INVITATION TO SUBMIT TECHNICAL AND COMMERCIAL OFFERS

Directional Drilling Services

We hereby invite qualified and experienced companies to submit their technical and commercial proposals for the provision of Directional Drilling Services in accordance with the scope of work outlined in the attached document.

Scope of Work Includes:

- Provision of directional drilling services including planned deviation and sidetrack drilling operations.

- Supply of Positive Displacement Motors (PDM), Non-Magnetic Drill Collars, Circulating Subs, Stabilizers, Gyro Single-Shot tools, and other required directional equipment.

- Capability to perform sidetrack drilling in case of unsuccessful instrumentation.

- Provision of equipment with conformity certificates, manufacturing dates, and usage tracking.

- Availability of backup equipment and fishing tools for retrieval operations.

- Use of trajectory calculation and monitoring software including anticollision, torque & drag, and magnetic declination analysis.

- Deployment of experienced personnel with a minimum of five years in directional drilling operations.

- Preparation and submission of daily reports, graphical logs, and end-of-well documentation.

- The scope covers re-entry into one well and drilling of two exploration wells in the Ghadames Basin, Block 95/96.

Submission Guidelines:

- Offers must be submitted in sealed envelopes waxed in red.

- Both technical and commercial proposals must be included.

- Pricing details must be confined to the commercial offer only.

- Deadline for submission: within five (5) days from the date of this announcement.

We look forward to receiving your proposals.

SPECIFICATIONS OF EQUIPMENT AND SERVICES PROVIDED BY THE CONTRACTOR

4.2.5 DRILLING SERVICES, DIRECTIONAL DRILLING, AND DOWNHOLE MOTORS

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4.2.5.1. DESCRIPTION OF WORKS

Definition of Need and Specificity:

Directional drilling services are specialized provisions that involve specific equipment.

The Client will utilize these services for:

- Planned deviation,
- Side-Track drilling in case of unsuccessful instrumentation.

Note: The Client will request this service in the event of an incident on the well, considering it is initially drilled vertically.

4.2.5.2. TECHNICAL SPECIFICATIONS OF REQUIRED EQUIPMENT

For these tasks, the Contractor must provide at least the following equipment:

- Positive Displacement Motor (PDM)
- Non-Magnetic Drill Collars or HW NM
- Circulating Sub (Closing & Opening in one motion by dropping ball)
- Screens for Drill Pipe (DP)

- Stabilizers
- GYRO Single-Shot (provide a winch to assist in executing operations)
- Crossovers [Lot]

General:

- The connections of the requested directional equipment must conform to the connections of the tubular equipment possessed by the drilling rig, as described and designated for drilling wells A1/96-02, D1/96-1.
- All threads of the equipment to be used in the well and owned by the Contractor will be protected by protectors provided by the Contractor.
- The Contractor must:

o Provide necessary lifting heads for handling directional equipment, either for stacking or unstacking.

- The Contractor is obliged to:

o - Provide backups for all directional equipment, with a minimum of one (01) backup on-site for each directional element sent down the well.

- Each downhole equipment provided must be accompanied by:

o Manufacturing date,

o A conformity certificate inherent to its specifications,

o Its accounting depreciation period.

- The Contractor must:

o Maintain an on-site register tracking its downhole equipment, including:

- Exact description of the equipment (type, length, outer diameter, inner diameter, useful fishing diameter and length, etc.),
- Number of hours of use.

Fishing Equipment:

For the potential retrieval of its directional equipment, the Contractor must:

- Provide necessary equipment if they are not of standard diameter (including Overshots, grapples, etc.).

Downhole Motors and Tubular Equipment:

- Volumetric motors must be devoid of Dump valve and equipped with a rotor retainer.
- They must be Box-Down and Box-Up.

- They must be equipped with undersized "Bearing Housing Stabilizers" with the option of replacing the stabilizer skirt with a smooth skirt.

- The downhole motors required in this Contract must enable achieving the Minimum Bent Radius (BUR) as specified in the drilling program.

- Each downhole motor provided must be accompanied by a conformity certificate inherent to its specifications and the date of its manufacture.

- For each phase, the Contractor will provide two (02) Circulating Subs (including 01 backup).

- The Contractor will include a detailed procedure for redrilling the casing 9''5/8 and 7" with the directional Bottom Hole Assembly (BHA).

- For each diameter and type of motor, the Contractor will provide:

o Equipment diagrams with dimensioning of the various elements,

o "String RPM vs DLS" tables for each phase.

- All listed equipment must be delivered with necessary reductions for assembly in the drill strings.

- The Contractor will use :

o at its own expense, a trajectory calculation and monitoring program including anticollision calculations, Torque & Drag, coordinate conversion, magnetic declination calculation, convergence, etc.

- The mentioned equipment below is to be provided by the Contractor upon request by the Client. They must be available upon the Client's demand at the Contractor's base within reasonable timeframes. The proposed list of equipment is non-exhaustive; the Contractor must review and supplement this list as necessary.

The document continues with a detailed list of equipment items, their descriptions, specifications, and other requirements.

Item	Phase	Description
1	16''	9''1/2 ou 9'' 5/8 Steerable Mud Motor – Medium speed – Adjustable • Flow range: 1500 – 4500 lpm • Bit speed range: 100 – 250 rpm • Min operating torque: 9500 lbs.ft
2		9''1/2 ou 9 5/8" Steerable Mud Motor – Low speed – Adjustable • Flow range: 2250 – 4500 lpm • Bit speed range: 65 – 135 rpm • Min operating torque: 13000 lbs.ft
3		Top stabilizer with sleeves 16", 15 7/8", 15''3/4, 15 5/8"
4	12''1/4	8" ou 8 ¼" Steerable Mud Motor – Medium speed – Adjustable • Flow range: 1125 – 2250 lpm • Bit speed range: 75 – 225 rpm • Max operating torque: > 6600 lbs.ft
5		8" ou 8 ¼" Steerable Mud Motor – Low speed – Adjustable • Flow range: 1125 – 3400lpm • Bit speed range: 30 – 130 rpm • Max operating torque: > 8500 lbs.ft
6		Top stabilizer with sleeves 12 1/8", 12", 11 7/8", 11"
7		8" ou 8''1/4 Non-magnetic Drill collar ou Non-magnetic Flex Heavy weight – 30 ft
8	8''1/2	6''1/2 ou 6''3/4 Steerable mud motor – High speed – Adjustable • Flow range: 1125– 2250 lpm • Bit speed range: 80– 450 rpm • Max operating torque: > 2600 lbs.ft
9		6''1/2 ou 6''3/4 Steerable mud motor – Medium speed – Adjustable • Flow range: 1125 – 2250 lpm • Bit speed range: 135 – 280 rpm • Max operating torque: > 4700 lbs.ft
10		6"1/2 ou 6''3/4 Steerable mud motor – Low speed – Adjustable • Flow range: 1125 – 2250 lpm • Bit speed range: 50 – 140rpm • Max operating torque: > 6000 lbs.ft
11		Top stabilizer with sleeves 8''1/4, 8''1/8 , 8", 7''7/8
12		6''1/2 ou 6''3/4 Non-magnetic Drill collar ou Non-magnetic Flex Heavy weight – 30 ft long
13	6''	4''3/4 Steerable mud motor – Hi - speed – Adjustable • Flow range: 380 – 950 lpm • Bit speed range: 105 – 200 rpm • Max operating torque: 1000 - 2250 lbs.ft
14		Top stabilizer with sleeves 5''1/4, 5 1/2" , 5 7/8"
15		4''3/4 Non-magnetic Drill collar– 31 ft long
16		4''3/4 Circulating sub 4.06 ft

- **Magnetic Single Shot :**

The Contractor must provide:

- A complete 1''3/8 Single shot equipment including:

o Measuring instrument with indicator light, pill box, battery compartment, triggering adjustment watch, 02 "compass units" (0-10°, 0-30°),

o Orientation connector with key and appropriate locking mechanism,

o Standard running gear,

o Running gear with Mule Shoe,

- At least 05 x 1m loading bars,
- Rope Socket for connection to Wire-line cable,
- Fishing equipment (Harpoon, Overshots…).

- **Gyro Multi Shot :**

The Contractor will provide:

- A complete 1’’3/4 Gyro Multi shot equipment including:
  - Rope Socket for connection to Wire-line cable,
  - Two "Drill-pipe Centralizers", one at the top and the second at the bottom of the tool,
  - Sleeve containing the power supply battery,
  - Module for recording directional parameters,
  - Bottom shoe,
  - Standard running gear,
  - Running gear with Mule Shoe,
  - At least 05 x 1m loading bars,
  - Fishing equipment (Harpoon, Overshots…).

4.2.5.3. PERSONNEL

The Contractor must provide personnel with at least five years of experience and having worked for at least one year with this Contractor. The Contractor must:

- Provide resumes of employees who may work on this project.

Directional drilling and gyroscopic trajectory acquisition services require highly specialized personnel.

- **Qualification of Contractor Personnel:**

Designation	Number	Work System (1)	Qualification	Remarks
Basic Personnel				
Manager	01	**	**Engineer**	In addition to support personnel, the Contractor will appoint a representative on-site..
Site Personnel				
Operator for Side Track supervision (2)	01	The Contractor will arrange to answer the Client's call and provide a Side Track operator on 95/96 area. The remuneration of this operator will relate to the period of availability during the Side Track period. The presence of this personnel in Libya is not guaranteed by any workload plan.		

4.2.5.4. DATA AND REPORTS

The Contractor must provide:

- A daily report including graphical prints of recordings,

- However, the Contractor will provide any other report or interim print upon the Client's request,

- At the end of each run, graphical recordings up to the depth reached,

- The end-of-well report organized as follows:

o General:

- Operator
- Directional Contractor
- Permit/Block
- Drilling contractor/Rig:
- Well:
- Equipment:
  - Arrival on Work site - Departure off Work site
- Unit:
  - Personal arrival on Work site – Personal Departure off Work site

o WELL SUMMARY:

- Total drilling depth
- Start drilling date
- Displayed runs
- Top logged interval
- Bottom logged interval
- Start logging date
- Start logging time
- Drilling sizes, Casing sizes, and corresponding depth and inclination

- LOCATION / ELEVATION:
    - Well Head Longitude and Latitude
    - Logs origin
    - Depth reference
- DATA RUN SUMMARY:
    - Run number BHA number
    - Bit size Type of BHA
- MUD CHARACTERISTICS - OTHER SERVICES:
    - Type of mud Sensors
    - Samples provenance
    - Rm @ measured temperature
    - Rmf @ measured temperature
    - Rmc @ measured temperature
    - Deviation:
    - Rm @ MT Rmf @ MT Maximum inclination
    - Maximum temperature

- Remarks:

- List of curve mnemonics
- Type of acquisition by interval: drilling/reaming, rotating/sliding, logging up/logging down
- Applied corrections
- Any comments related to the acquisition process, the display of the logs, anomalies, and particular recommendations modifying the standard procedures.

- SERVICE EVALUATION/OPERATIONS QUALITY REPORT:

- Failure duration: (lack of data or unreliable data - in hours)
    - Telemetry
    - Down-hole detector (to be precise)
    - Down-hole memory
    - Power supply
    - Surface equipment
    - Other (to be precise).

- **Amount of the contract**

DAYS					
	OPERATIONS RATE US$/day	STAND RATE US$/day	REDRASS	Total operation (3 days) without standby	Total operation with standby (4 days) and redress
Item					
MWD Engineer					
LWD Engineer					
Directional Driller					
Project Enginner/Specialist					
AutoTrak RSS 675					
6-3/4'' Medium speed PDM					
7-3/4'' Medium speed					
6-3/4'' MWD-Drictional					
6-3/4'' Mud pulse					
Gamma Ray					
Haydra-Jar					
Multi-Cycle Circulating sub					
8-3/8''String Stabilizer NM Mod					
Float sub					
Long NMMMDC					
Short NMDC					
MWD/LWD Unit and surface Equipment					
Data transmission (SET UP)					
Data Transmission Charge					
Mob/Demob and set Up charge					
Drilling Bit					
Total operations for 3 day , 1 standby and redress					

- **Contingency plan**

Price list for any propose of equipment or personal that can be used for Sidetrack and performance drilling.

PRICE LIST

Item	Description	Unit	Unit Price				
			26" section	16"/17-1/2" section	12-1/4" section	8-1/2" section	6" section
1	**TRANSPORTATION**						
	Personal	USD/Well					
	Materiel						
2	**RENTAL CHARGES**						
	Personal						
	Directional Dillers	USD/DAY					
	MWD Engineers	USD/DAY					
	LWD Engineers	USD/DAY					
	GYRO Operator	USD/DAY					
	Equipment						
	PDM	USD/DAY					
	Collar MWD	USD/DAY					
3	**CIRCULATING CHARGES**						
	PDM	USD/DAY					
	MWD Directional	USD/DAY					
4	**LOST IN HOLE COST**						
	PDM	USD/tool					
	MWD Directional	USD/tool					

PERFORMANCE DRILLING STD (with MWD)						
			16''/17/1/2" Hole section	12-1/4'' Hole section	8-1/2'' Hole section	6" Hole section
	TRANSPORTATION	Distance (Km)				
		TRANSPORTATION				
	RENTAL CHARGE	Activity Qtys(Days)	4	4	4	4
		Personal (us$)				
		Equipment package (us$)				
		Total Rental charge (us$)				
	CIRCULATING CHARGES	Qtys PDM (Hours)				
		Qtys MWD (Hours)				
		Total circulating charge (us$)				
Lost in hole us$ (5% probality of LTH)						
		Total (us$)				
		Total performance drilling				

SIDE TRACKS							
			26" Hole section	16''/17/1/2" Hole section	12-1/4" Hole section	8-1/2" Hole section	6" Hole section
	TRANSPORTATION	Distance (Km)					
		TRANSPORTATION					
	RENTAL CHARGE	Activity Qtys(Days)	4	4	4	4	4
		Personal (us$)					
		Equipment package (us$)					
		Total Rental charge (us$)					
	CIRCULATING CHARGES	Qtys PDM (Hours)					
		Qtys MWD (Hours)					
		Total circulating charge (us$)					
Lost in hole us$ (5% probality of LTH)							
		Total (us$)					