-1:-

Subject:- **TE # PROC-FB/CB/PROD-2065/2017 - 3 PHASE SEPARATORS**

Reference to subject tender inquiry, the following points may please be endorsed for uploading to be available to all prospective bidders.

1. Refer to hydrocarbon composition at para 19.0 of TOR , bidder has to evaluate the material selection according to the gas composition (placed below) and Condensate Analysis Report (placed below). However, all materials shall conform to the requirements of NACE MR0175 for and other applicable NACE standards for sour service. CO_2 and H_2S content information at para 18.2 of TOR should not be considered may please be treated as deleted from TOR.
2. The civil design is not in bidder's scope. However bidder has to provide the design data for client's civil design as per para 4.35 of TOR.
3. HP separator should be of Class 900, MP separator should be of Class 600 and LP separator should be of Class 300.
4. Ceramic coating should be used for separators shell internal coating. However for internal coating of associated piping, other coating material can be used which should be compatible with NACE MR 0175 and product specification.
5. Ref para 6.5 of TOR, one Gas Scrubber is required at only MP Separator (in vendor's scope) with distribution of air supply to all pneumatic instruments of HP, MP & LP Separators.
6. Gas Composition Report Table at para 19.1 of TOR may please be ignored and following updated report to be considered for calculations.

TEST METHOD ASTM	DESCRIPTION		TEST RESULTS
D-1945	COMPONENTS		
"	CARBON DIOXIDE,	Mole %	1.943
"	NITROGEN,	Mole %	0.913
"	METHANE,	Mole %	85.465
"	ETHANE,	Mole %	7.354
"	PROPANE,	Mole %	2.940
"	ISO-BUTANE,	Mole %	0.363
"	N-BUTANE,	Mole %	0.648
"	ISO-PENTANE,	Mole %	0.121
"	N-PENTANE,	Mole %	0.118
"	HEXANE	Mole %	0.113
"	HEPTANE PLUS,	Mole %	0.022
	TOTAL		100
D 3588	Calculated Gas gravity (Air 1.00)		0.6632
"	Calculated **GROSS** heating value BTU per cubic feet of dry gas @ 14.65 PSI and 60 °F.		1112.94
"	Calculated **NET** heating value BTU per cubic feet of dry gas @ 14.65 PSI and 60 °F.		1006.18

7. Crude Analysis Report Table at para 19.2 of TOR may please be ignored and following updated report to be considered for calculations.

TEST METHOD	TEST PARAMETERS	TEST RESULTS
D-1298	Specific Gravity 60/60 °F	0.8134
-	Barrel Per M.Ton	7.73
D-1298	API Gravity 60/60 °F	42.46
D-4294	Total Sulphur Content, Wt.%	0.124
D-96	BS&W Vol.%	<0.05
D-95	Water Content by D&S Vol.%	<0.05
D-3230	Salt Content, lbs/1000bbl	Nil
D-445	Kinematic Viscosity at 50 °C, cSt	1.74
D-445	Kinematic Viscosity at 40 °C, cSt	1.92
D-97	Pour Point, °C	<-24
D-189	Con Carbon Residue (CCR), Wt.%	0.414
D-323	Reid Vapor Pressure @ 37.8 °C, psi	5.5
D-130	Copper Strip Corrosion @ 50 °C	1a
USB-97	Calorific Value (Gross), Btu/lb	19791
USB-97	Calorific Value (Net), Btu/lb	18540
D-86	**Distillation**	
	I.B.P. °C	52
	05/10 Vol.%, Recovered @ °C	79/94
	20/30 Vol.%, Recovered @ °C	123/152
	40/50 Vol.%, Recovered @ °C	187/242
	60/70 Vol.%, Recovered @ °C	234/349
	Recovery @ 359 °C, Vol%	751

8. Pressure Data under clause 6.0 of following paras of TOR may please be updated as under

6.1.1 <u>Flow (Multi-variable) Indicator Transmitter</u>

Description	HP	MP	LP
Differential Pressure range	0-400 IN H_2O	0-100 IN H_2O	0-100 IN H_2O
Static Pressure Range	0-2000 Psi	0-700 Psi	0-500 Psi

6.1.3 Pressure Control Valve

Description	HP	MP	LP
Rated Pressure range	ANSI Class 900	ANSI Class 600	ANSI Class 600

6.1.6 3-pen chart recorder

Description	HP	MP	LP
Pressure range	1500 Psi	700 Psi	200 Psi

6.2.1 Flow Transmitter (Water)

Description	HP	MP	LP
Range	0-2000 bbl	0-2000 bbl	0-2000 bbl

6.2.3 Level Control Valve (Water)

Description	HP	MP	LP
Pressure Rating	1500 Psi	700 Psi	200 Psi

6.3.1 Flow Transmitter (Condensate)

Description	HP	MP	LP
Range	0-10000 bbl	0-10000 bbl	0-10000 bbl

6.3.3 Level Control Valve(Condensate)

Description	HP	MP	LP
Pressure Rating	1500 Psi	700 Psi	200 Psi

6.4.1 Static Pressure Transmitter (Vessel)

Description	HP	MP	LP
Pressure Rating	2000 Psi	2000 Psi	2000 Psi

Instrument Fittings

Description	HP	MP	LP
S/S Pressure Rating	2000 Psi	2000 Psi	2000 Psi