SEPARATE QUOTATIONS REQUIRED FOR ATTACHED 01 x IT SPECIFICATIONS

IT NO: IT/13/2023-24

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.

	1 /	
	(m)	
	(n)	
	(p)	
	(q)	Fuel transfer pump.
No. of the Party of the Control of the	(r)	Inlet manifold gasket.
The Married Health State	(s)	Inlet manifold seals.
	(t)	Oil cooler core.
	(u)	Oil pump.
	(v)	Pistons.
	(w)	Piston pins.
	(x)	Pre-lube pump.
ALL PROPERTY OF THE PERSON NAMED IN COLUMN NAM	(y)	Pushrods.
	(z)	Rocker arms.
	(aa)	Spacer plate.
	(bb)	
		Software update.
AND DESCRIPTION OF THE PERSON	(cc)	Turbocharger.
The state of the s	(dd)	Starter motor.
17. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	(ee)	Alternator.
The state of the second state and	(ff)	Speed sensors.
Committee of the larger and	(gg)	All sensors.
A COST OF THE REAL PROPERTY AND DESCRIPTION OF	(hh)	Injector harness.
CONTRACTOR AND ADDRESS OF PARTY AND ADDRESS OF PART	(ii)	Main and extension harness.
	(kk)	Power cable.
	(11)	Services of protection module, start panel.
	(mm)	ECM.
	d. Inspector components reusability p	ection of Components Inspect the following according to the instructions in light of Caterpillar ublications:
Control of the last of the las	(a)	Camshaft.
	(b)	Crankshaft.
	(c)	Driven equipment (alignment).
A AND THE RESERVE	(d)	Engine cylinder block.
The second secon	(e)	Engine control module.
	(f)	
	1,17	Flywheel.
The state of the s	(g)	Front gear train (gears).
The second secon	(h)	Oil suction screen.
The state of the s	(j)	Rear green train.
	(k)	Sea water strainer.
	(1)	Inspect the camshaft for damage to the journals
	4574	and the lobes.
	(m)	Inspect the crankshaft for any of the following
TOTAL PROPERTY OF THE PROPERTY	The second second	conditions:
and the state of t		i. Deflection.
		ii. Damage to the journals.
		iii. Bearing material that has seized to the
	The state of the s	journals.
	3 7 3	iv. Check the journal taper and the profile of the
	10000	crankshaft journals.
	(6410)	The state of the s
	(n)	Check these components by interpreting the wear patterns on the following components:
		i. Rod bearing.
		ii. Main bearings.
	reason, use	crankshaft or the camshaft is removed for any the magnetic particle inspection process to the
	check for cra	
	(a) F	Replace the crankshaft vibration damper if any of he following conditions occur:

- i. 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.
- (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. <u>Cleaning of Components</u> 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.
- All pressure and temperature sensors inspection/ replacement.
- 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.
 - (I) 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.

Technical Specs	Techni below:	ical specs for ca	terpillar C-9 marine engine	are apper
	CN	D-+ N	15 10	
	S No			Qty
		NDER HEAD GI		10.
	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		
	19.		Seal o ring	6
	- International Control	6V5064	Seal o ring	6
		NER BLOCK GF		1.5
	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	2-0676)	
	25.	1077694	Thrust plate	1
	CRAN	KSHAFT GP (1		
	26.	1512939	Bearing main	7
	27.	2463150	Plate thrust	
		2463150 GP CRANKSH	Plate thrust AFT (1876508)	2
	SEAL	GP CRANKSH	AFT (1876508)	2
	SEAL 28.	GP CRANKSH 2457339	AFT (1876508) Seal GP CSHA	2
	28. 29.	GP CRANKSH 2457339 5285683	AFT (1876508) Seal GP CSHA Seal GP	2
	28. 29. PISTO	GP CRANKSH 2457339 5285683 ON AND ROD G	AFT (1876508) Seal GP CSHA Seal GP P (267-7269)	1 1
	28. 29. PISTO 30.	2457339 5285683 DN AND ROD G 3447380	AFT (1876508) Seal GP CSHA Seal GP P (267-7269) Skirt piston	1 1
	28. 29. PISTO 30. 31.	2457339 5285683 ON AND ROD G 3447380 2722312	AFT (1876508) Seal GP CSHA Seal GP P (267-7269) Skirt piston Crown	1 1 6 6
	28. 29. PISTO 30. 31. 32.	2457339 5285683 ON AND ROD G 3447380 2722312 3472380	AFT (1876508) Seal GP CSHA Seal GP P (267-7269) Skirt piston Crown Ring piston	2 1 1 1 6 6 6
	28. 29. PISTO 30. 31. 32.	2457339 5285683 DN AND ROD G 3447380 2722312 3472380 3472381	AFT (1876508) Seal GP CSHA Seal GP P (267-7269) Skirt piston Crown Ring piston Ring piston	2 1 1 1 6 6 6 6 6
	28. 29. PISTO 30. 31. 32. 33. 34.	2457339 5285683 ON AND ROD G 3447380 2722312 3472380	AFT (1876508) Seal GP CSHA Seal GP P (267-7269) Skirt piston Crown Ring piston	2 1 1 1 6 6 6
	28. 29. PISTO 30. 31. 32.	2457339 5285683 DN AND ROD G 3447380 2722312 3472380 3472381	AFT (1876508) Seal GP CSHA Seal GP P (267-7269) Skirt piston Crown Ring piston Ring piston	2 1 1 1 6 6 6 6 6
	28. 29. PISTO 30. 31. 32. 33. 34.	2457339 5285683 DN AND ROD G 3447380 2722312 3472380 3472381 3472382	AFT (1876508) Seal GP CSHA Seal GP P (267-7269) Skirt piston Crown Ring piston Ring piston Ring piston	1 1 1 6 6 6 6 6 6
	28. 29. PISTO 30. 31. 32. 33. 34. 35.	2457339 5285683 DN AND ROD G 3447380 2722312 3472380 3472381 3472382 2133190 7X2908	AFT (1876508) Seal GP CSHA Seal GP P (267-7269) Skirt piston Crown Ring piston Ring piston Ring piston Bearing	2 1 1 1 6 6 6 6 6 6 6
	SEAL 28. 29. PISTO 30. 31. 32. 33. 34. 35. 36. 37.	2457339 5285683 DN AND ROD G 3447380 2722312 3472380 3472381 3472382 2133190 7X2908 1608197	AFT (1876508) Seal GP CSHA Seal GP P (267-7269) Skirt piston Crown Ring piston Ring piston Ring piston Bearing Ring Bolt	2 1 1 1 6 6 6 6 6 6 6 12 6
	28. 29. PISTO 30. 31. 32. 33. 34. 35. 36. 37. 38.	2457339 5285683 DN AND ROD G 3447380 2722312 3472380 3472381 3472382 2133190 7X2908 1608197 6V3940	AFT (1876508) Seal GP CSHA Seal GP P (267-7269) Skirt piston Crown Ring piston Ring piston Ring piston Bearing Ring Bolt Bolt	2 1 1 1 6 6 6 6 6 6 6
	28. 29. PISTO 30. 31. 32. 33. 34. 35. 36. 37. 38. VALV	2457339 5285683 DN AND ROD G 3447380 2722312 3472380 3472381 3472382 2133190 7X2908 1608197 6V3940 E MECHANISM	AFT (1876508) Seal GP CSHA Seal GP P (267-7269) Skirt piston Crown Ring piston Ring piston Ring piston Bearing Ring Bolt Bolt	2 1 1 6 6 6 6 6 6 12 6
	38. VALV 39.	2457339 5285683 DN AND ROD G 3447380 2722312 3472380 3472381 3472382 2133190 7X2908 1608197 6V3940 E MECHANISM 4778095	AFT (1876508) Seal GP CSHA Seal GP P (267-7269) Skirt piston Crown Ring piston Ring piston Ring piston Bearing Ring Bolt Bolt Spring guide	2 1 1 6 6 6 6 6 6 6 6 6 6
	38. VALV 39. 40.	2457339 5285683 DN AND ROD G 3447380 2722312 3472380 3472381 3472382 2133190 7X2908 1608197 6V3940 (E MECHANISM 4778095 5811372	AFT (1876508) Seal GP CSHA Seal GP P (267-7269) Skirt piston Crown Ring piston Ring piston Ring piston Bearing Ring Bolt Bolt GP Spring guide Bridge valve	2 1 1 1 6 6 6 6 6 6 6 6 12 6 6
	38. VALV 39. 40. 41.	2457339 5285683 DN AND ROD G 3447380 2722312 3472380 3472381 3472382 2133190 7X2908 1608197 6V3940 E MECHANISM 4778095 5811372 2445891	AFT (1876508) Seal GP CSHA Seal GP P (267-7269) Skirt piston Crown Ring piston Ring piston Ring piston Bearing Ring Bolt Bolt Bolt GP Spring guide Bridge valve Bridge valve	2 1 1 1 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6
	SEAL 28. 29. PISTO 30. 31. 32. 33. 34. 35. 36. 37. 38. VALV 39. 40. 41. 42.	2457339 5285683 DN AND ROD G 3447380 2722312 3472380 3472381 3472382 2133190 7X2908 1608197 6V3940 E MECHANISM 4778095 5811372 2445891 2Y5829	AFT (1876508) Seal GP CSHA Seal GP P (267-7269) Skirt piston Crown Ring piston Ring piston Ring piston Bearing Ring Bolt Bolt Bolt Bolt GP Spring guide Bridge valve Bridge valve Nut	2 1 1 1 6 6 6 6 6 6 12 6 6 6 6
	SEAL 28. 29. PISTO 30. 31. 32. 33. 34. 35. 36. 37. 38. VALV 39. 40. 41. 42. 43.	2457339 5285683 DN AND ROD G 3447380 2722312 3472380 3472381 3472382 2133190 7X2908 1608197 6V3940 7E MECHANISM 4778095 5811372 2445891 2Y5829 2607524	AFT (1876508) Seal GP CSHA Seal GP P (267-7269) Skirt piston Crown Ring piston Ring piston Ring piston Bearing Ring Bolt Bolt Bolt GP Spring guide Bridge valve Bridge valve Nut Screw valve	2 1 1 1 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6
	SEAL 28. 29. PISTO 30. 31. 32. 33. 34. 35. 36. 37. 38. VALV 39. 40. 41. 42. 43. COVE	2457339 5285683 DN AND ROD G 3447380 2722312 3472380 3472381 3472382 2133190 7X2908 1608197 6V3940 E MECHANISM 4778095 5811372 2445891 2Y5829 2607524 ER GP VALVE M	AFT (1876508) Seal GP CSHA Seal GP P (267-7269) Skirt piston Crown Ring piston Ring piston Ring piston Bearing Ring Bolt Bolt Bolt GP Spring guide Bridge valve Bridge valve Nut Screw valve IECHANISM (261-3977)	2 1 1 1 6 6 6 6 6 6 12 6 6 6 12 12 12
	SEAL 28. 29. PISTO 30. 31. 32. 33. 34. 35. 36. 37. 38. VALV 39. 40. 41. 42. 43. COVE 44.	2457339 5285683 DN AND ROD G 3447380 2722312 3472380 3472381 3472382 2133190 7X2908 1608197 6V3940 E MECHANISM 4778095 5811372 2445891 2Y5829 2607524 ER GP VALVE N 2854106	AFT (1876508) Seal GP CSHA Seal GP P (267-7269) Skirt piston Crown Ring piston Ring piston Ring piston Bearing Ring Bolt Bolt Bolt GP Spring guide Bridge valve Bridge valve Nut Screw valve IECHANISM (261-3977) Seal	2 1 1 1 6 6 6 6 6 12 6 6 6 12 12 12
	SEAL 28. 29. PISTO 30. 31. 32. 33. 34. 35. 36. 37. 38. VALV 39. 40. 41. 42. 43. COVE 44. 45.	2457339 5285683 DN AND ROD G 3447380 2722312 3472380 3472381 3472382 2133190 7X2908 1608197 6V3940 E MECHANISM 4778095 5811372 2445891 2Y5829 2607524 ER GP VALVE N 2854106 2683490	AFT (1876508) Seal GP CSHA Seal GP P (267-7269) Skirt piston Crown Ring piston Ring piston Ring piston Bearing Ring Bolt Bolt Bolt GP Spring guide Bridge valve Bridge valve Nut Screw valve IECHANISM (261-3977) Seal Seal As	2 1 1 1 6 6 6 6 6 6 12 6 6 6 12 12 12
	SEAL 28. 29. PISTO 30. 31. 32. 33. 34. 35. 36. 37. 38. VALV 39. 40. 41. 42. 43. COVE 44.	2457339 5285683 DN AND ROD G 3447380 2722312 3472380 3472381 3472382 2133190 7X2908 1608197 6V3940 E MECHANISM 4778095 5811372 2445891 2Y5829 2607524 ER GP VALVE N 2854106	AFT (1876508) Seal GP CSHA Seal GP P (267-7269) Skirt piston Crown Ring piston Ring piston Ring piston Bearing Ring Bolt Bolt Bolt GP Spring guide Bridge valve Bridge valve Nut Screw valve IECHANISM (261-3977) Seal	2 1 1 1 6 6 6 6 6 12 6 6 6 12 12 12
	SEAL 28. 29. PISTO 30. 31. 32. 33. 34. 35. 36. 37. 38. VALV 39. 40. 41. 42. 43. COVE 44. 45.	2457339 5285683 DN AND ROD G 3447380 2722312 3472380 3472381 3472382 2133190 7X2908 1608197 6V3940 E MECHANISM 4778095 5811372 2445891 2Y5829 2607524 ER GP VALVE N 2854106 2683490	AFT (1876508) Seal GP CSHA Seal GP P (267-7269) Skirt piston Crown Ring piston Ring piston Ring piston Bearing Ring Bolt Bolt Bolt GP Spring guide Bridge valve Bridge valve Nut Screw valve IECHANISM (261-3977) Seal Seal As	2 1 1 1 6 6 6 6 6 6 12 6 6 6 12 12 12
	SEAL 28. 29. PISTO 30. 31. 32. 33. 34. 35. 36. 37. 38. VALV 39. 40. 41. 42. 43. COVE 44. 45. 46.	2457339 5285683 DN AND ROD G 3447380 2722312 3472380 3472381 3472382 2133190 7X2908 1608197 6V3940 4778095 5811372 2445891 2Y5829 2607524 R GP VALVE N 2854106 2683490 8T6912	AFT (1876508) Seal GP CSHA Seal GP P (267-7269) Skirt piston Crown Ring piston Ring piston Ring piston Bearing Ring Bolt Bolt Bolt GP Spring guide Bridge valve Bridge valve Nut Screw valve IECHANISM (261-3977) Seal Seal As Bolt	2 1 1 1 6 6 6 6 6 12 6 6 6 12 12 1 1 1 1

50.	3587876	Sleeve space	11
51.	2444500	Spring	9
	THER GP (305		
	2400041	Breather As	1
	9F4446	Ring	1
54	2132410	Gasket	1
	R GP FRONT (2		
	1136069	Plate	1
	1154219	Plate	1
57	2132410	Gasket	
			1
	TENSIONER G		1.4
50.	2792589	Pulley As	1
59.	2016699	Tightner	1
TURE	OCHARGER G	P (267-8925)	
60	2719416	Cartridge GP	1
61.	3110827	Seal O ring	1
62.	3110827 4319388 7M7273 3E8017 5417108	Clamp	2
63.	7M7273	Gasket	1
64	3E8017	Locknut	4
65	5417108	Hose BK	57
PIIME	GP OIL (195-8		57
66	3318906	Pump GP	1
		(400 9009)	3
C7	GP ENGINE OIL	(199-0098)	Ta
0/.	2089793	Hose As	1
68.	3K0360	Seal	1
69.	6V8398	Seal O ring	1
COOL	ER GP MARIN	E XMSN (197-5989)	
	2026706	Hose	1
71.	8T6703	Clamp	4
72.	2003916	Core	1
73.	2H3931	Seal	4
	6L2280	Rod	2
		CITON (267-9717)	
			6
76	5734231 2359651	Bolt socket	12
VIRIN	IG GP UNIT IN.	JECTOR (306-8280)	12
77.		Harness As	1
		CTOR HYDRAULIC (416-2	
78.	3190678	Pump GP	1 1
	- Complete State Complete State Company	THE RESERVE OF THE PROPERTY OF	
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
and the second second		MING (154-9283)	1
	_	and the state of t	12
86.	1375541	Pump As	1
87.	1P0436	Gasket	1
	ER GP FUEL (1		4
88.	5P4868	Clamp	1
	2094573	Clamp T Bolt	2
	4640509	Seal O Ring	2
89. 90.		CM hose Bulk	8
	3718122		
90. 91.	3718122 R GP FUEL (24	5-4782)	
90. 91.		The state of the s	1
90. 91. ILTE 92.	R GP FUEL (24 2S3992	Spring	1
90. 91. ILTE 92. 93.	R GP FUEL (24 2S3992 2147566	Spring Seal O ring	1
90. 91. ILTE 92. 93. 94.	R GP FUEL (24 2S3992 2147566 6N6250	Spring Seal O ring Gasket	1
90. 91. ILTE 92. 93. 94. 95.	R GP FUEL (24 2S3992 2147566	Spring Seal O ring	1

	2093339 4p3871	Seal Gasket	1 2
AFTER	COOLER GP	RAW WATER (197-5991)	
139.	6L2280	Rod	1
138.	5B4399	Ring	1
137.	3S9643	Seal	1
136.	2H3931	Seal	1
135.	2D8009	Seal O ring	4
134.	0990187	O Ring	2
133.	1255274	CAP	1
132.	4184162	Regulator TE	1
HEAT	EXCHANGER	GP SEA WATER (197-59	88)
131.	7J9108	Seal	2
130.	2385081	Seal O ring	3
129.	4J5477	Seal O ring	3
128.	3J7354	Seal O ring	2
	5417118	Hose BK	12
126.		Seal face	1
125.	8T4983	Clamp	1
124.	3718094	CM Hose Bulk	20
123.	2058846	Hose	1
122	1949567	Hose	1
121.	1922156	Hose	1
	1591503	Clamp	4
	8T4984	Clamp	4
	2S3440	Clamp	3
110	SP WATER (3		
LINE	GP WATER (3	06 2040)	1
117	2096400	203-4000)	
	P GP WATER (Element As C	1
	2447913	Element	1
	1968518		1
	1R0750	Filter AS-LU	1
	1R1808	Filter AS-LU	
	SUMABLE	THE GASKEL	1
	4893319	Kit Gasket	1
	. 4805751	Kit Gasket	6
	2974841	Kit Gasket	
	4893317	Kit Gasket	1
108	3. 4893316	Kit Gasket	1
107	7. 4893314	Kit Gasket	1
	3. 4893312	Kit Gasket	1
KIT	GASKET	WOULD OF ELE	1
10	5. 2006992	Motor GP ELE	
MO	OR GP START	TING ELECTRICAL (199-	1
10	4. Z00/ZZ0	Alternator C	1
10	3. 2380364	Pulley ALT	12
ALT	ERNATOR GP	CHARGING (206 2650)	1
10	2. 1922133	Gasket Exhaust	1
IVIA	VIFULD GP CH	ARGING (206-2650)	11
10	1. 2237453	Hose	1
10	5p0599 0. 1922153 1. 2237453	Hose air inlet	1
99	. 5p0599	Clamp	1 2
98	5P4868 1537950	Clamp Hose As	1

	*	148. 8C3080	Seal O Ring	2	
		149. 1131110	CAM	1	
0		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		nal firm having experience		
1.1.		repair/ maintenance machinery/ equipmer	and overhauling of m		
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 of	quipment whichever is earlie rigin or equivalent spare:	r. s/ accessorie	
14.	Acceptance Criteria Any other relevant	Use of USA of (including electromarine engines is staff. Inspection of spanstaff. Successful computarmeters and with both main endingers. Test certificates accessories i.e in by contracted firm.	rigin or equivalent spares onic control system) for to be ensured by contracted area arranged by the firm by letion of HATs/ SATs as persubject to achieving of > 30 gines with 90% - 100% designed or relevant documents of the properties of the pumps etc are not in light of OEM standards.	s/ accessorie caterpillar C- d firm. r SS/ Tech Dte er OEM defined knots of FRI gned RPMs. for equipment to be rendered	

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)
	10151	> 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.
	The second second	> Gear train bushings.
		> Gear train bearings.
	1000	 Main bearings. Piston rings.
		After cooler core.
	ALC: No other Designation of the Control of the Con	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):
	District President	> Camshaft followers.
		 Camshaft thrust washers.
		Connecting rod.
		Crankshaft vibration damper.
		Cylinder head assembly.
		 Cylinder liners.
	The second second	> Engine mounts.
		 Scavenge oil pump.
		Engine wiring harness.
		Exhaust manifold seals.
		Exhaust manifold seals.

	(m)	Exhaust manifold bellows.
	(n)	Fuel pressure regulating valves.
	(p)	Fuel priming pump.
	(p)	Fuel transfer pump.
A STATE OF THE PARTY OF THE PAR	(r)	Inlet manifold gasket.
TOTAL CHANGE STATE	(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.
The state of the s	(cc)	Turbocharger.
Accessed to the second	(dd)	Starter motor.
	State of the state	
	(ee)	Alternator.
	(ff)	Speed sensors.
	(gg)	All sensors.
	(hh)	Injector harness.
	(jj)	Main and extension harness.
	(kk)	Power cable.
	(11)	Services of protection module, start panel.
	(mm)	ECM.
	d. Inspe	notion of Commonts. I
	d. Inspe	ection of Components Inspect the following
	components	according to the instructions in light of Caterpillar
	reusability p	ublications:
	10.0	
	(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.
	(0)	Rear green train.
	(k)	Sea water strainer.
	40	Inspect the sense of the sense
	(1)	Inspect the camshaft for damage to the journals
	1	and the lobes.
	(m)	Inspect the crankshaft for any of the following
	Colonia I	conditions:
		i. Deflection.
		II Domone to the Journal
		ii. Damage to the journals.
		iii. Bearing material that has seized to the
		iii. Bearing material that has seized to the journals.
		iii. Bearing material that has seized to the journals.
		iii. Bearing material that has seized to the journals. iv. Check the journal taper and the profile of the
		iii. Bearing material that has seized to the journals.
	(n)	iii. Bearing material that has seized to the journals.iv. Check the journal taper and the profile of the crankshaft journals.
	(n)	 iii. Bearing material that has seized to the journals. iv. Check the journal taper and the profile of the crankshaft journals. Check these components by interpreting the wear
	(n)	iii. Bearing material that has seized to the journals.iv. Check the journal taper and the profile of the crankshaft journals.
	(n)	 iii. Bearing material that has seized to the journals. iv. Check the journal taper and the profile of the crankshaft journals. Check these components by interpreting the wear patterns on the following components:
	(n)	 iii. Bearing material that has seized to the journals. iv. Check the journal taper and the profile of the crankshaft journals. Check these components by interpreting the wear patterns on the following components: i. Rod bearing.
	(n)	 iii. Bearing material that has seized to the journals. iv. Check the journal taper and the profile of the crankshaft journals. Check these components by interpreting the wear patterns on the following components: i. Rod bearing.
		 iii. Bearing material that has seized to the journals. iv. 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	 iii. Bearing material that has seized to the journals. iv. 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	 iii. Bearing material that has seized to the journals. iv. 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. crankshaft or the camshaft is removed for any the magnetic particle inspection process to the
	Note: If the reason, use	 iii. Bearing material that has seized to the journals. iv. 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. crankshaft or the camshaft is removed for any the magnetic particle inspection process to the
	Note: If the reason, use check for crac	 iii. Bearing material that has seized to the journals. iv. 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. crankshaft or the camshaft is removed for any the magnetic particle inspection process to the

- i. Engine failure due to a broken crankshaft.
- ii. Excessive wear of the front bearing for the crankshaft.
- 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. <u>Cleaning of Components</u> 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.
- Fwd/ Aft engagement solenoid inspection/ replacement.
- 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.
 - (I) 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.

Tiple !	Technical Specs	Techni below:		oillar C-9 marine engine a	ire appen
	se product to any	S No	Part Number	Description	Qty
1100	and the same of the same	The second secon	NDER HEAD GP (2	68_4474)	Qty
		1.	1W2715	Lock	104
		2.	2A4429	Lock	24
	and the same of the same	3.	3613926		24
				Seal valves	12
		4.	2112134	Retainer spr	12
		5.	2170609	Seat valve spr	6
l		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
			NER BLOCK GP (1		
		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 (242-06		
		25.	1077694	Thrust plate	1
		-	KSHAFT GP (164-		
		26.	1512939	Bearing main	7
		27.	2463150	Plate thrust	2
			GP CRANKSHAF		12
				The state of the s	12
		28.	2457339	Seal GP CSHA	1
		29.	5285683	Seal GP	1
		The state of the s	ON AND ROD GP (2		120
		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
			E MECHANISM GF		
		39.	4778095	Spring guide	12
		40.	5811372	Bridge valve	6
		41.	2445891	Bridge valve	6
		42.	2Y5829	Nut	12
		43.	2607524	Screw valve	12
				HANISM (261-3977)	1.2
		44.	2854106	Seal	1
		45.	2683490	Seal As	1
		46.	8T6912	Bolt	
					10
		47.	2113445	Stud bold	1
		40	OT4224	Machae	4.4
		48. 49.	9N0869	Washer Washer	11

	3587876	Sleeve space	11
	2444500	Spring	9
	THER GP (305		10
	2400041		1
	9F4446		
		Ring	1
	2132410	Gasket	1
	GP FRONT (2	The state of the s	
55.	1136069	Plate	1
56.	1154219	Plate	1
57.	2132410	Gasket	1
BELT	TENSIONER G	P (245-4596)	
	2792589	Pulley As	1
	2016699	Tightner	1
TURB	OCHARGER G		
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
	GP OIL (195-8		5/
			172
	3318906	Pump GP	1
	GP ENGINE OIL		
67.	2089793	Hose As	1
68.	3K0360	Seal	1
69.	6V8398	Seal O ring	1
COOL	ER GP MARINI	E XMSN (197-5989)	
	2026706	Hose	1
71	8T6703	Clamp	4
72	2003016	Core	1
72	2003916		
73.	2H3931	Seal	4
	6L2280	Rod	2
PUMP	GP FUEL INJE	CITON (267-9717)	
75.	5734231 2359651	Injector GP	6
	2000001	Bolt socket	12
WIRIN	IG GP UNIT INJ	ECTOR (306-8280)	
77.	4190841	Harness As	1
PUMP	GP UNIT INJE	CTOR HYDRAULIC (416-2	2712)
78.	3190678	Pump GP	1
79.	2147568	Seal O Ring	1
	TREATING CONTRACTOR		1.4
	2227000	Sool O Diec	
80.	2287090	Seal O Ring	1
81.	2275904	Seal O Ring	1
			_
81.	2275904	Seal O Ring	1
81. 82. 83.	2275904 2385082 2385081	Seal O Ring Seal O Ring Seal O Ring	1 1 1
81. 82. 83. 84.	2275904 2385082 2385081 2147568	Seal O Ring Seal O Ring Seal O Ring Seal O Ring	1 1 1 1
81. 82. 83. 84. 85.	2275904 2385082 2385081 2147568 2287090	Seal O Ring	1 1 1
81. 82. 83. 84. 85. PUMP	2275904 2385082 2385081 2147568 2287090 GP FUEL PRIM	Seal O Ring MING (154-9283)	1 1 1 1
81. 82. 83. 84. 85. PUMP 86.	2275904 2385082 2385081 2147568 2287090 GP FUEL PRIM 1375541	Seal O Ring MING (154-9283) Pump As	1 1 1 1 1 1
81. 82. 83. 84. 85. PUMP 86. 87.	2275904 2385082 2385081 2147568 2287090 GP FUEL PRIM 1375541 1P0436	Seal O Ring MING (154-9283) Pump As Gasket	1 1 1 1
81. 82. 83. 84. 85. PUMP 86. 87.	2275904 2385082 2385081 2147568 2287090 GP FUEL PRIM 1375541 1P0436 ER GP FUEL (1	Seal O Ring MING (154-9283) Pump As Gasket	1 1 1 1 1
81. 82. 83. 84. 85. PUMP 86. 87.	2275904 2385082 2385081 2147568 2287090 GP FUEL PRIM 1375541 1P0436	Seal O Ring MING (154-9283) Pump As Gasket 197-6006) Clamp	1 1 1 1 1 1
81. 82. 83. 84. 85. PUMP 86. 87.	2275904 2385082 2385081 2147568 2287090 GP FUEL PRIM 1375541 1P0436 ER GP FUEL (1	Seal O Ring MING (154-9283) Pump As Gasket	1 1 1 1 1
81. 82. 83. 84. 85. PUMP 86. 87. COOL	2275904 2385082 2385081 2147568 2287090 GP FUEL PRIM 1375541 1P0436 ER GP FUEL (1	Seal O Ring MING (154-9283) Pump As Gasket 197-6006) Clamp Clamp Clamp T Bolt	1 1 1 1 1 1
81. 82. 83. 84. 85. PUMP 86. 87. COOL 88. 89.	2275904 2385082 2385081 2147568 2287090 GP FUEL PRIM 1375541 1P0436 ER GP FUEL (1 5P4868 2094573 4640509	Seal O Ring MING (154-9283) Pump As Gasket 197-6006) Clamp Clamp T Bolt Seal O Ring	1 1 1 1 1 1 1 1 2 2
81. 82. 83. 84. 85. PUMP 86. 87. COOL 88. 89. 90.	2275904 2385082 2385081 2147568 2287090 GP FUEL PRIM 1375541 1P0436 ER GP FUEL (1 5P4868 2094573 4640509 3718122	Seal O Ring MING (154-9283) Pump As Gasket 197-6006) Clamp Clamp T Bolt Seal O Ring CM hose Bulk	1 1 1 1 1 1 1 1
81. 82. 83. 84. 85. PUMP 86. 87. COOL 88. 89. 90. 91.	2275904 2385082 2385081 2147568 2287090 GP FUEL PRIM 1375541 1P0436 ER GP FUEL (1 5P4868 2094573 4640509 3718122 R GP FUEL (24	Seal O Ring MING (154-9283) Pump As Gasket 197-6006) Clamp Clamp Clamp T Bolt Seal O Ring CM hose Bulk 5-4782)	1 1 1 1 1 1 1 1 2 2 8
81. 82. 83. 84. 85. PUMP 86. 87. COOL 88. 89. 90. 91. FILTE	2275904 2385082 2385081 2147568 2287090 GP FUEL PRIM 1375541 1P0436 ER GP FUEL (1 5P4868 2094573 4640509 3718122 R GP FUEL (24 2S3992	Seal O Ring MING (154-9283) Pump As Gasket 197-6006) Clamp Clamp T Bolt Seal O Ring CM hose Bulk 5-4782) Spring	1 1 1 1 1 1 1 1 2 2 8
81. 82. 83. 84. 85. PUMP 86. 87. COOL 88. 89. 91. FILTE 92. 93.	2275904 2385082 2385081 2147568 2287090 GP FUEL PRIM 1375541 1P0436 ER GP FUEL (1 5P4868 2094573 4640509 3718122 R GP FUEL (24 2S3992 2147566	Seal O Ring MING (154-9283) Pump As Gasket 197-6006) Clamp Clamp Clamp T Bolt Seal O Ring CM hose Bulk 5-4782) Spring Seal O ring	1 1 1 1 1 1 1 1 2 2 8
81. 82. 83. 84. 85. PUMP 86. 87. COOL 88. 89. 90. 91. FILTE 92. 93.	2275904 2385082 2385081 2147568 2287090 GP FUEL PRIM 1375541 1P0436 ER GP FUEL (1 5P4868 2094573 4640509 3718122 R GP FUEL (24 2\$3992 2147566 6N6250	Seal O Ring MING (154-9283) Pump As Gasket 197-6006) Clamp Clamp T Bolt Seal O Ring CM hose Bulk 5-4782) Spring Seal O ring Gasket	1 1 1 1 1 1 1 1 2 2 2 8
81. 82. 83. 84. 85. PUMP 86. 87. COOL 88. 89. 91. FILTE 92. 93.	2275904 2385082 2385081 2147568 2287090 GP FUEL PRIM 1375541 1P0436 ER GP FUEL (1 5P4868 2094573 4640509 3718122 R GP FUEL (24 2S3992 2147566	Seal O Ring MING (154-9283) Pump As Gasket 197-6006) Clamp Clamp Clamp T Bolt Seal O Ring CM hose Bulk 5-4782) Spring Seal O ring	1 1 1 1 1 1 1 1 2 2 8

. .

98		Clamp Hose As	1
99	0. 5p0599 0. 1922153	Clamp	2
10	0. 1922153	Hose air inlet	1
10	1. 2237453	Hose	1
MA	NIFOLD GP CH	ARGING (206-2650)	
ALT	2. 1922133 ERNATOR GP	CHARGING (200 2000)	1
10	3. 2380364	Pulley Al T	14
10	4. 266/226	Alternator C	1
MO	TOR GP START	TING ELECTRICAL (199-691	91
10	5. 2006992	Motor GP ELE	1
KIT	GASKET	The second second	
10	3. 4893312	Kit Gasket	1
	7. 4893314	Kit Gasket	1
	3. 4893316	Kit Gasket	1
	9. 4893317	Kit Gasket	1
	2974841	Kit Gasket	6
	. 4805751	Kit Gasket	1
	4893319	Kit Gasket	1
	SUMABLE		
	. 1R1808	Filter AS-LU	1
	. 1R0750	Filter As	1
	. 1968518	Element	1
	2447913	Element As C	1
PUM	P GP WATER (209-4600)	1.7
117	. 2096400		1
LINE	GP WATER (3	06-3019)	
118	2S3440	Clamp	3
	8T4984	Clamp	4
	1591503	Clamp	4
	1922156	Hose	1
	1949567	Hose	1
	2058846	Hose	1
	3718094	CM Hose Bulk	20
	8T4983	Clamp	1
126.		Seal face	1
	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
130.	2H3931	Seal	1
13/.	3S9643	Seal	1
138.	5B4399	Ring	1
AETE	6L2280	Rod	1
140	2000LER GP	RAW WATER (197-5991)	
	2093339	Seal	1
141.	4p3871	Gasket	2
	1949570	Gasket	2
142	OTOTOO	SEA WATER (197-6009)	
	8T6703	Clamp	2
	1731819	Hose sea water	1
145.	4F8824	Ring	2
UNIP	GP AUXILIARY	SEA WATER (197-5993)	
146.	01.0000	Rod	

		148.	8C3080	Seal O Ring	2
	1 1 1 1 1 1 1 1 1 1	149.	1131110	CAM	1
0		150.		Seal Pump	1
		151.	A STATE OF THE PARTY OF T	Ring retain	1
		152.	Married Science Company Compan	Shaft water pump	1
		153.	A STATE OF THE PARTY OF T	Key stainless	1
		154.	the state of the s	Ring	1
		155.		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
		The second second	A COMPANY OF THE PARK	Spacer	1
12.	EDC		repair/ maintenance and overhauling of marine version machinery/ equipment. 30 days.		
13.	Warranty			ning hours of both engi uipment whichever is earlie	
14.	Acceptance Criteria	> Insp staf > Suc para with > Tes	luding electronine engines is to bection of spare f. cessful comple ameters and suboth main engine to certificates essories i.e injection.	gin or equivalent spares plic control system) for to be ensured by contracted es arranged by the firm by tion of HATs/ SATs as per bject to achieving of > 30 ines with 90% - 100% design or relevant documents for ectors, fuel pumps etc are in light of OEM standards.	caterpillar C i firm. SS/ Tech D r OEM define knots of FR gned RPMs.
15.	Any other relevant information			e to be arranged by the cor her equipment removal an	ntractor.

Note: 100% Payment after completion by CNA

Director General

Pakistan Maritime Security Agency Plot No 34-A, Dockyard Road KARACHI Telephone 021-48509194

Fax 99214625

E-Mail dpcc@pmsa.gov.pk

INVITATION TO TENDER GENERAL INSTRUCTIONS

1. CONDITIONS GOVERNING CONTRACT:

All Procurement / Repairs / Maintenance Contract, Local Purchase Order (LPO) and work ordered made as a result 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 envelop 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. Total price of the items quoted against the tender is to be clearly mentioned. It should also contains a **pay order 2% 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.
- c. **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 OUOTATION

Please prepare quotation in this format In case of GST @ 18% or SST @ 15%:

S.NO	<u>Description</u>	Unit Price	<u>Qty</u>	<u>Total</u>	GST @ 18%	T/Price
					or SST @ 15%.	

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

<u>S.NO</u>	<u>Description</u>	<u>Unit Price</u>	<u>Qty</u>	<u>Total</u>	<u>T/Price</u>

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. **OUOTING 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 be enturned 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 on Form DPL-15.

12. **DOCUMENTS REOUIRED:**

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".

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. LIOUIDATED 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 be imposed by this HO 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.
- 27. **DISOUALIFICATION:** 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 thistender.

- d. Taxes and duties, Freight / Transpiration and Insurance charges not indicated separately asper required price breakdown mentioned above.
- 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 arenot 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.