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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
Industrial Vehicles & Machinery Products Division
11 Laurier St./11, rue Laurier
7B1, Place du Portage, Phase III
Gatineau
Québec
K1A 0S5

Title - Sujet Boom Type, Rough Terrain, Fork Lift	
Solicitation No. - N° de l'invitation W8476-144678/A	Amendment No. - N° modif. 002
Client Reference No. - N° de référence du client W8476-144678	Date 2013-09-30
GETS Reference No. - N° de référence de SEAG PW-\$\$HS-597-63388	
File No. - N° de dossier hs597.W8476-144678	CCC No./N° CCC - FMS No./N° VME
Solicitation Closes - L'invitation prend fin at - à 02:00 PM on - le 2013-10-08	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: Bourassa, Chantal	Buyer Id - Id de l'acheteur hs597
Telephone No. - N° de téléphone (819) 956-6763 ()	FAX No. - N° de FAX (819) 956-5227
Destination - of Goods, Services, and Construction: Destination - des biens, services et construction:	

Instructions: See Herein

Instructions: Voir aux présentes

Delivery Required - Livraison exigée	Delivery Offered - Livraison proposée
Vendor/Firm Name and Address Raison sociale et adresse du fournisseur/de l'entrepreneur	
Telephone No. - N° de téléphone Facsimile No. - N° de télécopieur	
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

This amendment is raised to provide the following Question and Answer and to replace the Purchase Description dated 13 September 2013 by Purchase Description dated 30 September 2013 attached:

1) Questions and Answers:

Question 1:

"Could you ask your client if 6.10 meter will be ok instead of 5.5 meter".

Answer 1:

Yes - an overall vehicle length of 6.10 meter will be acceptable, but the overall height of the vehicle will be amended to 102 inches.

Question 2:

3.19 Military Green Coating System

You are asking for all interior and exterior metal surfaces of the vehicle and its installed equipment shall be painted IAW NATO STANAG 4360 or with standard CARC painting specifications, excluding unmodified GSM and components, tires, glass surfaces, wiring and nameplates, decals and soft material.

Why do we have to paint inside the cab as most of the interior of the cab is soft material? We supplied DND with CARC painted equipment, several years ago and we were advised we could leave all black parts, black!

Answer. 2:

This is what required by the user for this equipment.

Question 3:

What is the reason to paint the motor and inside the motor compartment? The unit is supplied with a standard, factory supplied, diesel engine. Painting over the factory paint could plug vents or electrical connectors and the extra paint thickness could cause the engine to operate hotter than is specified for a standard factory engine. The engine compartment is covered and the engine is not visible unless the cover is removed. If the exhaust system (exhaust pipe, muffler, tail pipe) is mounted outside the engine compartment, it would be painted CARC?

Answer. 3:

The motor does not need to be CARC painted except interior/exterior metal surfaces of the motor compartment. The exhaust system does not need to be CARC painted.

Section 3.19(g) of page 19 of the Purchase Description will be removed and section 3.8.1(d) will be added at page 15.

Question 4:

What do you classify as "soft material"?

Answer 4:

Soft material is meant for any non-metallic components such as fibres or rubber.

Question 5:

In 3.5.1 Application Equipment in (p) you ask for Non-Skid Walking Surface (All walking surfaces covered with a course non-skid coating for operator safety). Is this coating to be applied on top of or under the CARC paint?

Answer. 5:

This coating is to be applied on top of the CARC paint.

Question 6:

Can you describe what is classified as GSM? (Government Supplied Material)"

Answer 6:

According to Procurement Administration Manual (PAM), July 2013 definition, "Government Supplied Materiel is DND-owned materiel supplied to a contractor to incorporate into equipment which will be delivered to DND under the contract. GSM is not loaned because it will not be returned as a standalone item

- 2) Delete the Purchase Description dated 13 September 2013 in its entirety:

Insert Purchase Description dated 30 September 2013.

The amendment to the Purchase Description is raised to:

Sections 3.4.3(a) & (b) of page 10 of the Purchase Description will be amended as follows:

"3.4.3 (a) A length of no more than 6,100 mm (240 inches) excluding forks/or with forks folded;

3.4.3 (b) An overall vehicle height of no more than 2,590 mm (102 inches);"

Section 3.5.1 j (iii), (iv), (v) & (vi) of page 12 of the Purchase Description will also be amended as follows:

"3.5.1(j) Air Transportability (C-130) - Vehicle shall be capable of being transported to theatre by a C-130 cargo aircraft. The equipment shall:

-
- iii Have a maximum height of vehicle stripped for Air Transportation of no more than 2,590 mm (102 inches);
 - iv Have a maximum length of vehicle stripped for Air Transportation of no more than 11,000 mm long (468 inches);
 - v Have a maximum width of vehicle stripped for Air Transportation of no more than 2,667 mm (105 inches);
 - vi Have a maximum width over exterior of tires of no more than 2,615 mm (103 inches), with the tire at normally specified pressures;"

ALL OTHER TERMS AND CONDITIONS REMAIN UNCHANGED.



The Canadian Forces Material Handling Equipment
PURCHASE DESCRIPTION (PD) FOR ROUGH TERRAIN, AIR
TRANSPORTABLE, MILITARY PATTERN, DIESEL ENGINE DRIVEN,
BOOM TYPE MATERIAL HANDLER FORKLIFT TRUCK

30 September 2013

OPI: DSVPM 4/DAPVS 4
National Defence Headquarters
Major General George R. Pearkes Building
Ottawa, Ontario
K1A 0K2

Issued on Authority of the Chief of the Defence Staff
Publiée avec l'autorisation du Chef d'état-major de la Défense

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APPENDIX A: Integrated Logistic Support (ILS) Requirements

1. SCOPE

1.1 **Scope** - This purchase description covers the requirements for a military pattern, rough terrain, diesel engine driven extensible boom type material handler forklift truck.

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

- (a) Requirements, which are identified by the word "**shall**", are mandatory. Deviations will not be permitted;
- (b) Requirements identified by "**shall**^(B)" are mandatory. The Technical Authority will consider substitutes/alternatives for acceptance as an Equivalent;
- (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 "**shall**", "**shall**^(B)", or "will" are not used, the information provided is for guidance only;
- (e) In this document "provided" **shall** mean "provided and installed";
- (f) Where technical certification is required, a copy of the certification or an acceptable proof of compliance **shall** be provided upon request;
- (g) Metric measurements **shall** be used to define the requirement. Other measurements are for reference only and may not be exact conversions; and
- (h) Dimensions stated as nominal **shall** be treated as approximate dimensions. Nominal dimensions reflect a method by which materials or products are generally identified for sale commercially, but which differ from the actual 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" - A standard, means, or component type, which has been accepted by the Technical Authority as meeting the specified requirements for form, fit, function and performance;
- (c) "Proof of Compliance" - "Proof of Compliance" is defined as an unaltered document, such as a brochure and/or technical literature and/or a third party test report provided by a nationally and/or internationally recognized testing facility and/or a report generated by

a nationally and/or internationally recognized third party software. The document shall provide detailed information on each performance requirement and/or specification. Where a document submitted as Proof of Compliance does not cover all the performance requirements and/or specifications or when no such document is available or when modifications to the original equipment or customization are required to achieve the performance requirements and/or specifications, a Certificate of Attestation (as a separate document) signed by a senior engineer representing the Original Equipment Manufacturer (OEM) detailing the modifications and how they meet the performance requirements and/or specifications shall be provided. The certificate shall detail all performance requirements and/or specifications required to substantiate compliance. One certificate can be provided for one or all performance requirements and/or specifications; and

- (d) "Quality Assurance Representative" - The Government agent responsible for ensuring that material and services supplied by the contractor conform to the specified requirements.

1.4 **Requirements Summary Table** - Vehicles covered by this Purchase Description are represented as configurations. The following table shows required performance and dimensions by configuration with a clause reference.

CHARACTERISTIC	CLAUSE	UNITS	CONFIGURATION	
			A	B
RATED LOAD CAPACITY @ 24" LOAD CENTRE	3.4.2(a)	kg	4,082	
		lb	9,000	
LIFT HEIGHT WITH RATED LOAD CAPACITY	3.4.2(a)	mm	4,500	
		In	177	
LOAD CAPCITY WITH PARTIAL BOOM EXTENSION	3.4.2(b)	kg	2,041	
		lb	4,500	
BOOM FORWARD REACH	3.4.2(c)	mm	6,096	
		in	240	
LOAD CAPACITY AT FORWARD REACH	3.4.2(d)	kg	1,000	
		lb	2,204	
LIFHT HEIGHT AT FORWARD REACH	3.4.2(e)	mm	9,753	
		in	384	
OVERALL HEIGHT	3.4.3(b)	mm	2,692	
		in	106	

SIDE SHIFTER	3.5.1(d)	mm	102	
		in	4	
SUSPENSION SEAT	3.6(b)	-	✓	
AIR CONDITIONER	3.6(d)	-	✓	
FUEL CAPACITY	3.8.2(a)	hour	8	
COLD WEATHER AID	3.8.3	-	✓	
MILITARY GREEN PAINTING	3.19	-	✓	
OPERATOR'S TRAINING	A.7	-	✓	
MAINTENANCE PERSONNEL TRAINING	A.8	-	✓	
PROVISIONING DOCUMENTATION	A.9	-	✓	

2. APPLICABLE DOCUMENTS

2.1 Government Furnished Documents - NOT APPLICABLE

2.2 Other Publications - The following documents form part of this Purchase Description. Web sites for the organization are given when available. Effective documents are those in effect on date of manufacture. Sources are as shown:

SAE Handbook

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

Yearbook

Tire and Rim Association Inc.
3200 West Market St.,
Akron, Ohio, 44321
<http://www.us-tra.org/traHome.htm>

C-01-100-100/AG-005 Acceptance of Commercial & Foreign Government Publications as Adopted Publications

C-04-007-005/AG-000 Military Guide for Selection of Lubricants, Power Transmission Fluids and Corrosion Preventatives for use in Land Equipment Systems

D-01-100-214/SF-000 Preparation of Provisioning Documentation

D-01-100-200/SF-015	Preparation of Data Summaries for Standard Military Pattern Vehicles and Equipment
CAN\CGSB Standard 3.24-2012	Aviation Turbine Fuel (Military Grade F-34)
Fed-Std-595B	Colors Used in Government Procurement
Mil-DTL-64159 type II	Waterborne Polyurethane CARC
TTC-C-490, Type III	Cleaning Method of Ferrous Surfaces and Pretreatment for Organic Coatings
MIL-DTL-64159, Type II	CARC Topcoat
MIL-PRF-22750 (latest)	Epoxy Topcoat
STANAG 1135 (latest)	Inter-changeability of Fuels, Lubricants and Associated Products used by the Armed Forces of the North Atlantic Treaty Nations

3. REQUIREMENTS

3.1 Standard Design - The vehicle/equipment **shall**:

- (a) Be the manufacturer's latest model having demonstrated industry acceptability by having been manufactured and sold commercially for at least 1 year or **shall** be manufactured by a company that has at least 5 years experience in manufacturing equipment to the same standards/regulations;
- (b) Be subject to demonstrations and testing, to demonstrate the vehicle and vehicle system's capability to satisfy performance requirements as detailed in paragraph 5.2;
- (c) Have engineering certification available, upon demand, for this application from the original manufacturers of major equipment systems and assemblies;
- (d) 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; and
- (e) Have system and component capacities not greater than their published ratings (i.e. product or component brochures) or accompanied by proof of compliance.

3.2 Operating Conditions

3.2.1 **Weather** - The vehicle/equipment **shall** operate under the extremes of weather conditions found in Canada and around the world in temperatures ranging from -40 to 49° C (-40 to 120° F).

3.2.2 **Terrain** - The forklift **shall** be capable of being operated on use-roughened concrete floors and deteriorated outdoor uneven paved surfaces while being used stacking, un-stacking and moving general supplies in and around warehouses. The vehicle **shall** be capable of being operated off-road (e.g. construction sites, open fields, ditch with water, holes, and dirt tracks, military training areas). Terrain conditions **shall** include year round operations on snow, mud, sand and ice.

3.3 **Safety Standards**

3.3.1 **Noise Level** - The vehicle/equipment noise levels **shall** meet the requirements of legislation relative to Occupational Safety and Health both at the operator's station and exterior to the vehicle.

3.3.2 **Stability** - Vehicle stability **shall**^(E) be in accordance with CSA B335.

3.3.3 **Maintainability** - All maintenance and repair tasks **shall** be easy to perform with a minimum of special tools. A 95th percentile male or 5th percentile female **shall** be able to easily access, as a minimum, all wires, brake lines and lighting components for removal/repair. No access panel **shall** be permanently attached (i.e. no riveted plates).

3.3.4 **Human Engineering and Safety** - The vehicle/equipment, all systems and components **shall**:

- (a) Be designed for easy performance of all maintenance and repair tasks with a minimum of special tools. A 95th percentile male or 5th percentile female **shall** be able to easily access all engine components, wires, drive train heating/cooling system, brake lines, electrical and hydraulic components for preventive maintenance, removal and repair tasks. No access panel **shall** be permanently attached (i.e. no riveted plates);
- (b) Be safe and easy to use by a 95th percentile male or 5th percentile female under all operating conditions;
- (c) Have all entry and exit points equipped with handles and steps suitably positioned, to accommodate a 95th percentile male or a 5th percentile female under all operating conditions; and

-
- (d) Be equipped, where required for operator safety, with safety features such as warning and instruction plates, non-slip walking surfaces and heat shields.
- 3.3.5 **"DS" Safety Rating** - The vehicle **shall**^(E) have certification to Type "DS" requirements of UL 558 before delivery. The vehicle **shall**^(E) have a UL Type "DS" label permanently attached.
- 3.4 **Performance** - Performance **shall** be substantiated with the Proof of Compliance.
- 3.4.1 **Vehicle Performance** - The vehicle **shall**:
- (a) Attain a forward speed of 30 km/h (18 mph) on level ground and 10 km/h (6.2 mph) on rough terrain in an unladen condition;
 - (b) Ascend a 35 per cent grade at a forward speed of no less than 2.4 km/h (1.5 mph) with maximum rated load;
 - (c) Traverse a 10 per cent slope at a forward speed of no less than 2.4 km/h (1.5 mph) with maximum rated load;
 - (d) Traverse a 20 per cent slope at a forward speed of no less than 2.4 km/h (1.5 mph) carrying no load;
 - (e) Negotiate 150 mm (6 inches) of deep mud or incompact snow; and
 - (f) Negotiate a 30 % side slope with full load capacity on the retracted forks and the vertical centre of gravity of the load at a height of no more less than 750 mm (30 inches) above ground level.
- 3.4.2 **Forklift Performance** - Performance characteristics and rated capacities at 600 mm (24 inches) load centre **shall** be:
- (a) A rated load capacity of no less than that given as "**LOAD CAPACITY @ 24" LOAD CENTER**" in the Requirements Summary Table with the boom and fork carriage extended to 1,200 mm (48 inches) and the forks 1,200 mm (48 inches) off the ground. The forks **shall** be able to lift this load from the level position to a height of at least that given as "**LIFT HEIGHT WITH RATED LOAD CAPACITY**" without retracting the boom;
 - (b) A load capacity of no less than that given as "**LOAD CAPACITY WITH PARTIAL BOOM EXTENSION**" in the Requirements Summary Table with the boom and fork carriage extended to 4,000 mm (158 inches) and the forks 1,219 mm (48 inches) off the ground. The forklift shall be able to lift this
-

load from the level position to a height of 6,706 mm (264 inches) without retracting the boom;

- (c) A forward reach of no less than that given as "**BOOM FORWARD REACH**" in the Requirements Summary Table with the boom and fork carriage extended and the forks at least 1,200 mm (48 inches) off the ground;
- (d) A load capacity of no less than that given as "**LOAD CAPACITY AT FORWARD REACH**" with the boom and fork carriage extended to at least that given as "**BOOM FORWARD REACH**" in the Requirements Summary Table and the forks 1.2 m (48 inches) off the ground. The forks **shall** be able to lift this load from the level position to a full operating height of at least that given as "**LIFT HEIGHT AT FORWARD REACH**" in the Requirements Summary Table without retracting the boom;
- (e) A fork lifting speed fully retracted of at least 23 metres per minute (75 feet per minute) with the maximum rated load; and
- (f) Having forks to deposit it's load at least 600 mm (24 inches) below ground level when fully extended and at least 100 mm (4 inches) below ground level when fully retracted.

3.4.3 **Dimensions** - Dimensions **shall** be substantiated with the Proof of Compliance. The vehicle weight and dimensions **shall** comply with the air transportability requirements and additionally **shall** have:

- (a) A length of no more than 6,100 mm (240 inches) excluding forks/or with forks folded;
- (b) An overall height of no more than 2,590 mm (102 inches);
- (c) An underclearance at the lowest point of no less than 229 mm (9 inches); and
- (d) Approach and departure angles of no less than 25 degrees.

3.5 **Equipment**

3.5.1 **Application Equipment** - Equipment/features below **shall** be provided:

- (a) **Boom** - An extensible hydraulic boom which **shall** provide the lift capacities and heights required to satisfy the performance requirements;
- (b) **Forks** - Manufacturer's standard forks. The nominal length **shall** be 1,066 mm (42 inches). When requested by DND, forks with a nominal length of 1,219 mm (48 inches) **shall**

be provided. The forks **shall** be shipped with Non-Destructive Test (NDT) certification documents;

- (c) **Forks Carriage** - A fork carriage at least 1,300 mm (51 inches) wide with a fork tilt of not less than 10 degrees backwards and forwards, accomplished through carriage tilt.
- (d) **Fork Positioner and Side Shifter** - A hydraulic fork-positioner capable of adjusting forks individually from the cab, to approximately full width of the carriage and a hydraulic side shifting attachment. The side shifter **shall** be capable of side shifting fully laden forks simultaneously, at least that given as "SIDE SHIFT" in the Requirements Summary Table, to either side of the centre. An integrated side shifter with fork positioning is preferred;
- (e) **Fork-Levelling System** - A fork-leveling system. The leveling system **shall** make the forklift capable of entering into and lifting pallets that are on a slope of 15 percent to either side;
- (f) **36-inch Backrest** - A load backrest with a nominal height of 914 mm (36 inches);
- (g) **Boom Angle Indicator** - A boom angle indicator which **shall** be visible to the operator while seated in the operator's seat;
- (h) **Vehicle Tie-Down Devices** - Vehicle tie-down devices. Permanent and integrally vehicle tie-down devices **shall**:
 - i Be designed to withstand stresses imposed by thrust loads (all directions) with a factor of safety of 1.5 with respect to the ultimate strength of the material;
 - ii Be designed for forward thrust of 4 G, a rearward thrust of 4 G, an upward thrust of 2 G and a side thrust of 1.5 G (1 G = shipping weight of the equipment), loads are not imposed simultaneously;
 - iii Be designed/located to prevent shifting or movement during transport on low-bed trailers, rail car and aboard ships;
 - iv Be located to permit easy attachment of cables or turnbuckles;
 - v Be identified and marked with maximum strain permitted. Markings **shall** be painted using a contrasting colour; and
 - vi Include complete tie down instructions showing

locations. This information **shall** be shown in the manual and it is preferred that it is marked in the vehicle cab (in the form of decals).

- (i) **Lifting Attachments** - Lifting attachments. Lifting attachments, to lift the vehicle in travelling/operating position, **shall**:
- i Be capable of carrying not less than 2-1/2 times normal load imposed on each individual attachment (attachments marked with maximum allowable load);
 - ii Have attachments positioned so lifting strain are in line with longitudinal axis of attachment eye;
 - iii Have attachment eyes with inside diameter of not less than 76 mm (3 inches);
 - iv Have complete diagrams and instructions (preferably in operator's manual) for lifting/securing vehicle on transportation medium including the basic vehicle's shipping weight.
- (j) **Air Transportability (C-130)** - Vehicle **shall** be capable of being transported to theatre by a C-130 cargo aircraft. The equipment **shall**:
- i Have complete diagrams and instructions available to the operator for lifting and securing vehicle on transportation medium including the basic vehicle's shipping weight for determination of capacity of lifting and tie-down provisions;
 - ii Have a maximum reduced vehicle weight not exceeding 12,698 kg (28,000 lbs) and a maximum axle weight not exceeding 5,895 kg (13,000 lbs) per axle;
 - iii Have a maximum height of vehicle stripped for Air Transportation of no more than 2,590 mm (102 inches);
 - iv Have a maximum length of vehicle stripped for Air Transportation of no more than 11,000 mm long (468 inches);
 - v Have a maximum width of vehicle stripped for Air Transportation of no more than 2,667 mm (105 inches);
 - vi Have a maximum width over exterior of tires of no more than 2,615 mm (103 inches), with the tire at normally specified pressures;
 - vii Have a ramp break over angle capability of at least 20 degrees;
 - viii Have approach and departure angles of not less than

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- 20 degrees for the laden vehicle;
- ix Be able move onto and off of the C-130 under it's own power, controlled by an on-board operator, after being prepared for Air Transportation;
 - x Require no more than three hours preparation for shipment by air and reassembly at site; and
 - xi Not require any component weighing more than 90 kg (198 lbs) be lifted into position for the reassembly of the vehicle.
- (k) **Rear-Mounted Pintle Hook** - A swivel type pintle hook mounted at the rear of the vehicle. The pintle hook **shall** be mounted no less than 700 mm (28 inches) and no more than 960 mm (38 inches) above ground level. It is preferred that the pintle has the capacity to tow a trailer of at least 75% of the weight of the vehicle. The pintle hook **shall** be capable of accommodating a lunette with an internal diameter of 76 mm (3 inches) and material thickness of 41 mm (1 5/8 inches);
- (l) **Vandal Protection** - Vandal protection including provision (Padlock hasps preferred) for locking engine covers, filler caps and the cab;
- (m) **Recovery Hooks** - Towing hooks, loops, or a component with equivalent capability at the front and rear of the vehicle. Recovery hooks whose location is other than the vehicle chassis **shall** be approved by the Technical Authority;
- (n) **Tool Compartment** - Tool compartment to hold all tools and minor loose equipment required for daily maintenance, which **shall**:
- i Be protected from elements and road splash or be of weatherproof construction with anti-return type drainage; and
 - ii Have compartment cover equipped with a means to be secured using a padlock. The cover **shall** have a weatherproof seal.
- (o) **Filler Caps** - Clearly/permanently identified filler caps by contents, i.e. "HYDRAULIC OIL ONLY" (preferably specific fluid i.e. "SAE 30"); and
- (p) **Non-Skid Walking Surfaces** - All walking surfaces covered with a coarse non-skid coating for operator safety.
- 3.6 **Operator Station** - The operator station **shall** include:
- (a) **Cab** - Fully enclosed pressurized, weatherproof, metal framed, insulated and soundproof cab(s). The cab **shall**:
-

-
- i Have a heater and ventilation and defrosting system capable of keeping windows free from frost and moisture with noise absorbing insulation;
 - ii Have safety glass in windows providing all around visibility. The glass **shall** be tinted. Tinting **shall** not be achieved by applying an adhesive film. Adjustable sun visors **shall** be provided;
 - iii Have safety glass on the roof with wire meshed guard;
 - iv Have electrically power actuated windshield wipers for front and rear windows as well as glass roof with an electrically power operated windshield washer for each wiper. The front windshield wiper **shall** have 2 speeds preferably with an intermittent setting;
 - v Have two doors, or one door and at least one window that may be quickly opened and removed as an operator escape route in an emergency. Emergency exits **shall** be visibly labeled; and
 - vi Have doors which are lockable, preferably equipped with padlock hasps.
- (b) **Suspension Seat** - A full suspension seat in lieu of the standard seat with the same standards with respect to seat belts and adjustments. The seat design **shall** allow operator to operate the vehicle wearing personal protective gears (NSN:8470-21-912-4594) and combat vehicle crewman's helmet(NSN:8470-20-005-7348);
- (c) **Mirrors** - Adjustable rear-view mirrors positioned for safe reverse operation. If exterior mirrors are used, they **shall** be heated with separate dashboard switch. It is preferred that mirrors be a split type with at least 25 percent convex or fully convex; and
- (d) **Air Conditioner** - An air conditioning system conforming to SAE J1503 and SAE J169. Air conditioning units **shall** not use ozone depleting refrigerants such as CFCs (ChloroFluoroCarbons) but preferably use HFCs (Hydro FluoroCarbons).
- 3.7 **Chassis** - The vehicle chassis **shall** be the manufacturers standard for a vehicle of this type and size.
- 3.8 **Engine** - The engine **shall**:
- (a) Be diesel powered; and
 - (b) Be capable of operating on NATO standard single fuel,

defined as F-34 in CAN\CGSB Standard 3.24-2005. No reduction of vehicle/equipment performance below the rated requirements will be accepted. Proof of engine ability to operate on NATO standard single fuel **shall** be provided prior to commencement of production, preferably with the proposal. No change or adjustments to the engine by a technician to change from North American commercial fuels to high sulphur fuels will be accepted.

3.8.1 **Engine Components** - Engine components **shall** include:

- (a) A two stage dry type air cleaning system with a cyclonic pre-cleaner. Filters **shall** have a filter restriction gauge, which is preferably visible from the operator's station;
- (b) A muffler or exhaust system suitably located and/or shielded so that personnel will not contact a heated surface; and
- (c) Weather guards or an effective device to prevent entry of water into intake and exhaust stacks; and
- (d) Paint and painting of engines (including exhaust manifolds, exhaust pipes, mufflers, and other parts subject to high temperatures in excess of 400 °F) shall be in accordance with the applicable engine specification.

3.8.2 **Fuel Tank(s)** - The fuel tank(s) **shall**:

- (a) Have at least the fuel tank capacity for continuous operation of the vehicle for a period of that given as "FUEL CAPACITY" in the Requirements Summary Table. The fuel tank(s) **shall** be at least half full when delivered to the destination; and
- (b) Have a switch for selection of the fuel tank and gauge, if more than one fuel tank is provided. The engine **shall** be able to operate from one fuel tank at a time.

3.8.3 **Engine Cold Weather Aids** - The engine **shall** be equipped with cold weather aids to enable the engine (operating with winter grade fuels/oils) to be started at temperatures down to -40° C. External electrical power for the engine and battery heaters **shall** be provided at a location, accessible without lifting the engine covers, with a single cover-protected plug. It is preferred that the plug includes or is accompanied by a light (preferably LED) indicating when power is being supplied to the 110 Volt components. The following **shall** be included:

- (a) 110-volt engine heater(s) with a capacity as recommended

by the engine manufacturer or conforming to SAE Information Sheet J1310;

- (b) 110-volt battery heater(s) having wattage matched to battery size to prevent battery damage due to overheating. The battery **shall** be housed in an insulated battery box or in a heated cab;
- (c) A water separator/ fuel filter incorporating an electrical heating system to preheat diesel fuel prior to starting;
- (d) An in-line fuel heater. The heater **shall** be thermostatically controlled to prevent fuel temperature from rising above approximately 43°C (110° F). It is preferred that this be a heat exchanger type connected to the cooling system;
- (e) A low temperature starting aid. The engine **shall** have an ether injection system, glow plug or intake air preheat system; and
- (f) **Fuel-Fired Pre-Heater** - A fuel-fired preheat system. The fuel-fired pre-heater **shall** have an output of no less than 31.6 kJ (30,000 BTU). The unit **shall** be complete with an in-cab controller, which includes an automatic timing circuit with a delayed start of no less than 24 hours. The model **shall** be subject to Technical Authority approval. The preferred model is NSN 2990-12-357-4265 (Espar Hydronic D10).

3.9 **Transmission** - The vehicle **shall**^(E) be equipped with the following:

- (a) A power shift or power shuttle transmission (with at least 3 gear ratios forward and reverse), or an infinitely variable forward and reverse hydrostatic, servo-controlled drive incorporating automatic controls to compensate for speed and load; and
- (b) An inching transmission, clutch or other device incorporated in the driveline of the vehicle, to allow precise vehicle control.

3.9.1 **All Wheel Drive System (Driver-Selected)** - An all wheel drive system (driver-selected) **shall** be provided. A full-time all wheel drive system will be accepted as a substitute for a driver-selected all wheel drive system. The all wheel drive system **shall** provide a 4 X 4 capability by delivering power equally to all wheels.

3.10 **Brake System** - The brake system **shall**^(EA) conform to CSA B335.1.

3.10.1 **Service Brakes** - The service brakes **shall**^(E) be hydraulic-

actuated, self-adjusting service brakes.

3.10.2 **Parking Brake** - The parking brake **shall** be capable of holding vehicle with rated load on a 15 per cent gradient in both forward and reverse direction. Internal parking brakes **shall** include a method of brake release for recovery.

3.11 **Steering** - The vehicle steering system **shall**:

- (a) Be hydraulically boosted mechanical or full hydraulic power steering;
- (b) Provide emergency steering conforming to SAE Vehicle Standard J1511 with engine stopped;
- (c) Provide the following steering modes:
 - i Front wheel steer;
 - ii Coordinated steer; and
 - iii Crab type steer.
- (d) Have steering position and mode indicators located in a position readily visible to operator.

3.12 **Wheels, Rims and Tires** - Tires **shall** be of air filled-type. The wheels, tires and rims **shall** have a tread that is suited for off-road rough terrain use for military operation.

3.13 **Controls** - Controls **shall**:

- (a) Be in weather and moisture proof enclosures;
- (b) Have switches and levers with permanent position markings or diagram of operation visible to operator;
- (c) Have self-centering control levers;
- (d) Have a keyless ignition switch with a safety device ensuring that engine can only be started with the transmission in a neutral position; and
- (e) Have an accelerator control positioned for convenient operation.

3.14 **Instruments** - Instruments **shall** be readily visible to the operator. It is preferred that the instrument lamps have a dimming capability. Instruments **shall**:

- (a) Have an ammeter, voltmeter or charging indicator;
- (b) Have an engine temperature indicator;
- (c) If applicable, have a torque converter oil temperature indicator;
- (d) Have an engine oil pressure indicator;
- (e) Have a fuel gauge; and

-
- (f) Have a digital read-out hour-meter, which accurately displays accumulated engine running time up to at least 9,999 hours.

3.15 **Military Electrical System** - The contractor **shall** provide the Technical Authority for approval, a complete vehicle electrical schematic. The schematic **shall** include the Military Electrical System and the Military Lighting System, complete with a list of all components to be used before installation on the vehicle. Bound wiring harnesses for this equipment **shall** be made on a wiring loom, so that the position at each connection is identical for trouble-shooting and repeatability. Wiring harnesses **shall** incorporate waterproof quick connectors and where multiple wires are to be connected at one location this **shall** be done with a single connector. The Military Electrical System **shall** be a 24-volt negative ground system and **shall**:

- (a) Have the manufacturer's standard battery/batteries and alternator;
- (b) Include a 24 Volt single pin slave starting circuit with an electrical connector/receptacle complete with protective cap (NSN 5935-01-097-9974) mounted in an accessible location near starter motor or battery. The socket **shall** be accessible to a person at ground level outside the vehicle. Positive socket **shall** be connected to starter motor/battery terminal and body grounded;
- (c) A readily accessible driver-operated warning horn;
- (d) A back-up alarm system to alert personnel that the vehicle is in back-up mode. The backup alarm **shall** be connected such that it will not operate when the vehicle is in Blackout mode; and
- (e) Include a military master disconnect switch accessible to the personnel at ground level which **shall** disconnect all power to the vehicle's electrical system. The switch **shall** not incorporate a master relay into the system.

3.16 **Military Lighting System** - The Military Lighting System **shall**:

- (a) Include as a minimum all lighting and signals as required in the CMVSS for a vehicle of this type;
- (b) Have blackout circuit and highway lighting circuit connected to military lighting switch (NSN 5930-01-491-9893). The contractor **shall** obtain approval of the circuitry from the Technical Authority. The blackout circuitry is a controlled goods and the contractor **shall** be certified to handle controlled goods;
- (c) Have service lights, interior lights, horn and backup

alarm made inoperable automatically when in blackout mode;

- (d) Have all lights protected with appropriate brush guards. All lights **shall** be easily accessible for removal/replacement using common hand tools. The design **shall** facilitate access to repair blackout light assemblies or replace light bulb without removal of assembly or brush guard from vehicle;
- (e) Have a blackout drive light (NSN 6220-01-496-1925) mounted on left front of vehicle to provide maximum forward visibility under blackout drive conditions. The contractor **shall** obtain approval from the Technical Authority for position of the blackout drive light;
- (f) Have stop-tail light, blackout marker lights, quantity 2, (NSN 6220-01-482-6105) mounted on right and left sides at rear of vehicle, lights **shall** be mounted in a position clearly visible by a following vehicle;
- (g) Have combined service and blackout signal lights and markers, quantity 2, (NSN 6220-01-482-6107) mounted on right and left side at front of vehicle, lights **shall** be mounted in a position clearly visible by an oncoming vehicle;
- (h) Have floodlights that allow forklift operations at night, with sufficient lighting for the operator to see the load and fork tips in all positions. This **shall** include an adjustable floodlight;
- (i) A portable spot light, stowed inside the tool box, with a plug-in connector with at least 10 meters (32 ft-10 inches) of cable; and
- (j) Have all gauges operable from the cab and visible at night even in blackout mode.

3.17 **Hydraulic System** - The hydraulic system **shall** be the manufacturer's standard complete with all components required for the operation of the hydraulic equipment specified. Post-nitriding oxidation treatment for hydraulic cylinder rods is preferred.

3.18 **Lubricants and Hydraulic Fluids** - The vehicle **shall** be serviced with military acceptable lubricants and hydraulic fluids approved IAW Annex C to STANAG 1135 or C-04-007-005/AG-000.

3.19 **Military Green Coating System** - Military green coating system **shall** be provided. All interior and exterior metal surfaces of the vehicle and its installed equipment shall be painted IAW NATO STANAG 4360 (Latest Edition) or with the standard

Chemical Agent Resistant Coating (CARC) painting specifications, excluding unmodified Government Supplied Materiel (GSM) material and components, tires, glass surfaces, wiring and nameplates, decals, and soft materials.

The primer, topcoat, preparations and application **shall** comply with the following:

- (a) **Approval** - The equipment manufacturer **shall** submit the coating application plan to the Technical Authority for approval. The Technical Authority approval **shall** be received prior to commencement of coating application;
- (b) **Materials and Process** - Products used shall be from the applicable qualified products list and shall be applied as per manufacturers' instructions in order to meet Mil-DTL-53072 (latest edition);
- (c) **Cleaning** - Prior to any treatment or application of any coating, all surfaces shall be free of soil impurities or corrosion such as grease, oil, welding flux, or other foreign matter that may interfere with treatment or coating;
- (d) **Surface Treatment** - Organic pre-treatment coating for metal components shall be in accordance with TT-C-490 type III (DOD-P-15328);
- (e) **Primer** - The epoxy primer coating shall be in accordance with Mil-P-53022 (latest edition) type II;
- (f) **Topcoat** - Topcoat shall be one of the following:
 - A polyurethane topcoat in accordance with Mil-DTL-64159 type II (latest edition), colour 34094 (flat green) IAW Fed-Std-595B;
 - An epoxy topcoat in accordance with Mil-PRF-22750 (latest edition), colour 17925 (gloss white) IAW Fed-Std-595B for interior surfaces of vehicles;
- (g) **Sealing** - Crevices and gaps between non-welded and stagger welded components that could hasten corrosion **shall** be sealed using a silicone-type sealant compatible with the topcoat selected. This **shall** be applied after assembly, and **shall** be painted;
- (h) **Lettering and Symbols** - Lettering and symbols on the outside of the vehicle **shall** be flat black using paint or coating compatible with the topcoat selected. The colour **shall**^(E) be flat black 37030 in accordance with FED Std 595;
- (i) **Inspection** - The Technical Authority and Quality Assurance Representative may verify the application of the coating system in accordance with MIL standards

referenced in this document and the Coating Application Plan. Test samples **shall** be made available to DND, on request; and

- 3.19.1 **CARC Records** - Chemical Agent Resistant Coating is a controlled good until applied and cured or pot life expired. Access to controlled goods is subject to the Defence Production Act and the contractor shall be certified to handle controlled goods. The Technical Authority is required to maintain records of CARC used on vehicles. To facilitate this, the Contractor **shall** provide the Technical Authority with form(s) describing the processes used for surface preparation, the priming coat(s) applied and the topcoat(s) applied. The form(s) **shall** include manufacturer, product code(s) and batch number of products used, and also vehicle VIN numbers with dates of application. The form to provide this information will be supplied with the bid or will be available from the Technical Authority.
- 3.20 **Identification** - The following information **shall** be permanently marked in a conspicuous and protected location:
- (a) Manufacturer's name, model and serial number; and
 - (b) Manufacturer's Vehicle Identification Number (VIN), where applicable.
4. **INTEGRATED LOGISTIC SUPPORT (ILS)** - The Contractor is required to ensure that spare parts required to properly maintain and repair vehicles are available for purchase for a period of 15 years. The Contractor **shall** provide ILS documentation and services in accordance with **Appendix A - Integrated Logistic Support (ILS) Requirements** to this Purchase Description.
5. **QUALITY ASSURANCE**
- 5.1 **Quality System Requirements**- The Contractor's Quality System **shall** be in compliance with Quality Assurance Clause found in the Contract. The contractor **shall** be responsible for the Quality System. The Quality Assurance Representative (QAR) will assure that the contractor is providing a Quality System.
- 5.2 **Performance and Verification Testing**- The first system **shall** be examined and performance tested by the contractor, to ensure item by item conformance to specified requirements. The QAR and/or the Technical Authority may witness this testing and operate the system sufficiently to assess the handling characteristics.
6. **VEHICLE DELIVERY CONDITION** - The vehicle **shall** be delivered to destination in a fully operational condition (serviced and adjusted) and both the interior and exterior **shall** be cleaned.

If the vehicle requires assembly at destination, the Contractor **shall** be responsible for all manpower and equipment to perform assembly. The consignee will provide the area required for assembly. For shipment verification, all items such as wheel wrenches, jacks, and all other tools, equipment and accessories, which are shipped loose with the equipment, **shall** be listed on the shipping certificate or to an attached packing note.

APPENDIX A: INTEGRATED LOGISTIC SUPPORT (ILS) **REQUIREMENTS**

A.1 TECHNICAL MANUALS

1. All technical manuals required for the description, operation, maintenance and repair of the complete equipment, including sub-systems, **shall** be provided. As a minimum, the manuals **shall** consist of a Bilingual Operator's manual, and bilingual Maintenance manual and an English Parts manual. Bilingual Parts manuals are desirable. The content of the manuals **shall** be in accordance with Section 2 of C-01-100/AG-005 Acceptance of Commercial and Foreign Government Publications as Adopted Publications.
2. The contractor **shall** submit sample manuals to the Technical Authority (TA) for each equipment model for approval as describe in Section 2 of C-01-100/AG-005 Acceptance of Commercial and Foreign Government Publications as Adopted Publications, not later than 30 days after acceptance of the first production article.

National Défense Headquarters
LSTL Building
Mgen George R.Parkes Building
Ottawa, On, K1A 0K2
Attention: DSVPM 4-11-1

3. Manuals **shall** be delivered as follows:
 - (a) One complete Operator's manual with each vehicle or equipment (paper format);
 - (b) One complete set of Technical Manuals **shall** accompany the first vehicle or equipment shipped to each units (both paper and electronic format);
 - (c) One complete set of Technical Manuals, electronic and paper format **shall** be shipped to the Technical Authority no later than 30 days after acceptance of the manuals.
4. In the event that approved manuals are not available for the delivery of the equipment, manuals marked "Provisional" **shall** be supplied with the equipment. The contractor **shall** deliver replacement approved manuals to all destinations where Provisional manuals were delivered.

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5. The Canadian Government reserves the right to translate and reproduce, for Government use only, all or any part of the publications supplied, including the training packages, against the contract agreement As describe in Part 1 Para 8 and Para 9 of C-01-100/AG-005 Acceptance of Commercial and Foreign Government Publications as Adopted Publications.
 6. The contractor shall supply supplements to manuals to support dealer-installed equipment not covered in approved technical manuals. These supplements shall require separate DND approval. These supplements shall be provided to each destination in the same quantities and format as the approved Technical Manuals.
 7. Changes to Technical Manuals:
 - (a) During the period of the Contract, changes to equipment, which affect the contents of technical manuals, shall be conveyed to DND by revising the electronic and paper version of the technical manuals.
 - (b) Changes to the technical manual shall conform to the same format and presentation requirements as the original technical manuals.
 - (c) The revised electronic version of the manual shall be sent to the Technical Authority by the Contractor.
 7. Approved copy of the electronic format manuals shall be delivered on CD/DVD-ROM as per Para 3. CD/DVD-ROM shall not require installation, password and/or Internet connection to be accessed and shall be in unlocked PDF searchable format.

A.2 DATA SUMMARY

1. The contractor shall provide a bilingual DND equipment Data Summary for each make/model/ configuration as describe in D-01-100-200/SF-015. A representative sample template of the Data Summary, Equipment Configuration Code (ECC) and the publication number will be provided to the Contractor by the Technical Authority.
 - (a) The Data Summary shall provide details of all attachments and options.
 - (b) The Contractor shall submit a draft of the Data Summary to the Technical Authority for approval in electronic format (MS Word).

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- (c) Within 30 days of the Data Summary approval, the contractor **shall** provide to the Technical Authority one (1) copy in electronic format (MS Word).

A.3 WARNING SIGN AND IDENTIFICATION LABEL

1. The contractor **shall** ensure that equipment is delivered with bilingual warning signs and identification labels. Bilingual labels and signs **shall** also be represented in the parts manual.

A.4 WARRANTY LETTER

1. The contractor **shall** provide a bilingual Warranty Letter with each vehicle delivered in the approved DND format and include the following details:
- (a) A list of all Canadian designated warranty service providers that will honor the warranty for the equipment and attachments (if applicable) procured under this contract. Including the person to contact and phone number for each warranty service provider.
 - (b) Details of all additional warranty coverage of sub-systems and a copy of the warranty letter from each sub-system's OEM.
 - (c) Details of the warranty period as negotiated in the contract.
 - (d) Contractor contact information, name and phone number, for warranty support.
2. The DND TA will provide the contractor a template for the DND acceptable format of the warranty letter. The Contractor **shall** send a copy of the Warranty Letter, in electronic format, to the Technical Authority for each vehicle, at shipment.

A.5 PHOTOGRAPHS

1. Photographs **shall** be submitted to the DND TA in electronic format.
2. Within 15 days of delivery of the first vehicle or equipment of each make/model/ configuration, the contractor **shall** supply colour photographs, taken against a plain background, in digital Joint Photographic Experts Group (JPEG) format with a minimum 10 megapixel resolution of the following:
- (a) Left front three-quarter views of a completed unit;
 - (b) Right rear three-quarter views of a completed unit, and;

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- (c) Side and front view sketch showing dimensions. Brochure sketches are acceptable.

A.6 SPECIAL TOOLS LIST

1. The contractor will be required to prepare an itemized list of all special tools required for the servicing and repair of the vehicle or equipment. The list **shall** include the following information:
 - (a) Item name;
 - (b) Contractor's part number;
 - (c) Manufacturer's part number (OEM);
 - (d) Original manufacturer's NATO Supply code (NCAGE);
 - (f) NSN (NATO Stock Number) (if known);
 - (g) Quantity recommended per delivery location;
 - (h) Unit price; and
 - (i) Unit of issue.
2. These tools **shall** also be listed in the Maintenance manual as describe in Section 2 Para 4 of C-01-100/AG-005 Acceptance of Commercial and Foreign Government Publications as Adopted Publications.

A.7 OPERATOR'S TRAINING

1. The Contractor **shall** provide an operator training dealing with specific features and capabilities of the equipment. Operator will learn the operator servicing procedures, operate the features of the vehicle safely and efficiently and a minimum of one (1) hours practical operating training per operator. The training should be a minimum of eight (8) hours of operator training for a maximum of six (6) persons at a customer location. Training **shall** be available in both official languages for destinations in the province of Quebec and when requested by DND. Training dates **shall** be coordinated with the TA.
2. The contractor **shall** provide a copy of the training package to DND TA for approval at least 30 days before training begins.
3. The contractor **shall** have the "PROOF OF OPERATOR TRAINING" certificate signed by a Crown Representative at training location and return to the DND TA. The DND Technical Authority will supply this document in an electronic format.

A.8 MAINTENANCE PERSONNEL TRAINING

1. The Contractor shall provide maintenance personnel training with an in-depth knowledge so that repairs can be made quickly and efficiently dealing with specific features and capabilities of the equipment. Training shall include safety precautions, trouble shooting, test and adjustment and special tools and test equipment. Technicians will also learn the minimum operation and features of the vehicle to be able to maintain safely and efficiently. The maintenance training should be a minimum of two (2) days of training for a maximum of six (6) persons at one of DND locations where the equipment(s) would be delivered. Training shall be available in both official languages for destinations in the province of Quebec and when requested by DND. Training dates shall be coordinated with the TA and the course curriculum shall include:
2. The contractor shall provide a copy of the training package to the DND TA for approval at least 30 days before training begins.
3. The contractor shall have the "PROOF OF MAINTENANCE TRAINING" certificate signed by a Crown Representative at training location and return to the DND TA. The DND Technical Authority will supply this document in an electronic format.

A.9 PROVISIONING DOCUMENTATION

1. The Contractor shall provide the following provisioning documentation (PD) as describe in D-01-100-214/SF-000;
 - (a) Provisioning Parts Breakdown (PPB) as describe at Para 3.1.1 of D-01-100-214/SF-000;
 - (b) Supplementary provisioning technical documentation (SPTD) as describe at Para 3.8 of D-01-100-214/SF-000;
 - (c) The PPB and SPTD shall be provided to the DND Technical Authority (TA) for review. PPB and SPTD shall be in accordance with the maintenance concept below; and
 - (d) An Initial Provisioning conference (IPC) will be held at the contractor location at least 30 days after PPB and SPTD has been accepted by the TA.

A.10 MAINTENANCE CONCEPT

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1. The Maintenance Concept is the most important element of the support concept for equipment. It is imperative that the Contractor understand the maintenance concept in order to produce and deliver professional and accurate ILS deliverables.
 2. The maintenance concept for the equipment procured under this contract is based on two different levels of repairs. Based on the definition of levels or repairs below, the Contractor **shall** define the appropriate level of repairs for each maintenance task in order to facilitate DND technicians to carry out the full range of preventive and first and second level corrective maintenance tasks at Canadian Forces Tactical, Operational and Strategic Maintenance Units.
 3. In absence of maintenance tasks analysis report, the Contractor **shall** use its experience and knowledge to properly define the appropriate level of repairs. In the case where the Contractor is not the OEM, the Contractor **shall** ensure obtaining and providing DND with all information required to properly define level of repairs.

A.11 LEVEL OF REPAIRS DEFINITIONS

- (a) **Level one:** Level one includes Operator and Technician maintenance which principally includes preventive maintenance, inspection, servicing, preliminary diagnosis of faults, and corrective maintenance. Level One Repairs are considered tasks of a minor nature. The term "minor nature" infers short duration (less than four hours) and relatively simple repairs.
- (b) **Level Two:** Level two includes principally corrective maintenance carried out by the replacement of major assemblies. The duration of tasks is usually limited to 24 hours.