



U.S. Department
of Transportation

Federal Aviation
Administration

Advisory Circular

Subject: GUIDE SPECIFICATION
FOR AIRCRAFT RESCUE AND FIRE
FIGHTING VEHICLES

Date: 09/24/07
Initiated by: AAS-100

AC No.: 150/5220-10D
Change:

1. PURPOSE. This advisory circular (AC) contains information, references and guidelines for a family of aircraft rescue and fire fighting (ARFF) vehicles. Vehicles meeting this standard satisfy Title 14 Code of Federal Regulations (CFR) Part 139, *Certification of Airports*, and meet the requirements for airport response to aircraft fire fighting.

2. CANCELLATION. AC 150/5220-10C, *Guide Specification for Water/Foam Aircraft Rescue and Fire Fighting Vehicles*, dated February 18, 2002, and AC 150/5220-19, *Guide Specification for Small, Dual Agent Aircraft Rescue and Firefighting Vehicles*, dated December 7, 1993, and Engineering Brief No. 71, *Modification to Standard for Aircraft Rescue and Fire Fighting Vehicles*, Dated February 01, 2006, are canceled.

3. APPLICATION. The Federal Aviation Administration (FAA) recommends the use of National Fire Protection Association Standard (NFPA) 414, 2007 edition, *Standard for Aircraft Rescue and Fire-Fighting Vehicle*; and NFPA 1901, 2003 Edition, *Standard for Automotive Fire Apparatus*; and this publication for the preparation of ARFF vehicle specifications. This AC does not constitute a regulation and in general is not mandatory. However, use of these guidelines is mandatory for ARFF vehicles funded under Federal grant assistance programs. Mandatory terms such as “must” apply only to those who purchase ARFF vehicles using Airport Improvement Program (AIP) or Passenger Facility Charge Program (PFC) funds. In the event of a conflict, Part 139 takes precedence over all other documents identified in the AC. Features or design details not listed as required or optional in this document are not considered necessary unless a justification acceptable to the FAA is provided. If there are no additions, exceptions or amendments noted, then the standards of NFPA 414 are applicable.

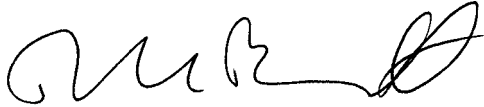
4. PRINCIPAL CHANGES.

- a. AC 150/5220-19, *Guide Specification for Small, Dual Agent Aircraft Rescue and Fire Fighting Vehicles*, has been incorporated into AC 150/5220-10.
- b. NFPA 414 has been adopted by reference.
- c. Foam/dry chemical/clean agent simultaneous delivery systems and compressed air foam systems have been incorporated.
- d. Remanufactured ARFF vehicle standards are incorporated.
- e. Clothing and tools have been removed.

- f. Training devices have been incorporated.
- g. Interior Access Vehicles have been incorporated.

5. METRIC UNITS. To promote an orderly transition to metric units, this AC contains both English and metric dimensions. The metric conversions may not be exact metric equivalents and, until there is an official changeover to the metric system, the English dimensions will govern.

6. COPIES OF THIS AC. The Office of Airport Safety and Standards makes ACs available to the public through the Internet. These ACs may be found through the FAA home page (www.faa.gov). A printed copy of this and other ACs can be ordered from the U.S. Department of Transportation, Subsequent Business Office, Ardmore East Business Center, 3341 Q 75th Avenue, Landover, MD 20785.



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NOTE: *The numbering system listed in this advisory directly corresponds to chapters in the NFPA 414.0 2007 edition. To properly use this document, first refer to NFPA 414.0 for the base requirements then refer to this advisory for any additions, exceptions or amendments (see Chapter Three below for definitions. To access the NFPA Standard, visit www.nfpa.org.*

CHAPTER ONE: ADMINISTRATION

ADDITION: 1.1

All remanufactured ARFF vehicles must meet the standards of this AC. Remanufactured ARFF vehicles must not exceed 75% of the cost of new manufactured vehicles of the same class with comparable options. Remanufacturing costs that exceed 75% of a new vehicle are not considered best value engineering for federal funding.

ADDITION: 1.3.4

Vehicles must be painted and marked per the standards of AC 150/5210-5, *Painting, Marking, and Lighting of Vehicles Used on an Airport*.

CHAPTER THREE: DEFINITIONS

ADDITION:

1. Specific terms that apply to this AC are listed below:

- **ADDITION:** A new item has been added to the standard in the reference document.
- **EXCEPTION:** A restriction has been imposed on the standard in the reference document.
- **AMENDMENT:** Subject matter has been rewritten to modify part or all of the original text of the reference document.

2. Vehicle Classes:

- Performance requirements for classes 1, 2 and 3 vehicles follow the NFPA 414 Performance requirements for ≥ 120 and ≤ 528 gallons.
- Performance requirements for class 4 vehicles follow the NFPA 414 Performance requirements for ≥ 528 and ≤ 1585 gallons.
- Performance requirements for class 5 vehicles follow the NFPA 414 Performance requirements for ≥ 1585 gallons.

Table 1. Usable Capacities

| Class of Vehicle | Water or Water/Foam Solution | | Dry Chemical* or Approved Clean Agent Equivalent | |
|------------------|---|--|--|-----------|
| | Gallons (U.S.) | Liters | Pounds | Kilograms |
| 1 | 120 | 454 | 500 | 225 |
| 2 | 300 | 1,136 | 500 | 225 |
| 3 | 500 | 1,900 | 500 | 225 |
| 4 | 1,500 | 5,685 | See 14 CFR Part 139, Para 139.317 | |
| 5 | 3,000 to 4,500 in 500 gallon increments | 11,360 to 17,035 in 1,900 liter increments | See 14 CFR Part 139, Para 139.317 | |

*500 lbs of Sodium based dry chemical or 450 lbs Potassium based dry chemical (i.e. Purple K Powder) or 460 lbs clean agent.

CHAPTER FOUR: AIRCRAFT RESCUE AND FIRE-FIGHTING VEHICLES

14 CFR 139.317 requires at least one vehicle to be equipped with dry chemical or approved clean agent regardless of airport index. Approved equivalent complementary agent systems referenced in Chapter 3 are acceptable optional additions to the basic vehicle when dictated by local operational needs.

NOTE: *Commercially manufactured chassis used to manufacture Class 1, 2 and 3 vehicles must comply with Federal Motor Vehicle Safety Standards (FMVSS). If NFPA requirements are more demanding, they take precedence.*

ADDITION: 4

All moving parts requiring routine lubrication must have a means of providing for such lubrication. There must be no pressure lubrication fittings where their normal use would damage grease seals or other parts.

AMENDMENT: 4.2.1.2.1 (2).AND (3)

Class 1, 2 and 3 vehicles are exempt from this requirement.

ADDITION: 4.2.2.3

Class 4 and 5 vehicles must be provided with mirrors that effectively cover the blind spot area in front of the vehicle that is not within the operator’s direct view.

ADDITION: 4.3

The engine and transmission must operate efficiently and without detrimental effect to any drive train components when lubricated with standard, commercially available lubricants per the recommendations of the engine and transmission manufacturers.

The engine oil and transmission fluid filters must be of the full-flow type with a replaceable spin-on element for class 4 and 5 vehicles.

AMENDMENT: 4.3.3.5.1

For class 1, 2 and 3 vehicles (refer to Table 1) sufficient capacity must be provided for a minimum of 100 miles (160 km) of highway travel at 60 MPH (97 kph) and 1 hour of pumping at the full rated discharge if the foam/water agent discharge system is engine driven.

AMENDMENT: TABLE 4.1.1 (A) AND (B)

Evasive Maneuver test must be conducted at 35 MPH (56 KPH).

AMENDMENT: TABLE 4.1.1 (C), (D), AND 3B (A).

For class 1, 2 and 3 vehicles nozzle flow rate must be \geq 60 GPM.

ADDITION: 4.6

An off-road, high-mobility suspension system resulting in no more than 0.5 g rms acceleration at the driver's seat of the vehicle when traversing an 8-inch (20 cm) diameter half round at 35 mph (56 kph) must be provided.

The suspension design by which the manufacturer meets the suspension performance requirements is at the manufacturer's discretion.

AMENDMENT: 4.11.5.1(3)

Crew seats with individual retractable 3 point restraint seatbelts.

AMENDMENT: 4.11.5.1 (11).

Not applicable to Class 1, 2, and 3 vehicles.

ADDITION: 4.8

Pintle hooks on class I, II, and III vehicles not to exceed maximum towing capacity of the vehicle.

The towing devices may be allowed to intrude into the 30-degree approach angle in order to provide ease of connection if needed.

ADDITION: 4.12.3

All compartments shall be provided with weatherproof lights that are switched to automatically light when compartment doors are opened and the vehicle master switch is in the 'on' position.

AMENDMENT: 4.12.6

The height between steps must be less than 20 inches (51 cm). For class 1, 2, and 3 vehicles the lower steps must be no more 19 inches (49 cm) from the ground. The lowermost steps may extend below the angle of approach or departure or ground clearance limits if they are designed to swing clear. The tread of the bottom steps must be at least 8 inches (20 cm) in width and succeeding steps at least 16 inches (40 cm) in width. The full width of all steps must have at least 6 inches (15 cm) of unobstructed toe room or depth when measured from, and perpendicular to, the front edge of the weight-bearing surface of the step.

EXCEPTION: 4.12.8

Vehicles must be painted and marked per the standards of AC 150/5210-5, *Painting, Marking, and Lighting of Vehicles Used on an Airport*.

EXCEPTION: 4.12.8.1

Vehicles must be painted and marked per the standards of AC 150/5210-5, *Painting, Marking, and Lighting of Vehicles Used on an Airport*.

ADDITION: 4.13

Table 2. Foam/Dry Chemical/Clean Agent Simultaneous Delivery System

NOTE: *The agent delivery rates in this table are allowed by the FAA as a result of independent third party demonstrations of fire suppression capability of a Foam/Dry Chemical/Clean Agent Simultaneous Delivery System.*

| Hand Line and Turret Performance Criteria | Class 1, 2, & 3 Vehicles | Class 4 & 5 Vehicles - This firefighting system has not been evaluated for Class 4 & 5 Vehicles |
|--|-------------------------------------|---|
| Foam Performance | See NFPA 414, 2007 Ed. Table 4.1.1 | N/A |
| Dry Chemical Performance | | |
| • Discharge rate | ≥ 8 lbs/sec (4.9 liters/sec) | N/A |
| • Discharge rate with foam | ≥ 8 lbs/sec (4.9 liters/sec) | N/A |
| • Discharge rate with foam and clean agent | ≥ 6 lbs/sec (3.7 liters/sec) | N/A |
| • Hand Line Range | ≥ 90 ft (27.5 M) | N/A |
| • Hose Length | See NFPA 414, 2007 Ed. Table 4.1.1 | N/A |
| • Turret Range | ≥ 100 ft (30.5 M) | N/A |
| • Turret Width | See NFPA 414, 2007 Ed. Table 4.1.1 | N/A |
| Clean Agent Performance | | |
| • Discharge with foam | ≥ 1 lb/sec (0.61 liters/sec) | N/A |
| • Discharge with foam and dry chemical | ≥ 1/3 lb/sec (0.2 liters/sec) | N/A |
| • Independent Clean Agent Range | ≥ 40 ft (12.2 M) | N/A |

| Hand Line and Turret Performance Criteria | Class 1, 2, & 3 Vehicles | Class 4 & 5 Vehicles - This firefighting system has not been evaluated for Class 4 & 5 Vehicles |
|--|-------------------------------------|---|
| <ul style="list-style-type: none"> • Inside Hose Diameter | ≥ ¼ inch (0.64 cm) | N/A |
| <ul style="list-style-type: none"> • Hose Length | See NFPA 414, 2007 Ed. Table 4.1.1 | N/A |

NOTE: *The agent delivery rates in this table are allowed as a result of independent third party demonstrations of fire suppression capability of a Foam/Dry Chemical/Clean Agent simultaneous delivery. (Evaluation of Quad-Agent Small Fire Fighting System DOT\FAA\AR-TN06\13) Otherwise, the standards of Tables 4.1.1(c) and 4.1.1(d) apply.*

Compressed Air Foam System (CAFS):

Compressed Air Foam System (CAFS) allows for improved fire suppression capability. CAFS must have expansion ratios of 6:1 to 10:1 with 8:1 being optimal. CAFS is currently restricted to Class 1, 2 and 3 vehicles as it has not been demonstrated on primary or auxiliary turrets of Class 4 and 5 vehicles.

Any hand line that is dedicated specifically for CAFS must have a smooth bore nozzle. Hand line discharge rates of 30 GPM and primary and auxiliary turret discharge rates of 60 GPM are permissible.

AMENDMENT: 4.15.2.2:

Manhole covers are not required for class 1, 2 and 3 vehicles.

AMENDMENT 4.16.1.6:

For Class 1, 2 and 3 vehicles, the foam tank must be equipped with at least one top fill opening of not less than 5 in. (127 mm) internal diameter.

EXCEPTION: 4.18.6 (1).

The only sections of chapter 20 of NFPA 1901, 2003 Edition that are applicable are the following:

- 20.14.2
- 20.14.3
- 20.19 through 20.19.6
- 20.20 Structure
- 20.23 Instruction Plates and Signs

AMENDMENT: 4.18.6.6

If an extendable boom is specified by the purchaser, a skin penetrating nozzle must be provided. The penetrating nozzle must be movable to allow for proper alignment of the penetrator to the aircraft fuselage for piercing operations. It must be capable of the minimum water/flow rate and pattern requirements of Tables 4.1.1(c) and 4.1.1(d) (not applicable to class 1, 2 and 3 vehicles).

EXCEPTION: 4.24.4

Vehicles must be lighted at a minimum per the standards of AC 150/5210-5, *Painting, Marking, and Lighting of Vehicles Used on an Airport*. Refer to Appendix B for maximum allowable lighting.

CHAPTER FIVE: INTERIOR ACCESS VEHICLE**ADDITION: CHAPTER 5**

An Interior Access Vehicle (IAV) must meet at least the agent requirements of CFR Part 139.317(a).

AMENDMENT: 5.1.3

The vehicle must provide access to sill heights of between 7 feet (2.3 meters) and up to at least the lower sills of the largest aircraft operating at the airport. This sill height is sufficiently low enough to allow access to the lowest sill height aircraft currently in operation (e.g. DC9) that does not have its own integral stairs.

ADDITION: 5.4

While on a 15 degree tilt the platform and stairs must be able to be leveled as a unit to within 5 degrees of horizontal for operational use.

AMENDMENT: 5.4.2

The vehicle must pass a 15 degree tilt test with stairs fully extended without stabilizing equipment. However, the platform is not required to be fully loaded to the design weight capacity. Side wheel chocks may be used to prevent the vehicle from sliding on the table surface, but their height is not to exceed 5% of the tire diameter.

NOTE: *The FAA will allow side wheel chocks to prevent an IAV from sliding on a tilt table surface with a low coefficient of friction. The FAA has accomplished some IAV testing using a tilt table that followed standards from ANSI/ITSDF B56.6-2005 which allows chocking not to exceed 5% of the vehicle's tire diameter.*

ADDITION: 5.5

The vehicle must meet the requirements of the Society of Automotive Engineers (SAE) ARP1247, *"General Requirements for Aerospace Ground Support Equipment, Motorized and Non-Motorized."* Rev. C, Paragraphs:

3.13.1.9 – Equipment Stability: The stability of the unit will be stated in terms of Stability Ratio. The Stability Ratio is defined as the ratio of the restoring moment to the overturning movement. If the ratio is greater than one, the unit is increasingly stable as the ratio increases. If the ratio is less than one, the unit will overturn.

3.13.1.9.1 – The unit in operating condition, in its most unstable configuration, shall have a minimum stability ratio of at least 1.2 when exposed to a wind load or jet blast of 19.4 lb/ft² (928.9Pa) (80 mph) (128.7 km/h) applied from the direction most likely to cause instability. It must also withstand a wind load of 24.4 lb/ft² (1168.3Pa) (90 mph) (144.8 km/h) without overturning.

Wind or jet blast unit forces shall be based on:

$$F = 0.00252 V^2 C_D$$

Where: C_D is the drag coefficient, assumed to be 1.20, $0.00252V^2$ is stagnation pressure of dry air at 68°F (20°C) and standard atmospheric pressure with velocity of V miles per hour, and F is the unit force in pounds per square foot.

3.13.1.9.3 – If stabilizers, outriggers, and/or spring lockouts are used or combination of same or similar device to gain stability, calculations or test data shall be developed both with and without the devices.

CHAPTER SIX: ACCEPTANCE CRITERIA

ADDITION: 6.1

The vehicle must be delivered with full operational quantities of lubricants, brake and hydraulic fluids, and cooling system fluid all of which must be suitable for use in the temperature range expected at the airport.

The vehicle must be provided with all fire fighting agents and propellants to make it operational upon delivery.

The vehicle manufacturer must provide initial adjustments to the vehicle for operational readiness and mount any ancillary appliances purchased through the vehicle manufacturer as part of the vehicle.

AMENDMENT: 6.1.5

Upon delivery of the vehicle to the airport, the manufacturer must, at no additional cost, provide the services of a qualified technician for up to a maximum of 5 consecutive days (or up to 8 days for an extendable turret) for training. This is considered sufficient time for the purchaser to adjust shift work schedules to get maximum employee attendance to training sessions at some point during the training period. During this time sufficient repetitive learning opportunities must be provided by the manufacturer to allow various shifts to complete the training requirements. The technician must provide thorough instruction in the use, operation, maintenance and testing of the vehicle. This setup must include operator training for the primary operators, which will give them sufficient knowledge to train other personnel in the functional use of all fire fighting and vehicle operating systems. Prior to leaving the vehicle, the technician should review the maintenance instructions with the purchaser's personnel to acquaint them with maintenance procedures as well as how to obtain support service for the vehicle. Training must include written operating instructions that depict the step-by-step operation of the vehicle. Written instructions must include materials that can be used to train subsequent new operators.

AMENDMENT: 6.3.2.6

Evasive maneuver test must be conducted at 35 MPH (56 KPH).

ADDITION: 6.4.3.2

GPS Based electronic data collection system.

ANNEX A**AMENDMENT: A4.1.5**

All options listed in A4.1.5 are approved options as amended below.

- 4c. Auxiliary generator capacity as specified by the manufacturer.
- 5e. Spare tire(s) - Only one spare tire on a rim not mounted on the vehicle is automatically approved
- 8m. Video Recorder for color and or FLIR camera(s) – Digital Format Only
- 8o. Pre-connect handlines and nozzles.
- 8y. Remote mounted instrument and control panel (structural panel) includes:
 - (1) Engine instruments and pump controls, including a tachometer, an oil pressure gauge, a temperature gauge, and a pressure control; pump shift; manual metering control; two compound suction-pressure gauges; water tank isolation valve; and panel lights.
 - (2) Either one or two 2-1/2 inch discharge valves must be provided. Each discharge valve must be provided with pressure gauge and bleeder. One manual metering control shall be provided.
 - (3) One 2-1/2 inch and one large diameter suction inlet connection with bleeder must be provided, if specified.
 - (4) A priming pump and reservoir must be provided if specified.

The following items from the options list A4.1.5 require justification to get FAA approval:

- 2a. Added payload capacity (GVWR) to carry special equipment where the purchaser identifies added equipment.
- 2c. Audio-visual devices that meet or exceed the field of vision provided by wide-angled mirrors.
- 3a. Engine that operates at necessary performance above 2000 ft (609.6 M) elevation.
- 3b. Radiator shutters.
- 3c. Engine coolant filter.
- 3d. Silicone coolant and heater hoses.
- 3e. Heated diesel fuel-water separator.
- 5f. Bead locks on all tires and rims.
- 7d. FLIR heads-up display located in the cab.

- 8d. Foam tank drain valves(s), drain line and hose that facilitate draining the tank into specified container(s) positioned on the ground within 10 ft. (3 M) in either horizontal direction of the foam tank drainage system.
- 8g. Turret controls located in the cab or on the roof platform

The following items from the options list A4.1.5 are not allowed as user specified options, but may be used by manufacturers to meet the stability requirements of this specification:

- 5a. Reduced under axle and underbody clearances to provide a more stable performance on pavement when the vehicle suspension is designed to permit instantaneous adjustment to the required height for off pavement travel.
- 5b. Tag or other non-powered axle(s) to assist weight distribution and/or stability requirements.
- 5c. Vehicle stability systems.
- 5d. Passive or active suspension components to increase the stability of the vehicle while decreasing the rollover threshold.

The following items from the options list A4.1.5 are not approved options:

- 2b. Increased overall width of the vehicle to facilitate increased performance and maneuverability with no concern for movement on public highways(s).
- 3f. Automatic drain(s) for the diesel fuel-water separator.
- 3g. Auxiliary fuel tank(s) commensurate with the need to meet local requirements.
- 5g. Run flat devices in all tires and wheels mounted on the vehicle.
- 8a. Water tank design that allows access with each baffled compartment of the tank for internal and external inspection/service.
- 8i. Turret(s) control(s) accessible both to the driver and the crew member.

AMENDMENT: A4.2.1.

Options 1-17 are not available for ARFF vehicle specification under this advisory circular.

ANNEX E

EXCEPTION: ANNEX E.

FAA Advisory Circular 150/5210-19 *Drivers Enhanced Vision System* supersedes NFPA 414.0 *Standard for Aircraft Rescue and Firefighting Vehicles, 2007 edition*, Annex E.

APPENDIX A: TRAINING EQUIPMENT

Only one each of the following training devices is necessary per airport. Training devices are a physical Aircraft Skin Penetration Device and a Computer Based Simulation Training system.

The use of an aircraft skin penetration tool has been shown to be an effective firefighting device. The skill involved with the effective employment of this device increases dramatically with practical application. The training devices must meet the following requirements:

1. AIRCRAFT SKIN PENETRATION TRAINING DEVICE

A rigid frame structure with a cross-sectional, curved aluminum panel(s) may be specified to meet the following requirements:

- a. Aluminum panels must be comparable in thickness, hardness and curvature of the predominant type aircraft for the specific airport. Panels may be movable or replaceable to allow adjustments for different aircraft types.
- b. Panels must be located at a representative height to the predominant aircraft in use at the specific airport.
- c. Must be mounted on a structure (portable or stationary) that remains stable during training exercises.

2. COMPUTER TRAINING SYSTEM

A computer based simulator training program may be specified to increase and maintain proficiency in the employment of extendable turrets. The training package must include controls that simulate as closely as possible the actual cab environment (e.g. location of joystick, throttle, and steering wheel). The simulation software program must represent the actual maneuvering operation and controller interface of the actual operation of the elevated and extendable boom of the ARFF vehicle.

APPENDIX B

The following options are available in addition to those discussed above in NFPA 414 Annex A.

A. The following are approved options and require no further justification.

WORKSHEET FOR SUBSYSTEM COMPONENT SELECTION

| Subsystem Description: | Rationale for Position: | Purchaser's Selection Class 1, 2 and 3 | Purchaser's Selection Class 4 and 5 |
|-------------------------------|---|---|---|
| Lubrication | Continuous duty cycle lubrication systems for suspension parts and other mechanical equipment joints have shown the ability to extend the time before repair and costly maintenance is required on over-the-road as well as heavy excavation equipment. The installation of this type of system is in line with the FAA's goal of extending vehicle service life. | | Yes _____ No _____ |
| Backup Monitor | | | <u>Backup monitor:</u> Yes _____ No _____ |
| Heated Mirrors | The heated mirrors might be helpful to the driver/crew member to see clearly in the bad weather. | <u>Heated mirrors:</u> Yes _____ No _____ | <u>Heated mirrors:</u> Yes _____ No _____ |
| CAFS | Improved Fire Suppression | Yes _____ No _____ | |

| Subsystem Description: | Rationale for Position: | Purchaser's Selection Class 1, 2 and 3 | Purchaser's Selection Class 4 and 5 |
|---|---|--|--|
| Means to keep brake system air reservoir up to operational pressure | The selected method of reservoir pressurization must be considered based on the local resource requirement. However, cost effectiveness must also be considered so it does not impact the "as-built" vehicle performance. It is viewed as a local operational decision. | | <u>100V or 220V auxiliary on-board compressor:</u> _____ or House air fitting: _____ Or both: _____ |
| Hoisting System | Aid in propellant cylinder change. | | <u>Lift system required:</u> Yes _____ No _____ |
| Height adjustable shelf | | Yes _____ No _____ | Yes _____ No _____ |
| Height adjustable roll-out trays | | Yes _____ No _____ | Yes _____ No _____ |
| SCBA storage | Recessed tubes in the vehicle body or racks in a side compartment | Recessed tubes: _____ Or Side compartment racks: _____ | Recessed tubes: _____ Or Side compartment racks: _____ |
| Air outlet receptacle | | Yes _____ No _____ | Yes _____ No _____ |

| Subsystem Description: | Rationale for Position: | Purchaser's Selection Class 1, 2 and 3 | Purchaser's Selection Class 4 and 5 |
|---|---|---|--|
| Vehicle mounted foam transfer pump | | Yes _____ No _____ | Yes _____ No _____ |
| Bleeder valves for water tank fills | | Yes _____ No _____ | Yes _____ No _____ |
| Air hose reel | | Yes _____ No _____ | Yes _____ No _____ |
| Electric cord reel with junction box | | Yes _____ No _____ | Yes _____ No _____ |
| Safety interlock system for pre-connect soft jacket hose. | Providing cab activation for each pre-connected soft jacket handline as well as preventing the hose from being charged in a compartment | Yes _____ No _____ | Yes _____ No _____ |
| Swing-out hose reels. | When hose reel is mounted in lower side compartment | Yes _____ No _____ | Yes _____ No _____ |
| Ground lighting | Activated when parking brake is engaged. | Yes _____ No _____ | Yes _____ No _____ |
| Cab mounted hand adjustable spotlights. | One in each corner (Class 1, 2 3 Only) | Yes _____ No _____ | N/A |
| Scene Lights | Two on each side (110v or 12 volt HID) | Yes _____ No _____ | Yes _____ No _____ |

| Subsystem Description: | Rationale for Position: | Purchaser's Selection Class 1, 2 and 3 | Purchaser's Selection Class 4 and 5 |
|--|--|---|---|
| Cab Mounted Wide Lights | Two 110v or 12 volt HID lights. | Yes _____ No _____ | Yes _____ No _____ |
| Telescoping Wide Lights | One or two 110v / 220v t on each side | Yes _____ No _____ | Yes _____ No _____ |
| 110v receptacles on sides of cab | | Yes _____ No _____ | Yes _____ No _____ |
| <p>Maximum Vehicle Lighting</p> <p>Minimum lighting requirements are in AC 150/5210-5, <i>Painting, Marking, and Lighting of Vehicles Used on an Airport</i></p> | <p>Two red or a combination of red-and-white front mounted emergency lights</p> <p>Two red or a combination of red-and-white rear mounted emergency lights</p> <p>Three red or a combination of red-and-white side mounted emergency lights (each side)</p> <p>Two amber non-emergency lights on top of vehicle</p> <p>Four red or a combination of red-and-white emergency lights on top corners of the vehicle</p> | <p>LED _____</p> <p>or</p> <p>Strobe _____</p> <p>or</p> <p>Rotating Beacon _____</p> | <p>LED _____</p> <p>or</p> <p>Strobe _____</p> <p>or</p> <p>Rotating Beacon _____</p> |

B. The following clarifications are specifically noted in the AC as purchaser options that require approval by the local FAA Airports District or Regional Office. They are approved as noted below:

 (Name and Title of FAA Approving Official)

WORKSHEET FOR SUBSYSTEM COMPONENT SELECTION

| Paragraph Title or Subsystem Description: | Rationale for Position: | Purchaser's Selection Class 1, 2, and 3 | Purchaser's Selection Class 4 and 5 |
|--|---|---|---|
| More than two Crew positions | The need for a seating configuration to accommodate more than two ARFF personnel per vehicle is a function of local operational practices. Therefore, it is included as an option available to the purchaser. | <u>Number of seats:</u> _____ <u>Justification:</u> | <u>Number of seats:</u> _____ <u>Justification:</u> |
| Extendable Boom | FAA will fund one extendable boom per station at each Index B through E airport. | | <u>Extendable Boom:</u> Yes _____ No _____ |

Intentionally left blank