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**Gatineau, Québec K1A 0S5**

**Bid Fax: (819) 997-9776**

**SOLICITATION AMENDMENT  
MODIFICATION DE L'INVITATION**

The referenced document is hereby revised; unless otherwise indicated, all other terms and conditions of the Solicitation remain the same.

Ce document est par la présente révisé; sauf indication contraire, les modalités de l'invitation demeurent les mêmes.

**Comments - Commentaires**

**Vendor/Firm Name and Address**

**Raison sociale et adresse du  
fournisseur/de l'entrepreneur**

**Issuing Office - Bureau de distribution**

**Vehicles & Industrial Products Division**

**11 Laurier St./11, rue Laurier**

**7A2, Place du Portage, Phase III**

**Gatineau, Québec K1A 0S5**

<b>Title - Sujet</b> Wildland Fire Fighting Vehicles	
<b>Solicitation No. - N° de l'invitation</b> W8476-185826/B	<b>Amendment No. - N° modif.</b> 003
<b>Client Reference No. - N° de référence du client</b> 6000424020	<b>Date</b> 2018-07-09
<b>GETS Reference No. - N° de référence de SEAG</b> PW-\$\$HP-929-74940	
<b>File No. - N° de dossier</b> hp929.W8476-185826	<b>CCC No./N° CCC - FMS No./N° VME</b>
<b>Solicitation Closes - L'invitation prend fin</b> <b>at - à 02:00 PM</b> <b>on - le 2018-07-24</b>	
<b>Time Zone</b> <b>Fuseau horaire</b> Eastern Daylight Saving Time EDT	
<b>F.O.B. - F.A.B.</b> <b>Plant-Usine:</b> <input type="checkbox"/> <b>Destination:</b> <input type="checkbox"/> <b>Other-Autre:</b> <input type="checkbox"/>	
<b>Address Enquiries to: - Adresser toutes questions à:</b> Way, Stephanie	<b>Buyer Id - Id de l'acheteur</b> hp929
<b>Telephone No. - N° de téléphone</b> (873) 469-3300 ( )	<b>FAX No. - N° de FAX</b> ( ) -
<b>Destination - of Goods, Services, and Construction:</b> <b>Destination - des biens, services et construction:</b>	

**Instructions: See Herein**

**Instructions: Voir aux présentes**

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<b>Name and title of person authorized to sign on behalf of Vendor/Firm</b> <b>(type or print)</b> <b>Nom et titre de la personne autorisée à signer au nom du fournisseur/ de l'entrepreneur (taper ou écrire en caractères d'imprimerie)</b>	
<b>Signature</b>	<b>Date</b>

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This amendment is raised to answer bidder question and replace the Purchase Description with Addendum 2 Purchase Description:

### **QUESTION 1**

Item 3.20.2 A: The water tank must be mounted to a steel sub frame structure, the mounting method must be designed and constructed to:

We would like to suggest an aluminium substructure for an improved corrosion resistance and for overall lighter apparatus body, is that acceptable?

### **ANSWER**

Steel or aluminium water tank substructure is acceptable.

Refer to Purchase Description addendum 2.

### **QUESTION 2**

Item 3.4.4 A: In areas other than the axles, the ground clearance must be at least 508 mm (20 inches).

Other chassis components than the axles, such as the gearbox, may also have a ground clearance slightly shorter than 20 inches. The remainder of the unit will have 20" ground clearance as required. Is this acceptable?

### **ANSWER**

In areas other than at the axles, the drive shaft, the transfer case and the transmission, the ground clearance must be at least 508 mm (20 inches).

Refer to Purchase Description addendum 2.

### **QUESTION 3**

Item 3.16.7 A & B: The vehicle must be equipped with LED lights were available, including; Headlights; Clearance, brake, turn signal and tail lights that comply with the Highway Traffic Regulation;

The headlights and marker lights are not available in LED from chassis manufacturer. Is this acceptable?

### **ANSWER**

Yes it is acceptable to have lights that are not LED. Item 3.16.7 states LED lights were available. If the chassis manufacturer does not offer LED lights, it is acceptable to use the lights supplied by the chassis manufacturer.

## **QUESTION 4**

Regarding Item 3.24.1 and 3.30.2

The actual requirement asks for both a rear dump chute and a rear compartment which are conflictual. In the objective of meeting the requested cubic meter capacity (from 3.30.2), we would like to propose an alternative in the compartment layout. The compartmentation would meet the cubic meter capacity requested at point 3.30.2 and the dump chute would meet requirements from point 3.24.1. Would alternatives be acceptable?

## **ANSWER**

Requirement for rear storage was removed during previous solicitation.

It is acceptable not to provide a rear compartment, has long as the 2.7 cubic meter of storage is meet.

If the manufacturer can provided some compartments at the rear, it is acceptable.

**ALL OTHER TERMS AND CONDITIONS REMAIN THE SAME**



## **ANNEX B**

### **PURCHASE DESCRIPTION FOR**

### **WILDLAND FIREFIGHTING VEHICLE, WITH COMPRESSED AIR FOAM SYSTEM**

**ECC 189208**

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**OPI DSVPM 5 – DAVPS 5**

Issued on Authority of the Chief of the Defence Staff

Publiée avec l'autorisation du chef d'état-major de la Défense

**Canada**

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**NOTICE**



This documentation has been reviewed by the technical authority and does not contain controlled goods.

**AVIS**

Cette documentation a été révisée par l'autorité technique et ne contient pas de marchandises contrôlées.

**1. SCOPE**

**1.1 Purpose** - This Purchase Description describes the requirements for a Range Firefighting Vehicle, including a truck mounted modular type Compressed Air Foam System (CAFS), auxiliary water tank, and hose reels.

**1.2 Instructions** - The following instructions apply to this Purchase Description:

- a) Requirements, which are identified by the word "**must**", are mandatory. Deviations will not be permitted.
- b) Requirements identified with a "will" define actions to be performed by Canada and require no action/obligation on the Contractor's part.
- c) Where "**must**" or "will" are not used, the information provided is for guidance only.
- d) In this document "provided" **must** mean "provided and installed".
- e) Where a technical certification is referred to in this specification, a copy of the certification or an acceptable Proof of Compliance **must** be supplied for the vehicle when requested by the Technical Authority.
- f) Metric measurements are used to define the requirement. Other measurements are for reference only and may not be exact conversions.
- g) Nominal dimensions reflect a method by which materials or products are generally identified, but which differ from the actual measured dimensions.

**1.3 Definitions** - The following definitions apply to the interpretation of this Purchase Description:

- a) "**Technical Authority**" - The government official responsible for technical content of this requirement.
- b) "**Equivalent**" - Substitutes and alternatives that are equivalent in product, performance or a standard will be considered for acceptance by the Technical Authority where Proof of Compliance for the requirement is provided.



- c) **“Vehicle”** – The entire vehicle including all systems and sub-systems, in a complete manufactured state in accordance with the requirements in this Purchase Description.
- d) **“5<sup>th</sup> percentile adult female”** – As defined in the *Motor Vehicle Safety Regulations (C.R.C., c. 1038)* a person having as physical characteristics a mass of 46.3 kg, height of 1499 mm, erect sitting height of 785 mm, normal sitting height of 752 mm, hip sitting breadth of 325 mm, hip sitting circumference of 925 mm, waist sitting circumference of 599 mm, chest depth of 191 mm, bust circumference of 775 mm, chest upper circumference of 757 mm, chest lower circumference of 676 mm, knee height of 455 mm, popliteal height of 356 mm, elbow rest height of 180 mm, thigh clearance height of 104 mm, buttock-to-knee length of 518 mm, buttock-to-poples length of 432 mm, elbow-to-elbow breadth of 312 mm and seat breadth of 312 mm.
- e) **“95<sup>th</sup> percentile adult male”** – As defined in the *Motor Vehicle Safety Regulations (C.R.C., c. 1038)* a person having as physical characteristics a mass of 97.5 kg, height of 1849 mm, erect sitting height of 965 mm, normal sitting height of 930 mm, hip sitting breadth of 419 mm, hip sitting circumference of 1199 mm, waist sitting circumference of 1080 mm, chest depth of 267 mm, chest circumference of 1130 mm, knee height of 594 mm, popliteal height of 490 mm, elbow rest height of 295 mm, thigh clearance height of 175 mm, buttock-to-knee length of 640 mm, buttock-to-poples length of 549 mm, elbow-to-elbow breadth of 506 mm and seat breadth of 404 mm.
- f) **“Gross Axle Weight Rating (GAWR)”** - The value specified by the vehicle manufacturer as the load-carrying capacity of a single axle system, as measured at the tire-ground interfaces.
- g) **“Gross Vehicle Weight Rating (GVWR)”** - The value specified by the vehicle manufacturer as the loaded weight of a single vehicle.

2. **APPLICABLE DOCUMENTS** - The following documents form part of this Purchase Description. The dates of issue are those in effect on the date of release of the RFP. Sources are as shown:

**Canadian Occupational Health and Safety Regulations (COHSR), 2015**

<http://laws.justice.gc.ca/eng/regulations/sor-86-304/index.html>

**SAE Handbook**

Society of Automotive Engineers Inc.  
400 Commonwealth Dr,  
Warrendale, PA, 15096  
<http://www.sae.org>

**Motor Vehicle Safety Regulations (MVSR)**

Government of Canada / Transport Canada  
<http://www.tc.gc.ca/eng/act-regulations/regulations-crc-c1038htm>

**ULC-S515- 2013 - Automobile Fire Fighting Vehicle**

Underwriters Laboratories of Canada (ULC)  
7 Underwriters Road  
Toronto, Ontario, M1R 3A9  
<http://www.ulc.ca>





**NFPA 1901 – 2016 - Standard for Automotive Fire Vehicle**

**NFPA 1906 – 2016 - Standard for Wildland Fire Vehicle**

National Fire Protection Association (NFPA)

1 Batterymarch Park

Quincy, Massachusetts 02169-7471

<http://www.nfpa.org>

3. **REQUIREMENTS**

3.1 **Standard Design**

- a) **Latest Model** - The vehicle design **must** be the manufacturer's latest model.
- b) **Industry Acceptability** - The vehicle design **must** have demonstrated industry acceptability by having been manufactured and sold commercially for at least 2 years, or be manufactured by a company that has at least 5 years of experience in design and manufacturing of a comparable type of equipment of equivalent or greater complexity.
- c) **Engineering Certification** - The vehicle design **must** have engineering certification available, upon demand, for this vehicle/equipment from the original manufacturers of major drive train components and major equipment systems and assemblies.
- d) **Regulations** - The vehicle **must** conform to all applicable laws, regulations and industry standards governing manufacture, safety, noise levels and pollution in effect in Canada at time of manufacture. International equivalent laws, regulations, and industrial standards will be accepted only if certified for equivalency by a professional engineer.
- e) **Published Ratings** - The vehicle **must** have system and component capacities equivalent to published ratings (i.e. product or component brochures).
- f) **Standard Components** - The vehicle **must** include all standard components, equipment and accessories for the model offered, although they may not be specifically described in this Purchase Description.
- g) **Spare Parts** - The manufacturer **must** select components readily available for a minimum period of fifteen (15) years from the date of manufacture.
- h) **CAFS Compatibility** - All firefighting system plumbing **must** be designed to flow CAFS fire suppression.

3.1.1 **Maintainability**

- a) The vehicle **must** permit access to all items required for servicing and maintenance.
- b) Spin on style filters **must** be provided where available.



### 3.2 Operating Conditions

- 3.2.1 **Weather** - The vehicle excluding fire pump package **must** operate under the extremes of weather conditions found in Canada in temperatures ranging from -40 to 37° C (-40 to 99° F).
- 3.2.2 **Terrain** - The vehicle **must** operate off-road. Terrain conditions **must** include year round operations on snow, mud, swamp, sand and ice.
- 3.2.3 **Visibility** – The vehicle **must** operate in day, night, and during periods of artificial obscuration in fire suppression operations.

### 3.3 Safety Standards

#### 3.3.1 Vehicle Safety Regulations

- a) The vehicle **must** comply with the Motor Vehicle Safety Regulations (MVSr).
- b) The completed vehicle **must** have Safety Compliance Certification Label with a National Safety Mark (NSM), as a seal of compliance, **or** be accompanied by a Vehicle Import Form containing proof of Inspection by the Registrar of Imported Vehicles.
- c) The completed vehicle **must** comply with the applicable sections of ULC-S515, NFPA 1901, and NFPA 1906, as specified and applicable to this type of vehicle construction.

#### 3.3.2 Human Factors Engineering

- a) The vehicle, all systems, and components **must** comply with the relevant sections of the COHSR.
- b) The vehicle **must** be manufactured/assembled for safety and ease of use by CAF users with anthropometric characteristic measurements ranging from 95th percentile male to 5th percentile female.
- c) The vehicle **must** have entry and exit points equipped with handles and steps sized and positioned to accommodate CAF users with anthropometric characteristic measurements ranging from 95th percentile male to 5th percentile female.
- d) The vehicle **must** be equipped, with warning and instruction plates, non-slip walking surfaces and heat shields, for operator safety.
- e) All access steps and ladders **must not** rely on removable pins for securing during use or transportation.

### 3.4 Vehicle Performance, Ratings, and Dimensions

#### 3.4.1 Performance

- a) The vehicle, at GVWR, **must** sustain a minimum top speed, of 80 km/hr (50 mph) on a level paved road.
- b) The vehicle centre of mass, under all loading conditions **must** be in front of the rear axle and within the chassis manufacturer's allowable conditions.
- c) The vehicle **must** be designed to meet all specified performance parameters at an elevation of 800m above sea level.



#### 3.4.2 Weight Ratings

- a) The GVWR of the vehicle **must** not be less than the sum of the unloaded vehicle mass, the cargo carrying capacity, and the product obtained by multiplying the designated seating capacity by 68kg as defined in the *Motor Vehicle Safety Regulations (C.R.C., c. 1038)*.
- b) Each GAWR **must** be equal to or less than the load rating of the weakest component in the axle system, i.e., axle housing, suspension, wheels, or tires.
- c) The total load on each axle of the vehicle **must** not exceed the GAWR for that axle.
- d) Axle loads **must** comply with all the provincial weight restrictions across Canada.

#### 3.4.3 Weight Distribution

- a) The vehicle and vehicle suspension system **must** accommodate changes in weight distribution due to variations in water tank level.

#### 3.4.4 Dimensions

- a) In areas other than at the axles, the drive shaft, the transfer case and the transmission, the ground clearance **must** be at least 508 mm (20 inches).
- b) The vehicle **must** have both an angle of approach and an angle of departure of at least 20 degrees.
- c) The maximum overall height of the vehicle **must** be a maximum of 3.75 metres (12.5 feet).
- d) The maximum overall length of the vehicle **must** be a maximum of 9.14 metres (30 feet).
- e) The maximum overall width of vehicle **must** be a maximum of 2.59 metres (8.5 feet).

#### 3.5 Frame

- a) The vehicle frame **must** be of heavy duty construction, manufactured for use in all conditions specified in sections 3.2, 3.3 and 3.3.2.

#### 3.6 Engine

- a) The vehicle engine **must** operate on diesel fuel to the CAN/CGSB Standard 3.517.
- b) Engine manufacturer's certification **must** be available upon request.

##### 3.6.1 Engine Components

- a) Replaceable air filter(s) **must** be provided.
- b) A cooling system **must** be provided.
- c) A combustion air cleaning system **must** be provided, with an air cleaner restriction indicator visible to the operator.
- d) A governor **must** be provided.
- e) A full flow replaceable oil filter **must** be installed.



- f) A fast idle system **must** be provided, to raise engine speed when required for operations.

#### 3.6.2 **Cold Weather Starting Aids**

- a) The engine **must** be equipped with cold weather aids applicable to the operating conditions in section 3.2.
- b) A block heater **must** be provided with a dedicated shoreline receptacle.

#### 3.6.3 **Exhaust System**

- a) The vehicle **must** be equipped with a vertical exhaust system shielded to prevent personnel contacting a heated surface.
- b) The exhaust system **must** prevent entry of rain and water.
- c) If a Selective Catalytic Reduction (SCR) System is used, there **must** be manual deactivation and activation controls for the automatic regeneration of the Diesel Exhaust Fluid (DEF).

#### 3.6.4 **Fuel Tank**

- a) The fuel tank(s) provided **must** comply with ULC-S515 Chapter 11.
- b) The fuel tank(s) **must** have a fuel capacity that will provide the greater of:
  - i. At least 500 km of fully laden cruise; or
  - ii. Ten continuous hours of pumping operations.

#### 3.7 **Drivetrain**

- a) The drivetrain consists of components transmitting power from the engine output shaft to driven wheels.
- b) The vehicle's drivetrain **must** be capable of 2x4 (rear wheel drive), 4x4 HI and 4x4 LO.
- c) The drivetrain **must** include a "Park" or "Neutral" starting interlock.
- d) The drivetrain **must** include limited slip or driver controlled locking differential(s) on the drive axle(s).

#### 3.8 **Transmission**

- a) The vehicle **must** be equipped with fully automatic transmission.
- b) The transmission **must** have an oil cooler.
- c) The transmission **must** have a replaceable oil filter.
- d) The transmission shift control **must** clearly indicate the position of the shift column under all lighting conditions.
- e) A means of checking the transmission oil level **must** be provided.
- f) An audible back-up alarm in compliance with ULC-S515 Chapter 12.11 **must** be installed.



### 3.9 **Brakes**

- a) The vehicle **must** be equipped with an air brake system, and include a parking brake.
- b) The braking system **must** include an anti-lock (ABS) brake system.
- c) The braking system **must** include an automatic air dryer.
- d) The braking system **must** include brake housing dust shields and visual brake stroke indicators on all wheels.
- e) The braking system **must** include air couplers (glad hands), service and emergency, in a protected location at the front and rear of the Vehicle.
- f) The braking system **must** include automatic slack adjusters on all wheels;
- g) The braking system **must** include heated automatic moisture expelling valve(s) on all tanks and air dryer.
- h) The braking system **must** be equipped with an auto-eject air connection for charging the air system.

### 3.10 **Suspension System**

- a) The vehicle **must** be equipped with a suspension at the front and rear axles.
- b) The suspension system **must** be provided with double acting shock absorbers on all axles.

### 3.11 **Steering**

- a) The vehicle **must** be equipped with a power assisted steering system.
- b) The steering system **must** be provided with a telescopic/tilt steering column.

### 3.12 **Wheels, Rims and Tires**

- a) The vehicle **must** be equipped with Michelin 395/85R20 or approved equivalent, steel-belted, tubeless radial tires.
  - i. All tires **must** have the same load rating, and tread pattern.
  - ii. The tire load rating **must** exceed the imposed load at each tire location, when the vehicle is loaded at the maximum GVWR.
  - iii. The tread pattern **must** be XZL or approved equivalent.
- b) The tires **must** be mounted on balanced two piece hub pilot disc wheels.
- c) Beadlocks **must** be provided on all wheels.

### 3.13 **Cab**

- a) The vehicle **must** be equipped with a minimum two (2) person conventional weatherproof cab and comply with ULC-S515 Chapter 13.



- b) The cab **must** be equipped with a self-levelling cab suspension, to reduce cab movement under the conditions specified in section 3.2.2.
- c) Driver and passenger seats **must** have dark upholstery and include retractable 3-point seat belts.
- d) Driver and passenger seats **must** be equipped with independent suspension systems.
- e) A minimum of two (2) doors **must** be provided with locks, be keyed alike.
- f) A ventilation/heater and defrosting system **must** be provided, with a multi-speed fan, applicable for the operating conditions as specified in 3.2.
- g) An air conditioning system **must** be provided, equipped with all components and controls required for regulation of the cab interior temperature.
- h) A powered windshield washer system **must** be provided with multi-speed wipers, where the wiper blades **do not** travel from a vertical centre windshield position to a horizontal position near the roof line.
- i) The cab floor or floor mats **must** be weatherproof.
- j) Two rotating interior sun visors **must** be installed.
- k) An AM/FM radio with an auxiliary port **must** be provided.
- l) Two heavy-duty, powered, and heated exterior side mirrors, with convex section, **must** be provided with in-cab controls.
- m) Two (2) USB plugs **must** be provided in the cab within range of the driver seat dedicated for use by the driver.
- n) Two (2) USB plugs **must** be provided in the cab for, and within reach, of the passenger seat.
- o) Audible Warning Devices including Air horn(s), **must** be provided in compliance with ULC-S515 Chapter 12.
- p) Mobile radio power leads and antennae cable **must** be wired into the vehicle, with a service loop terminating in the cab for future installation of radio equipment.
- q) An antennae base **must** be mounted high on the cab exterior.
- r) The front bumper **must** be designed to accommodate the installation of the bumper turret.
- s) The outer edges of the bumper **must** be provided with upright pole style bumper guides.
- t) A volume of 200 mm x 200 mm x 330mm **must** be allocated in the vehicle cab for future installation of communication repeater. Communication repeater will be supplied and installed by the client.

### 3.14 Walkway

- a) The vehicle **must** be equipped with a walkway positioned directly behind the cab.
- b) The walkway **must** house the external control panel described in Section 3.29.1.



- c) Access from the cab doors to the walkway **must** be designed as a single level access platform
- d) Ground access to the walkway **must** rely on fixed steps with a maximum first step to ground distance of 610 mm (24 inches).
- e) Vertical surfaces at the transverse walkway accessible by the operator **must** be reinforced.
- f) Vertical surfaces at the transverse walkway accessible by the operator **must** be protected with LINE – X spray or approved equivalent.
- g) The outer sides of the walkway **must** be equipped with padded, rip-stop vinyl covered, Mansaver bars or equivalent, to prevent accidental falls.

### 3.15 **Controls and Instruments**

- a) Each control and instrument **must** be permanently marked to identify the function, in both English and French.
- b) Vehicle controls and instruments **must** be grouped together in the cab and not restrict the operator's field of view.
- c) Control Panel lights **must** be provided for night-time operations.
- d) Controls **must** include:
  - i. Windshield washer sprayer and Intermittent windshield wiper controls;
  - ii. A fast idle feature;
  - iii. A master battery switch, accessible in the cab within reach of the driver; and
  - iv. Electrical horns.
- e) Instruments **must** be metric (unless otherwise indicated) and include as a minimum:
  - i. An engine tachometer;
  - ii. A speedometer;
  - iii. A trip distance indicator;
  - iv. An engine oil pressure indicator, with a low engine oil pressure warning;
  - v. An engine coolant temperature indicator, with a high temperature warning;
  - vi. A transmission oil temperature indicator, with a high temperature warning;
  - vii. An ammeter, voltmeter or charging indicator;
  - viii. An air pressure indicator (s);
  - ix. A fuel level indicator;
  - x. An engine hour meter;



- xi. A transfer case engagement indicator; and
- xii. A differential lock engagement indicator.

### 3.16 **Miscellaneous Equipment**

- a) License plate mounting provisions **must** be provided at the front and rear of the vehicle.
  - i. The rear license plate area **must** be illuminated.
- b) Heavy duty unmarked mud flaps **must** be provided behind the front and rear tires.
- c) Mid-frame mounted tie down points **must** be provided, with strength to permit tie down operations, and sized to accept one inch diameter tow hooks.
- d) Front and rear accessible frame mounted towing eyes **must** be provided, with strength to permit a direct pull on a single towing eye.
- e) A portable winch **must** be provided.
  - i. The rated winch capacity (measured from first layer onto winch drum) **must** be a minimum of 5454.54 kg (12,000 lbs).
  - ii. The winch **must** have an automatic drag and safety brake, a free spooling feature, and hook and roller fairlead.
  - iii. The winch **must** be equipped with a minimum of 30 metres (100 feet) of synthetic rope, with a capacity matching the winch capacity.
  - iv. The winch **must** be equipped with carry handles and provisions for quick mounting in the front and rear hitch receivers.
  - v. Front and rear hitch receivers **must** be provided, with covers sized to match the winch capacity.
  - vi. The winch **must** have a remote control with sufficient length to distance the operator from the winch.
  - vii. The winch electrical system **must** be provided with quick disconnect at rear and front of vehicle.
  - viii. The winch **must** be provided with removable waterproof cover.

#### 3.16.1 **Equipment to be delivered with the Vehicle**

- a) Three dual faced triangular warning signs with foldaway base, complete with storage case, as per DOT FMVSS 125 **must** be provided;
- b) One (1) 2.5 lbs ABC vehicle type fire extinguisher, mounted in the cab **must** be provided;
- c) Wheel chocks **must** be provided with storage mounted on driver's side;
- d) Hand held LED spotlight, with a minimum 300,000-candle power, with a momentary type control switch, coiled cord, and bracket **must** be provided.





- e) The spot light **must** be securely stored within reach of the seated passenger in the cab, and hard wired into the electrical system.
- f) A towing strap **must** be provided.
- g) A recovery strap **must** be provided.
- h) A drip torch, mounted in one of the compartments **must be** provided.
- i) A first aid kit **must** be provided.
- j) Two (2) 1.6 kg (3.5 lbs) axes complete with fiberglass handle **must** be provided and secured in storage compartments.
- k) Two (2) Pulaski axes complete with fiberglass handle **must** be provided and secured in storage compartments

#### 3.16.2 **Electrical System**

- a) All electrical equipment installed by the vehicle manufacturer **must** conform to current automotive electrical system standards and requirements of the applicable ULC/NFPA Vehicle Standard.
- b) All vehicle electrical circuits **must** be protected from overload.
- c) All exposed wiring **must** be run in loom with a minimum 142 degrees Celsius (289 degrees Fahrenheit) rating.
- d) All wiring looms **must** be supported and attached to body members along the entire run.
- e) Any point where wire or looms **must** pass through metal, grommets **must** be installed to protect the wire from abrasion.
- f) The main low voltage chassis-to-body interface point and distribution panel **must** be provided at the front of the body, in an accessible location, with a distribution panel labelled and containing body electrical relays and wire connection bar.
- g) Electrical connections in exposed areas **must** be made using heat shrink or weather proof connections.
- h) Electrical connections **must** be protected with automatic reset circuit breakers.

#### 3.16.3 **Alternator**

- a) The alternator **must** supply sufficient current to carry all electrical load requirements and voltage outputs.

#### 3.16.4 **Batteries**

- a) The vehicle **must** be supplied with heavy-duty, maintenance free batteries, compliant with ULC-S515 Chapter 12.
- b) Batteries **must** be mounted in an accessible, well protected location, including heat shielding, hold downs, and ventilation.



3.16.5 **Battery Charger**

- a) A 110V Kussmaul super auto-eject 20 amp receptacle or approved equivalent with a hinged weatherproof cover **must** be provided at the left side of the vehicle, to provide power to the battery charger, the air compressor and the flashlight charger.
- b) The bar graph indicator **must** be provided within view of the driver.

3.16.6 **Emergency Starting Systems**

- a) The vehicle **must** be equipped with external battery booster stud receptacles, located near the batteries, equipped with a cut-off switch, and permanently labelled with the voltage.

3.16.7 **General Lighting** - The Vehicle **must** be equipped with LED lights were available, including:

- a) Headlights;
- b) Clearance, brake, turn signal and tail lights that comply with the Highway Traffic Regulations;
- c) Ground lighting in accordance with ULC-S515 Chapter 12;
  - i. Ground lighting at entry door positions **must** automatically illuminate when the door(s) open.
  - ii. Ground lighting **must** be provided at all four corners of the vehicle.
- d) One red clearance light **must** be located on each side of the body, as far rearward as practical.
- e) Two red clearance lights **must** be located as far as practical to the outer left and right rear edge of the body.
- f) Three red clearance lights **must** be centered at the rear of the vehicle.
- g) Roof mounted spot/work lights **must** be provided capable of:
  - i. Turn on and off front facing spot/work lights.
  - ii. Turn on and off driver side facing spot/work light.
  - iii. Turn on and off passenger side facing spot/work light.

3.16.8 **Exterior Vehicle Lighting - Emergency Response**

- a) Exterior emergency warning lights complying with NFPA 1901 and ULC-S515 **must** be provided.
- b) A minimum of six (6) perimeter lights **must** be provided.
  - i. Two (2) **must** be surface mounted above the front bumper, inboard of the headlights.
  - ii. Two (2) **must** be provided at the midpoint of the vehicle, one on each side.
  - iii. Two (2) **must** mounted at the rear of the vehicle positioned as far apart as practical.
- c) Two (2) beacon lights or approved equivalent **must** be provided, at the rear of the vehicle positioned above to elevate the lights above the fire package for visibility.



- i. The beacon lights **must** be equipped with dedicated in cab controls.
- d) A wigwag system, with in cab controls **must** be provided.
- e) One (1) roof mounted light bar for Wildland application **must** be provided, with a minimum width of 1.32 metres (52 inches).
- f) A multi-position control for the emergency lighting system **must** be provided with one switch position for each of the following functions:
  - i. Turn off all emergency lighting;
  - ii. Turn on all emergency lighting; and
  - iii. Turn off all lighting positioned below the roof line.
  - iv. The emergency light switch **must** be located in a position that is accessible to the driver's seated position.

#### 3.16.9 **Siren and Speaker**

- a) One (1) 100 watt electronic siren amplifier with PA and control center **must** be provided.
- b) Two (2) 100-watt speakers **must** be provided.
  - i. One speaker **must** be mounted at the front of the vehicle; and
  - ii. One speaker **must** be mounted at the rear of the vehicle area.
- c) The siren and speaker control **must** be accessible by the driver and passenger.

#### 3.16.10 **Rear View Camera System**

- a) The vehicle **must** be equipped with a rear view camera system, with three distinct rear view orientations.
- b) The system **must** include a nominal LCD 7 inch screen, mounted within clear view of the driver.
- c) One (1) camera **must** be rear mounted, and activate when the transmission is in reverse and activated with on / off control switch.
- d) All camera feeds **must** be displayed on the in cab screen, and include night vision and audio.

#### 3.17 **Lubricants, Hydraulic Fluids and Fittings**

- a) All lubricants and fluids provided **must** meet the operating conditions specified in 3.2.

#### 3.18 **Identification** - The following information **must** be permanently affixed in a conspicuous location, inside the cab:

- a) The manufacturer's name, model number, serial number and model year;
- b) The GVWR and GAWR ratings.



3.19 **Warnings, Labels, and Instruction Plates** – The Vehicle **must** be provided with warnings, labels, and equipment operation instruction plates.

- a) All warning, labels, and instruction plates provided on the exterior of the vehicle **must** be engraved.
- b) Instructions and special procedures to be followed **must** be provided.
- c) International symbols as defined in SAE J1362 and/or bilingual (English/French) markings **must** be provided.

3.20 **Water Tank**

- a) The vehicle **must** be equipped with a water tank compliant with the requirements of **NFPA 1906 Section 7.4**.
- b) The water tank **must** have a minimum certified capacity of 4542 litres (1,200 US gallons).
- c) The water tank **must** be constructed from a corrosion resistant material and be designed to resist cracking and fatigue due to movement in off road conditions.
- d) Material **must** be of sufficient thickness to provide complete structural integrity of the tank for the expected life of the vehicle, for the required use.
- e) The tank **must** be designed to allow for an 80% water usage without pump cavitation.

3.20.1 **Vent/Fill Opening**

- a) The water tank **must** be equipped with a combination vent and manual fill opening.
- b) The opening **must** allow air to enter or escape during filling or emptying.
- c) The opening **must** be a minimum of 203 mm (8 inches) by 203 mm (8 inches) or 8 inch diameter.
- d) The opening **must** be equipped with a cover, marked with a label that reads “water fill/vent”.
- e) The opening **must** be readily accessible, covered and designed to prevent spillage.
- f) A 6mm  $\pm$ 1 mm mesh debris screen **must** be installed at the opening, and be removable for cleaning.

3.20.2 **Water Tank Mounting**

- a) The water tank **must** be mounted to a steel or aluminium sub frame structure, the mounting method **must** be designed and constructed to:
  - b) Prevent tank shifting and retain the tank while travelling empty;
  - c) Withstand the maximum gross loading under specified operating conditions; and
  - d) Allow for the independent differences in vehicle and tank flexion (Cradled, cushioned, spring-mounted, etc.), and be protected from undue stress of twisting resulting from severe operating conditions.



### 3.20.3 Stability

- a) The water tank **must** be equipped with baffles, swash partitions, or a method for dynamic water movement control, to stabilize partial loads of water.

### 3.20.4 Tank-to-Pump Valve

- a) The water tank **must** be connected to the intake side of the pump with an electric valve, controlled at the pump operator's panel and inside the cab.
- b) The electric valve **must** be a 76 mm (3 inch) equipped with accessible manual override.
- c) The electric valve **must** have an accessible manual override.

### 3.20.5 Tank Drain and Valve

- a) The drain **must** be a minimum 38 mm (1½ inch) and directed to the ground.
- b) The tank **must** be provided with a drain valve, accessible from a standing position, which will drain all water from the tank.

### 3.20.6 Manual Tank Fill and Auxiliary Intake

- a) The vehicle **must** be provided with a tank-to-pump fill line, and auxiliary intake, on the curb side and rear.
- b) A manual full flow valve **must** be provided.
- c) The valve **must** be a self-locking swing out design.
- d) Plumbing **must** be sized adequately to permit the full rated performance of the pump.
- e) The auxiliary intake **must** have a 76mm (3 inch) coupling.

### 3.21 Foam Cell

- a) The vehicle **must** be equipped with a foam cell with a capacity to support at least two complete water tank discharges, 75 litres (20 US gallons) as a minimum.
- b) The foam cell **must** be manufactured from a material that is compatible with "class A" foam solutions.
- c) The foam cell **must** be equipped with an accessible fill tower, covered to prevent foam solution spill caused by agitation or sloshing in expected operating conditions.
- d) The tank outlet **must** be sized to permit the required flow and arranged to permit use of the full tank capacity while on level ground, and a minimum 75% capacity while on a 20% side slope or ascending/descending a 30% grade.
- e) The tank **must** be adequately vented to permit rapid and complete filling without the build-up of excessive pressure, and to permit emptying the tank at maximum design flow without danger of collapse.
- f) A means of flushing or draining the system **must** be provided.



3.21.1 **Foam Cell Fill System**

- a) An electrically operated foam transfer pump **must** be provided and plumbed to allow the foam tank to be filled or drained, through a nominal 38 mm (1½ inch) hose connection, on the curb side of the vehicle.
- b) A fill hose **must** be provided, with compatible fittings described in 3.21.1 b) to the transfer pump, and adequate length for the suction end to easily reach ground level when connected.
- c) The CAFS air connections **must** be of brass compression type and not quick connection.
- d) The pump and plumbing system **must** be compatible with “class A” foam solution.
- e) Transfer pump controls **must** be installed near the pump connection.
- f) The pump **must** automatically shut off when the foam tank has been filled to a pre-set level.
- g) A check valve **must** be provided to prevent backflow of the concentrate during the connection and disconnection of the fill hose.
- h) The foam fill system **must** minimize foaming of the concentrate during manual fill operations, by introducing concentrate to the bottom of the tank.

3.22 **Compressed Air Foam System (CAFS)**

- a) A self-contained, slide in type CAFS **must** be provided.
- b) The CAFS **must** discharge water only, water/foam only, air only, and compressed air foam.
- c) The consistency of the compressed air foam **must** be fully adjustable.
- d) The CAFS **must** incorporate, an air cooled compressor.
- e) The CAFS **must** incorporate a water pump.
- f) The CAFS **must** incorporate an operator control panel with associated gauges, switches, controls.
- g) The CAFS **must** be provided with water discharges or outlets as applicable for operation and control of the system.

3.22.1 **CAFS Engine**

- a) The CAFS **must** be provided with a diesel engine, with sufficient power to meet the specified performance requirements.
- b) The CAFS engine **must** draw fuel directly from the vehicle fuel tank.
- c) The CAFS **must** be equipped with an hour meter.
- d) The engine mounting method **must** absorb vibration from the expected operating conditions.
- e) The engine **must** be water cooled, and be provided with an appropriately sized alternator, dry type air filter, and muffler.



- f) The engine **must** be provided with an oil pan drain extension or other suitable means to drain engine oil.
- g) Filters **must** be easily accessible for servicing.

#### 3.22.2 **CAFS Water Pump**

- a) The CAFS **must** be equipped with an integral single-stage centrifugal design pump.
- b) The pump **must** be provided with a vertically split aluminium case, replaceable bronze impeller, and seal rings.
- c) The pump **must** provide a minimum of 570 l/min (150 GPM) at a pressure of 1375 kPa (200psi).
- d) An oil free priming system **must** be provided, with controls at the operator's panel.
- e) The priming system **must** prime the pump through 6 meters (20 feet) of 76mm (3 inch) hard suction hose, with a minimum 4.88 metre (16 foot) lift.
- f) The pump **must** include a re-circulation line to prevent pump overheating.

#### 3.22.3 **CAFS Air Compressor**

- a) The CAFS **must** be provided with an air compressor with sufficient output to meet the specified performance requirements.
- b) The compressor **must** be an oil injected screw type design.
- c) The compressor **must** be provided with a Gates, Poly Chain Belt Drive System to ensure positive engagement of the compressor drive and prevent belt slippage in the event of inclement weather and or inadvertent contamination of the belt surface through spillage of oil or foam solution onto the belt drive.
- d) The compressor **must** be provided with an automatic means of balancing air pressure to water pressure within plus/minus 5 percent, throughout the operating range.
- e) The compressor oil tank **must** be equipped with a sight gauge.

#### 3.22.4 **CAFS Foam System**

- a) The CAFS **must** be provided with an integrated foam proportioning system compatible with "class A" foam concentrates.
- b) The foam system **must** be plumbed to both hose reels, and the bumper turret monitor.
- c) The foam system **must** be provided with check valves to prevent foam concentrate from entering the water system, and water from entering the foam system.
- d) The system **must** be sized to meet the flow requirements of the hose reels and bumper turret monitor.
- e) The foam proportioning system **must** be a fully automatic design, with direct injection into the discharge side of the pump.
- f) The foam proportioning system **must** deliver accuracy to within 3% of calibrated settings.



### 3.23 Couplings

- a) All vehicle fire system plumbing couplings **must** be of NPT threading type.
  - i. The vehicle **must** be delivered with a complete set of NPT to Storz couplings and a full set of NPT to cam-lock couplings to be installed by the Government of Canada.

### 3.24 Discharge and Inlet Plumbing

- a) All plumbing for discharge outlets and suction inlets **must** be schedule 10 stainless steel or heavy duty high pressure wire reinforced flexible hose with stainless steel couplings, to prevent corrosion.
- b) Victaulic couplings **must** be used on the plumbing.
- c) The system **must** be equipped with a master drain valve, designed to allow the complete draining of the pump and all water carrying lines and accessories.

#### 3.24.1 Dump Valve

- a) The water tank **must** be provided with rear discharge dump valve.
- b) The telescopic discharge dump chute **must** extend each side of the vehicle by a minimum of 460mm (16 inch).
- c) The dump valve **must** be 250mm by 250mm (10 inch by 10 inch) valve or same dump area, equipped with telescoping chutes.
- d) The valve **must** have a locking mechanism, to prevent accidental opening.
- e) The telescoping chute **must** be manually operated and designed with a spring-loaded clip, enabling the chute(s) to be locked and released easily and quickly.
- f) The dump valve and telescoping chute **must** be completely disassembled and finish painted to match the vehicle body before installation.

#### 3.24.2 Direct Tank Filling

- a) The vehicle **must** be equipped with two (2) valves on the water tank fill lines to allow water from external sources to fill into water tank.
- b) One 65mm (2½ in) manual valve **must** be provided at the right side pump control panel.
- c) Both tank fill line valves **must** regulate flow, controlled from the pump operator's position.
- d) One (1) 65 mm (2½ inch) checked valve **must** be provided at the rear of the vehicle.
- e) Tank fill inlet **must** flow water into the tank from the top of the tank.

#### 3.24.3 Rear Discharge

- a) The vehicle **must** be provided with one 65mm (2½ inch) discharge, plumbed to flow water only, water/foam only, and compressed air foam, at the rear of the vehicle.
- b) The rear discharge **must** be provided with a 65mm (2½ inch) Akron ball valve.





- c) The rear discharge valve **must** be controlled from the operator control panel.

#### 3.24.4 Side Discharges

- a) The vehicle **must** be provided with two 38 mm (1½ inch), side mounted discharge outlets, plumbed to flow water only, water/foam only, and compressed air foam, one on each side of the vehicle.
- b) The side discharge valves **must** be 65mm (2½ inch) Akron ball valves.
- c) The side discharge valves **must** be located near the deck platform.

#### 3.25 Hose Reels

- a) Two hose reels **must** be provided, one on each side of the vehicle.
- b) Each hose reels **must** hold a minimum of 60 metres (200 ft) of 38 mm (1½ inch) diameter hose each according to NFPA 1906 Section 15.10.8.
- c) Each hose reel **must** be provided with a 38 mm (1½ inch) Akron swing out valve.
- d) The hose reels **must** be provided with an aluminium frame, electric rewind motors and manual backup function. The control switch **must** be accessible from the ground.
- e) The reels **must** be provided with chrome plated hose guide rollers.
- f) The hoses **must** be ReelTex model 3200 or equivalent.
- g) Each hose **must** be equipped with a low flow, low pressure, combination fog/smooth bore nozzle with single shutoff and pistol grip.
- h) The hoses **must** be equipped to discharge: water only, water/foam only, air only, and compressed air foam.
- i) The hose reel system **must** be equipped with provisions to drain the hoses before storing on the hose reels.
- j) The hose reel system **must** be placed to allow for access from the ground level on each side of the vehicle.

#### 3.26 Front Bumper

- a) A bumper of sufficient strength including an apron to incorporate the monitor system **must** be provided.
- b) The bumper and apron **must** be protected with LINE – X spray or approved equivalent on lining or equivalent.

#### 3.27 Front Bumper Monitor – A front bumper monitor **must** be mounted on the front bumper of the Vehicle and controlled in the cab.

- a) The monitor provided **must** be Akron 3463 FireFox Electronic Monitor or approved equivalent with Akron 3293 FireFox electric nozzle or approved equivalent.
- b) The monitor nozzle **must** be low flow with minimum discharge range of 30 GPM to 125 GPM.



- c) A joy stick control **must** be mounted in the centre of the drive and passenger seating positions to provide vertical and horizontal monitor control, automatic oscillation control, automatic stow control, on/off electric valve control, and automatic pattern control from straight stream to fog.
- d) The monitor **must** provide a minimum of 90° of horizontal travel to each side of centre and 45° of vertical travel above and below centre.
- e) The monitor **must** be provided with a nominal 51 mm (2 inch) inlet, and nominal 51 mm (2 inch) electric valve.
- f) The monitor **must** be plumbed into the CAFS and discharge water only, foam/water only, and compressed air foam.
- g) The monitor **must** also be provided with a straight bore tube sized.
- h) The monitor **must** be provided with a quick disconnect to allow easy removal for hood tilt operations during vehicle servicing.
- i) The vehicle **must** be equipped with an indicator that will provide the vehicle operator with a visual indication of the monitor's discharge direction from the driver's and passenger seat.

### 3.28 Under Truck Discharge

- a) The vehicle **must** be provided with a minimum of three under truck discharges.
- b) Each discharge **must** be placed to maximized ground area protection. If an extension is required for a nozzle, each discharge extension **must** be equipped with a flexible nozzle feed hose, terminating in fog type nozzles.
- c) A minimum of one (1) discharge **must** be located at the front of the vehicle.
- d) A minimum of one (1) discharge **must** be provided under the vehicle, at approximately the mid-frame point.
- e) A minimum of one (1) discharge **must** be at the rear of the vehicle.
- f) The discharges **must** have a minimum capacity of 38 litres/min (10 US GPM).
- g) Under truck discharge controls **must** be provided within reach of the driver.
- h) Design of the under truck discharges **must** ensure a full under chassis fogging application, from the front bumper to rear bumper area including coverage of the wheel assemblies.

### 3.29 Controls and Gauges

#### 3.29.1 Exterior Control Panel

- a) The vehicle **must** be equipped with an exterior control panel that operates in full duplex with the interior cab control console of Section 3.29.2
- b) The control panel **must** be located to provide the operator with a 360° view of the area surrounding the vehicle.
- c) The control panel **must** be designed for use by an operator in a standing position, and provide visibility and accessibility of gauges and controls.



- d) The control panel **must** be equipped with protected LED lighting at the top of the panel, controlled on the operator's panel.
- e) The control panel backing **must** have a black scratch resistant finish.
- f) The control panel **must** have weatherproof controls.
- g) The control panel **must** include all controls required to fully operate the fire suppression system including:
  - i. A water tank level indicator;
  - ii. A foam level indicator;
  - iii. A 65 mm (2½ inch) Master water pressure, liquid filled indicator;
  - iv. A 65 mm (2½ inch) Master vacuum indicator;
  - v. A 65 mm (2½ inch) Master air pressure, liquid filled indicator;
  - vi. Pump Primer controls;
  - vii. CAFS operational controls;
  - viii. Liquid filled pressure indicators for all discharges;
  - ix. Tank to Pump electric butterfly valve control;
  - x. Vernier throttle control;
  - xi. Master drain valve;
  - xii. System Operation Instruction Placard;
  - xiii. CAFS engine oil pressure indicator, with a visual and audible low pressure warning indicator;
  - xiv. CAFS engine water temperature indicator, with a visual and audible high temperature warning indicator;
  - xv. CAFS compressor temperature indicator, with a visual and audible high temperature warning indicator;
  - xvi. Low fuel warning indicator;
  - xvii. Voltmeter;
  - xviii. Hour meter;
  - xix. An unload mode;
  - xx. An automatic setting to provide balancing of the air pressure to water pressure when the CAFS is functioning;
  - xxi. Foam system activation controls;



- xxii. Foam proportioning controls with rates variable from 0.1% to 1.0%;
- xxiii. A low and no concentrate warning indicator;
- xxiv. Manual backup controls;
- xxv. Air pressure indicator; and

### 3.29.2 Interior Cab Control Console

- a) The vehicle cab **must** be provided with an interior control console located in the cab, between the seats that operates in full duplex with the exterior control panel of Section 3.29.1.
- b) All gauges, controls, and indicators on the control console **must** be permanently identified.
- c) All switches and controls **must** be backlit, and brighten when activated to indicate to the operator that the switch has been turned on.
- d) Electrical components and wiring for console mounted equipment and accessories **must** be secured within the console, and include wiring service loops where applicable.
- e) The interior cab console **must** have a black scratch resistant finish.
- f) The interior cab console **must** include:
  - i. Water tank level indicator;
  - ii. Foam cell level indicator;
  - iii. The front bumper turret controller;
  - iv. CAFS operational controls;
  - v. CAFS engine oil pressure indicator, with a visual and audible low pressure warning indicator;
  - vi. CAFS engine water temperature indicator, with a visual and audible high temperature warning indicator;
  - vii. Compressor temperature indicator, with a visual and audible high temperature warning indicator;
  - viii. Pump pressure indicator;
  - ix. CAFS engine ignition;
  - x. Siren controller;
  - xi. A goose neck map light;
  - xii. A master switch sized to meet the load requirements of the Fire Package and non-OEM added lighting and accessories, independently wired an on/off control;
  - xiii. An electric valve controller for the tank-to-pump valve;



- xiv. Foam system activation controls;
- xv. A low and no concentrate warning indicator; and
- xvi. Air pressure indicator; and

#### 3.29.3 **Water and Foam Level Gauges**

- a) The water tank and foam cell level gauges **must** be FRC or approved equivalent LED miniature level gauges.
- b) The gauges **must** be equipped with a flashing warning, when respective tanks are below 25% full.
- c) Gauges **must** be calibrated for the tank designs.

#### 3.29.4 **Wheel Chocks and Mounting Brackets -**

- a) One set of wheel chocks, sized to meet the manufacturer's recommendations for the GVWR and Wildland application **must** be provided, with mounting brackets installed below the rear deck flatbed platform and not extend below the vehicle frame on driver side.

#### 3.30 **Body**

- a) The vehicle body **must** be fabricated from aluminium for corrosion prevention, durability, strength, and integrity of the body construction.
- b) The vehicle body **must** be equipped with enclosed weather resistant compartments for equipment storage.
- c) The compartments **must** have roll-up doors, equipped with:
  - i. A strap to assist with door closure;
  - ii. Interior door seals; and
  - iii. A means to hold the door in the open position.
- d) The cabinet floors **must** be designed to allow easy sweep out of debris, be ventilated, and have provisions for drainage of moisture.
- e) The cabinet floors **must** be provided with a Turtle tile industrial matting, or equivalent.
- f) Cabinet interiors **must** be lit using protected LED lighting.
- g) Cabinet lights **must** automatically turn on when the door is opened and turn off when the door is closed.
- h) All electrical junctions or wiring within the compartments **must** be protected from mechanical damage resulting from equipment stored within the compartment.

##### 3.30.1 **Body Protection**

- a) The vehicle **must** be equipped with brush guard for all vehicle roof lights.



- b) LINE – X spray lining or equivalent **must** be applied on vehicle roof light brush guards.

#### 3.30.2 Compartments

- a) Compartments doors **must** be equipped with non-keyed locks to secure compartment doors during vehicle movement.
- b) Compartments **must** be ventilated.
- c) Compartments doors **must** be roll-up design.
- d) Each compartment **must** be accessible from the ground by a 5<sup>th</sup> percentile female as described in section 1.3
- e) Each side of the vehicle (road and curb sides) **must** be provided with a minimum of one compartment.
- f) The total usable volume of storage for side and rear compartments **must** be a minimum of 2.7 cubic metres.
- g) Compartments **must** be sized to store six (6) hose packs. Each hose packs have minimum dimensions of 600 mm (24 inch) x 330 mm (13 inch) x 430 mm (17 inch).
- h) Compartments must be sized to store two (2) portable pumps. Each portable pump have minimal dimensions 600 mm (42 inch) x 485 mm (19 inch) x 430 mm (17 inch).
- i) The top outer surface of the right side compartment **must** be provided with supports for two nominal 3.05 m (10 foot) sections of 76 mm (3 inch) diameter hard suction hose.
- j) The interior wall of the cabinets **must** be provided with provisions to mount 20mm (3/4 inch) plywood sheet. This provision must not reduce total usable volume of storage.

#### 3.30.3 Rear Step

- a) The rear of the vehicle **must** be provided with a stepping surface to facilitate access to the rear compartment.

#### 3.31 Minor Equipment

- a) The vehicle **must** be provided with one (1) self-supporting Wildfire Forestry FireFlex, 5,680 Litre (1500 US gallon) portable pond, or equivalent.
- b) The portable pond **must** be secured to the structure or roof.
- c) Two nominal 3.05 m (10 foot) sections of 76 mm (3 inch) diameter hard suction hose **must** be provided.
- d) One (1) suction hose strainer **must** be provided with a 76mm (3inch) coupling.
- e) Two (2) LED flashlights Pelican model 3765 or approved equivalent **must** be provided with charging docks wired into the vehicles electrical system.
- f) One (1) low-level strainer sized to the suction hose **must** be provided.
- g) One (1) floating strainer sized to the suction hose **must** be provided.



### 3.32 Paint, Decal, and Corrosion Protection

#### 3.32.1 Paint

- a) All paint **must** be applied to the Vehicle in accordance with the **paint manufacturer's recommendations** and the manufacturer's best production procedures, rendering a durable finish and a smooth appearance, free from runs, sags and orange peel.
- b) The surface **must** include a corrosion-prevention pre-treatment to all bare metal, a sealer/primer, a minimum of two coats of base colour paint, and two coats of clear finish.
- c) All painted components of the Vehicle **must** be painted prior to assembly to ensure full coverage of metal treatments and paint.
- d) If aluminium is penetrated after painting, for mounting purposes, the point of penetration and all mounting hardware **must** be treated with a corrosion inhibiting pre-treatment.
- e) The paint process **must** utilize Akzo-Nobel's high-solid LV products, or equivalent, including:
  - i. Akzo-Nobel Sealer/Primer LV - Acrylic urethane sealer/primer;
  - ii. Akzo-Nobel High Solid LV topcoat - Lead free, chromate-free, high-solid acrylic urethane topcoat; and
  - iii. Akzo-Nobel High Solid LV clear coat.
- f) The vehicle **must** be painted two-tone, consisting of a FLNA 4006 White over FLNA 3225 Red Akzo-Nobel Lead free, chromate-free, high-solid acrylic urethane Paint, with the paint break line determined at the preproduction meeting, or equivalent.
- g) The chassis components **must** be finish painted black.

#### 3.32.2 Decal Package

- a) The vehicle **must** be provided with a decaling package.
- b) The two-tone paint break **must** be covered by a 19mm (3/4") Stripe (12.5mm (1/2") gold stripe, with 3mm (1/8") black outline), with a clear polyurethane coating.
- c) The cab and body **must** be provided with a double white Scotchlite reflective stripe, a nominal 152 mm (6 inches) and 51 mm (2 inches) wide, horizontally around the cab and body, in accordance with ASTM D 4956 and in compliance with NFPA 1901.
- d) All lettering **must** be applied in the ARIAL BLOCK font, in sizes ranging from 51 mm (2 inches) to 152 mm (6 inches) to accommodate the required text, in the outlined areas.
- e) All lettering **must** be gold with a black outline, unless otherwise specified.
- f) Decals **must** be in both official languages on the same side of the vehicle.
- g) Decals **must** be applied using high quality vinyl with a clear polyurethane coating.
- h) The following decals **must** be provided in the following locations:



- i. **"FIRE SERVICE D'INCENDIE"**, 51 mm (2 inches) to 152 mm (6 inches) in height sized to fit, in solid black, applied to the body centred on each side;
- ii. **Base identifier**, 51 mm (2 inches) to 152 mm (6 inches) in height sized to fit, applied to the body centred near the roofline on each side;
- iii. **National Defence Fire Service** logo , horizontally and vertically centred on both the driver and passenger doors (approx. 350mm x 500mm); and
- iv. **Vehicle number** on each side, the rear, and the roof.

### 3.32.3 Corrosion Protection

- a) The vehicle **must** be designed and manufactured to prevent galvanic corrosion.
- b) The materials used in the vehicle manufacturing **must** resist damage or deterioration as a result of cleaning with hot or cold water, steam, or detergents.
- c) A commercial rust prevention coating **must** be applied to the vehicle, such as Krown Rust Control or Rust Check.
- d) A decal and warranty papers for the rust prevention coating **must** accompany the vehicle.

## 4. **INTEGRATED LOGISTIC SUPPORT**

### 4.1 Vehicle Manuals

- a) All manuals required for the description, operation, maintenance and repair of the complete equipment, including sub-systems, **must** be provided, in compliance with NFPA 414.

#### 4.1.1 Operator's Manual

- a) The operator's manual **must** be bilingual (English/French).
- b) The operator's manual **must** include instructions for the safe operation of the vehicle.
- c) The operator's manual **must** include daily operator maintenance instructions/checks (including lubrication).
- d) The operator's manual **must** include safety warnings.
- e) The operator's manual **must** include hand signals (as necessary).

#### 4.1.2 Parts Manual(s)

- a) The parts manual(s) **must** be in English (bilingual is desirable).
- b) The parts manual **must** have illustrations showing all components of the vehicle including equipment and accessories from other manufacturers that are supplied to meet the requirements of the contract, with numbers for the itemization of the parts.
- c) The parts manual **must** have a listing for all itemized parts showing the Original Equipment Manufacturers (OEM) part number, the part name and a brief description of the item.





- d) The parts manual **must** cross reference the OEM part number to the correct illustration and item number.
- e) The parts manual **must** have a representation of bilingual warning signs and identification labels delivered on the equipment.

#### 4.1.3 **Maintenance (Service) Manuals**

- a) The maintenance manual **must** be English (bilingual is desirable).
- b) The maintenance manual **must** include a trouble shooting guide, showing the steps and tests required to identify the exact cause of a problem and the steps required to correct a problem.
- c) The maintenance manual **must** include a listing of the necessary tolerances, torque levels, fluid volume, and special tools (including item part numbers).
- d) The maintenance manual **must** include information on the order of disassembly and assembly of the systems and components of the vehicle.
- e) The maintenance manual **must** include special tools list as per 4.3.4.
- f) The maintenance manual **must** include schematics for the vehicle plumbing system, engine, drive train components, fire pump, and pump operator's panel.
- g) Electrical wiring diagrams **must** be included, clearly showing the routing and interface of the manufacturer's electrical circuit(s) with the cab and chassis OEM electrical system (Multiplex).

#### 4.1.4 **Manual Delivery to Technical Authority**

- a) Sample manuals **must** be submitted to the Technical Authority (TA) prior to the delivery of the vehicle for each model and or sub-system for approval. Sample manuals will not be returned. TA will provide approval or comments on the manuals within 30 days.
- b) One (1) complete set of approved manuals (Operator's, Maintenance, and Parts) in electronic format **must** be delivered to the Technical Authority.

#### 4.1.5 **Manual Delivery with Vehicle**

- a) Two (2) complete set of manuals (Operator's, Maintenance, and Parts) **must** accompany each vehicle, shipped to each location in electronic format.
- b) One Operator's Manual **must** be in paper format provided in the cab of the vehicle.

#### 4.1.6 **Electronic Format**

- a) Approved copies of the electronic format manuals **must** be delivered on CD/DVD-ROM.
- b) CD/DVD-ROM **must not** require installation, password and/or Internet connection to be accessed and be an unlocked PDF in a searchable format and not containing any .exe files.

#### 4.1.7 **Provisional Manuals**

- a) In the event that approved manuals are not available at the time of delivery of the equipment, manuals marked "Provisional" **must** be supplied with the equipment.



- b) The contractor **must** deliver replacement approved manuals to all destinations where Provisional manuals were delivered.

#### 4.1.8 **Manual Supplements**

- a) The contractor **must** supply manual supplements (Operator's, Maintenance and Parts) to support dealer-installed equipment not covered in the Vehicle Manuals.
- b) Manual supplements **must** be delivered in accordance with 4.1.4 and 4.1.5.

#### 4.1.9 **Translation and Reproduction Rights**

- a) The Canadian Government **must** reserve the right to translate and reproduce, for Government use only, all or any part of the publications supplied, including the training packages delivered against the contract agreement.

#### 4.1.10 **Changes to Manuals**

- a) During the period of the contract, changes to equipment, which affect the contents of manuals, **must** be reflected in the revision of the electronic and paper version of the manuals.
- b) Changes to the manuals **must** conform to the same format and presentation requirements as the original manuals.
- c) The revised electronic version of the manual **must** be sent to the Technical Authority by the Contractor.

#### 4.2 **Warranty Letter**

- a) The warranty letter **must** include a list of all Canadian designated warranty service providers that will honour the warranty for the equipment and attachments (if applicable) procured under this contract, including the contact person and phone number at each warranty service provider.
- b) The warranty letter **must** include additional warranty coverage of sub-systems and a copy of the warranty letter from each sub-system's Original Equipment Manufacturer (OEM).
- c) The warranty letter **must** include warranty period as negotiated in the contract.
- d) The warranty letter **must** include Contractor contact information, name and phone number, for warranty support.

#### 4.2.1 **Warranty Letter Delivery**

- a) The Contractor **must** provide a bilingual warranty letter to the Technical Authority and with each vehicle. If the Technical Authority requires the letter to be in DND format, then they will provide the Contractor a template for the DND acceptable format of the warranty letter.

#### 4.3 **Other ILS Deliverables to Technical Authority**

- a) The following deliverables **must** be provided in electronic format prior to the delivery of the last vehicle.



4.3.1 **Data Summary**

- a) The Contractor **must** provide a bilingual Data Summary for each make/model/configuration of vehicle by completing Technical Authority's template with data and a vehicle picture.

4.3.2 **Photographs** – The Contractor **must** provide photographs in color, taken against a plain background, and in digital JPEG format with a minimum 10 megapixel resolution and with the following views:

- a) One left front three-quarter view of a completed unit; and
- b) One right rear three-quarter view of a completed unit.

4.3.3 **Dimensioned Drawing**

- a) One side and front view sketch showing the dimensions **must** be provided. Brochure sketches are acceptable.

4.3.4 **Special Tools List** - The Contractor **must** provide an itemized list of specific special tools required for the servicing and repair of the vehicle or equipment procured under this contract and include:

- a) Item name;
- b) Contractor's part number;
- c) Manufacturer's part number (OEM);
- d) Quantity required per location;
- e) Unit price; and
- f) Unit of issue.

4.3.5 **Preventive Maintenance Replacement Parts Kit List (PMRPKL)** - The contractor **must** provide a list detailing the parts that are required to perform preventive maintenance to the system for a period of 12 months, and include:

- a) Item name;
- b) Contractor's part number;
- c) Manufacturer's part number (OEM);
- d) Manufacturer's NATO Supply code (NCAGE) or name and address;
- e) NSN (NATO Stock Number) (if known);
- f) Quantity per equipment;
- g) Quantity recommended;
- h) Unit price; and
- i) Unit of issue.



4.3.6 **Recommended Spare Parts List (RSPL)** – The Contractor **must** provide a list detailing the spare parts deemed necessary to maintain the vehicle for a period of 12 months exclusive of any warranty period, and include:

- a) Item name;
- b) Contractor's part number
- c) Manufacturer's part number (OEM);
- d) Manufacturer's NATO Supply code (NCAGE) or name and address;
- e) NSN (NATO Stock Number) (if known);
- f) Quantity per equipment;
- g) Quantity recommended;
- h) Unit price; and

4.3.7 **Cataloguing Information**

- a) The information **must** be in accordance with the terms of the contract in SACC Clause B4061C with the exception of paragraph 8.
- b) The Contractor **must** provide, upon request, the information necessary to catalogue the parts for the vehicle. The Technical Authority will request information within 30 days of receiving the RSPL.
- c) The Contractor **must** supply the information within 60 days after the request is made.

4.4 **Safety Recalls and Servicing Data**

- a) Safety recalls, and manufacturer's technical service bulletins, or equivalent **must** be provided to the technical authority on a continuing basis, throughout the life expectancy of the vehicle or for no less than 10 years.

4.5 **Training**

4.5.1 **Maintenance Personnel Training**

- a) The Contractor **must** provide a maintenance training course.
- b) The course **must** be given at the delivery destination and be available in both official languages.
- c) The course **must** have a minimum duration of two (2) days to provide training of up to eight (8) maintenance personnel and have the final dates arranged with the Technical Authority.
- d) The course **must** have a syllabus or course outline and schedule available for review seven (7) days prior to the course commencement date.
- e) After completion of the course, the Contractor **must** have a "PROOF OF MAINTENANCE TRAINING" certificate signed by a Canada Representative for the destination. The Technical Authority will supply this document in an electronic format.



4.5.1.1. **Maintenance Personnel Training Curriculum** - The following items **must** be included in the curriculum:

- a) Operator's training detailed in 4.6.2 below;
- b) Operation and maintenance safety precautions;
- c) Preventive maintenance including servicing schedules (10 % of classroom time);
- d) Trouble shooting, testing, and adjustments (70 % of classroom time); and
- e) Special tools and test equipment.

4.5.2 **Operator Training**

- a) The Contractor **must** provide an operator training course.
- b) The course **must** be given twice at each delivery destination and be available in both official languages.
- c) Each course **must** have minimum duration of two (2) days to provide training for up to twelve (12) para-trainers or maintainers and have the final dates arranged with the Technical Authority.
- d) The course **must** have a syllabus or course outline and schedule available for review thirty (30) days prior to the course commencement date. Each participant **must** receive a hard and electronic copy of the training package. Training to include but not limited to:
  - i. Preventive maintenance performed by operators (NFPA 1002 Chap 4),
  - ii. Compressed Air Foam operation (NFPA 1901 Chap 21),
  - iii. Pump Operator Training (NFPA 1002 Chapter 8) including, produce effective stream from tank, produce effective stream from pressurized source, produce effective stream from a static source, refilling the vehicle with water and proportioning rates & concentration for foam/CAF applications.
  - iv. Auxiliary equipment operation including: winch operation and safety, auxiliary lights, warning lights, hose reels, front bumper monitor, under truck nozzles, installation of the Wildfire Forestry FireFlex or approved equivalent and cab control console.
  - v. Written test for all participant.
  - vi. Review of course after written test.
- e) The course **must** be delivered by an instructor who is fully trained and functional on all aspects of the firefighting package, with at least three (3) years of experience within the past five (5) years on the specific vehicle or a vehicle of similar design.