DEPARTMENT OF THE AIR FORCE **QTP24-3-L350**
Headquarters US Air Force **14 January 2019**
Washington, D.C. 20330-1030

High Mobility Multipurpose Wheeled Vehicle (HMMWV)

Vehicle Management Codes: L530 – L535, L537, L540 – L545

QUALIFICATION TRAINING PACKAGE

CONTENTS

Section 1—OVERVIEW

1.1. Overview.

1.1.1. Send comments and suggested improvements on Air Force (AF) Form 847, *Recommendation for Change of Publication*, through Air Force Installation and Mission Support Center (AFIMSC) functional managers via e-mail at AFIMSC.IZSL.VehicleOps@us.af.mil.

1.1.2. How to use this plan:

1.1.2.1. Instructor:

1.1.2.1.1. Provide overview of training, **Section 2** and **Section 3**.

1.1.2.1.2. Instructor's lesson plan for trainee preparation, give classroom lecture, **Section 4**.

1.1.2.1.3. Instructor's lesson plan for knowledge training, **Section 5**.

1.1.2.1.4. Instructor's lesson plan for demonstration, **Section 6**.

1.1.2.1.5. Instructor's lesson plan for performance and evaluation, **Section 7**.

1.1.2.2. Trainee:

1.1.2.2.1. Reads this entire lesson plan prior to starting lecture.

1.1.2.2.2. Follows along with lecture using this lesson plan and its attachments.

1.1.2.2.3. Uses **Attachment 2** and **Attachment 4** as guides for vehicle inspection.

1.1.2.2.4. Takes performance test.

Section 2—RESPONSIBILITIES

2.1. Responsibilities.

2.1.1. The trainee shall:

2.1.1.1. Ensure the trainer explains the Air Force Qualification Training Plan (AFQTP) process and the responsibilities.

2.1.1.2. Review the AFQTP/Module/Unit with the trainer.

2.1.1.3. The trainee should ask questions if he/she does not understand the objectives for each unit.

2.1.1.4. Review missed questions with the trainer.

2.1.2. Instructor shall:

2.1.2.1. Review the AFQTP with the trainee.

2.1.2.2. Conduct knowledge training with the trainee using the AFQTP.

2.1.2.3. Grade the review questions using the answer key.

2.1.2.4. Review missed questions with the trainee to ensure the required task knowledge has been gained to complete the task.

2.1.2.5. Sign-off the task(s).

2.1.3. The Certifier shall:

2.1.3.1. Evaluate the Airman's task performance without assistance.

2.1.3.2. Sign-off the task(s).

Section 3—INTRODUCTION

3.1. Objectives.

3.1.1. Given lectures, demonstrations, hands-on driving session, and a performance and a written test, trainees will be able to perform operator's inspection and complete the performance test with zero instructor assists.

3.1.1.1. Train and qualify each trainee in safe operation and preventive maintenance of the various HMMWVs.

3.1.1.2. This training will ensure the trainee becomes a qualified HMMWV operator; an operator who has the knowledge and skills to operate a HMMWV in a safe and professional manner.

3.2. Desired Learning Outcomes.

3.2.1. Understand the safety precautions to be followed before-, during-, and after- operation of the HMMWV.

3.2.2. Understand the purpose of the HMMWV and its role in the mission.

3.2.3. Know the proper operator maintenance procedures of the HMMWV in accordance with (IAW) applicable technical orders (TOs) and use of Air Force (AF) Form 1800, *Operator's Inspection Guide and Trouble Report*.

3.2.4. Safely and proficiently operate the HMMWV.

3.2.5. Know the proper procedures of operating the 4X4 system on the HMMWV.

3.2.6. Know the towing limitations of the HMMWV vehicle.

3.2.7. Know the key operating characteristics/procedures while driving forwards, backwards, turning, towing, expedient field repairs, and over adverse terrain.

3.3. Lesson Duration.

3.3.1. Recommended instructional and hands on training time is 11 hours:

Figure 3.1. Recommended Training Time for Training Activities.

Training Activity	Training Time
Trainee's Preparation	2 Hours
Instructor's Lecture and Demonstration	2 Hours
Trainee's Personal Experience (to build confidence and proficiency) ▪ Perform Operator Maintenance ▪ Operate the Vehicle	5 Hours
Trainee's Performance Evaluation	2 Hours

Note: This is a recommended time; training time may be more or less depending how quickly a trainee learns new tasks.

3.4. Instructional References.

3.4.1. Risk Management (RM) and Safety Principles IAW Air Force Pamphlet (AFPAM) 90-803, *Risk Management (RM) Guidelines and Tools*.

3.4.2. AFI 13-213, *Airfield Driving*.

3.4.3. Applicable TOs or Manufacturer's Operator's Manual (see Vehicle Management for TO number for vehicle being used in training).

3.4.3.1. TO 36A12-1A-2091-1.

3.4.3.2. TO 36A12-1A-3061-1.

3.4.3.3. TO 36A12-11-3061-2.

3.4.4. Air Force Manual (AFMAN) 24-306, *Operation of Air Force Government Motor Vehicles*.

3.4.5. AF Form 1800.

3.4.6. HMMWV Lesson Plan.

3.5. Instructional Training Aids and Equipment.

3.5.1. HMMWV Lesson Plan.

3.5.2. HMMWV.

3.5.3. Slave cable.

3.5.4. Tire pressure gauge.

3.5.5. Flashlight.

3.5.6. Beacon/hazard lights.

3.5.7. Applicable TO or Manufacturer's Operator's Manual.

3.5.8. AF Form 1800.

3.5.9. Videos (if locally produced).

3.5.10. Suitable training area.

Section 4—TRAINEE PREPARATION

4.1. Licensing Requirements.

4.1.1. Trainee must have in his/her possession a valid state driver's license.

4.1.2. AF Form 171, *Request for Driver's Training and Addition to U.S. Government Driver's License* IAW Air Force Instruction (AFI) 24-301, *Ground Transportation*.

4.1.3. Applicable local licensing jurisdiction requirements.

4.2. Required Reading (Testable Material).

4.2.1. Read this entire lesson plan.

4.2.2. Read AFMAN 24-306.

4.2.3. Read manufacturer's operator's manual for the vehicle being trained on.

Section 5—KNOWLEDGE LECTURE AND EVALUATION

5.1. Overview of Training and Requirements.

5.1.1. Training objectives:

5.1.1.1. Given lectures, demonstrations, hands-on driving session, and a performance demonstration, trainees will be able to perform operator's inspection and complete the performance test with zero instructor assists.

5.1.1.2. Train and qualify each trainee in safe operation and preventive maintenance of the various HMMWVs.

5.1.1.3. This training will ensure the trainee becomes a qualified HMMWV operator—an operator who has the knowledge and skills to operate a HMMWV in a safe and professional manner.

5.1.2. Desired learning outcomes:

5.1.2.1. Understand the safety precautions to be followed pre-, during, and post-operation of the HMMWV.

5.1.2.2. Understand the purpose of the HMMWV and its role in the mission.

5.1.2.2.1. Purpose is to provide added ballistic protection for armament components, crew, and ammo.

5.1.2.2.2. Role in the mission (Unit/Base/Community (during natural disasters)/Air Force).

5.1.3. HMMWV design. The design of HMMWV varies depending on the vehicle type. Refer to the manufacturer's operator's manual for additional information on the specific HMMWV being operated, and to the data plate for safe load capacity guidance. The HMMWV normally can be identified by the following characteristics:

5.1.3.1. Four wheel drive (4WD) vehicle. A four-wheeled vehicle with a drive train that allows all four wheels to receive torque from the engine simultaneously.

5.1.3.2. All utilize a 6.2 or 6.5 liter V-8 diesel engine.

5.1.3.3. Additional common components:

5.1.3.3.1. Air brakes.

5.1.3.3.2. Three speed automatic transmission.

5.1.3.3.3. Power steering.

5.1.3.3.4. Utilize a 24 volt electrical system.

5.1.3.3.5. Fold down gate. Tailgate capacity is limited to 250 lb. when folded down.

5.1.4. Specifications. The operator should refer to the applicable TO or data plate for information regarding the following:

5.1.4.1. Specifications: Dimensions/weight, engine drive train information, turning radius, fluid types.

5.1.4.2. Parts: Counterweights and heavy weapon turret (if applicable).

5.1.4.3. Steering: Front wheel steering.

5.1.5. Capabilities.

5.1.5.1. Cruising range is 350 miles when traveling at 30-40 miles on hard surfaces or rolling terrain.

5.1.5.2. HMMWVs are capable of crossing 30 inches of still water at 5 miles per hour (mph)—or crossing 50 inches of water with a fording kit attached.

5.1.5.3. Able to travel main roads, secondary roads, to include trails, stream beds, 18-22 inch steps, 60 degrees on vertical slopes (uphill or down) and 40 degrees on side slopes when traversing a hill sideways.

Note: The degrees of being able to safely traverse an incline/decline or slope are affected by load weight and distribution as well as speed.

5.1.5.4. The HMMWV has a 3,400 lb. towing capacity.

5.1.5.5. Vehicle can climb grades of up to 60 degrees. .

5.1.5.6. Vehicle can ford water up to 30 inches at 5mph (50 inches with fording kit).

5.1.6. Tires.

5.1.6.1. Tires are capable of driving flat by utilizing a specially designed run-flat tire manufactured by the *Goodyea*r.

5.1.6.2. These tires will appear 75% flat when punctured, but will provide for emergency driving at 30 mph for a distance of 30 miles.

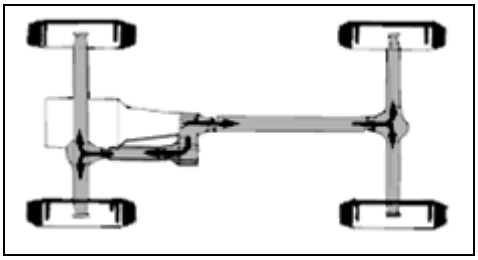
5.1.6.3. If both rear tires become flattened at the same time, the maximum speed is then 20 mph.

5.1.6.4. A lubricant contained inside the tires provides a smoke signal to the operator indicating a flat has occurred.

5.1.6.5. For off-road operations, place the vehicle neutral and then select the appropriate transfer case position. I.E. low lock, when climbing or descending steep hills, operating in deep mud, snow, sand or other slippery conditions.

5.1.7. The 4WD system. A vehicle equipped with 4WD has the ability to use all four wheels to power itself. This increases traction which may enable the operator to safely drive over terrain and road conditions that a conventional two-wheel drive vehicle cannot.

Figure 5.1. The 4WD System.



5.1.7.1. Power is supplied to all four wheels through a transfer case or power transfer unit. 4WD vehicles allow the operator to select different drive modes as necessary.

5.1.7.2. Refer to the manufacturer's operator's manual for information on shifting procedures and maintenance.

5.1.7.3. On some 4WD models, the initial shift from two-wheel drive to 4WD while the vehicle is moving can cause a momentary clunk and ratcheting sound. These sounds are normal as the front drivetrain comes up to speed and is not cause for concern.

5.1.8. Gauges, switches, instruments, lights and controls:

5.1.8.1. Glow plug indicator- lights when glow plugs are activated. Off (when engine is ready to be started).

5.1.8.2. Start/run switch.

5.1.8.3. Brake warning indicator- lights when fluid is low or parking brake is set.

5.1.8.4. Engine temp. Gauge- normal=190-230°. Electric coolant fan activates when temp exceeds 220° and turns off when it drops below 190°.

5.1.8.5. High beam indicator.

5.1.8.6. Engine oil pressure is 15 pounds per square inch (psi) or more.

5.1.8.7. Speedometer.

5.1.8.8. Voltmeter. Normal: in the green.

5.1.8.9. Fuel gauge: ONLY Diesel, J-8, or approved alternative fuel.

5.1.8.10. Heater controls: defrost, heat, or fan.

5.1.8.11. Main light switch: controls service, blackout (BO), and panel lights.

5.1.8.12. Directional signal control and warning hazard lever.

5.1.8.13. Dimmer switch.

5.1.8.14. Seat adjustment.

5.1.8.15. Air cleaner indicator. Normal: yellow or up to 24%. Red: needs cleaning or replace filter.

5.1.8.16. STE ICE plug: used for mechanical diagnostic testing.

5.1.8.17. Steering wheel lock cable.

5.1.8.18. Throttle lock: not to be used as cruise control.

5.1.8.19. Windshield washer/wiper control.

5.1.8.20. Windshield deicer: used to defrost ice and snow from windshield.

5.1.8.21. A/C on/off: turns on or off refrigerated air.

5.2. Vehicle Inspection.

5.2.1. Pre-trip vehicle inspection test. Use **Attachment 2** as a walk-around guide along with AF Form 1800.

5.2.2. Pre-trip inspection – find items/problems that could cause accident or breakdown.

5.2.2.1. Vehicle maintenance to authorize continued use for all other maintenance discrepancies.

5.2.2.2. Cleanliness/damage/missing items.

5.2.2.3. Leaks (fuel/oil/coolant/hydraulic/air).

5.2.2.4. Check Fluid Levels; ensure level is within limits:

5.2.2.4.1. Engine oil. Engine oil level should be at crosshatch marks between FULL and ADD 1 QUART on dipstick.

5.2.2.4.2. Coolant. Coolant level in the surge tank should be visible or minimum 1/2 full before operation.

5.2.2.4.2.1. Extreme care should be taken when removing surge tank filler cap if temperature gauge reads above 165° F. Do not add coolant to cooling system when engine is hot unless engine is running.

5.2.2.4.2.2. Add coolant slowly. Steam or hot coolant under pressure will cause injury. Place a thick cloth over surge tank filler cap; carefully turn cap counterclockwise to its first stop to allow cooling system pressure to escape.

5.2.2.4.2.3. Start the engine and run for one minute. Stop the engine and re-check coolant level. If coolant is low, add coolant until surge tank is 1/2 full. Replace the cap. Inspect the radiator core for clogged or bent fins.

5.2.2.4.3. Power steering fluid. Power steering fluid level should be between HOT and COLD marks on the power steering cap/dipstick if engine is warm. If engine is cool, level should be between ADD and COLD marks.

5.2.2.4.4. Transmission fluid. Do NOT fill transmission with fluid, if needed. Vehicle maintenance will perform this task.

5.2.2.4.4.1. Start engine, apply service brakes, and move transmission shift lever through all operating ranges, then check fluid level in “N" (neutral). Pull out dipstick and check for proper transmission fluid level. Fluid level should be at crosshatch marks between FULL and ADD.

5.2.2.4.4.2. Transmission must be at normal operating temperature before checking fluid level.

5.2.2.4.4.3. Do not overfill transmission. Damage to transmission will result.

5.2.2.4.4.4. Whenever transmission fluid level is checked, especially on a vehicle used in severe service, the condition of the fluid should be noted. If fluid is dark and has a strong odor, fluid and filter should be changed and transmission bands adjusted. Overheating might result in fluid deterioration, which may cause changes in fluid conditions. If this should occur, take the vehicle to Vehicle Management.

5.2.2.4.5. Antifreeze.

5.2.2.4.6. Brake master cylinder fluid. Fluid level in the brake master cylinder should be approximately 1/8 inch from top of reservoir.

5.2.2.4.7. Windshield washer fluid. Should not be less than 1/2 full.

5.2.2.5. Battery; security, fluid, damage, and corrosion.

5.2.2.5.1. The batteries are located on the interior of the HMMWV under the passenger seat.

5.2.2.5.2. Inspect the batteries for loose terminals, securely in the tray.

5.2.2.6. All wheel rims (cracks, splits, etc.); check for loose or missing lug nuts.

5.2.2.7. All tires.

5.2.2.7.1. Proper inflation. **Note:** Notify VCO/VCNCO, the supervisor, and/or vehicle maintenance if split rim is completely flat.

5.2.2.7.2. Sidewalls, tread to include depth.

5.2.2.7.3. Cuts and abrasions.

5.2.2.7.4. Lug nuts.

5.2.2.7.5. Inspect for foreign object damage (FOD) IAW AFI 13-213.

5.2.2.7.6. Measure tire pressures on a monthly basis.

5.2.2.8. Transmission.

5.2.2.9. Undercarriage.

5.2.2.10. Drive belts; tension, and fraying.

5.2.2.11. All hoses and wiring.

5.2.2.12. Differential, shocks, and brakes for leaks.

5.2.2.13. Suspension, springs, and shocks.

5.2.2.14. Fuel door and fuel cap; intact, not broken or damaged.

5.2.2.15. Horn operation.

5.2.2.16. Control panel.

5.2.2.17. Heater/defroster.

5.2.2.18. Mirrors.

5.2.2.19. Windshield and windshield wipers/washers.

5.2.2.20. Wiring/lights/reflectors (interior and exterior).

5.2.2.20.1. Turn on parking lights, and inspect both the front and rear.

5.2.2.20.2. Turn on headlights, and inspect both high and low beams.

5.2.2.20.3. Inspect blackout lights and markers.

5.2.2.20.4. Turn on four-way flasher, and inspect both front and rear.

5.2.2.20.5. Turn on left and right turn signals, and inspect both front and rear in both modes.

5.2.2.20.6. Apply brakes, and inspect brake lights.

5.2.2.21. Parking brake.

5.2.2.21.1. Operate parking brake to ensure the vehicle does not move while parking brake is applied, transmission is in neutral and the engine is either off or at idle speed.

5.2.2.22. Exterior of vehicle.

5.2.2.22.1. Inspect the body of the vehicle for rust and minor scratches and dents. Inspect for any loose or broken components.

5.2.2.22.2. Doors.

5.2.2.22.3. Windows.

5.2.2.23. Hood latches.

5.2.2.24. Towing connections.

5.2.2.25. Seatbelts.

5.2.2.26. Fire extinguisher.

5.2.3. During-operation.

5.2.3.1. All gauges and warning lights for proper operations.

5.2.3.1.1. Warning lights.

5.2.3.1.2. Gauges (oil pressure, fuel gauge, water temperature, voltage).

5.2.3.1.3. Indicators.

5.2.3.2. Listen for exhaust and air leaks. Listen for any unusual sounds.

5.2.3.3. Stay alert for any unusual smells or odors.

5.2.3.3.1. Stay alert for any abnormal vibrations or handling problems

5.2.4. Post-trip inspection and report.

5.2.4.1. Ensure vehicle and components are cleaned.

5.2.4.2. Equipment is properly stowed.

5.2.4.3. Refueled.

5.2.4.4. Parked.

5.2.4.5. Apply brakes.

5.2.4.6. Place transmission in neutral (park for an automatic).

5.2.4.7. Use chocks, if required.

5.2.5. A Seven-Step Inspection Method will help ensure the inspection is the same each time it is conducted, and that nothing is left out. See **Attachment 4** for the Seven-Step Inspection Method.

5.2.6. Types of vehicle inspection. If discrepancies are found they must be reported to the Vehicle Control Officer/Vehicle Control Non Commissioned Officer (VCO/VCNCO), the supervisor, and/or vehicle maintenance:

5.3. Vehicle Safety and Equipment.

5.3.1. Hazards and Human Factors Types of Mishaps:

5.3.1.1. Bruises, head injuries, cuts, lacerations to personnel.

5.3.1.2. Fatalities due to rollovers.

5.3.2. Common Operator Mishaps Due to:

5.3.2.1. Jerky starts and stops.

5.3.2.2. Failure to give proper signals when turning.

5.3.2.3. Traveling too fast and turning too sharply.

5.3.2.4. Failure to release parking brake before traveling.

5.3.2.5. Failure to use a spotter in difficult areas/situations. **Note:** Spotters must be trained and use hand signals IAW AFMAN 24-306.

5.3.2.6. Rollover risk.

5.3.3. Safety Clothing and Equipment:

5.3.3.1. Safety steel-toed boots must be worn.

5.3.3.2. Head protection.

5.3.3.3. Hand protection.

5.3.3.4. Raingear, cold weather gear, etc.

5.3.3.5. Reflective belt during hours of reduced visibility

5.3.3.6. Tire gauge.

5.3.3.7. Fire extinguisher.

5.3.3.8. Shovel, tow chains, and cables.

5.3.3.9. Hearing protection/eye protection.

5.3.3.10. AF Form 1800.

5.4. Driving Safety and Precautions.

5.4.1. Ensure personnel protective equipment is on.

5.4.2. Pay attention to the cautions and warning listed in the operator's manual.

5.4.3. Never start or operate the HMMWV from any other place than the driver's seat.

5.4.4. Never drive the vehicle up to anyone standing in front of an object.

5.4.5. Always keep all body parts inside the vehicle, unless up in the turret.

5.4.6. Passengers will ride in the provided seat.

5.4.7. Ensure all equipment items are secured (weapons, fire, extinguisher, shovel, etc.).

5.4.8. Do not operate the starter for more than 20 seconds.

5.4.9. Turn all radio equipment off before starting the engine. A power surge might occur and damage the radio. Turn off all radios within 50 feet of any fueling operation.

5.4.10. If any instrument reading is not normal, turn off the engine. Failure to do so may result in damage to the engine.

5.4.11. Be alert at all times during vehicle operation for exhaust odors, do not operate the vehicle in an enclosed area.

5.4.12. Vehicle operators will "stop" a vehicle if there are indications that it has operated with less than fifty percent of its oil capacity until an internal inspection has been conducted.

5.4.13. If unknown noises occur, vehicle will be parked and not restarted until cleared by experienced vehicle maintenance personnel.

5.4.14. Only use approved slave cables when attempting to jump start the engine.

5.4.15. Ensure the driving light switch is in the STOP LIGHT position as a minimum operating these vehicles. In the OFF position all service lights are inoperative.

5.4.16. Warning – Failure to ensure parking brake is applied when parking on a grade may cause damage to vehicle or injury/death to personnel. Place chocks, if equipped.

5.4.17. Make sure all slack from seat belt adjusting strap is removed. Seatbelts have non-locking retractors. For proper use, webbing must first be fully extended from the non-locking retractor device. All excess webbing must then be adjusted at the buckle. Caution – Injury to personnel will result if an accident occurs and seatbelts are not used/adjusted properly.

5.4.18. Do not leave ignition rotary switch in RUN once the WAIT-TO-START lamp assembly goes out. Damage to glow plugs will result.

5.4.19. When parking vehicle, be sure the light switch is in the OFF position and that all radio accessories are in the off position. Failure to do so leaves the electrical system on and could result in discharged batteries.

5.4.20. When raising and securing hood, make sure the hood prop rod is secured to hood support bracket. Caution – If hood support bracket is not properly secured in raised position, this may cause damage to equipment or injury to personnel.

5.4.21. When releasing hood prop rod, do not pull rod at hook end. Injury to fingers will occur.

5.4.22. Rollover risk warning. The potential for a vehicle to rollover increases for vehicles with a high gross weight (20,000 lbs. or more) or a high center of gravity. Check the vehicle's data plate to determine if the vehicle is at higher risk for rollover.

5.4.22.1. Rollover risk procedures. The senior occupant will ensure that all personnel are checked for injuries and that injured personnel are given the appropriate medical attention. Report the accident immediately, along with the injury report.

5.4.22.1.1. Driver. Release the accelerator. Keep hands on steering wheel with extended, but not locked, arms. Tuck head into chest and brace for impact and yell, "ROLLOVER."

5.4.22.1.2. Passenger(s). Tuck head into chest and brace for impact. Plant feet firmly on the floor while holding onto a stationary object. Yell, "ROLLOVER."

5.4.22.1.3. Gunner. Drop down. Tuck head into chest and brace for impact. Plant feet firmly on the floor while holding onto a stationary object. Yell, "ROLLOVER."

Note: Gunners when operating the turret, limit body protrusion not to exceed name tag.

5.4.23. Tire Changing Safety. In the event that the vehicle should have a flat or damaged tire, the trainee must know how to safely and properly change the tire. The following is the correct procedure for safely changing the tire:

5.4.23.1. Tools/equipment.

5.4.23.1.1. Vehicle jack w/jack handle.

5.4.23.1.2. Lug wrench.

5.4.23.1.3. Jack stand.

5.4.23.1.4. Wheel chocks.

5.4.23.1.5. Hand/eye/hearing protection (if pneumatic tools are going to be used).

5.4.23.1.6. Gloves should be worn when lifting and positioning tires in order to protect hands.

5.4.23.2. Ensure vehicle is seated on a level surface.

5.4.23.3. Chock the adjacent drive wheel.

5.4.23.4. Locate solid part of vehicle's frame.

5.4.23.5. Place the vehicle jack under the vehicle's frame as close as possible that will not impede tire removal and/or replacement.

5.4.23.6. Raise the vehicle with the jack until the vehicle's weight is supported on the jack but the tire is still in contact with the ground.

5.4.23.7. Loosen, do NOT remove, lug nuts.

5.4.23.8. Jack the vehicle up until the tire clears the ground with no more than an extra inch to allow replacement of tire.

5.4.23.9. Place jack stand under frame of the vehicle to support the vehicle in case the jack's hydraulic should leak and/or fail.

5.4.23.10. Remove the vehicle's lug nuts.

5.4.23.11. Remove the vehicle's flat/damaged tire.

5.4.23.12. Place replacement tire onto the vehicle's axle.

5.4.23.13. Replace vehicle's lug nuts (to hand tight).

5.4.23.14. Jack vehicle up and remove jack stand.

5.4.23.15. Lower vehicle until it makes contact with the ground.

5.4.23.16. Tighten vehicle's lug nuts in a star pattern.

Note: As soon as possible, take the vehicle to Vehicle Maintenance to have the vehicle's wheel torqued to manufacturer's specifications.

5.4.24. Off-road driving. For more information on off-road driving and safe vehicle operation guidance, refer to AFMAN 24-306.

5.4.24.1. Rocky terrain. Do not try to straddle large boulders. They will damage axles and other low parts of the vehicle. Move slowly over rocky terrain.

5.4.24.2. Mud and swamps.

5.4.24.2.1. Try to pull out of the mud/swamp slowly in low gear if the vehicle is equipped with automatic transmission. Place boards, brush or similar material under the vehicle's wheels to increase traction.

5.4.24.2.2. Roll onto the soft area at a medium speed for the selected gear. Carefully maintain a steady throttle until the vehicle reaches solid ground.

5.4.24.2.3. If the vehicle is automatic, try to pull out slowly by using the low gear. If using a lower gear, using boards or using brush does not work, try to use another vehicle to pull the vehicle out.

5.4.24.3. Sand. Estimate to make sure a sandy area is drivable. Adjust tire pressure if needed to meet the conditions. Exercise sound driving techniques.

5.4.24.3.1. Reduce tire pressure when driving in soft sand and over dunes. When operating with reduced tire pressure, drive at a low speed. Inflate tires to normal pressure as soon as the situation permits.

5.4.24.3.2. To start driving on sand be sure tires have the proper pressure. Select a gear or range that will start the vehicle with a minimum of or no clutch slippage and wheel spinning. Accelerate gradually.

5.4.24.3.3. To maintain driving on sand, remain at a steady rate of movement. Avoid unnecessary shifting of gears; with automatics keep it in low range. Stop before entering areas with soft sand and reduce tire pressure, as necessary. As soon as the need for low tire pressure ceases, re-inflate the tires to normal pressure.

5.4.24.3.4. Approach the dune from the windward slope at a 90° angle. Select the proper gear or range to avoid shifting while on the slope. Maintain as much momentum as possible while going up the slope; be prepared to change direction as the vehicle reaches the crest.

5.4.24.3.5. In order to stop in the sand, let the vehicle roll to a halt. Otherwise brake gradually. Try to stop on a downhill slope. It will give the operator the advantage if he/she needs to restart the vehicle.

5.5. Operation.

5.5.1. Starting procedures. **Note:** The HMMWV is a turbo diesel unit and requires that the glow plugs be given time to warm-up prior to starting. If this procedure is overlooked, the engine will crank but will not start.

5.5.1.1. Apply parking brake.

5.5.1.2. Place transmission shift lever in N (Neutral).

5.5.1.3. Do not leave rotary switch in RUN once WAIT-TO-START lamp assembly goes out. Damage to glow plugs will result.

5.5.1.4. Do not use starting fluid or any other fluid for the purpose of assisting in starting procedures. This will result in damage to the glow plugs and the engine.

Note: Do not overtax the starter or battery. Do not crank the starter for more than 20 seconds at a time. Wait at least 10-15 seconds between attempts.

5.5.1.5. Once the "wait" light has extinguished, place ignition rotary switch to START. Release lever after engine starts. Lever will return automatically to RUN.

5.5.1.6. To turn on lights, lift the "unlock" lever and hold in position.

5.5.1.7. Turn the selector switch lever to any ON position except B.O. marker.

5.5.1.8. Turn auxiliary lever to DIM or PANEL BRT. For normal daylight driving, turn selector lever to STOPLIGHT.

5.5.1.9. For blackout operations push selector to B.O. DRIVE.

5.5.1.10. When vehicle is parked, place the lever in B.O. MARKER.

5.5.1.11. Check the instruments while allowing engine to warm up for approximately one minute.

5.5.1.12. Immediately stop engine if any of the following conditions occur:

5.5.1.12.1. Excessive engine vibration.

5.5.1.12.2. Oil pressure does not register or suddenly drops to or less than approximately 6 psi with engine at idle.

5.5.1.12.3. Sudden increase in coolant temperature beyond normal operating temperature of approximately 190° to 230°F as indicated by engine coolant temperature gauge.

Note: Do not attempt to tow or push start the HMMWV. If the operator has the start/run switch in the RUN position, but does not start the engine, he or she could cause damage to the glow plugs or drain the battery.

5.5.2. Slave starting operations.

5.5.2.1. A slave cable is one large cable that connects from one running North Atlantic Treaty Organization (NATO) vehicle (i.e. deuce, etc.) to the dead vehicle. There is no positive and negative like normal vehicles.

5.5.2.2. The operator hooks up one end of the slave cable to the running vehicle and the other end to the dead vehicle and jump as they would normal vehicles. The slave cables should have 24 prongs attached.

5.5.2.3. The slave cables are used for NATO vehicles only.

5.5.2.4. Position slaving vehicle and disabled vehicle close enough for cable hookup.

5.5.2.5. Stop slaving vehicle engine.

5.5.2.6. Remove cover from slave receptacle of disabled vehicle and slaving vehicle.

5.5.2.7. Warning – Ensure all battery cables in disabled vehicle are properly connected before connecting slave cable. Damage to batteries, cables or serious injury to personnel may result from improperly connected batteries.

5.5.2.8. Caution – Use a twisting motion when installing slave cable to the receptacle. Forcefully pushing the cable onto the receptacle may cause damage to the receptacle mount. **Note:** Ensure all electrical switches in both vehicles are turned-off.

5.5.2.9. Connect slave cable to the slave receptacle of both vehicles.

5.5.2.10. Start slaving vehicle engine.

5.5.2.11. Start disabled vehicle engine.

5.5.2.12. After engine starts, disconnect slave cable from both vehicles. **Note:** For easy removal, apply hand cleaner on the inside of the cover before installing receptacle covers.

5.5.2.13. Install receptacle covers on both vehicles.

5.5.3. Basic operation.

5.5.3.1. Once the engine is at operating temperature and all other gauges are reading normal, depress the foot brake, release the hand brake and place the vehicle in the desired driving position.

5.5.3.2. Reverse. The vehicle needs to be at a complete stopping prior to shifting to reverse to avoid damage to the transmission. Always use a spotter when backing. The operator must always maintain visual contact with the spotter. If the operator loses visual contact, he or she should immediately stop the vehicle. See AFMAN 24-306 for additional information on spotter safety and standard spotter hand signals.

5.5.4. 4WD operation.

Table 5.1. 4WD Operation Transmission Controls.

Control	Description
Overdrive (D) w/circle around it	For highway driving.
Drive (no circle)	Normal driving, trailer and fording.
Park (P)	Used to park the vehicle.
Reverse (R)	Used to drive the vehicle in reverse.
2nd Gear	For hill climbing and engine braking.
1st Gear	For steep hill climbing or driving through mud, sand or snow.
Low Lock (L)	Used for climbing or descending steep hills and operating in deep mud, sand or snow.
Neutral (N)	Disengages both driving axles. This position can be used if the vehicle stalls in order to restart the vehicle. Always ensure the vehicle has the hand brake set when using neutral.
High (H)	Used for normal highway driving and fording.
High Lock (HL)	Used for driving through mud, snow, off-road and slippery road conditions.

Note: Warning – Damage to transfer case will result if the transfer case is operated in "L" (low lock) or "H/L" (high lock) on dry paved surfaces for sustained periods.

5.5.4.1. Vehicle must be stopped and transmission shift lever in "N" (neutral) before transfer case can be shifted. Failure to do this will result in damage to the transfer case.

5.5.4.2. When parking the vehicle, ensure the transfer case is left in High. If not, the vehicle may roll since both axles are disengaged when the transfer case is in "N". Regardless of the position of the transmission shift lever, setting the parking brake is also required.

5.5.5. Electrical winch operation.

5.5.5.1. The vehicle electrical system is used to power the winch. Have the engine running while operating the winch so the alternator recharges the battery.

5.5.5.2. Preparation for use:

5.5.5.2.1. Park vehicle directly facing object to be winched. Place transmission shift lever in N (neutral).

5.5.5.2.2. Apply parking brake.

5.5.5.2.3. Start engine.

5.5.5.2.4. Chock wheels.

5.5.5.3. Unwinding winch cable.

5.5.5.3.1. Wear leather gloves when handling winch cable. Do not handle cable with bare hands. Broken wires cause injury.

5.5.5.3.2. Do not power out winch cable for more than 10 ft. Use FREE SPOOL for paying out long lengths of winch cable. Failure to FREE SPOOL long lengths of winch cable may cause damage to winch.

5.5.5.3.3. Forward looking aft, turn clutch lever counterclockwise to FREE SPOOL.

5.5.5.3.4. Pull off cable by hand to desired length and connect to load.

5.5.5.3.5. When fully extending the winch cable, ensure that four wraps of winch cable remain on drum at all times. Failure to do so may cause injury or death to personnel or damage to the winch. **Note:** Refer to the manufacturer's operator's manual for guidance on required slack for the winch cable prior to starting of winching operations. This allows time for the winch motor to start-up for maximum pulling power.

5.5.5.4. Pulling load.

5.5.5.4.1. Install remote control switch by connecting plug to connector. If clutch does not disengage easily, rotate the drum to align gears.

5.5.5.4.2. Turn clutch lever clockwise to ENGAGED.

5.5.5.4.3. Remove remote control switch from stowage box.

5.5.5.4.4. Warning – Direct all personnel to stand clear of winch cable during winch operation. A snapped winch cable will cause injury or death.

Note: The electric winch is equipped with a thermal cut off switch to prevent winch from overheating or exceeding pull capacity. If winch stops during operation, wait approximately 2 minutes to let winch cool off. If after 5 minutes winch is still inoperative, notify organizational maintenance.

5.5.5.4.5. Operate remote control switch to IN or OUT until load has been retrieved.

5.5.5.4.6. Do not fully apply handle throttle during engine NO LOAD condition. Damage to engine may result.

5.5.5.4.7. The electric winch is equipped with a thermal cutoff switch to prevent winch from overheating. If winch stops during operation and does not restart within 5 seconds, wait approximately 2 minutes to let the winch cool off and to allow the thermal switch to reset. If after 5 minutes, the winch is still inoperative, notify Vehicle Management.

5.5.5.4.8. Engine speed is maintained for battery charging only and will not change winch operating speed.

5.5.5.4.9. Pull handle throttle out until desired engine speed is obtained (inside vehicle, right of steering wheel).

5.5.5.4.10. Operate remote control switch to IN or OUT until the load has been retrieved.

5.5.5.5. Securing winch after operation.

5.5.5.5.1. Winch cable must be wound on to the drum under a load of at least 500 lbs. or outer wraps will draw in to the inner wraps and damage winch cable.

5.5.5.5.2. Wind winch cable until hook is 4 ft. from cable guide.

5.5.5.5.3. Turn clutch lever counterclockwise to FREE SPOOL and rotate drum by hand to retrieve the remaining cable.

5.5.5.5.4. Remove remote control switch by disconnecting plug from connector.

5.5.5.5.5. Turn clutch lever clockwise to ENGAGED.

5.5.5.5.6. Release hand throttle (inside vehicle, right of steering wheel). Place remote control switch in stowage box.

5.5.6. Runflat operations.

5.5.6.1. The vehicles are equipped with run flat devices, allowing the vehicle to be driven with one or more tires flat. For more on vehicle-specific run flat operations, refer to the manufacturer's operator's manual.

5.5.6.2. Do not exceed 30 mph (48 kilometers per hour (kph) during any run flat operations. Do not exceed 20 mph (32 kph) with both rear tires flat. Loss of vehicle control may occur, causing damage to equipment and injury or death to personnel.

5.5.6.3. Speeds indicated in the manufacturer's operator's manual are the maximum and must be reduced when traveling on secondary roads, cross- country, or in traffic. Failure to reduce speeds could cause loss of control of vehicle causing damage to equipment and injury or death to personnel.

5.5.6.4. When driving vehicle road and weather conditions are constantly changing. Never drive at a speed greater than is reasonable and prudent for these conditions. Loss of vehicle control may occur, causing damage to equipment and injury or death to personnel.

5.5.6.5. A wheel that has been run flat must be replaced and inspected by unit maintenance as soon as possible before reuse, or damage to equipment may result.

5.5.6.6. Run flat operation may cause the bead to separate from the tire and/or wheel. If abnormal handling is experienced or noise such as flapping or pounding around the wheel well occurs, the tread needs to be cut away from the wheel before continuing operation. Failure to do so could result in damage to the vehicle.

Note: Run flat travel distance will improve with rubber run flat. If additional travel is required tire tread may be cut away from tire.

5.5.7. Operations under blackout conditions.

5.5.7.1. Blackout procedures.

5.5.7.1.1. When operating under blackout conditions, be sure the blackout marker lights are functioning correctly.

5.5.7.1.2. Lower the windshield to improve visibility.

5.5.7.1.3. Drive at reduced speeds.

5.5.7.1.4. If in a column, watch the rear blackout marker lights of the vehicle ahead to follow at the correct distance. Remember the white blackout stoplight of the vehicle ahead is on the right and left side.

5.5.7.2. Blackout marker lights.

5.5.7.2.1. To show the location of vehicles during blackouts, military vehicles are equipped with four blackout marker lights. Two of these lights are on the rear corners of the vehicles and the other two are on the front. They do not illuminate the road, but indicate the position of a vehicle as much as 250 yards ahead, depending on the weather. They cannot be seen from an airplane flying higher than 400 feet.

5.5.7.2.2. When operating a vehicle in a convoy under blackout conditions, if practicable, post a person equipped with a screened flashlight or a large white piece of material in the rear of the vehicle to warn the following driver if he approaches too closely.

5.5.7.2.2.1. An alert rear guard can usually detect a vehicle at a reasonable distance, even with no lamps.

5.5.7.2.2.2. In blackout operations, vehicles will maintain a speed of 5 to 10 mph (8 to 16 kph).

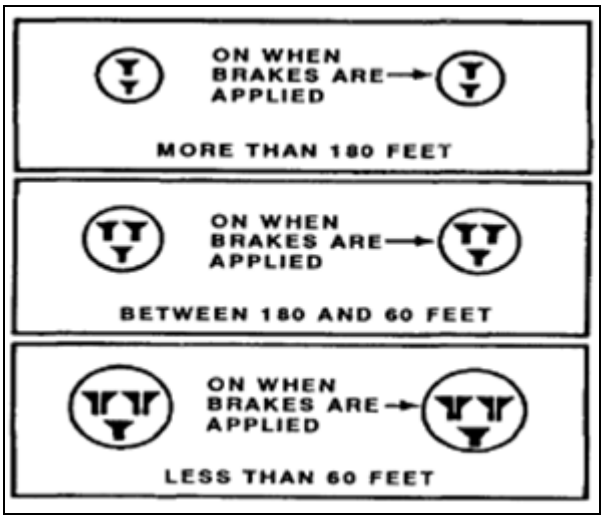
5.5.7.2.2.3. When a vehicle is disabled on the side of the road, the driver is posted at the rear with a screened flashlight or large white piece of material to warn approaching vehicles of the danger.

5.5.7.2.3. Taillights: Each rear lamp has two pairs of “cat’s eyes” that show red when on. Each pear appears as one red light when the vehicle is 60 to 180 feet (20 to 60 yards) away and as two pairs of cat’s eyes in each light at less than 60 feet.

5.5.7.2.3.1. One point of light tells the operator that he or she is too far behind the vehicle ahead. Two lights assure the operator that he or she is following at a proper distance. Four lights warn that the operator is getting too close.

5.5.7.2.3.2. Normally, the blackout stoplight is a separate unit mounted on the right and left taillights. It flashes a white light when the brakes are applied.

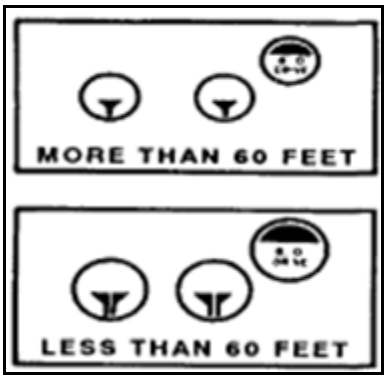
Figure. 5.2. Rear Blackout Lights.



5.5.7.2.4. Front lights: Each front light has one pair of cat's eyes. They show white when on. Each pair appears as one light when more than 60 feet away. When 60 feet away, one pair of cat's eyes in each light can be seen. This warns that the vehicle is near.

5.5.7.2.5. Blackout driving light: The blackout driving light is mounted to the left of the left headlight. It furnishes a different light beam for limited illumination when driving under blackout conditions.

Figure. 5.3. Front Blackout Marker Lights and Blackout Driving Lights.



5.5.8. Shutdown procedures.

5.5.8.1. Place transmission shift level to N (neutral).

5.5.8.2. If vehicle must be backed into a parking position, have another person act as a spotter to direct reverse operation.

5.5.8.3. Apply parking brake.

5.5.8.4. When parking the vehicle, be sure that the light switch is in the OFF position. Failure to do so leaves the electrical system on and could result in a discharged battery.

5.5.8.5. Chock wheels if necessary.

5.5.8.6. Allow the HMMWV to idle for approximately 3 to 5 minutes prior to shutting the engine off. This step is imperative on the turbo diesel to give it time to let the oil drain away from the iron cylinder block and avoid damaging the seals and gaskets.

5.5.8.7. Turn ignition rotary switch to ENG STOP.

Section 6—EXPLANATION AND DEMONSTRATION.

6.1. Instructor's Preparation.

6.1.1. Establish a training location.

6.1.2. Obtain appropriate vehicle operator's manual.

6.1.3. Schedule/reserve a vehicle.

6.1.4. Ensure trainee completes AF Form 171.

6.2. Safety Procedures and Equipment.

6.2.1. The following safety items should be followed by both the instructor and trainee.

6.2.1.1. Chock wheel (if required) when HMMWV is parked.

6.2.1.2. Remove all jewelry and identification tags.

6.2.1.3. Personal protective equipment and equipment items.

6.2.1.3.1. Safety steel-toed boots must be worn.

6.2.1.3.2. Head protection.

6.2.1.3.3. Hand protection, if required.

6.2.1.3.4. First aid kit.

6.2.1.3.5. Raingear, cold weather gear, etc.

6.2.1.3.6. Hearing/eye protection.

6.2.1.3.7. Reflective belt during hours of reduced visibility or on the flightline.

6.2.1.4. Walk-around vehicle to become familiar with and to familiarize and the trainee with all warning labels and signs.

6.2.1.5. Ensure trainee wears seatbelt properly and ensures proper adjustment.

6.2.1.6. Properly adjust driver's seat and all mirrors, if available.

6.2.1.7. Throughout demonstration, practice HMMWV safety.

6.2.2. Practice basic AF RM process during demonstration:

6.2.2.1. Identify hazards.

6.2.2.2. Assess hazards.

6.2.2.3. Develop controls and make decisions.

6.2.2.4. Implement controls.

6.2.2.5. Supervise and evaluate.

6.3. Operator Maintenance Demonstration.

6.3.1. With trainee, accomplish vehicle inspection using AF Form 1800. The vehicle inspection will follow the seven-step method as described in **Attachment 4**. An inspection guide (**Attachment 2**) can be used to ensure all areas of the HMMWV are covered in addition to the "Operation Demonstration" guidelines provided below.

6.4. Operation Demonstration.

6.4.1. Throughout demonstration:

6.4.1.1. Allow for questions.

6.4.1.2. Repeat demonstrations as needed.

6.4.2. For all HMMWVs, within the training area, demonstrate and explain the following. **Note:** Use information contained on the data plate and/or the operator's manual:

6.4.2.1. Specific HMMWV capacities: Explain parking brake as they apply to HMMWV being used.

6.4.2.2. HMMWV controls.

6.4.2.2.1. Shifting pattern.

6.4.2.2.2. Overdrive.

6.4.2.3. Point out the items to be inspected during operations.

6.4.2.3.1. Instruments.

6.4.2.3.2. Gauges.

6.4.2.3.3. Mirrors.

6.4.2.3.4. Tires.

6.4.3. Demonstrate the following HMMWV operations (use spotter when backing).

6.4.3.1. Forward stop (see following example for boundary setup).

6.4.3.1.1. Drive forward between the two rows.

6.4.3.1.2. Bring vehicles to a complete stop as close to the boundary.

6.4.3.2. Backing.

6.4.3.2.1. Straight line backing (see following example for boundary setup).

6.4.3.2.1.1. Back vehicle in a straight line between two rows.

6.4.3.2.1.2. Bring vehicles to a complete stop as close to the boundary.

6.4.3.3. Parking.

6.4.3.4. Right turn (see following example for boundary set-up).

6.4.3.4.1. Drive forward and make a right turn around a cone.

6.4.3.4.2. Bring right rear wheel(s) of the vehicle as close to the base of the cone as possible without hitting it.

6.4.4. With the HMMWV, demonstrate driving on an off-road course approved by SFS and ground safety.

6.4.5. Show trainee the after operation inspection and report.

6.4.5.1. Ensure vehicle is cleaned.

6.4.5.2. Refuel vehicle.

6.4.5.3. Following manufacturer's shut-down procedures.

6.4.5.4. Park.

6.4.5.4.1. Apply brakes.

6.4.5.4.2. Place transmission in neutral (park or an automatic).

6.4.5.5. Perform a walk-around inspection.

6.4.5.6. Annotate any discrepancies found on AF Form 1800.

6.4.6. Conclude by allowing time for questions and any requested re-demonstrations.

Section 7—TRAINEE PERFORMANCE AND EVALUATION

7.1. Trainee Performance.

7.1.1. Instructor will:

7.1.1.1. Ensure safety at all times. **Note:** Stop training when safety items are violated. Proceed only when the trainee fully understands how to avoid repeating the safety infraction(s).

7.1.1.1.1. Chock wheel (if required) when HMMWV is parked.

7.1.1.1.2. Remove all jewelry and identification tags.

Note: If available, mark vehicle with magnetic sign indicating "Driver-in-Training" or "Trainee Operator."

7.1.1.2. Personal protective equipment and other items:

7.1.1.2.1. Safety steel-toed boots must be worn.

7.1.1.2.2. Gloves will be worn during cargo loading and unloading.

7.1.1.2.3. Hearing protection/eye protection.

7.1.1.2.4. First aid kit.

7.1.1.2.5. Reflective belt during hours of reduced visibility or on the flightline.

7.1.1.2.6. Raingear, cold weather gear, etc.

7.1.1.3. Pay particular attention to the cautions and warnings listed in the operator's manual.

7.1.1.4. Ensure trainee wears seatbelt.

7.1.1.5. Properly adjust driver’s seat and all mirrors.

7.1.1.6. HMMWV safety items/procedures.

7.1.1.7. Ensure the driver is aware of driving situations he/she is to perform.

7.1.1.8. Conduct during/after-action reviews with the trainee (demonstration may need to be re-accomplished).

7.1.2. Trainee Performance.

7.1.2.1. Conduct operator maintenance (have trainee explain items being inspected). **Note:** Allow trainee to use **Attachment 2** as a guide while performing inspection.

7.1.2.1.1. Backing. Serve as the trainee’s spotter, or if available, have another trainee be the spotter. Spotters must be trained and use hand signals IAW AFMAN 24-306.

7.1.2.1.2. Continue until trainee can show proficiency in operating.

7.1.2.2. Have trainee practice the HMMWV operations listed below (use spotter when backing) until they can safely and efficiently perform.

7.1.2.3. Establish an off-road course and operate the HMMWV until trainee performs safely and efficiently.

7.1.2.4. Perform post-operation inspection.

7.1.2.4.1. Ensure vehicle cleaned.

7.1.2.4.2. Refueled.

7.1.2.4.3. Following manufacturer’s shut-down procedures.

7.1.2.4.4. Park.

7.1.2.4.5. Apply brakes.

7.1.2.4.6. Place transmission in neutral (park or an automatic).

7.1.2.5. Perform a walk-around inspection.

7.1.2.6. Report any discrepancies found on AF Form 1800.

7.2. Performance Evaluation.

7.2.1. Trainee will perform performance evaluation found in **Attachment 3**.

7.2.1.1. Instructor and trainee will review **Attachment 3**.

7.2.1.2. Instructor will answer trainee's questions.

Note: If available, mark vehicle with magnetic sign indicating "Driver-in-Training" or "Trainee Operator."

7.2.2. Instructor will:

7.2.2.1. Ensure safety at all times.

7.2.2.1.1. Place wheel chocks (if required) when HMMWV is parked.

7.2.2.1.2. Remove all jewelry and identification tags.

7.2.2.2. Personal protective equipment and other items.

7.2.2.2.1. Safety steel-toed boots must be worn.

7.2.2.2.2. Hearing protection/eye protection.

7.2.2.2.3. Gloves will be worn during cargo loading and unloading.

7.2.2.2.4. First aid kit.

7.2.2.2.5. Reflective belt during hours of reduced visibility or on the flightline.

7.2.2.3. Pay particular attention to the cautions and warnings listed in the operator's manual.

7.2.2.4. Ensure trainee wears seatbelt properly and ensures proper adjustment.

7.2.2.5. Properly adjust driver's seat and all mirrors (if available).

7.2.2.6. HMMWV safety items/procedures.

7.2.3. Explain driving techniques.

7.2.4. Establish a road course.

7.2.5. Ensure the driver is aware of driving situations.

7.2.6. Conduct after-action reviews with the trainee.

7.2.7. Trainee is not allowed any instructor assists to pass performance evaluation.

7.2.8. Evaluation checklist provided in **Attachment 3**.

7.2.9. Retraining; retrain No-Go's.

7.2.9.1. Re-demonstrate No-Go items.

7.2.9.2. Have trainee re-perform until they show proficiency in operating, critique weaknesses as observed.

7.2.9.3. Re-evaluate.

Attachment 1

GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

References
AFI 24-301, *Ground Transportation, 1 November 2018*
AFI 13-213, *Airfield Driving*, 1 June 2011
AFMAN 24-306, *Operation of Air Force Government Motor Vehicles*, X January 2017
AFPAM 90-803, *Risk Management (RM) Guidelines and Tools*, 11 February 2013

Adopted Forms
AF Form 171, *Request for Driver's Training and Addition to U.S. Government Drivers*, 1 November 2018
AF Form 847, *Recommendation for Change in Publication*
AF Form 1800, *Operator's Inspection Guide and Trouble Report*

Abbreviations and Acronyms
AF—Air Force
AFI—Air Force Instruction
AFIMSC—Air Force Installation and Mission Support Center
AFMAN—Air Force Manual
AFQTP—Air Force Qualification Training Plan
BO—Blackout
FOD—Foreign Object Damage
HMMWV—High Mobility Multipurpose Wheeled Vehicle
IAW—In Accordance With
KPH—Kilometers per Hour
MPH—Miles per Hour
NATO—North Atlantic Treaty Organization
PSI—Pounds per Square Inch
RM—Risk Management
TO—Technical Order
VCNCO—Vehicle Control Non Commissioned Officer
VCO—Vehicle Control Officer
4WD—Four Wheel Drive

Attachment 2

HMMWV INSPECTION GUIDE

GENERAL

STEP 1. VEHICLE OVERVIEW

☐ Paperwork
- AF Form 1800
- Discrepancy Correction Complete (VM Annotation)

☐ Vehicle Approach
- Damage
- Vehicle Leaning
- Fresh Leakage of Fluids
- Hazards Surrounding Vehicle

INTERNAL

STEP 2. ENGINE COMPARTMENT

☐ Leaks/hoses/Electrical Wiring Insulation
☐ Oil Level
☐ Coolant Level
☐ Power Steering Fluid
☐ Windshield Washer Fluid
☐ Battery Fluid Level, Connections & Tie-downs
☐ Automatic Transmission Fluid Level
☐ Engine Compartment Belts

STEP 3. ENGINE START/CAB CHECK (LEFT/FRONT/RIGHT)

☐ Safe Start
☐ Gauges
- Oil Pressure Gauge
- Air Pressure Gauge
- Temperature Gauge (Coolant/Engine Oil)
- Ammeter/Voltmeter

☐ Warning Lights & Buzzers
☐ Mirrors & Windshield
☐ Wipers/Washers
☐ Emergency & Safety Equipment
- Red Reflective Triangles
- Properly Charged & Rated Fire Extinguisher
- Optional (Chains/Tire Changing Equip, Emergency Phone List)

☐ **3B** – Lights/Reflectors/Reflector Tape Condition (Front/Sides/Rear)
(Dash Indicators for:)

- Left Turn Signal
- Right Turn Signal
- Four-Way Emergency Flashers
- High Beam Headlight
- Clearance Lights
- Blackout Lights
- Headlights
- Taillights
- Red Reflectors & Amber Reflectors
- Reflective Tape Condition

☐ Horn
☐ Heater/Defroster
☐ Brakes

- Parking Brake Check
- Service Brake Check
- Safety Belt

(TURN-OFF ENGINE/TURN-ON HEADLIGHTS *LOW BEAM* AND FOUR-WAY FLASHERS)

STEP 4. WALK-AROUND INSPECTION

☐ **4A** – Steering

- Steering Box/Hoses
- Steering Linkages

☐ **4B** – Suspension

- Springs/Air/Torque
- Mounts
- Shock Absorbers

☐ **4C** – Brakes

- Slack Adjustors & Pushrods
- Brake Chambers
- Brake Hoses/Lines
- Drum Brake
- Brake Linings

☐ **4D** – Wheels

- Rims
- Tires
- Hub Oil Seals/Axle Seals
- Lug Nuts
- Spacers & Budd Spacing

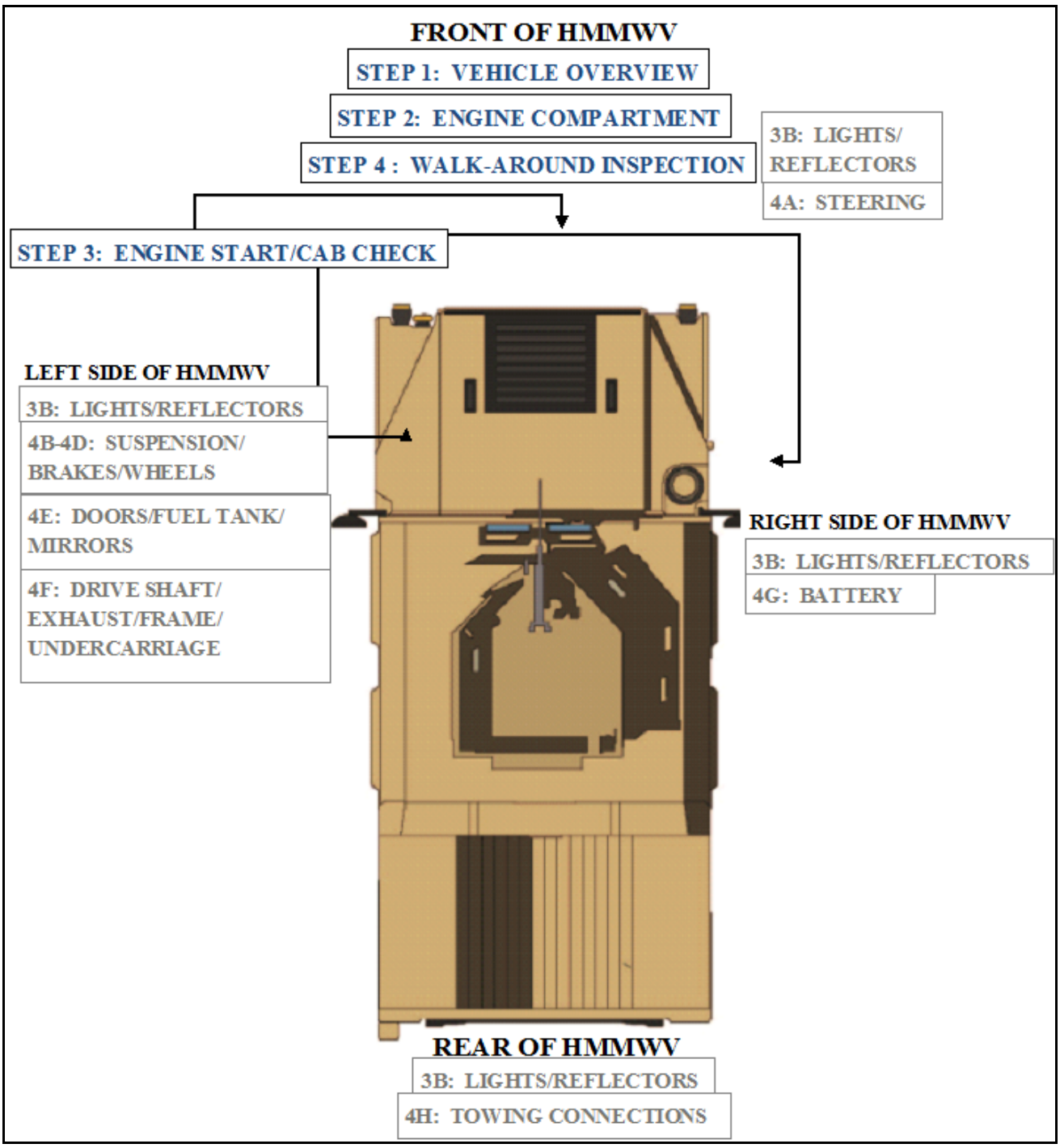
SIDE OF VEHICLE/UNDER VEHICLE

☐ **4E** – Doors
☐ **4E** – Mirrors
☐ **4E** – Fuel Tank
☐ **4F** – Drive Shaft
☐ **4F** – Exhaust Frame
☐ **4F** – Undercarriage
☐ **4G** – Battery

REAR OF VEHICLE

☐ **4H** – Towing Connections

Figure A2.1. HMMWV Inspection Guide.



Attachment 3

PERFORMANCE TEST

A3.1. Desired Learning Outcome.

A3.1.1. Understand the safety precautions to be followed pre-, during-, and post-operation of the HMMWV.

A3.1.2. Understand the purpose of the HMMWV and their role in the mission.

A3.1.3. Know the proper operator maintenance procedures of the HMMWV, IAW applicable technical orders and use of AF Form 1800.

A3.1.4. Safely and proficiently operate the HMMWV.

A3.2. Instructions. Before beginning the performance test, the trainer will brief the trainee on the scenario the trainee will need to accomplish. He/she will be given additional directions and instructions as needed to proceed through the scenario.

A3.3. Scoring.

A3.3.1. The trainer examiner will be scoring on HMMWV operations and also the general safe driving practices. The examiner will give directions and instructions to the trainee in sufficient time for to execute a driving maneuver. He/she will not be asked to drive in an unsafe manner.

A3.3.2. The examiner will be making various marks on the performance test checklist. This does not necessarily mean the trainee have done anything wrong. It is in the best interest to concentrate on the operation of the HMMWV. The trainer will explain the test results to the trainee at the conclusion of the performance test.

A3.3.3. Tasks being graded are listed on the following page; the trainee will be required to successfully pass all items.

A3.3.4. The instructor will stop the test at any time safe HMMWV operations are not being followed or as deemed necessary for safety concerns.

Figure A3.1. Performance Test Checklist:

PERFORMANCE TEST			
Trainees Name:		**Date:**	
Event	**Go**	**No Go**	**Notes**
1. PRE, DURING, AND POST- OPERATION INSPECTION			
1.1. Operator has required Personal Protective Equipment.			
1.2. Follows general pattern of pre-trip checklist.			
1.3. Performs brake component check			
1.4. Signs AF Form 1800 to signify accomplishment of complete inspection.			
1.5. Cleans windshield, windows, mirrors, lights and reflectors			
1.6. Continues during operations inspection checks.			
1.7. Knows use of jacks, tools, emergency devices, tire chains, fire extinguishers, etc.			
1.8. Performs post trip inspection and reports malfunctions to Vehicle Management.			
1.9. Inspects tires for tire pressure.			
Event	**Go**	**No Go**	**Notes**
2. OFF-ROAD DRIVING TEST			
2.1. General - safety belt is used; obeys all traffic signs, signals, and laws; completes test without an accident or moving violation.			
2.2. Turns - slows down smoothly, changes gears as needed to keep power, and checks mirrors to ensure proper clearance.			
2.3. Sandy Area – Maintains a speed that does not strain the vehicle or the engine. Reduces tire pressure. Comes to a halt instead of a stop/brake gradually when stopping.			
2.4. Swampy Area – Maintains a steady and even rate of movement.			

2.5. Winter Driving – Starts driving in second or third gear rather than first or low. Avoids quick acceleration. Aware of shaded areas due to slick ice. Drives at reduced speeds.			
Event	**Go**	**No Go**	**Notes**
3. KNOWLEDGE OF VEHICLE AND USE OF CONTROLS			
3.1. Engine:			
Uses proper starting procedures			
Allows proper warm-up.			
Understands all gauges.			
Uses proper shutdown procedures.			
Basic knowledge of engines.			
3.2. Brakes and Braking Techniques.			
Proper use of parking brake.			
Proper use of BO markers/turret.			
Event:	**Go**	**No Go**	**Notes**
4. BACKING/PARKING:			
4.1. Backing			
Positions HMMWV properly.			
Inspects HMMWV before backing.			
Post guide before backing and uses spotters properly.			
Uses mirrors properly.			
Avoids blind side backing.			
Controls speed.			
4.2. Parking.			
Checks traffic position before parking.			
Secures HMMWV properly.			
Parks legally and safely.			
Pulls completely off pavement when possible.			
Knows proper use of emergency warning devices.			
Uses emergency warning devices.			
CERTIFIER COMMENTS:			

Attachment 4

SEVEN-STEP INSPECTION PROCESS

Figure A4.1. Seven-Step Inspection Process.

Seven-Step Inspection Process	
Step	**Procedure**
1. Vehicle Overview	• Review the AF Form 1800. o Ensure any discrepancy has been corrected. o Vehicle Management annotated the discrepancy was completed. o Approaching the vehicle. ▪ Damage or vehicle leaning to one side. ▪ Fresh leakage of fluids. ▪ Hazards around vehicle.
2. Check Engine Compartment	• **Note:** Check that the parking brakes are on and/or wheels chocked. The operator may have to raise the hood, tilt the cab (secure loose things so they don't fall and break something), or open the engine compartment door. • Check the following: o Engine oil level. o Coolant level in radiator; condition of hoses. o Power steering fluid level; hose condition (if so equipped). o Windshield washer fluid level. o Battery fluid level, connections and tie-downs (battery may be located elsewhere). o Automatic transmission fluid level (may require engine to be running). o Check belts for tightness and excessive wear (alternator, water pump, air compressor)--learn how much "give" the belts should have when adjusted right. o Leaks in the engine compartment (fuel, coolant, oil, power steering fluid, hydraulic fluid, battery fluid). Cracked, worn electrical wiring insulation.

3. Start Engine and Inspect Inside the Cab (Get in and Start Engine)	• Make sure parking brake is on. • Put gearshift in neutral (or park if automatic). Start engine; listen for unusual noises. • Look at the gauges. o Oil pressure. Should come up to normal within seconds after engine is started. o Ammeter and/or voltmeter. Should be in normal range(s). o Coolant temperature. Should begin gradual rise to normal operating range. o Engine oil temperature. Should begin gradual rise to normal operating range. o Warning lights and buzzers. Oil, coolant, charging circuit warning, and antilock brake system lights should go out right away. o Check Condition of Controls. Check all of the following for looseness, sticking, damage, or improper setting: ▪ Steering wheel. ▪ Accelerator (gas pedal). ▪ Brake controls. ▪ Foot brake. ▪ Trailer brake (if vehicle has one). ▪ Parking brake. ▪ Transmission controls. ▪ Horn(s). ▪ Windshield wiper/washer. ▪ Lights. ▪ Headlights. ▪ Dimmer switch. ▪ Turn signal. ▪ Four-way flashers. ▪ Parking – clearance – identification – marker switch (switches). • Check mirrors and windshield. o Inspect mirrors and windshield for cracks, dirt, illegal stickers, or other obstructions to seeing clearly. Clean and adjust as necessary. • Check emergency equipment. o Check for safety equipment:

	▪ Spare electrical fuses (unless vehicle has circuit breakers). ▪ Properly charged and rated fire extinguisher. Check for optional items such as: ▪ Tire changing equipment. ▪ List of emergency phone numbers Accident reporting kit (packet). o Check safety belt. Check that the safety belt is securely mounted, adjusts; latches properly and is not ripped or frayed.
4. Turn-off Engine	• Make sure the parking brake is set, turn-off the engine, and take the key with. • Turn-on headlights (low beams) and four-way emergency flashers, and get out of the vehicle.
5. Do Walk-Around Inspection	• General. o Go to front of vehicle and check that low beams are on and both of the four-way flashers are working. o Push dimmer switch and check that high beams work. o Turn-off headlights and four-way emergency flashers. o Turn-on parking, clearance, side-marker, and identification lights. o Turn-on right turn signal, and start walk-around inspection. o Walk around and inspect. ▪ Clean all lights, reflectors, and glass as while doing the walk-around inspection. • Left front side. o Driver's door glass should be clean. o Door latches or locks should work properly. • Left front wheel. o Condition of wheel and rim--missing, bent, broken studs, clamps, lugs, or any signs of misalignment. o Condition of tires--properly inflated, valve stem and cap OK, no serious cuts, bulges, or tread wear.

	o Hub oil level OK, no leaks. Left front suspension. o Condition of spring, spring hangers, shackles, o U-bolts. o Shock absorber condition. • Left front brake. o Condition of brake drum or disc. o Condition of hoses. • Front. o Condition of front axle. Condition of steering system. o No loose, worn, bent, damaged or missing parts. o Must grab steering mechanism to test for looseness. o Condition of windshield. o Check for damage and clean if dirty. o Check windshield wiper arms for proper spring tension. o Check wiper blades for damage, "stiff" rubber, and securement. o Lights and reflectors. o Parking, clearance, and identification lights clean, operating, and proper color (amber at front). o Reflectors clean and proper color (amber at front). o Right front turn signal light clean, operating, and proper color (amber or white on signals facing forward). • Right side o Right front: check all items as done on left front. o Primary and secondary safety cab locks engaged (if cab-over-engine design). o Fuel tank(s). o Securely mounted, not damaged, or leaking. Fuel crossover line secure. o Tank(s) contain enough fuel. Cap(s) on and secure. o Condition of visible parts. Rear of engine--not leaking. o Transmission--not leaking.

	o Exhaust system--secure, not leaking, not touching wires, fuel, or air-lines. o Frame and cross members--no bends or cracks. o Air-lines and electrical wiring--secured against snagging, rubbing, wearing. o Spare tire carrier or rack not damaged (if so equipped). o Spare tire and/or wheel securely mounted in rack. o Spare tire and wheel adequate (proper size, properly inflated). • Right rear. o Condition of wheels and rims--no missing, bent, or broken spacers, studs, clamps, or lugs. o Condition of tires--properly inflated, valve stems and caps OK, no serious cuts, bulges, tread wear, tires not rubbing each other, and nothing stuck between them. o Tires same type, e.g., not mixed radial and bias types. o Tires evenly matched (same sizes). Wheel bearing/seals not leaking. o Suspension. o Condition of spring(s), spring hangers, shackles, and U-bolts. o Axle secure. o Powered axle(s) not leaking lube (gear oil). Condition of torque rod arms, bushings. o Condition of shock absorber(s). o If retractable axle equipped, check condition of lift mechanism. If air powered, check for leaks. o Condition of air ride components. o Brakes. o Brake adjustment. o Condition of brake drum(s) or discs. o Condition of hoses--look for any wear due to rubbing. o Lights and reflectors.

	o Side-marker lights clean, operating, and proper color (red at rear, others amber). o Side-marker reflectors clean and proper color (red at rear, others amber). • Rear. o Lights and reflectors. o Rear clearance and identification lights clean, operating, and proper color (red at rear). o Reflectors clean and proper color (red at rear). o Taillights clean, operating, and proper color (red at rear). o Right rear turn signal operating, and proper color (red, yellow, or amber at rear). o Splash guards present, not damaged, properly fastened, not dragging on ground, or rubbing tires. o Cargo secure (trucks). o End gates free of damage, properly secured in stake sockets. o Rear doors securely closed, latched/locked. • Left side. o Check all items as done on right side, plus: o Battery (batteries) (if not mounted in engine compartment). o Battery box (boxes) securely mounted to vehicle. Box has secure cover. o Battery (batteries) secured against movement. Battery (batteries) not broken or leaking. o Fluid in battery (batteries) at proper level (except maintenance-free type). o Cell caps present and securely tightened (except maintenance-free type). o Vents in cell caps free of foreign material (except maintenance-free type).

6. Check Signal Lights	• Get in and turn-off all lights. • Turn-on stop lights (apply trailer hand brake or have a helper put on the brake pedal). • Turn-on left turn signal lights. • Get out and check lights. • Left front turn signal light clean, operating and proper color (amber or white on signals facing the front). • Left rear turn signal light and both stop lights clean operating, and proper color (red, yellow, or amber). • Get in vehicle. o Turn-off lights not needed for driving. o Secure all loose articles (they might interfere with operation of the controls or hit the operator in a crash). o Start the engine.
7. Start the Engine and Check Test for Hydraulic Leaks	• Test for hydraulic leaks. o If the vehicle has hydraulic brakes, pump the brake pedal three times. o Then apply firm pressure to the pedal and hold for five seconds. o The pedal should not move. If it does, there may be a leak or other problem. • Brake system. • Test parking brake. o Fasten safety belt. o Set parking brake. o Gently pull forward against parking brake to make sure the parking brake holds. o If it doesn't hold vehicle, it is faulty; get it fixed. **Note:** This could cause serious damage to an up-armored HMMWV. • Check vehicle operation regularly: o Instruments. o Temperature gauges. o Pressure gauges. Ammeter/voltmeter. o Mirrors. o Tires. o If the trainee sees, hears, smells, or feels anything that might mean trouble, he/she should check it out.

	• Safety inspection. • Document any discrepancy on AF Form 1800. Sign-off AF Form 1800 to signify accomplishment of inspection.