SHIP REPAIR & FABRICATION

<u>Telephones</u>

Office: 4771690 / 4771695

Fax : 4771687



Telex : 4206 DH

Cable: "NAVIGATION" Doha Bank A/c: QNB Main Branch P.O.Box 1000, Doha - Qatar

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QAR A/C No. 0013-000309-060 USD A/C No. 0013-000309-061

DRAFT INVOICE

Page: 1 /12

103199

QATAR PETROLEUM

MESAIEED INDUSTRIAL CITY

MESAIEED OA 70

INVOICE NO : SFWK-DMY-008222

DATE: 13/08/2021

W/O Number : 21-011113

W/O Ref : NMO21089

EXPENSE A/C :

Vessel Name/Description: SPM BUOY- QATAR PETROLEUM

Job No	Description	Line Amount
	Contract No:- GC21101600 Contract Title: DRY DOCK REPAIR ON SPM BUOY AT MESAIEED	
	SAP ID No : 101921	
1100	PRELIMINARIES AND GENERAL MATTERS:-	679,140.69
	Provision of performance bond. Mobilization of contractor resources. Demobilization of contractor resources.	
1101	GENERAL SERVICES:-	3,235,990.30
	Provide the services of an IMODCO engineer or IMODCOs authorized third party technical representaive for duration of contrct for supervision and inspection of the services carried out in the drydock and disconnection, reinstallation and offshore commissioning of SBM Buoy, as detailed in clause 3.1.2 of Appendix A.	
	Carried out condition survey to determine the operational feasilibility and future life span recommendation of SPM Buoy following the tests upon overhauling and shall include detailed condition report of the SPM Buoy, recommendation on the continuity of the operation of the SPM Buoy until replaement, as per clause 3.1.6 of Appendix A.	
1102	OVERHAUL PREPARATION (As per clause 3.3.1 to 3.3.6 of Appendix A) :-	152,277.38
	Water flush with cleaning / emulsifying agent and gas-free the MPDU including its associated product piping.	

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DRAFT INVOICE

Page: 2 /12

103199

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MESAIEED QA 70

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DATE: 13/08/2021

W/O Number : 21-011113

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EXPENSE A/C :

Vessel Name/Description: SPM BUOY- QATAR PETROLEUM

Job No Description

Line Amount

Open all compartments (i.e., watertight hatches and manholes) and gasfree the respective spaces.

Deactivate and remove the navigation light, batteries, wiring and other ancillary equipment.

Disassemble the entire rotating assembly and lift-off all arms from the buoy.

Disassemble all SPM arms and its accessories before start of the overhauling works.

1103 BUOY HULL:-

1,283,925.00

Grit-blast the entire exterior of the buoy hull to remove all existing paintwork and corrosion.

Perform ultrasonic thickness gauging, around 200 points of all plating of the hull and skirt structure.

Replace all corroded or damaged plating and structural members on the deck, outer shell, inner shell, bulk heads and bottom – 196.956 m2 of area.

Replace all damaged buoy body fenders, attachment clips and fastening bolts.

Replace any corroded or damaged skirt pipe - 25 m

Replace any corroded or damaged skirt support braces - 8 nos

Replace any corroded or damaged skirt plating - 1 m2

Replace all anodes, mounting brackets and fastening bolts -21 nos

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DRAFT INVOICE

Page: 3 /12

103199

QATAR PETROLEUM

MESAIEED INDUSTRIAL CITY

MESAIEED OA 70

INVOICE NO : S

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DATE: 13/08/2021

W/O Number : 21-011113

W/O Ref : NMO21089

EXPENSE A/C :

Vessel Name/Description: SPM BUOY- QATAR PETROLEUM

Job No Description

Line Amount

Replace the chafe end of hawse-pipes at proxy of 6 o'clock and 12 o'clock positions - 6 nos

Replace all chain locker covers (6 nos.), fasteners, drill and tap new bolt holes and fit new bolts.

Replace the cover plate of submarine hose pulling tube along with new bolting and gasket.

Install twelve (12) new pad eyes at the bottom of the hull clockwise to the product piping flanges.

Replace two (2) units of watertight deck hatches and four (4) units of manhole covers and its reinforcement ring and with complement of new sealing gaskets and bolting.

Dismantle and remove the existing wheels and rails and replace with new wheel and rail.

Remove rigid polyurethane foam from compartment within the proximity of any hot work - 3 nos

1104 CALM BUOY ACCESS COMPARTMENT:-

19,956.63

Remove and plugged off all twelve (12) pieces of ½" NPT pipe plugs of the hydraulic umbilical, penetration plate at the bottom point adjacent to bulk head #45 in compartment #1.

Overhaul or replace bilge pump including replacement of suction and discharge hoses and securing clips and bolting.

1105 CALM BUOY CENTRAL CHAMBER:-

85,322.63

Re-condition the dogs, glands, rubber packings, hinge pins and lubrication fittings of the two (2) units of watertight doors

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DRAFT INVOICE

Page: 4 /12

103199

OATAR PETROLEUM

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MESAIEED OA 70

INVOICE NO: SFWK-DMY-008222

DATE: 13/08/2021

W/O Number : 21-011113

W/O Ref : NMO21089

EXPENSE A/C :

Vessel Name/Description: SPM BUOY- QATAR PETROLEUM

Job No Description

Line Amount

in the central chamber (one of 42" \times 30" and one of 30" \times 24")

Dismantle and remove six (6) connections of 24 inch size pipe flanges of two elbow spools, two 24 inch ball valves and two units of 24 inch bottom penetration pipes.

Remove two units of $1\ 1/2$ inch pipe plugs from the elbow spools.

Dismantle and remove three (3) connections of 16 inch size pipe flanges of one removable spool, one unit of 16 inch ball valve and one unit of 1 1/2 inch pipe plug.

Inspect the faces of all pipe flanges to determine its sealing integrity to carryout machining or replacement.

Replacement of two (2) units of 24 inch and one (1) unit of 16 inch ball valves.

Dismantle and remove all under-buoy hose spools with direct corresponding flanges.

Perform ultrasonic flaw detection and/or magnetic particles NDT to the full penetration welds at bottom reinforcement plate, pipe penetrations, girder welds at under buoy inlet nozzles and fillet welds of brackets and girders with direct attachment to the fixed pipes.

1106 CALM BUOY MULTI PRODUCTION DISTRIBUTION UNIT:-

121,606.00

Remove the MPDU from the buoy and transport it to a clean covered work area. Measure and record the thickness of existing choking resin on the buoy deck before its removal.

Disassemble the MPDU, grit-blast and paint all previously painted surfaces according to IMODCO paint specification

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QAR A/C No. 0013-000309-060 USD A/C No. 0013-000309-061

DRAFT INVOICE

Page: 5 / 12

103199

QATAR PETROLEUM

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EXPENSE A/C:

Vessel Name/Description: SPM BUOY- QATAR PETROLEUM

Job No Description Line Amount

appended as Attachment 2 to Appendix A.

Reassemble the MPDU with new top and bottom bearings, seal holders, product seals, seal rings, damp down ring, retaining ring, O-rings and fasteners.

Remove the existing bushing of hinges on the arm connector and fit new ones with interference fit (0.002 inch)

After the completion of the above works, stop test the MPDU as per the IMODCO testing requirements.

Re-install the overhauled MPDU to the buoy deck using new mounting bolts.

1107 CALM BUOY PIPE ARM:- 441,825.53

Remove and refit pipe spools, valves, new expansion joints and all other removable fittings.

Replace all corroded plating - 6 m2

Replacement of two (2) units of 24 inch and one (1) unit of 16 inch butterfly valves.

Remove damaged ladder and sacrifical anode at the 16 inch and 24 inch down drop pipes respectively.

Remove two (2) wheel assemblies and clean up mounting face and recondition assemblies using new wheels, bearings and seals.

Perform magnetic particles inspection at all stress concentration areas, particularly the welding attachments of down drop pipes supporting girders, flange connecting plate and wheels mounting support and evaluate for any weld failure.

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QAR A/C No. 0013-000309-060 USD A/C No. 0013-000309-061

DRAFT INVOICE

Page: 6 /12

103199

QATAR PETROLEUM

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EXPENSE A/C :

Vessel Name/Description: SPM BUOY- QATAR PETROLEUM

Job No Description

Line Amount

Repair weld failures and perform magnetic particles inspection.

Inspect the faces of all pipe flanges to determine its sealing integrity to carryout machining or replacement.

Machining work on the deteriorated flange which is not exceeding the takeoff of $2.25~\mathrm{mm}$ in depth, to ensure its sealing integrity.— $6~\mathrm{nos}$

Replacement of deteriorated flange which exceed the take-off of $2.25\ \mathrm{mm}$ in depth - $10\ \mathrm{nos}$

Install new access ladders to the outboard down drop pipes and a section of the horizontal fairlead tubular. After the completion of all the of the above works, grit blast all components of the loading arm to SA 2.5 and paint as per IMODCO Painting Specification appended as Attachment 2 to Appendix A.

Remove existing and install new hinge bushings with interference fit.

Install reconditioned wheel assemblies with new bolting.

1108 CALM BUOY MOORING ARM:-

165,619.50

Perform ultrasonic and/or magnetic particle inspection to weldments at mooring pad eyes and bollards.

Remove two (2) wheel assemblies and clean up mounting face and recondition assemblies using new wheels, bearing and seal.

Cut out and renew the damaged area of radius plate at outboard end.

Cut out and renew the two (2) units of 6 inch size tubular

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QAR A/C No. 0013-000309-060 USD A/C No. 0013-000309-061

DRAFT INVOICE

Page: 7 /12

103199

QATAR PETROLEUM

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> W/O Ref : NMO21089

EXPENSE A/C:

Vessel Name/Description: SPM BUOY- QATAR PETROLEUM

Job No Description Line Amount

stays at out board end.

Repair or replace rusted and damaged top guard pipe.

Cut out and renew any other corroded structural member. Remove existing and fabricate new hawser handling davit.

Replace of the damaged frame pipe.

Replace the corroded solar panel steel cage.

Grit-blast the entire structure of SA 2.5 and paint as per IMODCO Painting Specification appended as Attachment 2 to Appendix A.

Remove existing and install new mooring pad-eye bushings with interference fit.

Remove existing and install new bushings at hinge connector.

Install two (2) reconditioned wheel assemblies complete with new bolting.

Install new timber decking. Allow for 1) 24" x 6" x 1", 2) 15" x 6" x 3", and 3) 36" x 3" x 3".

1109 CALM BUOY BALANCE ARM:- 109,860.23

Renew any corroded or damaged plating on the balance arm structure - 52.47 m2

Replace existing divers ladder with new ones.

Perform ultrasonic and/or magnetic particles inspection at wheel mounting structure.

Remove the existing two (2) wheel assemblies, clean up the

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QAR A/C No. 0013-000309-060 USD A/C No. 0013-000309-061

DRAFT INVOICE

Page: 8 /12

103199

QATAR PETROLEUM

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EXPENSE A/C :

Vessel Name/Description: SPM BUOY- QATAR PETROLEUM

Job No Description

Line Amount

mounting face, and recondition assemblies with new wheels, bearings and seals.

Remove the sheave clamps, pins and replace bushings on the chain tensioning sheave assembly.

Replace of the damaged frame pipe.

Grit-blast the entire balance arm structure to SA 2.5 and paint as per IMODCO Painting Specification appended as Attachment 2 to Appendix A.

Remove existing and install new bushings at hinge connections with interference fit (0.002 inch).

Install two (2) reconditioned wheel assemblies complete with new bolting.

Install the sheave assembly complete with new sheave pin, Teflon bushings and fastening bolts.

Install the chain tensioning winch.

Install two lengths of rubber fenders at boat landing beams with new retaining bars with stainless steel bolts.

1110 CALM BUOY ANTIFOULING GEAR:-

81,313.60

Replace any damaged anti-fouling tubulars, live bolted connections, mounting bases and the two panels of expanded metal shield with new ones and replace all bolts and nuts with stainless steel bolts and nuts on all connections of mounting pads.

Fabricate and fit bird-deterrent device on tubulars consisting of 15 cm high metal vertical spikes spaced 20 cm apart strung

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QAR A/C No. 0013-000309-060 USD A/C No. 0013-000309-061

DRAFT INVOICE

Page: 9 /12

103199

QATAR PETROLEUM

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MESAIEED OA 70

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EXPENSE A/C:

Vessel Name/Description: SPM BUOY- QATAR PETROLEUM Job No Description Line Amount with piano wire on the top. 1111 CALM BUOY TELEMETRY SYSTEM: -41,635.06 Inspect all the components (including but not limited to antenna, cable, brackets) of the Buoy Remote Telemetry Unit (RTU) and replace defective component (free issue) Test the Buoy RTU in the dry dock and at original offshore location to confirm data transmitted from the Buoy RTU is received by MPB Control Room. 1112 SURGE PROTECTION SYSTEM: -85,801.52 Inspect all the components of surge protection instruments (pressure transmitter, pressure/temperature gage, cable glands, barriers and replace any defective component if required. Test the Buoy RTU in the dry dock and at original offshore location to confirm data transmitted from the Buoy RTU is received by MPB Control Room. Perform surge protection instruments communication/interface test at original ofshore location to confirm instruments signal transmission to Buoy RTU and MPB control room. 1113 34,274.63 CALM BUOY NAVAIDS EQUIPMENT:-

> Attach all electrical cables properly. Install earth cable for the navigation light and solar panel. Carry out tagging of the

Replace the fog horn including the new frame support.

electrical cables.

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DRAFT INVOICE

Page: 10 /12

103199

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EXPENSE A/C :

Vessel Name/Description: SPM BUOY- QATAR PETROLEUM

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Job No	Description	Line Amount
1114	SAFETY EQUIPMENTS:-	48,740.85
	Supply and install new portable fire extinguishers complete set with box. $\ \ \ \ \ \ \ \ \ \ \ \ \ $	
	Supply and install new warning information panel.	
	Supply and install new life buoys with mounting bracket, as required.	
1115	CALM BUOY PAINTING:-	528,605.42
	Grit-blast all external and accessible internal surfaces of the buoy body, the rotating arm and all associated structure to SA 2.5, and paint as per IMODCO Painting Specification appended as Attachment 2 to Appendix A or QP Specification for Painting and Wrapping of Metal Surfaces (New Construction & Maintenance) (QP-SPC-L-002-Rev 2) appended as Attachment 5 to Appendix A, whichever is more stringent.	
1116	CALM BUOY ASSEMBLY	119,820.54
	Reinstall and activate the navigation light, batteries, wiring and other ancillary equipment.	
	Reassemble the entire rotating assembly and lift-off all arms to the buoy.	
	Reassemble all SPM arms and its accessories.	
1117	CALM BUOY TESTING:-	284,563.21
	Conduct hull / buoyancy tank watertight integrity test in accordance with Clause 2 of Attachment 3 to Appendix A.	

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QAR A/C No. 0013-000309-060 USD A/C No. 0013-000309-061

DRAFT INVOICE

Page: 11 / 12

103199

QATAR PETROLEUM

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MESAIEED QA 70

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Vessel Name/Description: SPM BUOY- QATAR PETROLEUM

Job No Description

Line Amount

Conduct hydraulic test to MPDU piping system.

Conduct 'rotation test'.

Conduct test of the navigation light .

Check that all compartments are dry and check that all hatches and penetrations are closed and secured. Hose test all manholes and hatches according to classification requirements.

Lauch buoy and conduct balance test in accordance with clause 7 of attachment 3 to Appendix A $\,$

Additional ballast exceeding 1000 kg if reqired for stability, as per Clause 7 of Attachment 3 to Appendix A - Qty replaced 5000 kg $\,$

Conduct test of the bilge pump system in accordance with clause 8 of attachment 3 to Appendix A $\,$

Note:-

Payment as per contract.

Encl:-

-Copy of schedule of prices/amount invoiced against each item of bill of quantities invoiced.

-Documents certifying the work done for which invoice raised.

-Copy of signed form of agreement.

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DRAFT INVOICE

Page: 12 / 12

103199

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EXPENSE A/C :

Vessel Name/Description: SPM BUOY- QATAR PETROLEUM

Job No Description

Line Amount

7,520,278.72 Invoice Amount -->

(QAR - Seven Million Five Hundred Twenty Thousand Two Hundred Seventy-Eight And 72/100 Only)