CPO (REFINERIES)

TURNAROUND JOBS IN PROCESS UNITS IN ARU/RFU & SWS4 PLANTS AT BPCL- MUMBAI REFINERY

ADDENDUM NO:2 TO REQUEST FOR QUOTATION

CRFQ NO. 1000329115 -2

(E-TENDER NO. 57248)

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E-Tender Sys No: 57248

1.0 INTRODUCTION

Addendum No: 2 is issued against the tender for "TURNAROUND JOBS IN PROCESS UNITS IN ARU/RFU & SWS4 PLANTS AT BPCL MUMBAI REFINERY DURING JUNE-JULY 2019". This Addendum shall form the part of tender document for Package-2, ARU/RFU & SWS4 PLANTS E-Tender No: 57248 and shall be signed and submitted along with the techno-commercial bid.

The description of the Addendum is given below;

Package 2: ARU/RFU & SWS4 PLANTS

TECHNICAL		
Section No/Page No. of the document in the tender	**Sub heading Ref**	**Addendum issued**
VOLUME III PART 1 ARU SECTION O INSTRUMENT JOB	INSTRUMENT JOB PACKAGE	Scope of work in Instrument package is revised. New scope is attached along with addendum.

All other terms and conditions of the tender shall remain unaltered.

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ATTACHMENT 11 SECTION O

WORK PACKAGE FOR PACKAGE NO. 2

REFORMER FEED UNIT (RFU), AROMATICS RECOVERY UNIT (ARU) & COOLING WATER PUMP HOUSE (CWPH)

INSTRUMENT JOBS

Inst-Maintenance SD Jobs for ARU/RFU –TA-2019

A) Following Control valve/SDV to be removed, sent to shop, fixed back at site (including transportation)

- The CONTRACTOR shall follow work permit / safety rules and approved procedures.
- The CONTRACTOR shall ensure that the control valve to be removed has been isolated and depressurized by the BPCL Operations staff.
- The CONTRACTOR shall inspect the general condition of the control valves before removal and list all defects observed. This list shall be handed over to the respective BPCL representative and shall form the reference base to measure work executed by the CONTRACTOR.
- The CONTRACTOR shall inspect the control valve stroke indicator to ensure that the indicator is free from wear, cracks, damage and is not missing. The BPCL supervisor shall be informed of any such defects.
- The CONTRACTOR shall compile a checklist for each control valve and submit it to BPCL for approval.
- The CONTRACTOR shall remove the control valve from the process line
- Ensure the marking for flow direction before removal of valve.
- Make necessary arrangement like erection of scaffolding, rigging/crane arrangement for removal and installation of control valve.
- Provide plate type blind flanges on removal of the control valve. Blind flange to be arranged by contractor.
- On arrival of control valves at site, inspect the control valve and its accessories including the position indicator and its glass.
- Ensure the control valve’s tag number and name plates are properly fixed to the control valve.
- Ensure the control valve is free of any damage and that there are no missing parts.

- The CONTRACTOR shall transport the control valves carefully to avoid any damage, from the site to the Instrument shop.
- Transport the control valve from the Instrument Shop to the proper field location
- Fixing back of CV and SDV back at site and assembling of all the accessories like its actuator, if any.
- Ensure that the control valve or on/off valve is installed according to the flow direction indicated on the P&ID.
- Replace the line gaskets. BPCL will supply the gaskets
- Align the control valve, gaskets and pipe flanges.
- Easing and greasing of existing nut and bolts, Insert the bolts, nuts and washers.
- Replace the damaged bolts and nuts, Tighten nuts and bolts to the correct torque as per specification,

Table –A (control valve)

Sr .no	Tag	Body Size	Type of valve	Service	MAKE ,MODEL
1	70-EFC-301	6”X300RF	Globe	Hot oil to E206	IL,VA3R
2	70-EPC-303	6”x300RF	Globe	WATER STRPR VPR TO SRC	MIL,38-21125
3	70-EFC-208	8”x300RF	Globe	HOT OIL	MIL, 37-10134EB
4	70-EFC -205	6”X300RF	Globe	RICH SLV EXT STRIPPER	MIL-38-21125
5	70-EFC-211	6”x300RF	Globe	SRC FEED EX EXTR STRPR	MIL, 38-21125
6	70-EPC-203	10”x,300RF	GLOBE	Stripper o/h pr	IL, VSC,VA5R
7	60-PPC201A	6”x300RF	BV	SPLT-II RFLX PR	IL, VBW ,VA3D(SR -840943)
8	70-VPC-503A	10”X300	GLOBE	HOT OIL F-320 BYPASS	MIL ,

B) The following SDVs shall be removed from the line, hydro-testing and passing to be checked at Site if Found any defects, sent to shop, later on transported and fixed back at site.

- The CONTRACTOR shall follow work permit / safety rules and approved

procedures.

- The CONTRACTOR shall ensure that the control valve /SDV to be removed has been isolated by the BPCL Operations staff.
- The CONTRACTOR shall inspect the general condition of the control valve /SDV before removal and list all defects observed. This list shall be handed over to the respective BPCL representative and shall form the reference base to measure work executed by the CONTRACTOR.
- The CONTRACTOR shall show the hydro test of the SDV at rated Pressure to BPCL site engineer.
- The CONTRACTOR shall inspect the control valve /SDV stroke indicator to ensure that the indicator is free from wear, cracks, damage and is not missing. The BPCL supervisor shall be informed of any such defects.
- The CONTRACTOR shall compile a checklist for each control valve /SDV and submit it to BPCL for approval.
- The CONTRACTOR shall remove the control valve / SDV from the process line.
- Make necessary arrangement like erection of scaffolding, rigging/ arrangement for removal and installation of control valve / SDV.
- Provide plate type blind flanges on removal of the control valve /SDV. Blind flange to be arranged by contractor.
- Replace the line gaskets. BPCL will supply the gaskets
- Align the l valve, gaskets and pipe flanges.
- Easing and greasing of existing nut and bolts, Insert the bolts, nuts and washers.
- Replace the damaged bolts and nuts, Tighten nuts and bolts to the correct torque as per specification
- On arrival of control valve /SDV at site, inspect the valve and its accessories including the position indicator and its glass.

Table -B (SDV)

Sr .no	Tag	Body Size	Service	OP PR (Kg/Cm2)	PR TEST (Kg/Cm2)	Remarks
1	60-SDV-102	4 ”x300RF	FG TO F-101	4.5	6	
2	60-SDV-202	4” x300RF	FG TO F-102	4.5	6	
3	70-SDV-	4”x300RF	FG TO F-	4.5	6	

	502		320			

C-1) The following integral orifice with transmitter to be removed from the line along with its spool piece, sent to shop, later on fixed back at site.

- The CONTRACTOR shall follow work permit / safety rules and approved procedures.
- The CONTRACTOR shall ensure that the orifice to be removed has been isolated by the BPCL Operations staff.
- The CONTRACTOR shall inspect the general condition of the orifice before removal and list all defects observed. This list shall be handed over to the respective BPCL representative and shall form the reference base to measure work executed by the CONTRACTOR.
- Make necessary arrangement like erection of scaffolding, rigging arrangement for removal and installation.
- Contractor shall remove the spool piece having integral orifice, remove the orifice flange along with transmitter from its spool piece, clean the spool piece along with its length with water or steam to clear any dust/particle or deplug the same if found in plugged condition.
- Provide plate type blind flanges on removal of the spool piece. Blind flange to be arranged by contractor.
- Replace the line gaskets. BPCL will supply the gaskets.
- Align the spool piece, gaskets and pipe flanges.
- Easing and greasing of existing nut and bolts, Insert the bolts, nuts and washers.
- Replace the damaged bolts and nuts, Tighten nuts and bolts to the correct torque as per specification

Table-C-1 (integral orifice)

Sr .no	Tag	Body &line Size	Service
1	70-EFC-506	1.5” X 300RF x1.5 meter spool piece	
2	70-EFC -311	1.5” X 300RF 1.5 meter spool piece	

C-2) **Contractors shall remove the following orifice plates and fix back the orifice plates:**

- The CONTRACTOR shall follow work permit / safety rules and approved procedures.
- The CONTRACTOR shall ensure that the orifice to be removed has been isolated by the BPCL Operations staff.
- Contractor shall replace the orifice flange gaskets with new gaskets, BPCL will supply the gaskets
- If required, New orifice plat will be provided by BPCL, the Contractor shall insert the new orifice plate into the process line only in presence of BPCL site eng.
- The contractor shall make necessary arrangement like erection of scaffolding, rigging arrangement for removal and installation of orifice plate.

Table-C-2 (Orifice Plate)

TOTAL ORIFICE FLANGE : **50 INCH DIA**

a. VFI901 : CW to unit
b. DFI403 : IA to unit
c. DFI204 : LP steam to ARU
d. TFI113 : Total FO
e. VFI502 : FO to F320
f. DFI206 : HP steam to ARU
g. PFI108 : F101 FO return
h. PFI206 : F102 FO supply
i. PFI208 : F102 FO return

D) Replacing of impulse line of following transmitters

1. **EFI309**
2. **EFC208r**
3. **DFI 203**

4. **DFI204**
5. **DFI205**
6. **DFI206**
7. **DFI109**

E) Contractor shall remove the following ANUBAR from process line, and sent it to shop complex, later on fix back the same at site,

- The CONTRACTOR shall follow work permit / safety rules and approved procedures.
- The CONTRACTOR shall ensure that the ANUBAR to be removed has been isolated by the BPCL Operations staff.
- Make necessary arrangement like erection of scaffolding, rigging arrangement for removal and installation of ANUBAR. 80-VFI-901 (4"X150RF-)-(SEA WATER TO ARU /RFU/HDS), CW supply ARU and CW supply RFU.

F) **Replacement of half (½) inch 1st isolation valves:-**

- The CONTRACTOR shall follow work permit / safety rules and approved procedures.
- The CONTRACTOR shall ensure that the process line to be CUT has been isolated by the BPCL Operations staff.
- Contractor shall replace the orifice flange gaskets with new gaskets, BPCL will supply the gaskets
- New GATE VALVE will be provided by BPCL, the Contractor shall weld the new valve into the process line only in presence of BPCL site eng.
- Vendor to do the DP testing of the welded area &to show the DP test to inspection dept and approval to be taken from inspection dept
- The contractor shall make necessary arrangement for easing and greasing the valves
- The contractor shall make necessary arrangement like cutting of process line, erection of scaffolding, rigging arrangement for replacement of 1st isolation valve

  Half inch Isolation valves - 50 nos including valves for below instruments

G) Inspection and Hydro testing of a Instrument Air tanks:
Inspection and Hydro testing of a Instrument Air tanks for DOD and FD fan inlet damper OF F-101 & F-102 to be done at 8 kg/cm2, tank may be replaced if recommended by inspection dept of BPCL.

Total INSTRUMENT AIR TANKS: 6 NO S

H) Contractor shall remove the following Level Switches along with their displacer chambers from process line, and sent it to shop complex , later on fix back the same at site,

- The CONTRACTOR shall follow work permit / safety rules and approved procedures.
- The CONTRACTOR shall ensure that the level switch to be removed has been isolated by the BPCL Operations staff.
- Make necessary arrangement like erection of scaffolding, rigging (crane/ hydra) arrangement for removal and installation of level switches.
- Contactor shall remove the level switch from process line, remove the level switch with its displacer from its displacer chamber and send the level switch to shop complex.
- The CONTRACTOR shall clean the displacer chamber to make it free from sludge/dust/rust etc .
- BPCL site engineer shall inspect the level switch flange and its chamber flanges for any groove or damage on its gasket surface, if found damaged, CONTRATOR shall transport the displacer chamber to shop complex or contractor yard for repairing or replacing the flange and shall transport chamber back at site .
- Contractor shall do the Hydro testing of the displacer chamber as per Flange rating of chamber, and contractor shall show the hydro testing to the BPCL site Engineer:-.
- Provide plate type blind flanges on removal of the level switch. Blind flange to be arranged by contractor.
- Replace the line gaskets. BPCL will supply the gaskets.
- Align the level switch chamber, gaskets and pipe flanges.
- Easing and greasing of existing nut and bolts, Insert the bolts, nuts and washers.
- Replace the damaged bolts and nuts, Tighten nuts and bolts to the correct torque as per specification.

Table-H (Level Switches)

Sr no	TAG No	SERVICE
1	70-VLSH-507	Hot Oil Exp Vessel High Level
2	70-VLSL-505	Hot Oil Exp Vessel High Level
3	70-ELSH-214	Extr Colm Top High Level
4	70-ELSH-215	Extr Colm Top Lo Level
5	70-VLSH-506B	Hot Oil Collect Vessel High Level
6	70-VLSH-506A	Hot Oil Exp Vessel Lo Level
7	80-DLSHH-605	Flare KOD Hi Lvl
9	80-DLSLL-603	Flare KOD Lo Lvl
10	60-PLAH-102	RFU FSD Hi Lvl
11	60-PLAL-102S	RFU FSD Lo Lvl
12	70-ELSH-102	ARU FSD Hi Lvl
13	70-ELSL-103	ARU FSD Lo Lvl

I) The installation related support such as fabrication of ms manifold, ½" tapping provision. The installation of magnetic/mass flowmeter. The provision of stubs on process line for thermowell installation as per following MOC jobs.

Sr.No.	MOC No.	MOC Desc
1	ARU COMPLEX-16-2864	**3/4" tapping on 60-F-101 coil common outlet to be provided for pressure indication (New Tag No:- PPI109)**
2	ARU COMPLEX-16-2865	**3/4" tapping on 60-F-101 coil common inlet to be provided for Pressure Indication (New Tag No:- PPI110) and also generate low pressure annunciator hardware alarm i.e. PPAL110 in control room.**
3	ARU COMPLEX-16-2866	**60-F-101 FD Fan speed indication (Tag No:- PSI101) to be provided in DCS**
4	ARU COMPLEX-16-2867	**60-F-101 common coil outlet for temperature indication (New Tag No:- PTI103A/B/C). One Thermowell is available and additional two thermowell to be provided. Two out of three trip logic to be provided on High High coil common outlet temperature**
5	ARU COMPLEX-16-2868	**New pressure indication (new tag no:- PPI107A) is to be provided on 60-F-101 Pilot gas. Existing PPI107 & PPAL105 along with new tag PPI107A to be used for Two out of three logic for heater tripping on Low**

		Low pilot gas pressure (3/4" new tapping to be provided)
6	ARU COMPLEX-16-2869	**Structure to be erected near 60-F102 FD Fan for shifting HC detector PAI306 from Existing location to new Location i.e. FD 102 Suction**
7	ARU COMPLEX-16-2871	**3/4" tapping on 60-F-102 coil common inlet to be provided for Pressure Indication (New Tag No:- PPI208) and also generate low pressure alarm i.e. PPAL208 in DCS**
8	ARU COMPLEX-16-2872	**60-F-102 FD Fan speed indication (Tag No:- PSI102) to be provided in DCS**
9	ARU COMPLEX-16-2873	**60-F-102 common coil outlet for temperature indication (New Tag No:- PTI203A/B/C). One Thermowell is available and additional two thermowell to be provided. Two out of three trip logic to be provided on High High coil common outlet temperature**
10	ARU COMPLEX-16-2874	**New pressure indication (new tag no:- PPI207A) is to be provided on 60-F-102 Pilot gas. Existing PPI207 & PPAL203S along with new tag PPI207A to be used for Two out of three logic for heater tripping on Low Low pilot gas pressure (3/4" new tapping to be provided)**
11	ARU COMPLEX-16-2875	**80-F-320 coil common outlet Pressure indication (new tag No:- VPI509) to be provided. Existing Â¾â€• taping to be used**
12	ARU COMPLEX-16-2877	**80-F-320 common coil outlet for temperature indication (New Tag No:- VTI506A/B/C). Two out of three trip logic to be provided on High High coil common outlet temperature. 3 Nos thermowell are available on funace coil outlet**
13	ARU COMPLEX-16-2878	**Two new pressure indication (new tag no:- PPI504A/B) are to be provided on 80-F-320 Pilot gas. Existing PSL504 along with new tag PPI504A/B to be used for Two out of three logic for heater tripping on Low Low pilot gas pressure. Two Â¾ â€œ tapings are required**
14	ARU COMPLEX-18-3269	**To Provide N2 blanketing for TK 381 (sulfolane)**
15	ARU COMPLEX-	**Provision of additional line from E-212 O/L**

	18-3368	**to clay towers common inlet manifold along with differential pressure indication across this line.**
16	ARU COMPLEX-18-3384	**To increase SP-1 top line size from 3" to 4" .**
17	ARU COMPLEX-18-3519	**TO PROVIDE HC DETECTOR NEAR P-207A/B MINIMUM CIRCULATION LINE S-WRAPPED SECTION**
18	ARU COMPLEX-18-3520	**TO PROVIDE HC DETECTOR ON SP1 TOP TO R/D LINE S-WRAPPED SECTION ABOVE P-211 A/B**
19	ARU COMPLEX-18-3717	**Installation of secondary radar gauge for toluene tank 366 for improved safety.**
20	ARU COMPLEX-18-3718	**Provision of Mass flow meter in F 101 fuel oil return**
21	ARU COMPLEX-18-3719	**To provide mass flow meter on F 102 fuel oil return line**
22	ARU COMPLEX-18-3720	**To provide mass flowmeter on fuel oil supply and fuel oil return**
23	ARU COMPLEX-19-3763	**TO PROVIDE ADDITIONAL LEVEL INDICATION AT BOTTOM OF BENZENE COLUMN 70-C-207 AS PER OISD STANDARD 152.**
24	ARU COMPLEX-19-3764	**TO PROVIDE ADDITIONAL TEMP. INDICATION ON TOP AND ADDITIONAL LEVEL INDICATION ON BOTTOM OF RFU SP-1 COLUMN 60-C-101 AS PER OISD STANDARD 152**
25	ARU COMPLEX-19-3765	**TO PROVIDE ADDITIONAL TEMP. INDICATION ON TOP AND ADDITIONAL LEVEL INDICATION AT BOTTOM OF SP-2 COLUMN 60-C-102 AS PER OISD STANDARD 152**
26	ARU COMPLEX-19-3766	**TO PROVIDE ADDITIONAL TEMP. INDICATION ON TOP AND ADDITIONAL LEVEL INDICATION AT BOTTOM OF EXTRACT STRIPPER COLUMN 70-C-203 AS PER OISD STANDARD 152**
27	ARU COMPLEX-19-3767	**TO PROVIDE ADDITIONAL LEVEL INDICATION AT BOTTOM OF TOLUENE COLUMN 70-C-208 AS PER OISD STANDARD 152.**
28	ARU COMPLEX-19-3768	**TO PROVIDE ADDITIONAL TEMPERATURE INDICATION AT THE TOP OF COLUMN C-204 AS PER OISD STANDARD 152**
29	ARU COMPLEX-	**TO PROVIDE MAGNETIC FLOWMETER &**

	19-3769	**BLOW DOWN VALVE ON COOLING WATER SUPPLY AND TEMPERATURE INDICATION ON COOLING WATER RETURN.**
30	ARU COMPLEX-19-3771	**TO RELOCATE LEVEL INDICATION VLI500 OF HOT OIL EXPANSION VESSEL.**

J) Supply of following manpower during turnaround period for miscellaneous jobs:-

Supply of Helpers - 4 nos

K) **CIVIL CONTRACTOR INST JOBS** :

1) Painting(primer +2 coat of paint) of all instrument support by sky blue color and sign painting as per the instruction of instrument
2) Painting (primer +2 coat of paint) of control valve red or green as per the existing color of control valve and sign painting on control valve
3) Painting of instrument panels and instrument air tanks and cable duct main support and channels.
4) Vendor to supply paint has to show the sample to BPCL supervisor for quality, make and color type. After getting approval from BPCL supervisor job has to be commenced.

Electrical jobs in ARU Shutdown-2019.

A) Supply of manpower – Following manpower is required to carry out MOV (23 no) maintenance and HT & LT motors fan cover removal.

- Rigger in morning 12 hrs. – 1 No.
- Helper in night 12 hrs. 1 No.

The contractor has to provide lifting tools like chain block (Capacity Aprox. 100 kg), lifting belt (100 kg), D shackle, rope along with man power.

B) To carry out cleaning of HT motor cooling tubes cleaning. Motor fan covers to be repaired wherever required.

- Helpers -2 nos.

C) Other electrical jobs

a. Following metallic structures to be painted with one coat of Berger make anti-rust “Lacoloid” paint and two coats of aluminum paint.
   - All goose neck type lighting poles
   - Newly fabricated motor LCS supports to be painted.

b. At site motor painting to be carried out. Motor body old paint to be removed by scrapping and surface to be cleaned before painting. Motor fan cover to be painted from both inner and outer surface after dismantling it from motor.
Approximately 80 no. of LT Motors and 10 no. of HT motors to be painted.