

OIL & GAS DEVELOPMENT COMPANY LIMITED
PROCUREMENT DEPARTMENT, ISLAMABAD
FOREIGN SECTION E

(To be completed, filled in, signed and stamped by the principal)

ANNEXURE 'A

Material MUD LOGGING UNITS
Tender Enquiry No PROC-FE/CB/ML-5016/2021
Due Date
Evaluation Criteria FULL

SCHEDULE OF REQUIREMENT

Sr No	Description	Unit	Quantity	Unit Price (FOB)	Total Price (FOB)	Unit Price C & F BY SEA	Total Price C & F BY SEA	Deviated From Tender Spec. If Any
1	MUD LOGGING CABIN. A60, PRESSURIZED OR EQUIVALENT RATED MATERIAL FOR ZONE1 AREA APPLICATION. DETAILS ON SR.#01 OF THE ANNEXURE-A.	Sets	7					
2	MUD LOGGING UNIT SYSTEM CAPABILITIES & HARDWARE FEATURES. DETAILS OF REQUIREMENT AS ON SR.#02 OF THE ANNEXURE-A.	Sets	8					
3	APPLICATIONS & SOFTWARES. ONLINE/OFFLINE/ENGINEERING PROGRAMS. DETAILS OF REQUIREMENT AS ON SR.#03 OF THE ANNEXURE-A.	Sets	8					
4	HYDROCARBONS/GAS DETECTION SYSTEM(TOTAL GAS & CHROMATOGRAPHY). DETAILS OF REQUIREMENT AS ON SR.#04 OF THE ANNEXURE-A.	Sets	8					
5	DRILLING PARAMETERS/SENSORS. DETAILS OF REQUIREMENT AS ON SR.#05 OF THE ANNEXURE-A.	Sets	7					
6	MUD PARAMETERS / SENSORS. DETAILS OF REQUIREMENT AS ON SR.#06 OF THE ANNEXURE-A.	Sets	7					
7	GEOLOGICAL EQUIPMENT. DETAILS OF REQUIREMENT AS ON SR.#07 OF THE ANNEXURE-A.	Sets	7					
8	HAZARDOUS & SUPPLEMENTARY GASES DETECTION SYSTEM. DETAILS OF REQUIREMENT AS ON SR.#08 OF THE ANNEXURE-A.	Sets	7					
9	TELETRANSMISSION & MISCELLANEOUS GADGETS. DETAILS OF REQUIREMENT AS ON SR.#09 OF THE ANNEXURE-A.	Sets	7					

Note:

NOTE:

1. **Bid Validity:** Bid must be **valid for 180 days** from the date of Technical Bid Opening
2. **Bid Bond Amount:** USD 57,000/- (United States Dollar Fifty Seven Thousand only) or equivalent Pak Rupees **valid for 210 days** from the date of Technical Bid Opening
3. **Evaluation Criteria:** - Full Consignment Wise CFR Karachi.
4. **Delivery Period:** 90 days from establishment of LC
5. Bidders are advised to carefully read all the terms and conditions of the Tender Document "Master Set of Foreign Tender Document (Press-Single Stage Two Envelop) – Updated" available on OGDCL website which is an integral part of this Schedule of Requirement

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TERMS OF REFERENCE (TOR)

Scope of Work

- Mud Logging units (07 No.) are required for real time drilling data acquisition and processing at drilling Rigs.

Eligibility/Requirements

The manufacturer:

- Must have minimum of 15 years' experience (National/International) of manufacturing and sale of Mud Logging units.
- Will provide DNV-GL 2.7-1 certification for verification by OGDCL professional /approved TPI firm during pre-shipment inspection.
- Must be capable of providing required equipment **as per Annex. A.**
- Technically backup support/guidance to operate the system for two years after testing the equipment at no cost to OGDCL.

Inspection and Testing

- The inspection and testing of Mud Logging Units will be carried out at manufacturer's facility by two OGDCL technical professionals. Their expense of Airfare, Boarding and Lodging will be borne by the OGDCL.
- In case of any reason like Covid-19, if inspection may not be conducted by OGDCL professionals then the inspection will be tied up with Equipment inspection / Specification verification by Third Party Certification Company.
- The manufacturer will arrange third party equipment inspection and testing / specification verification from the OGDCL's approved Third Party Certification Company. OGDCL will inform manufacturer about Third Party Company and expense incurred in this regard will be borne by OGDCL.

Evaluation of Proposals

- The technical proposal will be reviewed to determine the responsiveness according to information vide **Annex. A, B and C.** Technical proposals not conforming to and deviating from the specifications and conditions laid down in the Tender Documents will be considered non-responsive.

MUD LOGGING UNIT SPECIFICATIONS

Online Mud Logging Unit "Latest" as per specification given below:

Sr. #	Description / Details	Unit	Quantity Required
1	<u>Mud Logging Cabin:</u>		
1.1	Skid mounted Cabin A60 Rated Material, Zone 1 Hazardous Area certified by reputed company of Oil Industry with Pressurization; 07 No.		
1.2	<p><u>Essential feature of A60 Certified Cabin</u></p> <p>-Brand new Skid mounted A60 Rated Material Zone 01 Hazardous area Mud Logging Cabin, Certified with reputed DNV-GL 2.7-1 Industry standard or Equivalent standard and AWS D1.1 or equivalent Structural Welding Code. Cabin size should be approximately L=27ft, W=8ft H=9ft and at least 3mm thick steel walls and 6mm thick steel floor and roof plate, interior walls and interior roof protected with fire resistant Rockwool insulation.</p> <p>- The unit Cabin is to be equipped with pressurization system Airlock and purging pressure system, designed for onshore harsh environment and rough transport condition. A60 fire rated unit doors, emergency escape hatch and two shock resistant windows one on entrance door & other on right side of instrument rack with protection bars, Emergency escape hatch.</p> <p>-Two independent Split air-conditioning 24000 BTU Heat & Cool for full redundancy in event of failure, explosion proof type, run on 50 HZ 220 VAC & rated to operate in desert up to 50 Degree Centigrade Ambient temperature.</p> <p>- Cabin should be included with Isolation Transformer (as per unit load requirement), Differential Safety circuit breakers, power rack, built-in voltage stabilizers, 5KVA UPS one for online system and one for Gas System independently with 30 Minutes backup time to run the system hardware, Unit Electrical Power Cable (100 M) to Rig generator etc.</p> <p>- The cabin should include all the standard necessities required for Mud Logging unit such as Instrument racks, Stainless steel 316 Grade sink & wet area for cuttings sample cleaning & description, Sample drying oven with fume extractor, Chemical storage dedicated drawers, Desks, Benches, Cabinet, Drawers, Tool kit, , Safety Equipment, Combined Pressurization Fire & Gas Panel, with Zone 1 rated smoke detectors and rechargeable emergency lighting, LEL combustible gas detectors, pneumatic fire dampers, flow and pressure switches and an emergency shut-in switch, refrigerator, instant water heater, Ambient SMART Hydrocarbon and fume detectors, fire extinguishers, internal air lock /MCT entry etc.</p> <p>- Bidders to provide complete literature, drawings maps etc. in all aspects of the entire fixture, and interior fittings, cabin contents, safety equipment and all other accessories fitted in the unit cabin with bid document. Separate certification of Standard API certified lifting rings/lifting pad eyes / lifting lugs / slings & overall load test of the unit with time span be provided with complete details in the technical Bid.</p>	No	07

2	<p><u>System capabilities & Hardware :</u></p> <p><u>Essential feature:</u></p> <p>-Versatile and robust latest generation Real time Data Acquisition and processing system with adequate memory capabilities to perform online / offline operations simultaneously.</p> <p>-The system should be capable of displaying both on-line and off-line (Time & Depth base data) in digital and graphic form on various in house and remote video screens, recording & printing of data on time charts recorders and printers, and should have ample storage capacity of storing on-line data minimum of 6500 meters or more and multiple data bases of off-set wells for correlation purposes.</p> <p>-Set of Real time Data Acquisition and processing system should include at least 06 work stations (consisting of latest existing technology hardware / operating system / software's) capable of online monitoring and recording and where necessary printing of instantaneous drilling operations and performing offline / engineering programs simultaneously.</p> <p>The system should be capable of analyzing real-time data streams from a number of sensors and gadgets and be equipped with adequate barrier system, instrumentation & data acquisition panel.</p> <p>The system should be capable of displaying and recording decision-ready information on drilling performance and safety via customizable screens. A summary of the real-time status of the well is to be obtained by combining depth and time-based data recorded by drilling /Mud / Gas / Parameters. Complete technical literature, circuit diagrams, operational manuals in all aspect should be provided along with the technical bid.</p> <p>One set of Mud Logging Unit should be included:</p> <ul style="list-style-type: none"> 2.1 • Server intel xeon based or equivalent as per Industrial standard (01 for backup) 02 Nos. 2.2 • Wireless Server Network Station 01 No. 2.3 • Offline workstation 01 No. 2.4 • Real-Time Graphic workstation 01 No. 2.5 • Real-Time numeric workstation 01 No. 2.6 • Remote Workstation 04 Nos. 2.7 • Black & White Laser jet Printer 01 No. 2.8 • Color A3 Size Printer with refillable ink bank Provision For Master Log Printing 01 No. 2.9 • Color Network Printer 01 No. 2.10 • Online data Display Monitor "40" 01 No. 2.11 • Explosion proof computer touch screen for Rig Floor with wireless connectivity 01 No. <p><u>Note: Backup software/guidance to OGDCL Engineers / Technicians to prepare Server Hard drive for backup supports will be provided.</u></p>	SET	08
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2.12	Server Security Key / Dongle	No.	08
2.13	Data Acquisition System with Digital and Analog Multi-Channel Recording	No.	08
2.14	Instrumentation Panel: Sensor interface panel to link all the sensors & panels with Online Computer system including gas detection / analysis system. Unit Instrumentation cabling, multi-core cable with explosion proof junction boxes to connect sensor with online system.	Set	08
2.15	Complete per head training cost for 04 (Four) weeks including Lodging, Boarding, Air ticket and pick & drop of OGDCL professional on new technology, software and operating system at equipment's manufacturing facility, training cost will not be the part of financial evaluation.	Mud Loggers	14
2.16	Complete per head training cost for 04 (Four) weeks including Lodging, Boarding Air ticket and pick & drop of OGDCL professional on new technology Hardware / Repair Maintenance at equipment's manufacturing facility, training cost will not be the part of financial evaluation.	Engr / Techs.	14
3	Applications & Software: Essential feature: -Latest Mud Logging software operating under latest windows environment containing all the related Mud logging utility programs with help support. -The Mud Log drawing utilities should be capable of generating Geological/industry related customized log formats, symbols columns and rows with specialized attributes and flexible scale selection. The utilities should also contain bank of such templates. - The software should be capable of monitoring real time (On-line) Drill Monitor, Trip Monitor, Circulation monitor, Pits monitor, Kick Control & Cementation Monitor. -The software should be capable of Real-time (On-line) logs generation such as Mud Logs, Gas Logs, DXC-Pore Pressure Logs, Engineering Log, Master log etc. The software should include offline optimization utilities for geological drilling engineer & hydraulic computation etc. -The software should also be capable of generating multi-well correlation (based on various data synthesis options) on color graphics (hard copy & screen output). - The software should be capable of online calculation such as D-exponent, Bit revolution, bit cost, drilling cost, 3-D plots of side track / directional drilling with rotational options etc. - The software should be capable of Tele-transmission (Real time data transmission from well site to town office). -The required software's are capable of detecting Real time Drilling and Rig safety monitoring such as Real time Early kick & Mud Loss detection, Real time cutting volume monitoring for borehole cleaning & stability (Caving Monitoring), String dynamic control, Real time stick & slip detection, Real	Set	08

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	<p>time Hydraulics, Surge & Swab and kick control, Near balance and narrow margin drilling monitoring, washouts detection & twist off prevention, Real time overpressure detection, Real time d-exponent analysis while drilling, continuous & immediate calculation of the formation pore pressure gradient, Continuous & immediate calculation of fracture gradient, immediate recognition of change of formation and pore pressure gradient,</p> <p>-The software should be capable of reservoir Evaluation & characterization using Gas data, geosteering or piloting of horizontal wells using gas chromatograph & ratios, recording and displaying the pixeler gas ratio, Wetness / Balance & Character ratios to detect Gas /Oil contact, Real time Gas interpretation, Gas data quality control & gas evaluation, field evaluation of WOC and formation fluids changes, Real time fractured reservoir evaluation, hazardous gas detections and alarms.</p> <p>-Complete technical literature and documentary evidence must be provided elaborating above mentioned required software features for assessment & technical qualification of bid.</p> <p>-Any non-compliance to above mentioned software feature will render the bid technically non-responsive & disqualified.</p>		
<p>4.1</p> <p>4.1.1</p> <p>4.1.2</p> <p>4.1.3</p> <p>4.1.4</p>	<p><u>Gas Detection System (Total Gas & Chromatograph)</u></p> <p>-Total Gas Detector & Chromatograph Measuring Method (FID).</p> <p>-Total Hydrocarbon Detector for continuously measuring of Total gas extracted from Mud working on Flame Ionization Detection (FID) principle.</p> <p>-Fast Cycle Gas Chromatograph separating and measuring hydrocarbons components from C1 to C5 by means of FID (Flame ionization Detector) with a cycle time of 60 Seconds.</p> <p>-The system should have the provision of manual and computerized calibration facility.</p> <p>- The Hydrocarbon detector and Chromatograph panels should also have independent recording capabilities in case of main on-line system failure.</p> <p>- Provision of Multi points calibration.</p> <p>- All the associated accessories of standard Gas system to be included.</p> <p>-Gas Extraction system / Gas Trap (pneumatic type) & associated accessories of standard Gas system.</p> <p>Provision of Gadgets along with each unit:</p> <ul style="list-style-type: none"> ● Provision of Hydrogen Generator; (1No. For Back up) 02 No. ● Provision of Air Compressor; (01 For Back up) 02 No. ● Provision of Flow Control Panels; 01 No. ● Calibration Gas Cylinder (M-Size) for Total Gas (CH₄) 01 No. 	<p>Set</p>	<p>08</p>

4.1.6.	for Chromatograph (C ₁ -nC ₅)			
	• Calibration Gas Bottle For CO ₂	01 No.		
4.1.7.	• Calibration Gas Bottle For Nitrogen	01 No.		
Each Mud Logging Unit must contain:				
5	Drilling Parameters / Sensors:			
5.1	Draw Works (Depth) Sensor	02 Nos.		
5.2	Hook Load Sensor (Rosemount) Range 0—1000 psi	01 No.		
5.3	Stand pipe Pressure Sensor (Rosemount) Range 0—6000 psi	01 No.		
5.4	Torque Sensors (Electrical) interchangeable for top drive & rotary (both options included)	01 Set.	Set	07
5.5	Pump Stroke Sensor (Micro/Limit Switch)	03 No.		
5.6	RPM Sensor interchangeable for Top Drive & Rotary drive (Both options included)	02 Nos.		
5.7	Casing Shut in Pressure Sensor Range 0—10000 psi	01 No.		
	-All Sensors and supporting gadgets should be explosion proof (Ex Marked with Zone0 & Zone 1) and provide certification of industrial safety Norms.			
6	Mud Parameters / Sensors:			
6.1	Mud pit Sensor (ultra sonic) system should be capable to monitor at least 08 pits at a time	08 Nos.		
6.2	Trip Tank Sensor	01 No.		
6.3	Temperature In & Out Sensor Range 0—100c deg	02 Nos.		
6.4	Mud Weight In & Out Sensor Range 0—3 SG	02 Nos.	Set	07
6.5	Conductivity In/Out Sensor Range 0—3 mS/	02 Nos.		
6.6	Mud Flow out (paddle type)	01 No.		
	-All Sensors and supporting gadgets should be explosion proof and Corrosion Proof S.S 316Grade material (Ex Marked with <u>Zone0 & Zone 1</u>) and provide certification of industrial safety Norms.			
7	Geological Equipment:			
7.1	Calcimeter with related accessory	01 No.		
7.2	Standard trinocular Petrographic Microscope: Magnification from 7x through 45x (with 10x eyepieces), zoom range 0.7x to 4.5x, with digital imaging with LCD display	01 No.		
7.3	Micro sole (Measuring Shale Density)	01 No.		
7.4	Fluoroscope	01 No.	Set	07
7.5	Standard Geological Accessories i.e. standard API set of sieves, Thermal wax bath (Electric heating for coring) (220v, 50Hz) with thermostat (Size min 60cm x 30cmx20cm) Walker Balance for Mud Density hot plate etc. (To meet well site requirement)			
8	Hazardous & Supplementary gases Detection System:			
8.1	H₂S Detection System			
8.1.1	H ₂ S detection system capable to monitor signal from at least 6 independent H ₂ S sensors at a time. Range is 0-100 PPM			
8.1.2	H ₂ S Sensors	04 Nos.		
8.1.3	Carbon dioxide detection system Range 0-100%	01 Set		
8.1.4	Nitrogen Sensor enable to install at gas line	01 NO.	Set	07
8.1.5	Environment gas detection system with sensors	01 Set		
8.1.6	Cutting gas detector (Gas blender working With Gas system) complete with Accessories.	01 Set		

9	Miscellaneous:			
9.1	Real Time data transmission from well site to town office Hardware & software include	01 Set.		
9.2	Wireless Intercom System 08 Set (Explosion proof 02 Set)	01 Set.		
9.3	Portable Resistivity Meter (0-3 Ohms)	01 Set.	Set	07
9.4	H ₂ S Detectors (Portable)	04 No.		

Annexure – B

Instruction to Bidder/Supplier:

The quote should include:

- All equipment must be covered with replacement of spares under **ONE YEAR WARRANTY** (Start from date of testing of unit at well site) & five years availability of spares and accessories.
- Equipment / Software should be latest at the time of delivery any up-gradation / modification during the five year will be made available for OGDCL Units.
- Bidder will bear all kind of cost involved for their visiting Engineer and testing of Mud Logging Unit at OGDCL field locations. However OGDCL will provide boarding, lodging & transport at field location only.
- Technically backup support /guidance to operate the system for two years after testing the equipment at no cost to OGDCL.
- Necessary training to OGDCL Mud Logger/technician to operate, calibrate the Mud Logging unit will be provided by unit testing Engineer.
- Detail technical literature in English language will be provided with bid document.
- Installation / testing of the equipment will be responsibility of the supplier.
- Equipment(s) calibration and performance will be duly signed at Equipment Checklist by OGDCL Engineer and Supplier Engineer at wellsite.
- **Bidders are required to quote 05 (Five) years recommended operational spares of main equipment with Part No. along with Technical Bid and each unit / spare cost with financial bid, which will not be the part of financial evaluation.**
- **OGDCL may opt to purchase spares as per requirement and then include spares cost in Purchase Order.**

Necessary Attachments:

- Product data / literature in original printed by manufacturer.
- Original authority letter issued by the manufacturer to bidder and to local agent (if any) not only for quoting their product but to provide back-up services and supplies also.
- Declaration for back-up services regarding repair & maintenance, trouble shooting and supply of optional accessories or spare for quoted product.
- Name of few clients other than OGDCL with their contact number and year of supply.
- Details of Training facilities, operational and related Mud Logging courses should be provided.
- Any non-compliance to above mentioned indent specifications & features /instructions to bidder / non-provision of Necessary attachments and complete technical literature will render the bid technically non-responsive & disqualified.

Technical Bid Evaluation Criteria

- The prospective bidders shall be evaluated as per following criteria.

Descriptions	Point Value	
	Score	Section %
Equipment		50%
1.1. Bids as per laid down specification of Mud Logging Units	Yes No	50 0
Supplier's Experience & Support		25%
1.2. Experience in manufacturing of ML Units (Documentary evidence required)	<15 15 Years 17 Years 18 Years 20+ Years	0 15 17 18 25
Manufacturing History		20%
1.3. Mud Logging Units manufactured / sold during last 15 years (Documentary evidence required)	<15 15 Units 16 to 20 Units 21 to 30 units 30+ Units	0 5 10 12 20
Backup Support		5%
1.4. Technically backup support/guidance to operate the system for two years after testing of ML Units.	Yes No	5 0
TOTAL POINT VALUE	100	100%
TECHNICAL QUALIFICATION (Minimum Score)	75	

- The bidders obtaining less than **75%** on the aggregate or **0%** marks in any criteria shall be considered Non-Responsive and will not be considered for Financial Evaluation.

Note:

- Documentary evidence in support of above is essentially required.*
- The Bidder must submit technical bid complete in all aspects i.e. necessary certifications, complete technical literature, documentations etc.*