



TECHNICAL SPECIFICATION AND REQUIREMENTS

FOR

1 YEAR DIRECTIONAL DRILLING WITH RSS AND LWD SERVICES

July, 2024

1. DESCRIPTION OF SERVICES

1.1. Scope of work

The purpose of this document is to specify TPAO's needs regarding Directional Drilling Services that include Mud Motors and/or RSS with MWD (Gamma Ray included) and LWD services (or Measurement After Drilling) for 1 year contract period, onshore Turkey.

1.2. Requirement of work

Items for Directional drilling tools:

- Mud Motor (Sleeve Stabilizers of required sizes including sleeve protector)*
- RSS *
- MWD (with Gamma Ray Sensors)*
- Dumb Iron tools (NMDC, XOs, Stabilizers, etc.)
- LWD Services*

*Origin of Manufacture of all proposed tools shall be trademarked to the Contractor. Change of manufacturer of the equipment will not be accepted after tender.

DD Services:

Hole size	Estimated number of wells per year	Mud Motor Size	Mud Motor Features	Flow rate range (gpm)	RSS Size
6"	20	5" or equivalent	Medium/high speed + medium torque	200-300	5" or equivalent
8 ½"	100	6 ¾" or equivalent	Medium speed + medium torque Low speed + High torque	300-500	6 ¾" or equivalent
10 5/8"	20	8" or equivalent	Medium speed + medium torque Low speed + High torque	400-700	8" or equivalent
12 ¼"	100	8" or equivalent	Medium speed + medium torque Low speed + High torque	400-700	8" or equivalent
17 ½"	85	9 1/2" or equivalent	Low speed + high torque	550-900	9 1/2" or equivalent
26"	20	9 1/2" or equivalent	Low speed + high torque	550-900	N/A

Table-1: Technical requirements for hole sizes

Contractor must have conducted at least 20 Directional Drilling Operations with RSS globally within last 2 years.

Contractor shall have the ability to redress their tools in Turkey.

Manufacture date of all the tools shall not exceed 6 years back from 2024. All the traceability records shall be kept ready for TPAO's investigation.

The inventory at the Contractor's Base with Equipment and Personnel Tracking Sheet on the rig sites shall be shared weekly with TPAO.

Contractor shall give notice if deviation from approved well plan occurs and follow communication protocol, which will be attached to the contract.

Contractor shall share data including all LWD Logs with real-time data transfer service (RTDT/RTOC)

Contractor shall provide engineering studies including Torque and Drag, Hydraulics & hole cleaning (including ECD&ESD, Bed Height Percentage, etc.), Vibrations and Anticollision, etc.

Contractor shall provide all necessary certificate and relevant documents.

Mud Motor, MWD, RSS and LWD circulation hour limit shall not be less than 250.

Mud Motor, MWD, RSS shall be compatible with oil based mud (Relevant preparation has to be made for OBM prior to the operation)

Prior to LWD job, Drilling fluid properties will be provided to the contractor. In case the drilling fluid is OBM, induction and OBM imager logs will be requested instead of resistivity and resistivity image logs.

Mud Motor, MWD, RSS and LWD's thread type shall be compatible with TPAO's BHAs.

Mud Motor, MWD, RSS and LWD's shall be capable of working with TPAO's mud pumps.

Additional RSS Requirements

- RSS shall provide real time near bit inclination data.
- RSS shall provide both real time and recorded memory data.
- RSS shall have pre-programmed automated direction control.
- RSS shall have more than 250 RPM as maximum limit.
- RSS shall be compatible with mud motors to have motorized RSS BHA if needed.
- RSS shall be capable of providing real time gamma ray log data if requested.

Additional LWD Services Requirements

LWD (or Measurement After Drilling) services will cover below equipment:

- Gamma-Ray
- Direction
- Resistivity / Induction
- High Resolution Resistivity image / OBM Imager
- Azimuthal Resistivity
- Sonic (Compressional and Shear)
- Density
- Neutron Porosity
- Geosteering Services
- Geosteering Azimuthal Resistivity
- Azimuthal GR
- Downhole Dynamics and Parameters
- ECD and ESD
- Vibration and stick slip data & log

The service shall also include:

- Any processing that can be performed on the Contractor's software on the worksite
- Any further processing required (at the Contractor's geoscience centre) in order to reach the quality level specified by the Company service requirements
- Merging of multiple-log pass data
- Depth matching with the previous Wireline Gamma ray
- The process and interpretation of Image log data (bed and fracture picking),
- Image log data with azimuth and inclination. Inclination data correction and true vertical depth (TVD) calculation results are presented as a table of measured depths, true vertical depth, deviation, hole azimuth, NS-EW distances and supported by a polar plot and vertical section plots show in North-South and East-West projections
- Image plots showing GR, speed corrected Static and Dynamic Images,
- The process and interpretation of image data (Bed and fracture picking)
- Environmental correction for log data (borehole, mud properties etc.)

TPAO requires each of the abovementioned LWD tools ready in Turkey. The tools shall be suitable for 12 ¼", 10 5/8", 8 ½" and 6" Hole sections. Contractor shall keep 2 set for each hole size ready in Turkey. 1 set shall be comprised of 2 each serviced tools. Contractor is obliged to process QC/QA for their data.

Adding LWD Services to the contract and usage of mentioned service is at TPAO's exclusive discretions.

1.3. Requirement of Personnel

Contractor shall keep minimum 2 Directional Drillers and 2 MWD Engineers (MWD engineers might work remotely) during the Directional Drilling Services with PDM and/or RSS on rigsite. Staff for both DD and MWD positions shall keep minimum 3 year relevant experience for senior personnel and 1 year relevant experience for junior personnel for PDM services. Staff for both DD and MWD positions shall keep minimum 3 year relevant experience for senior personnel and 2 year relevant experience for junior personnel for RSS services. Keeping MWD Engineers on the rigsite or filling this position by remote MWD's is under Contractor's initiative. There will be no charge applied for MWD engineers but any obstacles because of working remotely will be under Contractors responsibility.

Contractor shall have designated Well Planners each responsible for at most 7 wells simultaneously with 3 years relevant experience and designated Directional Drilling Engineers each responsible for at most 7 wells simultaneously available 7/24 and a Directional Drilling Coordinator with 10 years relevant experience located in Turkey. TPAO will review and approve above-mentioned personnel's CV's prior to first call out.

Contractor shall keep 2 LWD specialists during the service period on rigsite. LWD specialists shall keep minimum 4 year relevant experience

TPAO will review and approve all the personnel's CV's prior each job.

At any time, TPAO has right to decline unqualified personnel and Contractor shall replace such personnel as soon as possible.

2. DURATION OF THE AGREEMENT

The commencement date is the date of the Protocol signed mutually. Protocol will be the document stating the equipment specifications and number of personnel & equipment meet the commitment made in the commercial proposal under the column of cost sheet stated as "Proposed Number of Tool Sets that to be kept in Turkey" per section. Contractor shall be ready for awarded number of tools and personnel personnel with

approved CV's with no longer than 2 months past signature date of the contract. In case Contractor fails to supply all equipment and personnel stated in the commercial proposal at the day of protocol signature or any time lack of equipment and personnel is detected, TPAO keeps the right to postpone commencement date or commence the operations and apply daily %0.05 of the total contract amount penalty until contractor supplies missing equipment and personnel.

The duration of the Contract is one (1) year. In case of mutual agreement of the Operator and the Contractor regarding the extension of the contract period, the Contract period may be extended, up to a maximum of the Contract period. The Operator may increase the contractual work up to 100%. In case the contract period is extended according to these provisions, the fees in the Unit Price Table will not be changed.

Estimated total number of working days are shown below. Number of working days may vary upon TPAO's discretion.

DD Services:

Hole size	Estimated number of sections per year	Estimated total working days per year	Estimated Number of sets for Motor BHA to be kept ready in Turkey	Estimated Number of sets for RSS BHA to be kept ready in Turkey	Distribution of Motor Sets
6"	20	300	2	2	Medium/High speed + medium torque (3 set)
8 ½"	100	1500	15	10	Medium speed + medium torque (10 set) High torque + low speed (10 set)
10 5/8"	20	300	2	2	Medium speed + medium torque (2 set) High torque + low speed (1 set)
12 ¼"	100	1500	15	10	Medium speed + medium torque (10 set) High torque + low speed (10 set)
17 ½"	85	1275	10	10	Low speed + high torque (15 set)
26	20	300	4	-	Low speed + high torque (6 set)

Table 2: Estimated number of sections and quantity of tools for indicated hole sizes (each set shall have 1+1 back up tool)

3. EXECUTION OF WORK

Contractor's workload will vary throughout the contract period with a peak number of 35 Directional Drilling Services simultaneously.

Upon TPAO's call out, Contractor shall be ready on the rigsite together with the tools and personnel within 3 days.

As stated above each set shall have 1+1 back up tool. No payment will be issued unless the Contractor keeps 1 + 1 back up tool on the rigsite. In case of any malfunction or any LIH event on any tool, Contractor shall in maximum 24 hours, load an extra tool from Contractor's base and deliver it to the rigsite as soon as possible. The extra tool shall never be gathered from another active rigsite of Operator. No mobilization charge will be applied to the abovementioned extra tool.

Call out notification by TPAO by any means of channels stated in the contract shall be accepted as an official work order to commence work.

4. PRICING INFORMATION

Bidder's commercial quotation shall be prepared in unit price basis.

During commercial evaluation, 95% of total cost + 5% of LIH prices will be compared as below formulas.

Total costs are defined as sum of all the costs:

- A1: per all 26" sections,
- A2: per all 17 ½" sections,
- A3: per all 12 1/4" sections,
- A4: per all 10 5/8" sections per all,
- A5: per all 8 ½" sections
- A6: per all 6" sections.

Lost in Hole per tool prices are defined as one tool's cost;

- B1: per all 26" sections,
- B2: per all 17 ½" sections,
- B3: per all 12 1/4" sections,
- B4: per all 10 5/8" sections
- B5: per all 8 ½" sections
- B6: per all 6" sections.

Estimated number of sections defined as;

- X1: all 26" sections,
- X2: all 17 ½" sections,

X3: all 12 1/4" sections,
 X4: all 10 5/8" sections
 X5: all 8 1/2" sections
 X6: all 6" sections.

Total Cost: $A1 + A2 + A3 + A4 + A5 + A6$
 Lost in Hole per tool: $B1 + B2 + B3 + B4 + B5 + B6$
 Estimated Number of Sections: $X1 + X2 + X3 + X4 + X5 + X6$

Evaluation for bidders:

$((A1 + A2 + A3 + A4 + A5 + A6) \times 95/100) + ((B1 \times X1 + B2 \times X2 + B3 \times X3 + B4 \times X4 + B5 \times X5 + B6 \times X6) \times 5/100)$

Bidder must propose for all sections for DD services. TPAO keeps the right to award multiple bidders. Bidder must state "Proposed Number of Tool Sets that to be kept in Turkey" per section in the cost sheet.

Bidder may propose sections for LWD services partially.

In the event that NPT (nonproductive time) is caused by failure of Contractor's equipment, TPAO will pay zero rate for the equipment and personnel for the duration of the NPT.

Equipment's daily operating rate will only be applied when the equipment is below rotary table. Partial days will be calculated on hourly basis.

TPAO will **NOT** pay any **DBR (Damage beyond Repair)** charge for Contractor's equipment. In case of acidizing operations, TPAO may require Contractor to provide 3rd party inspection reports evidencing the DBR is caused by acidizing operations. As a result of the inspection report or determination by TPAO, if DBR is found to be caused by acidizing operations, upon TPAO's approval a DBR cost may be paid.

TPAO will **NOT** pay any **REDRESS** charge of Contractor's equipment.

TPAO will **NOT** pay any **STAND BY** charge of Contractor's equipment.

5. GENERAL CONDITIONS AND OTHER TERMS

- 5.1. Contractor shall provide a daily report showing details of operations during the preceding 24 hours and any other information related to work requested by the TPAO whenever requested and include Operation Manager, Operation Chief, Company Man and Drilling Engineers to the distribution list.

- 5.2. Necessary engineering studies including trajectory, hydraulic, Torque and Drag, Hydraulic (ECD&ESD, Bed Height Percentage, etc.), Vibrations i.e., reports of the each section of wells will be required prior to the each section or whenever TPAO requests.
- 5.3. End Of Well Reports including brief information of the runs, final surveys, FF calibration and ROP comparison with offset wells i.e., shall be prepared for each well within at most 15 days following release of the equipment and personnel.
- 5.4. In case of unsatisfactory performance, Failure Reports and Investigation Report including brief information of the runs, test reports, inspection reports i.e., shall be prepared for incident within at most 5 days.
- 5.5. In case of unsatisfactory performance of Contractor's equipment, Contractor shall replace such equipment at no cost (mobilization, demobilization, import- export etc.) to TPAO.
- 5.6. In bidder's commercial quotation, the mobilization/demobilization rate for equipment shall mean the transportation of the required tools between Contractor's base and rigsite. In case, Contractor wishes to mobilize any tool from Operator's rigsite to another rigsite; Contractor shall ask Operator with eligible technical supporting document that proves unnecessary of the tool to be serviced. Upon approval from the company, the contractor shall mobilize the tools between rigsites. For such occasion the Contractor will be compensated by one of the eight of the sum of mobilization and demobilization charge.
- 5.7. Both the LIH prices and the lump sum prices will be taken into consideration during the evaluation process. 95% of total cost and 5% of total LIH price will be collected and the prices will be compared according to this total price.
- 5.8. Only daily rates proposals will be accepted. Alternative proposals will not be evaluated.
- 5.9. In the event that TPAO can not be able to retrieve the tools (BHA Assembly and Drill string) LIH prices will be applied and Contractor will not charge operating rates for the tools during fishing operations.
- 5.10. In the event that TPAO is able to retrieve the tools (BHA Assembly and Drill string), Contractor will charge %30 of daily operating rate for the days of fishing operations.
- 5.11. Fishing operations starts with stuck pipe incident reported by the company man.
- 5.12. TPAO may terminate this work order any time with prior written notice in accordance with the terms of the applicable MSA. If there is no MSA, TPAO may terminate the applicable Contract signed for this job.
- 5.13. Abovementioned terms and conditions supersedes all the conditions at the MSA and Contract if conflict occurs.