# **Aircraft Rescue and Firefighting (ARFF) Vehicles** Vehicle Management Codes: L124, L125, L126 & C123















QUALIFICATION TRAINING PACKAGE

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#### **Section 1—OVERVIEW**

#### 1.1. Overview.

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

# 1.1.2. How to use this plan:

#### 1.1.2.1. Trainer:

- 1.1.2.1.1. Provide overview of training, Section 2 and Section 3.
- 1.1.2.1.2. Trainer's lesson plan for trainee preparation, give classroom lecture, **Section 4**.
- 1.1.2.1.3. Trainer's lesson plan for required knowledge, **Section 5**.
- 1.1.2.1.4. Trainer's lesson plan for demonstration, **Section 6**.
- 1.1.2.1.5. Trainer's lesson plan for performance and evaluation, **Section 7**.

#### 1.1.2.2. Trainee:

- 1.1.2.2.1. Reads material entire lesson plan prior to classroom lecture.
- 1.1.2.2.2. Follows along with lecture using this lesson plan and its attachments.
- 1.1.2.2.3. Takes required performance tests (Attachment 5).

#### **Section 2—RESPONSIBILITIES**

# 2.1. Responsibilities.

#### 2.1.1. The trainee shall:

- 2.1.1.1. Ensure the trainer explains the Qualification Training Package (QTP) process and the trainee's responsibilities.
- 2.1.1.2. Review the lesson plan with the trainer.
- 2.1.1.3. Ask questions if he/she does not understand the objectives for each unit.
- 2.1.1.4. Complete training hours required for the vehicle.

2.1.1.5. Take the required Performance Tests.

#### 2.1.2. The trainer shall:

- 2.1.2.1. Be on the unit's approved trainers list for the management codes covered by this QTP.
- 2.1.2.2. Review the lesson plan with the trainee.
- 2.1.2.3. Conduct knowledge training with the trainee using the lesson plan and vehicle operator manuals.
- 2.1.2.4. Conduct performance task explanation and demonstration using the Driver/Operator Aircraft Rescue and Firefighting (ARFF) Performance Test Supplement (Attachment 5).
- 2.1.2.5. Review questions with the trainee to ensure that required task knowledge has been gained to complete the task.
- 2.1.2.6. Document total hours trained on AF Form 171, Request for Driver's Training and Addition to U.S. Government Driver's License.
- 2.1.2.7. Coordinates with the trainee's supervisor to have vehicle licensing signed-off in the member's training record.

#### 2.1.3. The Evaluator shall:

2.1.3.1. Evaluate the Airman's task performance in accordance with (IAW) the Driver/Operator – ARFF Performance Test Supplement (**Attachment 5**).

## Section 3—INTRODUCTION

# 3.1. Objectives.

- 3.1.1. Given lectures, demonstrations and hands-on operations sessions, trainees will be able to complete all Performance Tests required in Attachment 5 with zero instructor assists.
  - 3.1.1.1. Ensure the trainee becomes trained and qualified as an ARFF operator; an operator who has the knowledge and skills to execute safe and professional vehicle operations and preventative maintenance requirements.
  - 3.1.1.2. Re-familiarize qualified operators in the safe operation and maintenance requirements of ARFF vehicles.

# 3.2. Desired Learning Outcome.

- 3.2.1. Understand the safety precautions to be followed pre-, during- and post-operation of the vehicle.
- 3.2.2. Understand the purpose of the vehicle and its role in the mission.
- 3.2.3. Know the proper operator maintenance procedures of the vehicle IAW applicable technical orders, manufacturer's operator's manuals and use of AF Form 1800, *Operator's Inspection Guide and Trouble Report*.
- 3.2.4. Safely and proficiently operate the ARFF vehicle.

#### 3.3. Lesson Duration.

3.3.1. Recommended minimum instructional and hands-on training time is 26 hours:

Figure 3.1. Recommended Training Time for Training Activities.

Training Activity	Training Time
Trainer's Instruction & Demonstration	6 Hours
Pre-Operations	6 Hours
Operations	10 Hours
Performance Evaluation	4 Hours

**Note:** This is a recommended minimum time; training time may be more depending how quickly a trainee learns new tasks and demonstrates competency.

#### 3.4. Instructional References.

- 3.4.1. DoD 6055.06M, DoD Fire and Emergency Services Certification Program
- 3.4.2. Risk Management (RM) and Safety Principles IAW Air Force Pamphlet (AFPAM) 90-803, *Risk Management (RM) Guidance and Tools*.
- 3.4.3. Applicable Technical Orders (TOs) or manufacturer's operator's manual(s).
- 3.4.4. Air Force Manual (AFMAN) 24-306, *Operation of Air Force Government Motor Vehicles*, Chapters 1-5, 7-9 and 12.
- 3.4.5. AF Form 1800, Operator's Inspection Guide and Trouble Report.
- 3.4.6. AF Form 171, Request for Driver's Training and Addition to U.S. Government Driver's License
- 3.4.7. ARFF Performance Test Supplement (Attachment 5).

- 3.4.8. Code of Federal Regulations (CFR), Title 49—Transportation, Subtitle B—Other Regulations Relating to Transportation (Continued), Chapter III—Federal Motor Carrier Safety Administration, Department of Transportation, parts 300-399; online at <a href="http://www.access.gpo.gov/nara/cfr/cfr-table-search.html">http://www.access.gpo.gov/nara/cfr/cfr-table-search.html</a>.
- 3.4.9. United States Department of Transportation, Federal Motor Carrier Safety Administration; on-line at http://www.fmcsa.dot.gov/index.htm.
- 3.4.10. *IFSTA Aircraft Rescue and Firefighting*, Fifth Edition.
- 3.4.11. NFPA 403, Standard for Aircraft Rescue and Fire-Fighting Services at Airports.
- 3.4.12. NFPA 412, Standard for Evaluating Aircraft Rescue and Fire-Fighting Foam Equipment.
- 3.4.13. NFPA 414, Standard for Aircraft Rescue and Fire-Fighting Vehicles.
- 3.4.14. NFPA 1002, Standard for Fire Apparatus Driver/Operator Professional Qualifications.
- 3.4.15. NFPA 1500, Standard on Fire Department Occupational Safety and Health Program.
- 3.4.16. TO 36-1-191, Technical and Managerial Reference for Motor Vehicle Maintenance.

# 3.5. Instructional Training Aids and Equipment.

- 3.5.1. This Qualification Training Package.
- 3.5.2. ARFF Vehicle.
- 3.5.3. Applicable TO and/or manufacturer's operator's manual(s).
- 3.5.4. *IFSTA Aircraft Rescue and Firefighting*, Fifth Edition.
- 3.5.5. Fire Department training area with driving course marked IAW with course specifications in the Performance Test Supplement (Attachment 5).
- 3.5.6. Traffic cones.

#### **Section 4—TRAINEE PREPARATION**

#### 4.1. Licensing Requirements.

4.1.1. Trainee must have in his/her possession a valid state driver's license and AF Form 483, *Certificate of Competency*, indicating a valid Airfield Driver's License.

- 4.1.2. AF Form 171 IAW AFI 24-301, Ground Transportation.
- 4.1.3. Applicable local licensing jurisdiction requirements.

# 4.2. Required Reading.

- 4.2.1. Read this Qualification Training Package in its entirety.
- 4.2.2. Read AFMAN 24-306, Chapters 1-5, 7-9 and 12.
- 4.2.3. Read manufacturer's operator's manual(s) for the specific vehicle being trained on.

## Section 5—KNOWLEDGE LECTURE AND EVALUATION.

## 5.1. Knowledge Overview (Lecture).

5.1.1. The material below was written using the instructional references listed in **Section 3**.

# 5.2. Overview of Training and Requirements.

- 5.2.1. Inspection, maintenance and servicing.
  - 5.2.1.1. Conduct and document routine tests, inspections, and servicing functions.
  - 5.2.1.2. Identify and explain the use of the apparatus' automotive gauges and potential performance problems based upon gauge readings.
  - 5.2.1.3. Explain the operating principles of the agent delivery system and identify its major components.
  - 5.2.1.4. Explain and operate the auxiliary cooling system and winterization system.
- 5.2.2. Vehicle and Equipment Operations.
  - 5.2.2.1. Explain in common measurements the basic dimensions and turning radius of the apparatus.
  - 5.2.2.2. Drive a fire department ARFF apparatus on a public road/highway.
  - 5.2.2.3. Drive a fire department ARFF apparatus on an airport.
  - 5.2.2.4. Perform unique or technical vehicle maneuvers.
  - 5.2.2.5. Demonstrate the ability to operate the ARFF apparatus off of an improved surface.

- 5.2.3. Firefighting operations.
  - 5.2.3.1. Maneuver, position and reposition an ARFF apparatus around an aircraft.
  - 5.2.3.2. Conduct a pump and roll (power modulation) in both forward and reverse while discharging agent.
  - 5.2.3.3. Produce and maintain effective fire stream at rated capacity from apparatus' internal water tank and transfer pump operations to an external pressurized water source (hydrant).
  - 5.2.3.4. Produce and maintain effective fire stream from apparatus roof turret at rated capacity while resupplied from another fire apparatus.
- 5.2.4. Forms and documentation.
  - 5.2.4.1. Required forms to be placed in the vehicle while in use:
    - 5.2.4.1.1. AF Form 1800. Reference AFI 24-302, *Vehicle Management*, for most current guidance on completing AF Form 1800.
    - 5.2.4.1.2. Standard Form 91, Motor Vehicle Accident Report.
    - 5.2.4.1.3. DD Form 518, Accident Identification Card.

#### 5.3. Vehicle specifications, design overview.

- 5.3.1. Air Force Fire Emergency Services (FES) has a variety of Aircraft Rescue and Firefighting Vehicles assigned. NFPA 414, *Standard for Aircraft Rescue Firefighting Vehicles*, specifies the minimum design, performance, and acceptance criteria for ARFF vehicles intended to transport personnel and equipment to the scene of an aircraft emergency for the purpose of rescuing occupants and conducting rescue and firefighting operations.
- 5.3.2. General characteristics.
  - 5.3.2.1. For general design characteristics and requirements for ARFF Vehicles, refer to NFPA 414, *Standard for Aircraft Rescue Firefighting Vehicles*, Chapter 4.
- 5.3.3. Specific characteristics.
  - 5.3.3.1. For design characteristics of specific make/model of ARFF vehicle, refer to the manufacturer's operating manual(s) or applicable TO.

# **5.4.** Vehicle Inspection.

5.4.1. Perform all pre-start servicing and inspections prior to operating the vehicle or at the beginning of each personnel change and after each use. Inspections cover the vehicle and its

firefighting systems. The inspection enables the operator and crew personnel to detect discrepancies before they lead to vehicle malfunctions. Refer to the TO and manufacturer's operator's manual(s) for all items that need to be inspected and the required frequency.

**Note:** If discrepancies are found they must be reported to Vehicle Control Official, the supervisor, and/or vehicle maintenance:

- 5.4.2. Pre-trip inspection find items/problems that could cause accident or breakdown. Use "systematic" or "walk around" method.
- 5.4.3. 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 3** for the Seven-Step Inspection Method.

# 5.5. Vehicle Safety and Equipment.

- 5.5.1. General. It is imperative that safety be considered at all times while driving the vehicle and that the operator reads and understand the manufacturer's operator's manual before driving the vehicle. The operator must become accustomed to the "feel" of the vehicle and learn its capabilities and limitations in order to maintain control while responding to an emergency.
- 5.5.2. Hazards and human factors:
  - 5.5.2.1. Traffic due to size and weight.
  - 5.5.2.2. Jerky starts and stops.
  - 5.5.2.3. Traveling too fast and turning too sharply.
  - 5.5.2.4. Cutting corners too sharply.
- 5.5.3. Safety requirements and PPE:
  - 5.5.3.1. All jewelry removed.
  - 5.5.3.2. Safety-toe boots.
  - 5.5.3.3. Gloves will be worn when required.
  - 5.5.3.4. Inclement and/or cold weather gear when required.
  - 5.5.3.5. Hearing protection when required.
  - 5.5.3.6. First Aid Kit.

#### 5.6. Driving Safety and Precautions.

# 5.6.1. Before driving.

- 5.6.1.1. Tire pressure can be adjusted to increase handling on poor-weather and off-road surfaces. The driver must determine the tire pressure that provides the desired balance between off-road mobility, poor weather handling, and on-road performance.
- 5.6.1.2. Upon entering the vehicle cab, adjust the seat position. Make sure there is sufficient clearance between the head and the cab roof at the seat's maximum upward travel. Serious injury may occur if head clearance is not adequate.
- 5.6.1.3. Fasten seat belts immediately after adjusting the seat height and before moving the vehicle. All persons riding in the vehicle cab must be seated in approved riding positions and secured by seat belts any time the vehicle is in motion. Failure to use seat belts can result in serious injury or death.
- 5.6.1.4. Before starting the vehicle engine, completely understand the function of all gauges and know their normal readings. The operator must also understand the operation of all switches and vehicle controls.
- 5.6.1.5. Make sure to read and follow the start-up and shut-down procedures before starting the vehicle engine. Failure to follow proper start-up and shut-down procedures may result in severe engine damage.
- 5.6.2. General Safe Driving Procedures. Safety considerations are covered in detail in NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*, Chapter 6.
  - 5.6.2.1. Operators of fire apparatus shall be directly responsible for the safe and prudent operation of the vehicle under all conditions.
  - 5.6.2.2. Fire department vehicles shall be operated in compliance with all applicable traffic laws, including special provisions pertaining to emergency vehicles as established by the AHJ, as well as specific rules, regulations, and procedures adopted by the fire department.

**Note:** Procedures for all responses shall emphasize that the safe arrival of fire apparatus to the incident scene is the first priority.

- 5.6.2.3. During emergency response, drivers of fire apparatus shall bring the vehicle to a complete stop under any of the following circumstances:
  - 5.6.2.3.1. When directed by a law enforcement officer.
  - 5.6.2.3.2. At red traffic lights.
  - 5.6.2.3.3. At stop signs.

- 5.6.2.3.4. At negative right-of-way intersections.
- 5.6.2.3.5. At blind intersections.
- 5.6.2.3.6. When the driver cannot account for all lanes of traffic in an intersection.
- 5.6.2.3.7. When other intersection hazards are present.
- 5.6.2.3.8. When encountering a stopped school bus with flashing warning lights.
- 5.6.2.4. Drivers shall proceed through intersections only when the driver can account for all lanes of traffic in the intersection.
- 5.6.2.5. During emergency response or non-emergency travel, drivers of fire apparatus shall come to a complete stop at all unguarded railroad grade crossing and ensure that it is safe to proceed before crossing the railroad track(s).
- 5.6.2.6. Drivers shall use caution when approaching and crossing any guarded railroad grade crossing.

# 5.7. Vehicle Operation.

- 5.7.1. Start the engine:
  - 5.7.1.1. Do not pump the accelerator prior to starting a diesel engine.
  - 5.7.1.2. Do not race the motor to warm up the vehicle.
  - 5.7.1.3. Check the instrument panel for proper readings.
- 5.7.2. Steering.
  - 5.7.2.1. Proper hand position on the steering wheel.
  - 5.7.2.2. Wider turning radius due to length of the vehicle.
- 5.7.3. Turning.
  - 5.7.3.1. Check traffic to the front, rear, and sides.
  - 5.7.3.2. Check all mirrors, and be aware of vehicle blind spots.
  - 5.7.3.3. Reduce vehicle's speed before beginning the turn.
  - 5.7.3.4. Always yield the right of way to pedestrians and other vehicles

## 5.7.4. Braking.

- 5.7.4.1. Controlling speed.
- 5.7.4.2. Normal stopping effected by:
  - 5.7.4.2.1. Reaction time.
  - 5.7.4.2.2. Speed.
  - 5.7.4.2.3. Inclement weather.
  - 5.7.4.2.4. Conditions of tires and brakes.
  - 5.7.4.2.5. Type and condition of road surface.
  - 5.7.4.2.6. Weight of vehicle and weight of equipment and agent.
- 5.7.4.3. Backing.
  - 5.7.4.3.1. Minimize the need for backing.
  - 5.7.4.3.2. If backing is required, ensure the use of spotters.
  - 5.7.4.3.3. Stop immediately is the spotter moves out of view of the mirror.
  - 5.7.4.3.4. Ensure back-up alarms are working properly.
  - 5.7.4.3.5. See AFMAN 24-306 for standard AF spotter hand signals and additional guidance on spotter safety.
- 5.7.4.4. Firefighting Systems. Engage and operate vehicle firefighting systems IAW applicable TOs and manufacturer's operator's manuals.

#### Section 6—EXPLANATION AND DEMONSTRATION

# 6.1. Instructor's Preparation.

- 6.1.1. Establish a training location.
- 6.1.2. Obtain appropriate manufacturer's operating manual.
- 6.1.3. Schedule/reserve a vehicle.
- 6.1.4. Ensure trainee has properly completed AF Form 171 on person.

# 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(s) when vehicle 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. Gloves will be worn during cargo loading and unloading.
    - 6.2.1.3.3. First aid kit.
    - 6.2.1.3.4. Inclement weather gear, if required.
    - 6.2.1.3.5. Hearing protection, if required.
  - 6.2.1.4. Walk around vehicle to familiarize the trainee 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.
  - 6.2.1.7. Throughout demonstration, practice vehicle safety.
- 6.2.2. Practice AF risk management 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 3**. An inspection guide (**Attachment 2**) can also be used to ensure all areas of the vehicle 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 the vehicle, within the training area, demonstrate and explain the following:
  - 6.4.2.1. Vehicle specifications.
  - 6.4.2.2. Vehicle controls.
  - 6.4.2.3. Vehicle inspection, maintenance and servicing.
  - 6.4.2.4. Use of the apparatus automotive gauges, and address potential performance problems based on gauge readings.
  - 6.4.2.5. Operating principles of the agent delivery system and identify its major components.
  - 6.4.2.6. Auxiliary cooling system and winterization system, if equipped.
- 6.4.3. Vehicle equipment and operations demonstration.
  - 6.4.3.1. Demonstrate and explain, in common measurements, the basic dimensions and turning radius of the apparatus.
  - 6.4.3.2. Demonstrate and perform driving a fire department ARFF apparatus on a public road/highway.
  - 6.4.3.3. Demonstrate and perform driving a fire department ARFF apparatus on an airport.
  - 6.4.3.4. Demonstrate and perform unique or technical vehicle maneuvers.
  - 6.4.3.5. Demonstrate the ability to operate the ARFF apparatus off of an improved surface.
- 6.4.4. Firefighting Operations.
  - 6.4.4.1. Demonstrate and perform maneuver, positioning and repositioning an ARFF apparatus around an aircraft.
  - 6.4.4.2. Demonstrate and perform a pump and roll (power modulation) in both forward and reverse while discharging agent.

- 6.4.4.3. Demonstrate and maintain effective fire stream at rated capacity from apparatus internal water tank and transfer pump operations to an external pressurized water source (hydrant).
- 6.4.4.4. Demonstrate and maintain effective fire stream from apparatus roof turret at rated capacity while resupplied from another fire apparatus.
- 6.4.5. Show trainee the after-operation inspection and report.
  - 6.4.5.1. Following manufacturer's shut-down procedures.
  - 6.4.5.2. Ensure vehicle is cleaned.
  - 6.4.5.3. Perform a walk around inspection.
  - 6.4.5.4. 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 Evaluation.

- 7.1.1. All Performance Evaluations will be conducted IAW the ARFF Performance Test Supplement (**Attachment 5**).
- 7.1.2. All personnel who operate assigned FES vehicles must have a valid/current U.S Air Force Motor Vehicle License and a valid State issued driver's license.
- 7.1.3. All trainees are required to have in their possession a valid AF Form 171, *Request for Driver's Training and Addition to U.S. Government Driver's License*, listing the type of vehicle, whenever training on a vehicle and must be accompanied by a fully qualified and licensed trainer.
- 7.1.4. Trainees shall have training hours completed and documented on the Driver's Training Qualification Form (**Attachment 4**) completed prior to performance testing.

#### 7.1.5. Evaluators:

- 7.1.5.1. The trainer and evaluator may not be the same individual IAW DoD 6055.06-M.
- 7.1.5.2. 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).

- 7.1.5.3. Ensure wheels are chocked when vehicle is parked.
- 7.1.5.4. Ensure all jewelry and identification tags are removed.
- 7.1.5.5. Ensure required personal protective equipment is used.
  - 7.1.5.5.1. Safety-toe boots.
  - 7.1.5.5.2. Gloves when required.
  - 7.1.5.5.3. Inclement/cold weather gear, if required.
  - 7.1.5.5.4. Hearing protection, if required.
- 7.1.5.6. Pay particular attention to the cautions and warnings listed in the operator's manual.
- 7.1.5.7. Ensure trainee wears seat belt.
- 7.1.5.8. Properly adjust driver's seat and all mirrors.
- 7.1.5.9. Ensure the operator is aware of driving situations he/she is to perform.

#### **Attachment 1**

#### GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

## References

AFI 24-301, Ground Transportation, 1 November 2018

**AFI 24-302**, *Vehicle Management*, 26 June 2012

**AFMAN 24-306**, Operation of Air Force Government Motor Vehicles, 9 December 2016

AFPAM 90-803, Risk Management (RM) Guidance and Tools, 11 February 2013

**ASTM D4956**, Standard Specification for Retroreflective Sheeting for Traffic Control, 15 July 2005

**DoD 6055.06-M,** *DoD Fire and Emergency Services Certification Program,* 16 September 2010

**IFSTA Aircraft Rescue and Firefighting**, Fifth Edition

**NFPA 403**, Standard for Aircraft Rescue and Fire-Fighting Services at Airports

NFPA 412, Standard for Evaluating Aircraft Rescue and Fire-Fighting Foam Equipment

NFPA 414, Standard for Aircraft Rescue and Fire-Fighting Vehicles

NFPA 1002, Standard for Fire Apparatus Driver/Operator Professional Qualifications

NFPA 1403, Standard on Live Fire Training Evolutions

NFPA 1500, Standard on Fire Department Occupational Safety and Health Program

Title 49 CFR Parts 300-399, Federal Motor Carriers, 23 August 2013

# Adopted Forms

**AF Form 171**, Request for Driver's Training and Addition to U.S. Government Drivers

**AF Form 847**, Recommendation for Change of Publication

AF Form 1800, Operator's Inspection Guide and Trouble Report

**DD Form 518**, Accident Identification Card

Standard Form 91, Motor Vehicle Accident Report

# Abbreviations and Acronyms

**AFI**—Air Force Instruction

AFIMSC—Air Force Installation and Mission Support Center

**AFMAN**—Air Force Manual

**AFPAM**—Air Force Pamphlet

AHJ—Authority Having Jurisdiction

**ARFF**—Aircraft Rescue Fire Fighting

**ASTM**—American Standard for Testing Materials

**CDC**—Career Development Course

**CFR**—Code of Federal Regulations

**DOT**—Department of Transportation

**FES**—Fire Emergency Services

FMCSA—Federal Motor Carrier Safety Administration

**IFSTA**—International Fire Service Training Association

**IAW**—In Accordance With

**KPH**—Kilometers per Hour

MPH—Miles per Hour

NFPA—National Fire Protection Association

**RM**—Risk Management

TO—Technical Order

# **Attachment 2**

# ARFF VEHICLE INSPECTION GUIDE

# GENERAL

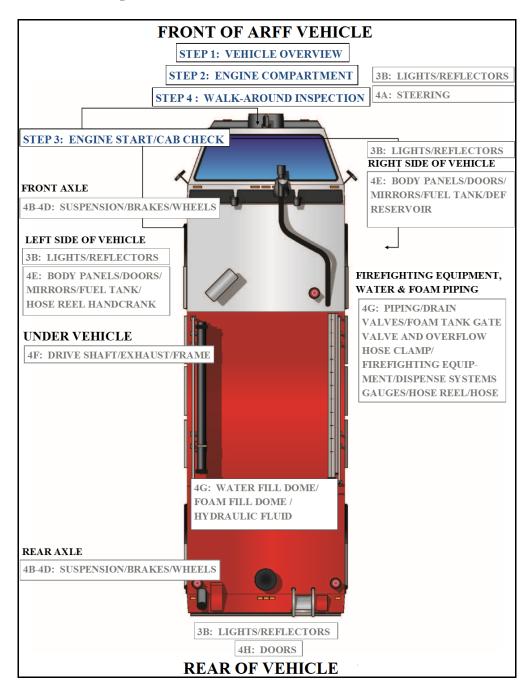
STE	P 1. VEHICLE OVERVIEW
	Paperwork
•	AF Form 1800
•	Discrepancy Correction Complete (VM Annotation)
	Vehicle Approach
•	Damage (to include light covers)
•	Vehicle Leaning?
•	Fresh Leakage of Fluids
•	Inspect Winch (if equipped)
•	Hazards Surrounding Vehicle
INTE	ERNAL
STEI	P 2. ENGINE COMPARTMENT
	Leaks/Hoses/Electrical Wiring Insulation
	Oil Level
	Coolant Level
	Power Steering Fluid
	Brake Fluid
	Windshield Washer Fluid
	Battery Fluid Level (Both), Connections & Tie Downs
	Automatic Transmission Fluid Level
	Engine Compartment Belts
	Under Hood Light Operation
	Check Air Cleaner Element
STE	P 3. ENGINE START/CAB CHECK (LEFT/FRONT/RIGHT)
	Safe Start
	Gauges
•	Oil Pressure Gauge
•	Air Pressure Gauge
•	Temperature Gauge (Coolant/Engine Oil)
•	Ammeter/Voltmeter
	Siren
	Communications System
	Windows
	Seat Adjustment
	Mirrors & Windshield
	Wipers/Washers
П	Removable Firefighting Equipment (missing/damaged)

	Winch Controller (if equipped)
	Water Level
	Foam Level
	Emergency & Safety Equipment
•	Spare Electrical Fuses
•	Red Reflective Triangles
•	6 Fuses or 3 Liquid Burning Flares
•	Properly Charged & Rated Fire Extinguisher
•	Optional (Chains/Tire Changing Equip, Emergency Phone List)
	Operate Pump
•	Ensure Proper PSI
•	Ensure Proper Water Flow
•	Check Discharge Patterns
•	Check Pump Pressure Gauge
	Ensure Smooth Oscillation of Turrets with Joystick
	Ensure "DO NOT MOVE APPARATUS" Light is Operational (if equipped)
	Ensure Back-Up Camera is Operational (if equipped)
	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
•	ABS Indicator
•	Clearance Lights
•	Telescoping Lights
(Reflec	ctive Clean & Functional Light & Reflector Checks Include:)
•	Headlights
•	Taillights
•	Backing Lights
•	Turn Signals
•	Four-Way Flashers
•	Brake Lights
•	Red Reflectors & Amber Reflectors
•	Reflective Tape Condition
	Horn
	Heater/Defroster
	Brakes
_ •	Parking Brake Check
•	Hydraulic Brake Check
•	Service Brake Check
•	Safety Belt
(TURN	N-OFF ENGINE/TURN-ON HEADLIGHTS *LOW BEAM* AND FOUR-WAY
•	HERS)

<u>STEP</u>	4. WALK-AROUND INSPECTION
	4A – Steering
•	Steering Box/Hoses
•	Steering Linkages
	<b>4B</b> – Suspension
•	Springs/Air/Torque
•	Mounts
•	Shock Absorbers
	4C – Brakes
•	Slack Adjustors & Pushrods
•	Brake Chambers
•	Brake Hoses/Lines
•	Drum Brake
•	Brake Linings
	<b>4D</b> – Wheels
•	Rims
•	Tires
•	Hub Oil Seals/Axle Seals
•	Lug Nuts
•	Spacers & Budd Spacing
IEET	SIDE/DRIVER SIDE
	4E – Body Panels
	4E – Doors
	4E – Mirrors
	<b>4E</b> – Fuel Tank
	<b>4E</b> – Hose Reel Handcrank
RIGH'	TSIDE/PASSENGER SIDE
	<b>4E</b> – Body Panels
	4E – Doors
	<b>4E</b> – Mirrors
	<b>4E</b> – Fuel Tank
	<b>4E</b> – Diesel Exhaust Fluid (DEF) Reservoir
UNDE	ER VEHICLE
	<b>4F</b> – Drive Shaft
	<b>4F</b> – Exhaust
	<b>4F</b> – Frame
TOP	
	<b>4F</b> – Water Fill Dome
	<b>4F</b> – Foam Fill Dome
	<b>4F</b> – Hydraulic Fluid

FIREF	IGHTING EQUIPMENT, WATER & FOAM PIPING
	<b>4G</b> – Piping/Drain Valves (Underside)
	<b>4G</b> – Foam Tank Gate Valve
	<b>4G</b> – Foam Tank Overflow Hose Clamp
	4G – Firefighting Equipment
	<b>4G</b> – Dispense Systems Gauge Readings
	4G – Hose Reel
	4G – Hose
<b>REAR</b>	
	4H – Doors

Figure A2.1. Vehicle Inspection Guide.



# **Attachment 3**

# SEVEN-STEP INSPECTION PROCESS

Figure A3.1. Seven-Step Inspection Process (Universal).

<del>_</del> _	Inspection Process (Universal)
Step	Procedure
2. Check Engine Compartment  2. Check Engine Compartment	<ul> <li>Review the AF Form 1800.</li> <li>Ensure any discrepancy has been corrected.</li> <li>Vehicle Management annotated the discrepancy was completed.</li> <li>Approaching the vehicle.</li> <li>Damage or vehicle leaning to one side.</li> <li>Fresh leakage of fluids.</li> <li>Hazards around vehicle.</li> <li>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.</li> <li>Check the following:</li> <li>Engine oil level.</li> <li>Coolant level in radiator; condition of hoses.</li> <li>Power steering fluid level; hose condition (if so equipped).</li> <li>Windshield washer fluid level.</li> <li>Battery fluid level, connections and tie-downs (battery may be located elsewhere).</li> <li>Automatic transmission fluid level (may require engine to be running).</li> </ul>

	0	Check belts for tightness and
		excessive wear (alternator, water
		pump, air compressor)learn how
		much "give" the belts should have
		when adjusted right.
	0	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	•	Make sure parking brake is on.
(Get in and Start Engine)	•	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.
	•	Look at the gauges.
	0	Oil pressure. Should come up to
		normal within seconds after engine is
		started.
	0	Air pressure. 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.
	0	Ammeter and/or voltmeter. Should be
		in normal range(s).
	0	Coolant temperature. Should begin
		gradual rise to normal operating
		range.
	0	Engine oil temperature. Should begin
		gradual rise to normal operating
		range.
	0	Warning lights and buzzers. Oil,
		coolant, charging circuit warning,
		and antilock brake system lights
		should go out right away.
		should go out fight away.

- Check Condition of Controls. Check all of the following for looseness, sticking, damage, or improper setting:
- Steering wheel.
- Clutch.
- Accelerator (gas pedal).
- Brake controls.
- Foot brake.
- Trailer brake (if vehicle has one).
- Parking brake.
- Transmission controls.
- Interaxle differential lock (if vehicle has one).
- 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).
- Three red reflective triangles, 6 fuses or 3 liquid burning flares.
- Properly charged and rated fire extinguisher. Check for optional items such as:
- 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.
	<ul> <li>Go to front of vehicle and check that</li> </ul>
	low beams are on and both of the
	four-way flashers are working.
	<ul> <li>Push dimmer switch and check that</li> </ul>
	high beams work.
	<ul> <li>Turn-off headlights and four-way</li> </ul>
	emergency flashers.
	o Turn-on parking, clearance, side-
	marker, and identification lights.
	o Turn-on right turn signal, and start
	walk-around inspection.
	<ul> <li>Walk around and inspect.</li> </ul>
	<ul> <li>Clean all lights, reflectors, and glass</li> </ul>
	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 tiresproperly inflated,
	valve stem and cap OK, no serious
	cuts, bulges, or tread wear.
	O Use wrench to test rust-streaked lug
	nuts, indicating looseness.

- Hub oil level OK, no leaks. Left front suspension.
   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.
- 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.
- Check windshield wiper arms for proper spring tension.
- 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).
- 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 Right fuel tank(s).
- Securely mounted, not damaged, or leaking. Fuel crossover line secure.

- o Tank(s) contain enough fuel. Cap(s) on and secure.
- 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.
- Air-lines and electrical wiring-secured against snagging, rubbing, wearing.
- Spare tire carrier or rack not damaged (if so equipped).
- o Spare tire and/or wheel securely mounted in rack.
- Spare tire and wheel adequate (proper size, properly inflated).
- o Cargo securement (trucks).
- Side boards, stakes strong enough,
   free of damage, properly set in place
   (if so equipped).
- Curbside cargo compartment doors in good condition, securely closed, latched/locked and required security seals in place.
- Right rear.
- 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.
- Tires evenly matched (same sizes).Wheel bearing/seals not leaking.
- o Suspension.

Condition of spring(s), spring hangers, shackles, and u-bolts. Axle secure. 0 Powered axle(s) not leaking lube 0 (gear oil). Condition of torque rod arms, bushings. Condition of shock absorber(s). 0 If retractable axle equipped, check 0 condition of lift mechanism. If air powered, check for leaks. Condition of air ride components. 0 Brakes. 0 Brake adjustment. 0 Condition of brake drum(s) or discs. 0 Condition of hoses--look for any 0 wear due to rubbing. Lights and reflectors. 0 Side-marker lights clean, operating, 0 and proper color (red at rear, others amber). Side-marker reflectors clean and 0 proper color (red at rear, others amber). Rear. Lights and reflectors. 0 Rear clearance and identification lights clean, operating, and proper color (red at rear). Reflectors clean and proper color 0 (red at rear). Taillights clean, operating, and 0 proper color (red at rear). Right rear turn signal operating, and proper color (red, yellow, or amber at rear). License plate(s) present, clean, and 0 secured.

Splash guards present, not damaged,

properly fastened, not dragging on

ground, or rubbing tires.

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	<u> </u>	Decidence 1 1 1
	0	Rear doors securely closed,
		latched/locked.
	•	Left side.
	0	Check all items as done on right side,
		plus:
	0	Battery (batteries) (if not mounted in
		engine compartment).
	0	Battery box (boxes) securely
		mounted to vehicle. Box has secure
		cover.
	0	Battery (batteries) secured against
		movement. Battery (batteries) not
		broken or leaking.
	0	Fluid in battery (batteries) at proper
		level (except maintenance-free type).
	0	Cell caps present and securely
		tightened (except maintenance-free
		type).
	0	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
	Ī	
		proper color (red, yellow, or amber).
	•	proper color (red, yellow, or amber).  Get in vehicle.
	•	Get in vehicle.
	•	Get in vehicle. Turn-off lights not needed for
		Get in vehicle. Turn-off lights not needed for driving.
	• 0	Get in vehicle.  Turn-off lights not needed for driving.  Check for all required papers, trip
		Get in vehicle. Turn-off lights not needed for driving.

	0	Secure all loose articles in cab (they
		might interfere with operation of the
		controls or hit the operator in a
		crash).
		,
7. 0	0	Start the engine.
7. Start the Engine and Check Test for	•	Test for hydraulic leaks.
Hydraulic Leaks	0	If the vehicle has hydraulic brakes,
		pump the brake pedal three times.
	0	Then apply firm pressure to the pedal
		and hold for five seconds.
	0	The pedal should not move. If it
		does, there may be a leak or other
		problem.
	•	Brake system.
	•	Test parking brake.
	0	Fasten safety belt.
	0	Set parking brake (power unit only).
		Release trailer parking brake (if
		applicable). Place vehicle into a low
		gear.
	0	Gently pull forward against parking
		brake to make sure the parking brake
		holds.
	0	Repeat the same steps for the trailer
		with trailer parking brake set and
		power unit parking brakes released
		(if applicable).
	0	If it doesn't hold vehicle, it is faulty;
		get it fixed.
	•	Test service brake stopping action.
		Go about 5 miles per hour.
		Push brake pedal firmly.
	0	"Pulling" to one side or the other can
	0	mean brake trouble.
	0	Any unusual brake pedal "feel" or
		delayed stopping action can mean
		trouble.

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Figure A3.2. Additional Steps for Inspecting Air Brakes System (Universal).

Additional Steps for Inspecting Air Brakes (Universal)		
Step	Procedure	
2. Engine Compartment Checks	• Check air compressor drive belt condition and tightness (if compressor is belt driven).	
5. Walk-Around Inspecting	<ul> <li>Check manual slack adjusters on S-cam brakes. Note: Vehicles with automatic slack adjustors still must be checked.</li> <li>Park on level ground and chock the wheels.</li> <li>Release the parking brakes so the operator can move the slack adjusters.</li> <li>Use gloves and pull hard on each slack adjuster that it can be reached.</li> <li>Check slack adjuster, more than 1-inch indicates adjustments required (vehicles with</li> </ul>	
	too much brake slack can be very hard to stop). Adjust it or have it adjusted.	
	Check brake drums (or discs), linings, and hoses.	
7. Final Air Brake Check	Test low pressure warning signal.	

- O Shut the engine off when the vehicle has enough air pressure so that the low pressure warning signal is not on.
- o Turn the electrical power on.
- Step on and off the brake pedal to reduce air tank pressure.
- O Low air pressure warning signal should come on before the pressure drops to less than 60 psi in the air tank with lowest pressure.
- Check that the spring brakes come on automatically.
- o Chock the wheels.
- o Release the parking brakes when enough air pressure is built up.
- o Shut the engine off.
- Step on and off the brake pedal to reduce the air tank pressure.
- o "Parking brake" knob should pop out when the air pressure falls to the manufacturer's specification.
- Check rate of air pressure buildup
- Refer to manufacturer's recommendation for average buildup time.
- o If not within recommended time, the air pressure may drop too low during driving operations.
- Test air leakage rate.
- O With a fully-charged air system (typically 125 psi).
- o Turn-off the engine.
- Release the service brake and time the air pressure drop.
- o The loss rate should be less than 2 psi in one minute for single vehicles.
- o Not less than 3 psi in 1 minute for combination vehicles.
- Then apply 90 psi or more with the brake pedal.
- O After the initial pressure drop, if the air pressure falls more than 3 psi in 1 minute for single vehicles.
- o Not more than 4 psi for combination vehicles.
- Check air compressor governor cut-in and cut-out pressures.

Air compressor should start at about 100 psi 0 and stop at about 125 psi. Run the engine at a fast idle. 0 Air governor should cut-out the air compressor at about the manufacturer's specified pressure. Engine idling, step on and off brake to reduce 0 air tank pressure. Compressor should cut-in at manufacturer's 0 specified cut-in pressure. Test parking brake: Stop the vehicle; put the 0 parking brake on; gently pull against it in low gear to determine if parking brake will hold. Test service brakes. Wait for normal air pressure. Release the parking brake. Move the vehicle forward slowly (about 5 mph). Apply the brakes firmly using the brake pedal.

Note any vehicle "pulling" to one side, unusual feel, or delayed stopping action.

# **Attachment 4**

# **Driver's Training Qualification Form**

Vehicle Type: ARFF		
Trainee's Name:		Trainer's Name:
	Pre	e Operations Station
Required Training	Hours	In each block, enter date of training, number of hours, training initials.
Manufacture Data Self Study	3	
<b>Pre-operation Daily Checkout</b> (Includes, Vehicle Gauges and Agent System Delivery)	3	
	C	Operations Station
Apparatus Maneuvering Positioning / Modulation (Must include 1 hour of night operations)	2	
Apparatus Turret Operation (Must include 1 hour of night operations)	2	
Vehicle Backing	1	
Flight Line Driving Operation (Day/Night) (Aircraft Ramp, Taxiways, Runways)	2	
Assigned Aircraft Set-up Positions	1	
Predetermined Driving Course (Installation Familiarization, Off- road & Obstacle)	2	
how quickly a trainee learns new task	ks and den	ended and may be increased or decreased depending on monstrates competency.  pleted, the Trainee and Supervisor must sign.
Trainee Signature:		Supervisor's Signature:

# **Attachment 5**

# **ARFF Vehicle Performance Test**

\*\*\*NOTE\*\*\* Completion of these Performance Tests for vehicle licensing purposes does not constitute completion of the Performance Tests for the Driver/Operator-ARFF Certification unless the trainee is completing the licensing requirements and Career Development Course in tandem.