DEPARTMENT OF THE AIR FORCE
Headquarters US Air Force
Washington, D.C. 20330-1030

QTP24-3-C600
20 December 2018
Certified Current 29 August 2022

Deicer

Vehicle Management Codes: C600 – C601

QUALIFICATION TRAINING PACKAGE

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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 overview, **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. 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 or 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 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 deicers.

3.1.1.2. This training will ensure the trainee becomes a qualified deicer operator; an operator who has the knowledge and skills to operate a deicer 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 deicer.

3.2.2. Understand the purpose of the deicer and their role in the mission.

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

3.2.4. Safely and proficiently operate the deicer.

3.3. Lesson Duration.

3.3.1. Recommended instructional and hands on training time is 30 hours:

Figure 3.1. Recommended Training Time for Training Activities.

Training Activity	Training Time
Trainee's Preparation	2 Hours
Instructor's Lecture	2 Hours
Instructor's Demonstration	4 Hours
Trainee's Personal Experience (to build confidence and proficiency) ▪ Perform Operator Maintenance ▪ Operate the Vehicle	20 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. AF Form 1800.

3.4.2. Risk Management (RM) and Safety Principles.

3.4.3. Applicable TOs or Manufacturer's Operator's Manual. See below. (This list is not all-inclusive. See Vehicle Management for TO number for vehicle being used in training.).

3.4.3.1. TO 35E17-6-41

3.4.3.2. TO 35E17-6-43.

3.4.3.3. TO 35E17-6-51.

3.4.3.4. TO 36-1-191.

3.4.3.5. TO 1C-10(K)A-2-12-31-01.

3.4.3.6. TO 1C-17A-2-10JG-50-1.

3.4.3.7. TO 42C-1-2.

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

3.4.5. Applicable Federal Facility Agreement (FAA)/Environmental Protection Agency (EPA) guidelines on De/Anti-icing and the fluids involved.

3.5. Instructional Training Aids and Equipment.

3.5.1. Deicer Lesson Plan.

3.5.2. Deicer.

3.5.3. Applicable TO(s) or Manufacturer's Operator's Manual. See below (not all-inclusive):

3.5.3.1. TO 35E17-6-41

3.5.3.2. TO 35E17-6-43.

3.5.3.3. TO 35E17-6-51.

3.5.3.4. TO 36-1-191.

3.5.3.5. TO 1C-10(K)A-2-12-31-01.

3.5.3.6. TO 1C-17A-2-10JG-50-1.

3.5.3.7. TO 42C-1-2.

3.5.4. AF Form 1800.

3.5.5. Suitable training area.

3.5.6. Traffic cones.

3.5.7. Personal Protective Equipment (PPE): Deice suit, steel-toed boots, gloves, cold weather gear, harness, hearing/eye protection, reflective gear, etc.

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.

4.2.1. This entire lesson plan.

4.2.2. AFMAN 24-306.

4.2.3. Manufacturer's Operator's Manual.

Section 5—KNOWLEDGE LECTURE AND EVALUATION

5.1. Knowledge Overview (Lecture).

5.1.1. The Air Force uses a variety of different deicer trucks in order to accomplish its mission. Training and licensing is a requirement to ensure the operator can operate the deicer safely and proficiently in order to ensure the safe and timely operation of aircraft while preventing flightline mishaps. This section covers an overview of material needed to meet these standards in addition to the Manufacturer's Operator's Manual, TOs and local guidance applicable to the vehicle being operated and the aircraft being serviced.

5.2. Overview of Training and Requirements.

5.2.1. Training objectives:

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

5.2.1.2. Train and qualify each trainee in safe operation and preventive maintenance of the deicer.

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

5.2.2. Desired learning outcomes:

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

5.2.2.2. Understand the purpose of the deicer and its role in the mission.

5.2.2.2.1. Role in the mission (Unit/Base/Community (during natural disasters)/AF).

5.2.2.2.2. Know the proper operator maintenance procedures of the deicer, IAW applicable TOs and use of AF Form 1800.

5.2.2.2.3. Be able to safely and proficiently operate the deicer.

5.2.2.2.4. Why is it important to safely and proficiently operate the deicer?

5.2.2.2.4.1. Meet mission requirements.

5.2.2.2.4.2. Demonstrates a qualified trained professional operator

5.2.3. Deicer design. A deicer truck is designed to remove compacted snow and ice off an aircraft in order to prepare the aircraft for flight. To meet this mission requirement, the truck is equipped with chemical deicing agents which are able to melt down through snow and ice to the hard surface of the aircraft, undercutting and loosening the snow and ice by lowering the freezing point of water. Some components vary based on vehicle type/model. The standard layout/design of a deicer can be found in the manufacturer's operator's manual or applicable T.O.

5.2.4. Deicer components.

5.2.4.1. Chassis (engine, hydraulic pumps and reservoir, batteries, fuel tank, fluid tank).

5.2.4.2. Auxiliary engine.

5.2.4.3. Operator's basket (containing spray guns, communication connections, basket controls, harness point and lights).

5.2.4.4. Hydraulic boom.

5.2.4.5. Compartment (containing Donkey Engine, heater and hydraulics).

5.2.4.6. Fluid pump.

5.2.4.7. Side gun (under wing nozzle).

5.2.4.8. Emergency boom controls.

5.2.4.9. De-icing fluid refill point.

5.2.4.10. Truck cab (containing heater controls, gauges, communication connections and driver controls, etc.).

5.2.4.11. Roof window.

5.2.4.12. Truck fuel tank.

5.2.4.13. De-icing fuel tank.

5.2.4.14. Boom locating point.

5.2.4.15. Inspection hatches.

5.2.4.16. Beacon light.

5.2.4.17. Fluid type (mix).

5.2.4.18. Fire control.

5.2.4.19. Fire access point.

5.2.4.20. Fluid level gauges.

5.2.4.21. Forced heat blower.

5.2.4.22. Fluid heater.

5.2.4.23. Heater exhaust outlet.

5.2.4.24. Spring locks/outrigger system, if applicable.

5.3. Vehicle Inspection.

5.3.1. Types of vehicle inspection. If discrepancies are found they must be reported to Vehicle Control Official (VCO), the supervisor, and/or vehicle maintenance:

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

5.3.1.1.1. Approaching the vehicle.

5.3.1.1.1.1. Notice general condition.

5.3.1.1.1.2. Look for exterior damage.

5.3.1.1.1.3. Fluid leaks.

5.3.1.1.2. Seat and mirror adjustment.

5.3.1.1.3. Wheels and rim:

5.3.1.1.3.1. Damaged rims.

5.3.1.1.3.2. Correct air pressure (where to find recommended air pressure).

5.3.1.1.3.3. Loose or missing lug nuts.

5.3.1.1.3.4. Cuts/tread separation.

5.3.1.1.4. Chassis/engine:

5.3.1.1.4.1. Engine/auxiliary engine.

5.3.1.1.4.1.1. Leaks.

5.3.1.1.4.1.2. Engine oil level.

5.3.1.1.4.2. Windshield washer fluid level.

5.3.1.1.4.3. Coolant level and radiator hoses.

5.3.1.1.4.4. Transmission/hydraulic fluid level.

5.3.1.1.4.5. Cracked, worn, or exposed electrical wiring.

5.3.1.1.4.6. Check belts for frays and excessive wear.

5.3.1.1.4.7. Battery.

5.3.1.1.5. Exhaust system:

5.3.1.1.5.1. Exhaust parts that are leaking.

5.3.1.1.5.2. Loose, broken, or missing exhaust pipes, mufflers, or tailpipes.

5.3.1.1.6. Truck cab.

5.3.1.1.6.1. Operator’s seat.

5.3.1.1.6.2. Seatbelt(s).

5.3.1.1.6.3. Forms (AF Form 1800, Department of Defense (DD) Form 518, Standard Form (SF) 91).

5.3.1.1.6.4. Mirrors.

5.3.1.1.6.5. Roof window/cab windows.

5.3.1.1.6.6. Horn operation.

5.3.1.1.6.7. Door latches and locks.

5.3.1.1.6.8. Gear shift selection.

5.3.1.1.6.9. Parking brake.

5.3.1.1.6.10. Windshield wipers/washers.

5.3.1.1.6.11. Communication and connections (headset).

5.3.1.1.7. Check controls for proper operations (interior/exterior).

5.3.1.1.7.1. Accelerator.

5.3.1.1.7.2. Brake pedal.

5.3.1.1.7.3. Parking brake.

5.3.1.1.7.4. Horn(s).

5.3.1.1.7.5. Heater/fan controls.

5.3.1.1.7.6. Transmission controls.

5.3.1.1.7.7. Pump controls.

5.3.1.1.7.8. Boom controls.

5.3.1.1.7.9. Door latches and locks.

5.3.1.1.8. Lights:

5.3.1.1.8.1. Headlights (high and low beam).

5.3.1.1.8.2. Turn signals and four way flashers.

5.3.1.1.8.3. Interior cab lights.

5.3.1.1.8.4. Beacon light.

5.3.1.1.8.5. Operator’s basket lights.

5.3.1.1.9. Deicer components:

5.3.1.1.9.1. Boom/emergency boom controls/boom locating point.

5.3.1.1.9.2. Inspection hatches.

5.3.1.1.9.3. Side gun (under wing nozzle).

5.3.1.1.9.4. Fluid pump/de-icing fluid refill point.

5.3.1.1.9.5. Compartment.

5.3.1.1.9.5.1. Donkey Engine.

5.3.1.1.9.5.2. Heater.

5.3.1.1.9.5.3. Hydraulics.

5.3.1.1.9.6. Operator’s basket.

5.3.1.1.9.6.1. Spray guns.

5.3.1.1.9.6.2. Communication connections.

5.3.1.1.9.6.3. Basket controls.

5.3.1.1.9.6.4. Harness points.

5.3.1.1.9.6.5. Lights.

5.3.1.1.9.7. Fire control/fire access point.

5.3.1.1.9.8. Forced heat blower/fluid heater/heater exhaust outlet.

5.3.1.1.9.9. Spring locks/outrigger system (if applicable).

5.3.1.1.10. Emergency equipment (mandatory items):

5.3.1.1.10.1. Fire extinguisher(s) (properly charged, inspection is current, and secured).

5.3.1.1.10.2. First aid kit (ensure restocked and not expired).

5.3.1.2. Inspections during operations:

5.3.1.2.1. All gauges and warning lights for proper operations: Warning lights, gauges and indicators.

5.3.1.2.2. Deicer controls. Refer to Manufacturer's Operator's Manual for more information regarding controls on specific deicer type.

5.3.1.2.3. Unusual noises. Listen for any unusual, irregular motions, or vibrations.

5.3.1.2.4. Listen for exhaust and air leaks. Exhaust leaks are often confused with other sounds.

5.3.1.3. After-operation inspection:

5.3.1.3.1. All gear is properly stowed (i.e. harness)

5.3.1.3.2. Ensure the deicer is cleaned.

5.3.1.3.3. Refueled.

5.3.1.3.4. Perform a walk-around inspection.

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

5.3.2. 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.

5.4. Vehicle Safety and Equipment.

5.4.1. Hazards and human factors:

5.4.2. Safety clothing and equipment:

5.4.2.1. Safety steel-toed boots must be worn.

5.4.2.2. Hearing protection.

5.4.2.3. Eye protection.

5.4.2.4. Safety harness.

5.4.2.5. Chocks.

5.4.2.6. Deice suit.

5.4.2.7. Raingear, cold weather gear, etc.

5.4.2.8. Fire extinguisher.

5.5. Driving Safety and Precautions.

5.5.1. Overview safety and precautions. The following are safety items and procedures to be followed during deicer operations. The manufacturer's operator's manual, applicable deicing operation TOs and local guidance will also provide safe deicer operating procedures. Additionally, the vehicle itself may have warning, cautions, and danger stickers that the Vehicle Operator should be aware of.

5.5.1.1. General safety and precautions.

5.5.1.1.1. Operator and passengers shall wear seat belts as provided.

5.5.1.1.2. Wear appropriate personal protective equipment.

5.5.1.1.3. Obstacles and hazards. Check the work area for obstacles that can cause loss of control to the vehicle: holes, objects, slippery surfaces, rough spots, etc. Plan the approach of the vehicle to and from the aircraft to avoid these hazards.

5.5.1.1.4. Overhead clearance. Stay clear of electrical power lines.

5.5.1.1.5. Do not stand on guard rails.

5.5.1.1.6. Do not operate the deicer without gates closed and latched.

5.5.1.2. Foreign Object Damage (FOD).

5.5.1.2.1. Vehicle operators will remove FOD from tires during daily the vehicle inspection. Before entering the airfield, a physical check for loose/unsecured objects and an inspection of the tire treads for FOD will be accomplished, with the exception of emergency vehicles responding to actual situations.

5.5.1.2.2. Any vehicle which has been driven on an unpaved surface will have a tire FOD inspection accomplished prior to re-entering the airfield area.

5.5.1.3. Deicing fluids.

5.5.1.3.1. Most anti-icing, deicing and defrosting fluids are mildly toxic. Contact with the skin or eyes should be avoided. Avoid prolonged exposure.

5.5.1.3.2. Be aware of the flash temperature of the fluid. Take care to insure that the fluids are kept away from sparks, fire and oxidizing agents.

5.5.1.3.3. Wear adequate eye protection when applying deicing fluids.

5.5.1.3.4. Deicing fluids containing ethylene glycol (MIL-A-8243, Type II) have been found to cause severe spalling of Portland cement concrete pavements. This damage may be prevented or minimized by treating such pavements prior to exposure with light seal coats of emulsified linseed oil.

5.5.1.3.5. The presence of either deicing or anti-icing fluids around Liquid Oxygen (LOX) servicing/overflow areas can result in a potential fire. Prior to LOX servicing, the fluids shall be removed from areas adjacent to the LOX filler and overflow tubes by flushing or wiping methods.

5.5.1.3.6. Special care shall be exercised to prevent the excess use of fluids around cabin heater and/or ventilator air intake ducts or around the intakes of the engines and APU's. This precaution is essential to minimize the possibility of toxic fumes entering the cabin or cockpit during taxi prior to takeoff. On some aircraft, the engine bleed could be closed for a short period for dry out, before takeoff must be approved by the respective Aircraft Single Manager (AF) or PMA (United States Navy).

5.5.1.3.7. Extreme caution must be exercised in the use of glycol-water solutions (including MIL-A-8243, SAE AMS 1424, Type I, and SAE AMS 1428, Type II,/IV Fluids) in and around aircraft having silver or silver-coated electrical/electronic circuitry. Rapid oxidation and fire can occur when glycol-water solutions come in contact with and short across bare or defectively insulated silver or silver-coated electrical circuits such as wiring, switches, circuit breakers, etc., which are carrying Direct Current (DC).

5.5.1.4. Deicing operations safety overview.

5.5.1.4.1. Use spotters when approaching the aircraft, backing, etc. **Note:** A spotter(s) is required within 25 feet of the aircraft. A spotter should be positioned in a safe area and trained IAW AFMAN 24-306.

5.5.1.4.2. Wing walkers are required at each wing tip when taxiing aircraft from an obstructed area or when the obstruction is within 25 feet of the aircraft.

5.5.1.4.3. When deicing any portion of an aircraft by spray method, all other maintenance operations to the aircraft shall be suspended. All but deicing personnel shall vacate aircraft vicinity during the deicing process.

5.5.1.4.4. Remove ice from leading edge first and then move progressively aft. Spray fluid from front to back on all wing/tail surfaces.

5.5.1.4.5. Do not use fluid for the removal of heavy snow.

5.5.1.4.6. Operate the spray boom slowly and cautiously.

5.5.1.4.7. Use covers when possible.

5.5.1.4.8. Take care to prevent ice/snow containments on the aircraft surfaces from entering or accumulating in intakes or control surface hinge areas.

5.5.1.4.9. Remove any accumulation of ice, slush or snow from the wing trailing-edge flap areas. Damage can occur if flaps are raised prior to this area being checked and cleaned as required.

5.5.1.4.10. During heavy or extended participation, check for accumulation in cavities, such as slots, balance bays, or wing and stabilizer rear spar areas.

5.5.1.4.11. Under freezing fog or other similar precipitation conditions, it may be necessary for the front and rear side of engine fan blades to be checked for ice buildup prior to starting the engine. Any deposits found shall be removed as recommended by the USAF Aircraft Single Manager.

5.6. Deicer Vehicle Operation.

5.6.1. Start-up procedures.

5.6.1.1. Make sure automatic transmission is in neutral and emergency/parking brake is set.

5.6.1.2. Use ignition switch to start the truck engine. Allow engine to warm-up.

5.6.1.3. Allow air brake pressure to build-up.

5.6.1.4. Start auxiliary engine using the cab control auxiliary engine ignition switch. Wait for glow plug light to go out, let engine warm-up. See Manufacturer's Operator's Manual for additional instructions.

5.6.1.5. Activate pumping system by turning pump switch to on. After a few seconds, the auxiliary engine speed should be increased to 2100 rpm. See Manufacturer's Operator's Manual for additional instructions.

5.6.1.6. Activate the heating system by turning heater switch on.

5.6.1.7. Insure the green, heater ON light stays on during the heating cycle.

5.6.1.8. Fluid temperature should increase to approximately 180°F (82°C) in 2-3 minutes.

5.6.1.9. See the Manufacturer's Operator's Manual for additional start-up and operating procedures on the following components:

5.6.1.9.1. Operating spring locks (if applicable).

5.6.1.9.2. Operating fluid guns.

5.6.1.9.3. Starting fluid heaters.

5.6.1.9.4. Heater visual and audible indications during start.

5.6.1.9.5. Shutting down fluid heaters.

5.6.1.9.6. Emergency boom lowering.

5.6.1.9.7. Fire suppression system.

5.6.1.9.8. Stopping the auxiliary engine.

5.6.1.9.9. Stopping fluid pump.

5.6.1.9.10. Stopping fluid heaters.

5.6.2. Restarting procedures. See vehicle's Manufacturer's Operator's Manual.

5.6.3. Basket operation. Using the vehicle's Manufacturer's Operator's Manual and applicable TOs, the trainer will explain the following regarding deicer basket operation:

5.6.3.1. Emergency stop procedures.

5.6.3.2. Emergency boom lowering procedures.

5.6.3.3. Harness attachment point(s)/harness use.

5.6.3.4. Communications and connections (headset).

5.6.3.5. Work light switches.

5.6.3.6. Pump delivery selection/pump override/pump delivery.

5.6.3.7. Anti-ice/de-ice and snow gun operation.

5.6.3.8. Boom controls.

5.6.3.9. Extend/retract.

5.6.3.10. Raise/lower/rotate.

5.6.3.11. PPE

5.6.4. Auxiliary engine operation (if fitted). Using the vehicle's Manufacturer's Operator's Manual and applicable TOs, the trainer will explain the following auxiliary engine operations:

5.6.4.1. Start.

5.6.4.2. Restart.

5.6.4.3. Stop.

5.6.4.4. Emergency stop procedures.

5.6.4.5. Manual accelerator control.

5.6.4.6. Fire extinguisher operation.

5.6.5. Fluid heater operation (if fitted). Using the vehicle's Manufacturer's Operator's Manual and applicable TOs, the trainer will explain the following in regards to fluid heater operations:

5.6.5.1. Start/shutdown procedures.

5.6.5.2. High flame/low flame indicators.

5.6.5.3. No flow indicator.

5.6.5.4. Low fluid indicator.

5.6.5.5. Pump pressure gauge.

5.6.6. Ground hose operation. Using the vehicle's Manufacturer's Operator's Manual and applicable TOs, the trainer will explain the following ground hose operations:

5.6.6.1. Position of hose.

5.6.6.2. Operation of ground gun.

5.6.6.3. Fluid flow rate.

5.6.7. Communication. Using the vehicle's Manufacturer's Operator's Manual, applicable TOs and local guidance, the trainer will explain the following deicer communication components and operations:

5.6.7.1. Communication with flight deck/engineering (i.e. aircraft configuration), as applicable.

5.6.7.2. Anti-icing code.

5.6.7.3. Communication between driver and sprayer.

5.6.7.4. Multiple vehicle operations, vehicle to vehicle.

5.6.7.5. Centralized operation.

5.6.7.6. Coordination.

5.6.8. Vehicle positioning. Using the vehicle's Manufacturer's Operator's Manual, applicable TOs and local guidance, the trainer will explain the following about vehicle positioning:

5.6.8.1. Optimum positioning for spraying.

5.6.8.2. Communication and operative.

5.6.8.3. Driving safely around the aircraft.

5.6.9. Vehicle safety around the aircraft. Using the vehicle's Manufacturer's Operator's Manual, applicable TOs and local guidance, the trainer will explain the following about safe driving around the aircraft being serviced and surrounding aircraft:

5.6.9.1. Approaching the aircraft (i.e. engines/anti-coll lights).

5.6.9.2. Vehicle brake check.

5.6.9.3. Vehicle height.

5.6.9.4. Vehicle speed.

5.6.9.5. Awareness of other ramp users.

5.6.9.6. Accident/incident reporting and safety reporting.

5.6.10. Driving the truck. Using the vehicle's Manufacturer's Operator's Manual, applicable TOs and local guidance, the trainer will explain the following about driving the deicer truck:

5.6.10.1. Maneuvering the vehicle.

5.6.10.2. Handling characteristics.

5.6.10.3. Stopping the vehicle.

5.6.10.4. Emergency situations.

5.6.10.5. Fault situation.

5.6.11. Deicer shutdown procedures. Refer to the deicer's Manufacturer's Operator's Manual for shutdown steps.

5.6.12. Ice removal/snow removal/anti-icing operations. Although deicing and anti-icing operations will vary by deicer type and aircraft type, the following information provides an overview of operations and responsibilities that need to be taught to the trainee. Refer to the deicer's Manufacturer's Operator's Manual, the applicable TO(s) for the aircraft being serviced and local guidance for more detailed information.

5.6.12.1. Snow removal/deicing/anti-icing procedures:

5.6.12.1.1. Receiving of de/anti-icing fluids.

5.6.12.1.2. Storage of de/ant-icing fluids.

5.6.12.1.3. Safe handling of de/anti-icing fluids.

5.6.12.1.4. Appropriate application of de/anti-icing fluids.

5.6.12.1.5. Quality control of de/anti-icing fluids.

5.6.12.1.6. Non-fluid methods of de/anti-icing.

5.6.12.1.7. Training of aircraft ground de/anti-icing personnel.

5.6.12.1.8. De/anti-icing coordination and communication.

5.6.12.1.9. Specific flight crew requirements and procedures if different from air carrier's core program and procedures.

5.6.12.1.10. Aircraft sensitive areas. The effects of contamination on the critical areas of the aircraft.

5.6.12.1.10.1. Aircraft flight deck windows, cabin windows, windscreen, seals, Plexiglas, and plastic can be damaged by direct application of HABS/hot deicing fluid. Do not apply hot air or deicing fluid directly to windows, windscreen, seals, Plexiglas, or plastic surfaces. Contact with windows, windscreen, seals, Plexiglas, or plastic will cause surface to glaze or soften.

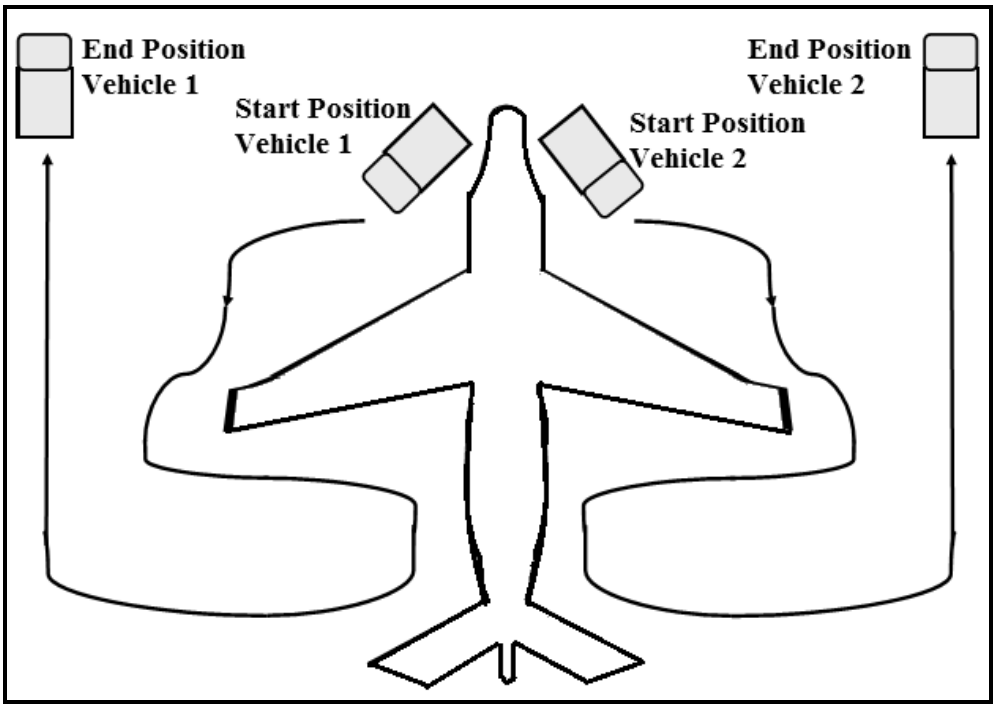
5.6.12.1.11. Sharp instruments such as picks, knives, or screwdrivers shall not be used to loosen ice formation from aircraft surfaces. Failure to comply may cause damage to aircraft.

5.6.12.1.12. Ensure deicing truck fluid heater (TM1800 only) is turned off prior to approaching the aircraft to perform deicing task. Failure to comply may cause injury to personnel and damage to aircraft.

5.6.12.1.13. All doors and hatches shall be closed prior to beginning deicing procedures. Failure to comply may cause damage to aircraft and equipment.

5.6.12.1.14. When using multiple vehicles to deice/anti-ice aircraft, supervisors are to ensure safe and effective application of deicing/anti-icing fluids. Supervisor will determine safest and most effective path and brief team members prior to deicing operations. See **Figure 5.3.** for an example of a multi-vehicle deicing path.

Figure 5.3. Multi-Vehicle Deicing Path Sample.



5.6.12.1.15. Spraying patterns and positions.

5.6.12.1.15.1. Snow and ice removal vehicles, with cabs/nozzles at maximum extension and positioned below horizontal stabilizer, require fluids to be sprayed in an upward, arching pattern, resulting in loss of fluid effectiveness due to heat loss, inadequate pressure and improper application angle. When this task is used to deice horizontal stabilizer, a visual inspection is required to ensure all freezing precipitation or frost contamination is removed.

5.6.12.1.15.2. Always spray either perpendicular to surface or from forward to aft of aircraft surface. Spraying deicing fluid from rear to front of a wing or tail surface may result in water or deicing fluid being trapped in control surface cavities. Failure to comply may cause injury to personnel and damage to aircraft.

5.6.12.1.16. Communication.

5.6.12.1.16.1. Communication between deicing supervisor and deicing vehicle driver shall be maintained at all times during this procedure. Failure to comply may cause injury to personnel and damage to aircraft and equipment.

5.6.12.1.16.2. Communication between deicing vehicle driver and boom operator shall be maintained at all times during this procedure. Failure to comply may cause injury to personnel and damage to aircraft and equipment.

5.6.13. Additional items.

5.6.13.1. Flightline rules and regulations (when applicable). Refer to AFMAN 24-306, AFI 13-213, *Airfield Driving* and local flightline procedures.

5.6.13.2. Fire extinguisher training. Deicers are equipped with fire extinguishers and training is required annually. The supervisor or Squadron VCO will schedule training with the local Fire Department. The fire extinguisher itself must be inspected to ensure current inspection date, ensure needle is positioned in the green and ensure it is securely mounted.

5.6.13.3. Local Policies and Procedures. Understand local policies and procedures in regards to deicer operations. If at a temporary duty location, take the time to learn the policies and procedures for the current location.

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, TOs and local guidance.

6.1.3. Reserve a deicer.

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 deicer 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. Hearing protection.

6.2.1.3.3. Eye protection.

6.2.1.3.4. Safety harness.

6.2.1.3.5. Deice suit.

6.2.1.3.6. Raingear, cold weather gear, etc.

6.2.1.3.7. Fire extinguisher.

6.2.1.4. The trainer and trainee should walk-around vehicle to familiarize themselves with all warning labels and signs.

6.2.1.5. Ensure trainee wears seat belt.

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

6.2.1.7. Throughout demonstration, practice deicer safety.

6.2.1.7.1. Always observe speed and safety precautions.

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 deicer 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 deicers, within the training area, demonstrate and explain the following. **Note:** Use information contained on the data plate and/or the operator's manual. Next, proceed to the applicable deicer operation demonstration:

6.4.2.1. Identify deicer capacities.

6.4.2.2. Identify deicer controls/indicators/switches.

6.4.2.3. Explain communication and connections.

6.4.2.4. Start-up/restart procedures (cold weather starting).

6.4.2.5. Stop/emergency stop procedures.

6.4.3. Demonstrate and explain the following:

6.4.3.1. Basket operations.

6.4.3.1.1. Emergency stop procedures.

6.4.3.1.2. Emergency boom lowering procedures.

6.4.3.1.3. Harness attachment point(s)/harness use.

6.4.3.1.4. Communications and connections (headset).

6.4.3.1.5. Work light switches.

6.4.3.1.6. Pump delivery selections/pump override/pump delivery.

6.4.3.1.7. Anti-ice/de-ice operations and snow gun operation.

6.4.3.2. Boom controls.

6.4.3.2.1. Extend/retract.

6.4.3.2.2. Raise/lower.

6.4.3.2.3. Rotate.

6.4.3.3. Auxiliary engine operation (if fitted).

6.4.3.3.1. Start.

6.4.3.3.2. Restart.

6.4.3.3.3. Stop.

6.4.3.3.4. Emergency stop procedures.

6.4.3.3.5. Manual accelerator control.

6.4.3.3.6. Fire extinguisher operation.

6.4.3.4. Fluid heater operation (if fitted).

6.4.3.4.1. Start/shutdown procedures.

6.4.3.4.2. High flame/low flame indicators.

6.4.3.4.3. No flow indicator.

6.4.3.4.4. Low fluid indicator.

6.4.3.4.5. Pump pressure gauge.

6.4.3.5. Ground hose operation.

6.4.3.5.1. Position of hose.

6.4.3.5.2. Operation of ground gun.

6.4.3.5.3. Fluid flow rate.

6.4.3.6. Communication.

6.4.3.6.1. Communication with flight deck/engineering (i.e. aircraft configuration), as applicable.

6.4.3.6.2. Anti-icing code.

6.4.3.6.3. Communication between driver and sprayer.

6.4.3.6.4. Multiple vehicle operations, vehicle-to-vehicle.

6.4.3.6.5. Centralized operation.

6.4.3.6.6. Coordination.

6.4.3.7. Vehicle positioning. (Cover various aircraft: F-22/C-17/C12/AWACs/etc.)

6.4.3.7.1. Optimum positioning for spraying.

6.4.3.7.2. Communication with operative.

6.4.3.7.3. Driving safely around the aircraft.

6.4.3.8. Vehicle safety around aircraft.

6.4.3.8.1. Approaching aircraft (i.e. engines/anti-coll lights).

6.4.3.8.2. Vehicle brake check.

6.4.3.8.3. Vehicle height.

6.4.3.8.4. Vehicle speed.

6.4.3.8.5. Awareness of other ramp users.

6.4.3.8.6. Accident/incident reporting and safety reporting.

6.4.3.8.7. Procedures for fluid spill on the airfield.

6.4.3.9. Driving the truck.

6.4.3.9.1. Maneuvering the vehicle.

6.4.3.9.2. Handling characteristics.

6.4.3.9.3. Emergency situations.

6.4.3.9.4. Fault situation.

6.4.3.10. Parking.

6.4.3.11. Backing.

6.4.3.12. Deicing operations.

6.4.3.12.1. Explain how to call the Maintenance Operation Center (MOC) for the start time.

6.4.3.12.2. The spotter marshalling the deice truck towards the aircraft.

6.4.3.12.3. Proper communication between the basket operator and the driver.

6.4.3.12.4. Proper placement of the deice truck for the best efficiency.

6.4.3.12.5. Proper use of air/fluid (water) to be effective, but not wasteful.

6.4.3.12.6. Proper deicing methods as in top to bottom, forward to aft and outboard to inboard.

6.4.3.12.7. Explaining how to call MOC for the stop time.

6.4.3.13. Complete after-operation inspection.

6.4.4. After-operation inspection (all deicer types). Show trainee the after operation inspection and report.

6.4.4.1. Ensure vehicle is cleaned.

6.4.4.2. Refuel vehicle.

6.4.4.3. Following manufacturer’s shut-down procedures.

6.4.4.4. Park.

6.4.4.4.1. Apply brakes.

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

6.4.4.5. Perform a walk-around inspection.

6.4.4.6. Annotate any discrepancies found on AF Form 1800.

6.4.5. 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 deicer 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. Hearing protection.

7.1.1.2.3. Eye protection.

7.1.1.2.4. Safety harness.

7.1.1.2.5. Deice suit.

7.1.1.2.6. Raingear, cold weather gear, etc.

7.1.1.2.7. Fire extinguisher.

7.1.1.3. Ensure trainee wears seat belts.

7.1.1.4. Properly adjust driver's seat and all mirrors.

7.1.1.5. Deicer safety items/procedures.

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

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

7.1.2. Trainee performance. See **Attachment 3**.

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. Pre-inspection.

7.1.2.1.2. During-inspection.

7.1.2.2. Ensure AF From 1800 is properly documented.

Note: Ensure caution is taken when braking due to the presence/absence of the deicing fluid.

7.1.2.3. Establish a course that will have the following: (if the course does not have one of the following, then the trainee should be able to explain the correct driving techniques).

7.1.2.3.1. Identify deicer capacities.

7.1.2.3.2. Identify deicer controls/indicators/switches.

7.1.2.3.3. Explain communication and connections.

7.1.2.3.4. Start-up/restart procedures.

7.1.2.3.5. Stop/emergency stop procedures.

7.1.2.3.6. Demonstrate and explain the following:

7.1.2.3.6.1. Basket operations.

7.1.2.3.6.1.1. Emergency stop procedures.

7.1.2.3.6.1.2. Emergency boom lowering procedures.

7.1.2.3.6.1.3. Harness attachment point(s)/harness use.

7.1.2.3.6.1.4. Communications and connections (headset).

7.1.2.3.6.1.5. Work light switches.

7.1.2.3.6.1.6. Pump delivery selections/pump override/pump delivery.

7.1.2.3.6.1.7. Anti-ice/de-ice operations and snow gun operation.

7.1.2.3.6.2. Boom controls.

7.1.2.3.6.2.1. Extend/retract.

7.1.2.3.6.2.2. Raise/lower.

7.1.2.3.6.2.3. Rotate.

7.1.2.3.6.3. Auxiliary engine operation (if fitted).

7.1.2.3.6.3.1. Start.

7.1.2.3.6.3.2. Restart.

7.1.2.3.6.3.3. Stop.

7.1.2.3.6.3.4. Emergency stop procedures.

7.1.2.3.6.3.5. Manual accelerator control.

7.1.2.3.6.3.6. Fire extinguisher operation.

7.1.2.3.6.4. Fluid heater operation (if fitted).

7.1.2.3.6.4.1. Start/shutdown procedures.

7.1.2.3.6.4.2. High flame/low flame indicators.

7.1.2.3.6.4.3. No flow indicator.

7.1.2.3.6.4.4. Low fluid indicator.

7.1.2.3.6.4.5. Pump pressure gauge.

7.1.2.3.6.5. Ground hose operation.

7.1.2.3.6.5.1. Position of hose.

7.1.2.3.6.5.2. Operation of ground gun.

7.1.2.3.6.5.3. Fluid flow rate.

7.1.2.3.6.6. Communication.

7.1.2.3.6.6.1. Communication with flight deck/engineering (i.e. aircraft configuration), as applicable.

7.1.2.3.6.6.2. Anti-icing code.

7.1.2.3.6.6.3. Communication between driver and sprayer.

7.1.2.3.6.6.4. Multiple vehicle operations, vehicle-to-vehicle.

7.1.2.3.6.6.5. Centralized operation.

7.1.2.3.6.6.6. Coordination.

7.1.2.3.6.7. Vehicle positioning. (Cover various aircraft: F-22/C-17/C12/AWACs/etc.)

7.1.2.3.6.7.1. Optimum positioning for spraying.

7.1.2.3.6.7.2. Communication with operative.

7.1.2.3.6.7.3. Driving safely around the aircraft.

7.1.2.3.6.8. Vehicle safety around aircraft.

7.1.2.3.6.8.1. Approaching aircraft (i.e. engines/anti-coll lights).

7.1.2.3.6.8.2. Vehicle brake check.

7.1.2.3.6.8.3. Vehicle height.

7.1.2.3.6.8.4. Vehicle speed.

7.1.2.3.6.8.5. Awareness of other ramp users.

7.1.2.3.6.8.6. Accident/incident reporting and safety reporting.

7.1.2.3.6.8.7. Procedures for fluid spill on airfield.

7.1.2.3.6.9. Driving the truck.

7.1.2.3.6.9.1. Maneuvering the vehicle.

7.1.2.3.6.9.2. Handling characteristics.

7.1.2.3.6.9.3. Emergency situations.

7.1.2.3.6.9.4. Fault situation.

7.1.2.3.6.10. Parking.

7.1.2.3.6.11. Backing.

7.1.2.3.6.12. Deicing operations.

7.1.2.3.6.12.1. Explain how to call the MOC for the start time.

7.1.2.3.6.12.2. The spotter marshalling the deice truck towards the aircraft.

7.1.2.3.6.12.3. Proper communication between the basket operator and the driver.

7.1.2.3.6.12.4. Proper placement of the deice truck for the best efficiency.

7.1.2.3.6.12.5. Proper use of air/fluid (water) to be effective, but not wasteful.

7.1.2.3.6.12.6. Proper deicing methods as in top to bottom, forward to aft and outboard to inboard.

7.1.2.3.6.12.7. Explaining how to call MOC for the stop time.

7.1.2.4. Deicing operations.

7.1.2.4.1. Instructors will position themselves with one instructor in the passenger seat and at least one more outside of the truck. The instructor in the passenger seat will be on headset ensuring that the communication is proficient during the entire deicing operation. The other instructor(s) will be outside ensuring the spotter understands his/her role in the process and also visibly evaluating the basket operator.

7.1.2.4.2. There should be two full set-ups per person. The initial set up should take place in an easily accessible area like the side of the fuselage. This set-up is the practice portion of the training. The second set-up should be in a more difficult area like a wing-root/armpit. This set-up will be the evaluation portion where the instructor will only give one assist if needed.

7.1.2.4.3. During the first evaluation portion, the instructor will tell the basket operator to spray air only, then air with fluid injection, and then finally fluid only. The instructor will tell the basket operator to turn the nozzle left, right, or straight. In addition, the instructor will tell the basket operator to turn the basket left, right, or straight and also to extend/retract the boom.

7.1.2.4.4. The next evaluation portion will consist of driving while deicing. The communication between the driver and basket operator will be crucial for this to be successful. Starting from the front, the deice team will complete one whole side of the aircraft.

7.1.2.4.5. If the student is proficient in the movements and in spraying air/fluid, then the instructor will tell the basket operator to stop deicing. The spotter, driver, and basket operator will communicate how to safely move away from the aircraft.

7.1.2.4.6. The three students will switch positions and demonstrate the same training until each team of three have completed the training with either a Go or No-Go score.

7.1.2.5. Perform after-operation inspection:

7.1.2.5.1. Ensure vehicle cleaned.

7.1.2.5.2. Refueled.

7.1.2.5.3. Following manufacturer's shut-down procedures.

7.1.2.5.4. Perform a walk-around inspection.

7.1.2.5.5. 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 deicer 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. Gloves will be worn during cargo loading and unloading.

7.2.2.2.3. Reflective vest.

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 seat belts.

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

7.2.2.6. Deicer safety items/procedures.

7.2.3. Explain driving techniques.

7.2.4. The trainee will accomplish the road course that includes the following:

7.2.4.1. Identify deicer capacities.

7.2.4.1.1. Identify deicer controls/indicators/switches.

7.2.4.1.2. Explain communication and connections.

7.2.4.2. Start-up/restart procedures.

7.2.4.3. Stop/emergency stop procedures.

7.2.4.4. Demonstrate and explain the following:

7.2.4.4.1. Basket operations.

7.2.4.4.1.1. Emergency stop procedures.

7.2.4.4.1.2. Emergency boom lowering procedures.

7.2.4.4.1.3. Harness attachment point(s)/harness use.

7.2.4.4.1.4. Communications and connections (headset).

7.2.4.4.1.5. Work light switches.

7.2.4.4.1.6. Pump delivery selections/pump override/pump delivery.

7.2.4.4.1.7. Anti-ice/de-ice operations and snow gun operation.

7.2.4.4.2. Boom controls.

7.2.4.4.2.1. Extend/retract.

7.2.4.4.2.2. Raise/lower.

7.2.4.4.2.3. Rotate.

7.2.4.4.3. Auxiliary engine operation (if fitted).

7.2.4.4.3.1. Start.

7.2.4.4.3.2. Restart.

7.2.4.4.3.3. Stop.

7.2.4.4.3.4. Emergency stop procedures.

7.2.4.4.3.5. Manual accelerator control.

7.2.4.4.3.6. Fire extinguisher operation.

7.2.4.4.4. Fluid heater operation (if fitted).

7.2.4.4.4.1. Start/shutdown procedures.

7.2.4.4.4.2. High flame/low flame indicators.

7.2.4.4.4.3. No flow indicator.

7.2.4.4.4.4. Low fluid indicator.

7.2.4.4.4.5. Pump pressure gauge.

7.2.4.4.5. Ground hose operation.

7.2.4.4.5.1. Position of hose.

7.2.4.4.5.2. Operation of ground gun.

7.2.4.4.5.3. Fluid flow rate.

7.2.4.4.6. Communication.

7.2.4.4.6.1. Communication with flight deck/engineering (i.e. aircraft configuration), as applicable.

7.2.4.4.6.2. Anti-icing code.

7.2.4.4.6.3. Communication between driver and sprayer.

7.2.4.4.6.4. Multiple vehicle operations, vehicle-to-vehicle.

7.2.4.4.6.5. Centralized operation.

7.2.4.4.6.6. Coordination.

7.2.4.4.7. Vehicle positioning. (Cover various aircraft: F-22/C-17/C12/AWACs/etc.)

7.2.4.4.7.1. Optimum positioning for spraying.

7.2.4.4.7.2. Communication with operative.

7.2.4.4.7.3. Driving safely around the aircraft.

7.2.4.4.8. Vehicle safety around aircraft.

7.2.4.4.8.1. Approaching aircraft (i.e. engines/anti-coll lights).

7.2.4.4.8.2. Vehicle brake check.

7.2.4.4.8.3. Vehicle height.

7.2.4.4.8.4. Vehicle speed.

7.2.4.4.8.5. Awareness of other ramp users.

7.2.4.4.8.6. Accident/incident reporting and safety reporting.

7.2.4.4.8.7. Procedures for fluid spill on airfield.

7.2.4.4.9. Driving the truck.

7.2.4.4.9.1. Maneuvering the vehicle.

7.2.4.4.9.2. Handling characteristics.

7.2.4.4.9.3. Emergency situations.

7.2.4.4.9.4. Fault situation.

7.2.4.4.10. Parking.

7.2.4.4.11. Backing.

7.2.4.4.12. Deicing operations.

7.2.4.4.12.1. Explain how to call the MOC for the start time.

7.2.4.4.12.2. The spotter marshalling the deice truck towards the aircraft.

7.2.4.4.12.3. Proper communication between the basket operator and the driver.

7.2.4.4.12.4. Proper placement of the deice truck for the best efficiency.

7.2.4.4.12.5. Proper use of air/fluid (water) to be effective, but not wasteful.

7.2.4.4.12.6. Proper deicing methods as in top to bottom, forward to aft and outboard to inboard.

7.2.4.4.12.7. Explaining how to call MOC for the stop time.

7.2.4.4.13. After-operation vehicle inspection.

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*, 9 December 2016

Adopted Forms

AF Form 171, *Request for Driver's Training and Addition to U.S. Government Driver's License*, 1 November 2018

AF Form 847, *Recommendation for Change of 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 Mission Support Center

AFMAN—Air Force Manual

AFQTP—Air Force Qualification Training Plan

DD—Department of Defense

EPA—Environmental Protection Agency

FAA—Federal Facility Agreement

FOD—Foreign Object Damage

IAW—In Accordance With

DoD—Department of Defense

DoDI—Department of Defense Instruction

DOT—Department of Transportation

FMSCA—Federal Motor Carrier Safety Administration

GAWR— Gross Axle Weight Rating

GCWR—Gross Combination Weight Rating

GVWR—Gross Vehicle Weight Rating

GVW─ Gross Vehicle Weight

HAZMAT—Hazardous Materials

IAW—In Accordance With

MOC—Maintenance Operation Center

RM—Risk Management

SF—Standard Form

TO—Technical Order

VCO—Vehicle Control Official

Attachment 2

DEICER 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
☐ Hydraulic Fluid
☐ Battery Fluid Level, Connections
☐ Automatic Transmission Fluid Level
☐ Engine Compartment Belts

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

☐ Safe Start
☐ Gauges and Controls
- Oil Pressure Gauge
- Temperature Gauge (Coolant/Engine Oil/Transmission Oil)
- Pump Controls
- Boom Controls

☐ Mirrors & Windshield

☐ Operator's Seat
☐ Seatbelts
☐ Wipers/Washers
☐ Roof Windows/Cab Windows
☐ Door Latches and Locks
☐ Gear Shift Selection
☐ Communication and Connections (Headset)
☐ Horn Operation
☐ Emergency & Safety Equipment

- First Aid Kit
- Properly Charged & Rated Fire Extinguisher
- Optional (Tire Changing Equip, Emergency Phone List)

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

- Left Turn Signal
- Right Turn Signal
- Four-Way Emergency Flashers
- High Beam Headlight
- Beacon Light
- Basket Lights
- Headlights
- Taillights
- Reflective Tape Condition

☐ Heater/Fan Controls
☐ Brakes

- Parking Brake Check
- Hydraulic Brake Check
- Brake Pedal

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

STEP 4. WALK-AROUND INSPECTION

- ☐ **4A** – Steering
- ☐ **4B** – Suspension
- ☐ **4C** – Brakes
- ☐ **4D** – Wheels
  - Rims
  - Tires
  - Hub Oil Seals/Axle Seals
  - Lug Nuts

SIDE OF VEHICLE

- ☐ **4E** – Doors
- ☐ **4E** – Mirrors
- ☐ **4E** – Fuel Tank

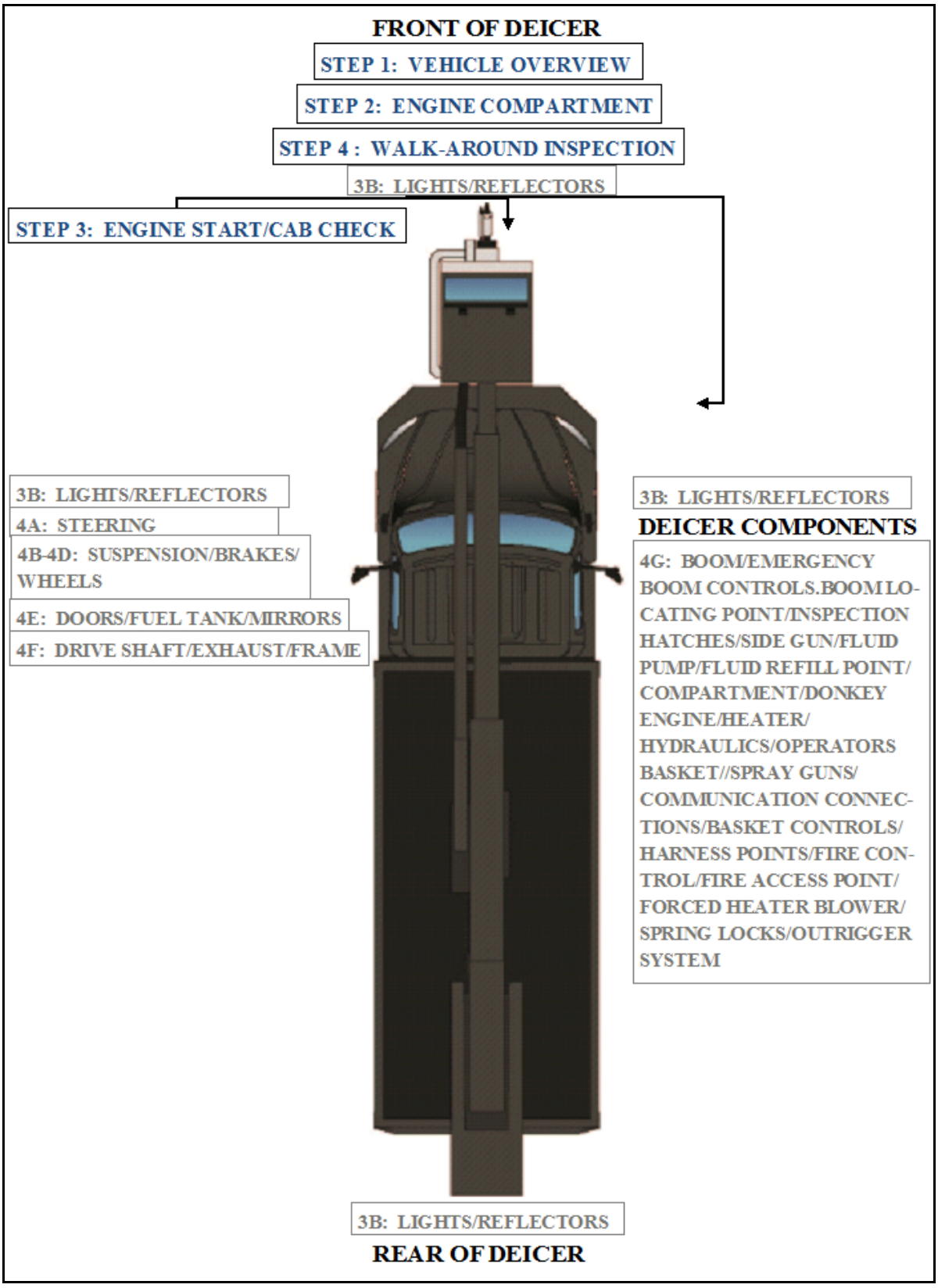
UNDER VEHICLE

- ☐ **4F** – Drive Shaft
- ☐ **4F** – Exhaust
- ☐ **4F** – Frame

DEICER COMPONENTS

- ☐ **4G** – Boom/Emergency Boom Controls/Boom Locating Point
- ☐ **4G** – Inspection Hatches
- ☐ **4G** – Side Gun (Under wing nozzle)
- ☐ **4G** – Fluid Pump/De-icing Fluid Refill Point
- ☐ **4G** – Compartment (Donkey Engine/Heater/Hydraulics)
- ☐ **4G** – Operator's Basket (Spray Guns/Communication Connections/Basket Controls/Harness Points)
- ☐ **4G** – Fire Control/Fire Access Point
- ☐ **4G** – Forced Heater Blower/Fluid heater/Heater Exhaust Outlet
- ☐ **4G** – Spring Locks/Outrigger System (if applicable)
- ☐ REAR OF DEICER

Figure A2.1. Deicer Inspection Guide.



Attachment 3

PERFORMANCE TEST

A3.1. Desired Learning Outcome.

A3.1.1. Understand the safety precautions to be followed before-, during-, and after-operation of the deicer.

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

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

A3.1.4. Safely and proficiently operate the deicer.

A3.2. Instructions. Before beginning the performance test, the trainer will brief the trainee on the scenario that will need to be accomplished. He or she will be given additional directions and instructions as needed throughout the scenario.

A3.3. Scoring.

A3.3.1. The trainer examiner will be scoring the trainee on deicer operations and also the general safe driving practices. The examiner will give directions and instructions to the trainee in sufficient time for him/her to execute a driving maneuver. They 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 anything has been done wrong. It is in the best interest to concentrate on the operation of the deicer. The trainer will explain the test results 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.

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. Signs AF Form 1800 to signify accomplishment of complete inspection.			
1.4. Cleans windshield, windows, mirrors, lights and reflectors			
1.5. Continues during-operations inspection checks.			
1.6. Knows use of tools, emergency devices, fire extinguishers, etc.			
1.7. Performs post trip inspection and reports malfunctions to Vehicle Management.			
Event	**Go**	**No Go**	**Notes**
2. KNOWLEDGE OF VEHICLE AND USE OF CONTROLS			
2.1. Engine:			
Uses proper starting/restarting procedures			
Allows proper warm-up.			
Understands all gauges.			
Uses proper shutdown procedures.			
Basic knowledge of engines.			
2.2. Brakes and braking techniques.			
Proper use and understanding of brakes and safe stopping distance.			
Proper use of parking brake.			
2.3. Identify deicer capacities.			
2.4. Identify deicer controls/indicators/switches.			
2.5. Explain communication and connections.			

Event:	Go	No Go	Notes
3. COMMUNICATION:			
3.1. Communication with flight deck/engineering (i.e. aircraft configuration), as applicable.			
3.2. Anti-icing code.			
3.3. Communication between operator and sprayer.			
3.4. Multiple vehicle operations, vehicle-to-vehicle.			
3.5. Centralized operation.			
3.6. Coordination			
Event:	**Go**	**No Go**	**Notes**
4. VEHICLE POSITIONING AND SAFETY(VARIOUS AIRCRAFT):			
4.1. Optimum positioning for spraying.			
4.2. Communication with operative.			
4.3. Vehicle safety around the aircraft:			
Approaching the aircraft (i.e. engines/anti-coll lights).			
Vehicle brake check.			
Vehicle height.			
Vehicle speed.			
Awareness of other ramp users.			
Accident/incident reporting and safety reporting. Procedures for fluid spill on the airfield.			
Event:	**Go**	**No Go**	**Notes**
5. DEICER VEHICLE BASIC OPERATIONS			
5.1. Maneuvering the vehicle.			
5.2. Handling characteristics.			
5.3. Stop/emergency stop procedures.			
5.4. Emergency situations.			
5.5. Fault situation.			
5.6. Basket operations.			
Emergency stop procedures.			
Emergency boom lowering procedures.			
Harness attachment point(s)/harness use.			
Communications and connections (headset).			
Work light switches.			

Pump delivery selections/pump override/pump delivery.			
Anti-ice/de-ice operations and snow gun operation.			
5.7. Boom controls.			
Extend/retract.			
Raise/lower.			
Rotate.			
5.8. Auxiliary engine operation (if fitted).			
Start.			
Restart.			
Stop.			
Emergency stop procedures.			
Manual accelerator control.			
Fire extinguisher operation.			
5.9. Fluid heater operation (if fitted).			
Start/shutdown procedures.			
High flame/low flame indicators.			
No flow indicator.			
Low fluid indicator.			
Pump pressure gauge.			
5.10. Ground hose operation.			
Position of hose.			
Operation of ground gun.			
Fluid flow rate.			
Event:	**Go**	**No Go**	**Notes**
6. BACKING/PARKING:			
6.1. Backing			
Positions deicer properly.			
Inspects deicer before backing.			
Post guide before backing and uses spotters properly.			
Uses mirrors properly.			
Avoids blind side backing.			
Controls speed.			
6.2. Parking.			
Checks position and surroundings before parking.			
Parks legally and safely.			

Event:	Go	No Go	Notes
7. DEICING OPERATIONS			
7.1. Explains how to call the MOC for a start time.			
7.2. Set-up.			
All members in communication.			
Spotter in correct position and properly marshalling deice truck.			
Uses proper communication between the basket operator and the operator.			
Basket operator clearly describing where to move the truck.			
Basket operator flies-out prior to getting to aircraft.			
Properly places the deicer truck for the best efficiency in operations.			
Properly uses air/fluid to be effective, but not wasteful.			
Properly uses deicing methods (top to bottom, forward to aft, outboard to inboard). Deicing is proficient and smooth.			
Explains how to call MOC for the stop time.			
7.3. Basket operations.			
Proficient with all gauges, switches, levers and buttons in basket.			
Communicates clearly and effectively with cab.			
Capable of smooth movements while spraying water.			
Knows how to switch between air, fluid injection and fluid-only.			
7.4. Cab operations.			
Avoids jerky starts and stops.			
Knows how to override basket controls.			
Communicates clearly and effectively with basket operator and spotter.			
Understands how to use the intercom system.			

7.5. Spotter.			
Consistently alert and attentive.			
Aware of surroundings and communicates clearly with the cab.			
Wears correct PPE.			
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. • If equipped, check the Anti-lock Braking System (ABS) indicator lights. Light on dash should come on and then turn-off. If it stays on the ABS is not working properly. • **Note:** For trailers only, if the yellow light on the left rear of the trailer stays on, the ABS is not working properly. • Look at the gauges. o <u>Oil pressure</u>. Should come up to normal within seconds after engine is started. o <u>Air pressure</u>. Pressure should build from 50 to 90 psi within 3 minutes. Build air pressure to governor cut-out (usually around 120 – 140 psi. Know the vehicle's requirements. o <u>Ammeter and/or voltmeter</u>. Should be in normal range(s). o <u>Coolant temperature</u>. Should begin gradual rise to normal operating range. o <u>Engine oil temperature</u>. 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. ▪ Clutch (if equipped). ▪ Accelerator (gas pedal). ▪ Brake controls. ▪ Foot brake. ▪ 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: ▪ Properly charged and rated fire extinguisher. Check for optional items such as: ▪ Chains (where winter conditions require). ▪ 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 Use wrench to test rust-streaked lug nuts, indicating looseness.

	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 Right 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. 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 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 Condition of shock absorber(s). 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 License plate(s) present, clean, and secured. o Splash guards present, not damaged, properly fastened, not dragging on ground, or rubbing tires. • 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 Check for all required papers, trip manifests, permits, etc. o Secure all loose articles in cab (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 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. • Test service brake stopping action. o Go about 5 miles per hour. o Push brake pedal firmly. o "Pulling" to one side or the other can mean brake trouble. o Any unusual brake pedal "feel" or delayed stopping action can mean trouble. o If the trainee finds anything unsafe during the Vehicle inspection, get it fixed. Federal and state laws forbid operating an unsafe vehicle. • Check vehicle operation regularly: o Instruments. o Air pressure gauge (if the vehicle has air brakes). 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. • Document any discrepancy on AF Form 1800. Sign-off AF Form 1800 to signify accomplishment of inspection.