

Scope of Work of purchasing Firefighting Truck for PS2

I. Introduction

Petrolines for Crude Oil Co. Ltd. (PETCO), a Sudanese crude oil pipeline operator, have 28 inch-1506 km pipeline transporting crude oil with six pump stations and marine terminal on the Red Sea.

PETCO plan to add a new Mercedes fire truck to its asset, a unit that designed for continuous use with all water and foam compound qualities, Capable to work off-roads in a tough environment (sandy, high temperature and humidity).

II. Main scope:

- A. Supply of firefighting truck with required Specifications.
- B. Supply of 2 Years consumed Spare parts.
- C. Onsite Training (Sudan).

A. Specification of firefighting truck.

General fire Truck unit specification:

- Chassis: Mercedes Benz brand new , manufacturing year 2020 or later.
- Water Tank : At least 10,000 L. Made of Polypropylene
- Foam Tanks: 2,000 L one tank. Made of Polypropylene
- Water / Foam Monitor Throw range: up to 80 m at output 6,000 l/min. at 10 bars
- Centrifugal Fire Pump : Chinetti, Rosenbauer
- Capable of operating in an ambient temperature range of 10 to +50 Deg C.
- Color And Finishing : Red with PETCO logo at both sides
- Truck Standard language for labels and documentation is English language.
- Working in tough environment (sandy, humidity, rainy....)
- Capable to Work off road with maximum ground clearance.
- Engine equipped to work effectively with Sudan diesel fuel specifications as attached.
- To include complete set of Standard and special Tools.
- Unit cabin Equipped with air condition system
- Engine Euro emissions standard to be selected based on attached Sudan fuel spec.

1. CHASSIS	
Make:	Mercedes Benz brand new manufacturing year 2020 or later.
Drive:	6x4
GVWR:	Not more than 35 tons
Height:	Highest point Not more than 4.2 m (as per Sudanese standards)
Width:	Not more than 2.6 m (excluding mirrors)
Steering:	Hydraulic type, left-hand drive (driver seat on the left side)
Engine:	At least 400 HP, (Euro class to be as for Sudan fuel spec. attached)
Gearbox:	Automatic gearbox Telligent
Brakes:	dual- circuit, anti-lock (ABS) brake system
Wheels:	315/80 R22.5, One spare wheel (max applicable ground clearance is required)
Fuel tank capacity:	Min. 300 litres
Electric system:	24 Volt
Cabin:	Two (2) door type with electrically operated windows
Seating:	One (1) driver + two (2) co-drivers

2. SUPERSTRUCTURE	
General design:	Self-supporting aluminium construction made of high-quality aluminium sheet material
Storage lockers:	3 lockers (2 on the left side and 1 on the right side), closed by roller shutters
Equipment brackets:	Quick release type
Shutters:	<ul style="list-style-type: none"> - Dust and water proof light-alloy roller shutters with bar lock mechanism. - A dual-skinned design is mandatory. <p>The profiles are to be low on noise, and smooth running. Automatic immediate illumination of the respective locker when opened.</p>
Working deck:	<ul style="list-style-type: none"> - Roof to be slip resistant
Access:	<ul style="list-style-type: none"> - 3 aluminium ladders 1 on the rear right side, 2 in the front of superstructure. - Hand grips where necessary.
Pump compartment:	<ul style="list-style-type: none"> - Closed by means of top hinged door

3. CENTRIFUGAL FIRE PUMP	
Type:	Centrifugal pump
Make:	Chinetti, Rosenbauer
Housing and Impeller Material:	corrosion-resistant lightweight metal or gunmetal.
Shaft Material :	Stainless Steel
Design:	<ul style="list-style-type: none"> – Meets EN 1028 or NFPA standards – Normal, high pressure and simultaneous operation type – Built-in high pressure relief valve
Performance :	<ul style="list-style-type: none"> – 5,500 l/min at 10 bar – 400 l/min at 40 bar
Operating condition:	from 10 ° to +50° C ambient temperature
Range of fluid temperature:	from +4° to +60° C
Pump control panel:	Rear pump compartment and electronic pressure governor with display
Gauges:	<ul style="list-style-type: none"> – Pressure manometers – Water and foam tank level gauge – Operation hour meter
High pressure outlets(HP):	– Ball valves
Manual lever for:	<ul style="list-style-type: none"> – Water and foam tank suction valve – Tank filling via pump – Around the pump admixing ratio pre-adjustment – Hose reel valve
Drive:	Propeller shaft by vehicle's engine PTO
Piping:	Material with high corrosion resistance for foam and water

4. Priming Device:	
Casing:	Light alloy
Operation method:	Reciprocating, double acting piston priming pump with hand lever to engage / disengage the priming pump
Control :	Automatically controlled
Lubrication :	Oil

5. Proportioning system:	
Foam proportioner:	Around the pump foam proportioner with electronically adjustable admixing rates of 3 % and 6 % for normal pressure and 3% high pressure admixing without effecting normal pressure side
Material	Light alloy or bronze

6. Compressed air foam system (CAFS)	
CAFS capacity :	Compressed air foam capacity not less than 6,400 l/min compressed air foam (3,200 l/min per outlet) at an expansion ratio of 1:4. Compressed air from compressor at least 5,000 l/min air at pressure of 11 bar. Foam proportioning ratio to be infinitely adjustable from 0.5% to 6%.
Compressor driving	V belt from PTO
Air compressor cooling	oil/water

7. WATER TANK	
Capacity:	At least 10,000 L
Material:	Polypropylene
Tank overpressure	Max. 0.2 bar (2.9 psi) permitted
Construction:	<ul style="list-style-type: none"> - Torsion free mounting to chassis frame - To be equipped with a method for lifting or removing the tank from chassis. - To be cushioned and mounted with shock-Absorbers.
Equipment:	<ul style="list-style-type: none"> - Manhole Removable cover with quick-re- lease device Ø 450 mm (17.7 in) - Overflow with over and under pressure system with spilling prevention - Drain outlet - Tank level indicator on pump panel and in the cabin - Tank filling connections, one (1) per side in the pump locker, - Size: 4" BSRT coupling and blind cap
Pump fill connection	- Ball valve
External fill connection	<ul style="list-style-type: none"> - Butterfly valve - Non-return valve at the tank inlet
Water tank suction connection	- Butterfly valve
Tank drainage	- Ball valve

8. FOAM TANKS	
Capacity:	2,000 L one tank.
Material:	To made of corrosion resistant, Polypropylene
Construction:	<ul style="list-style-type: none"> - To be equipped with a method for lifting or removing the tank from chassis. - To be cushioned and mounted with shock-Absorbers.
Equipment:	<ul style="list-style-type: none"> - Inspection hole - Tank level indicator on pump panel and in the cabin - Overflow
External filling and drain connector	Butterfly valve
Pump filling connection	Ball valve
Tank suction connection	Butterfly valve
Tank drainage	Ball valve

9. HIGH PRESSURE HOSE REEL	
Design:	Electric rewind type with crank for Manually rewinding
Brake	Friction brake
Equipment	60 m non-collapsible hose and nozzle
Performance	Minimum 200 l/min at 40 bar full stream, jet and wide-angle fog
Control	From pump control panel
Number:	Two (2), mounted in the pump locker

10. WATER / FOAM MONITOR	
Make:	ELKART, TFT, Akron, Chinetti, or Rosenbauer,
Type:	Remote controlled, with foam barrel and deflector
Material:	Light alloy
Bearing for rotation and swiveling movement :	Deep grooved ball bearing
Manual emergency operation:	Hand wheels
Location:	On the top
Output:	up to 6,000 l/min at 10 bars with 50% setting
Throw range:	up to 80 m at output 6.000 l/min. at 10 bars
Rotation:	At least 270°
Elevation:	0 – 70°
Depression:	0 – 15°

11. Throwing ranges and sprays widths	
Throwing ranges with O-stream nozzle and an attack angle of 30° at 10 bar (145 psi)	
Discharge rate water	Throwing range full jet/spray jet
3000 l/min (793 GPM)	85 m (279 ft) / 25 m (82 ft)
4000 l/min (1057 GPM)	90 m (295 ft) / 25 m (82 ft)
5000 l/min (1321 GPM)	93 m (305 ft) / 25 m (82 ft)
6000 l/min (1585 GPM)	95 m (312 ft) / 25 m (82 ft)
Spray widths with O-stream nozzle and an attack angle of 30° at 10 bar (145 psi)	
Discharge rate water	Spray width
3000 l/min (793 GPM)	15 m (49 ft)
4000 l/min (1057 GPM)	15 m (49 ft)
5000 l/min (1321 GPM)	15 m (49 ft)
6000 l/min (1585 GPM)	15 m (49 ft)

12. ELECTRICAL EQUIPMENT	
Illumination:	LED for cab, pump and storage compartments, automatic type
Surrounding light:	Eight (8) in total, three (3) on each side, two (2) in the rear, LED flood light type
Light bar:	LED light bar mounted on cabin roof, with integrated loudspeaker
Alarms and warning devices	cabin mounted hand microphone and external loudspeaker
Siren:	Whelen or Federal Signal
Radio gear:	Voltage transformer from 24 to 12 Volt. Battery connection with fuse protection. Mobile antenna, cab roof mounted, complete with coaxial cable and plug
Miscellaneous:	Pilot lamp for open doors or roller shutters

13. Light mast	
Design	4 stage design - Raised light mast
Performance of the search lights	8 x 42 W LED
Light output	8 x 2200 lm
Rotation	± 180°
Lowering the light tower head	0° bis 180°
Focusing the search light	-2° in focus position
	Up to +30° for surrounding filed illumination

14. Control System	
Superstructure :	controlled in the driver's cab and in the pump compartment
Display :	gives the operator essential status information of the fire truck systems and enables a quick identification of states of operation
Screen color and size	<ul style="list-style-type: none"> - To be contrast rich color screen, in order to be able to optimally read information even in intense sunlight - The screen size to be at optimum level and healthy visualized

15. COLOUR AND FINISHING	
Cab and superstructure	Red with PETCO logo at both sides
Fenders and bumpers	Grey
Rims:	Silver acc. to manufacturer standards
Frame:	dark grey acc. to manufacturer standards
Light alloy:	unpainted, natural colour
Rust protection:	Suitable for use in salt laden, high humidity atmosphere

16. DOCUMENTATION

- 2 sets of instruction books for chassis
- 2 sets of operation/service manuals for superstructure
- 2 sets of spare parts catalogues for superstructure.
- All manuals to be in English language, Instructions in English language where pictographs do not serve purpose

17. VEHICLE EQUIPMENT AND ACCESSORIES

- 1 set of standard chassis tool kit, including of wheel changing equipment
- 1 set of keys
- 01 of extension ladder – 12 m
- 01 of spreader rescue tool – WEBER or equivalent
- 01 of cutter rescue tool – WEBER or equivalent
- 02 of hazard warning indicators working on dry batteries size D
- 02 of harness cutting knives – protected blade
- 03 of breathing apparatus – 4 liters, with spare air cylinders
- 15 of fire approach suit sets – different sizes
- 02 of 3-ways radial collection head 4" x (3 x 2" ½)
- 01 of rope line – 15 m
- 01 of rope line – 30 m
- 02 of fire blankets
- 01 of medical first aid
- 02 of chocks – 15 cm high
- 01 of floodlight with tripod stand and 25 m extension cable on reel.
- 01 of tool box – general maintenance

18. WARRANTY

Bidder to give warrants of unit equipment to be free from defects in material and Workmanship for a period of (24) months from the date of receiving the unit

19. Factory Acceptance Test (FAT)

FAT unit testing shall be carried out to ensure its proper performance. The testing procedure involves operation at a variety of flow rates/Pressure/ranges for extended periods of time. During the test, all operating systems are monitored. Any abnormal operations are corrected and re-tested to ensure the Unit is functioning properly, Testing shall include but not limited to:

- 1- Start-up and run.
- 2- Pumps pressures and flow rates.
- 3- Monitoring and control system.
- 4- Unit movement and brakes.
- 5- Monitor test.
- 6- Water/foam mixing.
- 7- Lights.
- 8- Water connections and valves.
- 9- Water filling process.
- 10- Vibrations and noises.

PETCO will send three engineers for FAT

B. Supply of 2 Years consumed Spare parts

1. bidder shall deliver to PETCO with unit shipment spare parts and special tools necessary for operating and maintaining all Equipment (including components and systems of such Equipment) for two (2) years .
2. Bidder shall confirm ability to supplying required spare parts of the fire truck unit for a period of ten (10) years as from shipment.

C. Onsite Training

1. Unit team Trainings.

Bidder to provide comprehensive proper designated site training program for PETCO team which consist of (10) ten person around 5 working days including the followings but not limited to (accommodation and meals is PETCO responsibility):

- 1- Unit layout brief.
- 2- Unit hook up and operation.
- 3- Mechanical troubleshooting.
- 4- Electrical and control trouble shouting.
- 5- Unit Manual understanding.
- 6- Spare parts requesting procedure.
- 7- Unit preventive maintenance planning, preparation and carry out.

Attachment I:

Sudan Specification For Diesel

<u>PROPERTIES</u>	<u>STANDARD SPECIFICATION</u>	<u>METHOD</u>
Flash point ,C°	Min 57	ASTM D93
Distillation:		
50%recovered,C°	Max 355	ASTM D86
90%recovered, C°	Max 300	
95%recovered, C°	Max 365	
Kinematic viscosity (20 C°) , mm ² /s	2.2-8.8	ASTM D445 ASTM D7042
Ash, %,mass	Max 0.01	ASTM D482
Sulfur content , %mass*	Max 0.05	ASTM D5453
Copper Strip. Corrosion Rating	Max No. 1	ASTM D130
Cetane index, (calculate)	Min 45	ASTM D976 ASTM D4737
Cloud point, C°	Max 12	ASTM D2500
10 % Distillation carbon residue, %mass	Max 0.3	ASTM D189 ASTM D4530
Colour	Max 3.0	ASTM D1500
Water, %mass	Max 0.05	ASTM D95
Density (15 C°), kg /m ³	Report	ASTM D1298 ASTM D4052