SEPARATE QUOTATIONS REQUIRED FOR ATTACHED 09 x IT SPECIFICATIONS

IT NO : IT/85/01/2023-24

IT SPECIFICATION DESIGN, SUPPLY, INSTALLATION, TESTING, COMMISSIONING, OPERATION AND MAINTENANCE OF NET METERING BASED SOLAR PV SYSTEM ON LEASE PURCHASE AGREEMENT FOR PMSA UNITS

S No	Description	
1.	Parent Equipment	Power generation and distribution
2.	Sub Equipment	Power supply
3.	Assembly Component	Solar PV system complete
4.	Make	Pakistan/ China
5.	Model	Solar PV system with branded equipment
6.	Quantity	04 x PMSA bases
7.	Justification i.e PMS/ Failure/ FWT etc	New solar PV system to be installed for following 04 x PMSA Bases a. Head Quarter PMSA b. PMSA Base PASNI c. PMSA Base GAWADAR d. PMSA Base ORMARA
8.	Work required	Solar PV system to be installed by AEDB approved firms on Lease Purchase model (10 Years BOOT Basis) in accordance with AEDB approved bidding documents (Design, Supply, Installation, Testing, Commissioning, Operation and Maintenance of Net Metering Based Solar PV System on Lease Purchase Agreement).
9.	Technical Specification	i. HQ PMSA building load – 355 KW ii. PMSA base PASNI load 30 KW iii. PMSA base GAWADAR load 30 KW iv. PMSA base ORMARA load 30 KW
10.	Scope of Work (Salients)	Following work is required to be undertaken for design, supply, installation, testing, commissioning operation and maintenance of net metering based solar pv system on lease purchase agreement (10 Years BOOT Basis) for PMSA Bases i.a.w T&C of contract agreement: i. Design, supply, installation, testing, commission, operation and maintenance of net metering solar based PV system on lease purchase agreement for 04 x PMSA bases according to load. ii. Bidders shall bear all cost associated with preparation and submission of their respective bids/proposals without any liability for PMSA. iii. Bidders to visit and examine the site of the project and obtain all information for preparing the bid and design/ installation without any liability to procuring agency. iv. Bidders to evaluate requirement of any modification/ replacement in existing power generation and distribution

			system to meet solar system requirement.
		v.	Procuring agency will permit to enter its premises and lands for the purpose of inspection and feasibility.
		vi.	Bidders to provide proposed construction schedule, method of performing the project, list of sub-contractors and copy of PPIB certificate.
		vii.	The pre bid meeting if convened will be held at HQ PMSA.
		viii.	Solar PV module shall be of Tier-1 manufacturer as per latest Bloomberg New Energy France. (BNEF)
		ix.	The PV technology shall be half cut mono-PERC.
		x.	Each module shall have IP 65 rated junction boxes which shall be dust and vermin proof having copper bus bar terminals.
		xi.	EPDM rubber gasket, reverse blocking diodes and IEC standards 62790 to be complied.
		xii.	The power rating for each PV module shall be more than 540 W/P under STC conditions.
		xiii.	The PV module must be tight tested based on IEC standards 61215.
		xiv.	The PV module shall be SRO 604 issued by Govt of Pakistan.
		xv.	Each PV module shall have a unique barcode identification tag issued by the manufacturer.
		xvi.	Inverter shall be 3 phase grid tied with minimum IP 65 protection having CEC efficiency not less than 98.5% and output frequency of 50 HZ.
		xvii.	Under all conditions DC to AC ratio of the inverter shall not be more than 1.1 percent.
		xviii.	The Operating temperature range of inverter shall be between -25 C to 60 C.
		xix.	Inverter must have diesel generator synchronization module for seamless integration with generators and shore supply.
		xx.	Inverter shall have AC over current protection, residual current monitoring, DC reverse polarity protection, DC insulation resistance detection.
		xxi.	Inverter shall have a built-in data logger, communication, interface protection and remote monitoring capabilities.
		xxii.	Mounting structure shall be UV resistant and hot dip galvanized steel frame of gauge 12with 85 microns or thicker zinc coating and 100 micron for base plate.

	xxiii.	Spacing from parapet wall must be 3 feet.
	xxiv.	The structure shall withstand wind speed of 150 KM/H.
	xxv.	Complete civil work for mounting structure installation be carried out as per requirement.
	xxvi.	For roof top areas with additional slabs, rawal bolts based anchoring shall be followed in combination with water proofing treatment.
	xxvii.	Copper cables with purity of 99.9% or more with XLPO insulation and rated for 1500 V shall be used.
	xxviii.	The minimum size for DC cables shall be $4mm^2$.
	xxix.	Under all conditions for DC cables, voltage drop shall be less than 0.5 % at STC and for AC cables voltage drop shall be less than 1 % at STC.
	xxx.	Separate DC and AC earthing with 3 Ohm shall be achieved.
	xxxi.	Perforated cable trays of 16 gauge or thicker and UPVC pipes shall be installed.
	xxxii.	Circuit, breakers, protection devices and non-isolated lighting arrestors shall be installed as required.
	xxxiii.	MCB/MCCB circuit breaker shall be rated for more than 1.5 times then STC current rating.
	xxxiv.	Energy generation, power production and level monitoring of voltage and current for monitoring and control system to be ensured.
	xxxv.	Net metering application and installation of bidirectional meter as per regulation by NEPRA to be ensured.
	xxxvi.	Civil work w.r.t installation/ Framing of solar PV plates/ Batteries stowage and rigging of wiring/ cables to be carried out.
	xxxvii.	Location for installation of solar plates and battery rooms will the identified by the units.
	xxxviii.	All accessories/ equipment i.e DC beaker, charge controller, AC breaker, inverters, bus bars and change over switches are to be installed i.a.w load.
	xxxix.	All electric wires/ cables to be concealed to avoid from any damages/ deterioration.
	xl.	Solar PV system is to be installed at net metering based on lease purchase agreement.

		xli.	Proposed drawing and design/model will be approved by MoD for further installation.
		xlii.	All parameters for monitoring of load and systems to be installed.
		xliii.	All spares, tools, special equipment/accessories etc required for installation for said work to be arranged by the firm.
		xliv.	Any damage/ defect/ wear tear occur during the course of installation will be repaired/met by the firm.
11.	Eligibility Criteria	i.	Approved firms by AEDB.
		ii.	The firm must visit on site for feasibilities/ inspection to establish the extent of required work.
		iii.	The firm not undertaking the visit on site to see extent of work will not technically qualify.
		iv.	The firm must have sufficient experience of same kind of work with net metering based PV system on lease purchase agreement.
		v.	Firm must fulfill all requirements/ conditions mentioned in AEDB approved Bidding Documents (Design, Supply, Installation, Testing, Commissioning, Operation and Net Metering Based Solar PV System on Lease Purchase Agreement)
12.	EDC	x months after awarding agreement/contract.	
13.	Warranty	i.	Each module shall have 12 Years material and workman ship warranty and 25 years performance warranty.
		ii.	Warranty shall be issued by the third party.
		iii.	Inverter shall have minimum 10 years of replacement warranty.
14.	Acceptance Criteria	i.	Power Output of Solar as per design.
		ii.	Satisfactory performance as per end user.
15.	Any other relevant information	For any information w.r.t Solar System installation. Director Technical may be approached. Ph. No: 021-48508181	

IT NO : IT/85/02/2023-24

REPLACEMENT OF ANCHOR CHAIN CABLE – PMSS REHMAT

1.	Item Description	Anchor cable
2.	Sub equipment	03 x shackles (82.5 meter) stbd
3.	Assembly Component	Stbd Anchor
4.	Make	China
5.	Model	Hall Anchor
6.	Qty Required	Anchor chain cable of 03 x shackles(82.5 meter)
7.	Justification i.e PMS / Failure / FWT etc	Anchor and Cable was tested at PN Dockyard. Therefore, 03 x Shackles declared unsatisfactory for use due fear, wear and tear
8.	Work Required/ Defect	Anchor chain cable of 03 x shackles(82.5 meter)
9.	Detailed Scope of Work	Following work is to be under taken a. Anchor chain cable of 03 x shackles(82.5 meter) to be replaced b. Cable test load certificate to be provided by the firm. c. Swivel pieces (02 x in no) to be replaced d. Each cable is to be made Width 22mm Length 27.5 Meters. e. Cable is to be fitted by the firm. f. Any external work required for replacement Cable is to be carried by the firm. g. Cables are to be fitted by the firm. Any in-way work is to be removed and refitted by the firm.
10.	Technical Specification	Grad and Size 22mm
11.	Eligibility Criteria	
12.	EDC	30 Days
13.	Warranty	01 x Year after installation
14.	Acceptance Criteria	SAT trial by ship
15.	Any Other relevant Information	Anchor chain cable of 03 x shackles (82.5 meter) are to be replaced with new one by firm completion & sat work by ship staff.

IT NO : IT/85/03/2023-24

IT SPECIFICATIONS FOR MAJOR OVERHAULING OF C-9 ENGINES ALONGWITH ZF GEAR BOX FRB 160 – OSRON 23

1.	Ship's Name	FRB-160
2.	Parent Equipment	➢ Stbd & Port C-9 Caterpillar marine engines (USA) (Serial numbers Stbd X9Y01059 & Port X9Y01058) ➢ ZF Marine gear boxes
3.	Sub Equipment	As per serial number 9 mention below
4.	Assembly Component	As per serial number 9 mention below
5.	Make & Model	➢ Caterpillar C 9 Marine Engine (565 HP), USA ➢ 305 ZF Marine gear box, Germany
6.	Quantity	➢ 02 x Main Engines (Stbd and Port) ➢ 02 x ZF gear boxes (Stbd and Port)
7.	Justification i.e PMS/ Failure/ FWT etc	➢ Performance of Engines and gear boxes degraded due FWT ➢ Boat failed to achieve optimum performance upto 2500 ERPMs (35 Knots) speed. ➢ MoH of both engines and gear boxes alongwith electronic control system complete required for satisfactory operation.
8.	Work Required/ Defect	MoH of both engines and gear boxes alongwith electronic control system complete required for satisfactory operation upto 2500ERPMs at full load (upto 35 knots speed)
9.	Detail Scope of Work	**MAIN ENGINES** a. Both main engine performance degraded. Engine alongwith all accessories, fittings, piping, valves etc are to be inspected and replaced. Accordingly, engines performance is to be restored to .95% of the original through repair/ major overhauling as considered appropriate with the consent of PMSA. b. Replacement of Components Replace the following components during the major overhaul: ➢ Camshaft bearings. ➢ Connecting rod bearings. ➢ Crankshaft seals. ➢ Crankshaft thrust washers. ➢ Electronic unit injectors. ➢ Gear train bushings. ➢ Gear train bearings. ➢ Main bearings. ➢ Piston rings. ➢ After cooler core. ➢ Engine electronic control system. c. Inspection, Reconditioning or Exchanging of Components Inspect the following components according to the instructions in light of caterpillar reusability publications/ manuals. Recondition the worn components or exchange the components (if necessary): ➢ Camshaft followers. ➢ Camshaft thrust washers. ➢ Connecting rod. ➢ Crankshaft vibration damper. ➢ Cylinder head assembly. ➢ Cylinder liners. ➢ Engine mounts. ➢ Scavenge oil pump. ➢ Engine wiring harness. ➢ Exhaust manifold seals. ➢ Exhaust manifold seals. ➢ Exhaust manifold bellows

- Fuel pressure regulating valves.
- Fuel priming pump.
- Fuel transfer pump.
- Inlet manifold gasket.
- Inlet manifold seals.
- Oil cooler core.
- Oil pump.
- Pistons.
- Piston pins.
- Pre-lube pump.
- Pushrods.
- Rocker arms.
- Spacer plate.
- Software update.
- Turbocharger.
- Starter motor.
- Alternator.
- Speed sensors.
- All sensors.
- Injector harness.
- Main and extension harness.
- Power cable.
- Services of protection module, start panel.
- ECM.

d. Inspection of Components Inspect the following components according to the instructions in light of Caterpillar reusability publications:

- Camshaft.
- Crankshaft.
- Driven equipment (alignment).
- Engine cylinder block.
- Engine control module.
- Flywheel.
- Front gear train (gears).
- Oil suction screen.
- Rear green train.
- Sea water strainer.

- Inspect the camshaft for damage to the journals and the lobes.
- Inspect the crankshaft for any of the following conditions:
  - Deflection.
  - Damage to the journals.
  - Bearing material that has seized to the journals.

  - Check the journal taper and the profile of the crankshaft journals.

- Check these components by interpreting the wear patterns on the following components:

  - Rod bearing.
  - Main bearings.

Note: If the crankshaft or the camshaft is removed for any reason, use the magnetic particle inspection process to the check for cracks.

- Replace the crankshaft vibration damper if any of the following conditions occur:

- Engine failure due to a broken crankshaft.
- Excessive wear of the front bearing for the crankshaft.
- Excessive wear of the gear train that is not caused by a lack of lubrication.

➢ Inspection the gears of the gear train and inspect the gear train bushings for the following conditions:

- Worn gear teeth.
- Unusual fit.
- Unusual wear.

➢ In addition to the inspection of components, inspect the alignment of the driven equipment. See the application and installation guide for the engine or see the literature that is provided by the OEM of the driven equipment.

e. Cleaning of Components Clean the oil suction screen. Also, remove side covers in order to clean the oil sump. For instructions on removal and installation of components, see thee service manual, "Disassembly and Assembly module."

f. 03 x gel batteries 12 volt 180 AH. Capacity tested at 97%.

g. All flexible piping including sea water, fresh water and hydraulic related to engine systems are to be inspected, tested and replaced/ repaired (if necessary).

h. Engines control/ electrical system including wiring, panels, harness, protection modules, displays, batteries, ACR switches, all sensors etc, are to inspected, repaired/ replaced and calibrated/ STW as per OEM standards.

GEAR BOX

a. 02 x ZF marine gear boxes associated with C-9 caterpillar engines is to be overhauled for satisfactory operation. OEM certified spare/ parts are to be used/ arranged by the firm.

b. All pressure and temperature sensors inspection/ replacement.

c. Fwd/ Aft engagement solenoid inspection/ replacement.

d. Inspection and replacement (if required) of following accessories/ parts:

- PTO covers.
- Oil pump.
- Output shaft.
- Strainer/ oil filter.
- Drain plugs.
- Rear half housing.
- Front half housing.
- Oil dipstick.
- Breather.
- Oil cooler.
- Filter plug.
- Identification plate.
- Control valve.
- Valve control lever.
- 1/8 NPTF pressure connector.
- Oil filter.

10.	Technical Specs	Technical specs for caterpillar C-9 marine engine are appended below:

S No	Part Number	Description	Qty
CYLINDER HEAD GP (268-4474)			
1.	1W2715	Lock	24
2.	2A4429	Lock	24
3.	3613926	Seal valves	12
4.	2112134	Retainer spr	12
5.	2170609	Seat valve spr	6
6.	1906117	Spring valve	12
7.	1906115	Spring valve	12
8.	2418384	Retainer	12
9.	2418386	Spring valve	12
10.	2418385	Spring valve	12
11.	4901725	Valve exhaust	12
12.	4901726	Valve intake	12
13.	2595829	Guide valve	12
14.	2604856	Guide valve	12
15.	2128917	Insert valve	12
16.	2418388	Insert valve	12
17.	2271200	Sleeve inj	6
18.	3107255	Seal o ring	6
19.	6V5064	Seal o ring	6
CYLINER BLOCK GP (161-3406)			
20.	4695312	Liner Cylinder	6
21.	1670024	Seal liner	6
22.	2035805	Bearing sleeve	2
23.	2036090	Bearing sleeve	1
24.	2165586	Bearing sleeve	1
CAM SHAFT GP (242-0676)			
25.	1077694	Thrust plate	1
CRANKSHAFT GP (164-6148)			
26.	1512939	Bearing main	7
27.	2463150	Plate thrust	2
SEAL GP CRANKSHAFT (1876508)			
28.	2457339	Seal GP CSHA	1
29.	5285683	Seal GP	1
PISTON AND ROD GP (267-7269)			
30.	3447380	Skirt piston	6
31.	2722312	Crown	6
32.	3472380	Ring piston	6
33.	3472381	Ring piston	6
34.	3472382	Ring piston	6
35.	2133190	Bearing	6
36.	7X2908	Ring	12
37.	1608197	Bolt	6
38.	6V3940	Bolt	6
VALVE MECHANISM GP			
39.	4778095	Spring guide	12
40.	5811372	Bridge valve	6
41.	2445891	Bridge valve	6
42.	2Y5829	Nut	12
43.	2607524	Screw valve	12
COVER GP VALVE MECHANISM (261-3977)			
44.	2854106	Seal	1
45.	2683490	Seal As	1
46.	8T6912	Bolt	10
47.	2113445	Stud bold	1
48.	8T4224	Washer	11
49.	9N0869	Washer	9

50.	3587876	Sleeve space	11
51.	2444500	Spring	9
BREATHER GP (305-2909)			
52.	2400041	Breather As	1
53.	9F4446	Ring	1
54.	2132410	Gasket	1
GEAR GP FRONT (205-1321)			
55.	1136069	Plate	1
56.	1154219	Plate	1
57.	2132410	Gasket	1
BELT TENSIONER GP (245-4596)			
58.	2792589	Pulley As	1
59.	2016699	Tightner	1
TURBOCHARGER GP (267-8925)			
60.	2719416	Cartridge GP	1
61.	3110827	Seal O ring	1
62.	4319388	Clamp	2
63.	7M7273	Gasket	1
64.	3E8017	Locknut	4
65.	5417108	Hose BK	57
PUMP GP OIL (195-8098)			
66.	3318906	Pump GP	1
LINE GP ENGINE OIL (199-8098)			
67.	2089793	Hose As	1
68.	3K0360	Seal	1
69.	6V8398	Seal O ring	1
COOLER GP MARINE XMSN (197-5989)			
70.	2026706	Hose	1
71.	8T6703	Clamp	4
72.	2003916	Core	1
73.	2H3931	Seal	4
74.	6L2280	Rod	2
PUMP GP FUEL INJECITON (267-9717)			
75.	5734231	Injector GP	6
76.	2359651	Bolt socket	12
WIRING GP UNIT INJECTOR (306-8280)			
77.	4190841	Harness As	1
PUMP GP UNIT INJECTOR HYDRAULIC (416-2712)			
78.	3190678	Pump GP	1
79.	2147568	Seal O Ring	1
80.	2287090	Seal O Ring	1
81.	2275904	Seal O Ring	1
82.	2385082	Seal O Ring	1
83.	2385081	Seal O Ring	1
84.	2147568	Seal O Ring	1
85.	2287090	Seal O Ring	1
PUMP GP FUEL PRIMING (154-9283)			
86.	1375541	Pump As	1
87.	1P0436	Gasket	1
COOLER GP FUEL (197-6006)			
88.	5P4868	Clamp	1
89.	2094573	Clamp T Bolt	2
90.	4640509	Seal O Ring	2
91.	3718122	CM hose Bulk	8
FILTER GP FUEL (245-4782)			
92.	2S3992	Spring	1
93.	2147566	Seal O ring	1
94.	6N6250	Gasket	1
95.	2293218	Valve As	1
96.	1470182	Seal O Ring	2
AIR CLEANER GP (223-7456)			

97.	5P4868	Clamp	1
98.	1537950	Hose As	1
99.	5p0599	Clamp	2
100.	1922153	Hose air inlet	1
101.	2237453	Hose	1
MANIFOLD GP CHARGING (206-2650)			
102.	1922133	Gasket Exhaust	1
ALTERNATOR GP CHARGING (206-2650)			
103.	2380364	Pulley ALT	1
104.	2667226	Alternator G	1
MOTOR GP STARTING ELECTRICAL (199-6919)			
105.	2006992	Motor GP ELE	1
KIT GASKET			
106.	4893312	Kit Gasket	1
107.	4893314	Kit Gasket	1
108.	4893316	Kit Gasket	1
109.	4893317	Kit Gasket	1
110.	2974841	Kit Gasket	6
111.	4805751	Kit Gasket	1
112.	4893319	Kit Gasket	1
CONSUMABLE			
113.	1R1808	Filter AS-LU	1
114.	1R0750	Filter As	1
115.	1968518	Element	1
116.	2447913	Element As C	1
PUMP GP WATER (209-4600)			
117.	2096400		1
LINE GP WATER (306-3019)			
118.	2S3440	Clamp	3
119.	8T4984	Clamp	4
120.	1591503	Clamp	4
121.	1922156	Hose	1
122.	1949567	Hose	1
123.	2058846	Hose	1
124.	3718094	CM Hose Bulk	20
125.	8T4983	Clamp	1
126.	8T7000	Seal face	1
127.	5417118	Hose BK	12
128.	3J7354	Seal O ring	2
129.	4J5477	Seal O ring	3
130.	2385081	Seal O ring	3
131.	7J9108	Seal	2
HEAT EXCHANGER GP SEA WATER (197-5988)			
132.	4184162	Regulator TE	1
133.	1255274	CAP	1
134.	0990187	O Ring	2
135.	2D8009	Seal O ring	4
136.	2H3931	Seal	1
137.	3S9643	Seal	1
138.	5B4399	Ring	1
139.	6L2280	Rod	1
AFTER COOLER GP RAW WATER (197-5991)			
140.	2093339	Seal	1
141.	4p3871	Gasket	2
142.	1949570	Gasket	2
LINE GP AUXILIARY SEA WATER (197-6009)			
143.	8T6703	Clamp	2
144.	1731819	Hose sea water	1
145.	4F8824	Ring	2
PUMP GP AUXILIARY SEA WATER (197-5993)			
146.	6L2280	Rod	1
147.	1359819	Seal	1

		148.	8C3080	Seal O Ring	2
		149.	1131110	CAM	1
		150.	1149088	Seal Pump	1
		151.	1750225	Ring retain	1
		152.	3665761	Shaft water pump	1
		153.	4P5926	Key stainless	1
		154.	5G5078	Ring	1
		155.	2D6392	Seal O Ring	1
		156.	7E0321	Impeller	1
		157.	7E0328	Plate As	1
		158.	8H4320	Bearing	2
		159.	8T2944	Seal O ring	1
		160.	3704053	Slinger	1
		161.	3704056	Spacer	1
11.	Eligibilities	Any local/ international firm having experience of undertaking repair/ maintenance and overhauling of marine version machinery/ equipment.			
12.	EDC	30 days.			
13.	Warranty	One year/ 1000 running hours of both engines alongwith associated system/ equipment whichever is earlier.			
14.	Acceptance Criteria	➢ Use of USA origin or equivalent spares/ accessories (including electronic control system) for caterpillar C-9 marine engines is to be ensured by contracted firm. ➢ Inspection of spares arranged by the firm by SS/ Tech Dte staff. ➢ Successful completion of HATs/ SATs as per OEM defined parameters and subject to achieving of > 30 knots of FRB with both main engines with 90% - 100% designed RPMs. ➢ Test certificates or relevant documents for equipment/ accessories i.e injectors, fuel pumps etc are to be rendered by contracted firm in light of OEM standards.			
15.	Any other relevant information	➢ All consumables are to be arranged by the contractor. ➢ Engines or any other equipment removal and reinstallation will be the responsibility of contractor. ➢ Each and every equipment/ system/ section/ fitting including control, mechanical, electronic, electrical, piping, valves, pumps and display systems are to be checked and restored as per OEM technical manual. ➢ All replaced/ unserviceable old parts are to be returned to PMSA. ➢ OEM standard parts & tools are to be used alongwith documentary evidence.			

IT NO : IT/85/04/2023-24

REQUIREMENT OF 30 MM GUN AMMUNITION – PMSS KOLACHI

1.	Parent Equipment	30mm Naval Gun
2.	Sub Equipment	30mm Naval Gun Ammunition
3.	Assembly Component	Nil
4.	Make	North Industries Corporation Limited (NORINCO)
5.	Model	30mm HEI, AP-T, HEI-TP, Link
6.	Quantity	2050 (Minimum quantity as of Para 2 of Min 04/N)
7.	Justification i.e. PMS / Failure/ FWT	Consumable item
8.	Part No/ Patt No	Nil
9.	Material Description (where applicable)	As mentioned against each in attached (Encl 15A/F)
10.	Detailed scope of work	Procurement of 30mm ammunition for MPV's
11.	Eligibilities	N/A
12.	EDC	15-18 months after confirmation of order
13.	Warranty	15 years shelf life from the date of manufacturing
14.	Acceptance Criteria (if any)	Material should be as per requirement
15.	Any other relevant information	Nil

30mm High Explosive Incendiary Shell (HEI) for Naval Gun

Applied weapon system

30mm HEI for naval gun is applied to AK630 naval gun, NG-18 naval gun and their upgraded type made in Russia and China and single barrel 30mm naval gun.

Application and feature

30mm HEI for naval gun is mostly used for mutilating enemy air targets, fulfilling weapon system air defence mission, and firing to water and shore targets. 30mm HEI for naval gun is of nice firing accuracy, kill power, operating ambient capacity and projectile type universal performance.

Main technical data

Length of round	≤293mm
Weight of round	≈ 0.839kg
Weight of projectile	≈ 0.389kg
Muzzle velocity	890±15 m/s
Average pressure	≤330MPa
Dispersion at 1000m	ballistic gun at stationary gun mount Ey×Ez≤ 1m×1m
Self-destruction time	13s~25s
Operation temperature	-40□ ~+55□
Storage life	15 years

30mm Armor-piercing Shell with Tracer for Naval Gun

Applied weapon system

The 30mm AP-T for naval gun is applied to AK630 naval gun,NG-18 naval gun and their upgraded made in Russia and China and single barrel 30mm naval gun.

Application and feature

30mm AP-T for naval gun is mostly used for unit training and drilling. It is of good tracer burning duration, brightness and firing accuracy.

Main technical data

Length of round	≤293mm
Weight of round	≈0.837kg
Weight of projectile	≈0.389kg
Muzzle velocity	880±15 m/s
Average pressure	≤330MPa
Dispersion at 1000m	ballistic gun at stationary gun mount By×Ez≤ 1m×1m
tracer burning duration	≥10s
Operation temperature	-40□ ~+55□
Storage life	15 years

30mm Blind-loaded High Explosive Incendiary Shell for Naval Gun (HEI-TP)

Main technical data

Length of round	≤293mm
Weight of round	≈0.839kg
Weight of projectile	≈0.389kg
Muzzle velocity	890±15 m/s
Average pressure	≤330MPa
Dispersion at 1000m	ballistic gun at stationary gun mount Ez×By≤ 1m×1m
Operation temperature	-40℃~+55℃
Storage life	15 years

IT SPECIFICATIONS FOR MAJOR OVERHAULING OF HAMILTON WATERJET PROPULSION SYSTEM ALONGWITH STEERING CONTROL SYSTEM – FRB-161

1.	Ship's Name	FRB-161
2.	Parent Equipment	➢ 02 x Hamilton Waterjet Propulsion system (HJ 322) ➢ Sea star Steering control system with hydraulic power assist, Canada.
3.	Sub Equipment	As per serial number 9 mention below
4.	Assembly Component	As per serial number 9 mention below
5.	Make & Model	➢ Hamilton water jet (HJ0322) New Zealand ➢ Seastar Steering control system with hydraulic power assist, Canada.
6.	Quantity	➢ 02 x WJP systems ➢ 01 x steering control system
7.	Justification i.e PMS/ Failure/ FWT etc	Performance of, Hamilton WJP systems and steering control system has been degraded due old vintage and FWT.
8.	Work Required/ Defect	Overhauling of 02 x Hamilton water jet propulsion systems and 01 x Sea star Steering control system
9.	Detail Scope of Work	**WATER JET** a. 02 x complete Hamilton water jet HJ-322 system including control system, throttle & bucket control system, actuator, pump linkages, hydraulic, anodes, spool valves, Saginaw pump, hydraulic hoses, sea water hoses, accessories and fitting etc. Hamilton water jet system is to be overhauled as per OEM manual instruction. Repairs/ overhaul to restore system to its 95 % performance. Genuine OEM spares are to be used. b. Inspection and replacement (if required) of following accessories/ parts: (1) Internal water path. (2) Thrust bearing. (3) Water seal. (4) Anodes. (5) Reverse cylinder shaft. (6) Reverse hydraulic cylinder & Hoses. (7) Steering hydraulic cylinder and hoses. (8) Steering linkages. (9) Steering pushrod. (10) Steering cotter pins. (11) Steering crank. (12) Driveshaft universals. (13) Screen rake and bearing complete jet unit. (14) Steel Hull (only). (15) Distance piece. (16) Tail pipe. (17) Tail pipe fairing (18) Water bearing sleeve. (19) Bearing housing. (20) Impeller racer kit. (21) Sacrificial anodes (22) Emergency cooling piping/ clamps. (23) Lip seals. (24) Wear ring. **STEERING SYSTEM** a. Steering Helm pump steering ram and flexible pipes testing and repairing/ replacement requirements. b. Inspection and replacement (if required) of following accessories/ parts:

		(1) Remote fill and ventilation kit. (2) Filler kit. (3) Vented filler cap. (4) Non-vented filler cap. (5) Jam nut (Helm shaft). (6) Classic tilt helm pump (7) Bolt, Dash, 1/4" NC Nyloc. (8) Boot, tilt lever. (9) Cover, front. (10) Cover, rear. (11) Cover, oil fill. (12) Screw, BHSCS 8-32 x ½" SS. (13) Key, woodruff. (14) Nut, wheel. (15) Trunnion assembly. (16) Seal kit. (17) Bleeder/ tee assembly. (18) Rod end Ball for HC5318 and HC5318CAT. (19) Clevis connection Kit. (20) End gland seal kit. (21) Piston shaft. (22) Clevis pin. (23) Cotter pin. (24) Nut 7/16" NF. (25) Washer 7/16". (26) Support bracket.
10.	Technical Spec	a. **HAMILTON WATER JET SYSTEM** (1) Tail pipe (Part Number 107102). (2) Tail pipe fairing (Part Number 104618). (3) Water bearing sleeve (Part Number 111202). (4) Bearing housing (Part Number 111339). (5) Impeller racer kit (Part Number 107205). b. **SEASTAR STEERING CONTROL SYSTEM:** (1) Tilt Helm (Part Number HH5290/HH5291/HH5292). (2) Remote fill & vent plug kit (Part Number HA5450). (3) Helm Pump (Part Number HH6241). (4) Helm Pump Shaft (Part Number HH6241). (5) Inboard ATM cylinder (Part Number HC 5312-3) (6) Jet drive cylinder (Part Number HC1503-3). (7) Sterndrive (Part Number HC5331-3). (8) Ram cylinder (Part Number HC5332-3).
11.	Eligibilities	Any local/ international firm having experience of undertaking repair/ maintenance and overhauling of marine version machinery/ equipment.
12.	EDC	30 days
13.	Warranty	01 x Year after completion of work and successful trials.
14.	Acceptance Criteria	➢ Inspection of spares arranged by the firm by SS/ D(Tech) staff. ➢ Successful completion of HATs/ SATs as per OEM defined parameters and subject to achieving of > 30 knots of FRB. ➢ Test certificates or relevant documents for equipment/ accessories are to be rendered by contracted firm in light of OEM standards.
15.	Any other relevant information	➢ All consumables are to be arranged by the contractor. ➢ WJP system and steering system complete or any other associated accessories/ equipment removal and reinstallation will be the responsibility of contractor.
		➢ Each and every equipment/ system/ section/ fitting including control, mechanical, electronic, electrical, piping, valves, pumps and display systems are to be checked and restored as per OEM technical manual. ➢ All replaced/ unserviceable old parts are to be returned to PMSA. ➢ OEM standard parts & tools are to be used alongwith documentary evidence.

IT NO : IT/85/06/2023-24

REVISED IT SPECIFICATION: FOR REPAIR/ MAINTENANCE OF ITEMS FOR RENOVATION

OF CO OFFICE, SO OFFICE AND CONFERENCE ROOM PMSS NAZIM AT GWADAR

<table>
<tr><th>S. No</th><th>Specification</th><th>Remarks</th></tr>
<tr><td>1.</td><td>System</td><td>Repair/ Maintenance work of Furniture</td></tr>
<tr><td>2.</td><td>Quantity</td><td>
<table>
<tr><th>S.No</th><th>Description</th><th>Qty</th></tr>
<tr><td>a.</td><td>Executive office table with glass</td><td>04</td></tr>
<tr><td>b.</td><td>Executive office Chairs</td><td>04</td></tr>
<tr><td>c.</td><td>Conference Table with glass</td><td>01</td></tr>
<tr><td>d.</td><td>Conference Chairs</td><td>16</td></tr>
<tr><td>e.</td><td>Sofa Chairs</td><td>08</td></tr>
<tr><td>f.</td><td>Side Tables</td><td>04</td></tr>
<tr><td>g.</td><td>Computer Table</td><td>03</td></tr>
</table>
</td></tr>
<tr><td>3.</td><td>Technical Specification (If any)</td><td>N/A</td></tr>
<tr><td>4.</td><td>Scope of work</td><td>Repair/ Maintenance, Polish and Warnish of all items required at Gwadar</td></tr>
<tr><td>5.</td><td>Eligibilities</td><td>Through reputable, security wise cleared local contractor</td></tr>
<tr><td>6.</td><td>EDC</td><td>03 x Weeks</td></tr>
<tr><td>7.</td><td>Warranty</td><td>06 x Months</td></tr>
<tr><td>8.</td><td>Acceptance Criteria</td><td>Upon inspection by CO PMSS NAZIM and staff at GWADAR</td></tr>
<tr><td>9.</td><td>Any other information</td><td>Work required at PMSS NAZIM at GWADAR</td></tr>
</table>

IT NO : IT/85/07/2023-24

IT SPECIFICATIONS FOR MAJOR OVERHAULING OF C-9 ENGINES ALONGWITH ZF GEAR BOX FRB 161 – OSRON 23

1.	Ship's Name	FRB-161
2.	Parent Equipment	➢ Stbd & Port C-9 Caterpillar marine engines (USA) (Serial numbers Stbd X9Y01073 & Port X9Y01054) ➢ ZF Marine gear boxes
3.	Sub Equipment	As per serial number 9 mention below
4.	Assembly Component	As per serial number 9 mention below
5.	Make & Model	➢ Caterpillar C 9 Marine Engine (565 HP), USA ➢ 305 ZF Marine gear box, Germany
6.	Quantity	➢ 02 x Main Engines (Stbd and Port) ➢ 02 x ZF gear boxes (Stbd and Port)
7.	Justification i.e PMS/ Failure/ FWT etc	➢ Performance of Engines and gear boxes degraded due FWT ➢ Boat failed to achieve optimum performance upto 2500 ERPMs (35 Knots) speed. ➢ MoH of both engines and gear boxes alongwith electronic control system complete required for satisfactory operation.
8.	Work Required/ Defect	MoH of both engines and gear boxes alongwith electronic control system complete required for satisfactory operation upto 2500ERPMs at full load (upto 35 knots speed)
9.	Detail Scope of Work	**MAIN ENGINES** a. Both main engine performance degraded. Engine alongwith all accessories, fittings, piping, valves etc are to be inspected and replaced. Accordingly, engines performance is to be restored to .95% of the original through repair/ major overhauling as considered appropriate with the consent of PMSA. b. Replacement of Components Replace the following components during the major overhaul: (a) Camshaft bearings. (b) Connecting rod bearings. (c) Crankshaft seals. (d) Crankshaft thrust washers. (e) Electronic unit injectors. (f) Gear train bushings. (g) Gear train bearings. (h) Main bearings. (j) Piston rings. (k) After cooler core. (l) Engine electronic control system. c. Inspection, Reconditioning or Exchanging of Components Inspect the following components according to the instructions in light of caterpillar reusability publications/ manuals. Recondition the worn components or exchange the components (if necessary): (a) Camshaft followers. (b) Camshaft thrust washers. (c) Connecting rod. (d) Crankshaft vibration damper. (e) Cylinder head assembly. (f) Cylinder liners. (g) Engine mounts. (h) Scavenge oil pump. (j) Engine wiring harness. (k) Exhaust manifold seals. (l) Exhaust manifold seals.

(m) Exhaust manifold bellows.
(n) Fuel pressure regulating valves.
(p) Fuel priming pump.
(q) Fuel transfer pump.
(r) Inlet manifold gasket.
(s) Inlet manifold seals.
(t) Oil cooler core.
(u) Oil pump.
(v) Pistons.
(w) Piston pins.
(x) Pre-lube pump.
(y) Pushrods.
(z) Rocker arms.
(aa) Spacer plate.
(bb) Software update.
(cc) Turbocharger.
(dd) Starter motor.
(ee) Alternator.
(ff) Speed sensors.
(gg) All sensors.
(hh) Injector harness.
(jj) Main and extension harness.
(kk) Power cable.
(ll) Services of protection module, start panel.
(mm) ECM.

d. Inspection of Components Inspect the following components according to the instructions in light of Caterpillar reusability publications:

(a) Camshaft.
(b) Crankshaft.
(c) Driven equipment (alignment).
(d) Engine cylinder block.
(e) Engine control module.
(f) Flywheel.
(g) Front gear train (gears).
(h) Oil suction screen.
(j) Rear green train.
(k) Sea water strainer.

(l) Inspect the camshaft for damage to the journals and the lobes.
(m) Inspect the crankshaft for any of the following conditions:
i. Deflection.
ii. Damage to the journals.
iii. Bearing material that has seized to the journals.
iv. Check the journal taper and the profile of the crankshaft journals.

(n) Check these components by interpreting the wear patterns on the following components:
i. Rod bearing.
ii. Main bearings.

Note: If the crankshaft or the camshaft is removed for any reason, use the magnetic particle inspection process to the check for cracks.

(a) Replace the crankshaft vibration damper if any of the following conditions occur:

i. Engine failure due to a broken crankshaft.
ii. Excessive wear of the front bearing for the crankshaft.
iii. Excessive wear of the gear train that is not caused by a lack of lubrication.

(b) Inspection the gears of the gear train and inspect the gear train bushings for the following conditions:

i. Worn gear teeth.
ii. Unusual fit.
iii. Unusual wear.

(c) In addition to the inspection of components, inspect the alignment of the driven equipment. See the application and installation guide for the engine or see the literature that is provided by the OEM of the driven equipment.

e. Cleaning of Components Clean the oil suction screen. Also, remove side covers in order to clean the oil sump. For instructions on removal and installation of components, see thee service manual, "Disassembly and Assembly module."

f. 03 x gel batteries 12 volt 180 AH. Capacity tested at 97%.

g. All flexible piping including sea water, fresh water and hydraulic related to engine systems are to be inspected, tested and replaced/ repaired (if necessary).

h. Engines control/ electrical system including wiring, panels, harness, protection modules, displays, batteries, ACR switches, all sensors etc, are to inspected, repaired/ replaced and calibrated/ STW as per OEM standards.

GEAR BOX

a. 02 x ZF marine gear boxes associated with C-9 caterpillar engines is to be overhauled for satisfactory operation. OEM certified spare/ parts are to be used/ arranged by the firm.

b. All pressure and temperature sensors inspection/ replacement.

c. Fwd/ Aft engagement solenoid inspection/ replacement.

d. Inspection and replacement (if required) of following accessories/ parts:

(d) PTO covers.
(e) Oil pump.
(f) Output shaft.
(g) Strainer/ oil filter.
(h) Drain plugs.
(i) Rear half housing.
(j) Front half housing.
(k) Oil dipstick.
(l) Breather.
(m) Oil cooler.
(n) Filter plug.
(o) Identification plate.
(p) Control valve.
(q) Valve control lever.
(r) 1/8 NPTF pressure connector.
(s) Oil filter.

10.	Technical Specs	Technical specs for caterpillar C-9 marine engine are appe below:

S No	Part Number	Description	Qty
CYLINDER HEAD GP (268-4474)			
1.	1W2715	Lock	24
2.	2A4429	Lock	24
3.	3613926	Seal valves	12
4.	2112134	Retainer spr	12
5.	2170609	Seat valve spr	6
6.	1906117	Spring valve	12
7.	1906115	Spring valve	12
8.	2418384	Retainer	12
9.	2418386	Spring valve	12
10.	2418385	Spring valve	12
11.	4901725	Valve exhaust	12
12.	4901726	Valve intake	12
13.	2595829	Guide valve	12
14.	2604856	Guide valve	12
15.	2128917	Insert valve	12
16.	2418388	Insert valve	12
17.	2271200	Sleeve inj	6
18.	3107255	Seal o ring	6
19.	6V5064	Seal o ring	6
CYLINER BLOCK GP (161-3406)			
20.	4695312	Liner Cylinder	6
21.	1670024	Seal liner	6
22.	2035805	Bearing sleeve	2
23.	2036090	Bearing sleeve	1
24.	2165586	Bearing sleeve	1
CAM SHAFT GP (242-0676)			
25.	1077694	Thrust plate	1
CRANKSHAFT GP (164-6148)			
26.	1512939	Bearing main	7
27.	2463150	Plate thrust	2
SEAL GP CRANKSHAFT (1876508)			
28.	2457339	Seal GP CSHA	1
29.	5285683	Seal GP	1
PISTON AND ROD GP (267-7269)			
30.	3447380	Skirt piston	6
31.	2722312	Crown	6
32.	3472380	Ring piston	6
33.	3472381	Ring piston	6
34.	3472382	Ring piston	6
35.	2133190	Bearing	6
36.	7X2908	Ring	12
37.	1608197	Bolt	6
38.	6V3940	Bolt	6
VALVE MECHANISM GP			
39.	4778095	Spring guide	12
40.	5811372	Bridge valve	6
41.	2445891	Bridge valve	6
42.	2Y5829	Nut	12
43.	2607524	Screw valve	12
COVER GP VALVE MECHANISM (261-3977)			
44.	2854106	Seal	1
45.	2683490	Seal As	1
46.	8T6912	Bolt	10
47.	2113445	Stud bold	1
48.	8T4224	Washer	11
49.	9N0869	Washer	9

50.	3587876	Sleeve space	11
51.	2444500	Spring	9
BREATHER GP (305-2909)			
52.	2400041	Breather As	1
53.	9F4446	Ring	1
54.	2132410	Gasket	1
GEAR GP FRONT (205-1321)			
55.	1136069	Plate	1
56.	1154219	Plate	1
57.	2132410	Gasket	1
BELT TENSIONER GP (245-4596)			
58.	2792589	Pulley As	1
59.	2016699	Tightner	1
TURBOCHARGER GP (267-8925)			
60.	2719416	Cartridge GP	1
61.	3110827	Seal O ring	1
62.	4319388	Clamp	2
63.	7M7273	Gasket	1
64.	3E8017	Locknut	4
65.	5417108	Hose BK	57
PUMP GP OIL (195-8098)			
66.	3318906	Pump GP	1
LINE GP ENGINE OIL (199-8098)			
67.	2089793	Hose As	1
68.	3K0360	Seal	1
69.	6V8398	Seal O ring	1
COOLER GP MARINE XMSN (197-5989)			
70.	2026706	Hose	1
71.	8T6703	Clamp	4
72.	2003916	Core	1
73.	2H3931	Seal	4
74.	6L2280	Rod	2
PUMP GP FUEL INJECITON (267-9717)			
75.	5734231	Injector GP	6
76.	2359651	Bolt socket	12
WIRING GP UNIT INJECTOR (306-8280)			
77.	4190841	Harness As	1
PUMP GP UNIT INJECTOR HYDRAULIC (416-2712)			
78.	3190678	Pump GP	1
79.	2147568	Seal O Ring	1
80.	2287090	Seal O Ring	1
81.	2275904	Seal O Ring	1
82.	2385082	Seal O Ring	1
83.	2385081	Seal O Ring	1
84.	2147568	Seal O Ring	1
85.	2287090	Seal O Ring	1
PUMP GP FUEL PRIMING (154-9283)			
86.	1375541	Pump As	1
87.	1P0436	Gasket	1
COOLER GP FUEL (197-6006)			
88.	5P4868	Clamp	1
89.	2094573	Clamp T Bolt	2
90.	4640509	Seal O Ring	2
91.	3718122	CM hose Bulk	8
FILTER GP FUEL (245-4782)			
92.	2S3992	Spring	1
93.	2147566	Seal O ring	1
94.	6N6250	Gasket	1
95.	2293218	Valve As	1
96.	1470182	Seal O Ring	2
AIR CLEANER GP (223-7456)			

97.	5P4868	Clamp	1
98.	1537950	Hose As	1
99.	5p0599	Clamp	2
100.	1922153	Hose air inlet	1
101.	2237453	Hose	1
MANIFOLD GP CHARGING (206-2650)			
102.	1922133	Gasket Exhaust	1
ALTERNATOR GP CHARGING (206-2650)			
103.	2380364	Pulley ALT	1
104.	2667226	Alternator G	1
MOTOR GP STARTING ELECTRICAL (199-6919)			
105.	2006992	Motor GP ELE	1
KIT GASKET			
106.	4893312	Kit Gasket	1
107.	4893314	Kit Gasket	1
108.	4893316	Kit Gasket	1
109.	4893317	Kit Gasket	1
110.	2974841	Kit Gasket	6
111.	4805751	Kit Gasket	1
112.	4893319	Kit Gasket	1
CONSUMABLE			
113.	1R1808	Filter AS-LU	1
114.	1R0750	Filter As	1
115.	1968518	Element	1
116.	2447913	Element As C	1
PUMP GP WATER (209-4600)			
117.	2096400		1
LINE GP WATER (306-3019)			
118.	2S3440	Clamp	3
119.	8T4984	Clamp	4
120.	1591503	Clamp	4
121.	1922156	Hose	1
122.	1949567	Hose	1
123.	2058846	Hose	1
124.	3718094	CM Hose Bulk	20
125.	8T4983	Clamp	1
126.	8T7000	Seal face	1
127.	5417118	Hose BK	12
128.	3J7354	Seal O ring	2
129.	4J5477	Seal O ring	3
130.	2385081	Seal O ring	3
131.	7J9108	Seal	2
HEAT EXCHANGER GP SEA WATER (197-5988)			
132.	4184162	Regulator TE	1
133.	1255274	CAP	1
134.	0990187	O Ring	2
135.	2D8009	Seal O ring	4
136.	2H3931	Seal	1
137.	3S9643	Seal	1
138.	5B4399	Ring	1
139.	6L2280	Rod	1
AFTER COOLER GP RAW WATER (197-5991)			
140.	2093339	Seal	1
141.	4p3871	Gasket	2
142.	1949570	Gasket	2
LINE GP AUXILIARY SEA WATER (197-6009)			
143.	8T6703	Clamp	2
144.	1731819	Hose sea water	1
145.	4F8824	Ring	2
PUMP GP AUXILIARY SEA WATER (197-5993)			
146.	6L2280	Rod	1
147.	1359819	Seal	1

		148.	8C3080	Seal O Ring	2
		149.	1131110	CAM	1
		150.	1149088	Seal Pump	1
		151.	1750225	Ring retain	1
		152.	3665761	Shaft water pump	1
		153.	4P5926	Key stainless	1
		154.	5G5078	Ring	1
		155.	2D6392	Seal O Ring	1
		156.	7E0321	Impeller	1
		157.	7E0328	Plate As	1
		158.	8H4320	Bearing	2
		159.	8T2944	Seal O ring	1
		160.	3704053	Slinger	1
		161.	3704056	Spacer	1
11.	Eligibilities	Any local/ international firm having experience of undertaking repair/ maintenance and overhauling of marine version machinery/ equipment.			
12.	EDC	30 days.			
13.	Warranty	One year/ 1000 running hours of both engines alongwith associated system/ equipment whichever is earlier.			
14.	Acceptance Criteria	➢ Use of USA origin or equivalent spares/ accessories (including electronic control system) for caterpillar C-9 marine engines is to be ensured by contracted firm. ➢ Inspection of spares arranged by the firm by SS/ Tech Dte staff. ➢ Successful completion of HATs/ SATs as per OEM defined parameters and subject to achieving of > 30 knots of FRB with both main engines with 90% - 100% designed RPMs. ➢ Test certificates or relevant documents for equipment/ accessories i.e injectors, fuel pumps etc are to be rendered by contracted firm in light of OEM standards.			
15.	Any other relevant information	➢ All consumables are to be arranged by the contractor. ➢ Engines or any other equipment removal and reinstallation will be the responsibility of contractor. ➢ Each and every equipment/ system/ section/ fitting including control, mechanical, electronic, electrical, piping, valves, pumps and display systems are to be checked and restored as per OEM technical manual. ➢ All replaced/ unserviceable old parts are to be returned to PMSA. ➢ OEM standard parts & tools are to be used alongwith documentary evidence.			

IT NO : IT/85/08/2023-24

IT SPECIFICATIONS – PROCUREMENT OF PNEUMATIC BUOYANCY TUBE (COLLAR) C
ZHB-02 – OSRON 23

1.	Ship's name	Zodiac Hurricane Boat – 02 (Length 11.5 Meters)
2.	Parent equipment	Aluminum Hull (Identification Number CA- XMP11030B616)
3.	Sub equipment	Pneumatic Buoyancy Tube (Collar)
4.	Assembly component	Pneumatic Buoyancy Tube (Collar)
5.	Make/ origin	Zodiac Hurricane Technologies Delta, B.C, CANADA
6.	Model	H1100 OB MACH II
7.	Quantity	01 in number
8.	Justification i.e PMS/ Failure/ FWT etc	Pneumatic Buoyancy Tube (Collar) degraded resultantly, air leakages being observed from various places (within sections and chambers) due deterioration of collar fabric/ polyethylene rubber.
9.	Work Required/ Defect	Procurement of 01 x Pneumatic Buoyancy Tube (Collar) (Part Number TA1100CP090B-B) alongwith accessories mentioned at S No 11.
10.	Detail Scope of Work	Procurement of 01 x Pneumatic Buoyancy Tube (Collar) (Part Number TA1100CP090B-B) alongwith accessories mentioned at S No 11.
11.	Technical Spec	

S No	Part No	Description
a.	TC 20102	Cone end
b.	TA1100CP090B-B	Air holding tube
c.	TP 92047	Logo
d.	TS11005-B	Step tread
e.	TP10050-BC-B	Patch D-ring 2 inch
f.	RN 20030	Lifeline 1/2 Inch
g.	LC 10000-B-B	Lace cuff
h.	TV 20000	Valve intercommunicating
j.	TV 10065	Valve, pressure relief
k.	TV 40000	Flange, recessed, prv
l.	TP 10025-B-B	Flange, rope ½ inch
m.	TR82070P	Rubstrake
n.	5B110001	Bow skirt
p.	TP 20026-B-B	Flange, bow
q.	JU110015-B1-T	H1100 OB IC valve collar (black)
r.	TR82070P	Tube, Extra row rubstrake
s.	SB923001	Tube, Bow skirt blk fabric
t.	ZH4402790-1-B	Tube, steptread, non-slip
u.	ZH0001412-B	Autoinflate system, 2011,Blk

12.	Eligibilities	Any well reputed local/ international firm having expertise for procurement of Pneumatic Buoyancy Tube (Collar)
13.	EDD	90 Days
14.	Warranty	01 x Year after completion of work.
15.	Acceptance Criteria	a. Inspection of all replaced parts by end user. b. Successful trials by end user after onboard installation.
16.	Any other relevant information	Nil

IT NO : IT/85/09/2023-24

IT SPECIFICATION FOR CORROSION TREATMENT/ REPAINTING/ REPLACEMENT/ PURCHASE OF MISCELLANEOUS ITEMS FOR HANGAR ROOF SHEETS – 93 PMSA SQUADRON

1.	**Ship's Name**	93 SQN
2.	**Parent Equipment**	Parking/ Maintenance Hangar
3.	**Sub Equipment**	Hangar Roof Steel Corrugated Sheets
4.	**Assembly Equipment**	N/A
5.	**Make**	Local
6.	**Model**	N/A
7.	**Quantity**	30
8.	**Justification**	Corrosion treatment/ Repainting/ Replacement/ Purchase of Miscellaneous items (as applicable) to be carried out on 30 x roof sheets
9.	**Work Required/ Defect (Subject to inspection)**	• 30 x Sheets found corroded and needs corrosion treatment and repainting • Replacement of excessive damage sheets (as applicable)
10.	**Detailed Scope of Work** (Req from Repair Agency)	--
11.	**Technical specs (if any)**	Made: Metal Dimension: Length 14.5 Feet Width 3.5 Feet
12.	**EDC**	02 weeks
13.	**Acceptance criteria (if any)**	Satisfactory corrosion treatment/ repainting and replacement (as applicable) of defective sheets
14.	**Any other relevant information**	Onsite inspection may be carried out by firm before quotation for exact cost estimation

Note: 100% Payment after completion by CNA

Director General
Pakistan Maritime Security Agency
Plot No 34-A, Dockyard Road
KARACHI
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INVITATION TO TENDER GENERAL INSTRUCTIONS

1. CONDITIONS GOVERNING CONTRACT:

All Procurement / Repairs / Maintenance Contract, Local Purchase Order (LPO) and work ordered made as aresult of this IT shall mean the agreement entered into between the parties that is buyer and the supplier will be in accordance with the PPRA rules 2004 or any amendment issued from time to time. Therefore all open tender inquiry will be uploaded on PPRA Website and publish on print media as the case may be.

2. SUMBISSION OF TENDER:

Firms shall submit their offers in two separate envelopes clearly marked as "**Commercial Offer**" and "**Technical Offer**" for open tender. Both envelops shall be properly sealed bearing the signature of the bidder. Thereafter both these envelopes shall be placed in one bigger envelope. This envelope should bearthe address of the D (P&CC).

a. **TECHNICAL OFFER:** Should contain all relevant details and specifications as per the IT specifications. Literature / Brochure or any other relevant technical details may also be included in it. Technical offer should not contain the price. Indication of price in technical offer may render it null and void. The word "Technical Offer" should be clearly mentioned alongwith the tender No anddate on the envelope containing the technical offer.

b. **COMMERCIAL OFFER:** The price be quoted in figures as well as in words alongwith essential Literature / Brochures. The word "Commercial Offer", tender number should be clearly mentioned on the envelope. Taxes, duties, freight / transportation, insurance charges etc if any areto be indicated separately.

. c. **BID SECURITY**: All registered firms are exempted from provision of bid security upto Rs.500,000/- and unregistered firms have to provide bid security equals to 02% for bids amounting upto Rs.500,000/- in the shape of Pay Order in favor of "IT Sale Account DG PMSA". Furthermore, firms are required to deposit bid security not exceeding 05% of the bid price for bid value amounting more than Rs.500,000/-. Moreover, following guidelines will be followed:

i. 2% from registered firms.
ii. 5% from un-registered firms.

d. Total price of the items quoted against the tender is to be clearly mentioned. It should also contains a **pay order 2% or 5% in the shape of pay order of the offered value** as earnest money. Cross cheque or cash is not acceptable in this case. The offer received without earnest money will be rejected.

e. **SPECIAL INSTRUCTIONS:** Tender documents and its conditions may please be read point to point and understood properly before quoting. All tender conditions should be responded properly. In case of any deviation due to non-acceptance of tender conditions, the same should be highlighted alongwith changed offer / conditions. Tender may however be liable to be rejected.

PREPARATION OF QUOTATION

Please prepare quotation in this format In case of GST @ 18% or SST @ 13%:

S.NO	Description	Unit Price	Qty	Total	GST @ 18% or SST @ 13%.	T/Price

Please prepare quotation in this format In case of without GST or SST:

S.NO	Description	Unit Price	Qty	Total	T/Price

Without this format quotation will not be accepted.

3. DATE AND TIME FOR RECEIPT OF TENDER:

Tender must be dropped in tender Box placed at main gate. HQ PMSA will not accept any excuse of delay occurring due to whatsoever reason. Tender received after the time indicated in IT will not be entertained. The tender opening time, however, fall on next working day in case of closed / forced holiday or any other unforeseen event. Only authorized representatives of firm will be allowed to attend tender opening.**The tender received through Fax, E-Mail will not be acceptable**.

4. TENDER OPENING:

Technical offer will be opened as per scope of work on the date and time mentioned in the tender. Commercial offer shall be retained with technical officer. It will be opened at a later stage. All technical offers will be scrutinized by a Technical Scrutiny Report (TSR) committee nominated by HQ PMSA. The offers which are not as per the IT specification will be rejected. The firms recommended by TSR Committee will be allowed to attend the commercial opening for which date and time will be intimated separately.

5. VALIDITY OFFER:

The validity period of quotations must be indicated and should invariably be for 90 days extendable to 30 days from the date of opening of Technical offer.

6. QUOTING OF RATES:

Unit price of the item, GST/ SST or any other Govt tax and Total price all these should be indicated separately in Pak Rupees in a very clear manner as follows:

S No Description Qty U/Price GST/SST/Taxes Total Price

7. ATL/ GST/ SST/ INCOME TAX NUMBER:

Only registered suppliers, who are on Active Taxpayers List (ATL) of FBR, are eligible to supply goods/ services to Government department. GST/SST and income tax number be clearly indicated on the quotations and all other relevant documents.

8. RETURN OF EARNEST MONEY:

a. Earnest money to the unsuccessful bidders will be returned **one week** after commercialopening date.

b. Earnest money to the firm who has won the purchase order/ work order & contract will bereturned on submission of Bank Guarantee as per the contract.

9. TENDER FEE:

Each technical offer must be accompanied with Cash of **Rs.5,000**/- nonrefundable as tender fee (In favour of IT Sale Account DG PMSA).

10. INSPECTION AUTHORITY:

Joint inspection of stores provided and work done will be carried out by committee appointed by HQ PMSA or as per the contract.

11. CONDITION OF STORES:

Spares, Stores, items and work done will be accepted on Warranty / Guarantee of the firm onForm DPL-15.

12. DOCUMENTS REQUIRED:

Following documents are required to be submitted alongwith the quotes where applicable:

a. OEM / Authorized Dealer/Agent Certificate alongwith OEM Dealership Evidence as applicable.

b. The Supplier is to provide OEM conformance certificate. In case of Fax or e-mail hard copy of conformance certificate must follow. On receipt of this PMSA HQ may approach the OEM to confirm the veracity of the documents submitted. Companies / firms rendering false OEM conformance certificate will be penalized as per rules in vogue.

13. SECURITY DEPOSIT / BANK GUARANTEE:

To ensure timely and correct supply of stores the firm will furnish an unconditional Bank Guarantee (BG) from a schedule bank for an amount of **10%** of the contract value (excluding taxes, duties / freight handling charges on a stamp paper of the value of (Rs.100/00) as per prescribed format in the shape of Bank Guarantee. Format of Bank Guarantee is at Annex „B". Furthermore, it is imperative to mention that deposit of PBG for HMI and Core Exchange cases will be equal to the total value of engine.

14. CURRENT BANK STATEMENT:

For all contracts of Rs 1,000,000/- or more the firm is required to submit current bank statement of the firm.

15. INTEGRITY PACT:

Procurement exceeding Rs 1.00 M shall be subject to an integrity pact, between the Buyer and the Suppliers or Contractors.

16. CORRESPONDENCE:

All correspondence will be addressed to the Buyer. Correspondence with regard to payment or issue of delivery receipt may be addressed to D (P & CC) PMSA Karachi.

17. PRE SHIPMENT INSPECTION:

PMSA may send a team of Officers for the inspection of Major Equipment and Machinery items at OEM premises for inspection before dispatch if required at the Supplier's cost and arrangement.

18. AMENDMENT IN CONTRACT:

Contract may be amended / modified to include fresh clause modify the existing clauses with the mutual agreements by the Supplier and the Buyer such modifications shall form an integral part of the contract.

19. DISCREPANCY:

The Buyer will render a discrepancy report to all concerned within 45 days after receipt of stores for discrepancies found in the consignment. The quantities found short are to be made good by the Supplier free of cost.

20. PRICE VARIATION:

Price offered against IT are to be firm and final.

21. LIQUIDATED DAMAGES (LD):

Liquidated Damages upto 2% per month are liable to be imposed on the Suppliers by the Buyer in accordance with PPRA rules, if the stores supplied after the expiry of the delivery date without any valid reason. Total value of the LD shall not exceed 10% of the contract value.

22. RISK PURCHASE:

In the event of failure on the part of Supplier to comply with the contractual obligations the contract will becancelled at the Risk and Expense of the Supplier in accordance with PPRA rules.

23. PENALTY:

In case of wrong supply of the item by the Supplier, a penalty of 10% of the contract value may beimposed by this HQ PMSA apart from any other penalties.

24. ALL RIGHTS RESERVED:

HQ PMSA may reject all bids or proposals at any time prior to the acceptance of a bid or proposal as per PPRA Rule 33(I).

25. PAYMENT:

The payment will be released through Controller of Naval Accounts (CNA) Karachi in Pak Rupees after completion of delivery / work.

26. **PARTIAL ORDER**. All participating firms are to comply acceptance of partial order. Partial supply as per lowest rates i.a.w technically acceptable will be awarded to the lowest bidder.

27. **DISQUALIFICATION:** Offers are liable to be rejected if:-

a. Received after time and date specified in the IT.

b. Offers are found conditional or incomplete in any respect.

c. There is any deviation from the General / Special / Technical Instructions contained in this tender.

d. Taxes and duties, Freight, Transportation and Insurance charges not indicated separately as per required price breakdown mentioned above. Details of taxes are as under:

(i). **SST 13%**: SST @ 13% will be implemented on Repair/ Maintenance/ Overhauling and Fabrication cases.

(ii). **GST 18%**: GST @ 18% will be implemented on Procurement and supplies.

e. Pay Order with Commercial Offer and Cash with Technical Offer is not received.

f. Multiple rates quoted against one item.

g. Manufacture's relevant Brochures and technical details on major equipment, assemblies are not attached in support of specification.

h. Offers (Technical / Commercial) are containing amendments / corrections / overwriting etc.

j. National Tax No (NTN) and GST/SST No are not indicated on technical and commercial offer.

k. If validity of offer is not quoted as required in IT or made subject to confirmation late.