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**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

Title - Sujet Refueller dual tank	
Solicitation No. - N° de l'invitation W8476-185867/A	Amendment No. - N° modif. 001
Client Reference No. - N° de référence du client 6000428121	Date 2018-03-06
GETS Reference No. - N° de référence de SEAG PW-\$\$HP-929-74535	
File No. - N° de dossier hp929.W8476-185867	CCC No./N° CCC - FMS No./N° VME
Solicitation Closes - L'invitation prend fin at - à 02:00 PM on - le 2018-04-23	Time Zone Fuseau horaire Eastern Daylight Saving Time EDT
F.O.B. - F.A.B. Plant-Usine: <input type="checkbox"/> Destination: <input checked="" type="checkbox"/> Other-Autre: <input type="checkbox"/>	
Address Enquiries to: - Adresser toutes questions à: Way, Stephanie	Buyer Id - Id de l'acheteur hp929
Telephone No. - N° de téléphone (873) 469-3300 ()	FAX No. - N° de FAX () -
Destination - of Goods, Services, and Construction: Destination - des biens, services et construction:	

Instructions: See Herein

Instructions: Voir aux présentes

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

Solicitation No. - N° de l'invitation
W8476-185867/A

Amd. No. - N° de la modif.
001

Buyer ID - Id de l'acheteur
HP929

Client Ref. No. - N° de réf. du client
W8476-185867

File No. - N° du dossier
hp929 W8476-185867

CCC No./N° CCC - FMS No/ N° VME

This solicitation amendment 001 is raised to include Annex B Purchase Description.

All other terms and conditions remain the same.



ANNEX B

PURCHASE DESCRIPTION FOR

Dual Compartment Tank Truck 10,000 Litre Capacity ECC 189442



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.

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Table of Contents

1.	SCOPE	8
1.1	Scope	8
1.2	Instructions	8
1.3	Definitions	8
2.	APPLICABLE DOCUMENTS	9
2.1	Applicable Documents	9
3.	REQUIREMENTS	10
3.1	Standard Design	10
3.2	Operating Conditions	11
3.2.1	Weather	11
3.2.2	Terrain	11
3.3	Safety Standards	11
3.3.1	Vehicle Safety Regulations	11
3.3.2	Transport Canada Registration	11
3.3.3	Human Factors Engineering	12
3.4	Vehicle Performance, Ratings and Dimensions	12
3.4.1	Performance	12
3.4.2	Weight Ratings	12
3.4.3	Dimensions	12
3.5	Frame	12
3.6	Engine	13
3.6.1	Engine Components	13
3.6.2	Cold Weather Starting Aids	13
3.6.3	Exhaust System	13
3.6.4	Fuel Tank(s)	13
3.6.5	Fuel Lines	13
3.7	Drivetrain	13
3.8	Transmission	14
3.8.1	Pumps Drive	14
3.9	Braking System	14
3.9.1	Brake Interlock	14
3.10	Steering	15
3.11	Wheels, Rims and Tires	15



3.12	Cab	15
3.13	Equipment Performance	16
3.13.1	Fuelling System	16
3.13.2	Defueling System	16
3.13.3	Overfill Protection	17
3.14	Equipment Requirements	17
3.14.1	Product Tank	17
3.14.2	Catwalk	18
3.14.3	Rollover Damage Protection	18
3.14.4	Ladder	18
3.14.5	Piping	19
3.14.6	Sump	19
3.14.7	Gravity Discharge	19
3.14.8	Pumping Equipment	19
3.14.9	Valves and Vents	19
3.14.10	Bottom Loading	19
3.15	Filtration System	20
3.16	Delivery Equipment	20
3.16.1	Fuelling Hose Reels	20
3.16.2	Fuelling Hoses	20
3.16.3	Defueling	20
3.16.4	Defueling Connections	20
3.16.5	Defueling Hoses	21
3.16.6	Defueling Spout	21
3.16.7	Nozzles	21
3.17	Other Equipment	21
3.17.1	Spill Kit	21
3.17.2	Fire Blanket	21
3.17.3	Dipstick	22
3.17.4	Wheel Wrench	22
3.17.5	Fire Extinguishers	22
3.17.6	Wheel Chocks	22
3.18	Body	22
3.19	Cabinets	23
3.19.1	Pumping Cabinet	23
3.19.2	Storage Cabinets	23



3.20	Pumping Instruments and Controls	23
3.20.1	Meters	24
3.20.2	Registers	24
3.21	Equipment Electrical	24
3.21.1	Grounding Studs	25
3.21.2	Grounding Cable	25
3.22	Hydraulic System	25
3.22.1	Lubricants and Fluids	25
3.23	Electrical System	25
3.24	Lighting	26
3.25	Controls	26
3.26	Instruments	27
3.27	Paint	27
3.28	Retroreflective Tape	27
3.29	Corrosion Protection	27
3.30	Warning, Markings and Instruction Plates	27
4.	INTEGRATED LOGISTIC SUPPORT	28
4.1	Vehicle Manuals	28
4.1.1	Operator's Manuals	28
4.1.2	Parts Manual(s)	28
4.1.3	Maintenance Manuals	28
4.1.4	Manual Delivery to Technical Authority	29
4.1.5	Manual Delivery with Vehicle	29
4.1.6	Electronic Format	29
4.1.7	Provisional Manuals	29
4.1.8	Manual Supplements	29
4.1.9	Translation and Reproduction Rights	30
4.1.10	Changes to Manuals	30
4.2	Warranty Letter	30
4.2.1	Warranty Letter Delivery	30
4.3	Other ILS Deliverables to Technical Authority	30
4.3.1	Data Summary	30
4.3.2	Photographs	30
4.3.3	Dimensioned Drawing	31
4.3.4	Special Tools List	31
4.3.5	Recommended Spare Parts List (RSPL)	31



4.4	Safety Recalls and Servicing Data	31
4.5	Familiarization Training	31



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1. SCOPE

1.1 Scope This document describes a dual compartment, 4x2 tank truck with a net capacity of 10,000 litres. The truck will be used as a mobile fuel-dispensing unit. The truck will incorporate two (2) independent fuelling systems, where one tank has a capacity of 3,000 litres and the other tank has a capacity of 7,000 litres.

1.2 Instructions Requirements, which are identified by the word “**must**”, are mandatory. Deviations will not be permitted.

- c) Requirements identified with a “will” define actions to be performed by Canada and require no action/obligation on the Contractor's part.
- d) Where “**must**” or “will” are not used, the information supplied is for guidance only.
- e) In this document “provided” **must** mean “provided and installed”.
- 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

- 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 equivalency for the respective requirement is provided for evaluation.
- 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) “**Road Legal**” – Applies to a self-propelled vehicle designed for or capable of transporting persons, property, material or permanently or temporarily affixed apparatus on a highway.
- e) “**5th 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.
- f) “**95th 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.

- g) **“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.
- h) **“Gross Vehicle Weight Rating (GVWR)”** - The value specified by the vehicle manufacturer as the loaded weight of a single vehicle.

2. APPLICABLE DOCUMENTS

2.1 Applicable Documents

- i) 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. Canada will not be supplying these documents. 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>

Automotive (On-road) Diesel Fuel

CAN/CGSB Standard 3.517
Standards Council of Canada
270 Albert Street, suite 200
Ottawa, ON K1P 6N7
<https://www.scc.ca/en>

Motor Vehicle Safety Regulations (MVSr)

Government of Canada / Transport Canada
<https://www.tc.gc.ca/eng/acts-regulations/regulations-crc-c1038.htm>

Hazardous Products Act

Government of Canada
<http://laws-lois.justice.gc.ca/eng/acts/H-3/>

CSA B620 - Highway Tanks and Portable Tanks for the Transportation of Dangerous Goods

Canadian Standards Association (CSA)
178 Rexdale Blvd.
Toronto, Ontario M9W 1R3

NFPA 385 - Tank Vehicles for Flammable and Combustible Liquids

National Fire Protection Association (NFPA)
1 Batterymarch Park
Quincy, Massachusetts 02169-7471

**MIL-STD-209K – Department of Defence, Interface Standard for Lifting and Tie down Provisions
Commercial Item Description A-A-50696 - Reels, Static Discharge, Grounding, 50 and 75 Foot
Cable Lengths**

GSA - Specification Section
470 L'Enfant Plaza
Suite 8100
Washington, DC 20407

American National Standards Institute (ANSI)

ANSI /SIA A92.7-1990 (R1998) Airline Ground Support Vehicle-Mounted Vertical Lift Devices
1430 Broadway
New York, NY, 10018
<http://webstore.ansi.org/>

API RP 1004 - Bottom Loading and Vapor Recovery for MC-306 & DOT-406 Tank Motor Vehicles

American Petroleum Institute (API)
1220 L Street, NW
Washington, DC 20005-4070

R.S., 1985, c. W-6

Weights and Measures Act
<http://laws-lois.justice.gc.ca/eng/acts/W-6/page-1.html>

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 year, or be manufactured by a company that has at least 5 years' experience in design and manufacturing of a comparable type of equipment of equivalent or greater complexity.
- c) **Engineering Certification** - Original manufacturers engineering certification **must** be provided upon request for major drive train components, and major equipment systems and assemblies, to demonstrate that assemblies are used within their design limitations.
- d) **Regulations** – The vehicle **must** conform to all applicable laws, regulations and industrial standards governing manufacture, safety, noise levels and pollution in effect in Canada at the 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 ten (10) years from the date of manufacture.

- h) **Hazardous Materials** - The contractor **must** comply with Hazardous Products Act of Canada concerning the use of hazardous materials, ozone depleting substances, polychlorinated biphenyls, asbestos and heavy metals used in the manufacture and assembly of the product supplied.
- i) **Measurements** – Values for labels and indicators provided with equipment **must** be presented in metric units, or **must** have both imperial and metric units with metric dominant.

3.2 Operating Conditions

3.2.1 Weather

- j) The vehicle **must** operate under the extremes of weather conditions found in Canada in temperatures ranging from -40 to 37° C (-40 to 99° F) and cold starting from -40° C with external aids.

3.2.2 Terrain

- k) The unladen or fully laden vehicle **must** be capable of being operated on gravel roads, taxiways, and primary and secondary roads. Terrain conditions **must** include year round operations on snow, mud, swamp, sand and ice.

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 vehicle **must** meet the requirements of NFPA 385, CSA B621 and all other relevant standards normally used by industry.
- d) The vehicle **must** be certified to CSA B620, TC 406 standard.
- e) The product tank, pumping, filtration, metering, delivery and piping equipment supplied **must** be compatible with CAN/CGSB-3.5-2011 Automotive Gasoline and CAN/CGSB-3.517-15 Diesel Fuel.
- f) The vehicle **must** meet the requirement of the Weights and Measures Act (R.S., 1985, c. W-6)

3.3.2 Transport Canada Registration

- g) The contractor/subcontractor **must** be registered with Transport Canada for the manufacture and assembly of TC 406 - Highway and Portable Tanks for the Transportation of Dangerous Goods prior to contract award.

3.3.3 **Human Factors Engineering** 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.

3.4 Vehicle Performance, Ratings and Dimensions

3.4.1 Performance

- a) The vehicle, at GVWR, **must** sustain a forward speed of at least 100 km/h on a level paved road and a cruising speed of at least 95 km/h.
- b) The vehicle **must** have an engine, transmission and related equipment that is compatible with an operation cycle that includes long periods of slow driving and extensive idling.
- c) The vehicle **must** be able to safely traverse and stop on a 20% (11.45 degrees) side slope.
- d) The vehicle **must** be able to safely operate on road conditions as specified in section 3.2.2.

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 68 kg 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 Dimensions

- a) The vehicle **must** have road legal dimensions across Canada.

3.5 Frame The frame **must** be a 4x2 configuration.

- c) The vehicle **must** be able to be towed from the front and rear (not suspended) by commercial tow trucks while loaded to capability.

3.6 **Engine** The engine **must** operate on ultra-low sulphur diesel fuel to the CAN/CGSB Standard 3.517.

3.6.1 **Engine Components**

- e) The engine **must** integrate an automatic shutdown protection system for low oil pressure and high temperature. The purpose of this feature is to protect the engine during pumping operations when the operator cannot view the engine instruments.

3.6.2 **Cold Weather Starting Aids**

- a) A low temperature engine starting aid **must** be provided, including glow plug(s) or intake air preheat system.
- b) A thermostatically controlled water separator/fuel filter **must** be provided to preheat diesel fuel prior to starting.
- c) A 110-volt engine heater(s) **must** be provided.
- d) A 110-volt battery heater(s) **must** be provided.
- e) The battery **must** be housed in an insulated battery box, blanket or heated cab.
- f) All cold weather aids **must** be connected together with a single, cover-protected, external electrical power plug, accessible without lifting the cab. The plug **must** be in accordance to CSA-C22.2-Wiring Devices.

3.6.3 **Exhaust System**

- g) The exhaust system **must** prevent entry of rain.
- h) If a Selective Catalytic Reduction (SCR) System is used, there **must** be manual deactivation and activation controls for the automatic regeneration of the Diesel Particulate Filter (DPF).

3.6.4 **Fuel Tank(s)**

- i) The fuel tank(s) **must** have a fuel capacity that will provide the greater of: at least 500 km of fully laden cruise or ten continuous hours of pumping operations.
- j) If more than one fuel tank is used, separate fuel indicators **must** be provided.

3.6.5 **Fuel Lines**

- k) All chassis fuel lines **must** be insulated to maintain a constant temperature of the fuel when exposed to the extremes of weather conditions.

3.7 **Drivetrain**

- l) The vehicle **must** be 4x2 drive.
- m) The drivetrain **must** include a "Park" or "Neutral" starting interlock.

- n) The drivetrain **must** include limited slip or driver controlled locking differential(s) on the drive axle(s).
- o) The drivetrain **must** include a guard to prevent product tank and equipment damage resulting from failed driveshaft components.

3.8 Transmission

- p) The vehicle **must** be equipped with fully automatic transmission.
- q) The transmission **must** have an oil cooler.
- r) The transmission **must** have a replaceable oil filter.
- s) The transmission shift control **must** clearly indicate the shift selection position under all lighting conditions.

3.8.1 Pumps Drive

- a) The vehicle **must** be equipped with two product-pumping system, one for each compartment.
- b) The two product-pumping systems **must** either be driven by PTO shaft or hydraulic motors.

3.8.1.1. Power Take-Off (PTO) Shaft

- c) If PTOs are provided, it **must** be hot-shift type with a shifting mechanism controllable from the cab.
- d) The engagement of the PTOs **must** render the vehicle's accelerator pedal inoperable.
- e) Safety guards **must** cover the PTOs shaft for safety.

3.8.1.2. Hydraulic Motors

- f) If the two pumps are driven by hydraulic motors, each motor **must** be coupled to one product pump.

3.9 Braking SystemThe vehicle **must** be equipped with a braking system, including a parking brake.

3.9.1 Brake Interlock

- a) The vehicle **must** be equipped with a brake interlock system.
- b) The brake interlock system **must** operate in a manner so that it applies the vehicle's brakes and prevents the vehicle from movement when it is activated.
- c) The brake interlock **must** prevent the vehicle from being moved when any catwalk fold-down safety rail is raised, any PTO is engaged (if PTOs are provided), any product tank internal valve is open, and when any connection is made to a bottom loading adapter and vapour recovery.

- d) The vehicle **must** be equipped with amber warning lights and audible alarm mounted in the cab that will come on whenever an interlock protected component is removed from its stowed position.
- e) An emergency brake interlock override **must** be provided and be located within the reach of a seated driver.
- f) The interlock override device **must** bear a seal to prevent tampering when not in use.
- g) A dash mounted red indicator light **must** signal the driver that the brake interlock is being overridden.
- h) When the vehicle is in movement, the warning lights and alarm **must** be activated to advise the operator that a component is dislodged from its stowed position.
- i) When the vehicle speed exceed 10 km/h, there **must** be preventive measures ensuring interlock devices are not activated causing brakes to apply.
- j) A locking securing device **must** be installed and be identified with safety warning labels to ensure interlock protected devices do not become dislodged due to road conditions. Such devices may include the insertion of clevis or locking pins.

3.10 **Steering**

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

3.11 **Wheels, Rims and Tires**

- a) Tires and rims **must** be selected in accordance with MVSR Technical Standards Documents No. 120, Revision 1R.
- b) Tires **must** have a tread pattern for use in the operating conditions described in Paragraph 3.2.
- c) The wheels, tires and rims **must** include valve extensions for inner tires, if used, to allow for easy access;
- d) It is desirable that all tires **must** be the same size, ply ratings, make and model.
- e) A spare wheel and tire **must** be delivered with each vehicle.
- f) On-board storage provision should be made on each vehicle to securely store spare wheel(s) and tire(s)

3.12 **Cab** The vehicle **must** be equipped with a two-person weatherproof cab.

- h) A fully adjustable driver's and passenger seat **must** be provided, with suspension and arm rests.
- i) Driver and passenger seats **must** have dark upholstery and include retractable **(3-point)** seat belts.

- j) A minimum of two (2) doors **must** be provided with power locks, be keyed alike, and have keyless entry.
- k) A ventilation/heater and defrosting system **must** be provided, with a multi-speed fan, applicable for the operating conditions as specified in Paragraph 3.2.1.
- l) An air conditioning system **must** be provided equipped with all components and controls required for regulation of the cab interior temperature.
- m) A powered windshield washer system **must** be provided with multi-speed wipers, where the wiper blades **do not** travel from a vertical center windshield position to a horizontal position near the roof line.
- n) The cab floor or floor mats **must** be weatherproof.
- o) Two rotating interior sun visors **must** be installed.
- p) A back-up camera system **must** be installed in the cab with a screen size of at least 17.7 cm (7 inches).
- q) An AM/FM stereo radio with an auxiliary port **must** be provided.
- r) Two heavy-duty, powered and heated exterior side mirrors, with convex section, **must** be provided with in-cab controls.
- s) The cab **must** be equipped with a 2.3 kg (5 lb) ULC approved and rechargeable dry chemical fire extinguisher, with a minimum rating of 3A10BC, equipped with a pressure gauge, service inspection tag, and accessible to the operator.

3.13 Equipment Performance The vehicle will normally be used to provide a large number of short duration, low flow rate, fuelling stops. Occasionally, the vehicle will be used as a bulk fuel dispenser requiring higher flow rates.

- u) The pumping system **must** be compatible with this operation cycle.
- v) The tank, filtration system, pumping system, fuelling system, and all related components **must** be compatible with Type A and B diesel fuel as specified in CAN/CGSB-3.517 as well as automotive gasoline fuel as specified in CAN/CGSB-3.5.

3.13.1 Fuelling System

- w) Two low-pressure fuelling systems **must** be provided.
- x) The low-pressure system **must** provide incrementally or infinitely variable fuelling flow up to a maximum of 189.27 litres (50 US gallons) per minute, controllable from the pumping station.

3.13.2 Defueling System

- y) The vehicle **must** be equipped with an auxiliary defueling capability for each tank.
- z) The defueling flow rate **must** be variable.

- aa) The maximum defuelling flow rate **must** be at least 90 litres (23.78 US gallons) per minute with the vehicle engine at idle.

3.13.3 **Overfill Protection**

- bb) A high-level shutdown system **must** be installed on each product tank to prevent the overfilling of the product tanks during defuelling or when bottom loading through the 2 ½-inch and 4-inch adaptors.
- cc) An electronic overfill protection for bottom loading through the API 4-inch and 2 ½-inch **must** be provided.
- dd) The electronic overfill protection system **must** be compatible with API RP 1004 commercial loading-racks.
- ee) A Thermistor socket, J-slot Optic socket and a float socket **must** be provided.

3.14 **Equipment Requirements**

- ff) The product tank, filtration system, product delivery system, and related equipment **must** meet the requirements detailed in the current issue of *NFPA 385, CSA B620 TC 406 and the Weights and Measures Act (R.S., 1985, c. W-6)*.
- gg) The product meter **must** be certified in accordance with Measurement Canada Weights and Measures Act (R.S., 1985, c. W-6).
- hh) The vehicle fuelling system **must** be certified for trade.

3.14.1 **Product Tank**

- a) The product tank **must** have two compartment, one compartment with a capacity of 3,000 litres and one compartment with a capacity of 7,000 litres, plus an additional 3 percent allowance for expansion and water sumps.
- b) The product tanks assemblies, including the tanks shell, ends, baffles, and other components directly welded to the tank **must** be constructed of aluminium alloy or stainless steel.
- c) The heads and baffles **must** be designed in accordance to the latest issue of the CSA B620, TC 406.
- d) The product tank **must** be equipped with baffles with a minimum 609 mm (24") inside diameter flange apparatus for personnel access.
- e) The product tank **must** be equipped with at least one manhole of a minimum diameter of 50.8 cm (20").
- f) The product tank **must** be designed to discharge rainwater from the top of the tank away from any structural components of the vehicle.
- g) The drains **must** be a minimum size of 1.5 inch on the bottom corners on each side of the rollover protection, at the front and rear sections, to drain liquids from the centre of the rollover sections.

- h) The product tank **must** incorporate a vapour recovery system conforming to *API RP 1004* with a connector located near the bottom-loading connectors.
- i) The vapour recovery system **must** be equipped with an override/bypass mode for situations where vapour recovery is not present.
- j) All outlets, valves, closures, piping, or any devices that if damaged in an accident could result in a loss of product **must** be protected with an accident damage protection system.
- k) All product piping **must** be either aluminum or stainless steel. Aluminum alloy is desired wherever possible.
- l) Connections made by Victaulic couplings or companion flanges are suggested for this application. Dissimilar metals **must** be protected from galvanic corrosion.

3.14.2 Catwalk

- m) A full-length catwalk **must** be provided at the top of the product tank.
- n) The catwalk **must** be designed as per *Canada Occupational Health and Safety Regulations*.
- o) The catwalk **must** not present a hazard to personnel or interfere with top-mounted equipment.
- p) The walking area **must** be equipped with a non-slip surface.
- q) The catwalk **must** be equipped with a non-slip surface and an automatic fold-down safety rails operable from the ground, coated with a fuel resistant rubberized compound to increase grip and to provide thermal insulation.

3.14.3 Rollover Damage Protection

- r) Rollover damage protection device(s) **must** be provided in accordance with the latest issue of the CSA B620, TC 406.

3.14.4 Ladder

- a) An aluminum ladder **must** be provided to safely and easily access the top of the tank.
- b) The ladder **must** meet the Canada Occupational Health and Safety Regulations.
- c) The ladder **must** have flexible type joints if installed on the chassis to relieve flexing stress between the chassis and the tank.
- d) The ladder **must** be of a heavy duty construction with the required support.
- e) The ladder frame **must** rise at least 25 cm above the height of the rollover protection rails and then curve downward to meet the rails.
- f) Grab-handles **must** be provided on the top of the tank and a handrail on each side of the ladder.
- g) Grab-handles on the top of the tank **must** be continuous with the handrails on the ladder to provide safety of ascent and descent.

- h) The ladder **must** have a minimum step width of 18 inches, a maximum step distance of 12 inches, a minimum step depth of 4 inches and a minimum toe clearance of 6 inches from inner edge of ladder step.

3.14.5 **Piping**

- s) All product piping **must** be either aluminum or stainless steel.
- t) Aluminum alloy is desired wherever possible. Connections made by Victaulic couplings or companion flanges are suggested for this application.
- u) Dissimilar metals **must** be protected from galvanic corrosion.

3.14.6 **Sump**

- v) The product tank **must** be provided with a sump to trap water.
- w) The product tank sump area **must** be a minimum of 1% of the tank's nominal capacity.
- x) The product supplied to the pump **must** be taken from a location external to the sump.
- y) The sump **must** be sloped and fitted with a self-closing nominal 1-inch gate valve to ensure it can be fully drained of accumulated water.

3.14.7 **Gravity Discharge**

- z) Gravity discharge **must** be possible for each product tank through the hose and the product meter.

3.14.8 **Pumping Equipment**

- aa) Two independent product-pumping systems **must** be provided.
- bb) Each pump **must** be dedicated to a single product tank.
- cc) The product pumps and pump drive system **must** be designed to withstand a high idle speed as may be required in cold weather operation.
- dd) The pumps **must** drop to low speed and pressure when a closed discharge is encountered.

3.14.9 **Valves and Vents**

- ee) The product tank valves **must** be capable of being repaired and replaced from the product tank exterior.
- ff) The product tank **must** be equipped with internal valves and vents in accordance with NFPA 385 and CSA B620 requirements.

3.14.10 **Bottom Loading**

- gg) Product will normally be loaded through bottom loading adaptors.

- hh) A 101 mm (4") bottom loading system conforming to API RP 1004 **must** be provided to load each product tank.
- ii) The adapters **must** be located on the curb side of the vehicle.
- jj) A protective cap and metal lanyard **must** be provided to protect the adapters when not in use.

3.15 Filtration System

- kk) The vehicle **must** be equipped with a filtration system.
- ll) The filter vessel **must** be P/N VF-61E (NSN 4330-01-294-4101).
- mm) The filter elements **must** be Velcon AD-51225 (NSN 4330-01-294-4118) for diesel fuel and Velcon AC-51205 (NSN 4430-01-294-419) for gasoline fuel.

3.16 Delivery Equipment

3.16.1 Fuelling Hose Reels

- nn) Two hose reels **must** be provided.
- oo) Each reel **must** be able to accommodate the hoses specified in section **Error! Reference source not found.**
- pp) Each reel **must** provide dedicated service to one of the two pumping systems.
- qq) The reels **must** be electrically or air operated, have a manual hand crank, and be equipped with a brake and locking device.
- rr) The reels **must** be enclosed.
- ss) If the crank is removable, it **must** have a storage provision near the reel or in the stowage cabinet.

3.16.2 Fuelling Hoses

- tt) Two Artic quality hoses of 15.24 meters (50') length and of 31.75 mm (1.25") inside diameter **must** be supplied complete with all required fittings.
- uu) The hoses **must** be installed on the respective pumping system reels.

3.16.3 Defueling

- vv) An auxiliary defueling capability **must** be provided for each of the pumping systems.

3.16.4 Defueling Connections

- ww) The connection to each defueling system **must** be a 50.8 mm (2") cam lock connector located within the pumping cabinet.
- xx) A gate valve and dust cap **must** be located on each connector.

3.16.5 Defueling Hoses

- yy) Two hoses of 50.8 mm (2") hard wall defueling hoses **must** be supplied.
- zz) The hoses **must** meet cold weather operations specified in section 3.2.
- aaa) The hoses **must** each measure at least 3 metres (9.8 feet) in length and include the required cam lock connections and caps on each end.

3.16.6 Defueling Spout

- bbb) One 31.75 mm (1.25") right-angle defueling spout with 600 mm (24") of reach **must** be supplied.
- ccc) The defueling spout **must** be attached to the defueling hose with the 2" cam lock connection.
- ddd) The ancillary defueling attachments **must** be stored in the stowage cabinet.

3.16.7 Nozzles

- eee) Three nozzles **must** be supplied with each fuelling system.
- fff) The nozzles outlet sizes **must** be ¾ inch, 1 inch, and 1¼ inch.
- ggg) The nozzles **must** be stored in the stowage cabinet.
- hhh) The nozzles **must** be non-locking, service station type, automatic shut off, with hose swivel adapters and cam lock with quick disconnects.
- iii) One nozzle storage hook **must** be mounted beside or above each hose reel.
- jjj) The nozzles **must** not require removal from the hose prior to placement into the respective hook.

3.17 Other Equipment

3.17.1 Spill Kit

- kkk) A fuel spill kit **must** be provided and located in an easily accessible dedicated weatherproof aluminum storage box with a non-locking door.
- lll) The spill kit **must** be AF Pollution Abatement Systems Part AF16 or **Equivalent**.
- mmm) The storage box door **must** be labelled in 50 mm (2") high black text, "*Spill Kit, Trousse de déversement*".

3.17.2 Fire Blanket

- nnn) A fire blanket **must** be provided and be model Steel Fire Equipment FB64 or **Equivalent**.
- ooo) The blanket **must** be located in an aluminum storage canister with a self-latching door.
- ppp) The storage canister door **must** not interfere with removal of the blanket.

qqq) The canister **must** be weatherproof, painted fire engine red, and labelled in red on a white background with letters 50 mm (2") high, "*Fire Blanket, Couverture Anti-Feu*".

3.17.3 Dipstick

rrr) A dipstick and a depth chart **must** be provided.

3.17.4 Wheel Wrench

sss) A wheel nut wrench **must** be provided and stowed in the stowage cabinet.

3.17.5 Fire Extinguishers

a) The vehicle **must** be equipped with at least two fire extinguishers, one on each side.

b) The fire extinguishers **must** have a rating of at least 2-A:20-B, C as per NFPA 385.

c) The extinguishers **must** be secured with heavy duty mounting bracket.

3.17.6 Wheel Chocks

ttt) The vehicle **must** be supplied with four (4) wheel chocks.

uuu) The wheel chocks **must** be made from a fuel resistant elastomeric compound.

vvv) A mounting bracket **must** be incorporated into the body for the storage of wheel chocks.

www) The bracket **must** be positioned for easy access. It is preferred that the storage location is on the driver side of the vehicle.

3.18 Body

xxx) Two storage tubes constructed of aluminium **must** be mounted on each side of the body, and will be used to stow the defueling hoses.

yyy) The storage tubes **must** include closures that prevent the ingress of water and debris.

zzz) All wheels **must** be equipped with fenders to retain road splash.

aaaa) A heavy-duty, full width, bolt on, rear bumper **must** be provided in accordance with CSA B620, TC406.

bbbb) The bumper **must** be designed such that the fully loaded vehicle can be pushed without damage.

cccc) Any lights and reflectors mounted to the bumper **must** be recessed.

dddd) The vehicle tank **must** be provided with mud flaps.

eeee) Front licence plate holder **must** be provided.

ffff) Rear licence plate holder with LED light **must** be provided.

3.19 Cabinets

- gggg) The vehicle **must** be equipped with weatherproof cabinets.
- hhhh) All cabinet boxes and cabinet doors **must** be constructed of aluminum alloy.
- iiii) All cabinets **must** have a sloping solid floor with a drain and be lined with removable open grid elastomeric matting.
- jjjj) Elastomeric seals and gutters **must** be used to prevent the ingress of dust, debris, and water.
- kkkk) The door handles **must** be recessed positive locking type and include padlocking provision.
- llll) All cabinet doors must include a system to hold them in place in the open position in high wind conditions.
- mmmm) The door(s) once open **must** not come into contact with the body of the cabinet.

3.19.1 Pumping Cabinet

- nnnn) The pumping cabinet **must** enclose the meter(s), fuelling hose reels, pumping control panel, and related equipment, with sufficient room around the equipment for ease of maintenance and operation.
- oooo) The cabinet **must** be located at the rear of the vehicle.

3.19.2 Storage Cabinets

- a) At least two storage cabinets **must** be provided and located on each side of the vehicle.
- b) The storage cabinets **must** have a solid floor lined with removable open grid elastomeric matting for protecting tools and the compartment finish.
- c) Tie downs or equipment holders **must** be provided to secure defined loose items.

3.20 Pumping Instruments and Controls

- pppp) The controls **must** be properly sized and arranged to allow personnel wearing arctic mittens to easily operate the equipment.
- qqqq) A Throttling valve **must** be installed between each meter and the hose reel.
- rrrr) The throttling valve **must** be manually controlled, graduated, locking type and lever operated.
- ssss) The throttling valve **must** be readily accessible to the operator and will be used to control the flow rate. During normal operations, the valves would remain set until a requirement for a higher or lower flow is encountered.
- tttt) A valve control **must** be installed on the pumping control panel for opening and closing the internal valves of the product tank.
- uuuu) A drain valve switch **must** be provided to control the drain valve of the product tank.

- vvvv) The vehicle **must** have at least three emergency shut-off controls, one mounted on each side of the vehicle and one mounted on the pumping control panel.
- www) Each emergency fuel shut-off controls **must** be identified by the words “EMERGENCY FUEL SHUTOFF / ARRÊT CARBURANT” in letters at least 50 mm (2 in.) high.
- xxxx) The method of operation **must** be indicated by an arrow or by the word “PUSH / POUSSER” OR “PULL / TIRER”, as appropriate.
- yyyy) All instruments in controls necessary for the operation of the pumping system **must** be grouped and labelled within the pumping control panel.

3.20.1 **Meters**

- zzzz) The vehicle **must** be equipped with two meters certified by Measurement Canada.
- aaaa) The meters **must** be certified for flow rate from 45 up to 225 litres (11.89 to 59.44 US gallons) per minute as specified by the Measurement Canada Approval Number S.WA-0368.
- bbbb) The meters **must** be the 1.5 inches Liquid Controls M7 flow meter or **Equivalent**.
- cccc) The meters **must** be calibrated in litres and include an air release valve, backpressure valve, and strainer.
- dddd) A check valve **must** be installed on the air eliminator line at the tank opening.

3.20.2 **Registers**

- eeee) The vehicle **must** be equipped with two mechanical registers.
- ffff) The registers **must** be Veeder-Root or **Equivalent**.
- gggg) Both registers **must** permit the display of litres, and be clearly visible, within easy reach of an operator standing on the ground at the control panel.

3.21 **Equipment Electrical**

- hhhh) A 12 volt negative ground electrical lighting system **must** be provided.
- iiii) Electrical circuits for installed equipment **must** be protected by identified vapour proof automatic circuit breakers.
- jjjj) The installation of all lights, switches, relays, circuit breakers, electrical devices and similar components **must** be vapour-proof.
- kkkk) All components **must** be installed in a vapour-proof enclosure, unless their construction is inherently vapour-proof.
- llll) All connections to vapour-proof enclosures and components **must** be sealed and vapour-tight.
- mmmm) All wiring **must** be labelled at each connecting end.

nnnnn) Grommets **must** be used when wiring passes through sheet metal.

ooooo) Conduits **must** not be routed through the product tank, piping, or drains.

ppppp) A master disconnect switch located on the driver side and accessible from the ground, **must** be provided.

3.21.1 **Grounding Studs**

qqqqq) At least five brass grounding studs **must** be installed.

rrrrr) Each grounding stud **must** be labelled with red circle measuring 101 mm (4") in diameter, centred on or placed next to the studs.

sssss) The words "GROUND" and "BORNE DE TERRE" **must** be painted or as a decal in white letters within the red circle.

ttttt) The studs **must** not be painted.

uuuuu) One grounding stud **must** be installed as close as possible to each of the two manhole covers.

vvvvv) One grounding stud **must** be located near the bottom loading adaptors.

wwwww) The remaining studs **must** be installed as close as possible to the lower rear corners of the rear product tank.

3.21.2 **Grounding Cable**

xxxxx) A grounding cable, complete with recoil reel and grip clamp, **must** be installed in the pumping cabinet.

yyyyy) The cable and reel **must** meet the requirements of Commercial Item Description A-A 50696, Type II (50 foot cable).

3.22 Hydraulic System If the vehicle is equipped with a hydraulic system, an oil cooler **must** be provided.

aaaaa) If the vehicle is equipped with a hydraulic system, hydraulic filter change indicators **must** be provided.

bbbbb) If the vehicle is equipped with a hydraulic system, hydraulic hoses **must** be grouped together and clearly identified.

ccccc) If the vehicle is equipped with a hydraulic system, clearly marked test ports **must** be provided.

3.22.1 **Lubricants and Fluids** All lubricants and fluids provided **must** meet the operating conditions specified in Paragraph 3.2.1.

3.23 Electrical System The vehicle **must** be equipped with a 12-volts electrical system.

fffff) All components **must** be installed in a vapour-proof enclosure, unless their construction is inherently vapour-proof.

gggggg) All connections to vapour-proof enclosures and components **must** be sealed and vapour-tight.

hhhhh) Wiring **must** be protected by insulating grommets, where passing through metal. The vehicle **must** be equipped with an alternator to charge the maintenance free battery and provide power at low RPM to all electrical components.

iiiiii) The vehicle **must** be equipped with an audible back-up alarm to alert personnel that the vehicle transmission is in reverse.

jjjjj) Heavy-duty, maintenance free batteries **must** be provided and secured in an accessible well-protected location.

kkkkk) The batteries **must** be stored in an insulated battery boxes.

lllll) A master disconnect switch located on the driver and accessible from the ground, **must** be provided.

mmmmm) All wiring **must** be labelled at each connecting end.

3.24 Lighting The vehicle **must** be equipped with LED lights.

ooooo) Lights **must** be recessed or otherwise protected from damage with all components accessible for servicing.

ppppp) In-cab instrument panel lights **must** be dimmable.

qqqqq) The vehicle **must** be equipped with four flood lights

rrrrr) The flood lights **must** be Betts Industries Model 325503 (NSN 6240-01-662-5626) or **Equivalent**.

sssss) Automatic strip lighting **must** be installed in all cabinets and be master controlled when the pumping system is powered up.

ttttt) A high profile amber strobe lights **must** be installed on the vehicle and be Star Warning system model 200A-12V-A or **Equivalent**.

uuuuu) All controls for the lights **must** be located in the cab, in reach of the driver.

3.25 Controls Each control **must** be permanently marked to identify the function, in both English and French or international symbols as defined by SAE J1362.

b) Vehicle controls **must** be grouped together in the cab.

c) Equipment controls **must** be grouped together in the pumping cabinet.

d) Controls **must** not restrict the operator's field of view.

e) Control panel lights **must** be provided for adequate lighting for nighttime operations.

3.26 Instruments Instruments **must** be metric and visible to the seated operator in all lighting conditions.

- g) An ammeter, voltmeter or charging indicator **must** be provided.
- h) An engine coolant temperature indicator **must** be provided.
- i) A hydraulic oil temperature and level indicator **must** be provided, if the vehicle is equipped with a hydraulic system.
- j) An engine oil pressure indicator **must** be provided.
- k) If PTOs are provided, an indicator light within the cab and at the pumping station **must** be provided to indicate when the PTO is engaged.
- l) An hour-meter with numeric display, which accurately records accumulated engine running time up to at least 9,999 hours **must** be provided.
- m) A fuel level indicator **must** be provided.
- n) A speedometer **must** be provided.
- o) An engine tachometer **must** be provided.

3.27 Paint All metal surfaces **must** be protected.

- q) The prime coating **must** be a high durability, corrosion resistant type, such as an epoxy.
- r) The colour **must** be white.

3.28 Retroreflective Tape Retroreflective tape **must** be placed on the vehicle in accordance with the Motor Vehicle Safety Regulations (MVSr).

3.29 Corrosion Protection The vehicle **must** be designed and manufactured to prevent galvanic corrosion.

- u) 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.
- v) A commercial rust prevention coating **must** be applied to the vehicle, such as Krown Rust Control or Rust Check.
- w) A decal and warranty papers for the rust prevention coating **must** accompany the vehicle.

3.30 Warning, Markings and Instruction Plates All identification, instructional, and warning labels **must** be bilingual or International symbols defined in SAE J1362.

- y) All identification, instructional, and warning labels **must** be within view of the operator.
- z) All gauges and controls and **must** be permanently labelled.

- aa) A product flow diagrams **must** be provided and affixed on the interior of the pumping cabinet doors.
- bb) Operating instructions **must** be provided and affixed on the interior of the pumping cabinet doors.
- cc) Four dangerous goods placard holders **must** be provided and located on each side of the vehicle.
- dd) There **must** be provisions made to mount a flat fuel identification sign on each side of the vehicle. The signs measure 610 mm (24") high by 1.22 metres (48") long and 3.17 mm (0.125") thick.

4. INTEGRATED LOGISTIC SUPPORT

4.1 Vehicle Manuals – All manuals required for the description, operation, maintenance and repair of the complete equipment, including sub-systems, **must** be provided.

4.1.1 Operator's Manuals

- ee) The operator's manuals **must** be bilingual (English/French).
- ff) The operator's manuals **must** include instructions for the safe operation of the vehicle.
- gg) The operator's manuals **must** include daily operator maintenance instructions/checks (including lubrication).
- hh) The operator's manuals **must** include safety warnings.
- ii) The operator's manuals **must** include hand signals (as necessary).

4.1.2 Parts Manual(s)

- jj) The parts manual(s) **must** be in English (bilingual is desirable).
- kk) 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.
- ll) 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.
- mm) The parts manual **must** cross reference the OEM part number to the correct illustration and item number.
- nn) The parts manual **must** have a representation of bilingual warning signs and identification labels delivered on the equipment.

4.1.3 Maintenance Manuals

- oo) The maintenance manual **must** be bilingual (English/French).

- pp) The maintenance manual **must** include a trouble shooting guide, showing the steps and tests required to determine the exact cause of a problem and an explanation of the steps required to correct a problem.
- qq) The maintenance manual **must** include a listing of the necessary tolerances, torque levels, fluid volume, and special tools (including item part numbers).
- rr) The maintenance manual **must** include information on the order of disassembly and assembly of the systems and components of the vehicle.
- ss) The maintenance manual **must** include special tools list as per 4.3.4.

4.1.4 **Manual Delivery to Technical Authority**

- tt) Sample manuals **must** be submitted to the Technical Authority (TA) prior to the delivery of the vehicle/trailer 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.
- uu) 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**

- vv) One (1) complete set of manuals (Operator's, Maintenance, and Parts) **must** accompany each vehicle, shipped to each location.
- ww) The manuals **must** be in paper and electronic format.

4.1.6 **Electronic Format**

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

4.1.7 **Provisional Manuals**

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

4.1.8 **Manual Supplements**

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

4.1.9 **Translation and Reproduction Rights**

- ddd) 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**

- eee) 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.
- fff) Changes to the manuals **must** conform to the same format and presentation requirements as the original manuals.
- ggg) The revised electronic version of the manual **must** be sent to the Technical Authority by the Contractor.

4.2 **Warranty Letter**

- hhh) 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.
- iii) 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).
- jjj) The warranty letter **must** include warranty period as negotiated in the contract.
- kkk) The warranty letter **must** include Contractor contact information, name and phone number, for warranty support.

4.2.1 **Warranty Letter Delivery**

- lll) 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****Data Summary**

The Contractor **must** provide a bilingual Data Summary of the vehicle by completing Technical Authority's template with data and a vehicle picture.

4.3.2 **Photographs**

The Contractor **must** provide photographs in colour, taken against a plain background, and in digital JPEG format with a minimum 10 megapixel resolution.

- ooo) One left front three-quarter view of a completed unit **must** be provided.
- ppp) One right rear three-quarter view of a completed unit **must** be provided.

4.3.3 **Dimensioned Drawing** 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 and include:

rrr) Item name;

sss) Contractor's part number;

ttt) Manufacturer's part number (OEM);

uuu) Quantity recommended per delivery location;

vvv) Unit price; and

www) Unit of issue.

4.3.5 **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:

xxx) Item name;

yyy) Contractor's part number;

zzz) Manufacturer's part number (OEM);

aaaa) Manufacturer's NATO Supply code (NCAGE) or name and address;

bbbb) NSN (NATO Stock Number) (if known);

cccc) Quantity per equipment;

dddd) Quantity recommended;

eeee) Unit price; and

ffff) Unit of issue.

4.4 **Safety Recalls and Servicing Data** Safety recalls, and manufacturer's technical service bulletins, or equivalent **must** be provided to the technical authority and the final delivery locations on a continuing basis, throughout the life expectancy of the vehicle or for no less than 10 years.

4.5 **Familiarization Training**

a) The Contractor **must** perform at least 1-day (8 hours) familiarization instruction at each destination, for a maximum of 8 personnel (at each destination).

b) The instruction **must** include the detailed operation and normal servicing of the vehicle/equipment and will be attended by CAF operators and maintainers.

- c) Familiarization instructions **must** be available in both official languages for destinations in the province of Quebec or as requested by the Technical Authority.
- d) The final dates **must** be arranged with the Technical Authority.
- e) After completion of the familiarization session, the Contractor **must** have a **“PROOF OF FAMILIARIZATION INSTRUCTION”** certificate signed by the consignee. The Technical Authority will supply this document in an electronic format, when requested.