

CORRIGENDUM

1.0 Amendment No. 2 dated 21.07.2016 to Tender No. CJG1322P17 is issued to incorporate changes to clause Nos. 11.0 & 11.1 of Annexure B, Section –II, Part-3 (Scope of Work/Terms of Reference/Technical Specification) as under :

Srl No	Clause No.	Existing Clause	Amended Clause
1	Clause 11.0 Annexure B SECTION – II Part – 3 (Scope of Work/ Terms of Reference /Technical Specification)	<p><u>Specification of Gas sample cylinder</u> a) Volume : 20000 cc (20L) b) Filling Pressure : 200 Bar at 65°C; c) Working Temperature: 5 to 100°C d) Material of Construction : Cylinder : Aluminium Alloy : COMPLAINT(AA6061T6) Valves : 316 Stainless Steel ¼” NPT Complete with valve protectors ; and Polypropylene transport Box. The supplied cylinder must conform to PED(Europe)/DOT(USA)/TC(Canada) safety norms & suitable for use in H₂S & CO₂ environment. Supplies must include necessary hydrostatic test certificate.</p> <p><u>Specification of Liquid Sample Cylinder</u> Type 5 liquid sample bottles for Mercury free operation (Proserv Part No : 800669) a) Volume : 700 ml b) MAWP : 10000 Psi at 150°C c) Certification : PED(Europe)/DOT(USA) d) Outlet Ports : ¼” NPT Female with valve protection guards. e) Material of Construction : Cylinder & End Cap : 17 – 4 ph. Piston & Mixing Ball : AIS1316.</p>	<p><u>A. SPECIFICATION OF GAS SAMPLE CYLINDER</u> a) Volume: 20000 cc (20L) b) Filling Pressure: 200 Bar at 65°C; c) Working Temperature: 5 to 100°C d) Material of Construction: Cylinder: Aluminium Alloy: COMPLAINT (AA6061T6) Valves: 316 Stainless Steel ¼” NPT Certification: OEM certification Complete with valve protectors; and Polypropylene transport Box. Supplies must include necessary hydrostatic test certificate. The equipments should be suitable for use in H₂S & CO₂ environment.</p> <p><u>B. SPECIFICATION OF MERCURY FREE POSITIVE DISPLACEMENT SAMPLERS</u> Mercury Free Positive Displacement Samplers (PDS) for collection of representative bottom hole samples for reservoir studies. The Positive Displacement Samplers should be suitable for running downhole on Slick lines of 0.092 inch or 0.108 inch for triggering by a mechanical firing device and should conform to the following specifications – a) Sample Volume: min 600 ml. b) Maximum Working Pressure: 10000 psi or higher. c) Max Working temperature: 180°C d) Outside Diameter: 1 11/16” (43mm). e) Material of construction: Stainless steel (H₂S, Sour gas resistant), titanium and brass alloy / 17-4 PH SS (AISI 630), Aluminum Bronze f) Certification: OEM certification The PDS Samplers should be designed for controlled sampling by positive displacement and suitable for on-site mercury free sample transfer using a sample transfer bench. The equipments should be suitable for use in H₂S & CO₂ environment.</p> <p><u>C. SPECIFICATION OF PISTON BASED LIQUID SAMPLE BOTTLES</u> Liquid Sample Bottles for mercury free operation as per following specifications - Volume - 650 ml or more Filling Pressure: 10000 psi at 150 deg C. Certification: OEM certification Inlet/Outlet ports – ¼” NPT Female with valve protection guards fitted Material of Construction – Cylinder & End Cap - Titanium Piston & mixing ball Light weight and easy handling The equipments should be suitable for use in H₂S & CO₂ environment.</p>

			<p><u>D. SPECIFICATION OF MERCURY FREE MOBILE SAMPLE TRANSFER BENCH</u></p> <p>Mercury free sample transfer bench for isobaric transfer of reservoir fluid sample in the field site under mercury free condition from PDS sampler to liquid sampling bottles of 650 ml or more capacity and should conform to the following specifications –</p> <p>Compatible with quoted PDS down hole sampler, & piston type sample cylinder Maximum working pressure: 15000 psi Materials of construction: All stainless steel construction Transfer fluid: 2:1 water / glycol mixture for Hg-free operation Valves: Autoclave 20Kpsi. Pump: Haskel M188 or equivalent The equipments should be suitable for use in H2S & CO2 environment.</p>
2	<p>Clause 11.1 Annexure B</p> <p>SECTION – II Part – 3</p> <p>(Scope of Work/ Terms of Reference /Technical Specification)</p>	<p>Complete PVT analysis of recombined reservoir fluid sample include the followings:</p> <p>a) Validity check for both separator liquid sample and gas sample to be captured in the report.</p> <p>b) Recombination technique followed for replication of representative reservoir fluid in laboratory (along with detailed calculation) to be reported.</p> <p>c) Determination of Dew Point Pressures and their corresponding volumes. Constant mass expansion (CME) studies on recombined reservoir fluid sample at reservoir temperature as well as at 4 other temperatures – two above & two below the reservoir temperature to be performed. For each temperature relative volume, retrograde liquid accumulation (% by volume), specific volume to be reported with plot. Fluid compressibility above dew point, co-efficient of thermal expansion also needs to be reported. Phase envelope (P-T diagram) to be constructed based on experimental CME data.</p> <p>d) Constant volume depletion experiment to be performed at reservoir temperature to determine gas formation volume factor, gas expansion factor, gas deviation factor, produced gas gravity, compositional analysis of produced gas (extended GC analysis required to be performed), cumulative gas production and total hydrocarbon recovery (weight by weight) with respect to dew point volume.</p> <p>e) Determination of molar composition of reservoir fluid (in details i.e extended analysis to be carried out for separator gas as well as flash gas), molecular weight of reservoir fluid, molecular weight and specific gravity of C7+</p>	<p>A. Complete PVT analysis of Gas-Condensate sample includes the followings:</p> <p>a) Validity check for both separator liquid sample and gas sample to be captured in the report.</p> <p>b) Recombination technique followed for replication of representative reservoir fluid in laboratory (along with detailed calculation) to be reported.</p> <p>c) Determination of Dew Point Pressures and their corresponding volumes. Constant mass expansion (CME) studies on recombined reservoir fluid sample at reservoir temperature as well as at 4 other temperatures – two above & two below the reservoir temperature to be performed. For each temperature relative volume, retrograde liquid accumulation (% by volume), specific volume to be reported with plot. Fluid compressibility above dew point, co-efficient of thermal expansion also needs to be reported. Phase envelope (P-T diagram) to be constructed based on experimental CME data.</p> <p>d) Constant volume depletion experiment to be performed at reservoir temperature to determine gas formation volume factor, gas expansion factor, gas deviation factor, produced gas gravity, compositional analysis of produced gas (extended GC analysis required to be performed), cumulative gas production and total hydrocarbon recovery (weight by weight) with respect to dew point volume.</p> <p>e) Determination of molar composition of reservoir fluid (in details i.e extended analysis to be carried out for separator gas as well as flash gas), molecular weight of reservoir fluid, molecular weight and specific gravity of C7+ fraction.</p> <p>f) Validation of Constant Volume Depletion Data and also the fluid composition to be checked by using material balance calculation</p>

		<p>fraction.</p> <p>f) Validation of Constant Volume Depletion Data and also the fluid composition to be checked by using material balance calculation & available theoretical correlation (eg. Standing, Hoffman Plot etc). The data validation part to be reported in details.</p>	<p>& available theoretical correlation (eg. Standing, Hoffman Plot etc). The data validation part to be reported in details.</p> <p>B. Complete PVT Study of Black Oil Sample includes the followings:</p> <p>a)Determination of Bubble Point Pressures of 2-3 Bottom Hole Reservoir Fluid Samples and their validity check.</p> <p>b)Constant Mass Expansion Studies at BHT and determination of different reservoir fluid properties pertaining to this experiment</p> <p>c)Differential Liberation Study and determination of different reservoir fluid properties pertaining to this experiment</p> <p>d)Density of Reservoir fluid at BHT.</p> <p>e) Determination of live Oil Viscosity.</p> <p>f)Composition of Reservoir fluid: Compositional analysis of differential gases evolved during differential liberation study, dead oil, flash oil and flash gas.</p> <p>g)Separator Study at different sets (at least four sets) of Pressure & Temperature.</p>
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2.0 All other terms & Conditions remain unchanged.
