APPLICATION FORM FOR PRE-QUALIFICATION OF SERVICE COMPANIES FOR ACQAUIRING SERVICES FOR SAMPLING FOR PVT ANALYSIS & PVT ANALYSIS OF OIL,CONDENSATE & GAS

PROC-SERVICES/CB/PQ/PROD-3205/2018

INTRODUCTION & TERMS AND CONDITIONS

1. INTRODUCTION

Oil and Gas Development Company Ltd (OGDCL) is Pakistan's leading E&P sector company, having operations at about 50 locations and fields in all the four provinces. The Company is listed and traded on Pakistan Stock Exchange with highest market capitalization. Recently the Company, through GDR process, has also been listed on London Stock Exchange. More details about the Company can be obtained from its website www.ogdcl.com.

1.1 Invitation of Applications

Applications are invited from potential firms having requisite capability, experience and expertise for providing DST services with flex test at incoming OGDCL wells..

2. SUBMISSION OF APPLICATIONS.

2.1 The pre-qualification application shall be submitted in duplicate (one marked "ORIGINAL" and the one marked "COPY") in a sealed envelope clearly marked as: **"APPLICATION FOR PRE-QUALIFICATION OF SERVICE COMPANIES FOR ACQAUIRING SERVICES FOR SAMPLING FOR PVT ANALYSIS & PVT ANALYSIS OF OIL, CONDENSATE & GAS NOTICE NO. PROC-SERVICES/CB/PQ/PROD-3205/2018** must be delivered / dropped in the tender box / OGDCL reception at time & date mentioned in Press Tender Notice" at the following address:-

A/Manager (SCM) Services
Oil & Gas Development Company Limited
Supply Chain Management Department
OGDCL House, Plot No. 3 (New No. 3013) F-6/G-6,
Jinnah Avenue, Islamabad (Pakistan)
Phone No. 92-51-920023780/ 3652
Email: ejaz_rizvi@ogdcl.com

2.2 The sealed envelope shall indicate the name and address of the Applicant.

2.3 All the pages of application shall be signed and stamped by Applicant's authorized Representative(s).

2.4 **Language of Application**

The Application must be prepared and submitted in English language. Supporting documents and attachments furnished by the Applicant must also be in English language.

2.6 **Cost of Pre-Qualification.**

The Contractor shall bear all cost associated with the preparation and submission of application for Pre-Qualification. OGDCL shall under no circumstances be responsible or liable for such cost regardless of the out-come of the application process.

2.7 **Deadline for Submission of Application**

2.7.1 The original application, together with the required copies must be delivered / dropped in the tender box / OGDCL reception **at time & date mentioned in Press Tender Notice"** at the following address:- at the address specified in clause 2.1.

2.7.2 OGDCL may, at its discretion extend the deadline for the submission of applications by amending the Pre-Qualification documents in which case all rights and obligations of the OGDCL and Applicants previously subject to the deadline will thereafter be subject to the deadline as extended.

2.8 **Late Submission of Applications**

Any Application received after deadline for submission of Applications prescribed by the Company pursuant to Clause-2 will be rejected and returned unopened to the Applicant.

2.9 **Clarification of Applications.**

To assist in the examination, evaluation and comparison of Applications the Company may at its discretion, ask the Applicant for a clarification of its application.

2.10 **OGDCL'S Right to Accept or Reject any or All Applications.**

The Company reserves the right to accept or reject any application or to annul the Pre-Qualification process and reject all Applications at any time without thereby incurring any liability to the effected Applicant or any obligation to justify the affected Applicant or Applicants of the grounds for the Company's action.

2.11 **Affidavit**

The Applicant shall provide an affidavit that his firm has never been blacklisted. In case the Applicant is in litigation or dispute or has involved in litigation or dispute with Company (OGDCL), details and nature of litigation and dispute may be indicated.

2.12 **Evaluation/Short-listing/Prequalification Criteria**
Evaluation/Short-listing/Prequalification shall be carried out on Group Wise basis.

(Syed Ejaz Abbas Rizvi)
A/Manager (SCM) Services

TERMS OF REFERENCE (TOR)

SAMPLING FOR PVT ANALYSIS & PVT ANALYSIS OF OIL/CONDENSATE & GAS

1. Mandatory Requirement:

All the bidders are required to provide following to become eligible for bidding:

- The bidders have to confirm their capability of providing the following Services as per bid format attached:
  - ✓ Onsite Gas Analysis
  - ✓ Surface Sampling for Oil/Gas/Water
  - ✓ PVT Analysis for
    - Black Oil
    - Heavy Oil
    - Gas Condensate/Volatile Oil
    - Dry Gas
  - ✓ Gas, Oil and Water Analysis
  - ✓ Optional Requirements – Flow Assurance and EOR (details provided in commercial table attached)

- The bidders have to provide evidence of jobs carried out in Pakistan for at least two years.
- The bidders must have an existing base set up in Pakistan at the time of bidding.
- The bidder must have a basic lab setup in Pakistan and the lab should have valid ISO certification. If required the OGDCL Team will visit the facilities to confirm the same.
- The ability to provide sampling services for Oil/Gas & water and perform all tests as per below mentioned test list. The company will be disqualified if it is unable to provide sampling services and any of below mentioned test.
- The bidder shall be a registered company in Pakistan. Provide documents for registration with SECP and Tax Department.

2. Terms and Conditions:

2.1 The technical prequalification will remain valid for a period of 03 years.

2.2 The test and services mentioned in below mentioned tables 01 to Table 06 are mandatory. Company failed to provide any service and test mentioned in tables 01 to table 06 will be technically disqualified.

2.3 The company having capability of performing 70 % tests mentioned in Table 07 to Table 12 to become technically qualified.

2.4 In case transport is not provided by OGDCL, Mob/De-Mob Charges for equipment and crew (Per Km) will be calculated according to the distance as per OGDCL distance chart or as per actual for the location not covered in the distance chart.

2.5 During traveling (mobilization/de-mobilization) phase, no operating/stand-by/rental charges will be admissible and only Mobilization/De-mobilization charges will be payable (if not mobilized through OGDCL transport).

2.6 Standby/Operating charges will be applicable from the day next to the arrival day of all crew/equipment at location/field, to the day crew/equipment is released from the location. If the job is started on the reporting day only then operating charges will be applicable for that 1st / reporting day. Further, daily operating charges for crew will be applicable when sampling or analysis is underway at location otherwise standby charges will be applicable. Partial availability of crew or equipment at location will not attract any charges.

2.7 Daily Operating charges of equipment and crew must remain same after 4 days where ever these charges are applicable.

2.8 **Daily standby charges of equipment and crew must remain same after 2 days wherever these charges are applicable.**

2.9 **Bidder must quote all type of standby charges not more than 50% of operating charges otherwise bids will be declared non-responsive.**

2.10 H_2S / CO_2 Charges will be applicable only when the equipment is exposed environment with conditions CO_2>5 % and H_2S > 300 PPM.

2.11 The bidder is required to submit the post job report within one week after execution of job; otherwise invoices will not be accepted for payment.

2.12 If, after mobilization/reporting at site, job is cancelled then only mobilization / de-mobilization charges for crew / equipment will be paid. No job cancellation charges are admissible.

2.13 If during job, it is ascertained that the service company is unable to perform / accomplish the job satisfactorily, OGDCL reserves the right to demobilize the service company. Invoice for such job will not be entertained for payment.

2.14 OGDCL reserves the right to increase or decrease the scope of work at any time without any change in prices or other terms & conditions.

2.15 The bidder to provide the CV's of technical professionals to be deployed for the subject services.

2.16 OGDCL reserves the right to ask bidder for the replacement of any of their personnel who is/are unacceptable to OGDCL for his/their incompetence or misbehavior at Contract holder's expense.

2.17 Successful bidder will provide the same personnel mentioned in their bid to carryout jobs. In case the service company engages the personnel other than those mentioned in their bid, the educational and experience certificate must be provided before his mobilization. In case company fails to provide the necessary documentation, OGDCL reserves the right to cancel the personnel operation and stand by charges for that particular job.

2.18 Fuel, oil and lubricants/transport that may be required by service company for operational purpose will be charged to service company as per actual and the cost will be deducted from the invoice.

2.19 Boarding / Lodging and laundry services would be provided free of cost by OGDCL to the service company crew while working in the field.

2.20 In case samples are to be transported to other countries (other than Pakistan) for performing tests, the rentals of the cylinders should not exceed 75 days under any circumstances. OGDCL will not entertain rentals of cylinders over 75 days. Any additional charges will be borne by the bidder. Furthermore, time log/sheet will be required to clear invoices related to rental of cylinders in foreign transport cases.

2.21 While submitting invoice(s) for payment, Service Company shall submit a certificate from concerned FBR Office to the effect that Service Company has cleared its professional tax liability.

2.22 OGDCL reserves the right to accept or reject any/all bid (s) or annul the entire bidding process at any time prior to award of (Contract) without taking any responsibility of the affected bidder(s) and is not bound to justify the reasons to the affected bidder(s).

2.23 Rental of sampling cylinders for analysis abroad will be paid for maximum 75 Days or till sample check is finalize.

2.24 The bidder must agree with all terms and conditions in this TOR.

2.25 The technical prequalification shall be subjected to satisfactory performance of contractor throughout the entire period.

2.26 All bid documents and certificates must be submitted in English Language or translated in English if any document is not in English Language.

2.27 The contract/job shall be interpreted in accordance with the law applicable in Pakistan.

TECHNICAL EVALUATION CRITERIA

Sr#	Qualification Requirement	Maximum Marks
1	Relevant experience in reputed international E & P companies outside Pakistan (at least 05 years) 5 years ------ 19 marks 6-10 years ------ 22 marks 11 years or more ------ 25 marks	25
2	Relevant experience in reputed E & P companies in Pakistan (at least 02 years) 2 years ------ 15 marks 3 years ------ 17.5 marks 4 years ------ 20 marks	20
3	ISO 9001, ISO 14001, OHSAS 18001 certifications for the Labs in Pakistan One certification only ------ 10 marks Two certifications ------ 12.5 marks All three certifications ------ 15 marks	15
4	Availability of sampling Pakistani national Engineer/s in Pakistan having (at least 01 Sampling Engineer) 1 sampling engineers ------ 7.5 marks 2 sampling engineers ------ 9 marks 3 sampling engineers ------ 10 marks	10
5	Professional and Skilled manpower for detailed PVT analysis, (submit CVs) Experience of Project Lead - 5 years ------ 10 marks Experience of Project Lead - 6-8 years ------ 12.5 marks Experience of Project Lead - 9 + years ------ 15 marks	15
6	Proof of PVT at least 5 wells from E & P companies in Pakistan 5 sampling jobs ------ 7.5 marks 6-7 sampling jobs ------ 9 marks 7-8 sampling jobs ------ 10 marks	10
7	Financial Status (Audited Reports of last 3 years)	5
	Total Marks	100
	Minimum Qualifying Marks	75

Note:

1. Attach supporting documents where necessary.
2. Bidder securing less than 75% marks will be declared technically non-responsive and their financial proposals will not be opened.

LIST OF EQUIPMENT AND CREW FOR SAMPLING AND ANALYSIS SERVICE

1. Onsite Gas Analysis

Sr. No	Description	Availability	
1.00	**Equipment and Personnel**	Yes	No
1.01	Equipment and Personnel for at least 03 wells at a time		
1.02	Determination of gas sample composition up to C6 plus incl. N2, CO2 & H2S by GC technique		
	Onsite Gas Analysis - Detection Tube		
1.03	H2S by Gastec or Draeger tubes.		
1.04	Mercaptans by Gastec or Draeger tubes.		
1.05	COS by Gastec or Draeger tubes.		
1.06	CO_2 by Gastec or Draeger tubes.		
	Onsite Gas Analysis Charges - H2S by UOP 212		
1.07	Equipment to perform Hydrogen Sulphide, Mercaptan Sulphur and Carbonyl Sulphide in gas by modified UOP 212 method.		
	Onsite Gas Analysis Charges - H2O Content/H2O Dew Point by Panametrics		
1.08	Equipment to perform moisture content of gas by Panametrics.		

2. Sampling Services

Sr. No	Description	Availability	
		Yes	No
2.01	Surface oil and gas sampling kit (10000 psi rated): including high pressure lines, manifolds & fittings, vacuum pump, Enerpac high pressure hand-pump, calibrated gauges, cylinder stands, and associated tools. - 03 Nos.		
2.02	Sampling Crew 06 Persons for 03 wells		
	Sampling Cylinders		
2.03	640 cm^3 (10000psi rated) piston cylinder suitable for liquid and gas sampling. -09 Cylinders.		
2.04	Flow-through cylinders suitable for gas sampling for compositional analysis.		
2.05	20 Liter Luxfer Oil cylinder (rated to 3,000 psig) for PVT studies. 09 Cylinders.		
2.06	500 cm^3 (1000 psi rated) passivated cylinder suitable for gas sampling for mercaptan analysis.		
2.07	640 cm3 (10000 psi rated) passivated piston cylinder suitable for liquid sampling for mercaptan analysis.		
2.08	IATA approved steel can. (1L,5L,11L and 25L), 10 Nos.		
2.09	Untreated 1 liter plastic bottle for general water analysis. 10 Nos.		
2.10	Untreated 1 liter glass bottle for oil-in-water analysis. 10 Nos.		
2.11	Untreated 5 liter plastic container for water sampling. 10 Nos.		
2.12	Nitric acid washed glass bottle for Mercury analysis. 10 Nos.		

3. PVT Analysis Services - Black Oil(25<API<45)

Sr. No	Description	Availability	
Sample Restoration and Validity Checks		**Yes**	No
3.00	**Separator Liquids**		
3.01	Validity check of separator liquid sample including opening pressure, sample volume, sample nature		
3.02	Thermal Restoration of separator liquid		
3.03	Heat treatment of separator gas cylinders to above sampling conditions, measurement of opening pressure, check for free liquid (hydrocarbon / water) and C11+ extended gas analysis.		
3.04	Validity check of separator liquid sample, measuring bubble point at separator temperature		
3.05	Determination of separator liquid room temperature bubble point pressure including check for free water and sample volume determination.		
3.06	Determination of saturation point pressure at separator temperature, including check for free water and sample volume determination.		
3.07	Dehydration of sample at elevated temperature within sample cylinder. Includes removal of free water every 48 hours until no free water is observed.		
3.08	Water content by Karl Fischer Technique		
	Separator Gas		
3.09	Validity check of separator gas sample: Thermal restoration, opening pressure at separator temperature and GC compositional analysis to C10 plus		
	Compositional Analysis		
3.10	Flash of separator liquid at separator temperature to ambient conditions		
3.11	Determination of liberated gas sample composition up to C10 plus incl. N2, CO2 & H2S by GC technique		
3.12	Determination of stock tank liquid composition up to C36 plus by GC technique		
3.13	Calculation of separator liquid composition using stock tank liquid and gas composition and related Gas/Liquid ratio		
	Recombination of Separator Samples		
3.14	Calculation of wellstream liquid composition using separator liquid and gas composition and related Gas/Liquid ratio		
3.15	Physical recombination of separator samples according to calculated GOR (provided) to produce reservoir fluid up to 500 cc for PVT analysis.		
3.16	Compositional Analysis of physical recombined reservoir fluid along with bubble point measurement		
	Constant Composition Expansion		
3.17	Partial constant composition expansion (CCE) at test temperature including determination of saturation pressure, Pressure volume relation, bubble point pressure, relative volume, compressibility factor, thermal expansion and composition to C36+.		
3.18	Constant composition expansion (CCE) at reservoir temperature including determination of saturation pressure, compressibility, relative volume and single phase density.		
	Differential Vaporization		
3.19	Differential vaporization at reservoir temperature for a maximum of 6 pressure stages from saturation pressure to atmospheric pressure. Results to include GOR, FVF, liquid density, gas Z factor and compositions of evolved gases to C11+ and residual liquid to C36+.		

3.20	Additional pressure stage including the liberated gas analysis up to C10 plus		
	Viscosity Measurement		
3.21	Viscosity of reservoir fluid from reservoir pressure to atmospheric pressure (min 10 pressure steps)		
	Separator Test		
3.22	Single and multi-stage Separator test (stage plus stock tank) at supplied conditions to produce solution gas-oil ratio, formation volume factor and stock tank density. Includes compositions of evolved gases to C11+ and residual liquid to C36+.		
3.23	Molar composition to C10 plus of separator and stock tank gases, liberated from each step of Single Stage Separation Process.		
3.24	Additional Pressure and temperature stages for Separator test		
3.25	Molar composition to C36 plus of residual oil from any Separator test		
3.26	Correction of differential data to surface separator condition		
	Environmentally-Friendly Disposal of Samples		
3.27	Disposal of pressurized liquid samples to waste.		
3.28	Disposal of pressurized gas samples (20L cylinder)		
3.29	Disposal of pressurized gas samples (< 600 cm3 cylinder).		

4. PVT Analysis Services - Heavy Oil (API < 25^0)

Sr. No	Description	Availability	
Sample Restoration and Validity Checks		**Yes**	No
4.00	**Separator Liquids**		
4.01	Validity check of separator liquid sample including opening pressure, sample volume, sample nature		
4.02	Thermal Restoration of separator liquid		
4.03	Heat treatment of separator gas cylinders to above sampling conditions, measurement of opening pressure, check for free liquid (hydrocarbon / water) and C11+ extended gas analysis.		
4.04	Validity check of separator liquid sample, measuring bubble point at separator temperature		
4.05	Determination of separator liquid room temperature bubble point pressure including check for free water and sample volume determination.		
4.06	Determination of saturation point pressure at separator temperature, including check for free water and sample volume determination.		
4.07	Dehydration of sample at elevated temperature within sample cylinder. Includes removal of free water every 48 hours until no free water is observed.		
4.08	Water content by Karl Fischer Technique		
	Separator Gas		
4.09	Validity check of separator gas sample: Thermal restoration, opening pressure at separator temperature and GC compositional analysis to C10 plus		
	Compositional Analysis		
4.10	Flash of separator liquid at separator temperature to ambient conditions		
4.11	Determination of liberated gas sample composition up to C10 plus incl. N2, CO2 & H2S by GC technique		
4.12	Determination of stock tank liquid composition up to C36 plus by GC technique		
4.13	Calculation of separator liquid composition using stock tank liquid and gas composition and related Gas/Liquid ratio		
	Recombination of Separator Samples		

4.14	Calculation of wellstream liquid composition using separator liquid and gas composition and related Gas/Liquid ratio		
4.15	Physical recombination of separator samples according to calculated GOR (provided) to produce reservoir fluid up to 500 cc for PVT analysis.		
4.16	Compositional Analysis of physical recombined reservoir fluid along with bubble measurement		
	Constant Composition Expansion		
4.17	Partial constant composition expansion (CCE) at test temperature including determination of saturation pressure, Pressure volume relation, bubble point pressure, relative volume, compressibility factor, thermal expansion and composition to C36+.		
4.18	Constant composition expansion (CCE) at reservoir temperature including determination of saturation pressure, compressibility, relative volume and single phase density.		
	Differential Vaporization		
4.19	Differential vaporization at reservoir temperature for a maximum of 6 pressure stages from saturation pressure to atmospheric pressure. Results to include GOR, FVF, liquid density, gas Z factor and compositions of evolved gases to C11+ and residual liquid to C36+.		
4.20	Molar composition to C36 plus of residual oil from DV test		
4.21	Additional pressure stage including the liberated gas analysis up to C10 plus		
	Viscosity Measurement		
4.22	Viscosity of reservoir fluid from reservoir pressure to atmospheric pressure (min 10 pressure steps)		
	Separation Test		
4.23	Single and multi-stage Separator test (stage plus stock tank) at supplied conditions to produce solution gas-oil ratio, formation volume factor and stock tank density. Includes compositions of evolved gases to C11+ and residual liquid to C36+.		
4.24	Molar composition to C10 plus of separator and stock tank gases, liberated from each step of Single Stage Separation Process.		
4.25	Additional Pressure and temperature stages for Separator test		
4.26	Molar composition to C36 plus of residual oil from any Separator test		
4.27	Correction of differential data to surface separator condition		
	Environmentally-Friendly Disposal of Samples		
4.28	Disposal of pressurized liquid samples to waste.		
4.29	Disposal of pressurized gas samples (20L cylinder)		
4.30	Disposal of pressurized gas samples (< 600 cm3 cylinder).		

5. PVT Analysis Services - Gas Condensate/Volatile Oil(API > 45^0)

Sr. No	Description	Availability	
Sample Restoration and Validity Checks		**Yes**	No
5.00	**Separator Liquids**		
5.01	Validity check of separator liquid sample including opening pressure, sample volume, sample nature		
5.02	Thermal Restoration of separator liquid		
5.03	Heat treatment of separator gas cylinders to above sampling conditions, measurement of opening pressure, check for free liquid (hydrocarbon / water) and C11+ extended gas analysis.		

5.04	Validity check of separator liquid sample, measuring bubble point at separator temperature		
5.05	Determination of separator liquid room temperature bubble point pressure including check for free water and sample volume determination.		
5.06	Determination of saturation point pressure at separator temperature, including check for free water and sample volume determination.		
5.07	Dehydration of sample at elevated temperature within sample cylinder. Includes removal of free water every 48 hours until no free water is observed.		
5.08	Water content by Karl Fischer Technique		
	Separator Gas		
5.09	Validity check of separator gas sample: Thermal restoration, opening pressure at separator temperature and GC compositional analysis to C10 plus		
	Compositional Analysis		
5.10	Flash of separator liquid at separator temperature to ambient conditions		
5.11	Determination of liberated gas sample composition up to C10 plus incl. N2, CO2 & H2S by GC technique		
5.12	Determination of stock tank liquid composition up to C36 plus by GC technique		
5.13	Calculation of separator liquid composition using stock tank liquid and gas composition and related Gas/Liquid ratio		
	Recombination of Separator Samples		
5.14	Calculation of well stream liquid composition using separator liquid and gas composition and related Gas/Liquid ratio		
5.15	Physical recombination of separator samples according to calculated GOR (provided) to produce reservoir fluid up to 500 cc for PVT analysis.		
5.16	Compositional Analysis of physical recombined reservoir fluid along with bubble measurement		
	Reservoir Condition Analysis - Volatile Oil		
5.17	Constant composition expansion (CCE) at reservoir temperature including determination of saturation pressure, compressibility, relative volume and single phase density. Liquid shrinkage measurement to lowest possible pressure. Includes movie file of CCE and shrinkage data.		
5.18	Constant volume depletion (CVD) and analysis of equilibrium phase gas composition up to C36+. Determination of Z factor and volume produced at each stage - 6 stages.		
	Additional Stages to Constant Volume Depletion (CVD), at reservoir temperature, including the wellstream analysis.		
	Reservoir Condition Analysis - Gas Condensate		
5.19	Constant composition expansion (CCE) at reservoir temperature including determination of saturation pressure, relative volume and single phase compressibility. Retrograde liquid measurement to maximum build up. Includes movie file of CCE and RL data.		
5.20	Constant volume depletion (CVD) and analysis of equilibrium phase gas composition to C11+ Determination of Z factor and volume produced at each stage - 6 stages.		
5.21	Additional Stages to Constant Volume Depletion (CVD), at reservoir temperature, including the wellstream analysis.		
	Viscosity Measurement		
5.22	Viscosity of reservoir fluid from reservoir pressure to atmospheric pressure (min 10 pressure steps)		
5.23	Viscosity of reservoir fluid from reservoir pressure to dew point pressure (min		

	10 pressure steps)		
	Separator Test		
5.24	Single and multi-stage Separator test (stage plus stock tank) at supplied conditions to produce solution gas-oil ratio, formation volume factor and stock tank density. Includes compositions of evolved gases to C11+ and residual liquid to C36+.		
	Environmentally-Friendly Disposal of Samples		
5.25	Disposal of pressurized liquid samples to waste.		
5.26	Disposal of pressurized gas samples (20L cylinder)		
5.27	Disposal of pressurized gas samples (< 600 cm3 cylinder).		

6. PVT Analysis Services - Dry Gas

Sr. No	Description	Availability	
Sample Restoration and Validity Checks		Yes	No
6.00	**Separator Liquids**		
6.01	Validity check of separator liquid sample including opening pressure, sample volume, sample nature. Remove top and bottom subsamples (10 cm3) to examine chamber contents.		
6.02	Thermal Restoration of separator liquid		
6.03	Validity check of separator liquid sample, measuring bubble point at separator temperature		
6.04	Water content by Karl Fischer Technique		
	Separator Gas		
6.05	Validity check of separator gas sample: Thermal restoration, opening pressure at separator temperature and GC compositional analysis to C10 plus		
	Compositional Analysis		
6.06	Flash of separator liquid at separator temperature to ambient conditions		
6.07	Determination of liberated gas sample composition up to C10 plus incl. N2, CO2 & H2S by GC technique		
6.08	Determination of stock tank liquid composition up to C36 plus by GC technique		
6.09	Calculation of separator liquid composition using stock tank liquid and gas composition and related Gas/Liquid ratio		
	Recombination of Separator Samples		
6.10	Calculation of wellstream liquid composition using separator liquid and gas composition and related Gas/Liquid ratio		
6.11	Physical recombination of separator samples according to calculated GOR (provided) to produce reservoir fluid up to 500ccs		
6.12	Compositional Analysis of physical recombined reservoir fluid along with bubble measurement		
	Constant Composition Expansion		
6.13	Dry Gas: Constant Composition Expansion (CCE) at reservoir temperature including Saturation pressure determination (if possible) PV relationship, relative volume and single phase compressibility, Z factor and calculate gas viscosity		
	Environmentally-Friendly Disposal of Samples		
6.14	Disposal of pressurised gas samples (< 600 cm3 cylinder).		
6.15	Disposal of pressurized gas samples (20L cylinder)		

7. Gas Analysis

Sr. No	Description	Availability	
		Yes	No
7.01	Helium Content		
7.02	Gas Gravity		
7.03	Calorific Value		
7.04	Dew Point Test (Moisture Content)		
7.05	LPG Recovery		

8. Oil Analysis

Sr. No	Description	Method	Availability	
			Yes	No
8.01	Appearance	Visual		
8.02	Color (Visual)	Visual		
8.03	Color (ASTM)	ASTM D 1500/IP196		
8.04	API and Specific Gravity at 60/60°F	ASTM D 1298/IP365		
8.05	Kinematic Viscosity (Cst)	IP71		
8.06	BS&W	ASTM D4007/1796/2709		
8.07	Salt Content	ASTM D3230/IP265		
8.08	Total Sulphur Content	ASTM D4294		
8.09	Mercaptan Sulphur	UOP163		
8.10	Reid Vapour Pressure	IP69		
8.11	Pour Point	ASTM D 97/IP15		
8.12	Calorific Value	ASTM D240		
8.13	Engler Distillation or Distillation to 700°F	ASTM D86		
8.14	True Boiling Point (TBP)	ASTM D2892		
8.15	Ash analysis plus determination of alkali & other metals by ICP (Fe, Na, Ca, Mg, Sr, Ba, P, Si and S as Sulphate)	ICP		
8.16	Ash analysis plus determination of heavy metals by ICP (Pb, Ni, Cd, Co, Cr, Mn, Be, Cu, Mo, Bi, Zn and Ni)	ICP		
8.17	Ash content	ASTM D482		
8.18	Asphaltenes content (C5)	Gravimetric		
8.19	Asphaltenes content(C7)	IP 143		
8.20	Calorific value by calculation (requires ash content, density, sulphur content, water content and D86 distillation)	ASTM D4868		
8.21	Carbon residue	IP 13		
8.22	Cetane index (calculated on cuts)	IP 218		
8.23	Density @ 60°F.	Digital densitometer		
8.24	Fire point	ASTM D92		
8.25	Flash point	ASTM D92		
8.26	Flash point (Penskey Martin)	ASTM D93		
8.27	H2S	UOP 103, UOP 163		
8.28	Initial pH (i-pH)	ASTM D7946		
8.29	Kinematics viscosity < 5°C	ASTM D445		
8.30	Kinematics viscosity > 5°C	ASTM D445		
8.31	Naphthenic acid number			
8.32	Reid vapor pressure	ASTM D323 and IP69		

8.33	Salt content	ASTM D323		
8.34	SARA analysis of oil sample	HPLC & IP 143		
8.35	Sediment by extraction	ASTM D473		
8.36	Total acid number (TAN)	IP 177 / ASTM D664		
8.37	Total base number (TBN)	ASTM D2896		
8.38	Viscosity index (measurement of viscosities and calculation)	ASTM D2270		
8.39	Water Content	ASTM D95, IP358		
8.40	Water content by Karl Fisher	ASTM D4928		
8.41	Wax content	modified UOP 46/64		
8.42	Wax appearance temperature (WAT)	Cross Polar Microscopy (CPM)		

9. Water Analysis

Sr. No	Description	Method	Availability	
			Yes	No
9.01	10 ion Analysis inc. SG TDS, Appearance, Resistivity, pH. Na/K/Ca/Mg/Ba/Sr/DissFe/Total Fe. Chloride/Sulphate/(Bi)Carbonate/Hydroxide.	APHA		
9.02	Turbidity	APHA2130B		
9.03	Color unfiltered	Visual		
9.04	Color filtered	Visual		
9.05	Odour			
9.06	Conductivity	APHA2510B		
9.07	H2S	APHA 4500 S2-, Chemets		
9.08	Total Suspended Solids (TSS)	APHA2540D		
9.09	Total Dissolved Solids (TDS)	APHA2540C		
9.10	Manganese (Mn)	APHA3120B		
9.11	Aluminum (Al)	APHA3120B		
9.12	Dissolved Oxygen	APHA 4500 O		
9.13	Nitrate (NO3)	APHA 4110 B		
9.14	Phosphate (PO4)	APHA 4110 B		
9.15	Silica (SiO2)	APHA3120B		
9.16	Biological oxygen demand	APHA 5210 A		
9.17	Coliform (E. / B. Coli)	APHA 9222 B		
9.18	API "12 ion" analysis on water to determine sodium, calcium, magnesium, barium, dissolved iron, chloride, sulphur as sulphate (by IC), potassium, strontium, qualitative sulphide, pH, bicarbonate, carbonate, specific gravity, resistivity, logarithmic plot and stiff diagram.	API RP 45		
9.19	Ammonia	Chemets		
9.20	Bromide	Dionex Ion Chromatography		
9.21	Chloride	Titration		
9.22	Cyanides	HACH colorimetric method		
9.23	Density at room temperature and at 60/60	Digital densitometer		
9.24	Determination of Sulphur as Sulphate (for water with H2S).	Gravimetry		
9.25	Dissolved CO2	Chemets		

9.26	Dissolved O2	Chemets		
9.27	Fatty acid analysis - Acetate, Formate, Propionateand Butyrate (C1 to C4)	Dionex Ion Chromatography		
9.28	Fluoride	HACH colorimetric method		
9.29	Hydrocarbons by.	APHA gravimetric method		
9.30	Kinematic viscosity of water			
9.31	Nitrate	HACH colorimetric method		
9.32	Nitrite	HACH colorimetric method		
9.33	Oil content of water	TD 500/HACH		
9.34	Optional total Iron in unfiltered water sample	ICP		
9.35	pH at room temperature	pH meter		
9.36	Phenol	HACH colorimetric method		
9.37	Residual Chlorine	Chemets		
9.38	Resistivity at 77°F or 25°C	Conductivity meter		
9.39	Resistivity measurement at other temperatures.	Conductivity meter		
9.40	Metal	ICP		
9.41	Sulphite	Chemets		
9.42	Sulphide	APHA gravimetric method		
9.43	Total dissolved solids by evaporation @ 110°C	Gravimetric		
9.44	Total dissolved solids by evaporation @ 180°C	Gravimetric		
9.45	Total solids by evaporation @ 110°C by gravimetric.	Gravimetric		
9.46	Total suspended solids - Filtration through membrane filter (0.45 um)	Gravimetric		
9.47	Provision of sets of SRB: Sulphate Reducing Bacteria series dilution vials. Recommended two sets per sample.			
9.48	Provision of sterile syringes and needles for performing bacteriological sampling (one set of syringe and needle for each injection to eliminate cross-contamination).			
9.49	28 day incubation period of bacteriological test kits and interpretation of final results.			
9.50	Biological oxygen demand			
9.51	Coliform (E. / B. Coli)			

10. Flow Assurance - Asphaltene and Wax Analysis

Sr. No	Description	Availability	
10.00	**ASPHALTENE DEPOSITION ANALYSIS**	Yes	No
	Asphaltene - Pre Study Analysis		
10.01	Sample restoration for 5 days at reservoir pressure and temperature (dependent upon pressure and temperature rating of cylinder) with continual agitation. Sample maintained at elevated pressure and temperature for the duration of the study.		
10.02	Pump-off of pressurized fluid and collection of residual fluid for stock tank properties testing (excludes heat treatment).		

10.03	Measurement of asphaltene content (nC7 insoluble) of filtered and unfiltered sample by IP 143.		
10.04	SARA analysis of oil sample by HPLC and IP 143.		
10.05	WAT by Cross Polar Microscopy (CPM).		
	Assessment of Sample Validity		
10.06	Restoration of sample to reservoir conditions per 24 hours		
10.07	Atmospheric separation and compositional analysis of liquid sample to C36+		
10.08	Measurement of asphaltene and resin content of filtered and unfiltered sample		
10.09	Measurement of Asphaltene Deposition Pressure and Envelope - Near Infra-Red (NIR) Spectography		
10.10	Measure Asphaltene deposition pressure at reservoir temperature		
10.11	Asphaltene flocculation envelope ; Includes defining the asphaltene flocculation (onset) pressure at a series of prescribed temperatures relative to the saturation locus on a pressure-temperature (P-T) diagram.		
	Asphaltene P-T Diagram of Reservoir Fluid		
10.12	Asphaltene analysis including Visual (HP Microscope) and NIR. Image analysis including movie file and statistical particle size distributions during run (4 images).		
	Asphaltene P-x Diagram		
10.13	Determination of compressibility Z factor of gas at ambient temperature at injection gas pressure.		
10.14	Sequential titration of reservoir fluid with injection gas in the NIR system, determination of asphaltene onset as a function of GOR at fixed pressure and at reservoir temperature.		
10.15	Preparation of swollen fluid blend for isothermal depressurization experiment.		
10.16	Asphaltene analysis including Visual (HP Microscope) and NIR. Image analysis including movie file and statistical particle size distributions during run (4 images).		
10.17	Bulk precipitation using high pressure high temperature (HPHT) filtration. Asphaltene content of filtered liquid by IP 143 (nC5 or nC7).		
	Wax Appearance Temp(WAT)& Wax Dissolution Temp(WDT) of Live Oil		
10.18	Charge subsample of reservoir fluid to wax loop apparatus and pre-filter at 93°C (200°F), prior to determining WAT		
10.19	Determine WAT of live fluid sample at constant pressure		
10.20	Heat preparation of sample to 200°F with agitation.		
10.21	Pump-off of pressurized fluid for WAT on STO.		
10.22	WAT & WDT of pump-off by IP 389 using DSC.		
10.23	Charge subsample of reservoir fluid to wax loop apparatus and pre-filter at 90°C, prior to determining WAT and WDT.		
10.24	Stabilize reservoir fluid at 90°C (or Tes) and perform WAT measurement by controlled decrease in temperature. Measure WDT by controlled increase of sample to original temperature.		
10.25	Condition fluid to new gas saturation, stabilize and perform WAT and WDT measurements at per client requirements.		
10.26	Measurement of pipeline restart pressure at live conditions.		
10.27	Depressurize fluid and measure new pipeline restart pressure on depressurized sample.		
	WAX DEPOSITION ANALYSIS		
	Stock Tank Fluid Properties		
10.28	Flash of sample to atmospheric conditions (without compositional analysis)		
10.29	Wax content by modified BP methodology		

10.30	Pour point by IP/ASTM methodology		
10.31	Cloud point by IP/ASTM methodology		

11. Advance PVT Analysis (Enhanced Oil Recovery)

Sr. No	Description	Availability	
11.00	**Injection Gas Preparation**	Yes	No
11.01	Rich Gas Preparation		
11.02	Lean Gas Preparation		
11.03	Quality check analysis for prepared gas		
11.04	Compression of gas sample		
	EOR with Rich Gas		
11.05	Solubility Swelling (6 gas additions)		
11.06	Equilibrium Phase Split (3 Mixtures)		
11.07	MMP Study (Slim Tube) (6 Pressures)		
11.08	Multicontact study (Backward or Forward) (4 Contacts)		
	EOR with Lean Gas		
11.09	Solubility Swelling (6 gas additions)		
11.10	MMP Study (Slim Tube) (6 Pressures)		
	IFT for Oil-Gas system		
11.11	Preparation of synthetic brine sample to measured or supplied water composition including measured composition.		
11.12	Add gas to synthetic brine to produce 500 cm3 of 'live' formation water (Psat = IFT Pressure).		
11.13	Physical recombination of reservoir fluid with gas to produce sufficient swollen fluid at specified gas liquid ratio for IFT or Contact Angle measurement.		
11.14	Charge equal sample volumes of drop and encompassing phases to a high pressure cell and stabilise the fluid at the measurement pressure at Tres for 24 hours. Measure phase volumes.		
11.15	Measure density and composition of equilibrium drop phase to C36+.		
11.16	Measure density and composition of equilibrium encompassing phase to C36+.		
11.17	IFT of oil and water system by pendant drop method.		
11.18	IFT of gas and water system by pendant drop method.		
11.19	IFT of oil and gas system by pendant drop method.		

12. Chemistry

Sr. No	Description	Availability	
		Yes	No
12.00	**Sample Separation / Restoration**		
12.01	Isolation of water from mud mixture by mud filtration process prior to analysis (125 cm3 volume required for 12 ion analysis).		
12.02	Isolation of water from emulsion by centrifuge prior to analysis (125 cm3 volume required for 12 ion analysis).		
12.03	Water filtration using Whatman Filter (no.5).		
12.04	Restoration of sample by removing any free water present, equilibrate temperature between ambient and 45°C (depends on fluid type) and homogenise prior to any subsampling.		
12.05	Water content by Karl Fisher by ASTM D4928.		
12.06	Isolation of oil from emulsion by centrifuge prior to analysis (500 cm3 volume required for basic assay analysis / carbon number distillation).		

12.07	Water content by Karl Fisher by ASTM D4928 following dehydration procedure.		
	Fluid Compatibility (Asphaltene Deposition) of Stock Tank Liquids		
12.08	Prefiltration of oil sample (°API > 20) to remove any solids using vacuum membrane filtration (0.45 um).		
12.09	Prefiltration of oil sample (°API < 20) to remove any solids using membrane filtration (0.45 um) at elevated pressure.		
12.10	Determine n-pentane insoluble asphaltene content of sample, prior to mixing. Calculate theoretical asphaltene content of each mixture.		
12.11	Prepare four fluid mixture ratios (20:80, 40:60, 60:40 & 80%:20% by volume), stabilise for 24 hours & filter. Measure asphaltene content & compare against theoretical value.		
12.12	Repeat test on fluid mixture at client specified ratio.		
	Evaluation of Asphaltene Inhibitors		
12.13	Initial preparatory analysis to determine n-pentane insoluble asphaltene content of selected oil sample, after addition of known amounts of solvent (5 mixtures). Data used to calculate optimum dosage rate for further testing after addition of chemical inhibitor.		
12.14	Prefiltration of oil sample to remove any solids.		
12.15	Evaluation of asphaltene deposition properties upon addition of selected concentration of chemical product.		
	Distillation Analysis		
12.16	High temperature carbon number distillation of stock tank oil sample with determination of weight, volume, molecular weight & density of each cut to C20+ (331°C).		
12.17	Additional one cut using sub-atmospheric distillation from C20 (331°C) to C35 (491°C) with determination of weight, volume, molecular weight & density.		
	Scale / Sludge / Deposit Analysis		
12.18	Standard suite of tests to determine composition and properties of solid sample.		
12.19	Digital image of sample upon receipt		
12.20	Sample pre-treatment, radioactivity check, magnetic properties, qualitative sulfide and carbonate tests.		
12.21	Digital image of sample after pre-treatment		
12.22	Loss on ignition		
12.23	Acid insoluble content by gravimetric.		
12.24	Acid soluble I.C.P - calcium, sodium, potassium, magnesium, barium, strontium, iron, aluminum, and sulphur as sulphate by ICP.		
12.25	Acid insoluble I.C.P - calcium, sodium, potassium, magnesium, barium, strontium, iron, aluminum, and sulphur as sulphate by ICP.		
12.26	Water soluble content by gravimetric.		
12.27	Chloride content by AgNO3 titration.		
12.28	Water soluble I.C.P - calcium, magnesium, barium, strontium, iron, aluminum, and sulphur as sulphate by ICP.		
12.29	Silica by HF treatment by gravimetric.		
12.30	Sulphide as Iron Sulphide by iodometric.		
12.31	Water content by ASTM D 95.		
12.32	Toluene soluble by extraction by gravimetric.		
12.33	Weight loss on drying at 100, 500 and 900°C by gravimetric.		
	Additional Scale / Sludge / Deposit Analysis		
12.34	Additional elements by ICP.		
12.35	Wax Content by UOP 46/64.		
12.36	Asphaltenes by IP 143.		

12.37	Solvent extraction of sample using Dichloromethane (DCM) to dissolve organic material.		
12.38	Qualatative fingerprint analysis of solvent enxtract by gas chromatography to determine elution pattern to C40+.		
12.39	Analysis of crystalline minerals of non-geological sample by X-Ray Diffraction Analysis (XRD).		
	Emulsion Studies		
12.40	Preparation of synthetic brine sample to measured or supplied water composition.		
12.41	Blend water and oil at specific ratio and temperature and record descriptions of the oil, water and interface and the percentage water separation after 1, 5, 10, 15, 30, 60 and 120 minutes. For visual enhancement digital images taken at 5, 10, 15, 30, 60 (ASTM D1401).		
	Emulsion Rheology Study		
12.42	Measurement of dynamic viscosity of emulsions per temperature and at an appropriate shear rate.		
	Evaluation of Demulsifier Efficiency and Applicability		
12.43	Emulsion test performed to evaluate the efficiency and applicability of demulsifier upon addition of selected concentration of product. Testing recommended at selected temperatures on a minimum of four products, at three different concentrations. (ASTM D1401).		
12.44	Independent review of laboratory testing after addition of chemical vendor's products and preparation of detailed final report, including conclusions on chemical effectiveness and ranking on suitability of each product.		
	Foaming Characteristics		
12.45	Determination of Foaming Characteristics by IP 146 Method. Incorporating nine digital images of foaming (one obtained during test, one after 5 minutes settling time and one after 10 minutes for three test temperatures) (IP 146 / ASTM D892).		
	Self-Scaling Testing (Bottle Testing) - 100%		
12.46	Preparation of synthetic brine sample to measured water compositions.		
12.47	API "10 ion" analysis on water to determine sodium, calcium, magnesium, barium, dissolved iron, chloride, sulphur as sulphate (by IC), qualitative sulphide, pH, bicarbonate, carbonate, specific gravity, resistivity, logarithmic plot and stiff diagram (API RP 45).		
12.48	Prepare self-scaling blanks at the following temperatures - 30°C, 40°C, 50°C, 60°C, 70°C, 80°C, & 90°C and stabilize sample at test temperature for 16 hours. Filter sample and perform short form water analysis plus pH and bicarbonate on the filtrate (2 waters at 7 temperatures).		
12.49	Digital image of each test.		
	Water Compatibility Testing (Bottle Testing) - Sample A and B		
12.50	Prepare water mixtures at the following temperatures - 30°C, 40°C, 50°C, 60°C, 70°C, 80°C, & 90°C and stabilize sample at test temperature for 16 hours. Filter sample and perform short form water analysis plus pH and bicarbonate on the filtrate (5 water mixtures at 7 temperatures).		
12.51	Calculate theoretical water composition of 5 selected water mixtures		
12.52	Digital image of each test.		
	Chemical Inhibitor / Dissolver Testing - Static Jar Tests		
12.53	Add three (low, medium, high) known concentrations of chemical to samples of water mixture of selected ratio. Stabilize samples at test temperature for 16 hours, filter samples and perform short form water analysis plus pH and bicarbonate on the filtrates.		

12.54	Perform above test at additional elevated temperature.		
	Particles Counts in Water		
12.55	Set-up, calibrate & analysis of first water to determine particle counts/size distribution by Beckman Coulter Counter.		
12.56	Analysis of additional water to determine particle counts/size distribution by Beckman Coulter Counter.		
	Environmentally-Friendly Disposal of Samples & Containers		
12.57	Disposal of dead water samples and container.		
12.58	Disposal of dead hydrocarbon liquid sample and container - up to 1 litre.		
12.59	Disposal of dead hydrocarbon liquid samples and container - up to 5 litres.		
12.60	Disposal of dead hydrocarbon liquid samples and container - up to 11 litres.		
12.61	Disposal of dead hydrocarbon liquid samples and container - up to 25 litres.		
12.62	Disposal of dead hydrocarbon liquid samples and container - up to 205 litres.		
12.63	Disposal of scale/sludge/deposit samples to waste (< 80 cps).		
12.64	Disposal of scale/sludge/deposit samples to waste (> 80cps).		

Annexure-"G"

DRAFT CONTRACT

CONTRACT NO. PROC-SERVICES/CASE NO. ..... / NAME OF SERVICES

THIS **Contract for hiring of (Name of Services) ("Contract")** is made at Islamabad as of this---------- day of ----------/year of execution, by and between

Oil & Gas Development Company Limited , a body corporate, having its office at OGDCL House, Jinnah Avenue, Sector F-6, Islamabad (hereinafter referred to as the "Company" which expression shall include its successors and assigns) and

M/s (Name of Contractor or Consultant as the case may be) having its office at address..... (hereinafter referred to as the "Contractor / Consultant" which expression shall include its successors and assigns)

Contractor/ Consultant and Company may hereinafter be collectively referred to as the "Parties" and each individually as a "Party".

WHEREAS, The Company is desirous of hiring timely, efficient and reliable (Name of Services) .....services under rate running contract for a period of (period)on as and when required basis.

AND WHEREAS, the Company invited bids for providing Name of Services ..... through Tender Enquiry No. PROC-SERVICES/Case No..... and the Contractor / Consultant through its Bid Proposal No..... dated ..... warrants and represents for providing efficient and reliable Name of Services .....

WHEREAS, the Contractor / Consultant is engaged in the business of rendering the desired services to various E & P companies and it hereby expresses its ability and willingness to provide the desired services along with necessary equipment, type of Contract.

NOW THEREFORE, in consideration of the promises and mutual undertaking and covenants hereinafter set forth, the Parties hereby agree as follows:

SECTION 1. SCOPE OF WORK
Description of Scope of Work (As described in TOR/Tender enquiry)

SECTION 2. TERM:
The initial term of this Contract shall be ----------months/years from the date of its acceptance by the contractor till completion of the job whichever is later unless earlier terminated under the provisions hereof. Any extension in the term of Contract will be subject to mutual consent of both the parties.

SECTION 3. CONTRACT DOCUMENTS:
The following documents shall be deemed to form and be read and construed as integral part of this Contract:

(a) This Contract.

(b) Company's Invitation to Bid No. PROC-SERVICES/ / /2018 dated _____.
(c) Company's LOI No. PROC-SERVICES/ / /2018 dated_____.
(d) Contractor's letter dated_____.
(e) Contractor's Bid Proposals No. dated _____.

Any inconsistency between the above documents of this Contract shall be resolved by giving precedence in the order in which they are listed above.

SECTION 4. PRICING TERMS:

4.1 The Services under this Contract shall be rendered at an estimated Cost of _____as detailed below:

4.2 All prices charged under this Contract shall remain firm during the period of this Contract.

4.3 All payments under this Contract shall be made at actual in equivalent Pak Rupees at official currency exchange rate prevalent on the date of payment. The Company shall use its best efforts to make payment as early as possible against duly verified invoices. However, any payment made after thirty (30) days shall not in any way attract any markup, interest, surcharge or charges, etc.

4.4 To avoid delay in payment, it is essential that the invoices shall:
(a) be duly signed and stamped and type-written in English.
(b) be identified by the Contract number.
(c) contain sufficient description of services provided by the Contractor.
(d) state the location of the Company where Services have been provided.
(e) state the period of Services, duly verified with sign and stamp of Head of Department.
(f) be precise and strictly in accordance with the Contract.
(g) contain any other information deemed essential either by the Contractor or by the Company.
(h) be submitted to Manager Accounts under intimation to SCM Department.

SECTION 5. TAXES AND DUTIES:

5.1 The contract price includes all direct taxes, duties, fees, levies and any other relevant charges payable/ applicable on the last date of submission of main/supplementary financial bid inside and outside Pakistan, except if OGDCL imports material in its own name it will bear duties/ import taxes/ port charges. The Contractor will be responsible for all the direct taxes (present or future) with respect to income/ payments of total contract amount, under the scope of the contract.

5.2 Indirect taxes (Provincial Sales Tax/ Islamabad Capital Territory Sales Tax) in Pakistan will be borne by OGDCL at actual where applicable. The contract price will be adjusted for any subsequent changes in the rates of indirect taxes as made applicable thereafter by the relevant authorities in Pakistan.

5.3 Any direct taxes, duties, fees, levies and other relevant charges, present or future, assessed or payable inside or outside Pakistan by the Contractor and its sub-contractor and /or by the expatriate personnel deputed by the Contractor and its sub-contractor in connection with its performance under the Contract shall be the sole and exclusive responsibility of the Contractor.

5.4 The Contractor shall be responsible and pay all taxes on its income outside and in particular on its income in Pakistan under the Contract and under the laws of Pakistan.

5.5 The Company shall have the right, as provided under the laws of Pakistan to meet its obligations and in particular to deduct from the payment due to the Contractor (against entire contract value including supplies and / or services components etc as applicable) , income tax at source at the rates prevailing from time to time, from the invoiced amounts, or such reduced rates fixed by the taxation authorities in Pakistan for the Contractor on production of current and valid documentary evidence by the Contractor from competent tax authorities in Pakistan and pay such amount to appropriate authorities.

5.6 The Contractor shall also be responsible for any income taxes levied on the Contractor's and its sub-contractor's expatriate personnel, under the laws of Pakistan and for all social security issuances and other contributions for the Contractor's expatriate personnel regardless of whether such contributions are levied on employer or employee or both in Pakistan or outside Pakistan.

5.7 The Contractor shall keep the Company duly informed about the steps taken by the Contractor in order to meet its obligations under the Contract and provide the necessary documents to the Company in this connection.

5.8 The Contractor shall indemnify the Company against any claim which might occur due to non compliance by Contractor of any legal obligation regarding the taxes, duties, fees, levies, or other charges, including taxes on income in Pakistan and any other payments to the relevant Government or Governmental agencies or any other applicable authority.

5.9 Understanding reflected under the above tax clause would prevail in case of any understanding to the contrary that may be reflected with respect to tax matters, in any other clause of the contract

SECTION 6. ADJUSTMENT OF CONTRACT PRICE:

The Contract value (price) shall be subject to adjustment as a result of addition / reduction in scope of work. However unit price quoted for such work shall be used as base price for computation of final invoice. Contractor should take approval for such changes in writing from the Company. Rates and quantum of any work, not covered in the scope of work shall be subject to approval of Company.

SECTION 7. CONTRACTOR'S OBLIGATIONS:

7.1 The Contractor warrants and represents that all Services along with necessary equipment provided under this Contract shall be in accordance with good

industry practice and the Contractor shall use every reasonable means for efficient and timely performance and provision of the Services.

7.2 The equipments, tools and materials utilized by the Contractor in performance of this Contract shall be handled and utilized with due care and diligence and proper record of consumables etc shall be maintained and made available to the Company upon request.

7.3 The Contractor shall secure and maintain during the performance of this Contract, all licenses, permits, authorization and certification required under the laws of Pakistan and applicable to Contractor. Company has the right to inspect such licenses, permits, authorization and certificates and the Contractor shall forthwith comply with such request.

7.4 Contractor shall employ and depute for the execution of Services, persons who are careful, skilled and experienced in their profession. The Company' shall have the right to ask the Contractor to replace any person employed by the Contractor for execution of Services who, in the sole opinion of Company, misbehaves, is incompetent or negligent in the performance of his duties or fails to conform with any particular provisions with regard to safety which may be set out in the Contract, or any conduct which is prejudicial to safety or health, and such person shall not be employed again for the Services without the permission of the Company.

7.5 Contractor and its personnel shall, when using Company's premises, adopt and observe all safety, security, fire and health measures and comply with all reasonable directions relating to health and safety rules and emergency evacuation plans as notified or as directed by the Company.

SECTION 8. DECLARATION:

8.1 The Contractor hereby declares that it has not obtained or induced the procurement of any Contract, right, interest, privilege or other obligation or benefit from Company through any corrupt business practices.

8.2 Without limiting the generality of the foregoing, the Contractor represents and warrants that it has fully declared the brokerage, commission, fees etc. paid or payable to anyone and not given or agreed to give and shall not give or agree to give to anyone within or outside Pakistan either directly or indirectly through any natural or juridical person, including its affiliate, agent, associate, broker, Contractor, director, promoter, shareholder, sponsor or subsidiary, any commission, gratification, bribe, finder's fee or kickback, whether described as consultation fee or otherwise, with the object of obtaining or inducing the procurement of a contract, right, interest, privilege or other obligation or benefit in whatsoever form from the Company, except that which has been expressly declared pursuant hereto.

8.3 The Contractor certifies that it has made and shall make full disclosure of all agreements and arrangements with all persons in respect of or related to the transaction with the Company and has not taken any action or will not take any action to circumvent the above declaration, representation or warranty.

8.4 The Contractor accepts full responsibility and strict liability for making any false declaration, not making full disclosure, misrepresenting facts or taking

any action likely to defeat the purpose of this declaration, representation and warranty. It agrees that any Contract, right, interest, privilege or other obligation or benefit obtained or procured as aforesaid shall, without prejudice to any other rights and remedies available to the Company under any law, Contract or other instrument, be voidable at the option of the Company.

8.5 Notwithstanding any rights and remedies exercised by Company in this regard, the Contractor agrees to indemnify Company for any loss or damage incurred by it on account of its corrupt business practices and further pay compensation to Company in an amount equivalent to ten times the sum of any commission, gratification, bribe, finder's fee or kickback paid by the Contractor as aforesaid for the purpose of obtaining or inducing the procurement of any Contract, right, interest, privilege or other obligation or benefit in whatsoever form from Company.

SECTION 9. PERFORMANCE BOND/SECURITY DEPOSIT:

The Contractor shall provide to the Company, within fifteen (15) days of the award of the Contract, a Performance Bond in the form of an irrevocable, independent, unconditional, direct obligation of the bank and first and simple demand guarantee of a Pakistani Scheduled Bank or branch of a foreign bank operating in Pakistan, except NIB Bank, in the amount equivalent to 10% (Ten percent) of the total contract value in Pak Rupees/US$ strictly in accordance with the format given at LOI to cover and secure the Contractor's faithful performance and execution of this Contract. The charges and expenses payable in connection with the issuance, extension, renewal and maintenance of the Performance Bond shall be borne and paid by the Contractor. The Performance Bond shall be valid and shall be maintained in full force effect until ----------/ extendable six (06) months beyond the validity of the Contract. The Company has sole and absolute right to encash the Performance Bond without any prior notice to the Contractor in the event of any breach, failure, non-compliance or delay in the performance of the Contract.

SECTION 10. LIABILITIES:

10.1 Each party shall defend, indemnify and hold the other party harmless from and against any claim INCLUDING THIRD (3rd) PARTIES arising out of (i) loss or damage to its own property, and / or (ii) death of or injury to its own personnel.

10.2 Each party shall be liable for, and shall defend, indemnify and hold the other Party and its members/affiliates, co-ventures (if any), contractors or subcontractors, and it's and their respective employees, directors, officers, agents and invitees harmless from and against all claims, demands, causes of action, judgments, awards, damages, losses, costs, expenses and liabilities of any kind and character arising out of third party property damage (including death) caused by the indemnifying Party's negligence during the performance of the Contract.

10.3 Notwithstanding any other provision of this Contract, Company shall defend, indemnify and hold harmless the Contractor from and against all liabilities, claims, damages, losses and costs relating to or resulting from (a) through (e) below, including any and all personal injury, death and loss of or damage to the drilling rig, vessel or platform and all other property arising there from (except if caused by Contractor's Gross Negligence or willful misconduct):

(a) damage to or loss of or impairment to any well (including the casing) or well bore;
(b) killing of or the bringing under control of any well:
(c) damage to or loss or any reservoir or productive formation, or subsurface minerals or structure or the loss of oil or gas therefore in;
(d) blowout, fire, explosion, catering , or any uncontrolled well condition;
(e) pollution, as well as containing, controlling and cleaning up any pollution, contamination or debris.

Gross Negligence or Willful Misconduct means any act or failure to act (whether sole, joint or concurrent) by a person that was intended to cause or was in reckless disregard of, or wanton indifference to, the harmful consequences to the safety or property of another person which the person acting or failing to act knew, or should have known, would result from such act of omission, provided that Gross Negligence or Willful Misconduct does not include any act or failure to act insofar as it: (i) constituted mere ordinary omission or oversight; or (ii) was done or omitted in accordance with the express instructions or approval of all parties."

The liability clause will be applicable to both parties i.e. OGDCL and the contractor and therefore its ambit and scope will be interpreted accordingly.

SECTION 11. INDEMNITIES:

11.1 Neither Party shall be liable to the other for any punitive, indirect or consequential damages sustained by the other including without limitation business interruptions, loss of profits, loss of use of assets, loss of data and loss of contracts, and each Party shall hold the other Party harmless in respect thereof.

11.2 The Contractor shall indemnify the Company against all motions, proceedings, claims, liens and demands whatsoever which may be made against the Company by the third parties for or in respect of or out of any failure by the Contractor in performance of its obligation or wrongful performance under this Contract or any act or omission in connection therewith. Should Company have to pay any moneys in respect of any such claims or demands, the amounts to be paid and the costs incurred by the Company connection therewith, shall be charged in to and paid by the Contractor in full.

SECTION 12. LIQUIDATED DAMAGES:

12.1 If the contractor fails to deliver any or all of the goods/services within the time periods(s) specified in the Contract, the purchaser shall, without prejudice to other remedies under the Contract, deduct from the Contract Price/Bank Guarantee as liquidated damages, a sum not more than 0.5% of the contract price per week or part thereof for first four weeks, 1.00% per week for next four weeks and 1.5% per week exceeding four weeks upto maximum extent of 5% of the contract value.

12.2 In case the purchaser is satisfied that the delayed/defective services/shipment was due to some mistake or circumstances beyond the control of the contractor and the contractor has not intentionally or

negligently contributed in the delay, the purchaser may impose Liquidated Damages for not more than a sum equivalent to 0.5% of the delayed or defective shipment per week or part thereof for first two weeks, 1.00 per week for next three weeks and 1.5% per week exceeding five weeks but not exceeding 5% of the contract value of the delayed/defective shipment provided that the Contractor takes immediate remedial measures for the replacement of defective shipment and takes prompt steps to mitigate the delayed. The Purchaser may however, impose Liquidated Damages as per clause 12.1 above if the delayed or defective shipment/ services has affected the project completion schedule or has resulted in Production losses.

12.3 Even after imposition of LDs, if the supplier fails to materialize the delivery (material and or services); the Purchaser reserves the right to cancel Purchase Order/Contract/LC and forfeit the Guarantee (if applicable) after intimating the supplier for such cancellation/forfeiture.

SECTION 13. PATENT RIGHTS:

The Contractor shall protect, indemnify and hold the Company harmless from and against all claims, proceedings, demands, damages, costs, charges and expenses whatsoever for or on account of infringement of any patent rights, design, trade-mark, industrial design or name or other protected rights in respect of any design, method, machine work, material etc. used for or in connection with the Services.

SECTION 14. DIRECTIONS:

The Contractor and its personnel must, when using Company's premises, adopt and observe all safety, security, fire and health measures and comply with all reasonable directions relating to health and safety rules and emergency evacuation plans as notified or as directed by the Company or its representative.

SECTION 15. CONFIDENTIALITY:

15.1 Any data provided by the Company or which the Contractor or its employees have access to, or which they acquire directly or indirectly under this Contract or during the performance of this Contract, shall be deemed Confidential Information. Duplication or disclosure of such Confidential Information by Contractor or any one claiming through it without the prior written consent of the Company is strictly prohibited. All Confidential Information shall be the sole property of the Company. The Contractor hereby agrees not to disclose said data, information, any interpretations thereof, or data derivative there from or any information relating to Company's facilities, installations and operations etc to unauthorized parties or person. This Section also applies to any sub-consultant, assignee or consultants used by the Contractor. The obligations under these provisions shall survive the termination or expiry of this Contract.

15.2 Neither the Contractor nor any of its employees shall, except with the prior written consent of the Company, take ground or aerial photographs of the site, rig, installation or existing facilities of the Company.

15.3 The Contractor further undertakes that it shall not, except with the prior written consent of the Company:

i) make any reference publicly, whether to the press or in books, brochures, internal publications, publicity material, magazines and periodicals or by advertisement through radio, television or films or by any other medium relating to:
   a) the Contract or its terms and conditions,
   b) the nature or extent of Services carried out by the Contractor,
   c) the method, materials, or equipment used and personnel employed, or
   d) any other Company information in the possession of the Contractor.

ii) disclose or convey any of the matters or information referred to in (i) above to any employees of the Contractor not directly concerned with the Contract.

SECTION 16. DEFAULT:

16.1 If the Contractor is unable or unwilling to perform its Services in accordance with terms of the Contract, the Company may obtain conforming Services from other sources, in which case, the Contractor shall be liable to the Company for the increased cost, if any, incurred by the Company for procuring such Services from other sources.

16.2 The Contractor shall also be in default under the Contract if the Contractor (a) fails to fully and timely perform any of its material obligations under the Contract (b) becomes insolvent or seeks relief under the bankruptcy laws.

SECTION 17. ARBITRATION:

17.1 If any technical question, difference or dispute arises under this Contract, the Parties shall use their best efforts to promptly resolve such dispute, controversy or disagreement. However, if the dispute continues, either Party may give written notice to the other for appointment of an expert to resolve the dispute. The expert shall be preferably a Pakistani national and shall have at least ten years of experience in the relevant technical field.

17.2 If any question, difference or dispute arises regarding the rights, obligations or performance by the Parties under this Contract, the Parties shall use their best efforts to promptly resolve such dispute, controversy or disagreement. This includes without limitation the question of whether one or the other is in default and what action if any shall be taken to remedy such default. If the Parties are unable to resolve such question, difference, dispute and controversy, the matter may be referred to arbitration. Either Party may notify the other in writing specifying the nature of the dispute and designate one arbitrator to whom such dispute shall be referred requesting that the other party give notice in writing within fifteen (15) days after receipt of the notice of designation of the second arbitrator. The two arbitrators shall within fifteen (15) days after the receipt of notice of the second arbitrator, appoint an umpire whose decision with respect to the dispute shall govern in the event that the arbitrators shall fail to agree. In the event that second arbitrator is not designated within the time specified, the first arbitrator shall have full and complete power to determine the dispute.

17.3 Arbitration shall be precedent in any action of law and that the provisions of the Arbitration Act, 1940 and rules framed thereunder shall apply. The venue of the arbitration shall be in Islamabad, Pakistan.

17.4 The expenses of arbitration shall be charged equally to the Parties unless the award of the arbitrator(s) or the umpire, as the case may be, otherwise provide.

SECTION 18. TERMINATION:

18.1 In the event of default by the Contractor, the Company shall have the right to terminate the Contract for cause, by giving written notice effective ten (10) days after the date of such notice, unless otherwise specified therein. If the Contractor cures such default within the ten (10) days period, or provides evidence to satisfy the Company that such default does not exist. In addition to any other remedy available under law or in equity, the Company shall be entitled to recover all actual damages, costs and losses incurred by the Company as a result of default by the Contractor.

18.2 The Company shall have the right to terminate the Contract, in whole or in part, without any cause at any time upon thirty (30) days' prior written notice. Upon receipt of such notice of termination, the Contractor shall promptly cease all further Services under the Contract with such exceptions, if any, specified in the notice of termination. The Company shall pay the Contractor for all Services performed and obligations incurred prior to the date of termination in accordance with the terms of the Contract.

SECTION 19. FORCE MAJEURE:

19.1 "Force Majeure" shall mean an unforeseeable event that impairs the ability of the Party affected by it to wholly or partially perform its obligations under this Contract. In the event of either party hereto being rendered unable, wholly or in part, by Force Majeure circumstances to carry out its obligations under this Contract, then such party by giving notice with satisfactory evidence of such Force Majeure circumstance(s) relied upon, the obligations of the party giving such notice so far as they are affected by such Force Majeure shall be suspended for the period during which the party, is rendered unable as aforesaid, but for no longer period. However, such notice must be given within fourteen (14) days of occurrence of Force Majeure event. The terms Force Majeure as employed herein, shall include but not be limited to acts of God or war, war whether declared or undeclared; acts of terrorism or sabotage, or public enemy; riots and insurrection; civil commotion; revolution; embargo, blockade, invasion or act of foreign enemies; epidemic; landslide, lightening, earthquake, loss of well, reservoir failure, change of law or policy; or any other cause beyond the control of the affected Party which materially and adversely affects the performance by such Party of its obligations under or pursuant to this Contract, other than to make payments due hereunder, acts of enemies, civil insurrection, fires, floods, earthquakes or other physical disasters, order or request of Government, blockade or embargo. It is however, clarified that strikes, lockouts, shortage or non availability of raw materials, rains disturbances, other labour disputes or non availability of transport shall not

be included in the term "Force Majeure". During the established period of Force Majeure as contained hereinabove, the Contractor shall not be entitled to payment for Services and the Company shall not impose penalty.

19.2 In case the Force Majeure contingencies last continuously for more than one month, both parties will agree on the necessary arrangement for the further implementation of the contract. In case further implementation is unforeseeable and impossible, both parties shall arrange for the termination of the Contract, but without prejudice to their right and obligations prior to such termination it being understood that each party shall fulfill its contractual obligations so far as they have fallen due before the operation of Force Majeure.

SECTION 20. LICENSE, PERMITS, AUTHORIZATION AND CERTIFICATION:

The Contractor / Consultant hereby warrants and undertakes that all kinds of licenses, permits, authorizations and certifications required under the laws of Pakistan and applicable to the Contractor / Consultant are intact, valid and possessed by the Contractor / Consultant and shall be maintained during the performance of this Contract. The Company has the right to inspect, or demand for such licenses, permits, authorization and certificates and the Contractor/ Consultant shall forthwith comply with such inspection on demand.

SECTION 21. PHOTOGRAPHY AND ADVERTISING:

21.1 The Contractor undertakes that neither the Contractor nor any of its employees shall, except with the prior written consent of the Company shall take, any ground or aerial photographs of the site, rig, installation or existing facilities at or around the work site.

21.2 The Contractor further undertakes that neither the Contractor nor any of the Contractor's personnel shall, except with the prior written consent of the Company:

i. make any reference publicly, whether to the press or in books, brochures, internal publications, publicity material, magazines and periodicals or by advertisement through radio, television or films or by any other medium relating to:
   - the Contract or its terms and conditions,
   - the type or extent of the works, services, jobs required to be carried out by the Contractor,
   - the method, materials, or equipment used and personnel employed,
   - any information in the possession of the Contractor as to the operations of the Company.

ii. Disclose or convey any of the matters or information referred to in (i) above to any employees of the Contractor not directly concerned with the Contract.

SECTION 22. SECURITY:

22.1 Company shall provide appropriate site security including, as from time to time may be necessary, security personnel and security services at the work site or during transportation of personnel and equipment to and from the work site.

22.2 It is the express intent of the Parties that any delay in the performance of Services or provision of equipment, or part thereof related directly or indirectly to security issues shall under no circumstances be deemed a breach of Contractor's obligation under the Contract.

SECTION 23. INSURANCE DEMURRAGE:

23.1 The Contractor shall within seven (07) days of the date hereof take out and shall maintain until maturity of the Contract, standard insurance policies, which shall include Contractor's waiver of subrogation as follows:

(a) Worker's compensation insurance covering all employees, engaged directly or indirectly in the performance of the Services in accordance with the applicable statutory requirements of the state or nation having jurisdiction over such employees.

(b) All risk insurance cover for the Services and Equipment including without limitation Equipment and machinery and other materials, if any supplied hereunder by the Contractor.

(c) The foregoing insurance shall be maintained with insurers that are satisfactory to the Company, and the terms of coverage for the foregoing insurance shall also be satisfactory to the Company and shall be evidenced by certificate to be furnished to Company. Such certificates shall provide that ten (10) days written notice shall be given to Company prior to cancellation of any policy. In the event the Contractor fails to effect or keep in force the insurances then the Company without prejudice to any other rights, shall effect and keep in force such insurance's at the Contractor's cost and risk.

(d) It shall be the duty of the Contractor to notify the insurers of any insurance referred to above or of any matter or event, which by the terms of such insurance are required to be so notified.

23.2 The Contractor shall indemnify the Company against all suits, proceedings, claims, liens and demands whatsoever which may be made against the Company by the third parties for or in respect of, out of any failure by the Contractor in performance of its obligation or wrongful performance under this Contract or any act or omission in connection therewith. Should Company have to pay any moneys in respect of any such claims or demands, the amounts to be paid and the costs incurred by the Company in connection therewith, shall be charged to and paid by the Contractor in full.

SECTION 24. EMPLOYMENT OF PAKISTANI NATIONALS

The Contractor shall employ qualified Pakistani nationals for its Services, if available. If necessary, Contractor may employ expatriate professionals only after making all out efforts to employ Pakistani nationals. The Contractor shall make reasonable efforts to train Pakistani nationals in order to gradually replace its expatriate staff.

Unskilled workers if needed for the Services shall be hired from the area where the Services are being performed.

SECTION 25. ASSIGNMENT:

The Contractor shall not sub-contract or assign either whole or part of its obligations under this Contract without the prior written consent of the Company and such consent if given shall not relieve the Contractor from any liability or obligation under this Contract. The Contractor shall be responsible for the acts, defaults and negligence of any sub Contractor, its personnel or agents as fully as it/they were the acts, defaults or negligence of the Contractor, or its personnel.

SECTION 26. ENTIRE CONTRACT:

The documents mentioned in Section-3 of this Contract constitute the entire understanding between the Company and the Contractor on the subject matter and supersede all prior discussions, communications and agreements regarding the subject matter, whether written or oral.

SECTION 27. AMENDMENTS:

No variation in or modification of the terms of this Contract shall be made except by written amendment signed by the duly authorized representative of the Company and the Contractor.

SECTION 28. GOVERNING LAW:

This Contract shall be construed, interpreted and governed by the laws of the Islamic Republic of Pakistan.

SECTION 29. ERADICATION OF CORRUPTION:

All vendors, Suppliers, Contractors, Consultants and alike are encouraged to inform the Managing Director and Heads of Departments in case where any Company's employee asks for any type of favour whether monetary or in kind. You can contact the M.D. and Heads of Departments on the following addresses, phone numbers, faxes or e-mail:

i MD & CEO
Oil & Gas Development Company Limited
OGDCL House, Blue Area, Islamabad.
Tel No. 051-9209701
Fax No. 051-9209708
E-mail: md@ogdcl.com

ii GM (SCM)
Tel No. 051-920023540
Fax No. 051-9209859

SECTION 30. NOTICES:

Any notice, request demand, statement, call, question, intimation, reference, or other Communication required for execution of this Contract shall be made in writing and

shall be directed by courier service or facsimile to the address of the Parties as follows:

To the Company:

Manager (_____)
Oil & Gas Development Company limited
OGDCL House, Jinnah Avenue, Sector F-6
Blue Area, Islamabad, Pakistan
Telephone: 0092 - 51-92002_____
Facsimile: 0092 - 51-

To the Contractor:

Mr. _____.
M/s _____.

Address:-_____
Telephone: 0092 -
Facsimile: 0092 -

Notices shall be deemed served when received by the addressee.

IN WITNESS WHEREOF, the Parties hereto have executed this Contract as of the date first above written.

COMPANY	**CONTRACTOR**
Signature_____	Signature_____
Name_____	Name_____
Position_____	Position _____
Witness _____	Witness_____
Witness_____	Witness_____