, and a requirement to operate the vehicle off road (to include steep grades, woods, mud, rocky terrain, and shallow streams [28 inches or less] during daylight hours).

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

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 every three students for the practical exercise.

6. Training aids and equipment: Television, VCR, and videotape TVT 55-51 (PIN: 710753 DA), "HETS Driving Techniques." Rags, lubricants, coolant, DD Form 1970 (or ULLS generated DA Form 5987-E), DA Form 2404 (or ULLS generated DA Form 5988-E), pencil, TM 9-2320-360-10, TM 9-2330-381-14, equipment records folder, an M1070 HET, an M1000 semitrailer, and all required BII for every three students.

7. References: AR 385-55, DA Pamphlet 738-750, FM 21-305, TM 9-2320-360-10, and TM 9-2330-381-14.

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 HETS.

a. As an option, show videotape TVT 55-51, "HET 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) Driving off road towing the trailer is more restrictive than driving the HET bobtail. Grade and side slope capabilities with the semitrailer are significantly reduced, as is backing. Before going off road it is best to check the terrain, make sure that slopes are not too steep, the terrain will support the weight of the HETS (GCW), and that there is sufficient space to turn the HET/semitrailer without backing.

(2) Anticipate terrain and before negotiating, take positive action to match CTIS, driveline control, 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 HET 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) Switch the CTIS selector switch to the CROSS COUNTRY position for off-road driving. Remember to press and hold the CTIS start button for approximately two seconds. When encountering more difficult terrain, the CTIS setting can be changed.

(8) Attempt to keep the HET's wheels from spinning. If wheels start to slip, stop the HET and change one or more of the following to gain traction:

- CTIS settings.
- Transfer case position.
- Driveline control position.

(9) Drive slowly enough to prevent--

- Vehicle damage.
- Occupants from being injured (injuries associated with hard or excessive jolts).
- The load from coming loose or shifting.

c. Driving up steep grades requires these techniques.

WARNING

Avoid driving diagonally across a hill. HET may roll causing injury or death to personnel and damage to equipment.

(1) Steer HET straight up hills when possible. When necessary to drive across a hill, choose the lowest angle possible. The left fuel shutoff valve should be kept closed while driving across a hill when the left side of the HET is higher than the right.

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

(3) Move the driveline control to the LOCK or UNLOCK position to match the setting of the transfer case.

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

(4) If operating the HET with a heavy load, stop the vehicle and shift the transfer case shift lever to low.

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

(5) Apply the service brake pedal and place the transmission selector in first gear if encountering an extreme grade (greater than 15 percent). If grades are less than 15 percent, all other gear selections are acceptable while climbing.

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

(6) 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 HET and change one or more of the following to gain traction:

- CTIS settings.
- Transfer case position.
- Driveline control position.

CAUTION
When using the emergency position on the CTIS, top speed should not exceed 5 MPH and distance traveled should not exceed 15 miles.

(7) If wheels are still slipping, stop the HET and turn the CTIS rotary selector switch to the EMERGENCY position. Remember to press and hold the CTIS start button for about two seconds.

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

(9) Keep the HET moving and avoid quick, sharp turns.

(10) If HET starts to slide while climbing the hill:

- Release the accelerator pedal.
- Steer in the direction of the slide until the HET stops.

- Press the accelerator slowly and steer the HET on a straight course.

(11) Stop the HET after reaching the top of the grade. Select the appropriate transmission gear, transfer range, driveline control position, and CTIS setting for the terrain.

d. Driving down steep grades requires these methods:

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

(2) Stop the vehicle and shift the transfer case shift lever to low if operating the HET with a heavy load or the grade is steep.

WARNING

Avoid driving diagonally across a hill. HET may roll causing injury or death to personnel and damage to equipment.

(3) Steer HET straight down hills when possible. When necessary to drive across a hill, choose the lowest angle possible. The left fuel shutoff valve should be kept closed while driving across a hill, when the left side of the HET is higher than the right.

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.

(4) 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-slowing device, not a vehicle-stopping device.

(5) Adjust the transmission range selector to a gear that will allow the engine with the engine brake applied to control the vehicle 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 brakes to control downhill speed will result in the loss of braking power because of heat buildup.

(6) Use the service brakes as needed to control vehicle speed.

e. Operation in forest or uneven terrain requires these driving techniques:

(1) Check the terrain for obstacles.

(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 as required.

(4) Lock the driveline control if necessary.

(5) Drive slowly, maneuver around ground obstructions, and choose route while under way.

(6) Avoid driving under low overhead obstructions when possible.

(7) Check tire traction and braking. Rocks and fallen leaves can be very slippery, especially when wet.

(8) Ensure tire and spare wheels are in good condition when driving over rocky terrain. Tire punctures are more likely to occur when operating on rocky terrain.

f. Fording streams calls for these handling techniques:

CAUTION

Do not ford water unless depth is known. Water deeper than 28 inches will cause equipment damage.

(1) Ensure depth of fording site is not more than 28 inches and the water flow of the stream is not too swift.

(2) Ensure the bottom at the fording site is firm enough that 28 inches maximum fording depth will not be exceeded, and HET will not become stuck.

(3) Stop the HET at the edge of the water.

(4) If the brakes have been used heavily and are hot; if possible, allow drums and shoes to cool before entering the water .

(5) Ensure the HET is operating correctly before entering the water.

(6) Set the CTIS rotary selector switch to the EMERGENCY position.

(7) Set the transfer case shift lever to low.

(8) Set the driveline control to the LOCK position.

(9) Set the transmission range selector to 1 (first range).

CAUTION

Limit HET speed to 3 to 4 MPH during fording operations. Failure to do this will result in equipment damage.

(10) Drive the HET slowly into the water. Keep the speed steady while fording water. Do not stop unless absolutely necessary.

(11) Restart the engine immediately if it stalls. If the engine will not start, tow or winch the HET from the water with another vehicle as soon as possible.

(12) If the HET accidentally enters water deeper than 28 inches, do the following:

- Press the brake pedal until the HET stops.
- Set the transmission range selector to reverse (R).
- Release the brake pedal and slowly back the HET out of the deep water.

WARNING

Do not rely on the service brakes after fording water. Wet brakes may not stop the HET. Injury or death to personnel may result.

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

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

CAUTION

Salt water is corrosive and will damage HET parts. HET parts that come in contact with salt water must be washed.

(15) Remove water and clean foreign deposits from all HET parts as soon as possible.

g. Operating in sand and mud requires these driving techniques:

WARNING

Operating in mud causes brake linings to get wet and can impair HET braking. If braking is impaired while operating in mud, dry brakes by driving HET about 500 feet while applying service brakes frequently. This must be done with brake drums totally out of mud so that drying action can take place. If drying brakes does not restore adequate braking, injury to personnel and damage to equipment may result.

CAUTION

Blowing sand can scratch glass surfaces. Keep glass surfaces covered with tarpaulin as much as possible in these conditions to prevent scratching.

(1) Leave glass surfaces covered if not needed for operations.

(2) Check air cleaner restriction indicator frequently. Shut down engine immediately when yellow diaphragm enters red zone.

(3) Set CTIS rotary switch to the CROSS COUNTRY position.

(4) Set transfer case shift lever to LOW position.

(5) Accelerate slowly so the tires do not spin and dig into the sand or mud. Set CTIS rotary switch to MUD, SAND, AND SNOW position if tires spin.

(6) Set the driveline control to the LOCK position for added tire traction.

(7) Shift the transmission range selector to a lower gear range for added tire traction.

WARNING
Avoid driving diagonally across a hill. HET may roll causing injury or death to personnel and damage to equipment.

(8) Do not straddle or drive on sides of sand mounds. Loose sand will not support the vehicle on steep slopes.

(9) Steer HET straight up hills when possible. When necessary to drive across a hill, choose the lowest angle possible. The left fuel shutoff valve should be kept closed while driving across a hill, when the left side of the HET is higher than the right.

(10) Drive the HET slowly when in loose sand or mud to avoid becoming stuck.

(11) Keep the accelerator pedal steady after the HET reaches the desired speed.

(12) If the HET becomes stuck in loose sand and mud, use this method:

- Set the transmission range selector to the REVERSE position.
- Move the HET straight back about 20 feet then apply brakes and set transmission range selector to 1 (first range).
- Slowly move the HET forward and increase speed gradually.
- Turn the HET gradually to avoid oversteering the vehicle.
- Set the transmission range selector to 2-5 (drive) when the vehicle picks up speed and is moving forward smoothly.

(13) If the HET starts to skid, use this method:

- Release the accelerator pedal and steer in the direction of the skid.
- Press the brake pedal lightly when the vehicle is under control.
- Press accelerator pedal slowly and steer the vehicle on a straight course.

(14) When possible, park the tractor so it does not face into the wind to avoid glass surfaces from being scratch by sand and dust.

h. As soon as possible, clean mud from HET to include wheels, brakes, axles, axle vents, universal joints, steering mechanism, and radiator.

CAUTIONS

Do not hit axle breathers when cleaning mud from axles. Damage to axle breathers could result.

Do not direct high-pressure water stream at glass surfaces, seals, air intake, axle breathers, exhaust outlet, or any other component of the HET that could be easily damaged by high-pressure water stream.

i. Ensure axle breather vent caps move freely on breather body.

j. Give safety briefing, to include reinforcing ground guide safety precautions for backing the HETS.

3. Practical exercise.

a. Assign students to vehicles and issue TM 9-2320-360-10, TM 9-2330-381-14, pencils, DD Form 1970 (or ULLS generated DA Form 5987-E), DA Form 2404 (or ULLS generated DA Form 5988-E), 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 HETS off road. During-operation PMCS is also conducted at this time.

NOTE: As each student practices driving, an assistant instructor rides in the right front seat, the other two student drivers ride in the rear seat and rotate driving duties. 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 habits.

d. Students perform after-operations PMCS and ensure all operator entries required on DD Form 1970 (or ULLS generated DA Form 5987-E), DA Form 2404 (or ULLS generated DA Form 5988-E), 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 55-51, “HETS Driving Techniques,” and reinforced throughout the course. Students perform driving tasks daily and are tested on the EOCCT.

E. SAFETY RESTRICTIONS.

1. Ensure all chock blocks are in place when vehicles are parked.

2. Ensure students remove all jewelry and identification tags before performing PMCS.

3. Ensure all personnel wear hearing protection when working in or around the HET tractor.

4. Ensure students pay particular attention to the cautions and warnings listed in the operator’s manual.

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

6. Maintain a safe following distance and speed limit when driving within the training area (as determined by the local law or command).

7. Ensure all occupants wear seat belts while vehicle is in motion.

8. Ensure ground guides are used when backing HETS.

9. Use the HET 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.

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

11. 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.

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

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

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

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

16. Ensure personnel maintain at least three points of contact when mounting or dismounting the HETS (to including PMCS).

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

18. Avoid driving diagonally across a hill. The HET may roll causing injury or death to personnel and damage to equipment.

19. Do not rely on the service brakes after fording water. Wet brakes may not stop the HET. Injury or death to personnel may result.

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

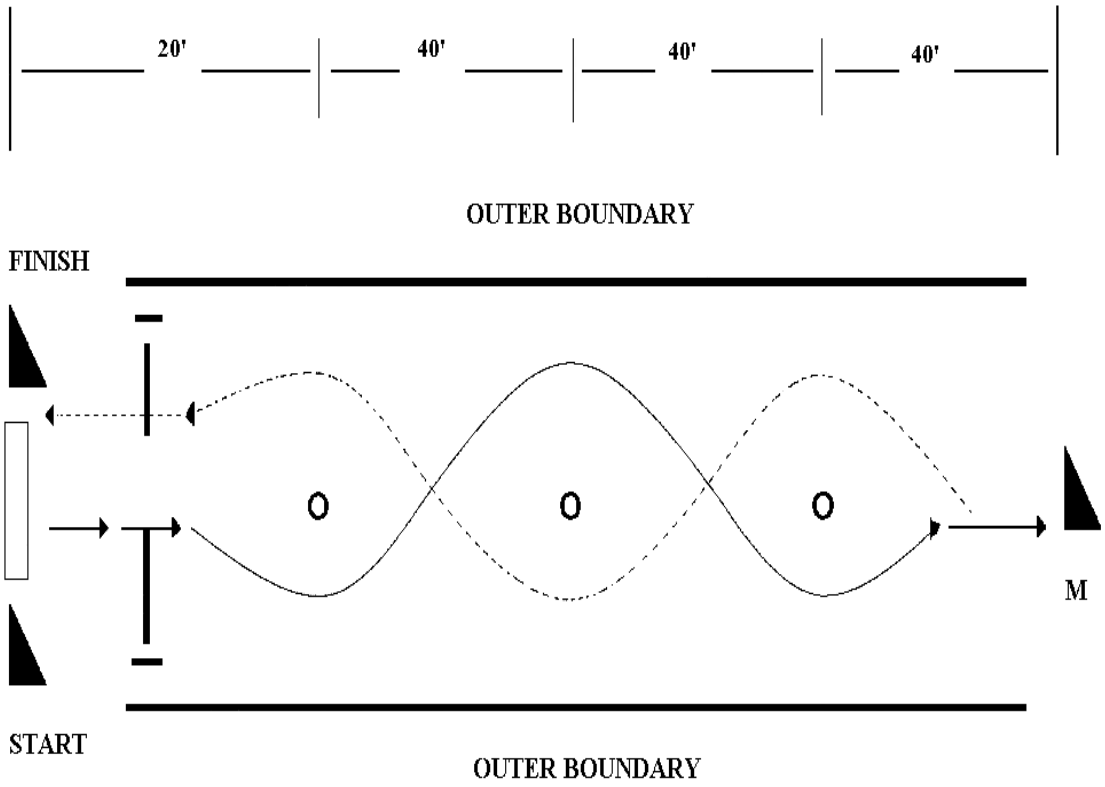
21. Operating in mud causes brake linings to get wet and can impair HET braking. If braking is impaired while operating in mud, dry brakes by driving HET about 500 feet while applying service brakes frequently. This must be done with brake drums totally out of mud so that drying action can take place. If drying brakes does not restore adequate braking, injury to personnel and damage to equipment may result.

F. ADDITIONAL COMMENTS AND INFORMATION. Recommended instructional time is 12 hours (1.0 conference and 11.0 practical exercise to include 4.5 PMCS).

CHAPTER 6

HETS SAMPLE TRAINING AREAS

Figure 6-1 shows the HET serpentine course. Figure 6-2 shows the HET system left and right turns. Figure 6-3 shows the HET forward stop and straight line backing. Figure 6-4 shows the HET system serpentine courses.

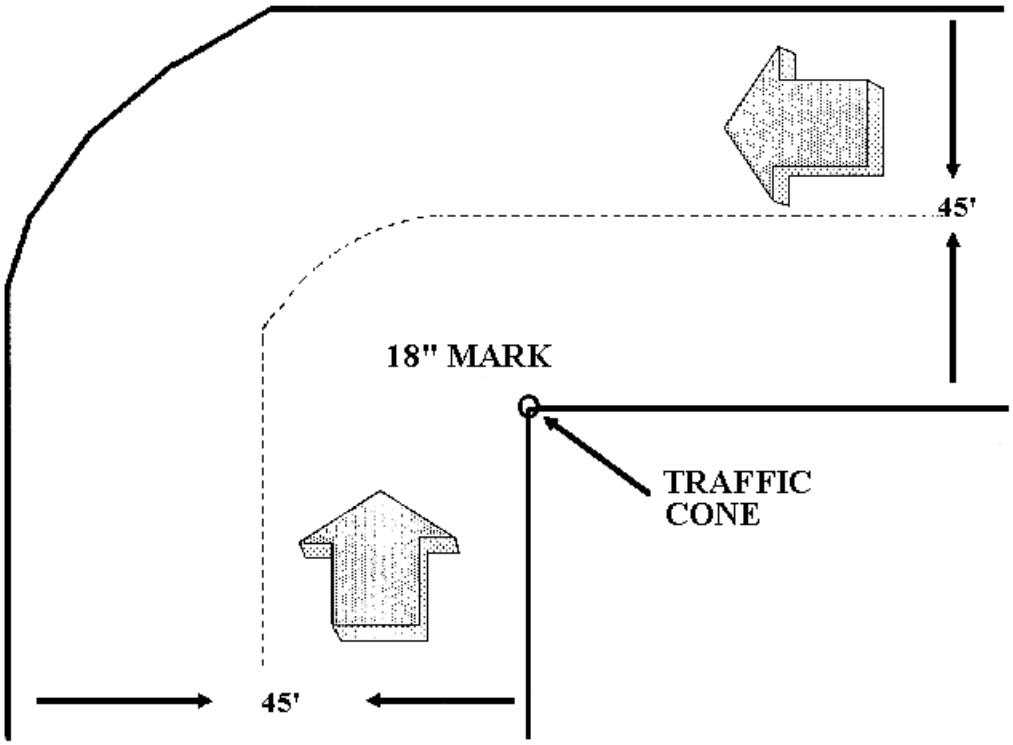


KEY:

	STANDARD (WIDTH BETWEEN STANDARDS IS 15')
O	TRAFFIC CONE
M	MID-POINT
→	FORWARD
← - - - -	BACKING
▭	START AND FINISH

MINIMUM SIZE OF AREA IS 140' LONG AND 30' WIDE

Figure 6-1. HET serpentine course

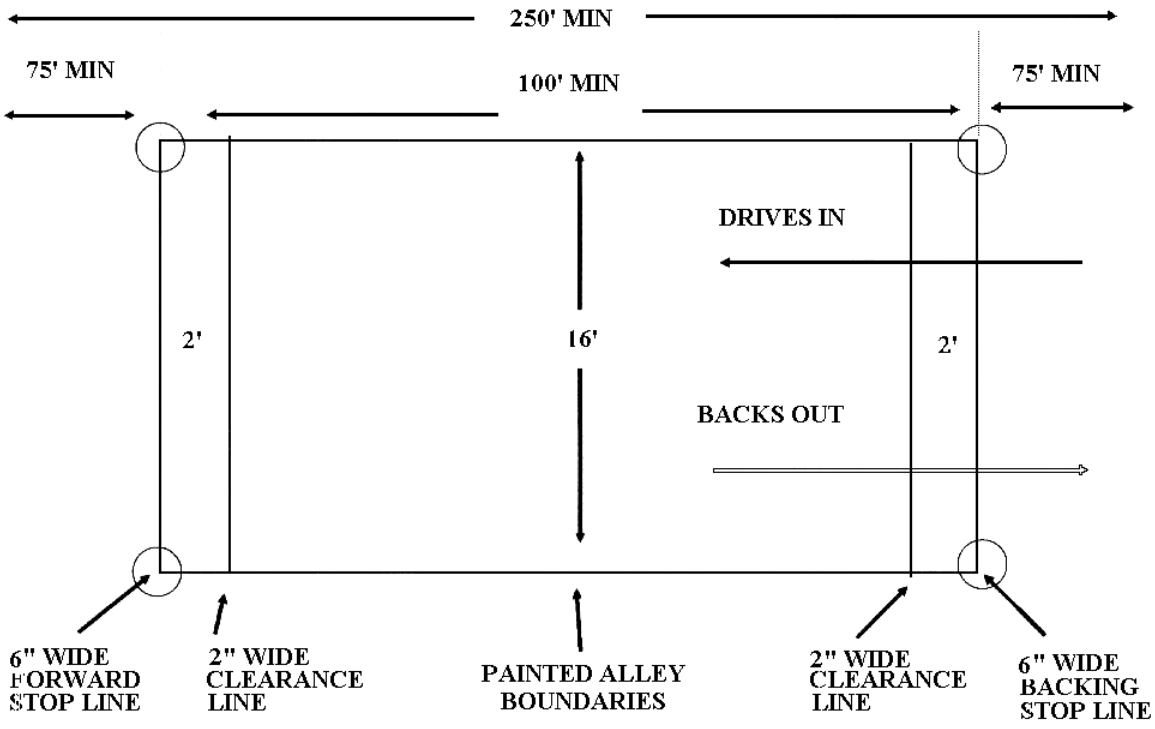


NOTES:

ONE TRAINING AREA CAN BE USED FOR BOTH MANEUVERS, BUT THE MANEUVERS MUST BE DONE SEPARATELY. FOR EXAMPLE, ALL STUDENTS DOING THE RIGHT TURN FIRST, THEN 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 THE OUTER BOUNDARIES.

Figure 6-2. HET system left and right turns



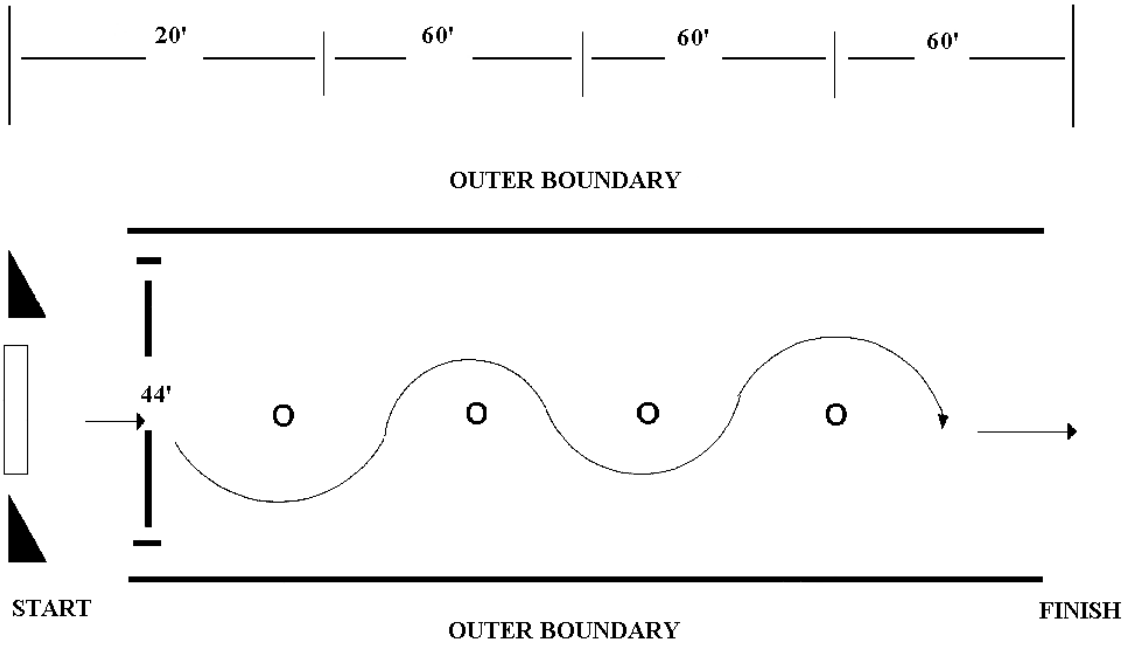
NOTES:

◯ - TRAFFIC CONES

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 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).

Figure 6-3. HET forward stop and straight line backing



KEY:

STANDARD (WIDTH BETWEEN STANDARDS IS 16")

TRAFFIC CONE

FORWARD

START

MINIMUM SIZE OF AREA IS 260' LONG AND 45' WIDE

Figure 6-4. HET system serpentine course

CHAPTER 7

END OF COURSE COMPREHENSIVE TEST

LESSON TITLE: END OF COURSE COMPREHENSIVE TEST

TASK NUMBER: All previously taught tasks.

A. TRAINING OBJECTIVE.

TASK: Pass the EOCCT.

CONDITIONS Given an examination booklet, pencil, DD Form 1970 (or ULLS generated DA Form 5987-E), DA Form 2404 (or ULLS generated DA Form 5988-E), TM 9-2320-360-10, TM 9-2330-381-14, equipment records folder, rags, lubricants, coolant, an M1070 HET, an M1000 semitrailer, all required BII, road test route, and suitable training area(s).

STANDARD: Pass all required written and performance tests.

B. INTERMEDIATE TRAINING.

Intermediate Training Objective 1

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 or the alternate written test.

Intermediate Training Objective 2

TASK: Couple an M1070 HET to an M1000 semitrailer.

CONDITIONS: Given an M1070 HET, an M1000 semitrailer, all required BII, and a requirement to couple the M1070 HET to an M1000 semitrailer.

STANDARD: Without damage to equipment or injury to personnel, couple the M1070 HET to an M1000 semitrailer in the correct sequence. Student must receive all GOs on the performance test checklist.

Intermediate Training Objective 3

TASK: Pass the driver's road test.

CONDITIONS: Given DD Form 1970 (or ULLS generated DA Form 5987-E), DA Form 2404 (or ULLS generated DA Form 5988-E), pencil, TM 9-2320-360-10, TM 9-2330-381-14, equipment records folders, rags, lubricants, coolant, road test route, an M1070 HET, an M1000 semitrailer, and all required BII.

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 HET/M1000 semitrailer off road.

CONDITIONS: Given DD Form 1970 (or ULLS generated DA Form 5987-E), DA Form 2404 (or ULLS generated DA Form 5988-E), pencil, TM 9-2320-360-10, TM 9-2330-381-14, equipment records folder, rags, lubricants, coolant, a suitable off-road training area, an M1070 HET coupled to an M1000 semitrailer, all required BII, and a requirement to operate the HET and semitrailer during daylight hours off the road (to include steep grades, woods, mud, rocky terrain, and shallow streams [28 inches]).

STANDARD: Operate the vehicle safely at reduced speeds, taking precautions not to damage the HET and semitrailer while driving over rough terrain and receive all GOs on the performance test checklist.

Intermediate Training Objective 5

TASK: Load an M-1 tank onto an M1000 semitrailer using dual winches.

CONDITIONS: Given an M1070 HET, an M1000 semitrailer, all required BII, a disabled M-1 tank and suitable training area.

STANDARD: Following all safety precautions, without damage to equipment or injury to personnel, load an M-1 tank on an M1000 semitrailer in the proper sequence. Students must receive all GOs on the performance test checklist.

Intermediate Training Objective 6

TASK: Unload an M-1 tank off the M1000 semitrailer using dual winches.

CONDITIONS: Given an M1070 HET, an M1000 semitrailer, all required BII, a disabled M-1 tank, and suitable training area.

STANDARD: Following all safety precautions, without damage to equipment or injury to personnel, unload an M-1 tank off an M1000 semitrailer in the proper sequence. Students must receive all GOs on the performance test checklist.

Intermediate Training Objective 7

TASK: Uncouple an M1070 HET from an M1000 semitrailer.

CONDITIONS: Given an M1070 HET, an M1000 semitrailer, all required BII, and a requirement to uncouple the M1070 HET from an M1000 semitrailer.

STANDARD: Without damage to equipment or injury to personnel, uncouple the M1070 HET from an M1000 semitrailer in the correct sequence. Students must receive all GOs on the performance test checklist.

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: Personnel as scheduled.

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 (or ULLS generated DA Form 5987-E), DA Form 2404 (or ULLS generated DA Form 5988-E), TM 9-2320-360-10, TM 9-2330-381-14, equipment records folder, an M1070 HET, an M1000 semitrailer, and all required BII for every student.

7. References: AR 385-55, AR 600-55, DA Pamphlet 738-750, FM 21-305, TM 9-2320-360-10, and TM 9-2330-381-14.

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. The driver will test in the testing sequence listed below and will not start the next test until he successfully passes the previous test.

a. Intermediate training objective 1 (written test).

b. Intermediate training objective 2 (couple M1070 HET to an M1000 semitrailer).

c. Intermediate training objective 3 (road test).

d. Intermediate training objective 4 (off-road driving).

e. Intermediate training objective 5 (load an M-1 tank).

f. Intermediate training objective 6 (unload an M-1 tank).

g. Intermediate training objective 7 (uncouple M1070 HET from an M1000 semitrailer).

3. Evaluate. 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 all chock blocks are in place when vehicles are parked.

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

3. Ensure students remove all watches, jewelry, and identification tags before working in or around the HET and/or semitrailer.

4. Ensure that students pay particular attention to the cautions and warnings listed in the operator's manuals.

5. Ensure all personnel wear hearing protection when working in or around a running HET.

6. Ensure a safe following distance and speed are maintained when driving on the designated route (as determined by the local command or civil authorities).

7. Ensure that ground guide(s) are always used when backing the HET and semitrailer.

8. Ensure the driver and ground guide(s) know and understand the hand and arm signals as outlined in FM 21-305.

9. Ensure that all personnel wear seat belts when the vehicle is in motion.

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

11. Ensure the position of the ground guide(s) is known at all times. Failure to observe this warning may result in personal injury or death.

12. Ensure personnel maintain at least three points of contact when mounting or dismounting the HET and semitrailer (to include performing PMCS).

13. The HET ladder must be used when performing maintenance. The two hooks on the ladder must be installed in the holes located on top of the fender prior to use. Using the ladder for other applications could result in serious injury or death to personnel.

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

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

16. 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 can result in injury or death to personnel.

17. 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.

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

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

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

21. All safety requirements such as hazard flags, road permits, flashing warning lights, escort vehicles, and wide load signs must be met. Failure to comply could result in injury to personnel or damage to equipment.

22. The trailer hand brake control is only used for testing the semitrailer brakes. Using it when driving will cause the semitrailer to skid. Using the semitrailer hand brake control to park can cause all the air to leak out of the brake system.

23. Unlike conventional semitrailers, the M1000 semitrailer tracks the same turning radius as the HET and does not cut the inside-turning radius when making turns. The operator needs to make tighter turns to keep the semitrailer from hitting the outer curb.

24. The HET semitrailer combination does not track in the same way as standard or conventional tractor-trailer combinations. Operators must know and understand this prior to operating HETS on public access roads. Wide, conventional tractor-trailer turns may result in personal injury or damage to equipment.

25. When making sharp turns, the trailer may swing beyond normal turning radius. Failure to observe this warning may result in personal injury or damage to equipment.

26. In some cases when trailer is backed up, wheels on trailer will not be straight when the HET/semitrailer is stopped and then driven forward. Rear of trailer will swing wide right or left and may cause injury to bystanders.

27. 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 and 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.

28. When manually steering the semitrailer, make many starts and stops to give assistant operator time to adjust steering. The HET operator should allow even space on both sides of the HET so that assistant operator steering the semitrailer has room to make adjustments or injury to personnel and damage to equipment may result.

F. ADDITIONAL COMMENTS AND INFORMATION. Recommended testing time is 8.0 hours.

INTERMEDIATE TRAINING OBJECTIVE 1

WRITTEN TEST (PRIMARY)

NAME _____ RANK _____ DATE _____

Instructions for Test

A. This test is administered to all HETS 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 how many degrees F?

a. 200.
b. 210.
c. 220.
d. 230.

_____ 2. What position should the transmission range selector be in when starting the engine?

a. 2-5.
b. R.
c. N.
d. 1st.

_____ 3. The “low air” warning alarm will sound when the air system pressure is below how many psi?

a. 40
b. 60.
c. 80.
d. 100.

_____ 4. What switch must be in the OFF position for internal and external lights to operate?

a. Engine.
b. Black out drive.
c. Black out marker.
d. Black out lights.

_____ 5. During cold weather starting, the ether start button should not be pressed more than three times during a single starting attempt.

a. True.
b. False.

_____ 6. If the CTIS is set in the emergency mode, the maximum speed should not exceed how many MPH?

a. 20.
b. 15.
c. 10.
d. 5.

_____ 7. The CTIS controls which one of the following?

a. Axle lockup.
b. Tire inflation and deflation.
c. The governed road speed.
d. Vehicle's angle of approach and departure.

_____ 8. Refer to TM 9-2320-360-10, Table 3-1 (Troubleshooting) if engine fails to start after how many attempts?

a. 2.
b. 3.
c. 4.
d. 5.

_____ 9. The transfer case shift lever is used for which of the following?

a. Change gear ranges.
b. Engage the axle lockup.
c. Engage the PTO.
d. Improve vehicle traction on dry level ground.

_____ 10. The engine brake is a--

a. Substitute for the service brakes.
b. Vehicle stopping device.
c. Vehicle slowing device.
d. Requirement on over-the-road trucks.

_____ 11. The CTIS “low air” indicator lights up red when, which one of the following happens?

a. The tire pressure is below 15 psi.
b. The service brakes are used.
c. The parking brake is set.
d. The air pressure in the vehicle air system drops below 85 psi.

_____ 12. What is the maximum cross-country speed, in MPH, at GCW?

a. 5.
b. 20.
c. 30.
d. 45.

_____ 13. At what interval must the air reservoirs be drained on the M1070 HET?

a. After daily operation.
b. During daily operation.
c. Weekly operation.
d. Monthly operation.

_____ 14. What is the first thing an operator does when the check engine indicator lights up?

a. Shut down the engine as soon as possible.
b. Reduce speed.
c. Activate air pump.
d. Check gauges.

_____ 15. The transmission range selector has how many forward gear positions?

a. 7.
b. 6.
c. 5.
d. 4.

_____ 16. The M1000 semitrailer has how many bogies?

a. 6.
b. 8.
c. 10.
d. 12.

_____ 17. In what position must the suspension shut-off valve handle be when the M1000 semitrailer is parked/stored?

a. Adjust.
b. Shut-off.
c. Tow.
d. Run/adjust.

_____ 18. The APU is used to power which one of the following systems?

a. Brake.
b. Pneumatic.
c. Hydraulic.
d. Electrical.

_____ 19. What function does the suspension shut-off valve operate on the main hydraulic control panel?

a. Prohibits manual steering when in the off mode.
b. Prohibits movement of suspension and gooseneck when in the shut-off mode.
c. Allows normal suspension and gooseneck adjustments when in the adjust mode.
d. Both b and c.

_____ 20. The trailer brake release valve should be released prior to doing what function with the M1000 semitrailer?

a. Platform adjustments.
b. Gooseneck height adjustments.
c. Start APU.
d. None of the above.

_____ 21. The front curbside bogie valve applies hydraulic pressure to which of the following?

a. The two right front bogies.
b. The three right front bogies.
c. The two left front bogies.
d. The three left front bogies.

_____ 22. How many suspension isolation valves are located on the M1000 semitrailer?

a. 4.
b. 6.
c. 8.
d. 10.

_____ 23. Prior to adjusting the platform, approximately how many inches away should you move the four wheel chocks from the streetside and curbside number one bogies?

a. 4.
b. 5.
c. 6.
d. 7.

_____ 24. Operating with a Class I or Class II hydraulic leak is allowed as long as hydraulic fluid level is monitored.

a. True.
b. False.

_____ 25. What is the proper psi tire pressure for the M1000 semitrailer?

a. 65 $\pm$ 5.
b. 75 $\pm$ 5.
c. 85 $\pm$ 5.
d. 95 $\pm$ 5.

_____ 26. In what position should the gooseneck isolation valve be when the M1000 semitrailer coupled to a tractor?

a. Run.
b. Run/Adjust.
c. Adjust.
d. Center.

_____ 27. The M1000 semitrailer bogie consists of which of the following?

a. One axle unit and two tires.
b. Two axle units and four tires.
c. Two axle units and two tires.
d. Two axle units and four tires.

_____ 28. The steering pressure indicator light illuminates when the hydraulic pressure, for steering, drops below how many psi?

a. 68.
b. 78.
c. 88.
d. 98.

_____ 29. The gooseneck isolation valve must be in the ADJUST position in order to adjust which of the following?

a. Suspension height.
b. Platform height.
c. Gooseneck height.
d. Steering angle.

_____ 30. You must always stop and put the transmission in neutral to shift the transfer case because--

a. There is a large shift step between direct and low range that makes a large speed change.
b. The transfer case will not shift with transmission in gear, and attempting to shift could cause damage.
c. The transfer case is shifted manually and the transmission is shifted electrically.
d. Only one shift can be made at a time.

INTERMEDIATE TRAINING OBJECTIVE 1

WRITTEN TEST ANSWER SHEET (PRIMARY)

1.	D	11.	D	21.	B
2.	C	12.	C	22.	D
3.	B	13.	A	23.	C
4.	D	14.	D	24.	A
5.	A	15.	C	25.	C
6.	D	16.	C	26.	A
7.	B	17.	B	27.	B
8.	B	18.	C	28.	A
9	A	19.	D	29.	C
10.	C	20.	A	30.	B

INTERMEDIATE TRAINING OBJECTIVE 1

WRITTEN TEST (ALTERNATE)

NAME _____ RANK _____ DATE _____

Instructions for Test

A. This test is administered to all HETS 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. At what interval must the air reservoirs be drained on the M1070 HET?

a. Monthly operation.
b. Weekly operation.
c. After daily operation.
d. During daily operation.

_____ 2. What is the first thing an operator does when the check engine indicator lights up?

a. Shut down the engine as soon as possible.
b. Reduce speed.
c. Activate air pump.
d. Check gauges.

_____ 3. The transmission range selector has how many forward gear positions?

a. 7.
b. 6.
c. 5.
d. 3.

_____ 4. What is the primary purpose of the trailer hand brake control (Johnny bar)?

a. Increase air drag on the trailer.
b. Turn signal control for trailer.
c. Used to slow down the vehicle if the service brakes fail.
d. Testing the semitrailer brakes.

_____ 5. When using the CTIS, the overspeed indicator lights up when which of the following happens?

a. The vehicle is exceeding 40 MPH.
b. The vehicle's average speed for one minute exceeds the speed limit for the rotary selector switch setting.
c. The transmission is in a lower gear while negotiating rugged terrain.
d. The start switch is depressed.

_____ 6. You must always stop and put the 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 large 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 the transmission in gear, and attempting to shift could cause damage.

_____ 7. If a Class III oil leak develops from a wheel valve, turn CTIS ON/OFF switch to OFF position and complete the mission.

a. True.
b. False.

_____ 8. The engine brake is a--

a. Vehicle slowing device.
b. Substitute for the service brakes.
c. Requirement on over-the-road trucks.
d. Vehicle stopping device.

_____ 9. The green arrow on the air gauge indicates air pressure to which of the following?

a. Service brakes on rear tridem axles.
b. Service brakes on front axles.
c. Rear suspension system.
d. CTIS pressure transducer.

_____ 10. Engine coolant temperature should not exceed how many degrees F?

a. 200.
b. 210.
c. 225.
d. 230.

_____ 11. What position should the transmission range selector be in when starting the engine?

a. 2-5.
b. R.
c. N.
d. 1st.

_____ 12. What is the normal operating range, in psi, for the air pressure gauge?

a. 20 to 120.
b. 30 to 120.
c. 45 to 120.
d. 60 to 120.

_____ 13. The “low air” warning alarm will sound when the air system pressure is below how many psi?

a. 40.
b. 60.
c. 80.
d. 100.

_____ 14. Use the ether start control only if the temperature is below how many degrees F?

a. 45.
b. 35.
c. 25.
d. 15.

_____ 15. The transfer case shift lever is used for which of the following?

a. Improve the vehicle traction on dry level ground.
b. Engage the axle lockup.
c. Change gear ranges.
d. Engage the PTO switch.

_____ 16. What is the fluid capacity, in gallons, of the hydraulic reservoir?

a. 16.5.
b. 14.5.
c. 12.5.
d. 10.5.

_____ 17. Which set of bogies do not steer the M1000 semitrailer?

a. Fifth.
b. Fourth.
c. Third.
d. Second.
e. First.

_____ 18. What is the normal operating platform bed height, in inches, for the M1000 semitrailer?

a. 63.
b. 53.
c. 43.
d. 33.

_____ 1.9 What is the minimum amount of psi air pressure required to release the parking brakes on the M1000 semitrailer?

a. 25.
b. 35.
c. 45.
d. 55.

_____ 20. The system pressure gauge on the hydraulic control panel indicates hydraulic pressure for which of the following?

a. The overall system.
b. The gooseneck system.
c. The three left front bogies.
d. The three right front bogies.

_____ 21. All the lights on the M1000 semitrailer are 12 volts with the exception of which of the following lights?

a. Brake.
b. Clearance.
c. Turn signals.
d. Blackout.

_____ 22. The APU is used to power which one of the following systems?

a. Brake.
b. Pneumatic.
c. Hydraulic.
d. Electrical.

_____ 23. The maximum water fording capability of the M1000 semitrailer is how many inches?

a. 18.
b. 28.
c. 38.
d. 48.

_____ 24. If the CTIS is set in the emergency mode, the maximum speed should not exceed how many MPH?

a. 20.
b. 15.
c. 10.
d. 5.

_____ 25. When coupled with the M1000 semitrailer the fifth wheel should be in what position?

a. Partial oscillating.
b. Non-oscillating.
c. Fully oscillating.
d. None of the above.

_____ 26. What switch must be in the OFF position for internal and external lights to operate?

a. Engine.
b. Black out drive.
c. Black out marker.
d. Black out lights.

_____ 27. What should you use when performing PMCS?

a. Operator manuals and follow instructions carefully.
b. Lubrication order only.
c. Do it from memory.

_____ 28. What is the maximum cross-country speed, in MPH, at GCW?

a. 10.
b. 20.
c. 30.
d. 40.

_____ 29. During uncoupling procedures the suspension shut-off valve and gooseneck isolation valve handles are in what position?

a. Pushed all the way in.
b. Pulled all the way out.
c. One in and one out.

_____ 30. The rear platform height for loading operation must be adjusted to how many inches?

a. 24.
b. 34.
c. 44.
d. 54.

INTERMEDIATE TRAINING OBJECTIVE 1

WRITTEN TEST ANSWER SHEET (ALTERNATE)

1.	C	11.	C	21.	D
2.	D	12.	D	22.	C
3.	C	13.	B	23.	B
4.	D	14.	A	24.	D
5.	B	15.	C	25.	C
6.	D	16.	A	26.	D
7.	A	17.	E	27.	A
8.	A	18.	C	28.	C
9	B	19.	C	29.	B
10.	D	20.	A	30.	B

INTERMEDIATE TRAINING OBJECTIVE 2

PERFORMANCE TEST

COUPLE THE M1070 HET TO AN M1000 SEMITRAILER

NAME_____ **RANK**_____ **UNIT**_____

EVALUATOR_____ **DATE**_____

STEPS	**GO**	**NO-GO**
1. POSITIONS THE HET DIRECTLY IN FRONT OF THE SEMITRAILER, WITH SUFFICIENT SPACE TO PERFORM THE COUPLING.		
2. CHECKS THAT CHOCK BLOCKS ARE PROPERLY IN PLACE, IN FRONT AND BEHIND STREETSIDE AND CURBSIDE NUMBER 1 BOGIES.		
3. ENSURES GREASE IS APPLIED TO CONTACT AREAS OF PICKUP PLATE, KINGPIN, STEERING WEDGE, VEE ENTRY RAMPS, AND FIFTH WHEEL.		
4. CHECKS FIFTH WHEEL IS IN FULL OSCILLATING MODE (LOCKOUTS DISENGAGED).		
5. CHECKS SECONDARY LOCK RELEASE HANDLE IS HOOKED IN THE OUT POSITION.		
6. CHECKS PRIMARY LOCK RELEASE HANDLE IS HOOKED IN THE OUT POSITION.		
7. PUSHES FIFTH WHEEL DOWN UNTIL IT RESTS ON STOP AND IS BELOW GUIDE RAMPS.		
8. STARTS AND RUNS APU.		
9. ENSURES FRONT AND REAR SUPPORT LEGS ARE LOWERED AND SUPPORTING THE PLATFORM.		
10. ENSURES GOOSENECK ISOLATION VALVE AND SUSPENSION SHUT-OFF VALVE HANDLES ARE PULLED OUT TO THE ADJUST POSITION.		
11. ENSURES SEMITRAILER KINGPIN IS THE SAME HEIGHT AS THE HET FIFTH WHEEL.		
12. LOOSENS STEERING WEDGE ADJUSTING NUT THE APPROPRIATE AMOUNT OF TURNS.		

STEPS	GO	NO-GO
13. CHECKS STEERING WEDGE ALIGNMENT WITH FIFTH WHEEL VEE ENTRY.		
14. BACKS HET APPROXIMATELY TWO INCHES FROM GOOSENECK PICKUP PLATE AND STOPS.		
15. LOWERS THE GOOSENECK APPROXIMATELY ONE TO TWO INCHES LOWER THAN THE HET FIFTH WHEEL.		
16. SPOTTER MAKES FINAL ADJUSTMENTS TO STEERING WEDGE ALIGNMENT WITH HET FIFTH WHEEL VEE ENTRY BY OPERATING STEERING VALVE.		
17. BACKS SLOWLY UNTIL KINGPIN HAS LOCKED INTO HET FIFTH WHEEL COUPLING JAWS. SPOTTER CONFIRMS THAT KINGPIN IS SEATED AND BOTH FIFTH WHEEL LOCKS ARE PROPERLY ENGAGED.		
18. TESTS THE COUPLING BY NUDGING THE HET FORWARD SLIGHTLY TO ENSURE KINGPIN IS LOCKED.		
19. STOPS HET, SHIFTS TRANSMISSION RANGE SELECTOR TO NEUTRAL, AND APPLIES VEHICLE PARKING BRAKES.		
20. CHOCKS HET FRONT WHEEL IN FRONT AND BEHIND TIRE ON DRIVER'S SIDE.		
21. VISUALLY CHECKS THAT SECONDARY AND PRIMARY RELEASE HANDLES ARE IN LOCKED POSITION.		
22. VISUALLY CHECKS COUPLING JAWS ARE LOCKED AROUND KINGPIN.		
23. VISUALLY CHECKS TO ENSURE KINGPIN DID NOT RIDE OVER TOP OF HET FIFTH WHEEL.		
24. REMOVES EMERGENCY AND SERVICE DUMMY COUPLINGS FROM SEMITRAILER.		
25. CONNECTS THE SERVICE AIR GLADHAND TO THE SERVICE AIR COUPLING AND THE EMERGENCY AIR GLADHAND TO EMERGENCY AIR COUPLING.		
26. CONNECTS INTERVEHICULAR CABLE TO THE HET AND SEMITRAILER.		
27. TIGHTENS AND SECURES STEERING WEDGE ADJUSTING NUT INTO HET FIFTH WHEEL.		
28. ENTERS CAB, PUSHES TRAILER AIR SUPPLY VALVE KNOB IN TO CHARGE THE SEMITRAILER BRAKES.		

STEPS	GO	NO-GO
29. ALLOWS AMPLE TIME FOR AIR TANKS TO CHARGE. CHECKS AIR PRESSURE GAUGE, GAUGE SHOULD READ APPROXIMATELY 100 TO 120 PSI.		
30. APPLIES BRAKES TO ENSURE THAT BRAKES ARE OPERATING CORRECTLY. PULLS OUT ON HET PARKING BRAKE CONTROL (TO APPLY HET AND SEMITRAILER PARKING BRAKES).		
31. RAISES AND SECURES BOTH FRONT AND REAR SUPPORT LEGS.		
32. PUSHES GOOSENECK ISOLATION VALVE HANDLE IN TO THE RUN POSITION.		
33. MAKES MINOR PLATFORM HEIGHT ADJUSTMENTS.		
34. PUSHES SUSPENSION SHUT-OFF VALVE HANDLE IN TO THE SHUT-OFF POSITION.		
35. REMOVES AND STOWS HET AND SEMITRAILER CHOCK BLOCKS.		
36. PUSHES IN ON PARKING BRAKE CONTROL AND TRAILER AIR SUPPLY CONTROL (TO RELEASE HET PARKING BRAKES AND SEMITRAILER BRAKES).		
37. ATTEMPTS TO NUDGE FORWARD WITH SEMITRAILER BRAKES SET (JOHNNY BAR) TO ENSURE STEERING WEDGE IS SET INTO HET FIFTH WHEEL AND ADJUSTING NUT IS SECURE.		
38. DRIVES HET AND SEMITRAILER FORWARD APPROXIMATELY 60 FEET TO CHECK SEMITRAILER TRACKING. ADJUSTS THE TRACKING, IF NECESSARY, USING THE MANUAL STEERING VALVE.		
39. CLOSES HYDRAULIC CONTROL PANEL.		
40. SHUT DOWNS APU AND CLOSES CONTROL PANEL.		
41. PERFORMS PMCS ON HET AND SEMITRAILER.		

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. 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 HETS. 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 HETS. 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 operate the HETS.

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 that are to be tested on the HETS. 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, remains 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 front most part of the vehicle is within 2 feet of the forward stop line.

(2) Straight line backing (Figure 6-3). Back the vehicle through a straight alley and then stop the vehicle so that the front most part of the vehicle is within 2 feet of the stop line.

(3) Right turn (Figure 6-2). Drive the vehicle forward about 30 to 50 feet, then turn the vehicle right around a cone or other point. Bring the rear tires of the vehicle (tractor or trailer) within 18 inches from the cone without touching it.

c. On-the-road driving test with the following maneuvers:

(1) Eight left turns 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 HET 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 HET 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 that 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, pages 7-34 and 7-35, is a sample (front and back) of a completed DA Form 6125-R. A 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?

(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 three exercises (forward stop, straight-line backing, and right turn). Use a diagram of the site to show the driver what to do, and explain that 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.

ROAD TEST SCORE SHEET
For use of this form, see AR 600-55; the proponent agency is OCSA

DATE: 14 DEC 96

NAME OF DRIVER	NAME OF EXAMINER
DIANE BRAND	DANE STALLINGS

SSAN	SCORE	ROUTE
000-00-0000	-10	PRIMARY

STOP/START ON GRADE

Approach

	Up	Down
Traffic check	O	O
Signal On	O	O
Moves to proper lane	O	O
Smooth deceleration	O	O
Does not coast to stop	O	O

Stop

Vehicle parallel to curb	O	O
Vehicle does not roll	O	O
Signal off/4-ways on	O	O
Parking brake on	O	O

Resume

Traffic check	O	O
4-ways off/signal on	O	O
Release parking brake	O	O
Did not stall engine	O	O
Traffic check	O	O
Accelerate to traffic fow	O	O
SEARCH	O	O
DIRECTION	O	O
SPEED	O	O
No errors	X	X

EXPRESSWAY

Merge On

Traffic check	O
Signal On	O
Maintains spacing	X
Avoids stopping	O
Smooth merge	O
Cancel signal	O

Lane Changes

	Left	Right
Traffic check	O	O
Signal on	O	O
Adequate spacing	O	O
Smooth lane change	O	X
Cancel signal	O	O

Exit

Traffic check	O
Signal on	O
Smooth merge to exit lane	O
Decelerate in exit lane	O
Adequate spacing	O
Correct ramp speed	X
Cancel signal	O
SEARCH	O
DIRECTION	O
SPEED	O
No errors	O

DRIVING UP GRADE

In proper gear	X
Stays in right lane	O
Uses 4-ways if slow	O
Traffic check	O
SEARCH	O
DIRECTION	O
SPEED	O
No errors	O

DRIVING DOWN GRADE

Clear brakes	O
In proper gear	O
Steady braking on grade	O
Does not ride clutch	O
Maintain steady speed	O
Traffic check	O
SEARCH	O
DIRECTION	O
SPEED	O
No errors	O

GENERAL DRIVING BEHAVIOR

Use clutch properly *(to shift, double clutched, didn't ride)*	O
Used gears properly *(not over-rev/lug engine, clash gears, coast)*	O
Used brakes properly *(no hard braking, no riding or pumping brake)*	O
Proper steering *(both hands on wheel, not over/under steer)*	O
Obeyed all traffic signs and signals	O
Drove without an accident	O
Never put vehicle over sidewalks, lane markings, stop lines, etc.	O
Examiner was never thrown to left, right, or forward	O
Driver was never forced to take evasive action	O
Wore seat belt	O
Yielded right of way to pedestrians	O
Yielded right of way to other vehicles, as appropriate	O
No errors	O

NOTES
Before-operation PMCS satisfactory.
Vehicle control test satisfactory.

SAMPLE

DA FORM 6125-R, AUG 93 EDITION OF MAR 65 IS OBSOLETE. USAPPC V1.00

Figure 7-1. Road test score sheet (front).

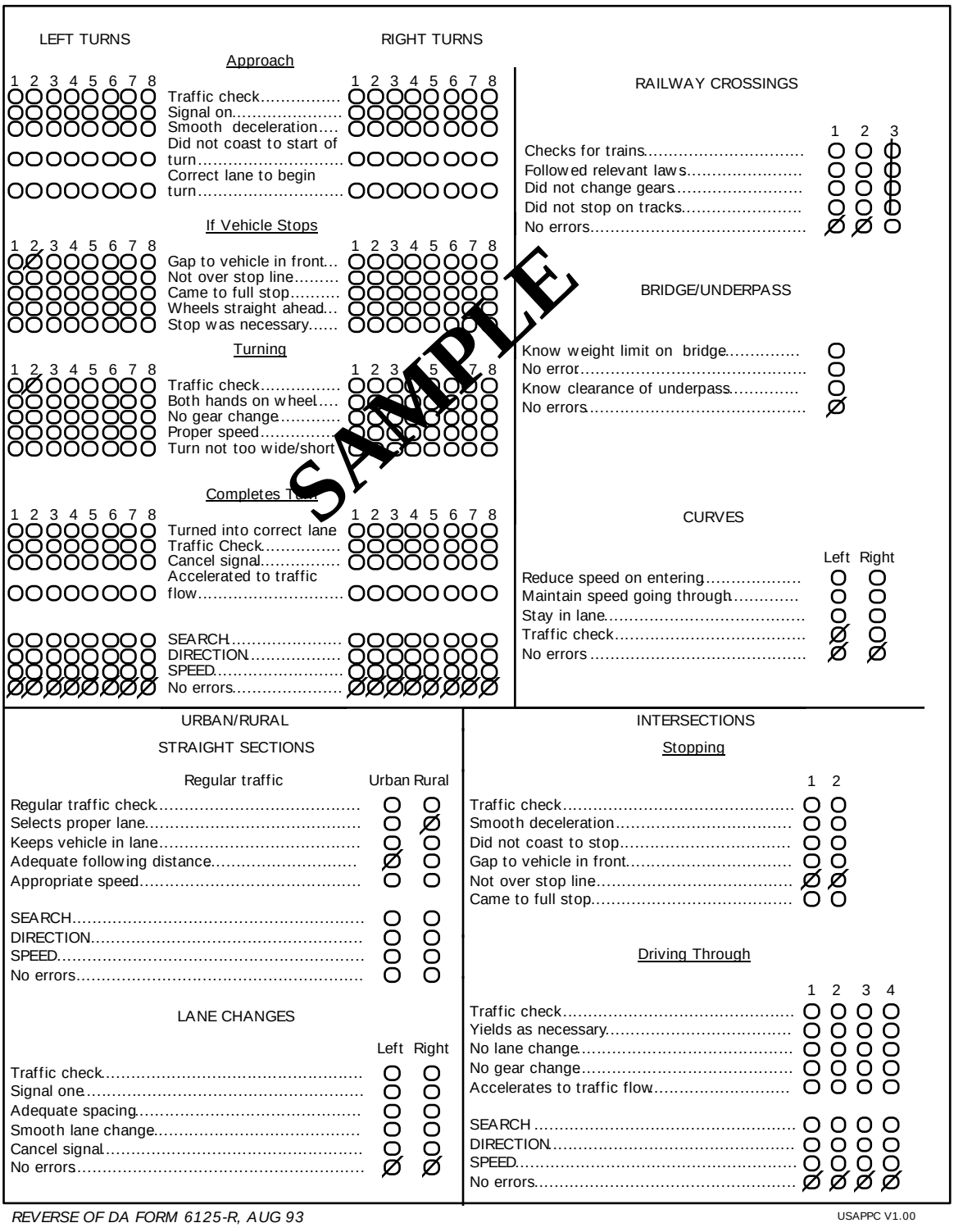


Figure 7-1. Road test score sheet (back).

(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. 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 did 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 HETS.

(5) ***Turns.*** There are eight columns of O's on the left of the box; eight columns of O's on the right (see 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 HET tractor when towing the HET trailer, because it can affect other traffic. If there is more than one left turn lane, the driver should start his turn from the right most 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.

(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 or 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. 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. No matter if a driver has passed or failed the results must be recorded on the DA Form 6125-R.

INTERMEDIATE TRAINING OBJECTIVE 4

PERFORMANCE TEST

OFF-ROAD DRIVING

NAME_____ **RANK**_____ **UNIT**_____

EVALUATOR_____ **DATE**_____

STEPS	**GO**	**NO-GO**
1. PLACES THE CTIS ON/OFF SWITCH TO THE ON POSITION.		
2. PRESETS THE CTIS SELECTOR SWITCH TO THE CROSS COUNTRY POSITION FOR OFF-ROAD DRIVING.		
3. PRESSES AND HOLDS THE CTIS START BUTTON TO ACTIVATE THE CTIS.		
4. ANTICIPATES TERRAIN AND BEFORE NEGOTIATING, TAKES POSITIVE ACTION TO MATCH CTIS, DRIVELINE LOCKUP, ENGINE BRAKE SELECTION, AND GEAR SELECTION TO TERRAIN FEATURES.		
5. ALLOWS CTIS AMPLE TIME TO ADJUST BEFORE ENCOUNTERING ADVERSE TERRAIN.		
6. DOES NOT EXCEED SPEED LIMIT OF CHOSEN CTIS SETTING.		
7. CHECKS CTIS FOR PROPER OPERATION AND SETTING.		
8. CHECKS OPERATION OF TWO-SPEED TRANSFER CASE SHIFTER.		
9. DOES NOT SHIFT INTO ANY LOWER GEAR THAN IS NECESSARY TO MAINTAIN HEADWAY.		
10. DOES NOT SHIFT THE TRANSMISSION INTO FIRST GEAR OR THE TRANSFER CASE WHILE THE TRUCK IS MOVING.		
11. CHECKS FOR OBSTRUCTIONS/CLEARANCES AND CHOOSES BEST ROUTE OF TRAVEL TO AVOID OBSTACLES.		
12. MAINTAINS CONTROL OF VEHICLE.		
13. ATTEMPTS TO KEEP THE VEHICLE'S WHEELS FROM SPINNING. IF THE WHEELS START TO SPIN STOPS THE TRACTOR AND CHANGES THE CTIS SETTING/DRIVELINE LOCKUP.		

STEPS	GO	NO-GO
14. DRIVES SLOWLY ENOUGH TO PREVENT TRACTOR/TRAILER DAMAGE, LOOSE OR SHIFTING CARGO, AND INJURY TO VEHICLE OCCUPANTS.		
15. MANUALLY DOWNSHIFTS/UPSHIFTS TRANSMISSION PROPERLY WHEN NECESSARY, SUCH AS ON GRADES.		
16. CHECKS OPERATION OF JACOBS ENGINE BRAKE SYSTEM ON GRADES.		
17. OPERATES TRANSFER CASE LOCKUP PROPERLY.		
18. ASCENDS/DESCENDS HILLS IN A STRAIGHT APPROACH.		
19. MANEUVERS AROUND OBSTACLES.		
20. DOES NOT EXCEED FORDING DEPTH/SPEED.		

INTERMEDIATE TRAINING OBJECTIVE 5

PERFORMANCE TEST

LOAD A DISABLED M-1 TANK ONTO AN M1000 SEMITRAILER

NAME_____ **RANK**_____ **UNIT**_____

EVALUATOR_____ **DATE**_____

STEPS	**GO**	**NO-GO**
1. PREPARATION OF M1070 HET BY THE OPERATOR:		
A. ENSURES CTIS ROTARY SWITCH IS AT THE APPROPRIATE SETTING.		
B. ALIGNS M1070 HET AND M1000 SEMITRAILER AS CLOSE AS POSSIBLE TO THE DISABLED M-1 TANK (APPROXIMATELY 15 FEET) ON AS LEVEL GROUND AS POSSIBLE.		
C. ASSISTANT OPERATOR VISUALLY CHECKS THE HET AND SEMITRAILER OFFSET ANGLE. ADJUSTS ANGLE AS NECESSARY.		
D. MOVES TRANSMISSION RANGE SELECTOR TO “N” NEUTRAL POSITION.		
E. APPLIES HET PARKING BRAKES.		
F. TURNS PTO SWITCH ON.		
G. TURNS BEACON LIGHT SWITCH ON.		
H. CHOCKS M1070 FRONT (1ST) AXLE IN FRONT AND BEHIND EACH TIRE.		
2. PREPARATION OF M1000 SEMITRAILER BY OPERATOR AND CREW MEMBERS:		
A. REMOVES MANILA ROPE FROM SEMITRAILER STOWAGE COMPARTMENT.		
B. UNWINDS MANILA ROPE AND POSITIONS ON SEMITRAILER.		
C. POSITIONS FRONT STREETSIDE PAYLOAD CHOCK APPROXIMATELY 10 INCHES FROM FORWARD EDGE OF PLATFORM.		

STEPS	GO	NO-GO
D. POSITIONS FRONT CURBSIDE PAYLOAD CHOCK APPROXIMATELY 14 INCHES FROM FORWARD EDGE OF PLATFORM.		
E. ALIGNS STREETSIDE AND CURBSIDE FRONT PAYLOAD CHOCK WITH FOURTH HOLE ON OUTBOARD PAYLOAD CHOCK MOUNTING BRACKETS ON PLATFORM.		
F. SECURES BOTH PAYLOAD CHOCKS WITH CAPSCREWS, WASHERS, AND NUTS.		
G. ALIGNS CURBSIDE REAR PAYLOAD CHOCK ON STREETSIDE FRONT EDGE ABOVE BOGIE #1.		
H. POSITIONS STREETSIDE PAYLOAD CHOCK NEXT TO BOGIE #4 REAR OF SEMITRAILER.		
I. REMOVES FRONT AND REAR CURB GUIDES STOWAGE BRACKETS FROM PLATFORM AREA.		
J. REMOVES ALL 12 CURB GUIDES FROM PLATFORM RECESSED STOWAGE AREA.		
K. ALIGNS AND INSTALLS 10 CURB GUIDES INTO SECOND HOLE INBOARD FROM PLATFORM EDGE WITH PIN FACING OUTWARD. SETS REMAINING TWO CURB GUIDES ASIDE.		
L. INVENTORIES AND REMOVES ALL TIEDOWN CHAINS, LOAD BINDERS, AND SHACKLES FROM SEMITRAILER STOWAGE COMPARTMENT.		
M. POSITIONS TWO FRONT TIEDOWN CHAINS THROUGH TWO FRONT TIEDOWN RINGS RECESSED IN PLATFORM.		
N. EXTENDS FOUR LOAD BINDERS TO SHOW 6 1/2 INCHES OF THREAD ON BOTH ENDS. POSITIONS TWO LARGE SHACKLES AND LOAD BINDERS NEAR REAR PAYLOAD TIEDOWN RINGS.		
O. USING TWO SHACKLES, SECURES EACH SET OF LOAD BINDERS WITH SMALL PEAR END FACING TOWARD LOAD BINDER TO EACH REAR PAYLOAD TIEDOWN RING.		
P. ADJUSTS EACH SET OF LOAD BINDERS BY PLACING ONE LOAD BINDER PARALLEL WITH EDGE OF PLATFORM AND ONE ANGLED TOWARD CENTER OF PLATFORM. POSITIONS HANDLES INBOARD.		
Q. LAYS OUT STREETSIDE PARALLEL TIEDOWN CHAIN(S).		

STEPS	GO	NO-GO
R. LAYS OUT CURBSIDE PARALLEL TIEDOWN CHAIN(S).		
S. LAYS OUT CURBSIDE ANGLED REAR PAYLOAD TIEDOWN CHAIN(S).		
T. LAYS OUT STREETSIDE ANGLED REAR PAYLOAD TIEDOWN CHAIN(S).		
U. LOWERS WARNING LIGHT ON STREETSIDE OF PLATFORM.		
3. ADJUST LOADING RAMPS:		
A. OPENS LOAD BINDER ON STREETSIDE AND REMOVES RAMP STOW CHAIN HOOK FROM SLOTTED HOLE IN PLATFORM.		
B. CONNECTS RAMP STOW CHAIN HOOK TO FORWARD (LARGE) MOUNTING HOLE ON ISO CONTAINER BRACKET AND CLOSES LOAD BINDER.		
C. REMOVES HITCH PIN AND CROWBAR FROM REAR OF PLATFORM BELOW LOADING RAMPS. REINSTALLS HITCH PIN TO SECURE ISOLATION VALVE HANDLE.		
D. OPERATOR INSERTS SMALL END OF CROWBAR THROUGH HOLE IN STREETSIDE RAMP LIFT LEVER AND INTO BAR STRIP.		
E. ASSISTANT OPERATOR STANDS ON BEAVERTAIL SECTION, PUSHES RAMP REARWARD AGAINST RAMP STOW CHAIN UNTIL RAMP IS PERPENDICULAR TO PLATFORM.		
F. OPERATOR PUSHES OR PULLS ON CROWBAR IN DIRECTION REQUIRED TO SLIDE RAMP OUTBOARD FROM CENTER.		
G. CONTINUES TO PLACE CROWBAR INTO BAR STRIP HOLES UNTIL RAMP IS AT FURTHEST OUTBOARD POSITION.		
H. REPEAT ABOVE STEPS TO ADJUST CURBSIDE LOADING RAMP.		
4. LOWER RAMPS:		
A. OPENS LOAD BINDER ON STREETSIDE AND REMOVES RAMP STOW CHAIN HOOK FROM PLATFORM AND ATTACHES HOOK INTO RAMP LEVER. CLOSES LOAD BINDER.		

STEPS	GO	NO-GO
B. STANDING BETWEEN BOTH RAMPS, GRASPS LOWER HANDLE ON STREETSIDE LOADING RAMP AND PULLS DOWNWARD. AS RAMP SWINGS DOWNWARD, TRANSITIONS TO UPPER HANDLE AND APPLIES PRESSURE UNTIL RAMP IS BELOW HORIZONTAL POSITION AND THEN PULLS DOWN UNTIL RAMP IS ON THE GROUND.		
C. REPEAT ABOVE STEPS TO LOWER THE CURBSIDE LOADING RAMP.		
5. OPERATOR AND CREW MEMBERS ADJUST PLATFORM HEIGHT:		
A. OPERATOR STARTS AND RUNS APU.		
B. OPENS HYDRAULIC CONTROL PANEL AND PULLS SUSPENSION SHUT-OFF VALVE HANDLE OUTWARD TO ADJUST POSITION.		
C. RELEASES SEMITRAILER PARK BRAKES.		
D. OPERATOR AND CREW MEMBERS ADJUST PLATFORM HEIGHT TO PRELOADING POSITION, LOWERS REAR SUPPORT LEGS AND LOADING RAMPS.		
E. APPLIES SEMITRAILER PARKING BRAKES.		
F. ALIGNS AND INSTALLS TWO CURB GUIDES ON REAR OF PLATFORM.		
6. START WINCHING OPERATIONS:		
A. RAISES AND SECURES WINCH GUARD.		
B. RELEASES AUXILIARY WINCH KICKOUT LEVER COUNTERCLOCKWISE.		
C. REMOVES TWO LARGE SHACKLES FROM REAR PAYLOAD TIEDOWN RINGS.		
D. CREW MEMBERS UNHOOK AUXILIARY WINCH CABLE FROM STOWAGE POINT, PULLS CABLE REARWARD TO FRONT OF DISABLED M-1 TANK.		
E. ATTACHES AND SECURES TWO LARGE SHACKLES TO BOTH UPPER RECOVERY EYES ON DISABLED M-1 TANK.		
F. ATTACHES AUXILIARY SNATCH BLOCK TO UPPER LEFT RECOVERY EYE ON DISABLED M-1 TANK.		

STEPS	GO	NO-GO
G. CREW MEMBER OPENS AUXILIARY SNATCH BLOCK AND PASSES AUXILIARY WINCH CABLE THROUGH SNATCH BLOCK AND CLOSES AUXILIARY SNATCH BLOCK. TIGHTENS RETAINING BOLT TO SECURE SIDE HOUSING IN THE CLOSED POSITION.		
H. PULLS AUXILIARY WINCH CABLE FORWARD ALONG CURBSIDE OF GOOSENECK TO PASSENGER SIDE WINCH CABLE.		
I. OPERATOR PAYS OUT PASSENGER SIDE WINCH CABLE, CREW MEMBERS PULL CABLE OUT AND ATTACHES PASSENGER SIDE WINCH CABLE CLEVIS TO AUXILIARY WINCH CABLE CLEVIS.		
J. OPERATOR PAYS IN AUXILIARY WINCH CABLE AND PAYS OUT PASSENGER SIDE WINCH CABLE TO PULL PASSENGER SIDE WINCH CABLE REARWARD TO AUXILIARY SNATCH BLOCK.		
K. CREW MEMBER CONTINUES TO PULL PASSENGER SIDE CABLE OUT UNTIL WINCH CABLE TOUCHES THE GROUND.		
L. DISCONNECTS PASSENGER SIDE WINCH CABLE FROM AUXILIARY WINCH CABLE AND LAYS CABLE ON GROUND IN FRONT OF DISABLED M-1 TANK.		
M. CREW MEMBERS PULL AUXILIARY WINCH CABLE FORWARD OVER PLATFORM UNTIL CABLE REACHES FRONT OF PLATFORM AND TOWARD DRIVERS SIDE WINCH CABLE AND STOPS.		
N. OPERATOR PAYS OUT DRIVERS SIDE WINCH CABLE AND DISCONNECTS FROM STORAGE POINT.		
O. CREW MEMBERS ATTACH AUXILIARY WINCH CABLE TO DRIVERS SIDE WINCH CABLE.		
P. OPERATOR PAYS IN AUXILIARY WINCH CABLE TO PULL DRIVERS SIDE WINCH CABLE BACK TO AUXILIARY SNATCH BLOCK.		
Q. CREW MEMBER ROUTES DRIVERS SIDE WINCH CABLE THROUGH GOOSENECK CABLE GUIDE.		
R. OPERATOR CONTINUES TO PAY IN AUXILIARY WINCH CABLE TO PULL DRIVERS SIDE WINCH CABLE REARWARD TO AUXILIARY SNATCH BLOCK AND STOPS APPROXIMATELY 12 INCHES FROM SNATCH BLOCK.		

STEPS	GO	NO-GO
S. CREW MEMBER PULLS ADDITIONAL CABLE OUT UNTIL DRIVERS SIDE WINCH CABLE TOUCHES THE GROUND AND STOPS.		
T. CREW MEMBERS DISCONNECT DRIVERS SIDE WINCH CABLE FROM AUXILIARY WINCH CABLE, LAYS CABLE ON THE GROUND, AND INSTALLS SHOULDERED PINS AND COTTER PINS TO BOTH CLEVISES.		
7. STOW SNATCH BLOCK AND AUXILIARY WINCH CABLE:		
A. UNSCREW RETAINING BOLT AND ROTATES SIDE HOUSING ON AUXILIARY SNATCH BLOCK TO OPEN SNATCH BLOCK.		
B. REMOVES AUXILIARY WINCH CABLE FROM THE AUXILIARY SNATCH BLOCK AND ROTATES SIDE HOUSING TO CLOSE. TIGHTENS RETAINING BOLT TO SECURE SIDE HOUSING IN CLOSED POSITION.		
C. REMOVES AUXILIARY SNATCH BLOCK FROM SHACKLE AND PLACES BACK INTO STORAGE ON HET.		
D. OPERATOR PUSHES DOWNWARD ON AUXILIARY WINCH CABLE WHILE A CREWMEMBER MAINTAINS TENSION ON THE AUXILIARY WINCH CABLE AND RESTOWS ON STOW HOOK.		
8. CONTINUE WINCHING OPERATIONS:		
A. CREW MEMBERS ATTACH AND SECURE BOTH DRIVERS SIDE AND PASSENGER SIDE WINCH CABLES TO DISABLED M-1 TANK UPPER RECOVERY EYES.		
B. OPERATOR DIRECTS CREW MEMBERS TO STAND ON EACH SIDE OF THE PAYLOAD TO PROVIDE DIRECTIONAL CONTROL (CURBSIDE AND STREETSIDE).		
C. OPERATOR CLEARS THE AREA OF ALL NONESSENTIAL PERSONNEL.		
D. OPERATOR PAYS IN DRIVERS SIDE AND PASSENGER SIDE WINCH CABLES TO REMOVE ALL SLACK IN CABLES.		
E. CONTINUES TO WINCH DISABLED M-1 TANK UP THE RAMPS AND ON THE SEMITRAILER UNTIL STREETSIDE TRACK MAKES CONTACT WITH CURBSIDE FRONT PAYLOAD CHOCK.		
F. OPERATOR STOPS WINCHING OPERATION.		

STEPS	GO	NO-GO
G. CREW MEMBER CHOCKS REAR STREETSIDE OF DISABLED M-1 TANK WITH PAYLOAD CHOCK.		
9. ADJUST PLATFORM HEIGHT:		
A. STARTS AND RUNS APU AT FULL THROTTLE.		
B. RELEASES SEMITRAILER PARKING BRAKES.		
C. OPERATOR AND CREW MEMBERS ADJUST PLATFORM TO NORMAL RUNNING HEIGHT.		
D. APPLIES SEMITRAILER PARKING BRAKES.		
10. SECURE DISABLED TANK TO PLATFORM:		
A. ATTACHES AND SECURES TWO FRONT TIEDOWN CHAINS TO FRONT OF DISABLED M-1 TANK.		
B. CREW MEMBER REMOVES TWO SHACKLES FROM SEMITRAILER STOWAGE COMPARTMENT AND ATTACHES SHACKLES TO LOWER TOWING LUGS ON FRONT OF DISABLED M-1 TANK.		
C. CREW MEMBER REMOVES CURBSIDE REAR PAYLOAD CHOCK FROM FRONT STREETSIDE OF PLATFORM.		
D. OPERATOR CONTINUES TO PAY IN DRIVERS SIDE AND PASSENGER SIDE WINCH CABLES UNTIL CREW MEMBERS SIGNAL THAT BOTH FRONT TIEDOWN CHAINS ARE TIGHT AND FRONT ROAD WHEELS ARE FIRMLY ON TOP OF FRONT PAYLOAD CHOCKS.		
E. CREW MEMBERS CHOCK REAR OF DISABLED M-1 TANK WITH TWO REAR PAYLOAD CHOCKS FIRMLY UNDER TRACKS.		
F. OPERATOR PAYS OUT BOTH DRIVERS SIDE AND PASSENGER SIDE WINCH CABLES UNTIL CABLES TOUCH TOP OF HET TIRES.		
G. CREW MEMBERS CHECK BOTH DRIVERS SIDE AND PASSENGER SIDE WINCH CABLES FOR TWIST.		
H. CREW MEMBERS SLOWLY AND CAREFULLY REMOVE COTTER PINS AND SHOULDERED PINS FROM CLEVISES FROM DRIVERS SIDE AND PASSENGER SIDE WINCH CABLES.		
I. REMOVES TWO LARGE SHACKLES FROM BOTH UPPER RECOVERY EYES ON DISABLED M-1 TANK.		

STEPS	GO	NO-GO
J. INSTALLS TWO LARGE SHACKLES AND FOUR LOAD BINDERS ON REAR PAYLOAD TIEDOWN RINGS.		
K. REMOVES TWO SHACKLES FROM SEMITRAILER STOWAGE COMPARTMENT.		
L. ATTACHES STREETSIDE PARALLEL CHAIN AND CURBSIDE REAR ANGLED TIEDOWN CHAIN TO STREETSIDE TOWING LUG USING SHACKLE.		
M. ATTACHES CURBSIDE PARALLEL TIEDOWN CHAIN AND STREETSIDE REAR ANGLED TIEDOWN CHAIN TO CURBSIDE REAR TOWING LUG USING SHACKLE.		
N. ATTACHES BOTH PARALLEL CHAINS TO EACH PARALLEL LOAD BINDERS.		
O. TIGHTENS EACH LOAD BINDER AS TIGHT AS POSSIBLE.		
P. ATTACHES BOTH CURBSIDE AND STREETSIDE REAR ANGLED TIEDOWN CHAINS TO ANGLED LOAD BINDERS AS FOLLOWS:		
(1) ATTACHES FREE END OF CURBSIDE REAR ANGLED TIEDOWN CHAIN TO CURBSIDE REAR ANGLED LOAD BINDER.		
(2) PASSES FREE END OF STREETSIDE REAR ANGLED TIEDOWN CHAIN OVER TOP OF CURBSIDE REAR ANGLED TIEDOWN CHAIN AND ATTACHES TO STREETSIDE REAR ANGLED LOAD BINDER.		
(3) TIGHTENS EACH LOAD BINDER AS TIGHT AS POSSIBLE AND ENSURES DISABLED M-1 TANK IS SECURELY AGAINST REAR PAYLOAD CHOCKS.		
(4) PASSES TWO UTILITY CHAINS THROUGH TWO TIEDOWN RINGS IN FRONT OF EACH PAYLOAD CHOCK AND CONNECTS CHAINS TO THEMSELVES.		
(5) PASSES FREE END OF BOTH CHAINS THROUGH HANDLES OF TWO REAR PAYLOAD CHOCKS LAY ENDS IN CENTER OF PLATFORM.		
(6) CHECKS THAT SMALL LOAD BINDER IS ATTACHED TO TWO UTILITY CHAINS AND CLOSES LOAD BINDER.		
11. OPERATOR AND CREW MEMBERS PREPARE HETS FOR TRANSPORT:		

STEPS	GO	NO-GO
A. CHECKS THAT SHOULDERED PINS AND COTTER PINS ARE INSTALLED TO EACH CLEVIS ON BOTH WINCH CABLES.		
B. REMOVES BOTH WINCH CABLES FROM GOOSENECK CABLE GUIDES.		
C. OPERATOR PAYS IN DRIVERS SIDE WINCH CABLE WHILE CREW MEMBERS KEEP TENSION ON WINCH CABLE.		
D. OPERATOR PAYS IN PASSENGER SIDE WINCH CABLE WHILE CREW MEMBERS KEEP TENSION ON WINCH CABLE.		
E. CREW MEMBERS ENSURE CABLES ARE WRAPPED EVENLY ON DRUMS WITHOUT TANGLES, KINKS, OR TWIST. CABLE COILS SHOULD BE TIGHT AND CLOSE TOGETHER.		
F. CREW MEMBERS ATTACH CABLE CLEVIS TO HET STOWAGE POINT AND SIGNALS OPERATOR TO TAKE UP SLACK AND WATCH TO PREVENT CABLES FROM WINDING OVER THE DRUM FLANGES.		
G. OPERATOR DISENGAGES ENGINE SPEED CONTROL SWITCH TO LOW IDLE.		
H. OPERATOR LOWERS WINCH GUARD AND LOCKS IN PLACE.		
I. REMOVES AND SECURES SIX CURB GUIDES IN PLATFORM RECESS AREA.		
J. RAISE AND ADJUST RAMPS SPAN WIDTH TO FURTHEST INBOARD POSITION AND STOW LOADING RAMPS FOR TRANSPORT:		
(1) GRASPS UPPER HANDLE ON RAMP AND PULL UPWARD. RELEASES UPPER HANDLE AS RAMP PASSES HORIZONTAL POSITION. GRASPS LOWER HANDLE AND APPLIES PRESSURE UNTIL RAMP IS FIRMLY AGAINST BEAVERTAIL.		
(2) OPENS LOAD BINDER AND UNHOOKS RAMP CHAIN HOOK AT RAMP LIFTING LEVER.		
(3) CONNECTS RAMP CHAIN HOOK TO FRONTMOST (LARGE) MOUNTING HOLE ON ISO CONTAINER MOUNTING BRACKET. CLOSES LOAD BINDER.		
(4) OPERATOR INSERTS SMALL END OF CROWBAR THROUGH HOLE IN STREETSIDE RAMP LIFT LEVER AND INTO BAR STRIP.		

STEPS	GO	NO-GO
(5) POSITIONS ASSISTANT OPERATOR ON BEAVERTAIL SECTION OF PLATFORM TO PUSH STREETSIDE LOADING RAMP REARWARD UNTIL RAMP IS PERPENDICULAR TO PLATFORM. OPERATOR MUST PUSH OR PULL ON CROWBAR IN DIRECTION REQUIRED TO SLIDE RAMP INBOARD.		
(6) CONTINUES TO PLACE CROWBAR INTO HOLES ALONG BAR STRIP AND MOVES RAMP TO FURTHEST INBOARD POSITION.		
(7) REPEAT ABOVE STEPS TO ADJUST CURBSIDE LOADING RAMP.		
(8) OPENS LOAD BINDERS, REMOVES RAMP CHAIN HOOKS FROM ISO CONTAINER BRACKET HOLES, AND CONNECTS HOOKS IN CENTER OF PLATFORM. CLOSES LOAD BINDERS.		
(9) REMOVES HITCH PIN AND REINSTALLS CROWBAR BELOW LOADING RAMPS, THEN REINSTALLS HITCH PIN.		
K. RAISES BEACON WARNING LIGHT.		
L. OPERATOR PUSHES SUSPENSION SHUT-OFF VALVE HANDLE INWARD TO THE SHUT-OFF POSITION.		
M. SHUTS DOWN APU, THEN CLOSES AND SECURES CONTROL PANEL.		
N. RAISES AND SECURES BOTH REAR SUPPORT LEGS.		
O. CHECKS THAT ALL BII IS STOWED IN SEMITRAILER STOWAGE COMPARTMENT.		
P. REMOVES AND STOWS ALL CHOCK BLOCKS.		
Q. TURNS PTO SWITCH OFF.		
R. MOVES TRANSMISSION RANGE SELECTOR TO THE APPROPRIATE RANGE.		
S. RELEASES HET PARKING BRAKES.		

INTERMEDIATE TRAINING OBJECTIVE 6

PERFORMANCE TEST

UNLOAD A DISABLED M-1 TANK FROM AN M1000 SEMITRAILER

NAME_____ **RANK**_____ **UNIT**_____

EVALUATOR_____ **DATE**_____

STEPS	**GO**	**NO-GO**
1. PREPARATION OF HET BY THE OPERATOR:		
A. CHECKS ALIGNMENT OF THE HET AND SEMITRAILER FOR A STRAIGHT PULL OFF.		
B. ASSISTANT OPERATOR VISUALLY CHECKS THE HET AND SEMITRAILER OFFSET ANGLE.		
C. MOVES TRANSMISSION RANGE SELECTOR TO "N" NEUTRAL POSITION.		
D. APPLIES HET PARKING BRAKES.		
E. TURNS PTO SWITCH ON.		
F. ENSURES BEACON LIGHT IS ON.		
G. CHOCKS M1070 HET FRONT (1ST) AXLE IN FRONT AND BEHIND EACH TIRE.		
H. REMOVES CROWBAR FROM STOWAGE POSITION.		
I. LOWERS BEACON WARNING LIGHT.		
J. ADJUSTS RAMP SPAN WIDTH TO MATCH PAYLOAD TRACK WIDTH.		
K. REMOVES SIX CURB GUIDES FROM REAR RECESSED AREA.		
L. POSITIONS FOUR CURB GUIDES ON PLATFORM WITH PIN FACING OUTBOARD. SETS REMAINING TWO CURB GUIDES ASIDE.		
2. PREPARES M1000 SEMITRAILER FOR OFF LOADING:		
A. REMOVES MANILA ROPE FROM SEMITRAILER STOWAGE COMPARTMENT.		
B. UNWINDS MANILA ROPE AND POSITIONS ON SEMITRAILER. TIES BOTH ENDS OF MANILA ROPE TO FRONT LIFTING EYES ON PLATFORM.		

STEPS	GO	NO-GO
C. LOOSENS HANDLE ON REAR SNATCH BLOCK STOW CLAMP ON PLATFORM AND REMOVES FROM STOWED POSITION.		
D. OPERATOR RAISES AND SECURES WINCH GUARD IN FULL UPRIGHT POSITION.		
E. OPERATOR RELEASES AUXILIARY WINCH KICKOUT LEVER AND ROTATES COUNTERCLOCKWISE.		
F. UNTIES MANILA ROPE FROM CURBSIDE FRONT LIFTING EYE ON PLATFORM AND MOVES END OF ROPE TO STREETSIDE FRONT LIFTING EYE.		
G. UNHOOKS AUXILIARY WINCH CABLE FROM STOW HOOK. PULLS AUXILIARY WINCH CABLE TO FREE END OF MANILA ROPE AND TIES ROPE TO AUXILIARY WINCH CABLE CLEVIS.		
H. UNTIES END OF MANILA ROPE FROM STREETSIDE FRONT LIFTING EYE OF PLATFORM AND USES MANILA ROPE TO PULL AUXILIARY WINCH CABLE REARWARD UNDER PAYLOAD TO REAR SNATCH BLOCK.		
I. CREW MEMBER REMOVES LINCH PIN AND KEEPER PIN, OPENS REAR SNATCH BLOCK AND PASSES AUXILIARY WINCH CABLE THROUGH. THEN, CLOSES REAR SNATCH BLOCK, INSTALLS KEEPER PIN AND SECURES WITH LINCH PIN.		
J. OPERATOR CONTINUES TO PULL MANILA ROPE FORWARD UNTIL AUXILIARY WINCH CABLE CLEVIS REACHES CLEVIS ON DRIVERS SIDE WINCH CABLE.		
K. UNTIES MANILA ROPE FROM AUXILIARY WINCH CABLE CLEVIS.		
L. OPERATOR ENGAGES BOTH DRIVERS SIDE AND PASSENGER SIDE WINCH KICKOUT LEVERS.		
M. OPERATOR ENGAGES CABLE HOLD DOWN LEVER.		
N. OPERATOR PAYS OUT DRIVERS SIDE WINCH CABLE UNTIL THERE IS ENOUGH SLACK TO REMOVE FROM STOW HOOK.		
O. OPERATOR CONTINUES TO PAY OUT DRIVERS SIDE WINCH CABLE UNTIL CREW MEMBERS CAN REACH CLEVIS AND STOPS.		

STEPS	GO	NO-GO
P. ATTACHES AUXILIARY WINCH CABLE CLEVIS TO DRIVERS SIDE WINCH CABLE CLEVIS.		
Q. OPERATOR ENGAGES AUXILIARY WINCH CABLE KICKOUT LEVER AND ROTATES CLOCKWISE. DISENGAGES DRIVERS SIDE WINCH KICKOUT SWITCH.		
R. OPERATOR PAYS IN AUXILIARY WINCH CABLE TO PULL DRIVERS SIDE WINCH CABLE TO REAR SNATCH BLOCK AND STOPS.		
S. IF AUXILIARY WINCH CABLE DOES NOT PULL DRIVERS SIDE WINCH CABLE REARWARD, PUSHES ENGINE SPEED CONTROL SWITCH FORWARD TO HIGH IDLE.		
T. OPERATOR CONTINUES PAYING OUT DRIVERS SIDE WINCH CABLE UNTIL CABLE HAS REACHED REAR SNATCH BLOCK AND CREW MEMBERS SIGNAL OPERATOR TO STOP. RELEASES LEVER.		
U. CREW MEMBER MUST PULL ADDITIONAL CABLE OUT SO THAT CABLE CAN BE PASSED THROUGH REAR SNATCH BLOCK.		
V. CREW MEMBERS UNFASTEN LINCH PIN FROM KEEPER PIN, REMOVES FROM SNATCH BLOCK, LIFTS AND OPENS SNATCH BLOCK, AND PASSES DRIVERS SIDE WINCH CABLE THROUGH SNATCH BLOCK.		
W. CREW MEMBERS CLOSE SNATCH BLOCK AND REINSTALL KEEPER PIN. SECURES KEEPER TO SNATCH BLOCK BY INSTALLING LINCH PIN.		
X. OPERATOR CONTINUES TO PAY IN AUXILIARY WINCH CABLE TO PULL DRIVERS SIDE WINCH CABLE FORWARD TO STREETSIDE OF PAYLOAD.		
Y. OPERATOR RELEASES AUXILIARY WINCH LEVER WHEN DRIVERS SIDE WINCH CABLE IS APPROXIMATELY 12 INCHES PAST STREETSIDE FRONT OF PLATFORM.		
Z. CREW MEMBER DISCONNECTS DRIVERS SIDE WINCH CABLE FROM AUXILIARY WINCH CLEVIS.		
AA. RETRACTS AUXILIARY WINCH CABLE AND RESTOWS ON STOW HOOK.		
BB. CREW MEMBERS PULL DRIVERS SIDE WINCH CABLE TO CURBSIDE OF PLATFORM AND ROUTES OVER BOTH FRONT TIEDOWN CHAINS.		

STEPS	GO	NO-GO
CC. CREW MEMBER ATTACHES DRIVERS SIDE WINCH CABLE CLEVIS TO PEAR RING ON FRONT CURBSIDE TIEDOWN CHAIN NEXT TO SHACKLE ON CURBSIDE FRONT TOWING LUG.		
DD. SECURES WINCH CABLE WITH SHOULDERED PIN AND COTTER PIN.		
EE. CREW MEMBER ROUTES DRIVERS SIDE WINCH CABLE THROUGH STREETSIDE GOOSENECK CABLE GUIDE AND AROUND PIVOT PIN SHEAVE.		
FF. OPERATOR PAYS OUT PASSENGER SIDE WINCH CABLE TO DISCONNECT CABLE FROM STOWAGE POINT ON HET. CONTINUES TO PAY OUT CABLE APPROXIMATELY 24 INCHES.		
GG. OPERATOR DISENGAGES PASSENGER SIDE WINCH KICKOUT SWITCH.		
HH. REMOVES COTTER PIN AND SHOULDERED PIN FROM CLEVIS ON PASSENGER SIDE WINCH CABLE.		
3. OPERATOR AND CREW MEMBERS DISCONNECT REAR TIEDOWN CHAINS AND REPOSITION REAR PAYLOAD CHOCK BLOCKS:		
A. CREW MEMBER OPENS SMALL LOAD BINDER AND CREW MEMBERS REMOVE TWO UTILITY CHAINS FROM REAR PLATFORM TIEDOWN RINGS. MOVES TWO UTILITY CHAINS AND LOAD BINDER OUT OF THE WAY.		
B. LOOSENS TWO ANGLED LOAD BINDERS AND DISCONNECTS TWO REAR ANGLE TIEDOWN CHAINS.		
C. PAYLOAD OPERATOR RELEASES M-1 TANK BRAKES.		
D. OPERATE TWO PARALLEL LOAD BINDERS TO TIGHTEN BOTH CURBSIDE AND STREETSIDE TIEDOWN CHAINS.		
E. CONTINUE TO TIGHTEN EACH LOAD BINDER AS TIGHTLY AS POSSIBLE TO MOVE M-1 TANK OFF OF REAR PAYLOAD CHOCKS, OR AT LEAST TO REDUCE PRESSURE OFF THE REAR CHOCKS.		
F. PAYLOAD OPERATOR MUST APPLY M-1 TANK BRAKES.		
G. IF NECESSARY, CREW MEMBERS USING THE CROWBAR, MOVE REAR PAYLOAD CHOCKS BACK APPROXIMATELY 6 INCHES.		

STEPS	GO	NO-GO
H. OPERATE TWO PARALLEL LOAD BINDERS TO LOOSEN BOTH CURBSIDE AND STREETSIDE PARALLEL TIEDOWN CHAINS. DISCONNECTS PARALLEL CHAINS FROM PARALLEL LOAD BINDERS.		
I. POSITIONS ALL TIEDOWN CHAINS AND LOAD BINDERS IN CENTER OF PLATFORM.		
J. OPERATOR PULLS WINCH SPEED CONTROL SWITCH TO LOW. PUSHES ENGINE SPEED CONTROL SWITCH TO HIGH ENGINE IDLE, THEN PUSHES ENGINE SPEED CONTROL SWITCH FORWARD TO LOCK ENGINE SPEED TO HIGH IDLE (APPROXIMATELY 1,500 RPM) THEN RELEASES SWITCH.		
K. CREW MEMBERS REMOVE TWO LARGE SHACKLES FROM REAR LOAD BINDERS.		
L. UNLATCHES AND EXTENDS GOOSENECK SAFETY RAIL.		
M. ATTACHES AND SECURES TWO LARGE SHACKLES TO BOTH UPPER RECOVERY EYES ON DISABLED M-1 TANK.		
N. CREW MEMBERS ATTACH PASSENGER SIDE WINCH CABLE TO UPPER RIGHT RECOVERY EYE ON DISABLED M-1 TANK.		
O. RETRACTS AND LATCHES GOOSENECK SAFETY RAIL.		
P. ROUTES PASSENGER SIDE WINCH CABLE THROUGH GOOSENECK CABLE GUIDE.		
Q. ENGAGES PASSENGER SIDE WINCH KICKOUT.		
R. OPERATOR PAYS IN PASSENGER SIDE WINCH CABLE UNTIL CABLE IS TIGHT.		
4. OPERATOR AND CREW MEMBERS WINCH OFF DISABLED M-1 TANK:		
A. CREW MEMBERS MOVE STREETSIDE REAR PAYLOAD CHOCK ABOVE #4 BOGIE.		
B. POSITIONS CURBSIDE PAYLOAD CHOCK ON THE GROUND NEXT TO #1 BOGIE.		
C. OPERATOR ENGAGES DRIVERS SIDE WINCH KICKOUT SWITCH. PAYS IN DRIVER SIDE WINCH CABLE TO PULL DISABLED M-1 TANK BACK TO STREETSIDE PAYLOAD CHOCK AND STOPS.		
D. CREW MEMBER CHOCKS FRONT OF DISABLED M-1 TANK WITH CURBSIDE PAYLOAD CHOCK.		

STEPS	GO	NO-GO
E. OPERATOR PAYS OUT BOTH DRIVERS SIDE AND PASSENGER SIDE WINCH CABLES UNTIL CABLES TOUCH TOP OF PLATFORM.		
F. CREW MEMBERS CHECK FOR TWIST IN DRIVERS SIDE WINCH CABLE AND DISCONNECT WINCH CABLE FROM PEAR RING ON CURBSIDE FRONT TIEDOWN CHAIN.		
G. DISCONNECTS CURBSIDE TIEDOWN CHAIN FROM DISABLED TANK AND PLATFORM.		
H. DISCONNECTS STREETSIDE TIEDOWN CHAIN FROM PLATFORM ONLY AND LEAVES CONNECTED TO TANK.		
I. CREW MEMBERS CHECK FOR TWIST IN PASSENGER SIDE WINCH CABLE AND DISCONNECTS WINCH CABLE FROM SHACKLE ON DISABLED TANK UPPER RIGHT RECOVERY EYE.		
J. ATTACHES SHACKLE AND STREETSIDE TIEDOWN CHAIN TO DISABLED M-1 TANK LOWER TIEDOWN LUGS. ALLOWS SLACK IN CHAIN TO FORM THE LOWER Y-CHAIN (TO BE USED TO CONTROL PAYLOAD DURING OFFLOAD).		
K. ATTACHES AND SECURES TWO SHACKLES AND CURBSIDE TIEDOWN CHAIN TO DISABLED TANK UPPER RECOVERY EYES. ALLOWS SLACK IN CHAIN TO FORM THE UPPER Y-CHAIN (TO BE USED TO CONTROL PAYLOAD DURING OFFLOAD).		
L. CREW MEMBERS ATTACH DRIVERS SIDE WINCH CABLE TO CENTER OF LOWER Y-CHAIN USING SHACKLE.		
M. CREW MEMBERS ATTACH PASSENGER SIDE WINCH CABLE TO CENTER OF UPPER Y-CHAIN USING SHACKLE.		
N. OPERATOR PAYS IN BOTH DRIVERS SIDE AND PASSENGER SIDE WINCH CABLES UNTIL CABLES BECOME TIGHT.		
5. OPERATOR AND CREW MEMBERS ADJUST PLATFORM HEIGHT, LOWER REAR SUPPORT LEGS, LOWER BOTH LOADING RAMPS, AND POSITION CURB GUIDES FOR OFF LOADING OF DISABLED M-1 TANK:		
A. ENSURES APU IS RUNNING AT FULL THROTTLE.		
B. PULLS SUSPENSION SHUT-OFF VALVE HANDLE OUTWARD TO ADJUST POSITION.		
C. RELEASES SEMITRAILER PARKING BRAKES.		

STEPS	GO	NO-GO
D. ADJUSTS PLATFORM HEIGHT, LOWERS BOTH REAR SUPPORT LEGS, AND LOWERS BOTH LOADING RAMPS.		
E. APPLIES SEMITRAILER PARKING BRAKES.		
F. INSTALLS TWO CURB GUIDES AT BEAVERTAIL JUST IN FRONT OF EACH LOADING RAMP.		
G. REMOVES REAR PAYLOAD CHOCKS.		
6. CONTINUE TO WINCH OFF DISABLED M-1 TANK:		
A. OPERATOR POSITIONS CREW MEMBERS ON EACH SIDE OF PLATFORM FOR DIRECTIONAL CONTROL.		
B. ENGAGES WINCH SPEED CONTROL SWITCH TO LOW AND ENGINE SPEED CONTROL SWITCH TO HIGH ENGINE IDLE.		
C. OPERATOR PAYS OUT PASSENGER SIDE WINCH CABLE TO RESTRAIN PAYLOAD AND PAYS IN DRIVERS SIDE WINCH CABLE TO TAKE UP SLACK.		
D. GROUND GUIDE SIGNALS OPERATOR WHEN CLEVIS ON DRIVERS SIDE WINCH CABLE IS OVER REAR SNATCH BLOCK.		
E. OPERATOR THEN PAYS OUT BOTH DRIVERS SIDE AND PASSENGER SIDE WINCH CABLES AT SAME TIME TO ALLOW DISABLED M-1 TANK TO ROLL DOWN LOADING RAMPS.		
7. IF DISABLED M-1 TANK CLEARS BOTH LOADING RAMPS, PROCEED TO STEP 8. IF TANK DOES NOT CLEAR BOTH LOADING RAMPS PROCEED AS FOLLOWS:		
A. OPERATOR RELEASES BOTH WINCH LEVERS.		
B. CREW MEMBERS RAISE BOTH REAR SUPPORT LEGS.		
C. OPERATOR PAYS OUT BOTH WINCH CABLES UNTIL CABLES TOUCH TOP OF PLATFORM.		
D. CREW MEMBERS CHECK FOR TWIST IN BOTH WINCH CABLES BEFORE DISCONNECTING FROM DISABLED M-1 TANK.		
E. CREW MEMBERS PLACE BOTH REAR PAYLOAD CHOCKS UPSIDE DOWN, APPROXIMATELY 24 INCHES TO REAR OF DISABLED M-1 TANK.		
F. OPERATOR AND CREW MEMBERS ADJUST PLATFORM TO NORMAL RUNNING HEIGHT.		

STEPS	GO	NO-GO
G. CREW MEMBERS CHECK THAT DISABLED M-1 TANK HAS ROLLED OFF BOTH LOADING RAMPS, IF NOT, LOWER PLATFORM TO ITS LOWEST HEIGHT.		
H. REMOVES AND RESTOWS FOUR HET WHEEL CHOCKS.		
I. ENTERS CAB, TURNS PTO OFF, RELEASES HET PARKING BRAKES, AND DRIVES HET FORWARD UNTIL CREW MEMBERS SIGNAL THAT DISABLED M-1 TANK HAS CLEARED BOTH LOADING RAMPS AND STOPS.		
J. MOVES TRANSMISSION RANGE SELECTOR INTO NEUTRAL, APPLIES HET PARKING BRAKES AND TURNS PTO SWITCH ON.		
K. CHOCKS HET TIRES.		
8. CONTINUE TO UNLOAD THE DISABLED M-1 TANK:		
A. OPERATOR PAYS OUT BOTH DRIVERS AND PASSENGER SIDE WINCH CABLES UNTIL CABLES TOUCH TOP OF PLATFORM AND RELEASES BOTH LEVERS.		
B. CREW MEMBERS CHECK FOR TWIST IN BOTH WINCH CABLES BEFORE DISCONNECTING FROM DISABLED M-1.		
C. REMOVES UPPER Y-CHAIN AND TWO SHACKLES FROM UPPER RECOVERY EYES.		
D. REMOVES LOWER Y-CHAIN AND TWO SHACKLES FROM LOWER TOWING LUGS.		
E. OPERATOR PUSHES ENGINE SPEED CONTROL SWITCH TO HIGH ENGINE IDLE.		
F. CREW MEMBERS OPEN REAR SNATCH BLOCK, REMOVE DRIVERS SIDE WINCH CABLE, CLOSE REAR SNATCH BLOCK, AND INSTALL KEEPER PIN AND SECURE WITH LINCH PIN.		
G. PLACES SNATCH BLOCK IN STOW POSITION WITH CLAMP AND TIGHTENS CLAMP.		
H. REMOVES DRIVERS SIDE WINCH CABLE FROM PIVOT PIN SHEAVE AND GOOSENECK CABLE GUIDE. LAYS CABLE ON PLATFORM.		
I. REMOVES PASSENGER SIDE WINCH CABLE FROM GOOSENECK CABLE GUIDE. LAYS CABLE ON PLATFORM.		
J. OPERATOR PAYS IN DRIVERS SIDE WINCH CABLE AND DIRECTS CREW MEMBERS TO MAINTAIN TENSION ON CABLE. STOWS WINCH CABLE ONTO STOW HOOK.		

STEPS	GO	NO-GO
K. OPERATOR PAYS IN PASSENGER SIDE WINCH CABLE AND DIRECTS CREW MEMBERS TO MAINTAIN TENSION ON CABLE.		
L. OPERATOR DISENGAGES ALL WINCH CONTROLS. LOWERS GUARD AND LOCKS IN PLACE.		
9. OPERATOR AND CREW MEMBERS PREPARE THE HET AND M1000 SEMITRAILER FOR TRAVEL:		
A. REMOVES ALL TIEDOWN CHAINS, LOAD BINDERS, AND SHACKLES AND RESTOWS IN SEMITRAILER STOWAGE COMPARTMENT.		
B. SECURES ALL 12 CURB GUIDES IN PLATFORM FRONT AND REAR RECESSED AREAS.		
C. DISASSEMBLES TWO REAR PAYLOAD CHOCKS.		
D. SECURES TWO REAR PAYLOAD CHOCKS ON TOP OF TWO FRONT PAYLOAD CHOCKS.		
E. RUNS APU AT FULL THROTTLE.		
F. RELEASES SEMITRAILER PARKING BRAKES.		
G. ADJUSTS PLATFORM TO NORMAL RUNNING HEIGHT.		
H. APPLIES SEMITRAILER PARKING BRAKES.		
I. ENSURES SUSPENSION SHUT-OFF VALVE IS PUSHED INWARD TO THE SHUT-OFF POSITION.		
J. RAISES AND SECURES BOTH REAR SUPPORT LEGS.		
K. RAISES AND ADJUSTS STREETSIDE AND CURBSIDE LOADING RAMPS.		
L. RAISES BEACON WARNING LIGHT.		
M. OPERATOR SHUTS DOWN APU AND CLOSES CONTROL PANEL.		
N. STOWS CROWBAR AT BACK OF PLATFORM AND CHECKS THAT ALL TOOLS AND EQUIPMENT ARE SECURED INTO PLATFORM STOWAGE COMPARTMENT.		
O. REMOVES AND RESTOWS HET CHOCK BLOCKS.		
P. TURNS PTO SWITCH TO OFF.		
Q. RELEASES HET PARKING BRAKES.		
R. MOVES TRANSMISSION RANGE SELECTOR TO APPROPRIATE RANGE.		

INTERMEDIATE TRAINING OBJECTIVE 7

PERFORMANCE TEST

UNCOUPLE THE M1070 HET FROM AN M1000 SEMITRAILER

NAME_____ **RANK**_____ **UNIT**_____

EVALUATOR_____ **DATE**_____

STEPS	**GO**	**NO-GO**
1. SHIFTS THE TRANSMISSION RANGE SELECTOR TO NEUTRAL AND PULLS OUT PARKING BRAKE CONTROL.		
2. CHOCKS STREETSIDE AND CURBSIDE NUMBER 1 BOGIES OUTER DUAL WHEELS ON SEMITRAILER.		
3. LOWERS BOTH FRONT AND REAR SUPPORT LEGS.		
4. LOOSENS STEERING WEDGE ADJUSTING NUT ONE FULL TURN COUNTERCLOCKWISE.		
5. PULLS PRIMARY AND SECONDARY LOCK RELEASE HANDLES OUT AND HOOKS IN THE OUT POSITION.		
6. STARTS APU.		
7. PULLS SUSPENSION SHUT-OFF VALVE OUT TO THE ADJUST POSITION.		
8. PULLS GOOSENECK ISOLATION VALVE HANDLE OUT TO THE ADJUST POSITION.		
9. PUSHES IN PARKING BRAKE CONTROL.		
10. PULLS OUT TRAILER AIR SUPPLY BUTTON.		
11. DRIVES HET FORWARD APPROXIMATELY ONE FOOT OR UNTIL KINGPIN IS IN THE VEE ENTRY OF THE FIFTH WHEEL AND STOPS.		
12. SHIFTS TRANSMISSION RANGE SELECTOR TO NEUTRAL POSITION AND PULLS OUT PARKING BRAKE CONTROL.		
13. ASSISTANT OPERATOR RAISES GOOSENECK (APPROXIMATELY 3 INCHES ABOVE HET FIFTH WHEEL).		
14. REMOVES THE ELECTRICAL CABLE FROM THE HET AND TRAILER, CLOSES RECEPTACLE COVER ON HET AND TRAILER, AND STOWS CABLE IN STOWAGE BOX ON HET.		

STEPS	GO	NO-GO
15. DISCONNECTS THE EMERGENCY AND SERVICE AIR GLADHANDS FROM AIR COUPLERS ON THE SEMITRAILER.		
16. CONNECTS THE EMERGENCY AND SERVICE AIR COUPLINGS TO THE POGO STICK DUMMY CONNECTORS ON HET.		
17. PUSHES IN PARKING BRAKE CONTROL, MOVES TRANSMISSION RANGE SELECTOR INTO 2-5 RANGE, AND DRIVES HET FORWARD UNTIL IT CLEARS THE GOOSENECK AND STOPS.		
18. OPERATOR SHIFTS THE TRANSMISSION RANGE SELECTOR INTO NEUTRAL, APPLIES HET PARKING BRAKES.		
19. ASSISTANT OPERATOR LOWERS THE GOOSENECK TO THE LOWEST POSITION.		
20. ASSISTANT OPERATOR PUSHES IN GOOSENECK ISOLATION VALVE HANDLE.		
21. ASSISTANT OPERATOR PUSHES SUSPENSION SHUT-OFF VALVE IN TO SHUT-OFF POSITION.		
22. CLOSES AND SECURES HYDRAULIC CONTROL PANEL.		
23. SHUTS DOWN APU AND CLOSES CONTROL PANEL.		
24. PERFORMS AFTER-OPERATION PMCS ON HET AND SEMITRAILER.		

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.

GLOSSARY

AAL	Additional Authorization List
AOAP	Army Oil Analysis Program
APU	Auxiliary power unit
AR	Army regulation
ATTN	attention
BII	basic issue items
C	celsius
CARC	chemical agent resistant coating
cm	centimeters
COEI	components of end item
CTIS	central tire inflation system
DA	Department of the Army
DC	District of Columbia
DD	Department of Defense; Detroit Diesel
DDEC	Detroit Diesel Electronic Control
DEF	defrost
EOCCT	end of course comprehensive test
F	fahrenheit
F/A	fresh air
FM	field manual
ft	feet/foot
FY	fiscal year
GCW	gross combination weight
GCWR	gross combination weight rating
GPFU	gas particulate filter unit
GVW	gross vehicle weight
H_2O	water
HET	heavy equipment transporter (truck)
HETS	Heavy Equipment Transporter System (truck and trailer)
HI	high
HN	host nation
hp	horsepower
hr	hour
ISO	International Standards Organization
Jake Brake	engine brake
kPa	kilopascal
LED	light-emitting diode
LO	lubrication order; low
km	kilometer
km/h	kilometers per hour
m	meter(s)
MACOM	major Army command
MAX	maximum
METT-T	mission, enemy, terrain, troops, and time
mm	millimeter
MPH	miles per hour
N	neutral

NBC	nuclear, biological, chemical
NO	number
OF	optional form
PART	particulate
PIN	product identification number
PM	post meridiem
PMCS	preventive maintenance checks and services
POL	petroleum, oils, and lubricants
psi	pounds per square inch
PTO	power take-off
R	reverse
RECIRC	recirculate
rpm	revolutions per minute
SOP	standing operating procedure
STE/ICE-R	simplified test equipment/internal combustion engine-reprogrammable
TB	tecnical bulletin
TC	training circular
TASC	Training and Audiovisual Support Center
TM	technical manual
TVT	training videotape
TX	Texas
ULLS	Unit Level logistics System
US	United States (of America)
USAR	United States Army Reserve
V	volt(s)
VA	Virginia
VCR	video cassette recorder
Vdc	volts direct current

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DOCUMENTS NEEDED

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