



**OIL & GAS DEVELOPMENT COMPANY LIMITED**  
**PROCUREMENT DEPARTMENT (LOCAL), ISLAMABAD**  
**SCHEDULE OF REQUIREMENT**

Material : **PURCHASE AND INSTALLATION OF ESP PACKAGES WITH RENTAL GENSET**

Tender Enquiry No: **LE-RMD-18294**

EVALUATION WILL BE CARRIED OUT ON FULL PKG.

**Due Date:**

Bid Bond Value : 17,956,400.00

Attachment(if any) : YES

Sr No	Description	Quantity	Make/Brand offered	Unit	Unit Price (PKR) Inclusive Of All Taxes Except GST	Unit Price (PKR) Inclusive of GST	Total Price (PKR) Inclusive of GST	Delivery Period Offered	deviation from Tender Spec. If Any
1	Purchase & Installation of ESP Package with Chemical Injection Sub, Control/Chemical Line on Five TOC Wells	5		Number					
2	Rental GENSETS for One Year	5		Number					
3	Services/Maintenance Contract for Two Years	1		Number					

**Special Note:** The prospective bidders also download the master set of Tender Document

- The prospective bidders may keep in touch with OGDCL web site for downloading the clarifications/amendments (if any) issued by OGDCL.
- MATERIAL TO BE DELIVERED AT LOCATIONS MENTIONED IN TOR AS PER DELIVERY SCHEDULE OF TOR. PAYMENT WILL BE MADE AS PER TOR. BID VALIDITY IS 120 DAYS AFTER TECHNICAL BID OPENING. DRAFT CONTRACT WILL BE APPLICABLE ON SR. NO. 2&3



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**Mandatory Checklist**

Please confirm the compliance of the following mandatory information along with the bid(s) (failing which bids(s) will not be accepted)

Documents	To be Attached with the Technical/Financial Bids	Compliance	
		Yes <input type="checkbox"/>	No <input type="checkbox"/>
Original Bid Bond	Technical Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Copy of NTN Certificate	Technical Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Copy of GST Certificate	Technical Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Confirmation that the Firm is appearing on FBR's Active Taxpayer List	Technical Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Duly signed and stamped <b>Annexure-A (Un-priced)</b>	Technical Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Duly filled, signed and stamped <b>Annexure-B</b>	Technical Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Duly filled, signed and stamped <b>Annexure-D</b>	Technical Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Duly filled, signed and stamped <b>Annexure-L</b> on Company's Letterhead	Technical Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Duly signed and stamped <b>Annexure-M</b> on Company's Letterhead	Technical Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Duly signed and stamped <b>Annexure-N</b> on Non-Judicial Stamp Paper duly attested by Notary Public	Technical Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Duly filled, signed and stamped <b>Annexure-A (Priced)</b>	Financial Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Duly filled, signed and stamped <b>Annexure-C</b>	Financial Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>
Duly filled, signed and stamped <b>Annexure-E</b>	Financial Bid	Yes <input type="checkbox"/>	No <input type="checkbox"/>



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For the Vendors/Contractors who opt to submit Bank Draft/Call Deposit/Pay order against Bid Bond/Performance Bond, our Accounts Department has finalized an arrangement for online payment to such Vendors/Contractors, which will be processed through (IBFT & LFT) for which following information is required:

i.	IBAN No. (International Bank Account Number 24 Digits)	
ii.	Vendor Name as per Title of their Bank Account	
iii.	Contact No. of Company's CEO/ Owner (Mobile & Landline)	
iv.	Bank Name.	
v.	Bank Branch Name and Code	

Name, Sign and Stamp of the authorized official of the Bidder(s) \_\_\_\_\_

**TERMS OF REFERENCE (TOR)**

**FOR**

**PURCHASE, INSTALLATION & COMMISSIONING OF FIVE  
(05) ELECTRICAL SUBMERSIBLE PUMP (ESP) FOR FIVE  
(05) WELLS OF TOC AREA**

**i.e. Pasakhi-2, Pasakhi North-3, Sono-4, Sono-7 & Lashari Center-5**

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## 1. Introduction

### 1.1. Background

First ever electrical submersible pump (ESP) in OGDCL was installed on Pasakhi-5 (PSK-5) well of Pasakhi Oil field. Prior to shifting at ESP, the well was producing with oil rate of 150 STBD and water rate of 1005 STBD. ESP operation started on August 17, 2019 with initial rate of 500 STBD and stable rate of 320-365 STBD which have been maintained since November 2019. The success story of PSK-5 is testament of OGDCL's commitment to strive for better recoveries through technological advancement.

Viewing outstanding ESP performance on PSK-5; OGDCL has evaluated five (05) more wells as ESP candidates namely Pasakhi-2, Pasakhi North-3, Sono-4, Sono-7 and Lashari Center-5. Fields' overview and short histories of candidate wells are given below.

### 1.2. Pasakhi Oil Field

Pasakhi Oil Field is located at 19 km in the East of Hyderabad city of Sind province, Pakistan. The Pasakhi and Pasakhi North D&PL cover an area of 27.95 Km<sup>2</sup>. The license is 100% owned and operated by OGDCL. The Pasakhi oil field was discovered in 1989 by the drilling of exploratory well Pasakhi-1. The well Pasakhi-1 was completed in Aug. 1989, which discovered commercial quantities of oil in the upper sands of Cretaceous Lower Goru Formation. This was followed by the Pasakhi North-1 well, which was also drilled in 1989 and discovered hydrocarbons in the same stratigraphic horizons. However, this field was found not to be in pressure communication with the main structure, from which it is delineated by a fault. The Pasakhi Field started producing on October 11, 1989. Since the discovery well, fourteen development wells have been drilled in the field i.e. Pasakhi North-1 in 1989, Pasakhi-2 in 1990, Pasakhi-3 in 1997 and Pasakhi-4 in 2001, Pasakhi North East-1 in 2006, Pasakhi-5 & 6 in 2008, Pasakhi-7 & 8 in 2011, Pasakhi-9 in 2012, Pasakhi-10 in 2015, Pasakhi North-3 in 2017, Pasakhi North East-2 in 2018, and Pasakhi-11 in 2020. Out of fifteen wells in total, ten are producing at present, eight through jet pumps, one through ESP (Pasakhi-5), and one naturally (Pasakhi-3). While out of remaining five wells, one well is shut in (Pasakhi-1), one had been recompleted in Ranikot formation for water disposal (Pasakhi-4), one is suspended (Pasakhi-8) and two wells are P & A (Pasakhi-9 & Pasakhi North-1).

The Pasakhi Field is currently producing 3850 STBD oil. In Integrated reservoir simulation study of 2017 for Pasakhi oil field, 55.838 MMSTB total reserves are assigned to Pasakhi Field. As of September 2020, cumulative production is 8.7 Bscf gas, 46.075 MMSTB oil, 20.85 MMSTB Water with remaining recoverable reserves of 9.673 MMSTB oil.

#### 1.2.1. Pasakhi-2 (PSK-2)

Pasakhi-2 was spudded on June 14, 1990 and drilled down to 2154 M in Lower Goru Formation. The well originally completed Upper Sands Layer-IIIA & IIIB (B-Sand) of Lower Goru Formation. It produced from B sand from October 1, 1990 to March 6, 1996, cumulatively recovering 567 MMscf Gas, 2.15 MMSTB Oil and 0.352 MMSTB Water as a natural producer. In 1997, the well was completed in Layer-I (A sand) and brought back on production on September 13, 1997. In 2004, Rig workover was carried out and Jet Pump was installed on the well, since then well is producing

through Jet pump from A sand. Last production parameters of this well were 554 STBD Oil & 500 STBD Water. Currently well is shut in due to downhole problem. As of September 2020, the well has recovered 547 MMscf Gas, 9.07 MMSTB Oil and 1.422 MMSTB Water.

### **1.2.2. Pasakhi North-3 (PSKN-3)**

Pasakhi North-3 was spudded on November 22, 2017 as a replacement well of Pasakhi North-1, which was P&A due to downhole problems. It has been drilled down to 2124 M (PBSD 2040 m) in Lower Goru Formation. The well completed directly with Jet Pump in Upper Sands Layer-I (A-Sand) of Lower Goru Formation. The well has been producing since January 18, 2018 with initial Oil rate of 425 STBD which later rose to 725 STBD. Currently the well is producing 805 STBD and 55 BWPD. As of September 2020, the well has recovered 0.641 MMSTB Oil and 0.131 MMSTB Water.

### **1.3. Sono Oil Field**

Sono D&P Lease is a part of Tando Alam Oil Complex (TOC) and covers an area of 25.8 Km<sup>2</sup>. The field lies in the Lower Indus basin in Sindh Province of Pakistan. Sono field is operated by OGDCL with 100% ownership. Sono field was discovered in 1988 by exploratory well, Sono-1 in Upper Sands of Lower Goru formation. Since then, seven development wells have been drilled in the field i.e. Sono-2 & 3 in 1988, Sono-4 in 1989, Sono-5 in 1990, Sono-6 in 1999 whereas Sono-7 & 8 in 2006. Two exploratory wells were also drilled but turned out to be dry i.e. Sono South-1 in 2005 & Sono Deep-1 in 2007. Currently, only three wells (Sono-4, 7, & 8) are producing in Sono oil field.

Sono Oil field was brought on production on May 22, 1988 as a part of Tando Alam Oil Complex. As of September 2020, the field has cumulatively produced 2.9 Bscf Gas, 20.13 MMSTB Oil and 13.83 MMSTB Water.

#### **1.3.1. Sono-4 (SN-4)**

Sono-4 was spudded on February 27, 1989 and was drilled down to a total depth of 2292 m. Well was completed across Upper Sands Layer-III (B Sand) of Lower Goru formation. Well was brought on regular production on June 1, 1989 with initial rates of 0.2 MMscfd gas & 410 STBD oil till May 11, 2004 with last production rates of 70 STBD oil and 10 STBD water. Total recovery from B sand was 361 MMscf gas, 1.520 MMSTB oil and 98.3 MSTB. After recompletion in Layer-I (A sand), the well restarted producing on December 19, 2004 with rates of 1738 STBD oil and 80 STBD water. Well is currently on production through Jet Pump at rates of 455 STBD oil & 1065 STBD water. As of September 2020, the well has produced cumulatively 4.67 MMSTB oil & 3.351 MMSTB water from A sand.

#### **1.3.2. Sono-7 (SN-7)**

Sono-7 was spud in February 22, 2006 to a depth of 2275 m. Well was completed across Upper Sands Layer-III (B Sand) of Lower Goru formation with Jet pump. It started producing April 26, 2006 with rates of 1412 STBD and 104 STBD. At present well is producing at 210 STBD oil and 1105 STBD water. As of September 2020, the well has cumulatively produced 2.69 MMSTB and 2.06 MMSTB water.

### **1.4. Lashari Center Oil Field**

Lashari Center D&P Lease is a part of Tando Alam Oil Complex (TOC) and covers an area of 23.1 Sq. Km. Lashari Center oil field lies geologically in the Lower

Indus basin is in Sindh Province of Pakistan. OGDCL operates this field with 100% ownership. OGDCL drilled exploratory well Lashari-1 in 1986 in the area but it encountered a fault and was plugged and abandoned. Lashari Center field was discovered in 1988 by another exploratory well, Lashari Center-1, which encountered hydrocarbons across Upper Sands of Lower Goru formation. Subsequently, eight more wells have been drilled in this field including five development LC-2 in 1990, LC-3 in 1994, LC-4 in 1999, LC-5 & LC-6 in 2005; and three exploratory wells i.e. Lashari South-1 in 1987, Lashari East-1 in 1988, & Lashari Deep-1 in 2005. Currently, only one well i.e. Lashari Center-5 is producing from Lashari Center field.

Lashari Center field was brought on production on November 27, 1988 as a part of Tando Alam Oil Complex. As of September 2020, the field has cumulatively produced 2.64 Bscf Gas, 12.9 MMSTB Oil and 9.3 MMSTB Water.

#### **1.4.1. Lashari Center-5 (LC-5)**

Lashari Center-5 was spudded on August 29, 2005, drilled down to 2173 mMD (2150 mTVD) in Lower Goru Formation. The well completed Upper Sands Layer-I (A-Sand) of Lower Goru Formation and started producing on May 1, 2005 with initial rates of 2202 STBD oil and 240 STBD water. At present well is producing 225 STBD Oil and 955 STBD water. As of September 2020, the well has recovered 4.71 MMSTB Oil and 4.343 MMSTB Water.

## **2. Objective**

The Objective of ESP installation is to increase oil production and reduce operating costs of mature oil fields already producing through artificial lift system in current scenario of declining oil prices. In this regard after success of ESP in Pasakhi-5, more suitable candidate wells for ESP installation were evaluated. After several months of detailed working and evaluations, our team has selected five (05) more wells namely Pasakhi-2, Pasakhi North-3, Sono-4, Sono-7 and Lashari Center-5 as good candidates for ESP installation by replacing Jet Pump. OGDCL expects an incremental oil production of 2500-3000 STBD from these wells.



### 3. Electrical Submersible Pumps (ESPs)

#### 3.1 Engineering

- 3.1.1** Design the ESP system to best match the requisite parameters. Completion diagrams are given in Annexure "A".
- a. to produce 1,150 to 4,700 bpd gross production from Pasakhi-2 and to handle a maximum Gas Oil Ratio (GOR) of 400 scf/bbl (which is ~400% higher than measured GOR in latest well test)
  - b. to produce 750 to 3,100 bpd gross production from Pasakhi North-3 and to handle a maximum Gas Oil Ratio (GOR) of 400 scf/bbl (which is ~100% higher than measured GOR in latest well test)
  - c. to produce 1,150 to 4,700 bpd gross production from Sono-4 and to handle a maximum Gas Oil Ratio (GOR) of 400 scf/bbl (which is ~400% higher than measured GOR in latest well test)
  - d. to produce 1,150 to 4,700 bpd gross production from Sono-7 and to handle a maximum Gas Oil Ratio (GOR) of 400 scf/bbl (which is ~500% higher than measured GOR in latest well test)
  - e. to produce 1,150 to 4,700 bpd gross production from Lashari Center-5 and to handle a maximum Gas Oil Ratio (GOR) of 400 scf/bbl (which is ~90% higher than measured GOR in latest well test).
- 3.1.2** Permanent application engineer in Pakistan, to be fully dedicated for ESP operations, troubleshooting and engineering.
- 3.1.3** Operate and interpret data obtained by the Down-hole multi-sensor wellhead, flowline critical parameters and monitor the well remotely by using the satellite, telemetry/ radio system for communication to provide recommendation for production and ESP performance optimization when required by OGDCL.
- 3.1.4** Verification of proper ESP operation by comparison with the field data and results from engineering study and design.
- 3.1.5** Verification of ESP performance curve and power consumption with dedicated software.
- 3.1.6** Analyze pump performance evaluation for detection of possible wear and tear or risk of failure.
- 3.1.7** Optimize ESP running parameters and engineering allowing the optimization of life expectancy.
- 3.1.8** Propose new technology to improve run life of ESP pump and real time monitoring.
- 3.1.9** Bidder will issue a perpetual license of ESP designing, pump curve calculator, PLC/ RTU/ Controller/ telemetry systems licenses software free of cost; which will be updated yearly and a refresher course will also be delivered after each update to the OGDCL professionals.
- 3.1.10 INSPECTION AND TESTING (Factory Acceptance Test (FAT)):**
- I. The supplier shall submit a complete plan and relevant certified documentation of the Factory Acceptance Test (FAT) to OGDCL. This plan must be complete and have sufficient detail to indicate the exact nature of each test, expected results and systematic procedure. The plan shall be submitted at least 30 days in advance to the FAT.

- II. The objective of the FAT is to verify that the purchased ESPs, as configured for delivery to site, meet or exceed the specified designed functional requirements. The FAT shall be a 100% complete system functional test and shall be witnessed by OGDCL Engineers/ Professionals.
- III. FAT shall be carried out at ESP manufacturing/ Testing facility. Acceptance of all equipment shall be subject to inspection by OGDCL nominated representatives. Inspection shall include verification of the equipment and its functionality dimensions, examination and checking of the documentation.
- IV. The FAT shall be conducted in accordance with the Bidder's standard QA procedures.
- V. The Bidder shall be responsible for generating the FAT procedures.
- VI. The pass/ fail criteria shall be 100% correct performance otherwise the faulty item shall be rectified or replaced at the Bidder's cost.
- VII. The FAT shall include the testing and acceptance of both hardware and required configuration softwares. All proprietary system software shall be complete and resident in the configuration machine (laptop) prior to the start of FAT. All documentation and listings must be free of mark-ups.
- VIII. All hardware diagnostic programs shall be run at the start of FAT. These shall be the diagnostic programs which have been used for processing the system in the Bidder factory.
- IX. It is the responsibility of the Bidder to make all the arrangements to carry out the FAT effectively.
- X. During the FAT, the ESPs shall be made available to the inspector(s) for sufficient period to verify satisfactory performance. The inspector(s) will reserve the right to witness the entire FAT as a non-participating observer. The FAT procedure will be signed off by the Bidder and the inspector(s) and a copy of the signed off FAT procedures and related printouts shall be furnished to the inspector(s) at the successful conclusion of the FAT.
- XI. FAT Criteria: The FAT shall include, but not be limited to the following:
  - a. Assembling sequence, including inspection and testing.
  - b. Proposed check of system architecture against approved for construction documents.
  - c. Proposed physical inspection of equipment.
  - d. Proposed check of documentation.
  - e. Simulation and observation of 100% inputs/ outputs
  - f. Confirmation of correct functions of all communication links.
  - g. Confirmation of availability of all specified screen functions and Operator Interface functions, including a proof test of automatic switchover to the Redundant Hardware Equipment.
  - h. Verification of installation of required software.
  - i. Verification / Confirmation of correct functions of all communication links and protocol such as:
    - j. Serial Interface and Communication.
  - k. Supplier shall be responsible for providing all simulation systems at its own cost during FAT.

- I. Presence to competent Bidder personnel to carry out the FAT
- XII. FAT Documentation
  - a. The Test Documentation shall comprise of a schedule of agreed and approved tests. All test specification documentation(s) shall comprise two sections.
  - b. A narrative Section, this shall detail the aims and objectives of the test, how the test is to be implemented and what test results are anticipated.
  - c. A results section, this shall document all stages of the test and the results obtained. Each stage shall be signed off by the test witness as appropriate.
- XIII. FAT Duration
  - a. It is the responsibility of the Bidder to make all the arrangements for the personals carrying out FAT including Visa, Boarding, Lodging and Travelling etc.
  - b. FAT shall be held in Bidder's manufacturing/ Testing facility. FAT shall be carried out for 5 to 10 working days for all five (05) ESPs based on the FAT documentation provided by the bidder excluding traveling period for Three (03) OGDCL Engineers.

### **3.2 Equipment Detail**

- 3.2.1 Bidder will provide Electrical Submersible Pump (ESP) and associated equipment – DOWNHOLE ASSEMBLY - including (but not limited to) discharge head, discharge pressure gauge, wellhead, Annulus, flowline pressure and temperature smart transmitters & all accessories & accessories, pump, intake, gas separator, gas mixer, seal section, motor, downhole sensor, MLE [Motor Lead Extension], power cable, power cable cross-coupling protector, centralizer, pothead protector, MLE protector, wellhead feed thru connector, lower connector, upper connector, ESP Wellhead and all REQUIRED SURFACE EQUIPMENTS including (but not limited to) surface VSD, transformers, junction box, surface cable, surface flexible suitable power cables(about 40 meters individual for each phase) with end lugs from VSD panel to synchronizing panel & Gensets and also all wiring.
- 3.2.2 Bidder will provide chemical injection sub and control line as per required completion of each well and compatible with respective ESP Wellhead adapter and downhole equipment(s).
- 3.2.3 Bidder to supply/provide any associated equipment (if required) to improve the quality of electrical power which may be disturbed due to type of load/ VSD operation such as –ve power factor/ KVAR or harmonic disturbance etc.
- 3.2.4 This project will be on "Turn Key" basis that bidder will be responsible to provide listed major equipment along with required minor equipment and consumables which are either mentioned in the list or not ; equipment required at any stage during installation and commissioning. This includes mobilization of ESP and its allied equipment, installation and commissioning of ESP and suitable Gnssets to run ESPs.

- 3.2.5** The Bidder has responsibility to keep one (01) set of downhole equipment and maintain required spares inventory for surface equipment in their facility in Pakistan during the service/ maintenance contract period to minimize the production curtailment in case of any problem in downhole and surface equipment which cannot be rectified quickly. Gas Separator and advance gas handler/ mixer must be part of the backup equipment.
- 3.2.6** All equipments supplied by the bidder shall be in conformity with API / ISO-Standards.
- 3.2.7** The Bidder must carry ten (10) years consecutive ISO 9001-2008 minimum quality validation capability certification related to ESP equipment and ESP power cable manufacturing.
- 3.2.8** Original detailed technical schematic drawings in assembled & dis-assembled form and complete technical literature of offered ESP downhole, surface equipments and accessories specifying types and part numbers must be submitted with the technical bid.
- 3.2.9** It is mandatory that the Bidder shall supply all spares required at the time of Pre-Commissioning & Commissioning of all Units.
- 3.2.10** It is mandatory that the Bidder shall supply all recommended Tool Kits and Safety Kits with all units.

### **3.3 Operation**

Following will be the responsibilities of the bidder:

- 3.3.1** ESP installation & pulling, installation of surface equipments including the wellhead.
- 3.3.2** Installation and servicing of ESP auxiliary downhole and surface equipment, including (but not limited to), downhole multi-sensor and related surface equipment, packer and tubing hanger cable penetrators.
- 3.3.3** All cable splices down hole and the surface.
- 3.3.4** Maintenance of new equipments.
- 3.3.5** Preparation, installation, start up and monitoring of the ESP system, including setting the parameters of the frequency variable speed drive.
- 3.3.6** Issue daily activity monitoring report for distribution to OGDCL during installation and commissioning.
- 3.3.7** The Bidder must have a complete ESP service facility and competent team available in Pakistan all the time to do all ESP activities (Installation, Pulling, troubleshooting and inspection) with rapid response within 24 hrs for the troubleshooting to restart the system and one week for other operations. OGDCL will ask for a tour to visit the bidder's ESP Service Facility in Pakistan.

### **3.4 Reporting and Quality**

- 3.4.1.** Keep record of the ESP run life and ESP daily operating parameters (will be shared by OGDCL or by using the PLC/ Controller, telemetry systems for communication if required).

- 3.4.2. Log and report all intervention, auto generation of hourly, daily, weekly, and monthly, yearly standard reports with historical data, repair and troubleshooting events on ESP/VSD equipment.
- 3.4.3. Inspection (tear down) upon the request from OGDCL at certified workshop with attendance of OGDCL for all or part of the defective elements of the pulled DOWNHOLE ASSEMBLY.
- 3.4.4. Issue monthly report on status of equipment under repair.
- 3.4.5. Reporting and preparation of periodic meetings.
- 3.4.6. Organization of training sessions as per the terms & conditions No. 4.11 The training sessions on the principles of functioning, management of the ESP, frequency speed control drives, ESP designing, monitoring trouble shooting.
- 3.4.7. Adherence to the HSE procedures of the bidder and OGDCL.
- 3.4.8. Bidder will also provide warranty of ESP & its allied equipment as per international standards.
- 3.4.9. Perform tear down and full investigation by a certified reliability engineer in Pakistan on any suspicious failed ESP equipment within warranty period or on OGDCL request of warranty period is over.

### 3.5 ESP Equipment Description and Requirements

#### 3.5.1 Wellhead System Specifications (For Five (05) Wells)

<b>Specification Sheet of ESP Well Head System</b> <b>5000 psi Working Pressure</b> <b>All Material to be as per API 6A LATEST EDITION, PSL-3, PR-2, Temperature Class 'U' Material Class 'EE-0.5'</b>		
Sr	Description	Qty
1	Recompletion Spool as per Manufacturer ESP design to install at the top of 11" 5K Tubing Head Spool. All required accessories e.g. Allen Wrench etc. should be supplied accordingly. <b>Top Flange: 11-inch 5K Psi</b> <b>Bottom Flange: 11-inch 5K Psi</b>	01 No for each well (05 in Total)
2	Sets of studs and nuts each set comprises of 12 Nos studs (each with 02 Nos Nuts), size 1-7/8" Dia x 14/2 length ", Zn/Cad/PTFE coated, Material A193 GR B7 (01 set/THS assembly)	01 Set for each well (05 in Total)
3	Gasket, Self-Sealing Ring ST/STL R-54	01 No for each well (05 in Total)
4	11" Nom. Bore Wear Bushing for Recompletion Spool at Serial # 1.	02 Nos in total
5	Tool for Installation & Removal of Wear Bushing at Serial # 4 with 3-1/2" IF Threads Box (Bottom & Top). The Tool may also be used for testing the BOP including the provision to test the Blind rams also.	02 Nos in total

**Purchase & Installation of Five (05) Electrical Submersible Pump (ESP) for Five (05) Wells of TOC area**

6	<p>Tubing Hanger as per Manufacturer ESP wellhead design to install in the recompletion spool at serial # 1                  Size: 11 inch (BxB)  <b>Top Connection:</b> 3-1/2" 9.3 PPF EUE 8rd (Box) or as per manufacturer design must have prep for the Valve, Back Pressure, 3" Nom. Cameron Type 'H', 3-1/32" OD, 4 T.P.I. L.H. Thread 3-1/2" OD Tubing compatible to tubing Hanger.  <b>Bottom Connection:</b> 3-1/2" 10.3 PPF Hydril CS or equivalent premium threads (Box).                  Hanger must be compatible with the Recompletion Spool at Serial # 1 Setting must not require any alignment.</p>	01 No for each well (05 in Total)
7	<p>Companion Flange 3-1/8" 5K Psi to install the 3-1/8" 5K gate valve assembly at the top of Riser                  Ring Gasket and Stud nuts to connect the 3-1/8" 5K Flanges</p>	01 No for each well (05 in Total)

**3.5.2 ESP Equipment Specifications (For Five (05) Wells)**

Equipment		(For Each well)
Downhole Equipment	Discharge head	<ul style="list-style-type: none"> <li>• Upper connection based on the tubing threads, Bidder to provide any X-over required</li> <li>• Expected Tubing is 3-1/2", 9.2 PPF</li> </ul>
	Pump	<ul style="list-style-type: none"> <li>• Abrasion resistance configuration suitable for well conditions</li> <li>• High Strength Shaft-Monel and mixed flow stages</li> <li>• Each ESP item must come with its Flow Acceptance Curve</li> <li>• Acceptance of GVF thru pump up to 20% or higher</li> </ul>
	Intake	<ul style="list-style-type: none"> <li>• Abrasion resistance configuration suitable for well conditions</li> <li>• Intake (conventional) for GVF before separation &lt; 10%</li> <li>• Intake (gas separator) to handle up to 25% GVF before fluid entering the pump</li> <li>• High Strength Shaft</li> </ul>
	Gas mixer/ Advance gas handler/ Multiphase Gas Handler	<ul style="list-style-type: none"> <li>• Abrasion resistance configuration suitable for well conditions</li> <li>• Required equipment for GVF (before separation) up to 75%</li> <li>• High Strength Shaft</li> <li>• Axial Stages</li> </ul>
	Protector section	<ul style="list-style-type: none"> <li>• High Strength Shaft</li> <li>• Tandem Protector to maximize the run life of the motor.</li> <li>• Protector thrust bearing type should be High load.</li> <li>• Maximum number of protectors should be used to increase run life of ESP system.</li> <li>• Protector type should be prefilled in factory with no required service during installation.</li> </ul>
	Motor	<ul style="list-style-type: none"> <li>• High Strength Shaft</li> <li>• High voltage, low amperage type</li> <li>• Motor winding temperatures minimum 400 deg F</li> <li>• HP Oversized by 30% to accommodate any future changing in well conditions or production requirements.</li> <li>• Minimum accepted motor load on the design phase will be 85%.</li> <li>• Motor thrust bearing type should be High load.</li> <li>• Motor Cable Extension should be Plug-in type.</li> </ul>
	Motor lead extension (MLE)	<ul style="list-style-type: none"> <li>• Flat cable with protectors (Lead type)</li> </ul>
	ESP Power cable	<ul style="list-style-type: none"> <li>• Size #1 or #2 or #4.</li> <li>• Designed for 400 deg F (204 deg C) operating temperatures</li> <li>• Copper, flat Lead type cable.</li> <li>• Monel coating armor</li> <li>• To be wet tested in factory- Certification required</li> <li>• ESP cable manufacturer to be recognized as a reliable worldwide supplier (brochure and certifications required).</li> <li>• Bidders to provide sample of power cable</li> </ul>
	Cross coupling cable protector	<ul style="list-style-type: none"> <li>• Carbon steel cross coupling protectors for:                             <ul style="list-style-type: none"> <li>▪ 3-1/2", 9.2 PPF, EUE TOP tubing</li> </ul> </li> <li>• Suitable for proposed ESP power cable and 2 x 1/4" control line</li> </ul>

**Purchase & Installation of Five (05) Electrical Submersible Pump (ESP) for Five (05) Wells of TOC area**

		<ul style="list-style-type: none"> <li>• Other sizes and types shall be included in the price list</li> </ul>
	Bottom-hole Multi-sensor	<ul style="list-style-type: none"> <li>• Use the ESP power cable to transmit data to surface</li> <li>• ESP system must not interfere with the down-hole sensor or surface equipment.</li> <li>• 13% chrome steel housing coating for the base gauge and AISI 4140 carbon steel or AISI 420 13% chrome steel for discharge sub.</li> <li>• Temperature rating 150 (°C)</li> <li>• pressure Rating 6500 Psi and motor temperature reading up to 409 (° C)</li> <li>• pressure accuracy of ±5 psi max with a resolution of 0.1 psi</li> <li>• Surface panel including data collector with event logger required with interpretation program providing at least: <ul style="list-style-type: none"> <li>▪ Historic trends</li> <li>▪ On line logging</li> </ul> </li> <li>• Suitable data including fine sampling option (minimum requirement): <ul style="list-style-type: none"> <li>▪ Intake pressure (psi)</li> <li>▪ Discharge pressure (psi)</li> <li>▪ Well bottom-hole Intake temperature (°C)</li> <li>▪ Motor oil or direct Motor temperature (°C)</li> <li>▪ Motor vibrations</li> <li>▪ Amps data</li> </ul> </li> </ul>
General Requirements		<ul style="list-style-type: none"> <li>• Elastomer material should be Aflas 150.</li> <li>• Head and base material should be 416 SS</li> </ul>
Surface Equipment	Mid joint cable protector	<ul style="list-style-type: none"> <li>• Carbon steel mid joint protectors for:</li> <li>• 3-1/2", 9.2 PPF tubing</li> <li>• Suitable for proposed ESP power cable and 2 x 1/4" control line</li> </ul>
	ESP Cable spooler	<ul style="list-style-type: none"> <li>• 2 x powered cable spoolers (one Prime and one backup)</li> <li>• 15T capacity</li> </ul>
	Electrical cable meter counter	<ul style="list-style-type: none"> <li>• 2 x meter counters</li> </ul>
	Wellhead Penetrator	<ul style="list-style-type: none"> <li>• ISO or ATEX Certified. Min requirement as below</li> <li>• Surface connector: 5Kv/100A, molded to 20 feet cable.</li> <li>• Downhole connector: 5kv/100A with proper seal design molded to at least 12 feet lead cable.</li> <li>• Penetrator 5Kv/100A, 300 DEG F, 5000 Psi</li> </ul>
	ESP Wellhead	<ul style="list-style-type: none"> <li>• Complete wellhead system, that is (not limited to):</li> <li>• Sized to be Compatible with the proposed ESP system and well completion. Please refer to the well current completion diagram.</li> <li>• It must wellheads manufactured to API 6a last edition</li> <li>• It should be with a proper quality control plan.</li> <li>• Suitable data through smart digital transmitters including fine sampling option (minimum requirement): <ul style="list-style-type: none"> <li>▪ Well head pressure (psi)</li> <li>▪ Annulus pressure (psi)</li> <li>▪ Well head temperature (°C)</li> <li>▪ Annulus temperature (°C).</li> <li>▪ Flow line pressure (psi).</li> <li>▪ Flow line temperature (°C).</li> <li>▪ Smart digital three phase portable flow meter for measurement of produced mixed liquid.</li> </ul> </li> </ul>
	VSD	<ul style="list-style-type: none"> <li>• VSD design must have adequate harmonics protection on both sides upstream and downstream. Check whether the VSD offered has built-in protection on both sides otherwise external harmonic filters must be supplied.</li> <li>• VSD control panel shall be equipped with all alarms and safety settings that can be set remotely to shut down and send data remotely through satellite or internet/ radio telemetry system.</li> <li>• ESP surface controller/ PLC should be able to have different operating condition, having the Gas mode condition is mandatory.</li> <li>• ESP controller/ PLC monitoring system should be able to show all ESP operating parameters (down hole, well head surface facilities</li> </ul>

**Purchase & Installation of Five (05) Electrical Submersible Pump (ESP) for Five (05) Wells of TOC area**

		<p>etc.), having the real-time pump curve operating condition will be a plus for bidder.</p> <ul style="list-style-type: none"> <li>• Total Harmonic Distortion on voltage according to IEC 50160 must be less than 5%.</li> <li>• Total Harmonic Distortion on current according to IEC 50160 shall be less than 8%.</li> <li>• VSD system should comply with Safety Integrity Level 3 (SIL3).</li> <li>• VSD container skid mounted should have the following specs minimum but not limit to: <ul style="list-style-type: none"> <li>▪ Closed (lock &amp; key) in special containers to avoid any access from unauthorized personal.</li> <li>▪ Weatherproof to avoid any field hard conditions.</li> <li>▪ Indoor AC units to auto control VSD container internal temperature.</li> <li>▪ VSD container have exhaust and intake proper duct with filters if required.</li> <li>▪ VSD controller/ PLC local display, keypad/ touch screen.</li> <li>▪ VSD container have indoor &amp; outdoor lights fixtures for security purposes.</li> <li>▪ VSD container have DB with circuit breakers.</li> <li>▪ VSD container should be suitable for outdoor open sky applications.</li> </ul> </li> </ul>
	Transformers	<ul style="list-style-type: none"> <li>• Step up transformer sized properly according to downhole requirements and VSD.</li> <li>• It must be skid mounted with the VSD in a cage with comfortable access for maintenance and monitoring.</li> </ul>
	Monitoring System	<ul style="list-style-type: none"> <li>• Real time monitoring using a system that is capable to monitor/ control/ connected from remotely like internet/ satellite.</li> <li>• Centralized SCADA HMI system for remote monitoring and control.</li> <li>• One (01) configuration machine (Laptop) possessing all the perpetually licensed software tools required for configuration of these ESPs.</li> <li>• System should be capable to send well ESP parameters to available ESP experts or engineers to analyze and provide recommendation for protection parameters setting to keep the ESP healthy and prevent shutdowns.</li> <li>• The monitoring center can be within Pakistan but there must be a local support engineer with rapid response for troubleshooting/ maintenance within 9 hours.</li> </ul>
Downhole Accessories	Chemical Inj Sub	<ul style="list-style-type: none"> <li>• 7" CIC ASSEMBLY, 2-3/8" EUEPIN, 5.50" OD, 316SS</li> </ul>
	Chemical line	<ul style="list-style-type: none"> <li>• Chemical Line ±6500 Ft "1/4" SS"</li> </ul>

**3.6 Equipment Delivery & Stock**

3.6.1. Bidder has to commit to supply the equipment, tools and spare parts of full ESP system to the well sites i.e. Pasakhi-2 (located about 23 KM NE from nearest city Hyderabad), Pasakhi North-3 (located about 23 KM NE from nearest city Hyderabad), Sono-4 (located about 25 KM NE from nearest city Hyderabad), Sono-7 (located about 25 KM NE from nearest city Hyderabad) and Lashari Center-5 (located about 25 KM NNW from nearest city Hyderabad). Before delivery equipment will be inspected by OGDCL. Delivery time for five (05) ESP Packages along with allied surface and downhole accessories is illustrated as below, any deviation from below timeline may incur the LD.

Wells	Availability
Well # 01	08 Weeks after issuance of PO
Well # 02	12 Weeks after issuance of PO
Well # 03	16 Weeks after issuance of PO



Well # 04	19 Weeks after issuance of PO
Well # 05	22 Weeks after issuance of PO

- 3.6.2. Data collection of Pasakhi-2, Pasakhi North-3, Sono-4, Sono-7 & Lashari center-5, field visit and ESP design are included in it. Bidder must have 1 set of backup equipment in their facility in Pakistan to minimize the production curtailment in case of any problem in downhole and surface equipment which cannot be rectified quickly. Gas Separator and advance gas handler/ multiphase gas handler must be part of the backup equipment.
- 3.6.3. ESP Package means; Downhole equipment: (ESP Motor, pump, protector, gas separator/handler, Power cable, MLE, downhole multisensory etc.); Surface equipment: (VSD, step up transformer, wellhead adaptor etc.); Factory acceptance test (FAT), Charges for the initial equipment/Personnel mobilization, installation and commissioning for each ESP.

### 3.7 Terms and Conditions

- 3.7.1. ESPs should be designed to best match the requisite parameters.
- to produce 1,150 to 4,700 bpd gross production from Pasakhi-2 and to handle a maximum Gas Oil Ratio (GOR) of 400 scf/bbl (which is ~400% higher than measured GOR in latest well test)
  - to produce 750 to 3,100 bpd gross production from Pasakhi North-3 and to handle a maximum Gas Oil Ratio (GOR) of 400 scf/bbl (which is ~100% higher than measured GOR in latest well test)
  - to produce 1,150 to 4,700 bpd gross production from Sono-4 and to handle a maximum Gas Oil Ratio (GOR) of 400 scf/bbl (which is ~400% higher than measured GOR in latest well test)
  - to produce 1,150 to 4,700 bpd gross production from Sono-7 and to handle a maximum Gas Oil Ratio (GOR) of 400 scf/bbl (which is ~500% higher than measured GOR in latest well test)
  - to produce 1,150 to 4,700 bpd gross production from Lashari Center-5 and to handle a maximum Gas Oil Ratio (GOR) of 400 scf/bbl (which is ~90% higher than measured GOR in latest well test).
- 3.7.2. In case ESP could not meet the design rates, bidder will replace that ESP free of cost with a new one which will be designed as per clause 4.1
- 3.7.3. The Bidder not having consecutive ten (10) year ISO 9001-2008 minimum quality validation capability certification related to ESP equipment and ESP power cable manufacturing will be considered NON-RESPONSIVE.
- 3.7.4. Equipment will be delivered to the field within 22 weeks after issuing of PO between the parties as per clause 3.6.1. Data collection of wells, field visit and ESP design are included in it. Arrival in Pakistan will be through Karachi port.
- 3.7.5. ESP Package means; Downhole equipment: (ESP Motor, pump, protector, gas separator/handler, Power cable, MLE, downhole multisensory etc.); Surface equipment: (VSD, step up transformer, wellhead adaptor etc.); Factory Acceptance test (FAT), Charges for the initial equipment/Personnel mobilization, installation and commissioning for each ESP.

- 3.7.6. Bidder will also provide warranty of ESP & its allied equipment as per international standards. Furthermore, minimum one (01) year warranty post installation will be acceptable)
- 3.7.7. Bidder will provide chemical sub and control line as per required completion of each well and compatible with respective ESP Wellhead adapter and downhole equipment.
- 3.7.8. Bidder to supply/provide any associated equipment (if required) to improve the quality of electrical power which may be disturbed due to type of load/ VSD operation such as –ve power factor or harmonic disturbance etc.
- 3.7.9. This project will be on “Turn Key” basis that bidder will be responsible to provide listed major equipment along with required minor equipment and consumables which are either mentioned in the list or not; equipment required at any stage during installation and commissioning. This includes mobilization of ESP and its allied equipment, installation and commissioning of ESP, suitable Genset to run ESP.
- 3.7.10. Bidder, must have supplied ESPs to E&P companies not belonging to bidders’ country of origin otherwise the bidder will be considered technically non responsive.
- 3.7.11. Bidder will arrange ESP Service Facility visit Pakistan for OGDCL professionals. Bidder also provide all design documents for approval before assembling/ manufacturing of equipment/ material in Pakistan for OGDCL professionals
- 3.7.12. Bidder will arrange minimum 02 weeks training session for 15-20 OGDCL professionals from RMD, Production Operations and PE&FD for ESP designing, monitoring, application, handling, troubleshooting, etc. Training will be given at OGDCL’s well site free of cost.
- 3.7.13. Bidder will provide perpetual licenses of ESP designing, pump curve calculator, PLC/ Controller/ telemetry systems licenses software and monitoring/calibration software free of cost; it will be updated yearly; refresher course will also be delivered after each update. Provision of these softwares is mandatory. Bidder who will not provide the softwares will be considered technically Non Responsive.
- 3.7.14. OGDCL will carry out Factory Acceptance Test (FAT) at manufacturer’s site/ facilities as per clause 3.1.10.
- 3.7.15. OGDCL will carry out a pre-shipment third-party inspection (TPI) of ESPs.
- 3.7.16. Delivery term will be FOR respective well/field locations i.e. Pasakhi-2 (located about 23 KM NE from nearest city Hyderabad), Pasakhi North-3 (located about 23 KM NE from nearest city Hyderabad), Sono-4 (located about 25 KM NE from nearest city Hyderabad), Sono-7 (located about 25 KM NE from nearest city Hyderabad) and Lashari center-5 (located about 25 KM NNW from nearest city Hyderabad). Before delivery equipment will be inspected by OGDCL. Title to and risk of loss to the equipment will pass to OGDCL immediately upon delivery and signed inspection report at the delivery point i.e. For respective well/ field locations.
- 3.7.17. If the purchasing of the equipment is confirmed by OGDCL, then OGDCL will issue a letter to customs department that OGDCL has purchased the equipment enabling bidder to clear its liabilities with Custom Authorities, OGDCL responsibility will be limited to issuance of letter to customs authorities only.

### 3.8 Payment Terms

- 3.8.1. 20% upfront payment after issuing the PO against bank guarantee (for 05 ESPs).
- 3.8.2. 50% after equipment arrival and inspection at well site as required by OGDCL (invoice will be generated for each ESP separately).
- 3.8.3. 30% after installation and commissioning (invoice will be generated for each ESP separately).

### 3.9 Submission of Proposal

- 3.9.1. Technical & Financial proposals should be provided in two separate envelopes.
- 3.9.2. The technical proposal must contain a brief history of Service Company/manufacturer of ESP, Wellhead for ESP and Cable used for this system, the nature of services provided, the key projects undertaken and its experience in the field of ESP systems. A soft copy on CD/DVD of the technical proposal should also be submitted along with the hard copy.
- 3.9.3. Two weeks training plan of 15 OGDCL Professionals from RMD, Production Operations and PE&FD for ESP designing, monitoring, operation, handling and troubleshooting at well site (free of charge).
- 3.9.4. Plan for visit of OGDCL professionals (03 persons) of ESP Service Facilities in Pakistan (free of charge).
- 3.9.5. Provision of ESP designing software and monitoring/ calibration, pump curve calculator, PLC / Controller/ telemetry systems licenses, software licenses (free of charge); updating of these licenses yearly; refresher course will also be delivered after each update.
- 3.9.6. Technical evaluation criteria is given in annexure "1". Minimum 65% marks required to qualify in each category whereas Bidder needs 75% marks overall to qualify technically.
- 3.9.7. The **technical** part of the proposal should also contain a tentative work program and time schedule to complete each phase of this project i.e. data analysis of wells (Pasakhi-2, Pasakhi North-3, Sono-4, Sono-7 & Lashari Center-5), field visit, designing & manufacturing of ESP, manufacturing facility visit, delivery, installation & commissioning on well and trainings. Bidder will provide projects (manufacturing and installation of ESPs) completed by them. The service company will also provide Resume of Engineering Team dedicated to this project. The Resume should be submitted in the following format:
  - a) Academic Qualification.
  - b) Total overall relevant experience, particularly emphasizing experience in well studies for artificial lift systems, ESP designing, installation and troubleshooting.
  - c) Overall experience/description of job assignments of the personnel with the bidding company.
  - d) Total overall experience of the person.

3.9.8. The **financial** section of the proposal should contain:

- a) **Lumpsum cost** for electrical submersible pump (ESP) and complete allied equipment (along with breakup of each equipment on separate page), Mobilization (along with breakup of each equipment/ crew on separate page) and Installation and Commissioning i.e. for ESP system, Gensets etc.
- b) Bidder must provide complete breakdown price list for ESP system components.

3.9.9. Financial Bid Format:

Sr. #	Description	Unit of Measurement	Unit Cost	Qty.	Total Cost PKR
1	Electrical submersible pump and complete allied equipment (along with breakup of each equipment on separate page), Mobilization (along with breakup of each equipment/crew on separate page), FAT and Installation and Commissioning i.e. for ESP system, Gensets etc.	01 package		05	
2	Chemical Injection sub & control line	01 set		05	

3.9.10. Complete breakup of each ESP Package & activity i.e. per month rate / per day rate / lumpsum rate etc., mentioned above must be provided on separate page in financial bid proposal.

## 4. GENSETS

### 4.1. Engineering

Bidder will provide 05 Gensets on rental basis for power supply to ESP systems with buy back option including two generators per GENSET “one prime (on gas fuel) and one standby (on diesel fuel)” to test the well and optimize ESP parameters. Both Generators should work on synchronize panel with independent isolation circuit breakers for easy switching from one to another. Both Generators should be compatible with ESP. Following will be key responsibilities of bidder/contractor.

- 4.1.1. The contractor must supply the generators along with Operation and maintenance services with:
  - a. Testing of provided Gen Sets at peak rated 100 % full load on industrial load bank for 4-6 hours after installation at site. The contractor will be responsible for arrangement/shifting/rental of load bank at site for load testing purposes.
  - b. Operational Staff consisting of 01 operators per shift (12 Hours) along with a supervisor (01 for both shifts) at location. In case of absence of any crew member due to any reason, contractor will arrange alternate crew. Free accommodation with paid meal (on payment at staff mess) will be provided for generator operating crew.
  - c. Servicing of the supplied generators, routine & breakdown maintenance, and troubleshooting.
  - d. Ensure the availability of maintenance spares like lube oil, filters, batteries, battery electrolyte, coolant conditioner etc. Moreover, OGDCL will not provide transport facility of any kind for arrangement/shifting of lube oil drums, consumables, or any other purpose.
  - e. Supply of standard 4 core power cables up to OGDCL changeover panel.
- 4.1.2. The contractor should supply the skid mounted Gas Driven (Prime) and Diesel driven (stand by) generator units.
- 4.1.3. The supplied generator packages (engines & generators) should be brand new or recently overhauled to give satisfied performance throughout the contract period.
- 4.1.4. The generator package should be equipped with panel board with visible display of all parameters, fault warnings and controls. All the safeties should be operative.
- 4.1.5. The contractor will be responsible to provide earthing to the Gensets from two different points.
- 4.1.6. The contractor will responsible to provide all necessary tools/accessories to their manpower for routine checkups and maintenance jobs.
- 4.1.7. The contractor will perform all preventive maintenance, TA-I, TA-II, Top end, and major overhauling timely with spares as per OEM maintenance schedule of supplied generators.
- 4.1.8. The contractor will be responsible for regular filling of log books issued for generators. The log book must be signed by In charge Maintenance of the respective field/location fortnightly. Filling of daily, weekly, monthly, six monthly and yearly maintenance logbooks and keeping their records will also be the responsibility of the contractor.

- 4.1.9. The contractor will be responsible for mobilization, installation and commissioning of both (main and standby) generators at site. OGDCL will only provide loading and unloading of the generator at site.
- 4.1.10. The contractor will be responsible to train his crew regarding HSEQ policies in practice at each location and to provide all required PPE's to his operational staff.
- 4.1.11. OGDCL will not be responsible for any damage caused to the gen sets due to non-presence of the operator or due to any other reason.
- 4.1.12. The contractor will assure the presence of workshop manual, maintenance manual, maintenance and performance reports and other necessary data of the gen sets at site.
- 4.1.13. Fuel will be provided by OGDCL. Fuel gas supply lines would be provided up to foundation by OGDCL. The contractor must make arrangements for making connections with the fuel supply line.
- 4.1.14. In case of separate cooling towers, civil work, and piping jobs for the installation of cooling towers for Gensets and the treatment of water of cooling towers is the responsibility of contractor. OGDCL will provide only ground water for filling in cooling towers, continuous flow not allowed.
- 4.1.15. All necessary checks regarding installation and commissioning of the generators are the responsibility of the contractor.
- 4.1.16. OGDCL will provide fuel gas for Genset at well site at 80-100 Psi, other arrangements for reducing the gas pressure according to the requirements of Genset will be the responsibility of contractor. Fuel Gas composition is given in Annexure "B".
- 4.1.17. The timeline for installation & commissioning is 3 calendar days after shifting at site.
- 4.1.18. The contractor will perform installation & commissioning activities of Gensets in parallel with the existing rental Gensets (where available) without any power break down.
- 4.1.19. The generator package should be equipped with all the standard accessories/safeties. The engine will be inspected and accepted after installation, commissioning, and load test.

**4.2. GENSET Details**

Surface Accessories	Gen Sets	<ul style="list-style-type: none"> <li>• Two Generators for power supply to the designed ESP, Prime Generator on Gas Fuel and Standby Generator on Diesel Fuel. Both Generators should work on synchronize panel with isolation independent circuit breakers for easy switching from one to another.</li> <li>• All wiring and flexible power cable required should be provided and done by the bidder.</li> <li>• Renowned brand like Caterpillar / Waukesha/ Jenbacher or equivalent.</li> <li>• The supplied Engines &amp; Generators Model should Not be older than 05 years and should be recently overhauled to give satisfactory performance during the contract period.</li> </ul>
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**4.3. GENSET Terms & Conditions**

- 4.3.1. Bidder will provide Genset on rental for power supply to ESP system with buy back option including two generators “one prime (on gas fuel) and one standby (on diesel fuel)” to test the well and optimize ESP parameters.
- 4.3.2. **Gensets will be delivered at the time of installation and commissioning.**
- 4.3.3. Both Generators should work on synchronize panel with isolation independent circuit breakers for easy switching from one to another.
- 4.3.4. Both Generators should be compatible with ESP.
- 4.3.5. Rental contract period of these Gensets will be 01 year which can be extended if required.
- 4.3.6. Maintenance and operation of these Gensets during rental period will be bidder’s responsibility.
- 4.3.7. No down time allowed for power supply.
- 4.3.8. In the event of any shutdown / breakdown, the standby generator will be started, and the contractor must arrange / make alternate arrangements for the provision of required electric power. In case of shut down of available stand by Generator, alternate Generator will be provided by the contactor immediately within 48 hours.
- 4.3.9. 100% Rental payment period will start after commissioning and successful running of generators at 100% load and delivering required results.
- 4.3.10. In the event of any shutdown/breakdown, the Contractor has to make alternate arrangements for provision of power by providing new generators, if the installed generators prove to be unrepairable or taking much longer time for maintenance.
- 4.3.11. In the event of any emergency shutdown/breakdown sums-up 24 hours/month cumulative or more, rent will not be paid for the shutdown duration of unit. i.e. deductible amount will be determined as:
  - a. Number of days of month x 24 hours = total hours.
  - b. Total Rent amount divided by calculated hours of the month = rental cost per hour.
  - c. Deductible Amount = Units shutdown hours x hourly rent
- 4.3.12. In the event of poor performance of Generators, OGDCL will serve formal notice to the Contractor for the rectification of all related issues within shortest possible time. Contractor will formally notify OGDCL about the overall plan to address the concerns.
- 4.3.13. Charges of any damage caused to any OGDCL equipment / appliances resulting from malfunctioning of generators will be charged from contractor as per actual.
- 4.3.14. If frequent shutdown/malfunctioning of the generators experienced, OGDCL will have the right to terminate the contract at 24-hour notice.
- 4.3.15. Contractor has to submit monthly rental invoice of the preceding month to OGDCL on the last date of every month to the location Incharge along with signed log books.
- 4.3.16. Rental charges will be started from the time of satisfactory start up for power supply. Rental charges will be paid only for the period of satisfactory power supply on monthly basis.

#### 4.4. **GENSETS Payment Terms**

- 4.1 Genset rent invoices will be generated on monthly basis.

**4.5. GENSETS Financial Proposal**

**4.5.1.** The **financial** section of the proposal for Rental GENSETs should be as per format table below along with following:

- a. **Lumpsum Rent** of 01 year per Genset.
- b. **Rent Per Month per Genset.**

Sr. #	Description	Unit of Measurement	Unit Cost	Qty.	Total Cost PKR
1	Rent of 01 Year per Genset	01 set		05	
2	Rent Per month per Genset	01 set		05	

**4.5.2.** The financial section of the proposal for GENSETs Buy Back option should be as per format table below along with following:

- a. Price of new Generator(s), Depreciated price of used Generator(s) (For buy back option)
- b. Depreciated price of each generator after three (03) month rental, six (06) month rental and one (01) year rental (For buy back option).

GENSET Buy Back Option					
Sr. #	Price Head	Gas Generator		Diesel Generator	
		Used*	New	Used*	New
1	Price at the time of start up				
2	Depreciated price after 03 month rental				
3	Depreciated price after 06 month rental				
4	Depreciated price after 12 month rental				

\*maximum 05 years old, recently overhauled

**4.5.3.** Price of the gensets will be finalized after considering depreciation, performance, efficiency, running hours and physical conditions at the time of purchase.



## **5. SERVICE/ MAINTENANCE**

### **5.1. Terms & Conditions**

- 5.1.1. The bidder must provide the services/ maintenance for two (02) years within the bid; service contract can be extended with mutual agreement after two years. Services including but not limited to:
- 5.1.2. The Bidder must have a complete ESP service facility and competent team available in Pakistan all the time to do all ESP activities (Installation, Pulling, troubleshooting and inspection) with rapid response within 24 hrs for the troubleshooting to restart the system and one week for other operations. OGDCL will ask for a tour to visit the bidder's ESP Service Facility in Pakistan. Bidder having no ESP Service Facilities will be considered technically Non-Responsive/Disqualified. This applies to the serial 4.3 (b) to 4.3 (i).
- 5.1.3. Installation and commissioning of ESP and surface equipment.
- 5.1.4. Downhole monitoring and surveillance of the downhole gauge parameters (when required by OGDCL).
- 5.1.5. Troubleshooting/maintenance of surface equipment of ESP.
- 5.1.6. Troubleshooting/maintenance of downhole equipment of the ESP.
- 5.1.7. Periodic visits of service engineer to well sites i.e. one visit /month. After each visit service engineer will generate a report about ESP health and his recommendations; and submit to OGDCL.
- 5.1.8. Bidder will provide complete list of surface and downhole equipment parts list along with prices. This price book will be part of service contract. Prices of these parts cannot be changed for two (02) years and will be revised when contract will be extended.
- 5.1.9. It is mandatory for the Bidder to maintain complete inventory of surface and downhole equipment parts in his warehouse/ service facilities in Pakistan to avoid delays.
- 5.1.10. Bidder must have 1 set of downhole equipment in their facility in Pakistan to minimize the production curtailment in case of any problem in downhole equipment which cannot be rectified quickly. Gas Separator and advance gas handler/ multiphase gas handler must be part of the backup equipment.

### **5.2. Financial Proposal**

- 5.2.1. For services/maintenance contract following charges should be mentioned for evaluation purpose.
  - I. Lump sum charges for Installation and commissioning of ESP and surface equipment.
  - II. Lump sum mobilization/de-mobilization charges of service engineer, crew and equipment.
  - III. Charges for Downhole monitoring and surveillance of the downhole gauge parameters (when required by OGDCL). (Optional)
  - IV. Charges for troubleshooting/maintenance of surface equipment of ESP.
  - V. Charges for troubleshooting/maintenance of downhole equipment of the ESP.

VI. Charges for periodic/emergency visits of service engineer to well sites i.e. one visit /month periodically. Per day rate may be provided.

**5.2.2.** The financial section of the proposal for Service and Maintenance should be as per format table below along with the items given in para 5.2.1.

Sr. #	Description	Unit of Measurement	Unit Cost	Qty.	Total Cost PKR
1	Charges for troubleshooting/maintenance of surface equipment of ESP including mobilization/demobilization charges of service engineer, crew, and equipment.	Lump Sum			
2	Charges for troubleshooting/maintenance of downhole equipment of the ESP including mobilization/demobilization charges of service engineer, crew, equipment and pulling out, installation and commissioning.	Lump Sum			
3	Charges for Engineer Field Visit/Inspection	Per Day		24	
4	Prices of complete surface and downhole equipment spare parts (Optional, it will not be part of financial evaluation)	Number			




**OIL & GAS DEVELOPMENT COMPANY LTD.**  
**KPD TAY / KUNNAR LPG PLANT & OIL FIELD.**

**Laboratory Section**

**OGF/ KPD /LAB/003(00)**

**FUEL GAS ANALYSIS REPORT**

Description	Fuel Gas Analysis Report
Sampling Date	23-12-2020
Sampling Time (Hrs)	11:40 Hrs
Pressure psig	780
Temperature °F	100
Component	Mole%
C1 (Methane)	88.186
C2 (Ethane)	5.517
C3 (Propane)	0.406
i-C4 (Iso-Butane)	0.017
n-C4 (Normal Butane)	0.017
i-C5 (Iso-Pentane)	0.007
n-C5 (Normal Pentane)	0.010
C6+ (Hexane Plus)	0.265
CO2 (Carbon Di-Oxide)	2.663
N2 (Nitrogen)	2.912
Total	100
Gross Ideal Heat Value	1013.91
C.V BTU/CF Dry	1017.08
C.V BTU/CF Saturated	999.38
Specific Gravity	0.63018

  
Anwar Husain  
Incharge Laboratory



<b>Purchase &amp; Installation of Five (05) Electrical Submersible Pump (ESP) In Five (05) Wells of TOC area</b> <b>i.e. Pasakhi-2, Pasakhi North-3, Sono-4, Sono-7 &amp; Lashari Center-5</b>		
<b>Technical evaluation Criteria</b>		
Note:	a. The consultant must provide Hard as well as soft (PDF) copies of Technical Bid. b. A legible Gantt chart will be provided by the consultant covering all the activities included Category 3. c. Bidders should submit required relevant information clearly according to the TORs and required in this annexure. Ambiguous or irrelevant information will not be entertained.	
Sr. No.	Category	Points
	<b>Total</b>	<b>100.00</b>
<b>1</b>	<b>Firm Experience</b>	<b>25.00</b>
<b>1.1</b>	<b>Firm Experience (ESP Manufacturing)</b>	<b>10.00</b>
	20 or more Years	10.00
	15 or more Years	8.00
	10 or more Years	6.00
	Less than 10 Years	Disqualified
Note:	a. Firm having Total Experience less than 10 years in ESP manufacturing will not be entertained and considered technically NON RESPONSIVE. b. Firm to furnish proof of claimed experience for evaluation purposes.	
<b>1.2</b>	<b>Firm Experience (ESP Installation)</b>	<b>10.00</b>
	20 or more Years	10.00
	15 or more Years	8.00
	10 or more Years	6.00
	Less than 10 Years	Disqualified
Note:	a. Firm having Total Experience less than 10 years in ESP Installation will not be entertained and considered technically NON RESPONSIVE. b. Firm to furnish proof of claimed experience for evaluation purposes.	
<b>1.3</b>	<b>Experience of the firm internationally in last three (03) years</b>	<b>5.00</b>
	50 or more Projects	5.00
	30 to 49 Projects	4.00
	15 to 29 Projects	3.00
	Less than 15 Projects	Disqualified
Note:	a. Company Name, Name of the project, Installation Year, Number of wells, & Brief description of Problem Statement/ Scope of Work, & achievements (8 - 10 Lines max) should be clearly mentioned in a table to support the claim. b. Only those Projects will be considered for evaluation for which information required in Note "a" would be provided. c. Firm with Less than 10 projects internationally will be considered NON RESPONSIVE d. Each Project must have atleast 05 ESP Provisions & installations in one go in order to qualify for evaluation under this para. Projects having less than 05 ESPs will not be considered for evaluation.	
<b>2</b>	<b>Technical</b>	<b>35.00</b>
<b>2.1</b>	<b>Design of ESP</b>	<b>15.00</b>
	100% according to Design as per TORs	15.00
	Less than 100% but more than 90% according to Design	12.00
	Less than 90% according to Design	Disqualified
Note:	a. Bidding Firm is advised to submit detailed design specifications and highlight compatibility with OGDCL's design.	
<b>2.2</b>	<b>Back up Equipment &amp; Spares availability till end of service contract</b>	<b>10.00</b>
	Yes	10.00
	No	Disqualified
Note:	a. One (01) complete ESP downhole unit as backup and spares of surface and downhole units will be kept and maintained in Pakistan.	



<b>Purchase &amp; Installation of Five (05) Electrical Submersible Pump (ESP) In Five (05) Wells of TOC area</b> <i>i.e. Pasakhi-2, Pasakhi North-3, Sono-4, Sono-7 &amp; Lashari Center-5</i>		
<b>Technical evaluation Criteria</b>		
<b>2.3</b>	<b>Rental Generators</b>	<b>10.00</b>
	Brand New	10.00
	Upto 02 years old (recently overhauled)	8.50
	Upto 05 years old (recently overhauled)	6.50
	Older than 05 Years	Disqualified
Note:	a. Model, Running hours and maintenance history of rental GENSETs (Gas and Diesel) to be provided.	
<b>3</b>	<b>Work Plan &amp; Skill Transfer Plan</b>	<b>25.00</b>
Note:	a. A Gantt chart will be provided by the consultant for covering all the activities included in the Work plan over the course of the study.	
<b>3.1</b>	<b>Timeline</b>	<b>15.00</b>
	As per OGDCL's Timeline	15.00
	OGDCL's Timeline plus 3 weeks extra	12.00
	OGDCL's Timeline plus 4 to 6 weeks extra	6.00
	OGDCL's Timeline plus more than 6 weeks extra	Disqualified
Note:	a. OGDCL expects delivery of first two ESPs within eight (08) weeks of issuance of PO/LOI and rest within 22 weeks (from issuance of PO/LOI).	
<b>3.2</b>	<b>Training Sessions (Skill/ Knowledge transfer)</b>	<b>10.00</b>
	Two weeks according to TORs	10.00
	One weeks according to TORs	8.00
	Less than One weeks according to TORs	4.00
Note:	a. According to TOR means that training with cover the areas indicated in TORs in detail.	
<b>4</b>	<b>Professionals' Qualification &amp; Experience</b>	<b>15.00</b>
Note:	a. Firm/ Consultant shall provide a dedicated team lead along with a back up candidate. b. For evaluation puposes, only Team leads' qualification & experience will be rated	
<b>4.1</b>	<b>ESP Engineer's Qualification</b>	<b>7.50</b>
	BS and MS Electrical/ Mechanical Engg or higher	7.50
	BS or MS Electrical/ Mechanical Engg or higher	6.00
	Both BS and MS in other disciplines	3.00
Note:	a. BS means Bachelor of Science equivalent to 16 years education while MS means Master of Science equivalent to 18 years education.	
<b>4.2</b>	<b>ESP Engineer's Experience</b>	<b>7.50</b>
	15 Years or more	7.50
	10 to 14 Years	6.00
	5 to 9 Years	3.00
	Less than 5 Years	Disqualified
Note:	a. Only relevent experience will be considered for evaluation purpose instead of Total Experience. Therefore, Consultant should clearly mention the number of years of relevent experience along with experience timeline and key projects undertaken by each personnel to support the claimed experience.	

**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 corporate body, having its registered 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 registered 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 for a period of (period).

**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 etc. from the date of signing of contract (or otherwise mentioned in TOR) 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 LOI.
- (c) Company’s Tender documents
- (d) Contractor’s Technical & Financial bid and all correspondence/clarification made thereafter.

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/fixed Cost (as the case may be) amounting to USD/Pak Rupee----- (as the case may be) inclusive of all applicable duties, levies and taxes etc. except Provincial Sales Tax/ICT on services in Pakistan. PST/ICT where applicable will be borne and paid by the Company at actual.
- 4.2 All prices charged under this Contract shall remain firm and final during the validity period of this Contract.

#### **SECTION 4A. PAYMENT TERMS**

- i. Payment will be made as per TOR.
- ii. The Company shall use its best efforts to make payment to all Pakistan based companies 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.
- iii. To avoid delay in payment, it is essential that the invoices shall:
- (a) be duly signed and stamped by authorized person and type-written in English.
  - (b) Complete Contract number must be clearly mentioned on invoice.
  - (c) Invoice must contain sufficient description of services as mentioned in the contract.
  - (d) Clearly mention the location of the Company where Services have been provided.
  - (e) Clearly mention period of Services, duly verified by authorized official of OGDCL end user.
  - (f) Contain any other information deemed essential either by the Contractor or by the Company.
  - (g) Invoices must be submitted to Manager Accounts on the following address for onward verification by Manager of end user Department of OGDCL: -

#### **Manager (Accounts)**

OGDCL House, Plot No. 3 (New No 3013)  
F-6/G-6, Jinnah Avenue, Islamabad (Pakistan)

#### **SECTION 5. TAXES AND DUTIES:**

- 5.1 The contract price includes all taxes (except Provincial Sales Tax/ Islamabad Capital Tax on services in Pakistan), 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 on services) in Pakistan will be paid 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 equipment, 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 after issuance of award of contract/Letter of intent (LOI), a Performance Guarantee in the form of an irrevocable, independent, unconditional, direct obligation of the bank and on first and simple demand guarantee issued by a Pakistani Scheduled Bank or branch of a foreign bank operating in Pakistan, except NIB & Summit Bank amount equivalent to 10% (Ten percent) of the total contract value in Pak Rupees/US\$ strictly in accordance with the format of Performance Bank Guarantee given in tender document 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 solely borne and paid by the Contractor. The Performance Bond shall be valid and shall be maintained in full force for 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, partial or whole.

In-case the bidder fails to fulfil agreed Tender / Contract Terms and Conditions, the bidder shall be liable to pay liquidated damages as per terms and mechanism agreed in the contract. Where any loss or damage suffered by OGDCL due to any act of the bidder is more than the liquidity damages, the company will be entitled/ recover the losses through encashment of Bank; Guarantee(s) /Bid Securities/earnest Money or forfeiture of security furnished by the bidder in other procurement cases.

#### **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, 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 of 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 amount 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 up to maximum extent of 10% 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 10% 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 delay. 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 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 therefrom 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 pay 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 contractual obligations under this 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 (a) above to any employees of the Contractor not directly concerned with the Contract.

#### **SECTION 22. SECURITY:**

22.1 If otherwise mentioned in TOR, 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 If otherwise mentioned in TOR, 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-contractor 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, Plot No. 3 (New No 3013)  
F-6 Jinnah Avenue Blue Area, Islamabad, Pakistan  
Telephone: 0092 -51-92002\_\_\_\_\_

**To the Contractor:**           Mr. \_\_\_\_\_  
M/s \_\_\_\_\_  
Address: \_\_\_\_\_  
\_\_\_\_\_  
Telephone: \_\_\_\_\_  
Email: \_\_\_\_\_

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\_\_\_\_\_

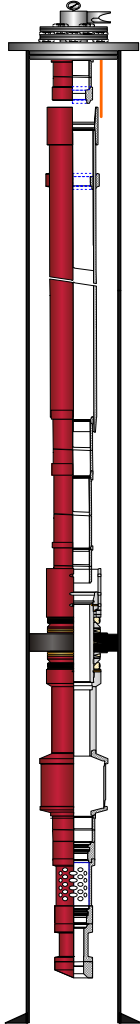
Witness\_\_\_\_\_

Witness\_\_\_\_\_

Witness\_\_\_\_\_



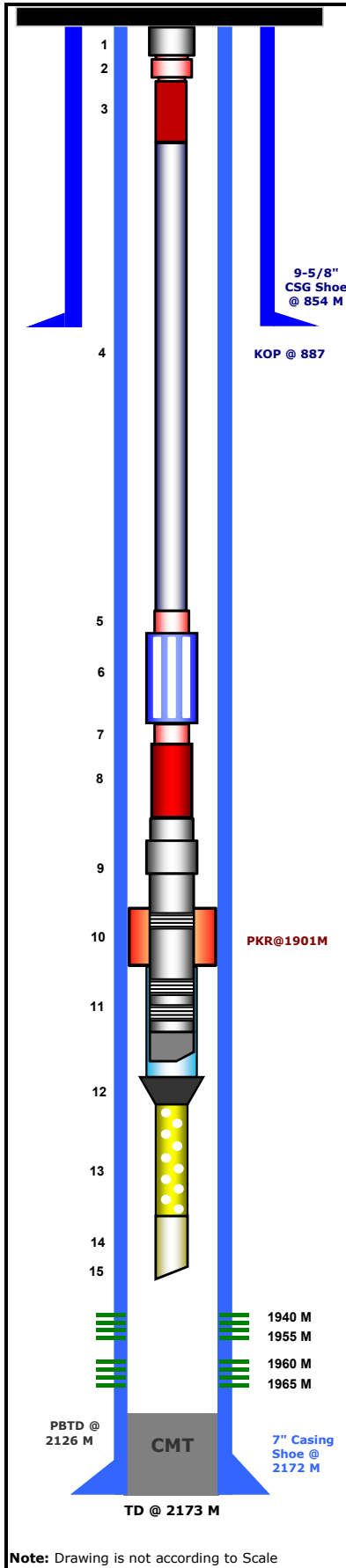
**Weatherford**  
Completion Systems



7" X 4" ULTRA PACK PERMANENT COMPLETION 23 - 32 PPF		
CLIENT REPRESENTATIVE Mr. Dileep	CLIENT	OGDCL
WFT REPRESENTATIVE JAMAL IQBAL	FILED	Pasaki
SETTING with Wireline	WELL	Pasaki North 3
PACKER SETIING DEPTH 1984 m	RIG	N55
	BRINE	



DISRIPTION OF TOOLS	OD (IN)	ID (IN)	LENGTH (M)	DEPTH (M)
<b>RTKB</b>			6.25	6.25
TUBING HANGER 2-7/8" CS Hydril BOX X BOX 6.5 PPF	6.8"	2.435	0.23	6.48
PIN X PIN 2-7/8" CS Hydril, 6.5 PPF	3.25	2.435	0.49	6.97
0.93 + 1.38 +3.11+3.1 Pup Joint CS Hydril, 6.5 PPF	3.25	2.435	8.52	15.49
194 Tubing joint 2-7/8 CS Hydril P x B	2.93	2.435	1960.425	1975.915
X-over 2-7/8 EUE P x CS Hydril B 6.5#	3	2.435	0.64	1976.555
Jet PUMP 2-7/8 EUE P x B 6.5#	4.5	2.435	2.85	1979.405
X-over 2-7/8 EUE B x CS Hydril B 6.5#	3.9	2.435	0.315	1979.72
Blast Joint 3.5" CS Hydril P x B 10.3 #	3.875	2.93	2.98	1982.7
ATOR SEAL ASSEMBLY 3.5" CS Hydril BOX X HMS DOWN (0.56M FLOAT)	5.125	2.96	0.8	1983.5
ULTRA PACK PACKER 7" X 4" ,23-32 PPF TOP TO MID	5.875	4	0.5	1984
MID TO BOTTOM			0.24	1984.24
PACKER BOTTOM SUB STUB ACME BOX X BOX	5.875	4	0.2	1984.44
SEAL BORE EXTENTION STUB ACME PIN X PIN	5.375	4	4.4	1988.84
ADAPTER SBE X MOE, " STUB ACME BOX X 5" LTC BOX	5.5	4	0.275	1989.115
MILLOUT EXTENSION 5" LTC PIN X PIN	5	4.25	1.65	1990.765
CASING SUB 5" LTC BOX X 3.5" CS Hydril PIN, 10.3 PPF	5.5	2.875	0.39	1991.155
3.5" PUP JOINT CS-Hydril PIN X BOX, 10.3 PPF	4.125	2.875	1.47	1992.625
3.5" PERFORATED PUP JOINT CS Hydril PIN X BOX, 10. 3 PPF	4.125	2.875	2.95	1995.575
3.5" HALF MULE SHOE Pup joint CS Hydril BOX X HMS DOWN	4.125	2.875	1.47	1997.045



OIL AND GAS DEVELOPMENT COMPANY LIMITED					
TANDO ALAM OIL COMPLEX					
WELL COMPLETION PROFILE					
L.C WELL # 05 (WORK-OVER # 05)					
<b>Casing</b>		7" Casing, 29 PPF, VAM, N-80 ID: 6.184"			
<b>Tubing</b>		2-7/8" CSH, 6.5 PPF, L-80 ID: 2.402"			
<b>X-MASS TREE</b>			<b>ELEVATION</b>		
Make	IKS	KB	21.80 M (AMSL)		
Size	2-9/16", 5000 psi	GL	17.40 M (AMSL)		
<b>Rig Name: (KREMCO K-750)</b>		LT&LG	25° 17' 1.839" N, 68° 34' 28.251" E		
<b>Completion Date</b>		02-06-14		<b>Completion Type</b>	
				Single String 7" Permanent Packer with Jet Pump	
<b>Kick off Point = 887 M</b>			<b>Maximum Well Deviation = 12 Deg.</b>		
S. No.	Depth M	Length M	OD MM	ID MM	Down Hole Completion Equipments
0	-	6.000	-	-	Rotary Table Difference (Old = 4.4 M)
1	6.00	0.368 (0.212/0.16)	177	62	IKS Tubing Hanger (Used with new rubber seal) 2-7/8" EUE (BxB)
2	6.16	0.194	83	60	X - Over 2-7/8" CSH (P) X 2-7/8" EUE (P)
3	6.35	7.352	73	61	Pup Joints (04 Nos.) 2-7/8" CSH (PXB)
4	13.71	1879.500	73	61	Tubing Joints (200 Nos.) 2-7/8" CSH (PXB)
5	1893.21	0.548	83	61	X-Over 2-7/8" EUE (P) X 2-7/8" CSH (B)
6	1893.75	3.076	115	57	BHA of Jet Pump - National (Redressed) 2-7/8" EUE (PXB)
7	1896.83	0.536	101	61	X-Over 3-1/2" CSH (P) X 2-7/8" EUE (B)
8	1897.37	2.974	101	72	Blast Joints (01 Nos.) 3-1/2" CSH (PXB)
9	1900.34	3.516 (0.246/3.270)	107/101	76	Baker LSA with 3 seals stack & Spacer (New) 3-1/2" CSH (B) X 1/2 Mule Shoe
10	1901	0.762 (0.402/0.36)	148	101	Baker Permanent Packer 7" FB (26-32 PPF)
11	1901.44	2.875	125	101	Baker Seal Bore Extension 4.75" Stub Acme (PXP)
12	1904.32	0.210	141	76	Baker Casing Sub 4.75" Stub Acme (B) X 3-1/2" NUE (P)
13	1904.53	3.100	107	73	Baker Perforated Pipe 3 1/2" NUE (PXB)
14	1907.63	3.165	107	73	Baker Spacer Tube with Half Mule Shoe 3-1/2" NUE (B) X 1/2 Mule Shoe
15	1910.79				End of Tubing
<b>X-mass tree:</b> IKS 2-9/16" (R-27) - API 5000 Psi with one Master Valve & NATIONAL control head.					
<b>Bonnet Flange:</b> IKS 7 -1/16" (R-46) x 2-9/16" (R27) x API 5000 psi.					
<b>Tubing Head Spool:</b> IKS 11" (R-54) x 7-1/6" (R-46) x API 5000 psi with two 2-1/16" (R-24) x 5000 psi wing valves.					
<b>Tubing Hanger:</b> IKS 2-7/8" EUE (BxB)					
<b>PRODUCTION ENGINEERS</b>			<b>FIELD MANAGER</b>		
ABDUL SATTAR MEMON / SYED ALI HASNAIN			FAYAZ AHMED MEMON		
<b>FORMATION</b>			<b>PERFORATION INTERVAL</b>		
LOWER GORU			1940 - 1955 = 15M 1960 - 1965 = 05M		

Note: Drawing is not according to Scale

**Oil & Gas Development Company Limited**

**TANDO ALAM OIL COMPLEX**

Actual Well Completion Profile

**SONO # 07 (Production Testing)**

<b>Casing</b>	7" (29 PPF) VAM N-80, ID = 6.184"
<b>Tubing</b>	2-7/8" (6.5 PPF) EUE & NKEL N-80, ID = 2.441"

X-Mass Tree		Elevations	
<b>Make</b>	Breda	<b>KB</b>	
<b>Size</b>	2-9/16", 5000 Psi	<b>GL</b>	

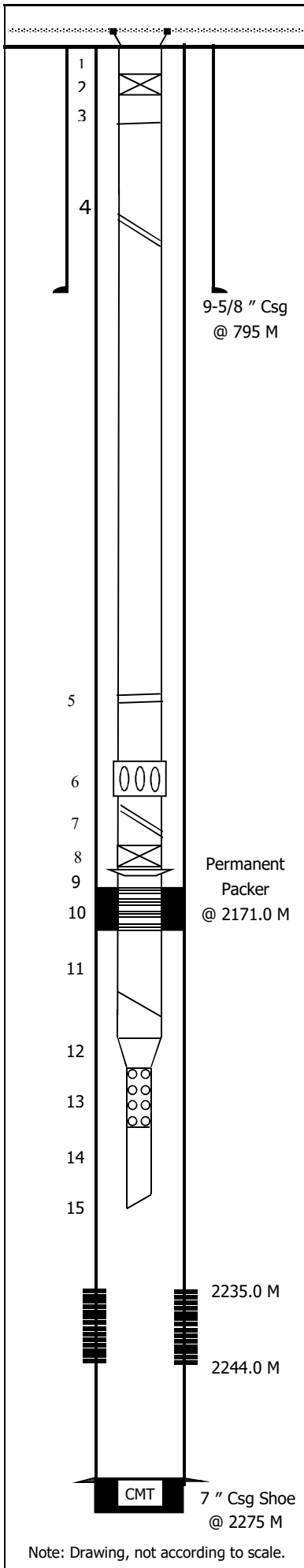
<b>Rig Name</b>	N-55	<b>Completion Type</b>	
<b>Completion Date</b>	25-04-2006	Single String - Permanent Packer	

Serial #	Depth Meters	Length Meters	OD mm	ID mm	Down Hole Completion Equipments
0	-	5.150	-	-	Rotary Table Difference (Rig T-50 B)
1	5.370	0.16 / 0.22	176	62	Tubing Hanger (Breda) 2-7/8" EUE (B X B)
2	5.875	0.505	80	62	X-Over 2-7/8" EUE (P X P)
3	13.030	7.155	73	62	Pup Joints (04) 2-7/8" EUE (P X B)
4	2146.140	2133.110	73	62	Tubing Joints (224) 2-7/8" 6.5 PPF EUE L-80
5	2149.070	2.930	93	62	Blast joint 2-7/8" EUE (PXB)
6	2150.740	1.670	114	57	JET PUMP BHA (National) 2-7/8" EUE (PXB)
7	2169.810	19.070	73	62	Tubing Joints (02 Nos.) 2-7/8" EUE (PXB)
8	2170.355	0.545	98	62	X-Over 2-7/8" EUE (B) X 3-1/2" CSH (P)
9	2170.610	3.520 0.255 / 3.265	101	77	Locator Seal Assembly (Baker) 3-1/2" CSH (B) X 1/2 Mule Shoe
10	2171.000	0.755 0.395 / 0.365	149	102	7" FB-1 Permanent Packer (Baker) Total Length = 0.755 M (0.39 M / 0.365 M)
11	2173.865	2.865	127	102	Seal Bore Extension (Baker) 4-3/4" STUB ACME (P X P)
12	2174.065	0.200	144	77	Casing Sub (Baker) 4-3/4" 8 stub acme (B) x 3-1/2" NU (P)
13	2177.160	3.095	108	76	Perforated Pipe (Baker) 3-1/2" NUE (P X B)
14	2180.320	3.160	108	76	Spacer Tube with Half Mule Shoe (Baker) 3-1/2" NUE (B) X 1/2 Mule Shoe
15	2180.320				End of Tubing

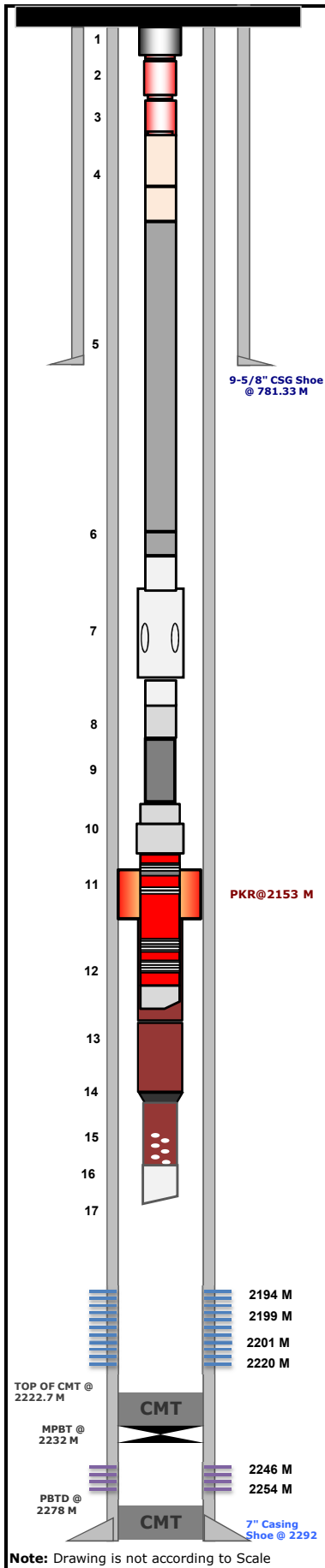
**X-Mass Tree:** "IKS" 2-9/16" (R-27) API 5000 Psi with one master valve and National control head.  
**Bonnet Flange:** 7-1/16" (R-46) API 5000 Psi x 2-9/16" (R-27) API 5000 Psi (IKS).  
**Tubing Head Spool:** 11" (R-54) API 5000 Psi x 7-1/16" (R-46) API 5000 Psi (IKS) with two wing valves of 2-1/16" (R-24) API 5000 Psi (IKS).

FORMATION	PERFORATION INTERVAL
Lower Goru	2244.0 M - 2235.0 M = 09 M

PRODUCTION ENGINEERS	FIELD MANAGERS
Munawar Rao / Mahmood Zaman / Bilal Anwar / Nand Kumar	Sharafat Ali / Munawar Ali Abbasi



Note: Drawing, not according to scale.



OIL AND GAS DEVELOPMENT COMPANY LIMITED					
TANDO ALAM OIL COMPLEX					
WELL COMPLETION PROFILE					
Sono # 04 (WORK-OVER # 07)					
Casing		7" Casing, 26 PPF, VAM, N-80 ID: 6.276" (159.41mm)			
Tubing		2-7/8" 6.4 PPF, L-80 3CR, VAM TOP tubing ID: 60 mm			
X-MASS TREE			ELEVATION		
Make	Canada Works		KB	22.80 M (AMSL)	
Size	2-9/16", 5000 psi		GL	16.60 M (AMSL)	
Rig Name: (KREMCO K-750T)					
Completion Date		10-Nov-18		Completion Type	
				Single String 7" Permanent Packer with Jet Pump	
S. No.	Depth M	Length M	OD MM	ID MM	Down Hole Completion Equipments
0	-	5.850	-	-	Rotary Table Difference
1	5.850	0.388 (0.20/0.185)	176	62	Tubing Hanger (Canada Works) 2-7/8" CSH (BxB)
2	6.035	0.400	73	57	X - Over 2-7/8" CSH (P) x 2-7/8" EUE (P)
3	6.435	0.620	73	57	X-Over 2-7/8" EUE (B) x 2-7/8" Vam Top (P)
4	7.055	3.973	73	60	Pup Joint (02 Nos. 3.058 m & 0.915) 2-7/8" 6.4 PPF L-80 Vam Top (PxB)
5	11.028	2134.240	73	60	Tubing Joints (228 Nos.) 2-7/8" 3CR 6.4 PPF L-80 Vam Top (PxB)
6	2145.268	0.630	73	57	X-Over 2-7/8" EUE (P) X 2-7/8" Vam Top (B)
7	2145.898	2.894	114	60	BHA of Jet Pump - Trico (New) 2-7/8" EUE (PxB)
8	2148.792	0.534	98	57	X-Over 3-1/2" CSH (P) X 2-7/8" EUE (B)
9	2149.326	2.977	102	68	Blast Joints (01 Nos.) 3-1/2" CSH (PxB)
10	2152.303	3.970 (0.324/3.646)	113 / 98	71	Halliburton LSA with 4 seals stack & 1 Spacer 3-1/2" CSH (B) X 1/2 Mule Shoe
11	2153	1.205 (0.795/0.410)	149	101	Halliburton Perma Series Production Packer 7" BWD Wireline-Set, 26-32 lb/ft 13% chrome, BOX 4 3/4 - 8 UN (812-BWD704016-G, 522485)
12	2153.54	4.490	127	101	Halliburton Seal Bore Extention 9% Chrome 4 3/4 - 8 UN (PXP)
13	2158.03	1.834	142	108	Halliburton Mill Out Extention 9 % Chrome 4 3/4 - 8 UN (PxB)
14	2159.86	0.220	127	70	Halliburton Casing Sub 4 3/4 - 8 UN (B) x 3 1/2" CS Hyd (P)
15	2160.08	3.055	101	70	Perforated Pipe 3 1/2" CS Hyd (PxB)
16	2163.14	1.550	98	70	Halliburton Spacer Tube with Half Mule Shoe 3 1/2" CS Hyd Box X Half Mule shoe
17	2164.69				END OF TUBING
<p><b>X-Mass Tree:</b> Canada Works 2-9/16" (R-27) - API 5000 Psi with one Master Valve (Shanghai Shenkai) &amp; control head.</p> <p><b>Bonnet Flange:</b> Canada Works 7 -1/16" (R-46) x 2-9/16" (R-27) x API 5000 psi.</p> <p><b>Tubing Head Spool:</b> Canada Works 11" (R-54) x 7-1/6" (R-46) x API 5000 psi with two 2-1/16" (R-24) x 5000 psi wing valves.</p> <p><b>Tubing Hanger:</b> Canada Works 2-7/8" EUE (BxB)</p>					
			2194 M		
			2199 M		
			2201 M		
			2220 M		
TOP OF CMT @ 2222.7 M					
MPBT @ 2232 M					
			2246 M		
			2254 M		
PBD @ 2278 M					
			7" Casing Shoe @ 2278 M		
<b>PRODUCTION ENGINEERS</b>					
ABDUL SATTAR MEMON / IRFAN ALI MEMON			<b>FIELD MANAGER</b>		
			MEHMOOD ZAMAN		
<b>FORMATION</b>					
LOWER GORU			<b>RE-PERFORATION INTERVAL</b>		
			2194 - 2199 = 05M		
			2201 - 2220 = 19M		

Note: Drawing is not according to Scale



**Oil & Gas Development Company Limited**

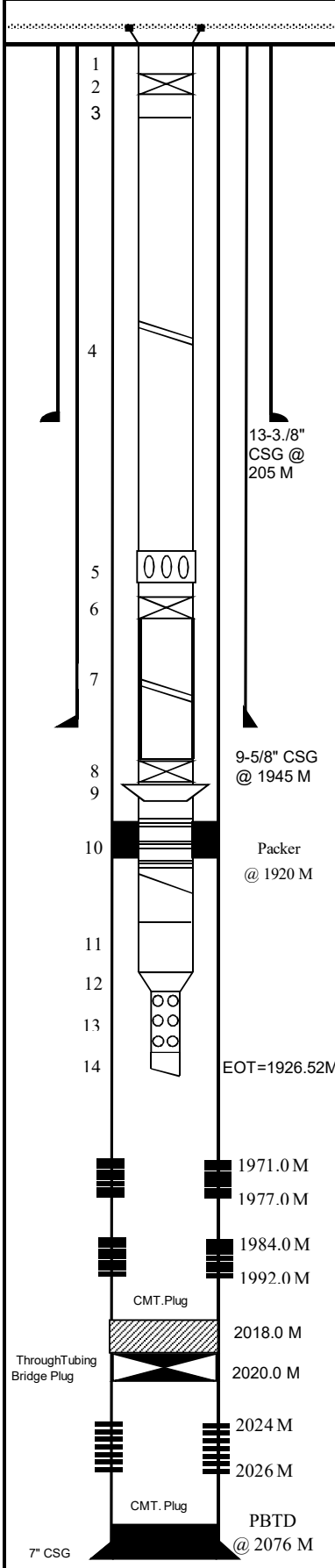
**TANDO ALAM OIL COMPLEX**

Well Completion Profile

**PASAKHI # 02 (5th Wor-Over)**

<b>Casing</b>	7" 29 PPF VAM N-80		
<b>Tubing</b>	2-7/8" 6.5 PPF EUE L-80		
<b>X-MASS TREE</b>		<b>ELEVATIONS</b>	
<b>Make</b>	Breda	<b>KB</b>	25.3 M
<b>Rating</b>	5000 PSI	<b>Size</b>	2-9/16"
		<b>GL</b>	16.9 M
<b>Rig Name</b>	Rig Kremco K-750 T	<b>Completion Type</b>	
<b>Completion Date</b>	<u>May 21, 2012</u>	Single String - Permanent Packer	

S.No.	Depth Meters	Length Meters	OD mm	ID mm	Down Hole Completion Equipment
0	-	6.700	-	-	<b>Rotary Table Difference</b>
1	6.700	0.385/0.19	177	63	<b>Tubing Hanger (Canadaworks)</b> 2-7/8" EUE (BxB)
2	6.890	0.498	79/94	62	<b>X-Over</b> 2-7/8" EUE (PxP)
3	7.388	1.806	79/74	62	<b>Pup Joint (02 Nos.)</b> 2-7/8" EUE (PxP)
4	9.194	1898.662	93	62	<b>Tubing Joints ( 199 Joints)</b> 2-7/8" EUE (PXB)
5	1907.856	3.07/ 1.59	115	59	<b>BHA of Jet Pump (Trico)</b> 2-7/8" EUE (P X B)
6	1910.926	0.310	100	61	<b>X-Over</b> 3-1/2" CSH (P) x 2-7/8" EUE (B)
7	1911.236	8.910	101	74	<b>Blast joints (03 Nos.)</b> 3-1/2" CSH (PXB), 10.3 PPF, L-80
9	1920.146	2.778/0.214	102/132	75	<b>Locator Seal Assembly (Weatherford)</b> 1/2" Mule Shoe X 3-1/2", 9.3 PPF CSH (B)
10	1920.360	1.14 0.71/0.43	148.95	101.6	<b>Weatherford Ultrapack permanent packer</b> 7", 23.0-32.0 PPF, Packer setting Depth = 1920 M
11	1921.520	2.860	139.7	101.6	<b>Weatherford Seal Bore Extension</b> 4-1/2" 8 THD. Stub Acme (PxP)
12	1924.380	0.160	140.34	75.95	<b>Casing Sub</b> 4-1/2" Stub Acme (B) X 3-1/2" C.S HYD (P)
13	1924.540	2.950	107.95	76	<b>Perforated Spacer tube with 1/2 Mule shoe.</b> 3-1/2" C.S Hyd. (B)
14	1927.490				<b>End of Tubing</b>



**X-Mass Tree:** "Breda" 2-9/16" R-27, API 5000 Psi with one master valve.

**Bonnet Flange:** (7 -1/16" R-46 x 2 -9/16" R-27) x API 5000 Psi (Canada Works)

**Tubing Head Spool:** (11" R-54 x 7-1/6" R-46) x API 5000 Psi (Canada works) with two wing valves of 2 -1/16" R-24 x API 5000 Psi

B. P. V. 2-1/2" Type "H"X-Mass Tree(Canada works): **Note:** Rig Kremco K-750-T R.T Difference = 6.70 M

FORMATION	INTERVAL
LOWER GORU	1971.0 M - 1977.0 M & 1984.0 M - 1992.0 M
<b>PRODUCTION ENGINEERS</b>	<b>FIELD MANAGER</b>
<b>Muhammad Aamir Khetrان / Dileep Kumar</b>	<b>Fayaz Ahmed Memon</b>

Note: Drawing, not according to scale.